# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

September 26, 2011

Mr. Bryan Word
Dean Word Company, Ltd.
P.O. Box 310330
New Braunfels, Texas 78131

Re: Edwards Aquifer Protection Program, Comal County

NAME OF PROJECT: Lonestar Quarry; located approximately 1.2 miles northeast of Schwab Road and FM 482; New Braunfels, Texas

TYPE OF PLAN: Request for Extension of Time to Commence Regulated Activities Authorized by a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Edwards Aquifer Protection Program File No. 1603.02, Investigation No. 950680
Regulated Entity Number: RN102870367

Dear Mr. Word:

On August 17, 2011, the Texas Commission on Environmental Quality (TCEQ) received your request for an extension of time to commence regulated activities related to the above referenced WPAP approval. The request has been reviewed for compliance with 30 TAC §213.4(h) and §213.13 which set forth the procedures for requesting an extension of time to commence regulated activities authorized by the approval and was found to be in general agreement with these procedures. Therefore, the request for an extension to the term of approval for the referenced project is granted. A summary of the dates of approval and expiration is enclosed.

| Date of Original Approval: | October 13, 2009 |
|---|---|
| Date of Expiration: | October 13, 2011 |
| Date Extension Request Received | Date of Extension Expiration |
| August 17, 2011 | April 13, 2012 |

The request and fee were received in compliance with 30 TAC §213.4(h) and §213.13. As indicated in the rules, an extension may not be granted if the proposed regulated activity or

approved plan for the regulated activity has changed. As understood, there will be no changes or modifications to the originally approved plan. This request for extension expires on April 13, 2012. Should construction not commence before the end of the six (6) month period, another request for extension would be required to keep the Edwards Aquifer Protection Plan validated.

If you have any questions or require additional information, please contact Yuliya Dunaway of the Edwards Aquifer Protection Program with the San Antonio Regional Office at (210) 490-3096.

Sincerely,

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

MRV/YD/eg

cc: Mr. Gary Nicholls, P.E., Westward Environmental, Inc.
Mr. James C. Klein, P.E., City of New Braunfels
The Honorable Harold D. Baldwin, City of Schertz
Mr. Tom Hornseth, P.E., Comal County
Mr. Karl J. Dreher, Edwards Aquifer Authority
TCEQ Central Records, MC 212

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

October 13, 2009

Mr. Bryan Word
Dean Word Company, Ltd.
P.O. Box 310330
New Braunfels, TX 78131.

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: Lonestar Quarry; Located approximately 1.2 miles northeast of Schwab Rd. and FM 482; New Braunfels, Texas
TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer
Edwards Aquifer Protection Program ID No. 1603.01; Investigation No. 709676; Regulated Entity No. RN102870367

Dear Mr. Word:

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 Dean Word Company, Ltd. on November 14, 2008. Final review of the WPAP was completed after additional material was received on January 5, 2009, January 29, 2009 and February 4, 2009. 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.*

## BACKGROUND

The original WPAP was approved on January 29, 2001 for a quarry project of approximately 270 acres with 3.57 acres of impervious cover. The project included a rock crusher, asphalt plant, office, paved road, scale and scale house. An aboveground storage tank (AST) facility plan was also approved on January 29, 2001 for eleven AST structures placed within two separate containment areas. This proposed project is a new quarry adjacent to the north and south of the previously approved quarry.

## PROJECT DESCRIPTION

The proposed commercial project is a limestone quarry with a total area of approximately 1,923 acres and a proposed quarry pit of approximately 1,576 acres. Setback distance of sixty feet will be maintained

from the north and west property boundary and sixty feet from the Recharge Zone boundary in the southern portion of the site. Setbacks are not proposed for the eastern boundary since the adjacent site is also a quarry site. No permanent impervious cover is proposed for the new quarry area, however, temporary impervious cover (portable buildings or trailers, movable base pads) is proposed. A rock crusher, screen and conveyers, stockpile areas, wash water ponds, scale house and scales are proposed for the site. Quarrying will occur to an elevation no deeper than 695 feet above mean sea level (a.m.s.l.) in the southern portion of the site and 725 feet a.m.s.l. in the northern portion. Project wastewater will be collected in portable toilets and disposed of by a TCEQ registered waste disposal service.

## 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, the various controls described below will be utilized.

- An earthen berm composed of compacted soil and/or overburden constructed to a height of at least two feet tall with a two foot wide top of berm and stabilized with native grasses. This berm will be inspected weekly and after each rainfall. As the quarry expands, the berm will be relocated, as needed, to divert upgradient stormwater around the site or quarry pit and will capture onsite flows to prevent stormwater from leaving the site.

- Rock berms will be installed on the downgradient side of the initial quarry pit to intercept sediment-laden runoff and serve as a physical barrier of the limits disturbance. The designs of the proposed rock berms are variations from the design in the Edwards Aquifer Technical Guidance Manual (RG-348, 2005). These berms will use open graded three to five inch diameter rocks and be placed perpendicular to the flow line. The berms will be inspected weekly and after each rainfall. Sediment and debris will be removed when the sediment height reaches six inches or clogs the berm.

- A fifty foot natural vegetative buffer area will be maintained downgradient of disturbed areas and along the perimeter of the property except along the eastern boundary of the site.

- Permanent soil stabilization will occur inside and outside the quarry pit for disturbed areas capable of growing vegetation (i.e., soil material present). These areas will be seeded or hydroseeded with native vegetation. For interim soil stabilization, the soil material will either be relocated or BMPs, such as rock berms, will be implemented to limit runoff.

- Geologic feature recognition training will be required for all quarry equipment operators to aid in the recognition of geologic features uncovered during the quarrying process. In addition, a Professional Geoscientist will inspect the quarry at least annually for sensitive features. Sensitive features will be reported to the TCEQ in accordance with 30 TAC 213. Protection measures for sensitive features, within the quarry pit, include sealing the feature or proposing a variety of BMPs (e.g., rock berms) to prevent sediment-laden stormwater from entering the feature.

- Flex base pads, approximately 150 feet by 100 feet with a one foot high berm, will act as secondary containment during maintenance and fueling activities. These base pads can be located both inside and outside the quarry pit. The base pads located inside the quarry pit will only service equipment that is impractical to move outside the pit area.

- Natural buffer areas are proposed for sensitive features until quarrying activities advance near the feature's buffer area. These buffer areas, except the features in Dry Comal Creek, will be fenced in order to provide protection from accidental encroachment and disturbance. The construction fencing will be installed when quarrying activities advance or will advance near the feature in the

upcoming 12 months. When quarrying activities advance to a feature, a temporary seal is proposed for the sensitive feature until the feature is mined out.

- If necessary, mine dewatering will be accomplished in accordance with the Texas Pollutant Discharge Elimination System (TPDES) General Permit TX050000, Sector J. A water pump will remove collected water after sufficient settling time. Before the water is discharged, the water is tested to determine compliance with total suspended solid limitations of 45 mg/L daily maximum value and 25 mg/L daily average value. Rock berms and other erosion controls will be implemented to prevent soil erosion and scour.

A request was made for an exception to the requirement of implementing permanent BMPs at the site upon completion of construction. Based upon the plan review, the management practices described above, that there is no increase in permanent impervious cover and that all onsite stormwater will be retained in the quarry pit, the exception request is approved.

## GEOLOGY

According to the geologic assessment included with the application, the Buda Limestone, Del Rio Clay, Georgetown Formation and Edwards Limestone were all observed by the project geologist at the surface of the site. As detailed by the project geologist, 207 features were recorded in the geologic assessment and 31 features received a sensitive score. The San Antonio Regional Office site assessment conducted on December 18, 2008 revealed the site as described by the geologic assessment. Refer to the Geologic Assessment in the WPAP application for a listing of the sensitive features.

Natural buffers were proposed for the 28 sensitive features until quarrying activities advance near a feature and the feature is sealed and mined out. Buffers were not proposed for the three faults, S-110, S-118 and S-205, due to the length of these features. Construction fencing will be installed to delineate a sensitive feature's natural buffer area when quarrying activities advance to a feature within the upcoming 12 months. Features within Dry Comal Creek will not have the construction fencing since water flows could continually destroy or remove the fencing. To prevent pollutants and sediments from entering a sensitive feature while activities are within close proximity to the feature, the sensitive features will be temporarily sealed with topsoil, overburden, crushed limestone, concrete or flowable fill approximately 90 days before the feature is mined out.

## SPECIAL CONDITIONS

I. This approval does not authorize the construction or installation of aboveground storage tanks at this site nor does this approval authorize the construction or installation of aboveground storage tanks at the original site if that AST facility plan has expired.

II. As stated in the WPAP application, a Texas Licensed Professional Geoscientist will conduct at least annual surveys of the pit area looking for geologic feature. Records of the surveys shall be maintained at the site and made available for TCEQ review for the life of the project. Anytime any sensitive feature(s) is discovered, the TCEQ shall be notified and the geologic assessment report submitted in accordance with 30 TAC 213 (refer to Standard Condition 12).

III. The BMPs proposed in the application and/or described in this approval letter must be operational prior to any soil disturbing activities within a BMP's drainage area.

IV. Intentional discharges of sediment laden stormwater from regulated activities are not allowed. If dewatering of areas becomes necessary appropriate measures must be taken.

V. The exception request from permanent BMPs is approved based upon the discussion in the Permanent Pollution Abatement Measures Section of this letter. The exception request does not approve any impervious cover or other TSS generating activities in which the generated stormwater flows off the site and does not or will not be captured by the quarry pit. As stated by the project engineer during the January 21, 2009 meeting, the applicant understands that a modification is required if the above situation occurs at the site.

VI. This approval letter is being sent for regulated activities defined in Chapter 213. This approval does not constitute a Water Rights permit. Failure to obtain all necessary authorizations prior to commencing activities near or in Dry Comal Creek or a defined water course could result in enforcement actions. Information regarding the Water Rights Program and permit process, including the possibility that the activities presented in this WPAP may require a Water Rights Permit, was explicitly stated to the applicant and the authorized agents during the January 29, 2009 meeting.

VII. As stated in §213.8(a)(6), industrial wastewater discharges into or adjacent to waters in the state that could create additional pollutant loading is a prohibited activity on the Edwards Aquifer Recharge zone. Depending on the specifics of the activities at the site, a Texas Pollutant Discharge Elimination System (TPDES) permit or a Texas Land Application Permit (TLAP) and additional BMPs and measures may be required.

VIII. As stated in the application, additional well data information could result in changes to the quarry depth. Notify the TCEQ San Antonio Regional Office, in writing, of any changes proposed to the depth of the quarry pit. A modification to this approved WPAP may be required.

IX. Pursuant to 30 TAC §213.4(h)(3) and as stated in the Edwards Aquifer protection plan, this protection plan approval or extension will expire and no extension will be granted if more than 50% of the total construction has not been completed within 10 years from the initial approval of the plan. A new Edwards Aquifer protection plan must be submitted to the TCEQ with the appropriate fees for review and approval by the executive director prior to commencing or continuing any construction or regulated activities beyond 10 years. The Applicant must submit a status report for the project containing information regarding the percentage of the total project construction completed within 180 days prior to the expiration date of this plan approval. If at that time, the total project construction cannot be demonstrated to be at least 50% complete, the Applicant must submit a new Edwards Aquifer protection plan to the TCEQ for review and approval before continuing any construction or regulated activities beyond 10 years from the date of initial approval of the plan.

If a new Edwards Aquifer protection plan is submitted to the TCEQ under 30 TAC § 213.4(h)(3), the approved plan will continue in effect until the executive director makes a determination on the new plan.

## STANDARD CONDITIONS

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

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

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

Prior to Commencement of Construction:

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

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

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

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

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

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

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

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

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

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

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

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,

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

MRV/CEF/eg

Enclosure: Deed Recordation Affidavit, Form TCEQ-0625

cc: Mr. Gary Nicholls, P.E., Westward Environmental, Inc.
Mr. James C. Klein, P.E., City of New Braunfels
The Honorable Harold D. Baldwin, City of Schertz
Mr. Tom Hornseth, P.E., Comal County
Ms. Velma Danielson, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC212

*Westward Environmental, Inc.*

*P.O. BOX 2205*
*BOERNE, TEXAS 78006*
*WWW.WESTWARDENV.COM*

October 8, 2012

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

Project No. 10173-19



Attn.: Todd Jones

Subject: **Extension Request III**
Water Pollution Abatement Plan (EAPP ID No. 1603.01)
Dean Word Company, Ltd. – CN600124812
Lonestar Quarry – RN102870367
Comal County, Texas

Dear Mr. Jones,

On behalf of Dean Word Company, Ltd., Westward Environmental, Inc. is submitting this **Extension of Time** request for the above referenced Water Pollution Abatement Plan approved on October 13, 2009 for the Lonestar Quarry. A start of construction letter dated November 6, 2009 was submitted to the TCEQ Region 13 office prior to construction activities which started on November 9, 2009 and are on-going at this time. Due to the economic downturn over the past couple of years, construction has not progressed as originally planned. An extension was granted and expires on October 13, 2012. This extension is being filed based on the 2 year 10% construction language found in the WPAP approval letter.

Westward Environmental, Inc. (WEI) will serve as the technical representative for Dean Word Company, Ltd. on this project. **Please ensure that WEI is copied on all correspondence including but not limited to the final TCEQ determination.** If you have any questions regarding this request, please contact our office.

Respectfully submitted,
WESTWARD ENVIRONMENTAL, INC.

Gary D. Nicholls, P.E.
Vice President

Distribution: Addressee (original + 5)
Mr. Bryan Word, P.E. – Dean Word Company, Ltd.
WEI 10173-19 file

*mb*

**Edwards Aquifer Protection Plan Extension Request**

__x__ Extension Request for a Water Pollution Prevention Plan (*TCEQ-10260)*

__x__ ATTACHMENT A - Approval Letter or Extension Approval

__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*)

**Extension Request for an**
**Edwards Aquifer Protection Plan**
Relating to 30 TAC §213.4(g)
Effective June 1, 1999

1. Regulated Entity information. If requested by an agent, attach the agent authorization form.

Regulated Entity Name: Lonestar Quarry

Customer (Applicant):
Contact Person: Bryan Word, P.E.
Entity: Dean Word Company, Ltd.
Mailing Address: P.O. Box 310330
City, State: New Braunfels, Texas Zip: 78131
Telephone: 830-606-5000 FAX: 830-606-5008

Agent/Engineer: Westward Environmental, Inc.
Contact Person: Gary D. Nicholls, P.E.
Mailing Address: #4 Shooting Club Road
City, State: Boerne, Texas Zip: 78006
Telephone: 830-249-8284 FAX: 830-249-0221

2. X **ATTACHMENT A - Approval Letter or Extension Approval.** Attach a copy of the last approval letter or the last approved extension.
Date of letter: April 23, 2012 – 2nd Extension Approval
Expiration date: October 13, 2012 – 2nd Extension Expiration

3. X This extension request is submitted not earlier than sixty (60) days prior to the expiration date of an approved Edwards Aquifer protection plan or a previously approved extension.

4. X A completed fee form is attached. The fee for a six-month extension of time is $150.

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

Signature of Customer/Engineer Date: 10/8/12

**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

*Protecting Texas by Reducing and Preventing Pollution*

April 23, 2012

Mr. Bryan Word
Dean Word Company, Ltd.
P.O. Box 310330
New Braunfels, Texas 78131

Re: Edwards Aquifer Protection Program, Comal County

NAME OF PROJECT: Lonestar Quarry; located approximately 1.2 miles northeast of Schwab Road and FM 482; New Braunfels, Texas

TYPE OF PLAN: Request for Extension of Time to Commence Regulated Activities Authorized by a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Edwards Aquifer Protection Program File No. 1603.03, Investigation No. 994714
Regulated Entity Number: RN102870367

Dear Mr. Word:

On March 8, 2012, the Texas Commission on Environmental Quality (TCEQ) received your request for an extension of time to commence regulated activities related to the above referenced WPAP approval. The request has been reviewed for compliance with 30 TAC §213.4(h) and §213.13 which set forth the procedures for requesting an extension of time to commence regulated activities authorized by the approval and was found to be in general agreement with these procedures. Therefore, the request for an extension to the term of approval for the referenced project is granted. A summary of the dates of approval and expiration is enclosed.

| Date of Original Approval: | October 13, 2009 |
|---|---|
| Date of Expiration: | October 13, 2011 |
| Date Extension Request Received | Date of Extension Expiration |
| August 17, 2011 | April 13, 2012 |
| March 8, 2012 | October 13, 2012 |

The request and fee were received in compliance with 30 TAC §213.4(h) and §213.13. As indicated in the rules, an extension may not be granted if the proposed regulated activity or approved plan for the regulated activity has changed. As understood, there will be no changes or

modifications to the originally approved plan. This request for extension expires on October 13, 2012. Should construction not commence before the end of the six (6) month period, another request for extension would be required to keep the Edwards Aquifer Protection Plan validated.

If you have any questions or require additional information, please contact Yuliya Dunaway of the Edwards Aquifer Protection Program with the San Antonio Regional Office at (210) 490-3096.

Sincerely,

for

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

MRV/YD/eg

cc: Mr. Gary Nicholls, P.E., Westward Environmental, Inc.
Mr. James C. Klein, P.E., City of New Braunfels
The Honorable Harold D. Baldwin, City of Schertz
Mr. Tom Hornseth, P.E., Comal County
Mr. Karl J. Dreher, Edwards Aquifer Authority
TCEQ Central Records, MC 212

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

I **Bryan Word, P.E.**,
Print Name

**Partner**,
Title - Owner/President/Other

of **Dean Word Company, Ltd.**,
Corporation/Partnership/Entity Name

have authorized **Gary D. Nicholls, P.E.**
Print Name of Agent/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 applicants who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

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

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

Applicant's Signature

8/5/12
Date

RECEIVED
OCT 24 2012
COUNTY ENGINEER

THE STATE OF Texas §

County of Kendall §

BEFORE ME, the undersigned authority, on this day personally appeared Bryan Ward 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 5th day of October, 2012.

NOTARY PUBLIC

Charlie Texas
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 4/11/13

NOTARY PUBLIC STATE OF TEXAS
CHARLIE TEXAS
My Commission Expires
April 11, 2013

RECEIVED
OCT 24 2012
COUNTY ENGINEER

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

NAME OF PROPOSED REGULATED ENTITY: Lonestar Quarry
REGULATED ENTITY LOCATION: Comal County, Texas
NAME OF CUSTOMER: Dean Word Company, Ltd.
CONTACT PERSON: Bryan Word PHONE: 830-606-5000
(Please Print)

Customer Reference Number (If Issued): CN 600124812 (nine digits)

Regulated Entity Reference Number (If Issued): RN 102870367 (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 | 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 | 1 Each | $150.00 |

Signature

Date 8/5/12

**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<br>5 < 10<br>10 < 40<br>40 < 100<br>100 < 500<br>= 500 | $1,500<br>$3,000<br>$4,000<br>$6,500<br>$8,000<br>$10,000 |
| Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur) | < 1<br>1 < 5<br>5 < 10<br>10 < 40<br>40 < 100<br>= 100 | $3,000<br>$4,000<br>$5,000<br>$6,500<br>$8,000<br>$10,000 |

**Organized Sewage Collection Systems and Modifications**

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

**Underground and Aboveground Storage Tank System Facility Plans and Modifications**

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

**Exception Requests**

| PROJECT | FEE |
|---|---|
| Exception Request | $500 |

**Extension of Time Requests**

| PROJECT | FEE |
|---|---|
| Extension of Time Request | $150 |

| VENDOR NO. | VENDOR NAME | CHECK NUMBER |
|---|---|---|
| 1815 | Texas Commission On | 98050 |

| Trans Record | Reference | Date | Description | Gross Amoun | Discount | Retainage | Previous | Balance | Net Amount |
|---|---|---|---|---|---|---|---|---|---|
| 1012 129 | 10052012 | 10/05/12 | Application Fee/Core Data | 150.00 | 0.00 | 0.00 | 0.00 | 0.00 | 150.00 |

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OCT 24 2012
COUNTY ENGINEER

| Vendor No. | | Gross Amount | Discount | Retainage | Previous | Balance | Net Amount |
|---|---|---|---|---|---|---|---|
| 1815 | | 150.00 | 0.00 | 0.00 | 0.00 | 0.00 | 150.00 |

THIS CHECK HAS A COLORED BACKGROUND AND CONTAINS MULTIPLE SECURITY FEATURES - SEE BACK FOR DETAILS

**DEAN WORD COMPANY, LTD.**
P.O. BOX 310330
NEW BRAUNFELS, TEXAS 78131-0330
(830) 625-2365

Frost National Bank
San Antonio, Texas

30-9/1140

CHECK NUMBER
98050

CHECK DATE
10/05/12

AMOUNT
$150.00

VOID VOID VOID VOID

****One hundred fifty and xx / 100 Dollars****

Texas Commission On
Environmental Quality
P.O. Box 13089
Austin, TX 78711-3089

HEAT SENSITIVE
RUB AREA TO VERIFY

⑈0000098050⑈ ⑆114000093⑆ 010320587⑈

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 Extension**

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

☒ Yes ☐ No Extension for approved Water Pollution Abatement Plan

| 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 600124812 | | RN 102870367 |

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## 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:* |
|---|---|---|
| Dean Word Company, Ltd. | | |

**10. Mailing Address:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| P.O. Box 310330 | | | | | | | |
| City | New Braunfels | State | TX | ZIP | 78131 | ZIP + 4 | 0330 |

| 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 ) 606-5000 | | ( 830 ) 606-5008 |

| 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)* |
|---|---|---|---|
| | 32036399767 | | |

**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)*

Lonestar Quarry

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COUNTY ENGINEER

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24. Street Address of the Regulated Entity: *(No P.O. Boxes)* | | | | | | | |
| | City | | State | | ZIP | | ZIP + 4 |
| 25. Mailing Address: | P.O. Box 310330 | | | | | | |
| | City | New Braunfels | State | TX | ZIP | 78131 | ZIP + 4 0330 |

| | | | |
|---|---|---|---|
| 26. E-Mail Address: | | | |
| 27. Telephone Number | 28. Extension or Code | 29. Fax Number *(if applicable)* | |
| ( 830 ) 606-5000 | | ( 830 ) 606-5008 | |
| 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) |
| 1422 | | 212312 | |
| 34. What is the Primary Business of this entity? *(Please do not repeat the SIC or NAICS description.)* | | | |
| Construction | | | |

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

| | |
|---|---|
| 35. Description to Physical Location: | From San Antonio, take IH-35 North. Exit Schwab Rd. (Exit 180) and go left. Road will "T" into FM 482. Go right for about 1.2 miles. Site is accessed through an easement on another company's property. Please call Westward Environmental for access to the site. |

| 36. Nearest City | County | State | Nearest ZIP Code |
|---|---|---|---|
| Schertz | Comal | TX | 78132 |

| 37. Latitude (N) In Decimal: | 29.6633 | 38. Longitude (W) In Decimal: | 98.2125 |
|---|---|---|---|

| Degrees | Minutes | Seconds | Degrees | Minutes | Seconds |
|---|---|---|---|---|---|
| 29 | 39 | 48 | 98 | 12 | 45 |

**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: |
| | | | | |

## SECTION IV: Preparer Information

| 40. Name: | Matt Bellos | 41. Title: | Project Manager |
|---|---|---|---|

| 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: | Dean Word Company, Ltd. | Job Title: | Partner |
| Name *(In Print)*: | Bryan Word | Phone: | ( 830 ) 606-5000 |
| Signature: | | Date: | 8/5/2012 |

# TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

*Protecting Texas by Reducing and Preventing Pollution*

January 29, 2001

Mr. Bryan Word, P.E.
Dean Word Company, Ltd.
P.O. Box 310330
New Braunfels, TX 78131-0330

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: Lonestar Quarry; Located at 6025 FM 482; New Braunfels, Texas
TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer
Edwards Aquifer Protection Program File No. 1603.00

Dear Mr. Word:

The Texas Natural Resource Conservation Commission (TNRCC) has completed its review of the WPAP application for the referenced project submitted to the San Antonio Regional Office by Gary Nicholls, P.E. of Westward Environmental, Inc. on behalf of Dean Word Company, Ltd. on November 15, 2000. As presented to the TNRCC, 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 20 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 quarry project will have an area of approximately 270 acres. It will include the items listed below. The impervious cover will be 3.57 acres (1.3 percent).

- The proposed project is limited to the construction of a limestone quarry, rock crusher, asphalt plant, office, paved road, scale and scalehouse.
- Hydrocarbon or hazardous substance storage at the site will be reviewed separately.
- Portable toilets will be provided, and all wastewater will be collected by a pump truck once or twice per week, as needed.

## PERMANENT POLLUTION ABATEMENT MEASURES

The quarrying operation is expected to be a long-term operation. Earthen berms and silt fences will be constructed and maintained around the perimeter of the project site. During the active life of the quarry and until the excavation is deeper than the down gradient boundary elevation, surface stream contamination will be minimized by the use of rock berms placed in the areas where stream runoff occurs and down gradient of the cleared areas to reduce erosion and runoff.

After quarrying is complete, all up gradient and on-site stormwater will be retained in the quarry pit and will not leave the site. The only water to be used on the quarry site will be for dust suppression.

## GEOLOGY

According to the geologic assessment included with the application, there are 25 geologic or manmade features located on the project site. The San Antonio Regional Office site inspection of January 22, 2001, revealed that the site is generally as described by the geologic assessment. Based on documents obtained prior to the January 22, 2001, site inspection, the existing quarry and rock crusher have been on site since 1993. No documentation was provided for their authorization under 30 TAC 213.4(a), or predecessor regulations effective March 21,1990.

## SPECIAL CONDITIONS

1. Prior to commencing commercial operation of the project, provide the TNRCC with a copy of a contract or agreement with the TNRCC licensed waste hauler who will be providing wastewater disposal.

2. Based on the January 22, 2001 on-site inspection of the project site, Commission records indicate that excavation of the quarry and construction of the rock crusher were actually initiated on or before January 22, 2001. These activities were conducted without the prior approval of the water pollution abatement plan for the project, as required by Commission rules (30 TAC Chapter 213). Therefore, the applicant is hereby advised that the after-the-fact approval of the excavation and placement of equipment, as provided by this letter, shall not absolve the applicant of any prior violations of Commission rules related to this project, and shall not necessarily preclude the Commission from pursuing appropriate enforcement actions and administrative penalties associated with such violations, as provided in 30 TAC §213.10 of Commission rules.

## STANDARD CONDITIONS

1. Pursuant to §26.136 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, TNRCC-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 file 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 TNRCC 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. Four wells exist on the site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.

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.

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

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 the San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TNRCC-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 John Mauser of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210/403-4024.

Sincerely,

Bobby D. Caldwell

for Jeffrey A. Saitas, P.E.
Executive Director
Texas Natural Resource Conservation Commission

JAS/JKM/eg

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

cc: Mr. Gary Nicholls, P.E., Westward Environmental, Inc.
Mr. John Bohuslav, TXDOT San Antonio District
Mr. Tom Hornseth, Comal County
Mr. Greg Ellis, Edwards Aquifer Authority
Ms. Jeffie Barbee, TNRCC Field Operations, Austin

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*



May 31, 2013

Mr. Bryan Word
Dean Word Company, Ltd.
P.O. Box 310330
New Braunfels, Texas 78131

Re: Edwards Aquifer Protection Program, Comal County

NAME OF PROJECT: Lonestar Quarry; Located approximately 1.2 miles northeast of Schwab Road and FM 482; New Braunfels, Texas.

TYPE OF PLAN: Request for Extension of Time to Commence Regulated Activities Authorized by a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Edwards Aquifer Protection Program File No. 1603.05, Investigation No. 1085279
Regulated Entity Number: RN102870367

Dear Mr. Word:

On April 12, 2013, the Texas Commission on Environmental Quality (TCEQ) received your request for an extension of time to commence regulated activities related to the above referenced WPAP approval. The request has been reviewed for compliance with 30 TAC §213.4(h) and §213.13 which set forth the procedures for requesting an extension of time to commence regulated activities authorized by the approval and was found to be in general agreement with these procedures. Therefore, the request for an extension to the term of approval for the referenced project is granted. A summary of the dates of approval and expiration are as follows:

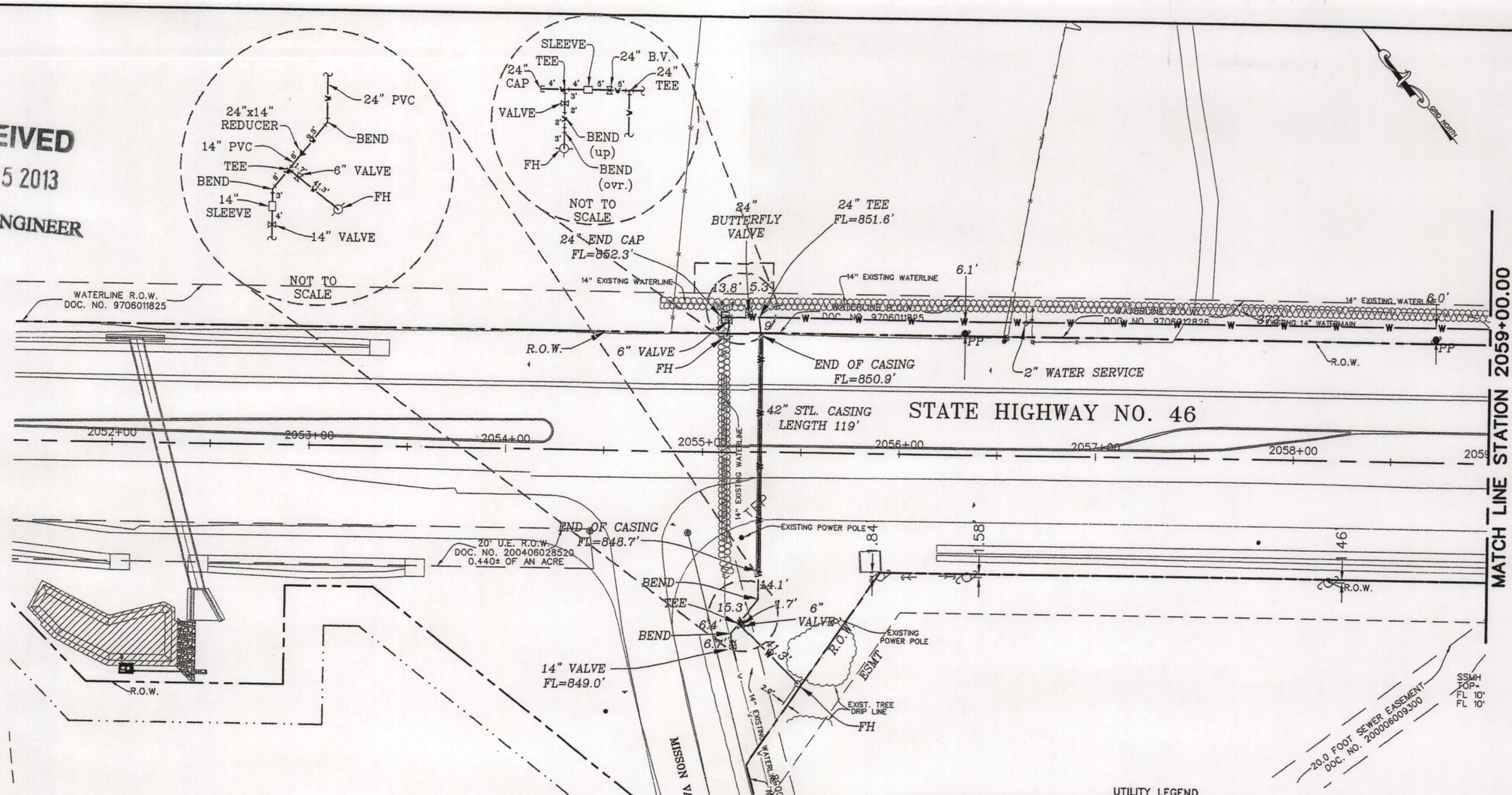
| Date of Original Approval: | October 13, 2009 |
|---|---|
| Date of Expiration: | October 13, 2011 |
| Date Extension Request Received | Date of Extension Expiration |
| August 17, 2011 | April 13, 2012 |
| March 08, 2012 | October 13, 2012 |
| October 12, 2012 | April 13, 2013 |
| April 12, 2013 | October 13, 2013 |

RECEIVED
JUN 05 2013
COUNTY ENGINEER










## UTILITY COMPANY

NOTE: EXISTING UTILITIES WITHIN THE RIGHT-OF-WAY WERE LOCATED BY AN ON-THE-GROUND SURFACE SURVEY PERFORMED BY HALFF ASSOCIATES ON NOVEMBER 27, 2006 AND COMPLETED FEBRUARY 8, 2007. THE SCHULTZ GROUP INC. LOCATED WATER AND WASTEWATER UTILITIES BY AN ON-THE-GROUND SURFACE SURVEY AND IDENTIFIED AND FIELD LOCATED BY NEW BRAUNFELS UTILITIES FROM AUGUST 21, 2007 TO JULY 31, 2008. UTILITIES INFORMATION PROVIDED BY TEXAS STATE OF TRANSPORTATION WERE USED AS REFERENCE IN IDENTIFYING UTILITIES AND ARE SHOWN IN AREAS NOT SURVEYED.

NEW BRAUNFELS UTILITIES
263 MAIN PLAZA
P.O. BOX 310289
NEW BRAUNFELS, TEXAS 7813
MAIN PHONE: (830) 629-8400
FAX: (830) 629-2119

WASTEWATER AND WATER
NEW BRAUNFELS UTILITIES (NBU)
(830) 608-9071

WASTEWATER-FORCE MAINS
NEW BRAUNFELS UTILITIES (NBU)
(830) 608-9071

ELECTRIC AND FIBER OPTIC CABLE
NEW BRAUNFELS UTILITIES (NBU)
(830) 608-8950

TELEPHONE AND FIBER OPTIC CABLE (AT&T)
CALL DIG-TESS 1-800-344-8377

FIBER OPTIC CABLE (OTHER)
CALL DIG-TESS 1-800-344-8377

CABLE TELEVISION
TIME WARNER CABLE
(210) 582-9645

DIG-TESS
1-800-344-8377

## NOTES

1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED UPON THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD83 (1986), SOUTH-CENTRAL ZONE. ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES. ALL COORDINATES WERE ADJUSTED FROM STATE PLANE GRID TO PROJECT SURFACE USING A SURFACE ADJUSTMENT SCALE FACTOR OF 1.00017, AS INSTRUCTED BY TxDOT.

2. ALL DISTANCES SHOWN ARE IN U.S. SURVEY FEET.

3. STATION AND OFFSETS SHOWN ARE BASED ON THE RIGHT-OF-WAY CENTERLINE.

4. CAUTION ALL UNDERGROUND UTILITY LOCATIONS AND DEPTHS ARE APPROXIMATE. CONTRACTOR SHALL COORDINATE WITH THE UTILITY PROVIDER TO VERIFY EXACT DEPTH AND LOCATION PRIOR TO CONSTRUCTION EXCAVATION. CONTRACTOR SHALL NOTIFY ENGINEER OF POTENTIAL CONFLICTS.

## ROADWAY LEGEND

- PROPOSED ROADWAY/SIDEWALK AREA
- PROPOSED DRAINAGE INLETS
- PROPOSED UNDERGROUND STORM LINES
- PROPOSED CULVERTS
- PROPOSED CONCRETE RIPRAP AND CURB SLOTS
- RIGHT OF WAY
- CENTERLINE OF RIGHT-OF-WAY
- PROPERTY LINE
- CONCRETE MONUMENT FOUND
- 1/2 IRON PIN FOUND
- SIGN
- EXISTING HEADWALL
- EXISTING CULVERT

## UTILITY LEGEND

- WATER VALVE
- FIRE HYDRANT
- WATER METER
- POWER POLE (FIELD TIED / BASED ON AERIAL OR OTHERS)
- WASTEWATER CLEANOUT
- MANHOLE
- TELEPHONE MANHOLE
- ANCHOR GUY WIRE
- [519] PROPOSED ROADWAY REFERENCE ELEVATION
- (519) EXISTING ELEVATION
- EXISTING WATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED UTILITY EASEMENT
- PROPOSED CUT AND RESTORE
- PROPOSED CASING
- LINE TO BE REMOVED, ABANDON, OR PLUGGED
- EXISTING OVERHEAD ELECTRIC
- EXISTING UNDERGROUND ELECTRIC
- EXISTING FIBER OPTIC LINE
- EXISTING TELEPHONE LINE
- EXISTING TELEVISION CABLE LINE
- EXISTING UTILITY EASEMENT
- EXISTING BUILIDNG SETBACK LINE
- EXISTING EASEMENT
- 10/12 DETAIL NUMBER / SHEET NUMBER

**WARNING**

These plan of record documents (sheets 24-45) have been prepared based on a portion of information provided by others. The Schultz Group, Inc. has not verified the accuracy and/or completeness of all information and shall not be responsible for any errors or omissions that may be incorporated as a result of erroneous information provided by others.

NBU

THE Schultz Group INC.
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 310483 NEW BRAUNFELS, TEXAS 78131 (830)606-3913
FAX (830)625-2204



30 0 30 60
SCALE IN FEET

# PLAN OF RECORD
## WATER AND SEWER
## ADJUSTMENT LAYOUT SHEET

STATE OF TEXAS
MICHAEL G. SHORT
88015
LICENSED PROFESSIONAL ENGINEER
4/22/10

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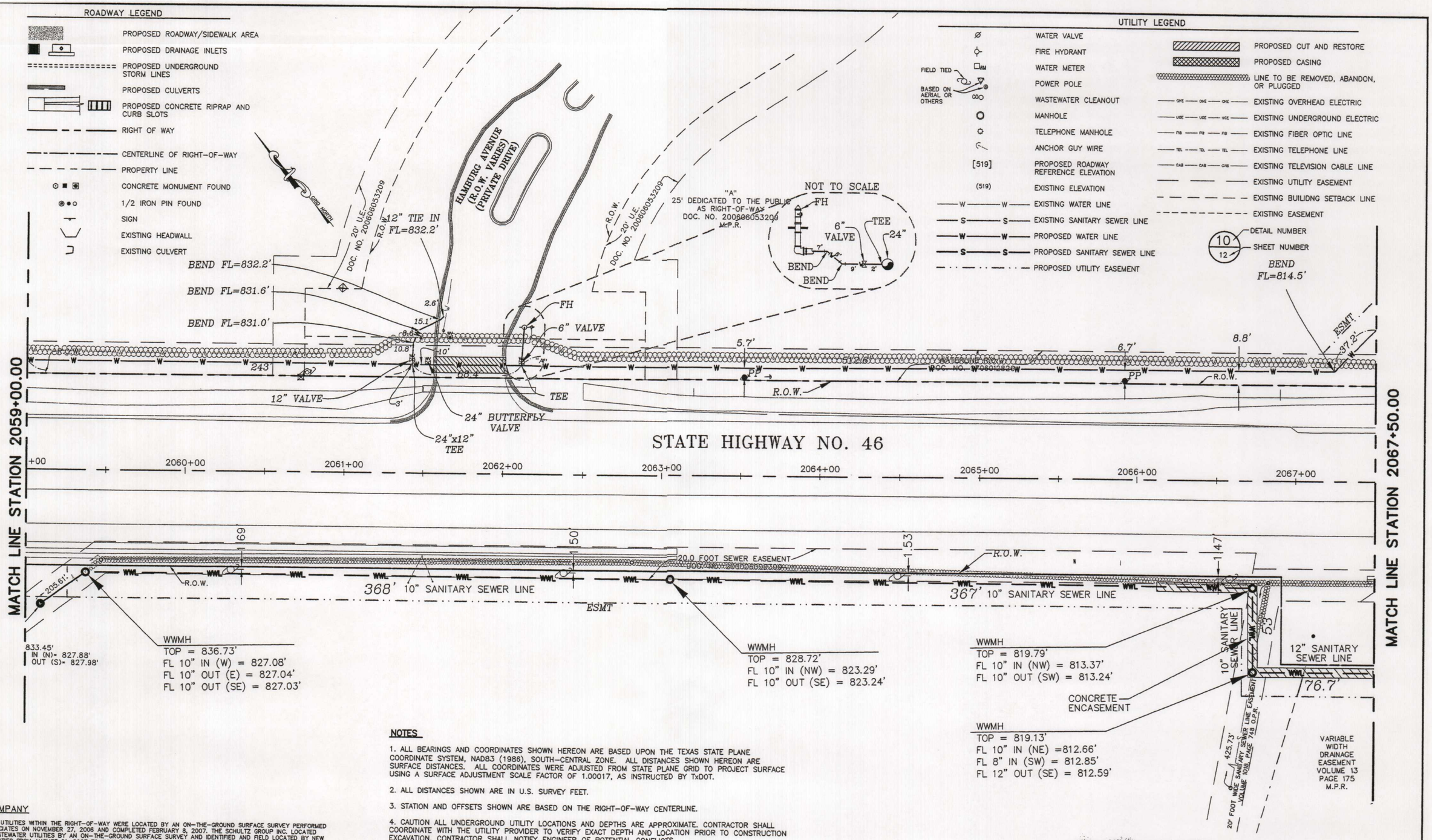


## UTILITY COMPANY

NOTE: EXISTING UTILITIES WITHIN THE RIGHT-OF-WAY WERE LOCATED BY AN ON-THE-GROUND SURFACE SURVEY PERFORMED BY HALFF ASSOCIATES ON NOVEMBER 27, 2006 AND COMPLETED FEBRUARY 8, 2007. THE SCHULTZ GROUP INC. LOCATED WATER AND WASTEWATER UTILITIES BY AN ON-THE-GROUND SURFACE SURVEY AND IDENTIFIED AND FIELD LOCATED BY NEW BRAUNFELS UTILITIES FROM AUGUST 21, 2007 TO JULY 31, 2008. UTILITIES INFORMATION PROVIDED BY TEXAS STATE OF TRANSPORTATION WERE USED AS REFERENCE IN IDENTIFYING UTILITIES AND ARE SHOWN IN AREAS NOT SURVEYED.

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## NOTES

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P.O. BOX 310483 NEW BRAUNFELS, TEXAS 78131 (830)606-3913
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SHEET 25 OF 89

30 0 30 60
SCALE IN FEET

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# PLAN OF RECORD
## WATER AND SEWER ADJUSTMENT LAYOUT SHEET

File Name: F:\080307\Admin\ws\dwl-plan01cost-208150.dwg

MATCH LINE STATION 2067+50.00

MATCH LINE STATION 2075+50.00

STATE HIGHWAY NO. 46

WWMH
TOP = 812.56'
FL 12" OUT = 806.51'
FL 12" IN = 808.51'

20' SINGLE SECTION OF DUCTILE IRON PIPE UNDER SEWER MAIN

NOT TO SCALE

BEND FL=815.6'

73.4'

ESMT

10'

57.1'

R.O.W.

367.7'

6.3'

73.1'

R.O.W.

20' SEWER EASEMENT VOL. 744

BEND FL=806.3'

19.9'

BEND FL=814.4'

45' CONCRETE ENCASEMENT

40 L.F. EXISTING CONCRETE ENCASEMENT

R.O.W.

97'

ESMT

8.2'

4.9'

8.1'

14" CAP
14"x12" TEE
SLEEVE
14"x12" TEE
SLEEVE
14" VALVE
12" VALVE
12" VALVE
BEND (ovr.)
6" VALVE
14"x8" TEE
14" CAP
24"x12" TEE
24" B.V.
F.H.
BEND
EXISTING 12 "T BAR M"
(45° up)
SLEEVE

TOP OF COVER ELEV.=827.55 TO OF STEM ELEV=825.80

TOP OF COVER ELEV.=828.54 TO OF STEM ELEV=825.64

14"x12" TEE FL=822.0'

14" VALVE

6" VALVE

24" BUTTERFLY VALVE

12.6'

14" END CAP FL=821.4'

12" VALVE

11'

24"x12" TEE

7.8'

FH

BEND FL=820.5'

EXISTING 14" VALVE

EXISTING 12" VALVE

END OF WATER CASING

24" STL. CASING LENGTH 100.9'

END OF STEEL WATER CASING FL=824.8'

CONCRETE ENCASMENT

WATERLINE R.O.W. DOC. NO. 9706012826

EXISTING WATERLINE

PP

R.O.W.

100 L.F. EXISTING 18" STEEL ENCASEMENT

[823.99]
TOP OF PVMT.

12" SANITARY SEWER LINE

2068+00

2069+00

2070+00

2071+00

2072+00

2073+00

2074+00

2075+00

WWMH
TOP = 819.63'
FL 12" IN (NW) = 811.71'
FL 12" IN (SW) = 811.77'
FL 12" OUT (SE) = 811.67'

END OF EXISTING SEWER CASING TOP ELEV. = 811.8'

EXISTING SEWER TOP ELEV. = 811.13

[823.99]
TOP OF PVMT.

22' CONCRETE ENCASEMENT

1.43'

5.1'

20' UTILITY ESMT VOLUME 1613 PAGE 746 O.P.R.

291.3'

12" SANITARY SEWER LINE

8" SANITARY SEWER LINE

R.O.W.

ESMT

CLEANOUT
TOP = 828.05'
FL 6" = 820.61'

12" SANITARY SEWER LINE

55'

R.O.W.

12" SANITARY SEWER LINE

WWMH
TOP = 821.86'
FL 12" IN (NW) = 811.91'
FL 12" OUT (NE) = 811.90'

116.1'

ESMT

CONCRETE ENCASEMENT

VARIABLE WIDTH DRAINAGE EASEMENT VOLUME 13, PAGE 175 M.P.R.

WWMH
TOP = 825.91'
FL 12" IN (NW) = 810.45'
FL 8" IN (SE) = 821.46'
FL 12" OUT (NE) = 810.34'

T BAR M

20' ELECTRIC R.O.W.-VOL. 555 PGS. 235-236

10' UTILITY ESMT. VOL. 13 PGS. 175-176 M.P.R.

ESMT

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## ROADWAY LEGEND

- PROPOSED ROADWAY/SIDEWALK AREA
- PROPOSED DRAINAGE INLETS
- PROPOSED UNDERGROUND STORM LINES
- PROPOSED CULVERTS
- PROPOSED CONCRETE RIPRAP AND CURB SLOTS
- RIGHT OF WAY
- CENTERLINE OF RIGHT-OF-WAY
- PROPERTY LINE
- CONCRETE MONUMENT FOUND
- 1/2 IRON PIN FOUND
- SIGN
- EXISTING HEADWALL
- EXISTING CULVERT

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- FIRE HYDRANT
- WATER METER
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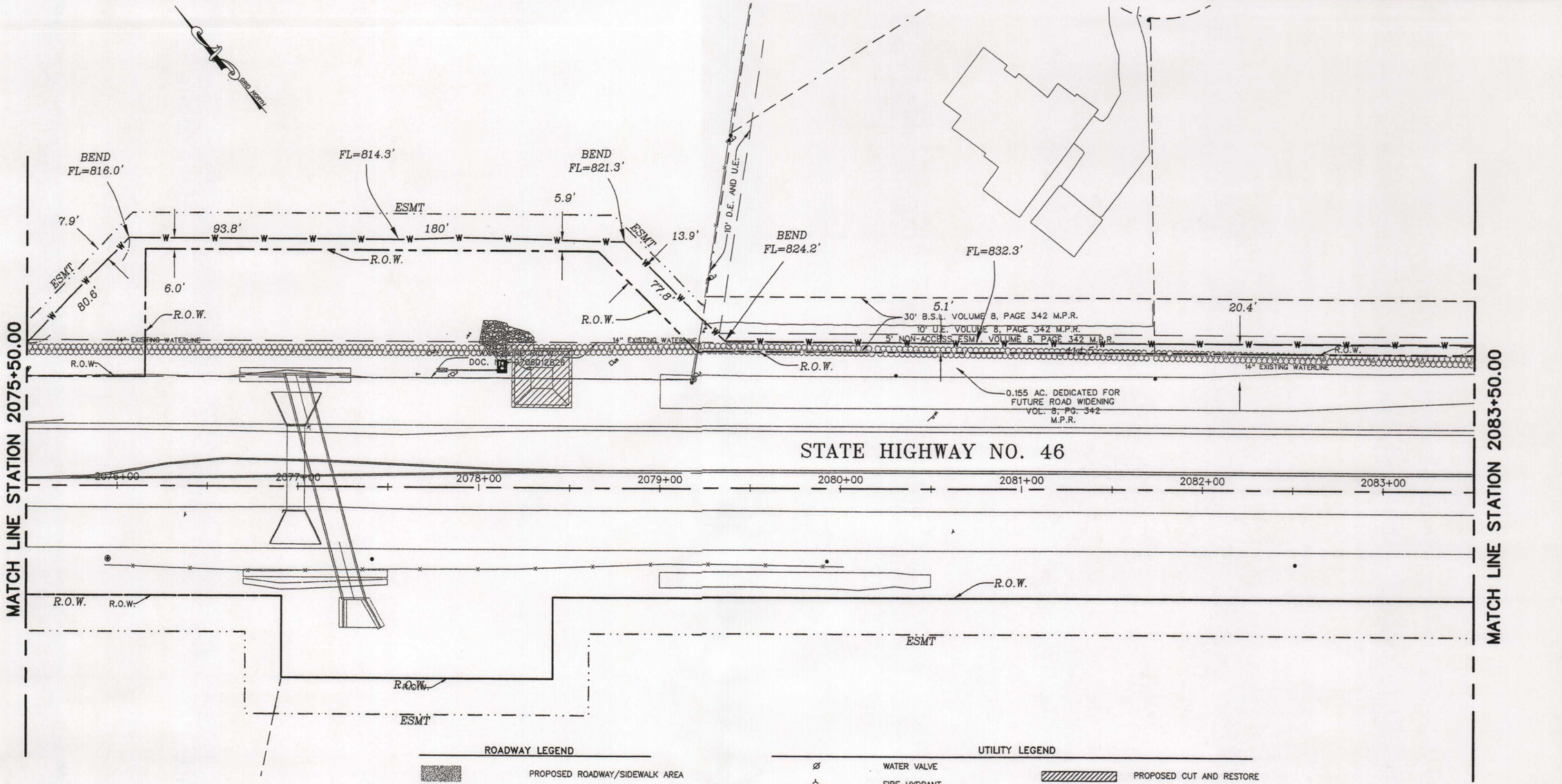


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# PLAN OF RECORD
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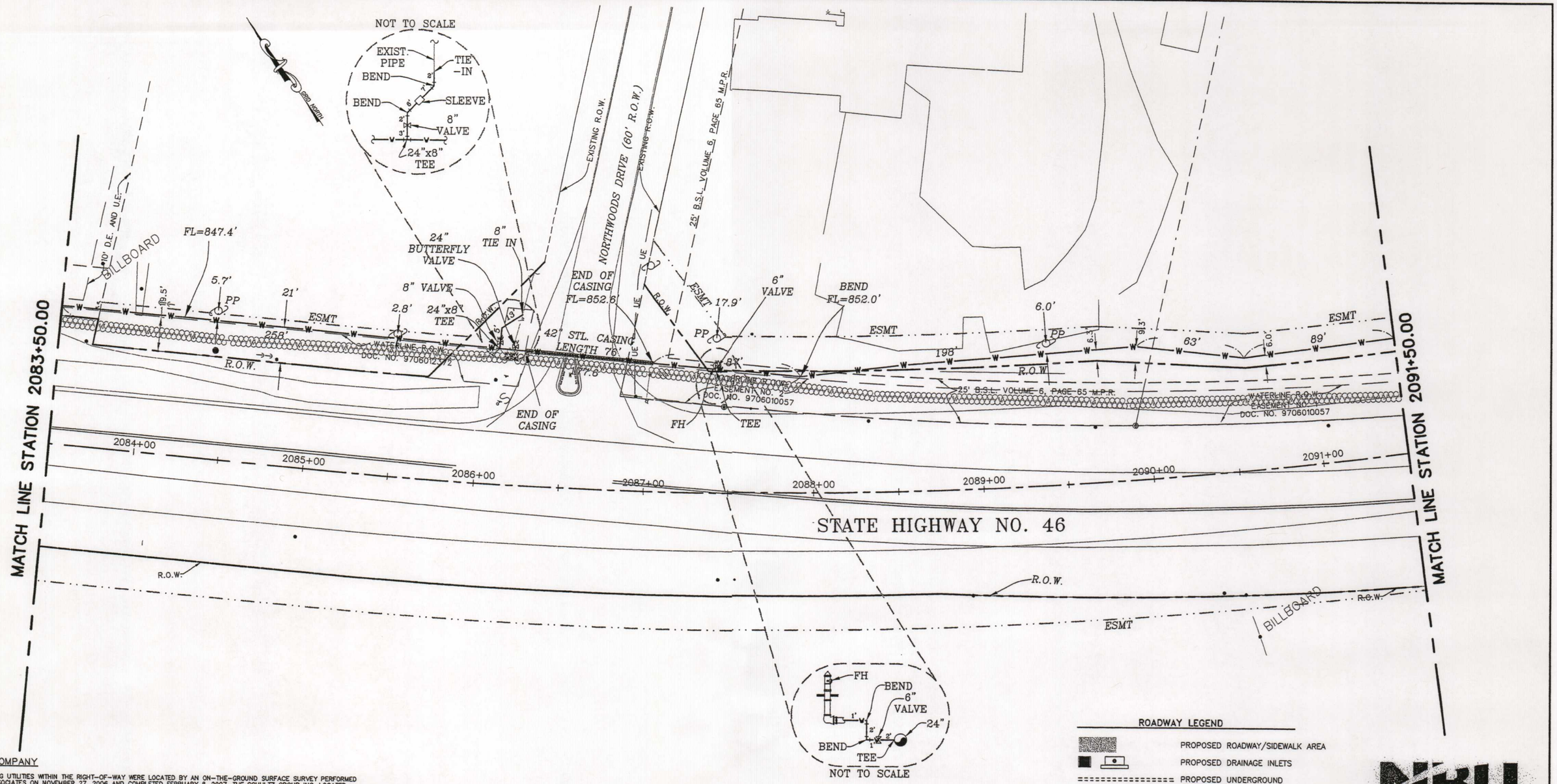


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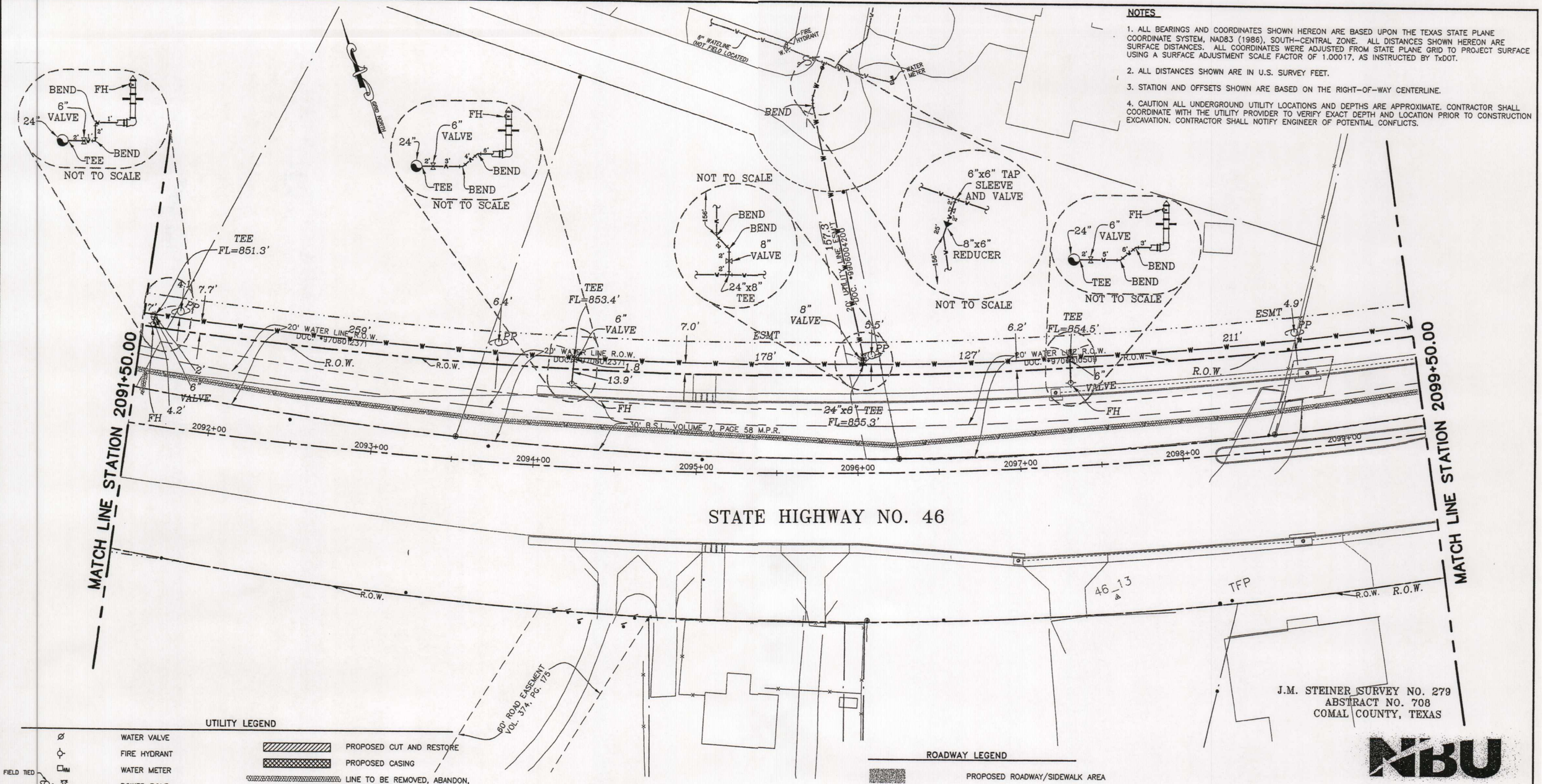


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File Name: P:\0663927\Addsht\addsht-plan01test-end.dwg

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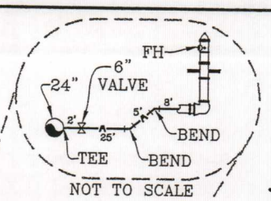

NOT TO SCALE

UTILITY COMPANY

NOTE: EXISTING UTILITIES WITHIN THE RIGHT-OF-WAY WERE LOCATED BY AN ON-THE-GROUND SURFACE SURVEY PERFORMED BY HALFF ASSOCIATES ON NOVEMBER 27, 2006 AND COMPLETED FEBRUARY 8, 2007. THE SCHULTZ GROUP INC. LOCATED WATER AND WASTEWATER UTILITIES BY AN ON-THE-GROUND SURFACE SURVEY AND IDENTIFIED AND FIELD LOCATED BY NEW BRAUNFELS UTILITIES FROM AUGUST 21, 2007 TO JULY 31, 2008. UTILITIES INFORMATION PROVIDED BY TEXAS STATE OF TRANSPORTATION WERE USED AS REFERENCE IN IDENTIFYING UTILITIES AND ARE SHOWN IN AREAS NOT SURVEYED.

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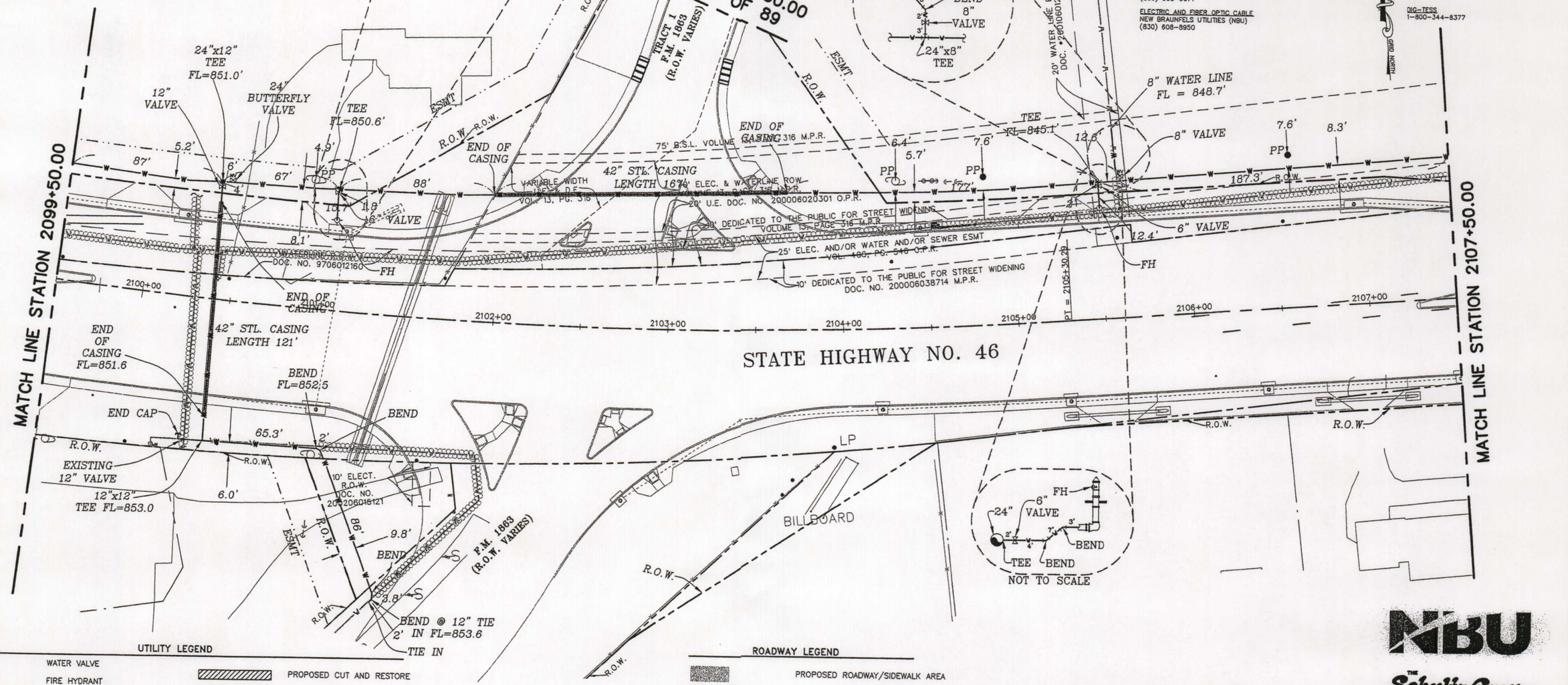


STATE HIGHWAY NO. 46

UTILITY LEGEND

- WATER VALVE
- FIRE HYDRANT
- WATER METER
- POWER POLE (FIELD TIED / BASED ON AERIAL OR OTHERS)
- WASTEWATER CLEANOUT
- MANHOLE
- TELEPHONE MANHOLE
- ANCHOR GUY WIRE
- [519] PROPOSED ROADWAY REFERENCE ELEVATION
- (519) EXISTING ELEVATION
- EXISTING WATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED UTILITY EASEMENT
- PROPOSED CUT AND RESTORE
- PROPOSED CASING
- LINE TO BE REMOVED, ABANDON, OR PLUGGED
- EXISTING OVERHEAD ELECTRIC
- EXISTING UNDERGROUND ELECTRIC
- EXISTING FIBER OPTIC LINE
- EXISTING TELEPHONE LINE
- EXISTING TELEVISION CABLE LINE
- EXISTING UTILITY EASEMENT
- EXISTING BUILIDNG SETBACK LINE
- EXISTING EASEMENT
- 10/12 DETAIL NUMBER / SHEET NUMBER

ROADWAY LEGEND

- PROPOSED ROADWAY/SIDEWALK AREA
- PROPOSED DRAINAGE INLETS
- PROPOSED UNDERGROUND STORM LINES
- PROPOSED CULVERTS
- PROPOSED CONCRETE RIPRAP AND CURB SLOTS
- RIGHT OF WAY
- CENTERLINE OF RIGHT-OF-WAY
- PROPERTY LINE
- CONCRETE MONUMENT FOUND
- 1/2 IRON PIN FOUND
- SIGN
- EXISTING HEADWALL
- EXISTING CULVERT

NBU

THE Schultz Group INC.
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 310483 NEW BRAUNFELS, TEXAS 78131 (830)606-3913
FAX (830)625-2204

# PLAN OF RECORD

WATER AND SEWER
ADJUSTMENT LAYOUT SHEET

SHEET 30 OF 89

30 0 30 60
SCALE IN FEET

STATE OF TEXAS
MICHAEL G. SHORT
98015
LICENSED PROFESSIONAL ENGINEER
4/28/10

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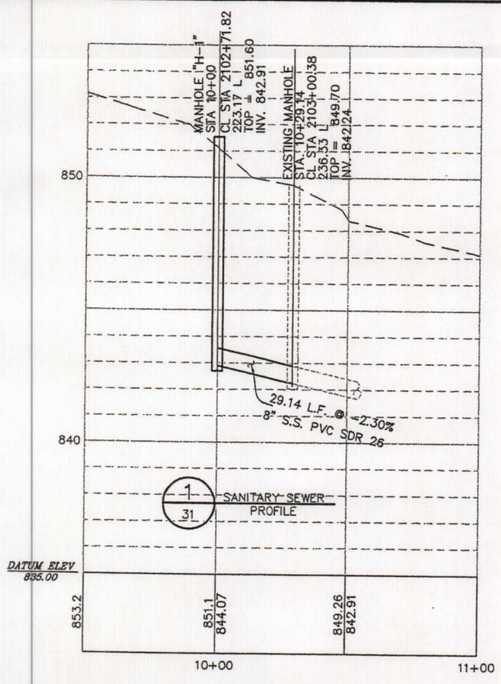


ROADWAY LEGEND

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GRID NORTH

SSMH 6580
TOP= 836.21'
INV=(830.30')

VARIABLE WIDTH U.E. & D.E.
VOLUME 13, PAGE 316

SSMH 6579
TOP= 839.04'
INV=(834.23)

BLOWOFF VALVE
FL=838.1'

39.4' FROM FACE OF CURB TO BLOWOFF

15.00'

VERTICAL 45°
FL=837.5'

8" TIE IN/VERTICAL 45°
FL=839.9'

19.1' FROM FACE OF CURB TO TIE IN

R.O.W.

TRACT 1
F.M. 1863
(R.O.W. VARIES)

S 80° 35' 07.44" E

20+00

PI 1393.64

20' U.E.
VOLUME 13
PAGES 316
M.P.R.

R.O.W.

8" WATER LINE

SSMH 6578
TOP= 841.71'
INV=(835.45')

20' WATER LINE ESMT
DOC. #20010601257

SSMH 6581
TOP= 844.18'
INV=(837.37)

WWMH
TOP = 853.04'
FL 8" OUT (NE) = 844.78'

VARIABLE WIDTH
U.E. & D.E.
VOL. 13, PG. 316

ROW

PC 15+64.89

MATCH LINE STA. 15+50.00
SEE SHEET 30 OF 89

MATCH LINE STA. 23+00.00
SEE SHEET 32 OF 89

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- MANHOLE
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UTILITY COMPANY

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SHEET 31 OF 89

30 0 30 60
SCALE IN FEET

# PLAN OF RECORD
## WATER AND SEWER
## ADJUSTMENT LAYOUT SHEET

STATE OF TEXAS
MICHAEL G. SHORT
86015
LICENSED
PROFESSIONAL ENGINEER

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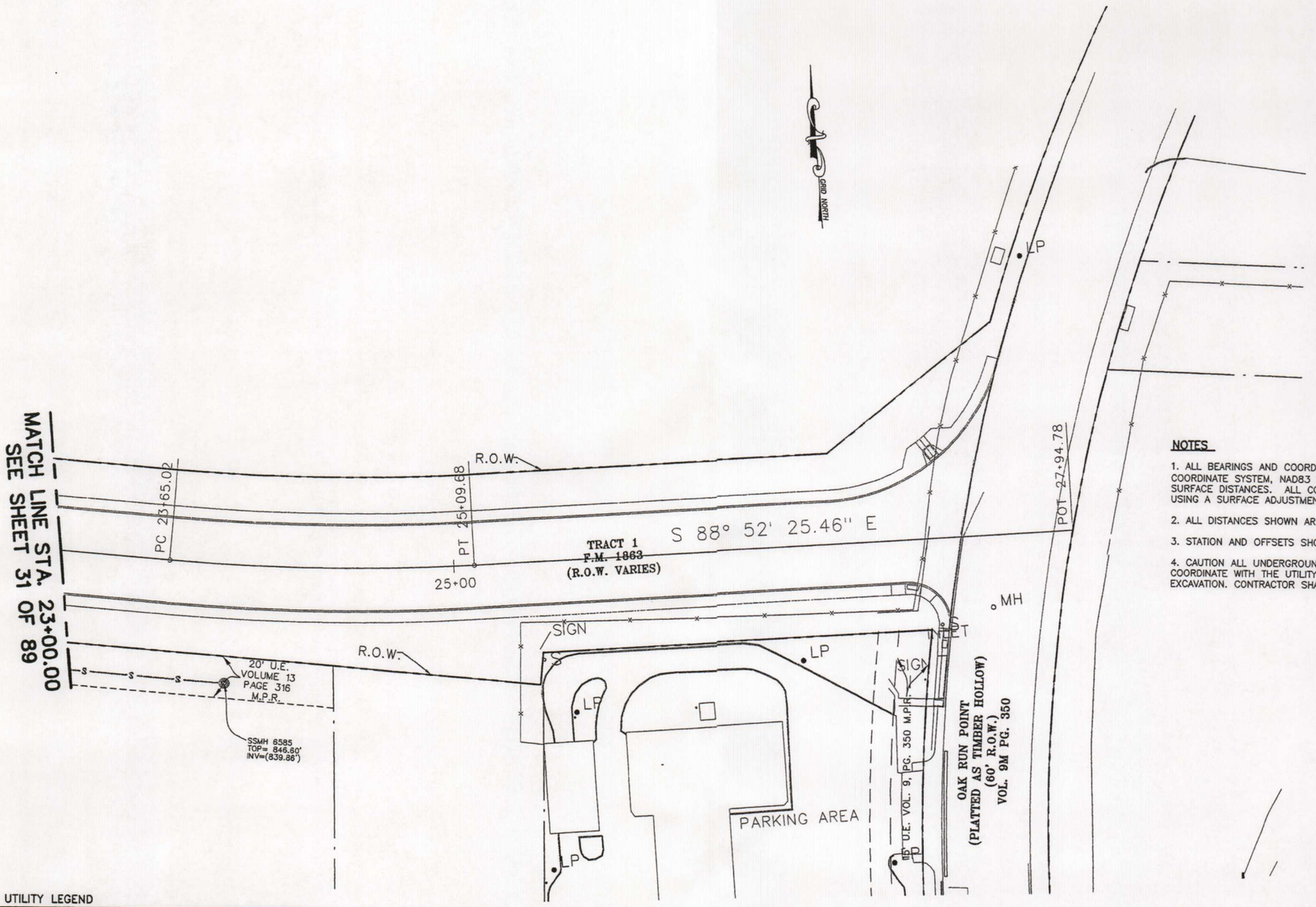


## ROADWAY LEGEND

- PROPOSED ROADWAY/SIDEWALK AREA
- PROPOSED DRAINAGE INLETS
- PROPOSED UNDERGROUND STORM LINES
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NO WATER OR SEWER ADJUSTMENTS THIS SHEET

# WATER AND SEWER ADJUSTMENT LAYOUT SHEET

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CONSULTING ENGINEERS & LAND SURVEYORS
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FAX (830)625-2204

SHEET 32 OF 89

30 0 30 60
SCALE IN FEET

STATE OF TEXAS
MICHAEL G. SHORT
88015
LICENSED PROFESSIONAL ENGINEER
4/28/10

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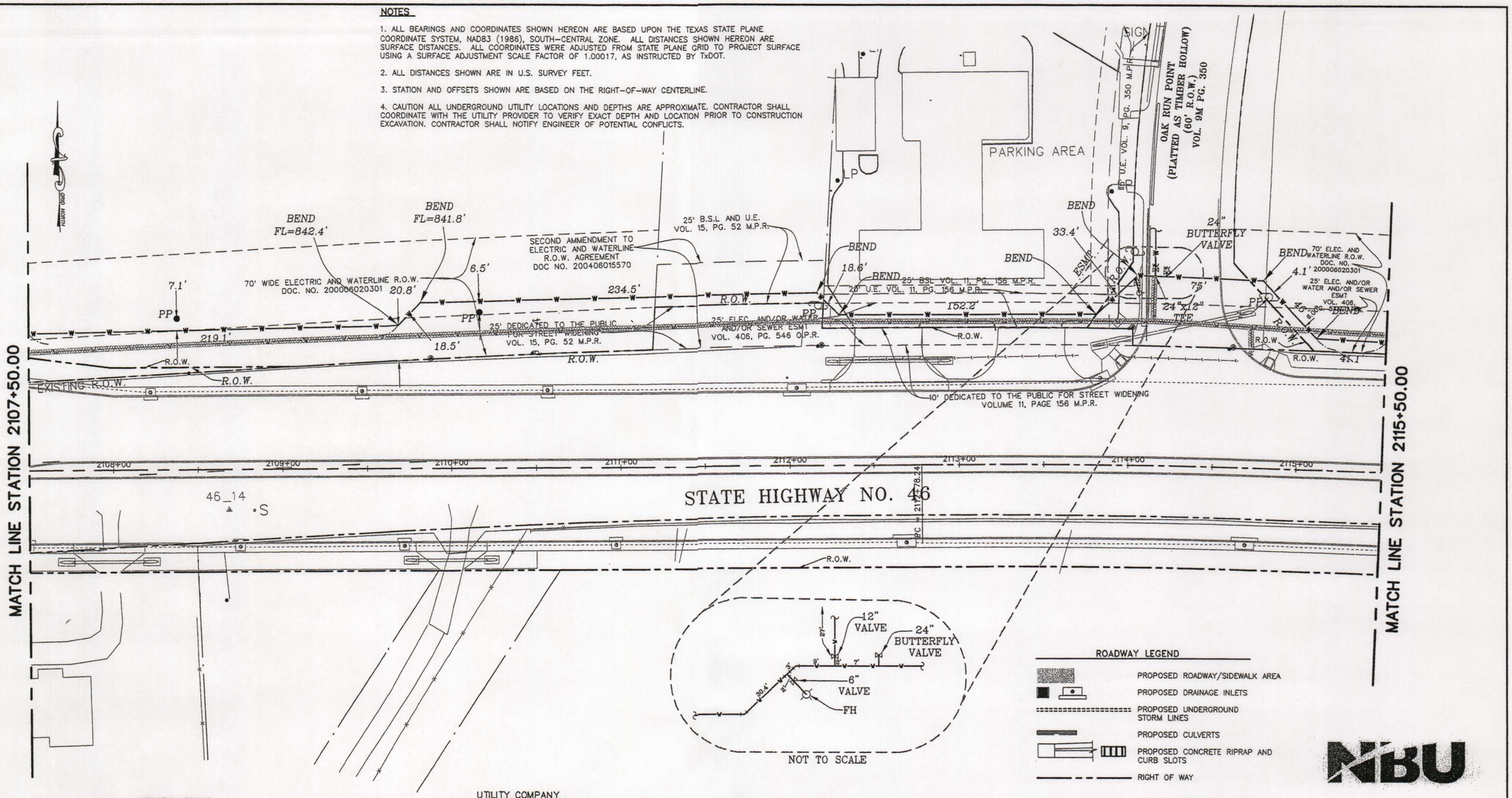





NOT TO SCALE

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30 0 30 60
SCALE IN FEET

# PLAN OF RECORD
## WATER AND SEWER ADJUSTMENT LAYOUT SHEET

STATE OF TEXAS
MICHAEL G. SHORT
88015
LICENSED PROFESSIONAL ENGINEER

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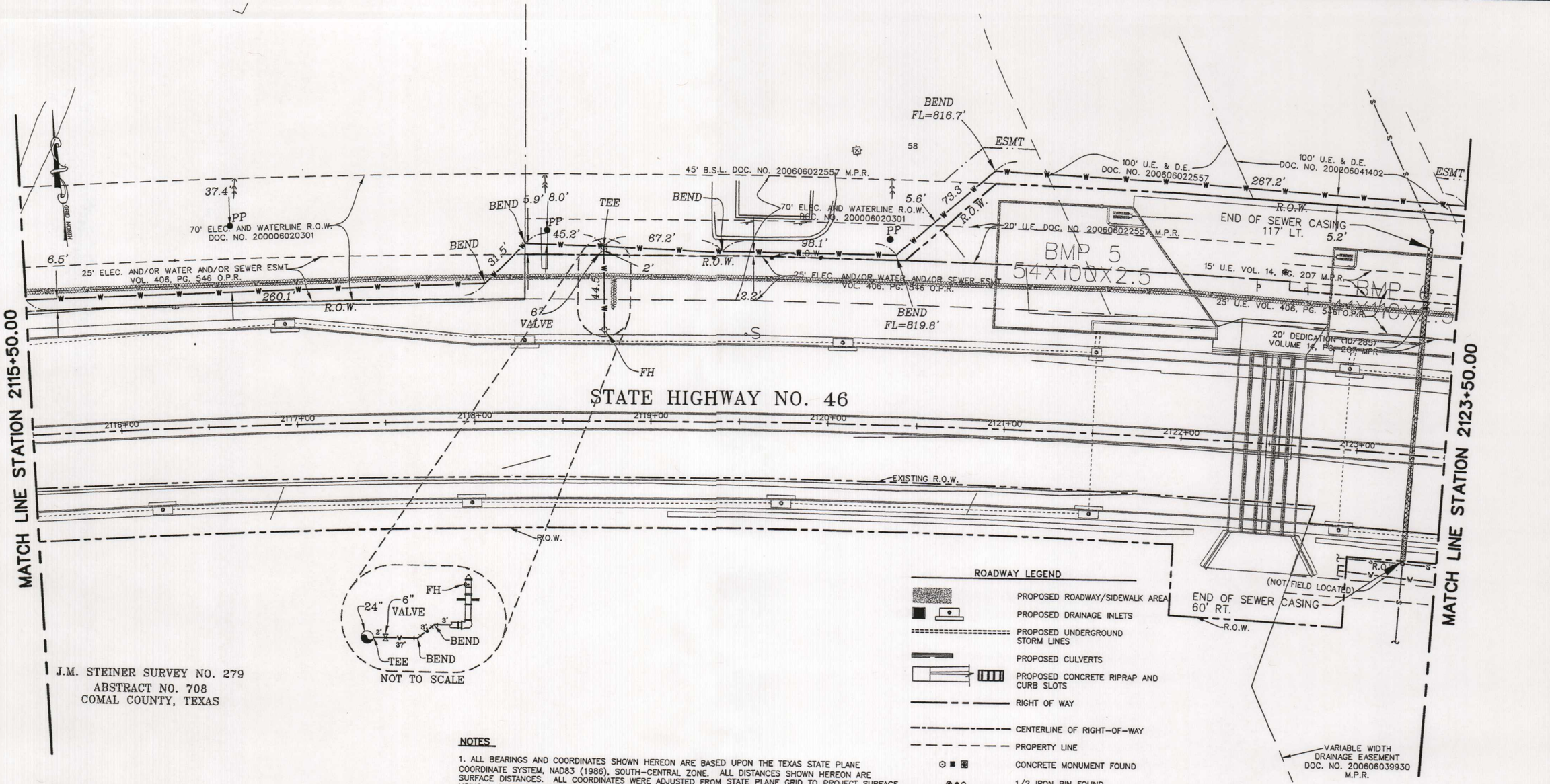


J.M. STEINER SURVEY NO. 279
ABSTRACT NO. 708
COMAL COUNTY, TEXAS

## UTILITY LEGEND

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FIELD TIED BASED ON AERIAL OR OTHERS

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ADJUSTMENT LAYOUT SHEET



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SCALE IN FEET

STATE OF TEXAS
MICHAEL G. SHORT
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LICENSED PROFESSIONAL ENGINEER

File Name: F:\06630\70\rebuild\rebuilt-plan01root-wsd.dwg

## UTILITY COMPANY

NOTE: EXISTING UTILITIES WITHIN THE RIGHT-OF-WAY WERE LOCATED BY AN ON-THE-GROUND SURFACE SURVEY PERFORMED BY HALFF ASSOCIATES ON NOVEMBER 27, 2006 AND COMPLETED FEBRUARY 8, 2007. THE SCHULTZ GROUP INC. LOCATED WATER AND WASTEWATER UTILITIES BY AN ON-THE-GROUND SURFACE SURVEY AND IDENTIFIED AND FIELD LOCATED BY NEW BRAUNFELS UTILITIES FROM AUGUST 21, 2007 TO JULY 31, 2008. UTILITIES INFORMATION PROVIDED BY TEXAS STATE OF TRANSPORTATION WERE USED AS REFERENCE IN IDENTIFYING UTILITIES AND ARE SHOWN IN AREAS NOT SURVEYED.

NEW BRAUNFELS UTILITIES
263 MAIN PLAZA
P.O. BOX 310289
NEW BRAUNFELS, TEXAS 7813
MAIN PHONE: (830) 629-8400
FAX: (830) 629-2119

WASTEWATER AND WATER
NEW BRAUNFELS UTILITIES (NBU)
(830) 608-9071

WASTEWATER-FORCE MAINS
NEW BRAUNFELS UTILITIES (NBU)
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ELECTRIC AND FIBER OPTIC CABLE
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TELEPHONE AND FIBER OPTIC CABLE (AT&T)
CALL DIG-TESS 1-800-344-8377

FIBER OPTIC CABLE (OTHER)
CALL DIG-TESS 1-800-344-8377

CABLE TELEVISION
TIME WARNER CABLE
(210) 582-9645

DIG-TESS
1-800-344-8377

## NOTES

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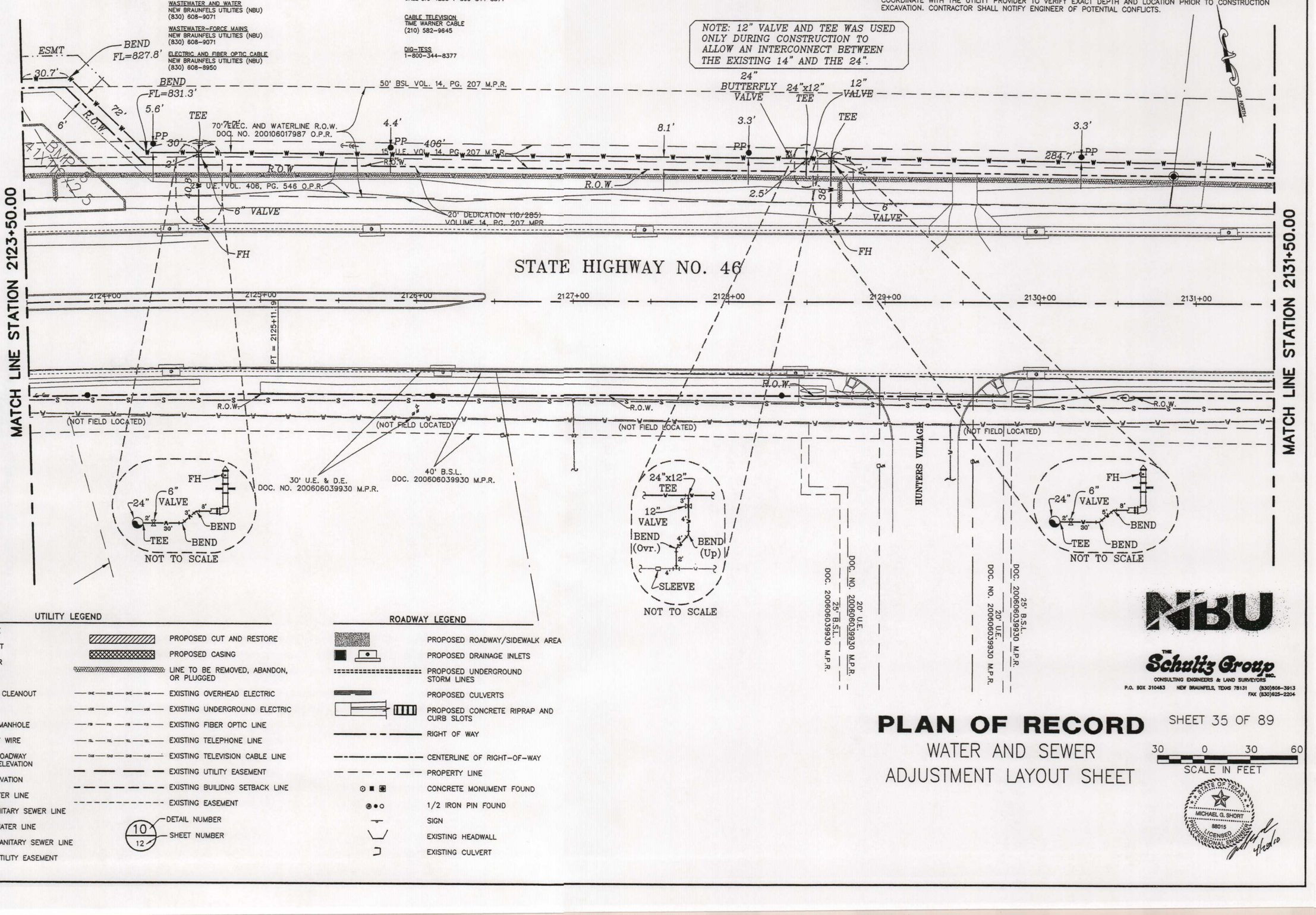


### UTILITY LEGEND

- WATER VALVE
- FIRE HYDRANT
- WATER METER
- POWER POLE (FIELD TIED / BASED ON AERIAL OR OTHERS)
- WASTEWATER CLEANOUT
- MANHOLE
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- ANCHOR GUY WIRE
- [519] PROPOSED ROADWAY REFERENCE ELEVATION
- (519) EXISTING ELEVATION
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- EXISTING BUILIDNG SETBACK LINE
- EXISTING EASEMENT
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### ROADWAY LEGEND

- PROPOSED ROADWAY/SIDEWALK AREA
- PROPOSED DRAINAGE INLETS
- PROPOSED UNDERGROUND STORM LINES
- PROPOSED CULVERTS
- PROPOSED CONCRETE RIPRAP AND CURB SLOTS
- RIGHT OF WAY
- CENTERLINE OF RIGHT-OF-WAY
- PROPERTY LINE
- CONCRETE MONUMENT FOUND
- 1/2 IRON PIN FOUND
- SIGN
- EXISTING HEADWALL
- EXISTING CULVERT

NBU

THE Schultz Group INC.
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 310483 NEW BRAUNFELS, TEXAS 78131 (830)606-3913 FAX (830)625-2204

# PLAN OF RECORD

WATER AND SEWER ADJUSTMENT LAYOUT SHEET



30 0 30 60
SCALE IN FEET

STATE OF TEXAS
MICHAEL G. SHORT
88015
LICENSED PROFESSIONAL ENGINEER

File Name: F:\06\30\7\Rebuilt\rebuilt-plot01xsit-asd.dwg

UTILITY COMPANY

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S.A. & M.G. RR. SURVEY NO. 276
ABSTRACT NO. 586
COMAL COUNTY, TEXAS

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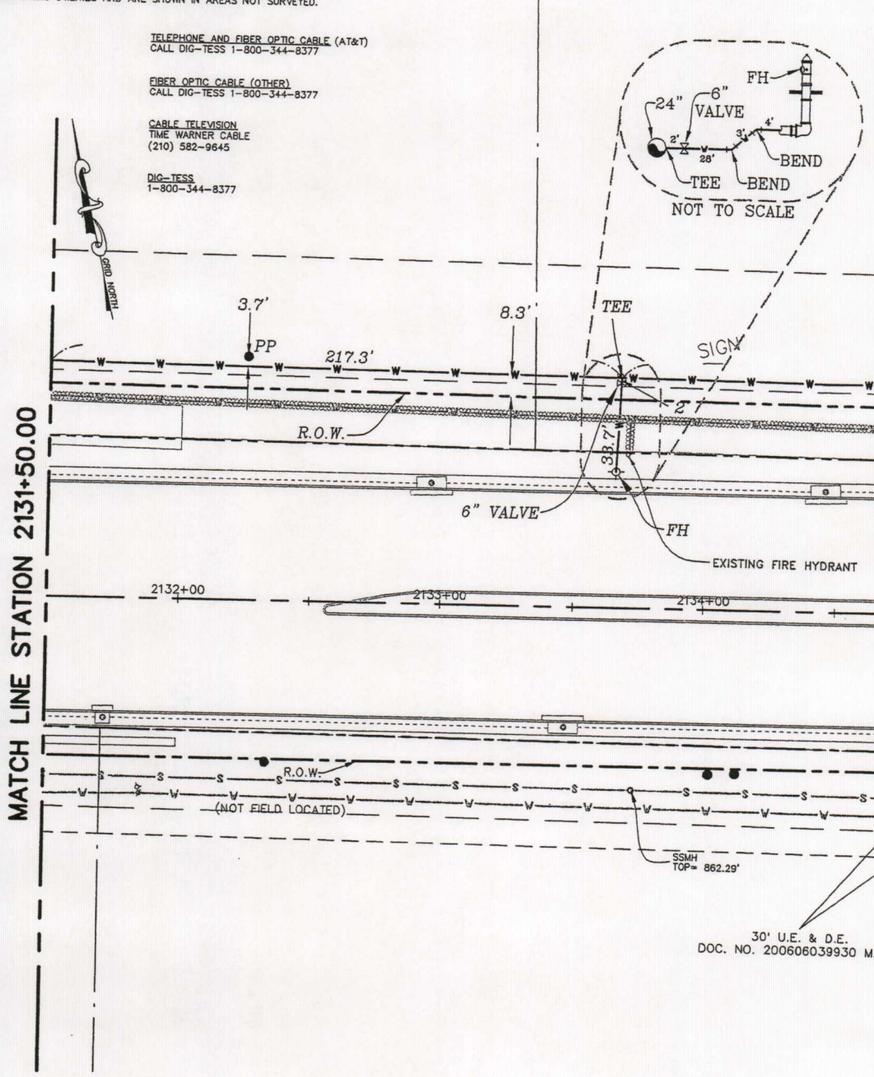


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FIELD TIED BASED ON AERIAL OR OTHERS

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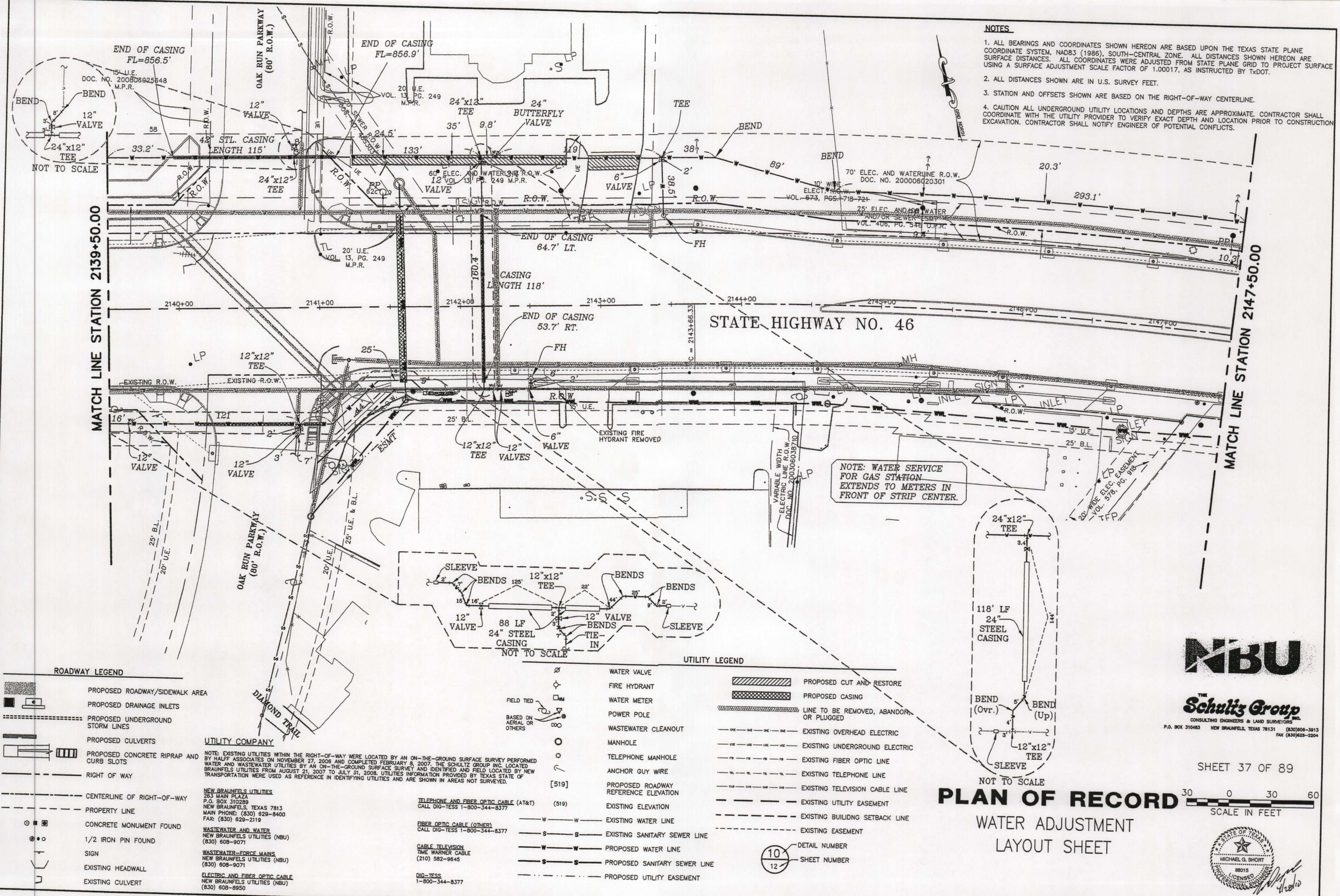
# PLAN OF RECORD
## WATER AND SEWER ADJUSTMENT LAYOUT SHEET



30 0 30 60
SCALE IN FEET

STATE OF TEXAS
MICHAEL G. SHORT
88015
LICENSED PROFESSIONAL ENGINEER

File Name: P:\06\30\71\Mebuilt\Default-plan01test-end.dwg

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UTILITY COMPANY

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SHEET 37 OF 89

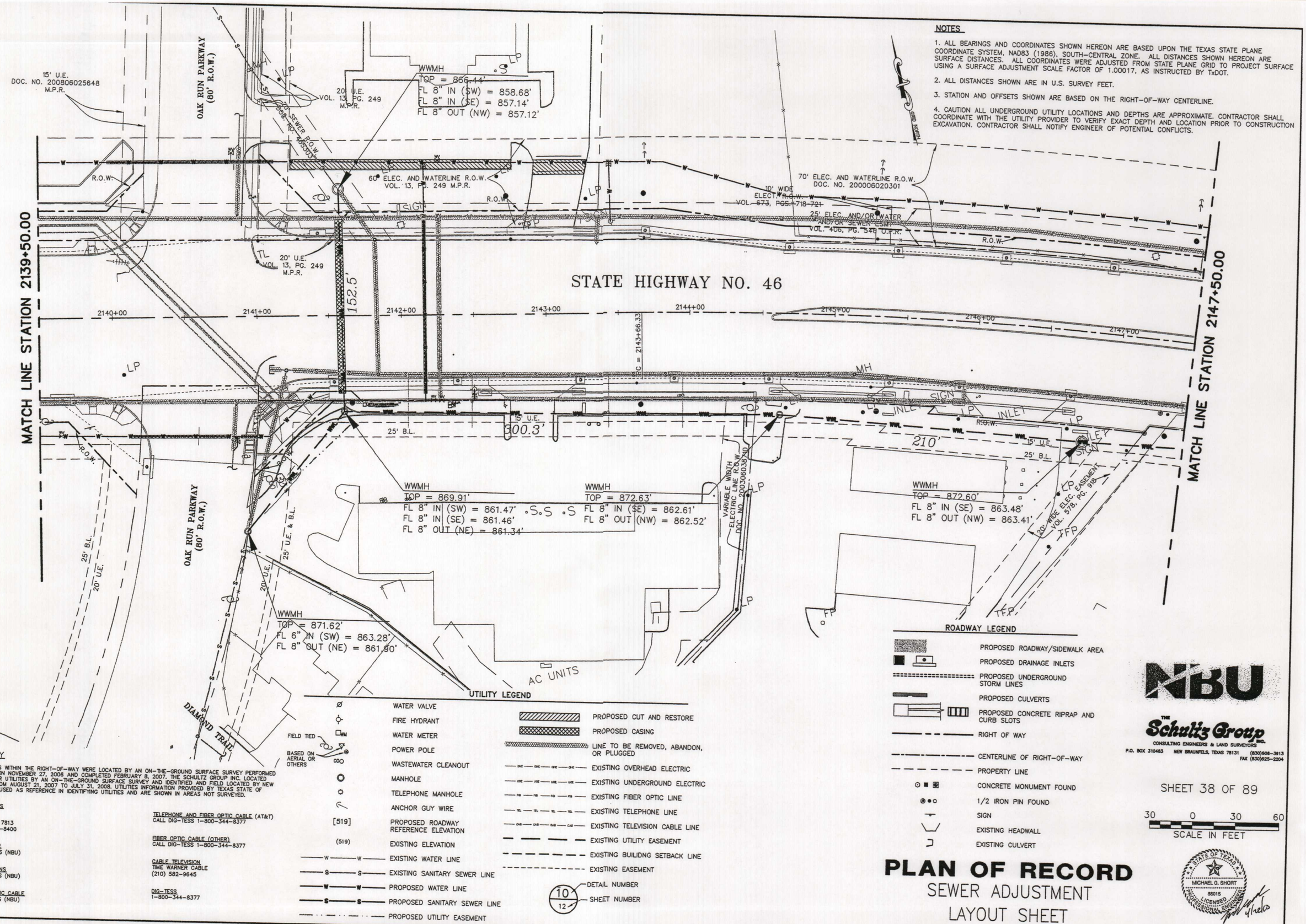
# PLAN OF RECORD

WATER ADJUSTMENT LAYOUT SHEET

30 0 30 60
SCALE IN FEET

STATE OF TEXAS
MICHAEL G. SHORT
88015
LICENSED PROFESSIONAL ENGINEER

File Name: F:\n0603307\Rebuild\rebuilt-sheet01-east-wadwg

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FAX (830)625-2204


SHEET 38 OF 89

30 0 30 60
SCALE IN FEET

# PLAN OF RECORD
## SEWER ADJUSTMENT
## LAYOUT SHEET

STATE OF TEXAS
MICHAEL G. SHORT
86015
LICENSED PROFESSIONAL ENGINEER

File Name: R:\09\09307\14\edit\Sheets\fr_plan01sadj-and.dwg

UTILITY COMPANY

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GRID NORTH

MATCH LINE STATION 2147+50.00

24"x8" TEE
8" VALVE
BEND
70' ELEC. AND WATERLINE R.O.W. DOC. NO. 200006020301
155.7'
302'
20.4'
25' ELEC. AND/OR WATER AND/OR SEWER ESMT. VOL. 486, PG. 546 O.P.R.
R.O.W.
11.1'
END OF CASING 53' LT.
6" VALVE
TEE
7.7'
8" TIE IN
59
79
21.9'
FH
24"x8" TEE
6.2'
284.7'
5.9'
5.4'
2" PRESSURE RELEASE VLAVE
OAK SPRAWL (60' R.O.W.)

NOT TO SCALE
FH
24" VALVE
6"
TEE
BEND
BEND
NOT TO SCALE

NOT TO SCALE
SLEEVE
BEND
11'
15.9'
BEND
8" VALVE
24"x8" TEE

STATE HIGHWAY NO. 46

2148+00
2149+00
2150+00
2151+00
2152+00
2153+00
2154+00
2155+00

MATCH LINE STATION 2155+50.00

20" CASING LENGTH 140'
173'
MH
R.O.W.
CONCRETE NOISE WALL
30' U.E., D.E. & M.E. VOL. 13, PG. 85 M.P.R.
249.3'
219.8'
20' U.E. & M.E.
END OF CASING 85.7' RT.
8" TIE IN
9.7'

WWMH
TOP = 871.81'
FL 8" IN (SE) = 864.31'
FL 8" IN (SW) = 867.06'
FL 8" OUT (NW) = 864.26'

WWMH
TOP = 874.68'
FL 8" IN (SE) STUBOUT = 868.82'
FL 6" IN (SW) = 868.74'
FL 8" OUT (NW) = 868.74'

20' U.E., D.E. AND MAINTENANCE EASEMENT VOL. 87, PG. 85

20' U.E., D.E. AND VOL. 13, PG. 85

24"x8" TEE
8" VALVE
BEND
20" CASING
173'
140'
BEND
6'
SLEEVE
BEND
2'
NOT TO SCALE

25' B.L.
20' U.E. & M.E. VOL. 12, PG. 27 M.P.R.
BIG OAK (R.O.W. VARIES)
LP
MH
CONSTRUCTION AREA

## ROADWAY LEGEND

- PROPOSED ROADWAY/SIDEWALK AREA
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SCALE IN FEET

# PLAN OF RECORD
## WATER AND SEWER ADJUSTMENT LAYOUT SHEET

STATE OF TEXAS
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LICENSED
PROFESSIONAL ENGINEER

File Name: P:\06630701\Mobile\Roads\R-plan01sost-end.dwg

## UTILITY COMPANY

NOTE: EXISTING UTILITIES WITHIN THE RIGHT-OF-WAY WERE LOCATED BY AN ON-THE-GROUND SURFACE SURVEY PERFORMED BY HALFF ASSOCIATES ON NOVEMBER 27, 2006 AND COMPLETED FEBRUARY 8, 2007. THE SCHULTZ GROUP INC. LOCATED WATER AND WASTEWATER UTILITIES BY AN ON-THE-GROUND SURFACE SURVEY AND IDENTIFIED AND FIELD LOCATED BY NEW BRAUNFELS UTILITIES FROM AUGUST 21, 2007 TO JULY 31, 2008. UTILITIES INFORMATION PROVIDED BY TEXAS STATE OF TRANSPORTATION WERE USED AS REFERENCE IN IDENTIFYING UTILITIES AND ARE SHOWN IN AREAS NOT SURVEYED.

NEW BRAUNFELS UTILITIES
263 MAIN PLAZA
P.O. BOX 310289
NEW BRAUNFELS, TEXAS 7813
MAIN PHONE: (830) 629-8400
FAX: (830) 629-2119

WASTEWATER AND WATER
NEW BRAUNFELS UTILITIES (NBU)
(830) 608-9071

WASTEWATER-FORCE MAINS
NEW BRAUNFELS UTILITIES (NBU)
(830) 608-9071

ELECTRIC AND FIBER OPTIC CABLE
NEW BRAUNFELS UTILITIES (NBU)
(830) 608-8950

TELEPHONE AND FIBER OPTIC CABLE (AT&T)
CALL DIG-TESS 1-800-344-8377

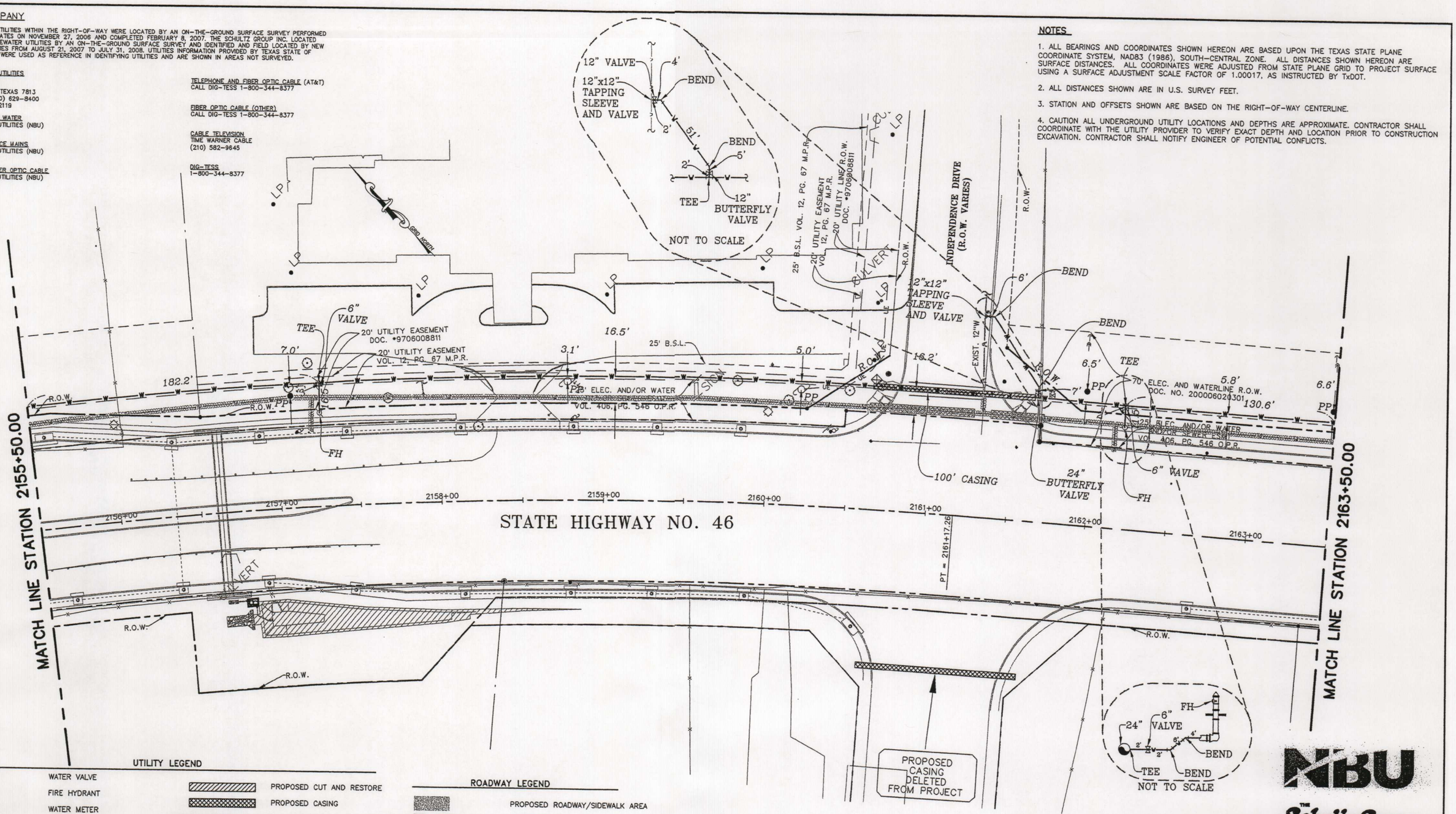
FIBER OPTIC CABLE (OTHER)
CALL DIG-TESS 1-800-344-8377

CABLE TELEVISION
TIME WARNER CABLE
(210) 582-9645

DIG-TESS
1-800-344-8377

## NOTES

1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED UPON THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD83 (1986), SOUTH-CENTRAL ZONE. ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES. ALL COORDINATES WERE ADJUSTED FROM STATE PLANE GRID TO PROJECT SURFACE USING A SURFACE ADJUSTMENT SCALE FACTOR OF 1.00017, AS INSTRUCTED BY TxDOT.
2. ALL DISTANCES SHOWN ARE IN U.S. SURVEY FEET.
3. STATION AND OFFSETS SHOWN ARE BASED ON THE RIGHT-OF-WAY CENTERLINE.
4. CAUTION ALL UNDERGROUND UTILITY LOCATIONS AND DEPTHS ARE APPROXIMATE. CONTRACTOR SHALL COORDINATE WITH THE UTILITY PROVIDER TO VERIFY EXACT DEPTH AND LOCATION PRIOR TO CONSTRUCTION EXCAVATION. CONTRACTOR SHALL NOTIFY ENGINEER OF POTENTIAL CONFLICTS.




### UTILITY LEGEND

- WATER VALVE
- FIRE HYDRANT
- WATER METER
- POWER POLE
- WASTEWATER CLEANOUT
- MANHOLE
- TELEPHONE MANHOLE
- ANCHOR GUY WIRE
- [519] PROPOSED ROADWAY REFERENCE ELEVATION
- (519) EXISTING ELEVATION
- EXISTING WATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED UTILITY EASEMENT
- PROPOSED CUT AND RESTORE
- PROPOSED CASING
- LINE TO BE REMOVED, ABANDON, OR PLUGGED
- EXISTING OVERHEAD ELECTRIC
- EXISTING UNDERGROUND ELECTRIC
- EXISTING FIBER OPTIC LINE
- EXISTING TELEPHONE LINE
- EXISTING TELEVISION CABLE LINE
- EXISTING UTILITY EASEMENT
- EXISTING BUILIDNG SETBACK LINE
- EXISTING EASEMENT
- 10/12 DETAIL NUMBER / SHEET NUMBER

FIELD TIED / BASED ON AERIAL OR OTHERS

### ROADWAY LEGEND

- PROPOSED ROADWAY/SIDEWALK AREA
- PROPOSED DRAINAGE INLETS
- PROPOSED UNDERGROUND STORM LINES
- PROPOSED CULVERTS
- PROPOSED CONCRETE RIPRAP AND CURB SLOTS
- RIGHT OF WAY
- CENTERLINE OF RIGHT-OF-WAY
- PROPERTY LINE
- CONCRETE MONUMENT FOUND
- 1/2 IRON PIN FOUND
- SIGN
- EXISTING HEADWALL
- EXISTING CULVERT

# PLAN OF RECORD

## WATER AND SEWER ADJUSTMENT LAYOUT SHEET


NBU
THE Schultz Group INC.
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 310483 NEW BRAUNFELS, TEXAS 78131 (830)606-3913 FAX (830)625-2204




30 0 30 60
SCALE IN FEET

STATE OF TEXAS
MICHAEL G. SHORT
88015
LICENSED
PROFESSIONAL ENGINEER

File Name: F:\06\06307\Mobility\Roadway\Plan-profile\Sheet-road.dwg

NOTES

1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED UPON THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD83 (1986), SOUTH-CENTRAL ZONE. ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES. ALL COORDINATES WERE ADJUSTED FROM STATE PLANE GRID TO PROJECT SURFACE USING A SURFACE ADJUSTMENT SCALE FACTOR OF 1.00017, AS INSTRUCTED BY TxDOT.

2. ALL DISTANCES SHOWN ARE IN U.S. SURVEY FEET.

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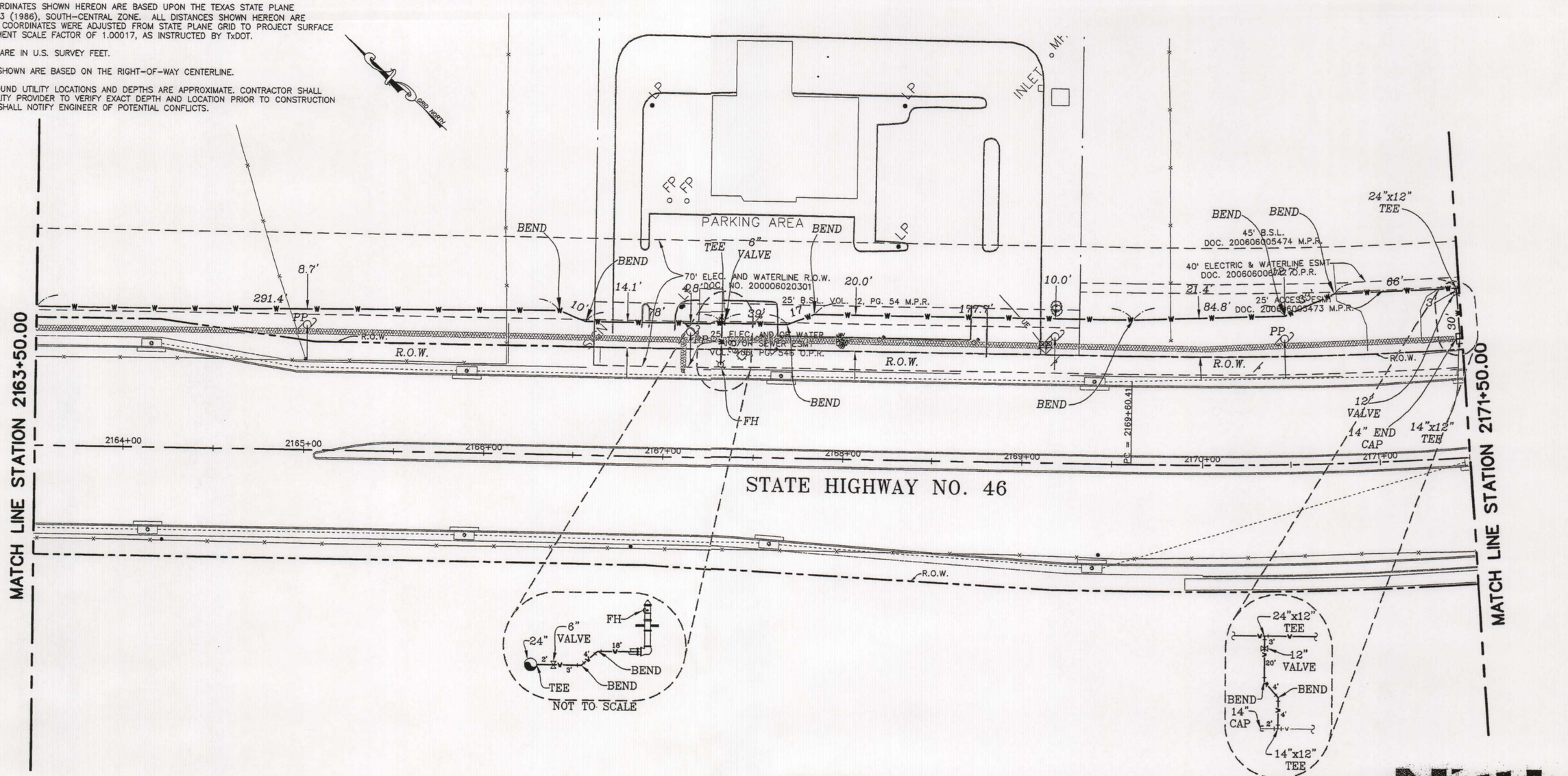
4. CAUTION ALL UNDERGROUND UTILITY LOCATIONS AND DEPTHS ARE APPROXIMATE. CONTRACTOR SHALL COORDINATE WITH THE UTILITY PROVIDER TO VERIFY EXACT DEPTH AND LOCATION PRIOR TO CONSTRUCTION EXCAVATION. CONTRACTOR SHALL NOTIFY ENGINEER OF POTENTIAL CONFLICTS.

GRID NORTH










UTILITY LEGEND

- WATER VALVE
- FIRE HYDRANT
- WATER METER
- POWER POLE (FIELD TIED / BASED ON AERIAL OR OTHERS)
- WASTEWATER CLEANOUT
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- EXISTING BUILDING SETBACK LINE
- EXISTING EASEMENT
- 10/12 DETAIL NUMBER / SHEET NUMBER

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- PROPOSED CONCRETE RIPRAP AND CURB SLOTS
- RIGHT OF WAY
- CENTERLINE OF RIGHT-OF-WAY
- PROPERTY LINE
- CONCRETE MONUMENT FOUND
- 1/2 IRON PIN FOUND
- SIGN
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- EXISTING CULVERT

UTILITY COMPANY

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FAX (830)625-2204




30 0 30 60
SCALE IN FEET

STATE OF TEXAS
MICHAEL G. SHORT
88015
LICENSED
PROFESSIONAL ENGINEER

# PLAN OF RECORD
## WATER AND SEWER
## ADJUSTMENT LAYOUT SHEET

File Name: P:\09030717\Rebuilt\rebuilt-plot01cost-end.dwg

## NOTES

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DIG-TESS
1-800-344-8377

## ROADWAY LEGEND

- PROPOSED ROADWAY/SIDEWALK AREA
- PROPOSED DRAINAGE INLETS
- PROPOSED UNDERGROUND STORM LINES
- PROPOSED CULVERTS
- PROPOSED CONCRETE RIPRAP AND CURB SLOTS
- RIGHT OF WAY
- CENTERLINE OF RIGHT-OF-WAY
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- CONCRETE MONUMENT FOUND
- 1/2 IRON PIN FOUND
- SIGN
- EXISTING HEADWALL
- EXISTING CULVERT

## UTILITY LEGEND

- WATER VALVE
- FIRE HYDRANT
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- EXISTING TELEVISION CABLE LINE
- EXISTING UTILITY EASEMENT
- EXISTING BUILIDNG SETBACK LINE
- EXISTING EASEMENT
- 10/12 DETAIL NUMBER / SHEET NUMBER

NOTE: NEW SEWER LINE INSTALLED BY OTHERS AT THIS LOCATION.

STATE HIGHWAY NO. 46

STATE LOOP 337 (R.O.W. VARIES)

MATCH LINE STATION 2171+50.00

MATCH LINE STATION 2179+50.00

NBU

THE Schultz Group INC.
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 310483 NEW BRAUNFELS, TEXAS 78131 (830)606-3913
FAX (830)625-2204



30 0 30 60
SCALE IN FEET

# PLAN OF RECORD
## WATER AND SEWER ADJUSTMENT LAYOUT SHEET

STATE OF TEXAS
MICHAEL G. SHORT
88015
LICENSED PROFESSIONAL ENGINEER

File Name: P:\060307\Adsutl\Tech\utl_plan01east_end.dwg

## UTILITY COMPANY

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TIME WARNER CABLE
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DIG-TESS
1-800-344-8377

MATCH LINE STATION 2179+50.00

MATCH LINE STATION 2188+50.00

STATE HIGHWAY NO. 46

15' U.E. VOL. 11, PG. 263
10' U.E. VOL. 11, PG. 53
20' U.E. VOL. 13, PG. 139
25' B.S.L. VOL. 13, PG. 139
1' NON-ACCESS ESMT. VOL. 13, PG. 139
R.O.W.
INLET
CDO
WATER LINE ADJUSTMENT TO BE MADE MY NBU.
15' B.S.L. & U.E. VOL. 11, PG. 53
OHIO AVE. (60' R.O.W.)
25' B.S.L. VOL. 5, PG. 195
10' UTILITY EASEMENT VOL. 5, PG. 195
ESMT
LP
TFP
PIPE
2180+00
2181+00
2182+00
2183+00
2184+00
2185+00
2186+00
2187+00
PT = 2180+45.43
42" STORM DRAIN INVERT=832.38'
14" WATER LINE FL ELEVATION=829.7'
VERTICAL BEND FL=829.8' STA: 2185+10.4 OFFSET: 39.3' RT.
135 LF/Top of 14"Water Pipe
14" VALVE
11.0'
EXISTING 14" WATER
VERTICAL BEND AND TIE IN FL=836.5' STA: 2185+03.4 OFFSET: 38.6' RT.
FL=829.6' STA: 2185+33.6 OFFSET: 38.6' RT.
END OF 30" WATER CASING FL=830.2' STA: 2187+84.8 OFFSET: 45.7' RT.
END OF 30" WATER CASING FL=829.1' STA: 2187+41.4 OFFSET: 44.7' RT.
END OF 30" WATER CASING FL=830.3' STA: 2187+91.1 OFFSET: 45.9' RT.
END OF 30" WATER CASING STA: 2188+16.8 OFFSET: 46.5' RT.
14"x8" TEE
VERTICAL BEND FL=831.6'
12.1'
11.3'
BEND FL=829.6' STA: 2187+17.6 OFFSET: 40.3' RT.
BEND FL=828.8' STA: 2187+21.9 OFFSET: 44.7' RT.
8" VAVLE
36" STORM DRAIN INVERT=834.25'
8" WATER LINE FL ELEVATION=829.8'
8" DI PIPE
WORKING AREA
VERTICAL BEND FL=835.2'
BEND FL=829.7'
BEND FL=829.8'
SIGN
VERTICAL BEND FL=829.7'
VERTICAL BEND AND TIE IN FL=838.0'
S. KELLICK LANE (60' R.O.W.)

14" VALVE
EX. 14" DI
14" SLEEVE
BEND
CASING
14"x8" TEE
8" VALVE

NOT TO SCALE

### UTILITY LEGEND

- WATER VALVE
- FIRE HYDRANT
- WATER METER
- POWER POLE
- WASTEWATER CLEANOUT
- MANHOLE
- TELEPHONE MANHOLE
- ANCHOR GUY WIRE
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- FIELD TIED
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- LINE TO BE REMOVED, ABANDON, OR PLUGGED
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### ROADWAY LEGEND

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- PROPOSED CONCRETE RIPRAP AND CURB SLOTS
- RIGHT OF WAY
- CENTERLINE OF RIGHT-OF-WAY
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### NOTES

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30 0 30 60
SCALE IN FEET

STATE OF TEXAS
MICHAEL G. SHORT
88015
LICENSED PROFESSIONAL ENGINEER

# PLAN OF RECORD
## WATER ADJUSTMENT
## LAYOUT SHEET

NOTES

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MATCH LINE STATION 2179+50.00

MATCH LINE STATION 2188+50.00

STATE HIGHWAY NO. 46

15' U.E. VOL. 11, PG. 263
10' U.E. VOL. 11, PG. 53
INLET
WWMH
TOP = 832.52'
FL 10" IN (SW) = 824.26'
FL 8" OUT (NE) = 824.14'
FL 10" IN (S) = 824.18'
FL 8" IN (S) = 824.16'
PIPE
GATES
WWMH
TOP = 834.32'
FL 8" IN (SW) = 825.55'
FL 8" OUT (NE) = 825.38'
10' UTILITY EASEMENT VOL. 5, PG. 195
GRID NORTH
OHIO AVE. (VARIABLE WIDTH R.O.W.)
TFP
LP
25' B.S.L. VOL. 5, PG. 195
15' B.S.L. & U.E. VOL. 11, PG. 263
189.4' 8" SANITARY SEWER LINE
WWMH
TOP = 840.29'
FL 8" IN (SW) = 832.31'
FL 8" OUT (SE) = 832.24'
20' U.E. VOL. 13, PG. 139
1' NON-ACCESS ESMT. VOL. 13, PG. 139
25' B.S.L. VOL. 13, PG. 139
R.O.W.
EX. 8" WATER LINE
25' B.S.L. VOL. 13, PG. 139
20' U.E. VOL. 13, PG. 139
25' B.S.L. VOL. 11, PG. 53
20' U.E. VOL. 11, PG. 53
15' B.S.L. & U.E. VOL. 11, PG. 53
130.7'
8" SANITARY SEWER LINE
WWMH
TOP = 838.78'
FL 8" IN (NW) = 826.76'
FL 8" IN (SE) = 826.75'
FL 8" OUT (NE) = 826.63'
345.1' 8" SANITARY SEWER LINE
6" WW FLOWLINE @ STORM DRAIN CROSSING = 833.12'
SSMH
TOP= 839.07'
FL 6" OUT (E)= 833.20'
FL 6" IN (S)= 833.23'
2180+00
2180+45.40 = 2181+00
2182+00
2183+00
2184+00
2185+00
2186+00
2187+00
53
EX. 12" WATER LINE
EX. 14" WATER LINE
EX. 12" WATER LINE
R.O.W.
SSMH
TOP= 842.06'
FL 6" IN (NW)= 835.62
FL 6" IN (SE)= 835.62'
FL 6" OUT (NE)= 834.85'
SIGN
LP
R.O.W.
WWMH
TOP = 840.08'
FL 6" IN (SW) = 834.41'
FL 6" OUT (NE) = 833.32'
LP
PARKING AREA
LP
SIGN
KERLICK LANE (80' R.O.W.)
EX. 8" WATER LINE
TFP

## UTILITY LEGEND

- WATER VALVE
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- PROPOSED CONCRETE RIPRAP AND CURB SLOTS
- RIGHT OF WAY
- CENTERLINE OF RIGHT-OF-WAY
- PROPERTY LINE
- CONCRETE MONUMENT FOUND
- 1/2 IRON PIN FOUND
- SIGN
- EXISTING HEADWALL
- EXISTING CULVERT

## UTILITY COMPANY

NOTE: EXISTING UTILITIES WITHIN THE RIGHT-OF-WAY WERE LOCATED BY AN ON-THE-GROUND SURFACE SURVEY PERFORMED BY HALFF ASSOCIATES ON NOVEMBER 27, 2006 AND COMPLETED FEBRUARY 8, 2007. THE SCHULTZ GROUP INC. LOCATED WATER AND WASTEWATER UTILITIES BY AN ON-THE-GROUND SURFACE SURVEY AND IDENTIFIED AND FIELD LOCATED BY NEW BRAUNFELS UTILITIES FROM AUGUST 21, 2007 TO JULY 31, 2008. UTILITIES INFORMATION PROVIDED BY TEXAS STATE OF TRANSPORTATION WERE USED AS REFERENCE IN IDENTIFYING UTILITIES AND ARE SHOWN IN AREAS NOT SURVEYED.

NEW BRAUNFELS UTILITIES
263 MAIN PLAZA
P.O. BOX 310289
NEW BRAUNFELS, TEXAS 7813
MAIN PHONE: (830) 629-8400
FAX: (830) 629-2119

WASTEWATER AND WATER
NEW BRAUNFELS UTILITIES (NBU)
(830) 608-9071

WASTEWATER-FORCE MAINS
NEW BRAUNFELS UTILITIES (NBU)
(830) 608-9071

ELECTRIC AND FIBER OPTIC CABLE
NEW BRAUNFELS UTILITIES (NBU)
(830) 608-8950

TELEPHONE AND FIBER OPTIC CABLE (AT&T)
CALL DIG-TESS 1-800-344-8377

FIBER OPTIC CABLE (OTHER)
CALL DIG-TESS 1-800-344-8377

CABLE TELEVISION
TIME WARNER CABLE
(210) 582-9645

DIG-TESS
1-800-344-8377

NBU

THE Schultz Group INC.
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 310483 NEW BRAUNFELS, TEXAS 78131 (830)606-3913
FAX (830)625-2204

SHEET 44 OF 89

# PLAN OF RECORD
## SEWER ADJUSTMENT LAYOUT SHEET

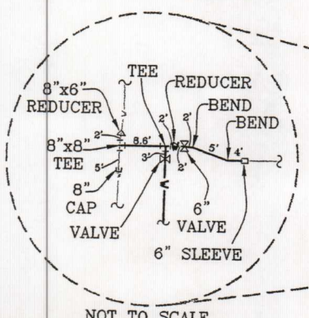
30 0 30 60
SCALE IN FEET

STATE OF TEXAS
MICHAEL G. SHORT
88015
LICENSED PROFESSIONAL ENGINEER
11/28/10

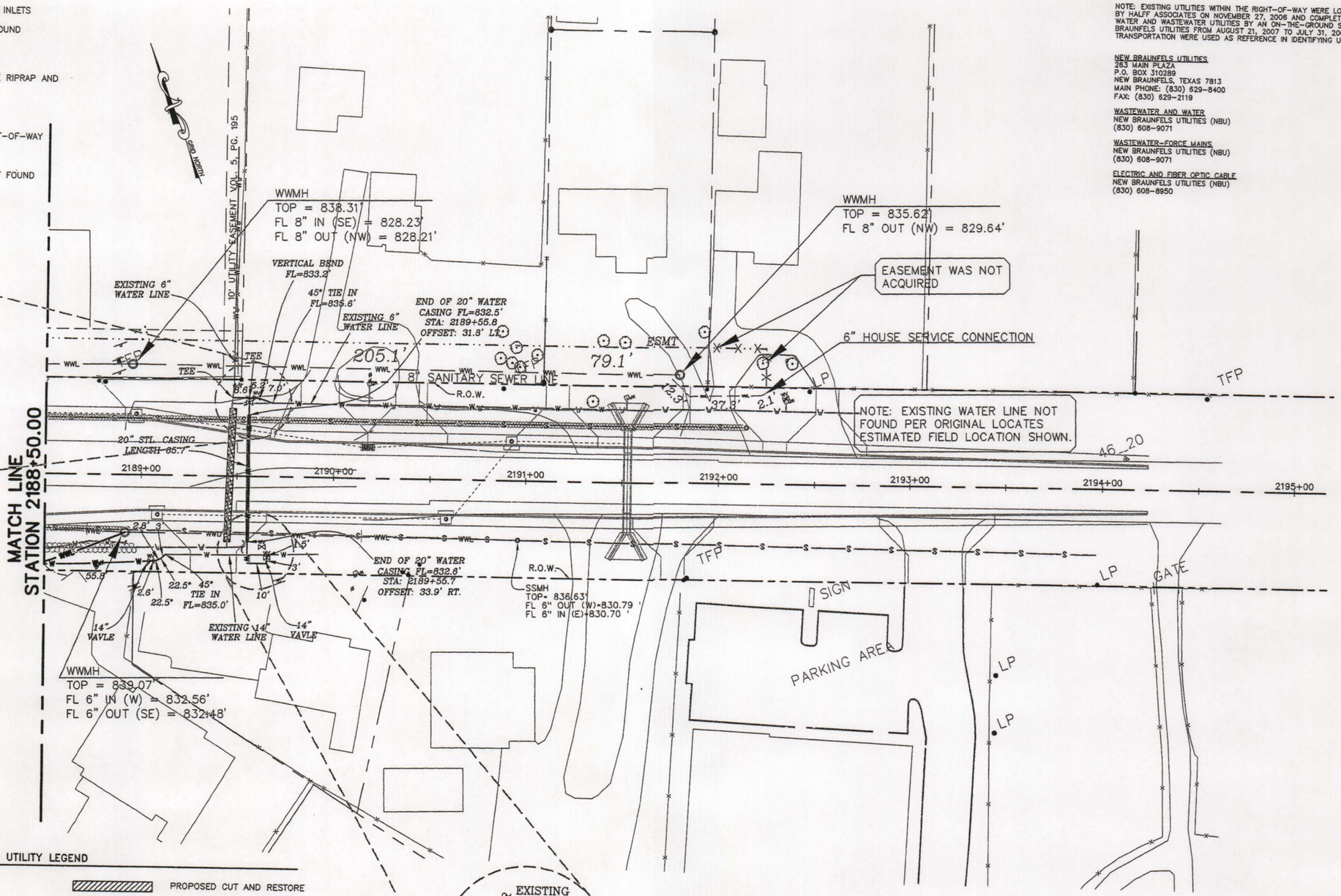
File Name: P:\1000\2007\Default\default - plan01-sadj.dwg

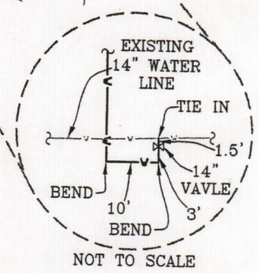
## ROADWAY LEGEND

- PROPOSED ROADWAY/SIDEWALK AREA
- PROPOSED DRAINAGE INLETS
- PROPOSED UNDERGROUND STORM LINES
- PROPOSED CULVERTS
- PROPOSED CONCRETE RIPRAP AND CURB SLOTS
- RIGHT OF WAY
- CENTERLINE OF RIGHT-OF-WAY
- PROPERTY LINE
- CONCRETE MONUMENT FOUND
- 1/2 IRON PIN FOUND
- SIGN
- EXISTING HEADWALL
- EXISTING CULVERT




NOT TO SCALE




NOT TO SCALE

## UTILITY LEGEND

- WATER VALVE
- FIRE HYDRANT
- WATER METER
- POWER POLE (FIELD TIED BASED ON AERIAL OR OTHERS)
- WASTEWATER CLEANOUT
- MANHOLE
- TELEPHONE MANHOLE
- ANCHOR GUY WIRE
- [519] PROPOSED ROADWAY REFERENCE ELEVATION
- (519) EXISTING ELEVATION
- W W EXISTING WATER LINE
- S S EXISTING SANITARY SEWER LINE
- W W PROPOSED WATER LINE
- S S PROPOSED SANITARY SEWER LINE
- PROPOSED UTILITY EASEMENT
- PROPOSED CUT AND RESTORE
- PROPOSED CASING
- LINE TO BE REMOVED, ABANDON, OR PLUGGED
- OHE OHE OHE OHE EXISTING OVERHEAD ELECTRIC
- UGE UGE UGE UGE EXISTING UNDERGROUND ELECTRIC
- FO FO FO FO EXISTING FIBER OPTIC LINE
- TEL TEL TEL TEL EXISTING TELEPHONE LINE
- CAB CAB CAB CAB EXISTING TELEVISION CABLE LINE
- EXISTING UTILITY EASEMENT
- EXISTING BUILIDNG SETBACK LINE
- EXISTING EASEMENT
- 10 / 12 DETAIL NUMBER / SHEET NUMBER

## UTILITY COMPANY

NOTE: EXISTING UTILITIES WITHIN THE RIGHT-OF-WAY WERE LOCATED BY AN ON-THE-GROUND SURFACE SURVEY PERFORMED BY HALFF ASSOCIATES ON NOVEMBER 27, 2006 AND COMPLETED FEBRUARY 8, 2007. THE SCHULTZ GROUP INC. LOCATED WATER AND WASTEWATER UTILITIES BY AN ON-THE-GROUND SURFACE SURVEY AND IDENTIFIED AND FIELD LOCATED BY NEW BRAUNFELS UTILITIES FROM AUGUST 21, 2007 TO JULY 31, 2008. UTILITIES INFORMATION PROVIDED BY TEXAS STATE OF TRANSPORTATION WERE USED AS REFERENCE IN IDENTIFYING UTILITIES AND ARE SHOWN IN AREAS NOT SURVEYED.

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NBU

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P.O. BOX 310483 NEW BRAUNFELS, TEXAS 78131 (830)606-3913 FAX (830)625-2204

SHEET 45 OF 89

30 0 30 60
SCALE IN FEET

## NOTES

1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED UPON THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD83 (1986), SOUTH-CENTRAL ZONE. ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES. ALL COORDINATES WERE ADJUSTED FROM STATE PLANE GRID TO PROJECT SURFACE USING A SURFACE ADJUSTMENT SCALE FACTOR OF 1.00017, AS INSTRUCTED BY TxDOT.
2. ALL DISTANCES SHOWN ARE IN U.S. SURVEY FEET.
3. STATION AND OFFSETS SHOWN ARE BASED ON THE RIGHT-OF-WAY CENTERLINE.
4. CAUTION ALL UNDERGROUND UTILITY LOCATIONS AND DEPTHS ARE APPROXIMATE. CONTRACTOR SHALL COORDINATE WITH THE UTILITY PROVIDER TO VERIFY EXACT DEPTH AND LOCATION PRIOR TO CONSTRUCTION EXCAVATION. CONTRACTOR SHALL NOTIFY ENGINEER OF POTENTIAL CONFLICTS.

# PLAN OF RECORD
## WATER AND SEWER ADJUSTMENT LAYOUT SHEET

STATE OF TEXAS
MICHAEL G. SHORT
88015
LICENSED PROFESSIONAL ENGINEER

File Name: F:\1060307\tdsk\tdsk_plan01.dwg

PAWELEK & MOY, INC.

CIVIL ENGINEERING & CONSULTING SERVICES
- RESIDENTIAL DEVELOPMENT
- SITE DEVELOPMENT
- PUBLIC WORKS
- UTILITIES



# Edwards Aquifer Protection Plan Extension Request

## Star Canyon Subdivision
(West of FM 2722)
Comal County, Texas

by
PAWELEK & MOY, INC.
Project No. 0709.02

May 31, 2013



130 W. Jahn Street, New Braunfels, Texas 78130 P.O. Box 311870. New Braunfels, Texas 78131-1870
tel: (830) 629-2563 fax: (830) 629-2564

## Edwards Aquifer Protection Plan Extension Request

X Extension Request for a Water Pollution Prevention Plan (*TCEQ-10260)*

X ATTACHMENT A - Approval Letter or Extension Approval

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*)

**Extension Request for an**
**Edwards Aquifer Protection Plan**
Relating to 30 TAC §213.4(g)
Effective June 1, 1999

1. Regulated Entity information. If requested by an agent, attach the agent authorization form.

Regulated Entity Name: Star Canyon Subdivision (West of FM 2722)

| | | |
|---|---|---|
| Customer (Applicant): | LBC Partners, Ltd. | |
| Contact Person: | Stephen L. Sallman | |
| Entity: | LBC Partners, Ltd. | |
| Mailing Address: | 4925 Greenville Avenue, Suite 1020 | |
| City, State: | Dallas, Texas | Zip: 75206 |
| Telephone: | (214) 368-0238 | FAX: (214) 368-0812 |
| Agent: | Pawelek & Moy, Inc. | |
| Contact Person: | John J. Moy, Jr., P.E. | |
| Mailing Address: | 130 W. Jahn St. | |
| City, State: | New Braunfels, Texas | Zip: 78130 |
| Telephone: | (830) 629-2563 | FAX: (830) 629-2564 |

2. X **ATTACHMENT A - Approval Letter or Extension Approval.** Attach a copy of the last approval letter or the last approved extension.
   Date of letter: January 7, 2013
   Expiration date: June 5, 2013

3. X This extension request is submitted not earlier than sixty (60) days prior to the expiration date of an approved Edwards Aquifer protection plan or a previously approved extension.

4. X A completed fee form is attached. The fee for a six-month extension of time is $150.

John J. Moy, Jr.
Print Name of Customer/Agent

Signature of Customer/Agent

5/31/13
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.

ATTACHMENT 'A'



# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

January 7, 2013

Mr. Stephen L. Sallman
LBC Partners, LTD.
4925 Greenville Avenue, Suite 1020
Dallas, Texas 75206

Re: Edwards Aquifer Protection Program, Comal County

NAME OF PROJECT: Star Canyon Subdivision (West of FM 2722); located approximately 3-5 miles north of Highway 46 on the west side of FM 2722; New Braunfels, Texas.

TYPE OF PLAN: Request for Extension of Time to Commence Regulated Activities Authorized by a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Edwards Aquifer Protection Program File No. 2781.06, Investigation No. 1051706
Regulated Entity Number: RN105483382

Dear Mr. Sallman:

On November 30, 2012, the Texas Commission on Environmental Quality (TCEQ) received your request for an extension of time to commence regulated activities related to the above referenced WPAP approval. The request has been reviewed for compliance with 30 TAC §213.4(h) and §213.13 which set forth the procedures for requesting an extension of time to commence regulated activities authorized by the approval and was found to be in general agreement with these procedures. Therefore, the request for an extension to the term of approval for the referenced project is granted. A summary of the dates of approval and expiration are as follows:

| Date of Original Approval: | June 5, 2008 |
|---|---|
| Date of Expiration: | June 5, 2010 |
| Date Extension Request Received | Date of Extension Expiration |
| May 27, 2010 | December 5, 2010 |
| December 2, 2010 | June 5, 2011 |
| June 2, 2011 | December 5, 2011 |

| | |
|---|---|
| December 1, 2010 | June 5, 2012 |
| May 25, 2012 | December 5, 2012 |
| November 30, 2012 | June 5, 2013 |

The request and fee were received in compliance with 30 TAC §213.4(h) and §213.13. As indicated in the rules, an extension may not be granted if the proposed regulated activities or approved plan for the regulated activities have changed. As understood, there will be no changes or modifications to the originally approved plan. This request for extension expires on June 5, 2013. Should construction not commence before the end of the six (6) month period, another request for extension would be required to keep the Edwards aquifer Protection Plan validated.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Alex Grant of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210) 403-4035.

Sincerely,

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

LMB/AG/eg

cc: Mr. John J. Moy, Jr., P.E., Pawelek & Moy, Inc.
Mr. Octavio Garza, P.E., City of New Braunfels
Mr. Tom Hornseth, P.E., Comal County
Mr. Roland Ruiz, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC 212

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

I Stephen L. Sallman,
Print Name

Owner/Manager,
Title - Owner/President/Other

of LBC Partners, Ltd.,
Corporation/Partnership/Entity Name

have authorized John J. Moy, Jr., P.E.
Print Name of Agent/Engineer

of Pawelek & Moy, 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:

Stephen L Sallman, Mgr. 5/30/13

Applicant's Signature Date

THE STATE OF Texas §

County of Dallas §

BEFORE ME, the undersigned authority, on this day personally appeared Stephen L. Sallman 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 30th day of May, 2013.

Tamara Miguez

NOTARY PUBLIC

TAMARA MIGUEZ

Typed or Printed Name of Notary

TAMARA J MIGUEZ
My Commission Expires
July 29, 2014

MY COMMISSION EXPIRES: 7-29-2014

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

NAME OF PROPOSED REGULATED ENTITY: Star Canyon Subdivision (West of FM 2722)
REGULATED ENTITY LOCATION: 3.5 Miles from S.H. 46 on FM 2722
NAME OF CUSTOMER: LBC Partners, Ltd.
CONTACT PERSON: Stephen L. Sallman PHONE: (214) 368-0238
(Please Print)

Customer Reference Number (if issued): CN 603336405 (nine digits)

Regulated Entity Reference Number (if issued): RN 105483382 (nine digits)

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

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

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

☐ **Austin Regional Office**

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

☒ **San Antonio Regional Office**

☐ **Overnight Delivery to TCEQ**:
TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
512/239-1278

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

| Type of Plan | Size | Fee Due |
|---|---|---|
| Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling | Acres | $ |
| Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks | Acres | $ |
| Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential | 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 | 1 Each | $ 150.00 |

Signature _____ Date 5/31/13

**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<br>5 < 10<br>10 < 40<br>40 < 100<br>100 < 500<br>≥ 500 | $1,500<br>$3,000<br>$4,000<br>$6,500<br>$8,000<br>$10,000 |
| Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur) | < 1<br>1 < 5<br>5 < 10<br>10 < 40<br>40 < 100<br>≥ 100 | $3,000<br>$4,000<br>$5,000<br>$6,500<br>$8,000<br>$10,000 |

**Organized Sewage Collection Systems and Modifications**

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

**Underground and Aboveground Storage Tank System Facility Plans and Modifications**

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

**Exception Requests**

| PROJECT | FEE |
|---|---|
| Exception Request | $500 |

**Extension of Time Requests**

| PROJECT | FEE |
|---|---|
| Extension of Time Request | $150 |

**LBC PARTNERS, LTD.**
4925 GREENVILLE AVENUE
DALLAS, TEXAS 75206
(214) 368-0238

**BANK OF TEXAS, N.A.**
DALLAS, TEXAS
32-1432/1110

1169

5/30/2013

PAY TO THE ORDER OF TCEQ $ **150.00

One Hundred Fifty and 00/100********** DOLLARS

TCEQ

MEMO WPAP Extension Fee

AUTHORIZED SIGNATURE

⑈001169⑈ ⑆111014325⑆ ⑈8091637064⑈

1169

| | | | |
|---|---|---|---|
| TCEQ<br>PRE DEV COSTS | TCEQ Extension Fee<br>(Star Canyon) | 5/30/2013 | 150.00 |

LBC-BOTx (MM) WPAP Extension Fee 150.00

TCEQ

# TCEQ Core Data Form

TCEQ Use Only

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

## SECTION I: General Information

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

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

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

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

☒ Yes ☐ No — Extension Request for an Edwards Aquifer Protection Plan (WPAP)

| 3. Customer Reference Number *(if issued)* | Follow this link to search for CN or RN numbers in Central Registry** | 4. Regulated Entity Reference Number *(if issued)* |
|---|---|---|
| CN 603336405 | | RN 105483382 |

## SECTION II: Customer Information

5. Effective Date for Customer Information Updates (mm/dd/yyyy)

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

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

7. General Customer Information

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State) ☒ No Change**

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

| 8. Type of Customer: | ☐ Corporation | ☐ Individual | ☐ Sole Proprietorship- D.B.A |
|---|---|---|---|
| ☐ City Government | ☐ County Government | ☐ Federal Government | ☐ State Government |
| ☐ Other Government | ☐ General Partnership | ☐ Limited Partnership | ☐ Other: |

| 9. Customer Legal Name *(If an individual, print last name first: ex: Doe, John)* | *If new Customer, enter previous Customer below* | *End Date:* |
|---|---|---|
| | | |

10. Mailing Address:

| City | | State | | ZIP | | ZIP + 4 | |
|---|---|---|---|---|---|---|---|

| 11. Country Mailing Information *(if outside USA)* | 12. E-Mail Address *(if applicable)* |
|---|---|
| | |

| 13. Telephone Number | 14. Extension or Code | 15. Fax Number *(if applicable)* |
|---|---|---|
| ( ) - | | ( ) - |

| 16. Federal Tax ID *(9 digits)* | 17. TX State Franchise Tax ID *(11 digits)* | 18. DUNS Number *(if applicable)* | 19. TX SOS Filing Number *(if applicable)* |
|---|---|---|---|
| | | | |

20. Number of Employees

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

21. Independently Owned and Operated?

☐ Yes ☐ No

## SECTION III: Regulated Entity Information

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

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information ☒ No Change** *(See below)*

**If "NO CHANGE" is checked and Section I is complete, skip to Section IV, Preparer Information.

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24. Street Address of the Regulated Entity: *(No P.O. Boxes)* | | | | | | | |
| | City | | State | | ZIP | | ZIP + 4 | |
| 25. Mailing Address: | | | | | | | |
| | City | | State | | ZIP | | ZIP + 4 | |
| 26. E-Mail Address: | | | | | | | |
| 27. Telephone Number | | 28. Extension or Code | | 29. Fax Number *(if applicable)* | | | |
| ( ) - | | | | ( ) - | | | |
| 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) | | | |
| | | | | | | | |
| 34. What is the Primary Business of this entity? *(Please do not repeat the SIC or NAICS description.)* | | | | | | | |
| | | | | | | | |

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

| | | | | | |
|---|---|---|---|---|---|
| 35. Description to Physical Location: | | | | | |
| 36. Nearest City | | County | | State | Nearest ZIP Code |
| | | | | | |
| 37. Latitude (N) In Decimal: | | | 38. Longitude (W) In Decimal: | | |
| Degrees | Minutes | Seconds | Degrees | Minutes | Seconds |
| | | | | | |

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: |
| | | | | |

## SECTION IV: Preparer Information

| 40. Name: | John J. Moy, Jr. | 41. Title: | Project Engineer |
|---|---|---|---|
| 42. Telephone Number | 43. Ext./Code | 44. Fax Number | 45. E-Mail Address |
| (830)629- 2563 | - | (830)629- 2564 | johnmoy711@sbcglobal.net |

## 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: | Pawelek & Moy, Inc. | Job Title: | Project Engineer |
| Name *(In Print)*: | John J. Moy, Jr. | Phone: | (830)629- 2563 |
| Signature: | John J. Moy Jr. | Date: | 5/31/13 |

THE Schultz Group INC.

P.O. BOX 310483 • NEW BRAUNFELS, TX 78131-0483 • Phone: (830) 606-3913 • Fax: (830) 625-2084



May 29, 2013

Mr. Neal Denton
Texas Commission on Environmental Quality
Region 13/ San Antonio
14250 Judson Road
San Antonio, Texas 78233-4480

Re: Edwards Aquifer Protection Program, Comal County
TYPE OF PLAN: SCS Modification
NAME OF PROJECT: Walnut Avenue Sewer Relocation
Response to Technical Review Comments dated May 16, 2013

Dear Mr. Denton,

Thank you for your technical review of the above referenced project. We have revised portions of the application per the Technical Review Comments dated May 16, 2013. The following summary of responses is intended to adequately address your comments. In addition amended portions of the application are included with this response:

General Information Form

1. The entire system is now sufficiently staked and ready for review. Per our phone conversation I understand that you have already inspected the site.

Modification of a Previously Approved Plan

1. The current site plan/plan of record drawings has been included with this submittal. The current site plan had originally been included on the proposed site plan shown as existing.
2. The appropriate selection has been made.

Organized Sewage Collection System (SCS) Application

1. This collection system has been designed to have a minimum structural lifespan of 50 years. The use of PVC pipes for sewage collection is a standard widely used by municipalities. It also meets the requirements of the TCEQ.
2. The calculations have been revised to account for 750 gallons per acre per day served.
3. All slopes are within the minimum/maximum range per TCEQ requirements as shown on the Flow Velocity Table within Appendix A of the SCS Application Form TCEQ-0582. All velocities when flowing full will be no less than 2.0 ft/sec and no more than 10.0 ft/sec.
4. Engineering Design Report has been revised to include safety precautions. To ensure safety all aspects of construction shall be in strict accordance with OSHA Standards.

5. The form has been revised to reflect that I will be certifying the testing after construction is complete and Mr. Taylor or appropriate NBU staff will be responsible for the testing every 5 years thereafter.
6. Item 6 has been revised to state that a WPAP is required. Per our conversation I believe the WPAP for the widening project has already been submitted by others.
7. Item 14 has been revised to only show manholes or cleanouts at the end of lines.
8. Vertical separation has been shown for all proposed sewer/water crossings.
9. Listed below are the project names and program ID#'s Associated with the existing sewer lines:
    a. SH 46 at RM 2722 Improvements ID# 07081310 and 13-07081310A
    b. State Hwy 46 Sewer Line Adjustments ID# 2842.00
10. We did not include that portion of the project because it is outside of the Edwards Aquifer Recharge Zone.
11. Sheet N2 has been revised with the required information.

Temporary Stormwater Section

1. Silt fences and rock berms have been placed where practical downstream of all proposed construction. In some areas the installation and removal of sewer lines is within a roadside channel or street pavement section making it extremely difficult to place silt fence immediately downstream. In these areas rock berm has been placed in a sensible location further downstream.
2. Item #9 has been revised accordingly.

Additional Items Changed

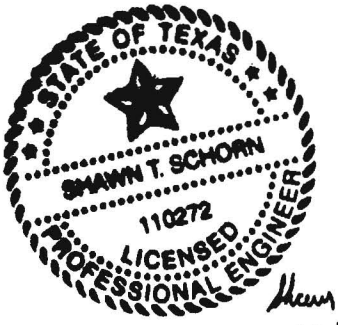
1. Line B was lowered near Kerlick Lane to provide additional separation distance from the proposed 24" waterline crossing. This also resulted in the minimum slope of the proposed 8" sewer to be increased to 0.63%. This change is reflected in the calculations within the engineering design report.

I believe the above represents all changes to the required documents as first submitted. I believe the information is complete and suitable for further review; however, if additional information is required please call me (830) 606-3913.

Sincerely,

Shawn T. Schorn

Shawn T. Schorn, P.E.
Project Engineer
F-532




Shawn T. Schorn
05/30/13

TCEQ

Protecting Texas by Reducing and Preventing Pollution

# FAX TRANSMITTAL

DATE: **May 16, 2013** NUMBER OF PAGES (including this cover sheet) **4**

TO:
NAME **Mr. Ian Taylor, P.E.**
ORGANIZATION **New Braunfels Utilities**
FAX Number **830-629-2119**

TO:
NAME **Mr. Shawn T. Schorn, P.E.**
ORGANIZATION **The Schultz Group, Inc.**
FAX NUMBER **830-625-2204**

FROM: TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
NAME **Neal Denton**
Division/Region **San Antonio Regional Office – Edwards Aquifer Protection Program**
Telephone Number **210-403-4026**
FAX Number **210-545-4329**

Re: Edwards Aquifer, Bexar County

NAME OF PROJECT: Walnut Avenue Sewer Relocation; Located along Walnut Avenue from Kerlick Lane to approximately 200 LF south of Howard Street, New Braunfels, Texas

TYPE OF PLAN: Request for the Approval of an Approved Organized Sewer Collection System (SCS) Plan; 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer and Chapter 217 Design Criteria for Domestic Wastewater Systems

Edwards Aquifer Protection Program (EAPP) San Antonio File No. 3121.00; Regulated Entity No. RN106642846; Investigation No. 1076298; Additional ID No. 13-13032101

Dear Mr. Schorn:

We are in the process of technically reviewing the SCS application you submitted on the above-referenced project. Before we can proceed with our review, the following comments relating to the application must be addressed.

General Information Form (TCEQ-0587) Comment:

1. Item #6 - It is indicated that "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." However, according to a phone call conducted on May 15, 2013, staking has yet to be provided. Please provide sufficient survey staking 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 and notify the Investigator of its completion as soon as possible.

Modification of a Previously Approved Plan Form (TCEQ-0590) Comment:

2. Item #6 – It is indicated that a current site plan of the approved project is provided as Attachment C. However, the current site plan of the approved project is not provided. Please amend to include the current site plan of the approved project is not provided.

3. Item #6 – Please make the appropriate selection.

Organized Sewage Collection System (SCS) Application (TCEQ-0582) Comments:

1. Attachment A – It is stated in 30 TAC 217.53(k)(1) that "an owner must ensure that a collection system is designed to have a minimum structural life of 50 years." Please verify this collection system is designed to have a minimum structural life of 50 years.

2. Attachment A – It is indicated that the infiltration and inflow is 50 gallons per inch of pipe diameter per mile of pipe per day to amount to 39 gallons a day. It is stated in the New Braunfels Utilities Water and Wastewater Design Criteria that "in sizing wastewater lines, external contributions are accounted for by including 750 gallons per acre per day served for inflow and infiltration." Please explain how the infiltration and inflow was determined or revise if necessary. Ensure Item #5 is updated as well if necessary. If no revision is necessary, please show the calculations for determining the infiltration and inflow to be 0.2958 gpm. The calculations performed with these criteria are yielding a different value.

3. Attachment A – It is stated in 30 TAC 217.10(e)(5) that "the report for a wastewater collection system must include...calculations of expected minimum and maximum velocities in the system for each size and type of pipe." Please include calculations of expected minimum and maximum velocities in the system for each size and type of pipe. It is understood that the minimum velocity is provided. Please provide the calculations for the determination as well as the maximum velocities.

4. Attachment A – It is stated in 30 TAC 217.10(e)(13) that "the report for a wastewater collection system must include...the safety considerations incorporated into a project design, including ventilation, entrances, working areas, and explosion prevention." Please amend to include the safety

considerations incorporated into a project design, including ventilation, entrances, working areas, and explosion prevention.

5. Item #1 – It is indicated that Mr. Taylor is responsible for providing the required engineering certification of testing for this sewer collection system upon completion and every five years thereafter. Typically, the project engineer provides the certification of testing upon completion. Is it accurate that Mr. Taylor will provide the engineering certification of testing for this sewer collection system upon completion? Please be advised that if a revision is necessary, it is permissible to edit the application to separate the contact person responsible for the certification upon completion and the contact person responsible for the certification every five years thereafter.

6. Item #6 – As indicated, a Water Pollution Abatement Plan (WPAP) is required for construction of any associated commercial, industrial or residential project located on the Recharge Zone. It is indicated that there is no associated project requiring a WPAP application. However, this SCS relocated is associated with the construction on Walnut Avenue, which requires a WPAP. Please revise the selection. The Investigator can be reached at the phone number on page 1 if assistance is required with determining the correct selection. A WPAP application for "North Walnut Avenue" was submitted on May 3, 2013, but the Investigator assigned to the review works in the Austin Regional Office and is out of the office at this time, so it currently cannot be determined if that is the associated WPAP.

7. Item #14 – This section is indicated to provide a list of the manholes or clean-outs which exist at the end of each sewer line. It appears a list of every manhole was provided. Please revise to show only the manholes or clean-outs which exist at the end of each sewer line.

8. Item #24 – Please revise to show the actual vertical separation distances of water line crossings.

9. Please provide the local jurisdiction job number, project name, and EAPP project number (if applicable) for the existing sewer line flowing into the system and the sewer line to which the system will be connected to into.

10. Sheet L8 – Line D continues south from this sheet, and since the first manhole shown is D-5, it appears the line begins to the south of what is shown. Please explain or provide the missing sheet.

11. Sheet N2 – Items #1, #3, #6, and #12 are missing the required information. Please revise to include the required information.

Temporary Stormwater Section (TCEQ-0602) Comments:

12. Item #7 – It is indicated that stormwater that originates on site will be filtered by silt fences and/or rock berms on the downgradient side of the property. However, it appears silt fence and/or rock berms are not placed in all areas downgradient of disturbed soils. Please explain or revise to show silt fences and/or rock berms are placed at all areas downgradient of disturbed soils.

13. Item #9 – As stated in 30 TAC 213.5(b)(4)(D)(i)(II), "the technical report must include a description of structural practices to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable." Therefore, stating that Attachment F is not applicable is not acceptable. However, Attachment F is provided. Please revise the selection.

We ask that you submit one original and four copies of the amended materials to supplement the SCS application to this office by no later than **14 days from the date of this fax. We only need the individual pages/drawings that were changed, not complete, new application packages.** If the response to this notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, a second notice will be sent to you requiring a response within 14 days from the notice date. If the response to the second is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application will be denied unless you provide written notification that the application is being withdrawn. Please note that the application fee will be forfeited if the plan is not withdrawn. If you have any questions or require additional information, please contact Neal Denton of the Edwards Aquifer Protection Program of the San Antonio Regional Office at the number listed above. **[END]**

## Modification of a Previously Approved Plan

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

1. Current Regulated Entity Name: State Highway 46 Sewer Line Adjustment
   Original Regulated Entity Name: State Highway 46 Sewer Line Adjustment
   Assigned Regulated Entity Numbers (RN): 1) 105640296, 2) _____, 3) _____

   X The applicant has not changed and the Customer Number (CN) is: 600522957
   ___ The applicant has changed. A new Core Data Form has been provided.

2. X **Attachment A: Original Approval Letter and Approved Modification Letters:** A copy of the original approval letter and copies any letters approving modification are found at the end of this form.

3. A modification of a previously approved plan in requested for (check all that apply):

   ___ physical or operational modification of any water pollution abatement structure(s) including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;
   ___ change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;
   ___ development of land previously identified as undeveloped in the original water pollution abatement plan;
   X physical modification of the approved organized sewage collection system;
   ___ physical modification of the approved underground storage tank system;
   ___ physical modification of the approved aboveground storage tank system.

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

| WPAP Modification Summary | Approved Project | Proposed Modification |
|---|---|---|
| Acres | | |
| Type of Development | | |
| Number of Residential Lots | | |
| Impervious Cover (acres) | | |
| Impervious Cover (%) | | |
| Permanent BMPs | | |
| Other | | |

| SCS Modification Summary | Approved Project | Proposed Modification |
|---|---|---|
| Linear Feet | 3,502 | 5,118 LF Proposed, 8,620 LF Total |
| Pipe Diameter | 6", 8" and 12" | 8" and 12" |
| Other | | |

| AST Modification Summary | Approved Project | Proposed Modification |
|---|---|---|
| Number of ASTs | | |
| Volume of ASTs | | |
| Other | | |

| UST Modification Summary | Approved Project | Proposed Modification |
|---|---|---|
| Number of USTs | | |
| Volume of USTs | | |
| Other | | |

5. _X_ **Attachment B: Narrative of Proposed Modification.** A narrative description of the nature of the proposed modification is provided at the end of this form. It discusses what was approved, including previous modifications, and how this proposed modification will change the approved plan.

6. _X_ **Attachment C: Current site plan of the approved project.** A current site plan showing the existing site development (i.e., current site layout) at the time this application for modification is provided at the end of this form. A site plan detailing the changes proposed in the submitted modification is required elsewhere.

___ The approved construction has not commenced. The original approval letter, and any subsequent modification approval letters are included as Attachment A to document that the approval has not expired.

_X_ The approved construction has commenced and has been completed. Attachment C illustrates that the site was constructed as approved.

___ The approved construction has commenced and has been completed. Attachment C illustrates that the site was **not** constructed as approved.

___ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was constructed as approved.

___ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was **not** constructed as approved.

7. ___ The acreage of the approved plan has increased. A Geologic Assessment has been provided for the new acreage.

_X_ Acreage has not been added to **or** removed from the approved plan.

8. _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.

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

Shawn T. Schorn, P.E.
Print Name of Customer/Agent

Shawn T. Schorn
Signature of Customer/Agent

05/29/13
Date

**Organized Sewage Collection System (SCS) Application**
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(c), Effective June 1, 1999

REGULATED ENTITY NAME: State Highway 46 Sewer Line Adjustment

X **ATTACHMENT A – SCS Engineering Design Report.** This Engineering Design Report is provided to fulfill the requirements of 30 TAC Chapter 217, including 217.10 of Subchapter A, §§217.51 – 217.70 of Subchapter C, and Subchapter D as applicable, and is required to be submitted with this SCS Application Form.

**CUSTOMER INFORMATION** (if different than customer information provided on core data form)

1. The entity and contact person responsible for providing the required engineering **certification** of testing for this sewage collection system upon completion (including private service connections) and every five years thereafter to the appropriate TCEQ region office pursuant to 30 TAC §213.5(c) is:

**After Construction**

| | | | |
|---|---|---|---|
| Contact Person: | Shawn T. Schorn, P.E. | | |
| Entity: | The Schultz Group, Inc. | | |
| Mailing Address: | 2461 Loop 337 | | |
| City, State: | New Braunfels, Texas | Zip: | 78130 |
| Telephone: | 830-606-3913 | FAX: | 830-625-2204 |

**Every 5 Years Thereafter**

| | | | |
|---|---|---|---|
| Contact Person: | Ian Taylor, P.E. | | |
| Entity: | New Braunfels Utilities | | |
| Mailing Address: | 263 E. Main Plaza | | |
| City, State: | New Braunfels, Texas | Zip: | 78130 |
| Telephone: | 830-629-8400 | FAX: | 830-629-2119 |

The appropriate regional office must be informed of any changes in this information within 30 days of the change.

2. The engineer responsible for the **design** of this sewage collection system is:

| | | | |
|---|---|---|---|
| Contact Person: | Shawn T. Schorn, P.E. | | |
| Texas Licensed Professional Engineer's Number: | 110272 | | |
| Entity: | The Schultz Group, Inc. | | |
| Mailing Address: | 2461 Loop 337 | | |
| City, State: | New Braunfels, Texas | Zip: | 78130 |
| Telephone: | 830-606-3913 | FAX: | 830-625-2204 |

**PROJECT DESCRIPTION**

3. Anticipated type of development to be served (estimated future population to be served, plus adequate allowance for institutional and commercial flows):

X Residential: # of single-family lots: 384
X Multi-family residential units: 8
X Commercial
__ Industrial

__ Off-site system (not associated with any development)
__ Other: _____

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

| | |
|---|---|
| 100 % Domestic | 691,805 gallons/day |
| _____ % Industrial | _____ gallons/day |
| _____ % Commingled | _____ gallons/day |
| _____ Total | _____ gallons/day |

5. Existing and anticipated infiltration/inflow is 39 gallons/day. This will be addressed by Water tight manholes, rubber gaskets, PVC compresion joints, or high compression Polyurethane connectors per TCEQ/NBU Specifications.

6. A Water Pollution Abatement Plan (WPAP) is required for construction of any associated commercial, industrial or residential project located on the Recharge Zone.

__ The WPAP application for this development was approved by letter dated_____. A copy of the approval letter is attached at the end of this application.
__ The WPAP application for this development was submitted to the TCEQ on _____, but has not been approved.
X A WPAP application is required for an associated project, but it has not been submitted.
__ There is no associated project requiring a WPAP application.

7. Pipe description:

| Pipe Diameter (Inches) | Linear Feet[1] | Pipe Material[2] | Specifications[3] |
|---|---|---|---|
| 8 | 3,617 | PVC SDR 26 | ASTM 2241, ASTM D 3212, ASTM F477 |
| 8 | 493 | PVC SDR 26 | ASTM D 3034, ASTM D3212, ASTM F477 |
| 12 | 1,008 | PVC SDR 26 | ASTM 2241, ASTM D 3212, ASTM F477 |
| | | | |
| Total Linear Feet | 5,118 | | |

1) Include stub-outs. Do not include private service laterals.
2) If PVC, state SDR value.
3) ASTM / ANSI / AWWA specification and class numbers should be included.

8. The following Wastewater Treatment Plant (WWTP)Kuehler Ave. Sewage Treatment Plant will receive project wastewater for treatment and disposal. This WWTP is an **EXISTING/PROPOSED** (circle one) facility.

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

X The City of New Braunfels Utilities (NBU) standard specifications.
__ Other. Specifications are provided directly behind this page.

10. X No force main(s) and/or lift station(s) are associated with this sewage collection system.
__ A force main(s) and/or lift station(s) is associated with this sewage collection system and the Lift Station/Force Main System application is included with this application.

**ALIGNMENT**

11. X There are no deviations from uniform grade in this sewage collection system without manholes and with open cut construction.

12. X Joint Deflection - The maximum allowable joint deflection is the lesser of the following three alternatives:
   __ equal to 5°; or
   X 80% of the manufacturer's recommended maximum deflection; or
   __ 80% of the appropriate ASTM, AWWA, ANSI or nationally-established standard for joint deflection.

13. X There are no deviations from straight alignment in this sewage collection system without manholes.
   __ **ATTACHMENT B - Justification and Calculations for Deviation in Straight Alignment Without Manholes.** Justification for deviations from straight alignment in this sewage collection system without manholes is provided in **ATTACHMENT B** at the end of this form.
   __ For curved sewer lines, all curved sewer line notes (TCEQ-0596) are included on the construction plans for the wastewater collection system.

**MANHOLES AND CLEANOUTS**

14. Manholes or clean-outs exist at the end of each sewer line(s). These locations are listed below:

| Line | Shown on Sheet | Station | Manhole or Clean-out? |
|---|---|---|---|
| A | S2 | 2206+91.61 | Manhole |
| C | S7 | 2197+53.32 | Manhole |
| E | S13 | 2220+84.69 | Manhole |
| | | | |
| | | | |
| | | | |

X Manholes are installed at all Points of Curvature and Points of Termination of a sewer line.

16. X The maximum spacing between manholes on this project for each pipe diameter is no greater than:

| Pipe Diameter (inches) | Max. Manhole Spacing (feet) |
|---|---|
| 6 - 15 | 500 |
| 16 - 30 | 800 |
| 36 - 48 | 1000 |
| ≥54 | 2000 |

N/A **ATTACHMENT C – Justification for Variance from Maximum Manhole Spacing**. The maximum spacing between manholes on this project (for each pipe diameter used) is greater than listed in the table above. Justification for any variance from the maximum spacing provided as **ATTACHMENT C** at the end of the form must include a letter from the entity which will operate and maintain the system stating that it has the capability to maintain lines with manhole spacing greater than the allowed spacing.

17. ___ All manholes will be monolithic, cast-in-place concrete.
X The owner/developer of this project is requesting the use of pre-cast manholes. The manufacturer's specifications and construction drawing, showing the method of sealing the joints, are attached.

**SITE PLAN**

**Items 18 through 23 must be included on the Site Plan.**

18. The Site Plan must have a minimum scale of 1" = 400'.
Site Plan Scale: 1" = 30'.

19. The Site Plan must include the sewage collection system general layout, including manholes with station numbers, and sewer pipe stubouts (if any). Site plan must be overlain by topographic contour lines, using a contour interval of not greater than ten feet and showing the area within both the five-year floodplain and the 100-year floodplain of any drainage way.

20. Lateral stub-outs:

X The location of all lateral stub-outs are shown and labeled.
___ No lateral stub-outs will be installed during the construction of this sewer collection system.

21. Location of existing and proposed water lines:

X The entire water distribution system for this project is shown and labeled.
___ If not shown on the Site Plan, a Utility Plan is provided showing the entire water and sewer systems.
___ There will be no water lines associated with this project.

22. 100-year floodplain:

X After construction is complete, no part of this project will be in or cross a 100-year floodplain, either naturally occurring or manmade. (Do not include streets or concrete-lined channels constructed above of sewer lines.)
___ After construction is complete, all sections located within the 100-year floodplain will have water-tight manholes. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

| Line | Sheet | Station | | Station |
|---|---|---|---|---|
| | of | | to | |
| | of | | to | |
| | of | | to | |
| | of | | to | |

23. 5-year floodplain:

X After construction is complete, no part of this project will be in or cross a 5-year floodplain, either naturally occurring or man-made. (Do not include streets or concrete-lined channels constructed above sewer lines.)
___ After construction is complete, all sections located within the 5-year floodplain will be

encased in concrete or capped with concrete. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

| Line | Sheet | Station | | Station |
|---|---|---|---|---|
| | of | | to | |
| | of | | to | |
| | of | | to | |
| | of | | to | |

**Items 24 through 31 must be included on the Plan and Profile sheets.**

24. X All existing or proposed water line crossings and any parallel water lines within 9 feet of sewer lines are listed in the table below. These lines must have the type of pressure rated pipe to be installed shown on the plan and profile sheets. Any request for a variance from the required pressure rated piping at crossings must include a variance approval from 30 TAC Chapter 290.

___ There will be no water line crossings.

___ There will be no water lines within 9 feet of proposed sewer lines.

| Line | Station or Closest Point | Crossing or Parallel | Horizontal Separation Distance | Vertical Separation Distance |
|---|---|---|---|---|
| A | 17+77.67 | Crossing | 0 | Depth Unknown/To be Removed |
| A | 17+96.16 | Crossing | 0 | Depth Unknown/To be Removed |
| A | 17+96.54 | Crossing | 0 | 2.01' |
| B | 14+84.16 | Crossing | 0 | Depth Unknown/To be Removed |
| B | 14+89.71 | Crossing | 0 | 3.20' |
| B | 15+56.08 | Crossing | 0 | Depth Unknown/To be Removed |
| B | 15+95.40 | Crossing | 0 | 8.83' |
| B | 16+77.93 | Crossing | 0 | Depth Unknown/To be Removed |
| B | 16+86.87 | Crossing | 0 | 7.36' |
| B | 18+25.85 | Crossing | 0 | 8.43' |
| B | 18+29.08 | Crossing | 0 | 8.37' |
| B | 19+66.24 | Crossing | 0 | 5.09' |

| | | | | |
|---|---|---|---|---|
| B | 20+21.70 | Crossing | 0 | 4.98' |
| B | 22+44.84 | Crossing | 0 | 5.61' |
| B | 23+24.75 | Crossing | 0 | 5.51' |
| B | 24+62.78 | Crossing | 0 | 4.12' |
| B | 26+00.30 | Crossing | 0 | 5.34' |
| B | 28+87.75 | Crossing | 0 | Depth Unknown/To be Removed |
| B | 30+67.89 | Crossing | 0 | 1.44' |
| C | 10+05.21 | Crossing | 0 | Depth Unknown/To be Removed |
| C | 10+13.92 | Crossing | 0 | Depth Unknown/To be Removed |
| C | 10+65.34 | Crossing | 0 | 2.06' |
| C | 10+72.17 | Crossing | 0 | Depth Unknown/To be Removed |
| C | 10+74.27 | Crossing | 0 | Depth Unknown/To be Removed |
| D | 10+27.61 | Crossing | 0 | Depth Unknown/To be Removed |
| D | 10+87.53 | Crossing | 0 | Depth Unknown/To be Removed |
| D | 12+31.98 | Crossing | 0 | Depth Unknown/To be Removed |
| D | 12+73.96 | Crossing | 0 | 2.34' |
| D | 13+14.96 | Crossing | 0 | Depth Unknown/To be Removed |
| D | 13+20.08 | Crossing | 0 | 0.47' |
| D | 15+18.06 | Crossing | 0 | 5.41' |
| D | 17+25.96 | Crossing | 0 | 9.55' |
| D | 18+16.25 | Crossing | 0 | Depth Unknown/To be Removed |
| D | 18+42.97 | Crossing | 0 | 10.38' |
| D | 19+07.87 | Crossing | 0 | 9.51' |

| | | | | |
|---|---|---|---|---|
| D | 19+10.87 | Crossing | 0 | 9.55' |
| D | 24+38.38 | Crossing | 0 | 4.73' |
| D | 25+08.64 | Crossing | 0 | 3.66' |
| D | 27+69.86 | Crossing | 0 | 1.64' |
| D | 32+51.48 | Crossing | 0 | Depth Unknown/To be Removed |
| D | 32+55.22 | Crossing | 0 | 2.77' |
| D | 32+64.36 | Crossing | 0 | Depth Unknown/To be Removed |
| E | 10+03.33 | Crossing | 0 | Depth Unknown/To be Removed |
| E | 10+63.81 | Crossing | 0 | 1.85' |
| E | 16+49.48 | Crossing | 0 | Depth Unknown/To be Removed |
| F | 10+05.47 | Crossing | 0 | Depth Unknown/To be Removed |
| F | 10+65.34 | Crossing | 0 | 4.58' |
| F | 10+77.79 | Crossing | 0 | Depth Unknown/To be Removed |
| G | 10+56.38 | Crossing | 0 | Depth Unknown/To be Removed |

25. Vented Manholes:

X **No part** of this sewer line is within the 100-year floodplain and vented manholes are not required by 30 TAC Chapter 217.

__ **A portion** of this sewer line is within the 100-year floodplain and vented manholes will be provided at less than 1500 foot intervals. These water-tight manholes are listed in the table below and labeled on the appropriate profile sheets.

__ **A portion** of this sewer line is within the 100-year floodplain and an alternative means of venting shall be provided at less than 1500 feet intervals. A description of the alternative means is described on the following page.

__ **A portion** of this sewer line is within the 100-year floodplain; however, there is no interval longer than 1500 feet located in the 100-year floodplain. No vented manholes will be used.

| Line | Manhole | Station | Sheet |
|---|---|---|---|
| | | | of |
| | | | of |

| | | | |
|---|---|---|---|
| | | | of |
| | | | of |
| | | | of |
| | | | of |

26. Drop manholes:

___ There are no drop manholes associated with this project.
X Sewer lines which enter new or existing manholes or "manhole structures" higher than 24 inches above the manhole invert are listed in the table below and labeled on the appropriate profile sheets. These lines meet the requirements of 30 TAC §217.55(l)(2)(H).

| Line | Manhole | Station | Sheet |
|---|---|---|---|
| A | A-5 | 2207+69.97 | S2 |
| A | A-6 | 2207+68.06 | S2 |
| A | A-7 | 2207+66.24 | S2 |
| A | A-8 | 2207+64.05 | S2 |
| A | A-9 | 2207+56.37 | S2 |
| B | B-1 | 2206+56.06 | S-3 |
| B | B-2 | 2205+88.64 | S3 |

27. Sewer line stub-outs (For proposed extensions):

___ The placement and markings of all sewer line stub-outs are shown and labeled.
X No sewer line stub-outs are to be installed during the construction of this sewage collection system.

28. Lateral stub-outs (For proposed private service connections):

X The placement and markings of all lateral stub-outs are shown and labeled.
___ No lateral stub-outs are to be installed during the construction of this sewage collection system.

29. Minimum flow velocity (From APPENDIX A)

X Assuming pipes are flowing full, all slopes are designed to produce flows equal to or greater than 2.0 feet per second for this system/line.

30. Maximum flow velocity/slopes (From APPENDIX A)

X Assuming pipes are flowing full, all slopes are designed to produce maximum flows of less than or equal to 10 feet per second for this system/line.

N/A **ATTACHMENT D – Calculations for Slopes for Flows Greater Than 10.0 Feet Per**

**Second.** Assuming pipes are flowing full, some slopes produce flows which are greater than 10 feet per second. These locations are listed in the table below. Calculations are provided in **ATTACHMENT D** at the end of this form.

| Line | Profile Sheet | Station | | Station | FPS | % Slope | Erosion/Shock Protection |
|---|---|---|---|---|---|---|---|
| | of | | to | | | | |
| | of | | to | | | | |
| | of | | to | | | | |
| | of | | to | | | | |

31. Assuming pipes are flowing full, where flows are ≥ 10 feet per second, the provisions noted below have been made to protect against pipe displacement by erosion and/or shock under 30 TAC §217.53(l)(2)(B). **Not Applicable**

___ Concrete encasement shown on appropriate Plan and Profile sheets for the locations listed in the table above.

___ Steel-reinforced, anchored concrete baffles/retards placed every 50 feet shown on appropriate Plan and Profile sheets for the locations listed in the table above.

**ADMINISTRATIVE INFORMATION**

32. X The **final plans and technical specifications** are submitted for TCEQ review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas Licensed Professional Engineer responsible for the design on each sheet.

33. Standard details are shown on the detail sheets, which are dated, signed, and sealed by the Texas Licensed Professional Engineer, as listed in the table below:

| Standard Details | Shown on Sheet |
|---|---|
| Lateral stub-out marking [**REQUIRED**] | D1-D4 |
| Manhole, showing inverts comply with 30 TAC §217.55(l)(2) [**REQUIRED**] | D1-D4 |
| Alternate method of joining lateral to existing SCS line for potential future connections [**REQUIRED**] | D1-D4 |
| Typical trench cross-sections [**REQUIRED**] | D1-D4 |
| Bolted manholes [**REQUIRED**] | D1-D4 |
| Sewer Service lateral standard details [**REQUIRED**] | D1-D4 |
| Clean-out at end of line [**REQUIRED, if used**] | D1-D4 |
| Baffles or concrete encasement for shock/erosion protection [**REQUIRED, if flow velocity of any section of pipe >10 fps**] | D1-D4 |
| Detail showing Wastewater Line/Water Line Crossing [**REQUIRED, if crossings are proposed**] | D1-D4 |

| | |
|---|---|
| Mandrel detail or specifications showing compliance with 30 TAC §217.57(b) and (c) [**REQUIRED, if Flexible Pipe is used**] | D1-D4 |
| Drop manholes [**REQUIRED, if a pipe entering a manhole is more than 24 inches above manhole invert**] | D1-D4 |

34. X All organized sewage collection system general construction notes (TCEQ-0596) are included on the construction plans for this sewage collection system.

35. X All proposed sewer lines will be sufficiently surveyed/staked to allow an assessment prior to TCEQ executive director approval. If the alignments of the proposed sewer lines are not walkable on that date, the application will be deemed incomplete and returned.

36. 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.

37. X Any modification of this SCS application will require TCEQ 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 **ORGANIZED SEWAGE COLLECTION SYSTEM APPLICATION** is hereby submitted for TCEQ review and executive director approval. The system was designed in accordance with the requirements of 30 TAC §213.5(c) and 30 TAC §217 and prepared by:

Place engineer's seal here:

Shawn T. Schorn, P.E.
Print Name of Licensed Professional Engineer

Shawn T. Schorn
Signature of Licensed Professional Engineer

05/29/13
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.

## APPENDIX A
Flow Velocity Table

Flow Velocity (Flowing Full)

All gravity sewer lines on the Edwards Aquifer Recharge Zone shall be designed and constructed with hydraulic slopes sufficient to give a velocity when **flowing full** of not less than 2.0 feet per second, and not greater than 10 feet per second. The grades shown in the following table are based on Manning's formula and an n factor of 0.013 and shall be the minimum and maximum acceptable slopes unless provisions are made otherwise.

| Pipe Diameter (Inches) | % Slope required for minimum flow velocity of 2.0 fps | % Slope which produces flow velocity of 10.0 fps |
|---|---|---|
| 6 | 0.50 | 12.35 |
| 8 | 0.33 | 8.40 |
| 10 | 0.25 | 6.23 |
| 12 | 0.20 | 4.88 |
| 15 | 0.15 | 3.62 |
| 18 | 0.11 | 2.83 |
| 21 | 0.09 | 2.30 |
| 24 | 0.08 | 1.93 |
| 27 | 0.06 | 1.65 |
| 30 | 0.055 | 1.43 |
| 33 | 0.05 | 1.26 |
| 36 | 0.045 | 1.12 |
| 39 | 0.04 | 1.01 |
| >39 | * | * |

*For lines larger than 39 inches in diameter, the slope may be determined by Manning's formula (as shown below) to maintain a minimum velocity greater than 2.0 feet per second when flowing full and a maximum velocity less than 10 feet per second when flowing full.

$$v = \frac{1.49}{n} \times R_h^{0.67} \times \sqrt{S}$$

*Where:*

$v$ = *velocity (ft/sec)*

$n$ = *Manning's roughness coefficient (0.013)*

$R_h$ = *hydraulic radius (ft)*

$S$ = *slope (ft/ft)*

**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.

# Walnut Avenue Sewer Relocation Engineering Design Report

| | | | |
|---|---|---|---|
| **Project:** | **Walnut Avenue Sewer Relocation** | **Calculated by:** | **Shawn Schorn** |
| **Job #:** | **90110** | | |
| **Date:** | **May 28, 2013** | **Checked by:** | **Michael G. Short** |

**Project Description**

It is proposed that the existing sewage collection system be relocated beginning at the intersection of Kerlick Lane and Walnut Avenue and ending approximately 200' south of the intersection of Howard Street and Walnut Avenue, within New Braunfels Texas. The sewage collection system adjustment is a requirement of the Texas Department of Transportation (TxDOT). Currently TxDOT is proposing to expand Walnut Ave. within the project limits. TxDOT is requiring existing sanitary sewer mains be located outside their proposed improvements. The sewage collection system adjustment for this project will consist of the removal of approximately 3,313 LF of 6" existing sewer main, 2,165 LF of 8" existing sewer main, and 32 manholes along the entire length of the project and the installation of approximately 4,110 LF of 8" sewer main, 1,008 LF of 12" sewer main, 45 manholes, and 30 sewer services/cleanouts.

The proposed rehabilitation has been design to handle existing wastewater flow. The proposed system has also been designed to handle new wastewater flows for new development within the existing commercial lots along Walnut Avenue. No new flows or developments are proposed with this relocation, therefore the receiving Kuehler Avenue Sewage Treatment Plant shall not have a increase in wastewater inflow as a result of this rehabilitation. If new flows were to be introduced at a later date, then a demand analysis should be done.

**Capacity Calculations**

| Address | Description | Land Use | Units | LUE Ratio/Unit | LUE'S | WW Avg Dry Weather Flow (gpm) | Peaking Factor | WW Peak Dry Weather Flow (gpm) | Infiltration (gpm) | WW Peak Wet Weather Flow | WW Minimum Flow (gpm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Varies | Single Family Residential Lots | Residence | 389 | 1.00 | 389.00 | 81.04 | 3.76 | 304.37 | | 304.37 | 16.71 |
| 955 Walnut Ave. | Old Albertsons | Building SQFT | 60,300 | 1 LUE/1660 SQFT | 37.00 | 7.71 | 4.23 | 32.61 | | 32.61 | 1.00 |
| 508 Landa St. | McBees BBQ | Fast Food | 1 | 3.00 | 3.00 | 0.63 | 4.42 | 2.76 | | 2.76 | 0.05 |
| 943 Walnut Ave. | Retail Shopping In Old Albertsons Parking Lot | Retail Shopping Center | 4,200 | 1 LUE/1660 SQFT | 3.00 | 0.63 | 4.42 | 2.76 | | 2.76 | 0.05 |
| 486 Landa St. | Exxon Across from McBees | Convenience Store/Gas Station | 1 | 5.00 | 5.00 | 1.04 | 4.40 | 4.58 | | 4.58 | 0.09 |
| 930 Walnut Ave. | The Plant House Nursery | Plant Nursery | 1 | 5.00 | 5.00 | 1.04 | 4.40 | 4.58 | | 4.58 | 0.09 |
| 971 Walnut Ave. | Firestone Tire and Service Center | Tire Service Center | 1 | 3.00 | 3.00 | 0.63 | 4.42 | 2.76 | | 2.76 | 0.05 |
| 974 Walnut Ave. | Shell Station | Convenience Store/Gas Station with Carwash | 1 | 10.00 | 10.00 | 2.08 | 4.35 | 9.07 | | 9.07 | 0.21 |
| 1001 Walnut Ave | Self Carwash | Carwash | 1 | 15.00 | 15.00 | 3.13 | 4.32 | 13.51 | | 13.51 | 0.34 |
| 1099 Walnut Ave. | Office Medical | Retail Shopping Center | 3,890 | 1 LUE/1660 SQFT | 3.00 | 0.63 | 4.42 | 2.76 | | 2.76 | 0.05 |
| 1101 Walnut Ave. | Hannahs Kitchen and Office Building | Building SQFT | 25,178 | 1 LUE/1660 SQFT | 16.00 | 3.33 | 4.32 | 14.39 | 157.47 | 14.39 | 0.37 |
| 1111 Walnut Ave. | ERA Realty Office | Building SQFT | 25,657 | 1 LUE/1660 SQFT | 16.00 | 3.33 | 4.32 | 14.39 | | 14.39 | 0.37 |
| 1023 Walnut Ave. | Empty Commercial Lot | Future Commercial | 1 | 10.00 | 10.00 | 2.08 | 4.35 | 9.07 | | 9.07 | 0.21 |
| 1041 Walnut Ave. | Empty Commercial Lot | Future Commercial | 1 | 10.00 | 10.00 | 2.08 | 4.35 | 9.07 | | 9.07 | 0.21 |
| 1105 Walnut Ave. | Empty Commercial Lot | Future Commercial | 1 | 10.00 | 10.00 | 2.08 | 4.35 | 9.07 | | 9.07 | 0.21 |
| 1112 Walnut Ave. | Office Building | Building SQFT | 9,758 | 1 LUE/1660 SQFT | 6.00 | 1.25 | 4.39 | 5.48 | | 5.48 | 0.11 |
| 1421 Walnut Ave. | Empty Commercial Lot | Future Commercial | 1 | 10.00 | 10.00 | 2.08 | 4.35 | 9.07 | | 9.07 | 0.21 |
| 1421 Walnut Ave. | Empty Commercial Lot | Future Commercial | 1 | 10.00 | 10.00 | 2.08 | 4.35 | 9.07 | | 9.07 | 0.21 |
| 1423 Walnut Ave. | Office Medical | Building SQFT | 6,960 | 1 LUE/1660 SQFT | 5.00 | 1.04 | 4.40 | 4.58 | | 4.58 | 0.09 |
| No Address Available Across from Deer Trot | Empty Commercial Lot | Future Commercial | 1 | 10.00 | 10.00 | 2.08 | 4.35 | 9.07 | | 9.07 | 0.21 |
| 1435 Walnut Ave. | Office Building/Hair | Building SQFT | 1,557 | 1 LUE/1660 SQFT | 1.00 | 0.21 | 4.45 | 0.93 | | 0.93 | 0.01 |
| 1445 Walnut Ave. | Apartments | Apartments | 8 | 0.5 LUE/Unit | 4.00 | 0.83 | 4.41 | 3.67 | | 3.67 | 0.07 |
| 1515 Walnut Ave. | Convenience Store | Convenience Store | 1 | 5.00 | 3.00 | 0.63 | 4.42 | 2.76 | | 2.76 | 0.05 |
| | | | | | | | | | | 0.00 | 0.00 |
| **Total** | | | | **Total** | **584.00** | **121.67** | *** | **480.42** | **157.47** | **637.89** | **20.95** |

1 LUE Provides Approximately 300 gpd or 0.146 gpm was assumed for this design.
Infiltration = 750 gpd per acre served by the system. This section has a service area of 302.34 acres giving 157.47 gpm of infiltration.

| Service Area Designation | Pipe Diameter (in) | WW Peak Wet Weather Flow (gpm) | Design Flow (gpm) |
|---|---|---|---|
| Manhole D-7 (DR 26)(PR-160 Pipe) | 12 | 637.89 | 637.89 |

Determination of Pipe Capacity with full flow (Manning's Equation)

| Service Area Designation | Pipe Diameter (in) | Inside Pipe Diameter (in) | Minimum Calculated Slope (ft/ft) | Manning's n value (PVC) | Velocity at .25% (ft/sec) | Full Pipe Capacity at .25% (gpm) | 85% Pipe Capacity (gpm) | WW Peak Wet Weather Flow (gpm) | Remarks | 65% Pipe Capacity (gpm) | WW Peak Dry Weather Flow (gpm) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Manhole D-7 (DR 26)(PR-160 Pipe) | 12 | 11.77 | 0.0025 | 0.013 | 2.24 | 759.28 | 645.39 | 637.89 | OK | 493.53 | 480.42 | OK |

Deflection and Buckling Pressure Calculations

Determination of Predicted Pipe Deflection and Buckling Pressure

| Service Area Designation | Pipe Structural Wall Thickness (in) | Outside Pipe Diameter (in) | Mean Pipe Diameter (in) | Moment of Inertia I=t^3/12 (in^4/L*in) | Prism Load (Eq. 6.7 Uni-Bell 1991) (psi) | Live Load at 2"(Table 6.6 Uni-Bell 1991) (psi) | Pipe Load (psi) | Pipe Stiffness (Eq. 7.1 Uni-Bell 1991) | Ring Stiffness Constant (Eq. B.1 TCEQ 2011) | Pipe Trench Width Coefficient (Eq. 7.37 Uni-Bell 1991) | Leonhardt's Zeta Factor (Eq. 7.37 Uni-Bell 1991) | Adjusted Modulus of Soil Reaction (Eq. 7.36 Uni-Bell 1991) (psi) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Manhole D-7 (DR 26)(PR-160 Pipe) | 0.49 | 12.750 | 12.26 | 0.009804083 | 31.25 | 5.56 | 36.81 | 101.59 | 186.74 | 1.14 | 1.00 | 1000.00 |

Determination of Predicted Pipe Deflection and Buckling Pressure (Continued)

| Service Area Designation | Bedding Angle Constant (Table 7.2 Uni-Bell 1991) | (%) Pipe Deflection (Eq. 7.12 Uni-Bell 1991, Simplified to include deflection lag factor = 1.0) | Poisson's Ratio (PVC) | Critical Buckling Pressure (Eq. 7.17 Uni-Bell 1991) (psi) | Confined Buckling Pressure (Eq. 7.20 Uni-Bell 1991) (psi) | Height at which Soil Will Cause Buckling (Eq. 6.7 Uni-Bell 1991, Simplified) (ft) | Critical Crushing Pressure (Eq. 7.21 & 7.22 Simplified, Uni-Bell 1991) | Height at which Soil Will Cause Crushing (Eq. 6.7 Uni-Bell 1991, Simplified) (ft) |
|---|---|---|---|---|---|---|---|---|
| Manhole D-7 (DR 26)(PR-160 Pipe) | 0.10 | 4.83 | 0.41 | 61.40 | 284.95 | 273.55 | 307.45 | 295.15 |

Specific Weight of Soil = 150 (pcf)
Live load at 2' of cover= 5.56 psi (Table 6.6 Uni-Bell 1991)
Modulus of elasticity of the pipe material = 400,000 (Table 2.1, Uni-Bell 1991)
Compressive of PVC = 4000 psi (Uni-Bell 1991)
Modulus of Soil Reaction = 1,000 (Table 7.3 Uni-Bell, 1991)
Modulus of Soil Reaction for the Bedding = 1,000 (Table 7.3 Uni-Bell, 1991)
Modulus of Soil Reaction for the Trench = 1,000 (Table 7.3 Uni-Bell, 1991)
Maximum Proposed Height of Cover is less than 30', Minimum Cover = 2.0'
Trench Width = 36"
Radius of Pipe = 12.75/2 = 6.375
The water table is below all pipe trenches; therefore, no hydrostatic forces are acting on the pipe.

**Strain**

Strain is not a typical failure mode for PVC pipe. "On the basis of extensive investigation of PVC Sewer Pipes subjected to constant strain caused by deflection, it was found that the strain in pipe material caused by deflections up to 20% could not give rise to failure within a 50-year period" (Uni-Bell 1991).

**Pipe Design Criteria**

**Table V A Pipe and Joint Specification**

| Pipe Diameter (in) | Linear Feet (ft) | Pipe Material | Pipe Specification | Tensile (psi) | Cell Class | Joint Specification |
|---|---|---|---|---|---|---|
| 12 | 1008 | PVC SDR 26 | ASTM 2241 | 7000 | 12454 | ASTM D3139/ASTM F477 |

**Corrosion Resistance**

The proposed use of PVC pipe provides some inherent corrosion resistance. PVC pipe is a non-conductor of electricity and will not create an electrochemical reaction with acids, or bases (Uni-Bell 1991). Proposed manholes will be concrete. The manholes will be coated with an epoxy coating on interior walls.

**Odor Control**

All proposed pipe slopes are within the min/max as described within TCEQ Form F-0582. There are no significant design features within the system that would create a nuisance odor issue or require the need for specific odor control.

**Faults**

There was no visible faulting observed on the site or faults noted on the Geologic Map presented in the USGS Water-Resources Investigation Report (Frost Geosciences)

**Bedding**

Pipe bedding will comply with ASTM D-2321 Class IA for materials and densification.

**Design Life**

This collection system has been designed to have a minimum structural lifespan of 50 years.

# Walnut Avenue Sewer Relocation Engineering Design Report

| | | | |
|---|---|---|---|
| **Project:** | **Walnut Avenue Sewer Relocation** | **Calculated by:** | **Shawn Schorn** |
| **Job #:** | **90110** | | |
| **Date:** | **May 28, 2013** | **Checked by:** | **Michael G. Short** |

**Project Description**

It is proposed that the existing sewage collection system be relocated beginning at the intersection of Kerlick Lane and Walnut Avenue and ending approximately 200' south of the intersection of Howard Street and Walnut Avenue, within New Braunfels Texas. The sewage collection system adjustment is a requirement of the Texas Department of Transportation (TxDOT). Currently TxDOT is proposing to expand Walnut Ave. within the project limits. TxDOT is requiring existing sanitary sewer mains be located outside their proposed improvements. The sewage collection system adjustment for this project will consist of the removal of approximately 3,313 LF of 6" existing sewer main, 2,165 LF of 8" existing sewer main, and 32 manholes along the entire length of the project and the installation of approximately 4,110 LF of 8" sewer main, 1,008 LF of 12" sewer main, 45 manholes, and 30 sewer services/cleanouts.

The proposed rehabilitation has been design to handle existing wastewater flow. The proposed system has also been designed to handle new wastewater flows for new development within the existing commercial lots along Walnut Avenue. No new flows or developments are proposed with this relocation, therefore the receiving Kuehler Avenue Sewage Treatment Plant shall not have a increase in wastewater inflow as a result of this rehabilitation. If new flows were to be introduced at a later date, then a demand analysis should be done.

**Capacity Calculations**

| Address | Description | Land Use | Units | LUE Ratio/Unit | LUE'S | WW Avg Dry Weather Flow (gpm) | Peaking Factor | WW Peak Dry Weather Flow (gpm) | Infiltration (gpm) | WW Peak Wet Weather Flow | WW Minimum Flow (gpm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Varies | Single Family Residential Lots | Residence | 204 | 1.00 | 204.00 | 42.50 | 3.93 | 166.92 | | 166.92 | 7.71 |
| 1023 Walnut Ave. | Empty Commercial Lot | Future Commercial | 1 | 10.00 | 10.00 | 2.08 | 4.35 | 9.07 | | 9.07 | 0.21 |
| 1041 Walnut Ave. | Empty Commercial Lot | Future Commercial | 1 | 10.00 | 10.00 | 2.08 | 4.35 | 9.07 | | 9.07 | 0.21 |
| 1105 Walnut Ave. | Empty Commercial Lot | Future Commercial | 1 | 10.00 | 10.00 | 2.08 | 4.35 | 9.07 | | 9.07 | 0.21 |
| 1112 Walnut Ave. | Office Building | Building SQFT | 9,758 | 1 LUE/1660 SQFT | 6.00 | 1.25 | 4.39 | 5.48 | | 5.48 | 0.11 |
| 1421 Walnut Ave. | Empty Commercial Lot | Future Commercial | 1 | 10.00 | 10.00 | 2.08 | 4.35 | 9.07 | 85.06 | 9.07 | 0.21 |
| 1421 Walnut Ave. | Empty Commercial Lot | Future Commercial | 1 | 10.00 | 10.00 | 2.08 | 4.35 | 9.07 | | 9.07 | 0.21 |
| 1423 Walnut Ave. | Office Medical | Building SQFT | 6,960 | 1 LUE/1660 SQFT | 5.00 | 1.04 | 4.40 | 4.58 | | 4.58 | 0.09 |
| No Address Available Across from Deer Trot | Empty Commercial Lot | Future Commercial | 1 | 10.00 | 10.00 | 2.08 | 4.35 | 9.07 | | 9.07 | 0.21 |
| 1435 Walnut Ave. | Office Building/Hair | Building SQFT | 1,557 | 1 LUE/1660 SQFT | 1.00 | 0.21 | 4.45 | 0.93 | | 0.93 | 0.01 |
| 1445 Walnut Ave. | Apartments | Apartments | 8 | 0.5 LUE/Unit | 4.00 | 0.83 | 4.41 | 3.67 | | 3.67 | 0.07 |
| 1515 Walnut Ave. | Convenience Store | Convenience Store | 1 | 5.00 | 3.00 | 0.63 | 4.42 | 2.76 | | 2.76 | 0.05 |
| | | | | | | | | | | 0.00 | 0.00 |
| **Total** | | | | **Total** | **283.00** | **58.96** | *** | **238.78** | **85.06** | **323.84** | **9.30** |

1 LUE Provides Approximately 300 gpd or 0.146 gpm was assumed for this design
Infiltration = 750 gpd per acre served by the system. This section has a service area of 163.32 acres giving 85.06 gpm of infiltration.

| Service Area Designation | Pipe Diameter (in) | WW Peak Wet Weather Flow (gpm) | Design Flow (gpm) |
|---|---|---|---|
| **Manhole A-1** | 8 | 323.84 | 323.84 |

Determination of Pipe Capacity with full flow (Manning's Equation)

| Service Area Designation | Pipe Diameter (in) | Inside Pipe Diameter (in) | Minimum Calculated Slope (ft/ft) | Manning's n value (PVC) | Velocity at 0.63% (ft/sec) | Full Pipe Capacity at .63% (gpm) | 85% Pipe Capacity (gpm) | WW Peak Wet Weather Flow (gpm) | Remarks | 65% Pipe Capacity (gpm) | WW Peak Dry Weather Flow (gpm) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Manhole A-1 (DR 26)(PR-160 Pipe) | 8 | 7.961 | 0.0063 | 0.013 | 2.74 | 424.89 | 361.16 | 323.84 | OK | 276.18 | 238.78 | OK |
| Manhole A-1 (DR 26) | 8 | 7.754 | 0.0063 | 0.013 | 2.69 | 396.06 | 336.65 | 323.84 | OK | 257.44 | 238.78 | OK |

Deflection and Buckling Pressure Calculations

Determination of Predicted Pipe Deflection and Buckling Pressure

| Service Area Designation | Pipe Structural Wall Thickness (in) | Outside Pipe Diameter (in) | Mean Pipe Diameter (in) | Moment of Inertia I=t^3/12 (in^4/L*in) | Prism Load (Eq. 6.7 Uni-Bell 1991) (psi) | Live Load at 2'(Table 6.6 Uni-Bell 1991) (psi) | Pipe Load (psi) | Pipe Stiffness (Eq. 7.1 Uni-Bell 1991) | Ring Stiffness Constant (Eq. B.1 TCEQ 2011) | Pipe Trench Width Coefficient (Eq. 7.37 Uni-Bell 1991) | Leonhardt's Zeta Factor (Eq. 7.37 Uni-Bell 1991) | Adjusted Modulus of Soil Reaction (Eq. 7.36 Uni-Bell 1991) (psi) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Manhole A-1 (DR 26)(PR-160 Pipe) | 0.332 | 8.625 | 8.293 | 0.003049531 | 31.25 | 5.56 | 36.81 | 102.04 | 126.88 | 1.99 | 1.00 | 1000.00 |
| Manhole A-1 (DR 26) | 0.323 | 8.400 | 8.077 | 0.002808189 | 31.25 | 5.56 | 36.81 | 101.75 | 123.23 | 2.06 | 1.00 | 1000.00 |

Determination of Predicted Pipe Deflection and Buckling Pressure (Continued)

| Service Area Designation | Bedding Angle Constant (Table 7.2 Uni-Bell 1991) | (%) Pipe Deflection (Eq. 7.12 Uni-Bell 1991, Simplified to include deflection lag factor = 1.0) | Poisson's Ratio (PVC) | Critical Buckling Pressure (Eq. 7.17 Uni-Bell 1991) (psi) | Confined Buckling Pressure (Eq. 7.20 Uni-Bell 1991) (psi) | Height at which Soil Will Cause Buckling (Eq. 6.7 Uni-Bell 1991, Simplified) (ft) | Critical Crushing Pressure (Eq. 7.21 & 7.22 Simplified, Uni-Bell 1991) | Height at which Soil Will Cause Crushing (Eq. 6.7 Uni-Bell 1991, Simplified) (ft) |
|---|---|---|---|---|---|---|---|---|
| Manhole A-1 (DR 26)(PR-160 Pipe) | 0.10 | 4.83 | 0.41 | 61.70 | 285.66 | 274.23 | 307.94 | 295.62 |
| Manhole A-1 (DR 26) | 0.10 | 4.83 | 0.41 | 61.50 | 285.19 | 273.78 | 307.62 | 295.31 |

Specific Weight of Soil = 150 (pcf)
Live load at 2' of cover= 5.56 psi (Table 6.6 Uni-Bell 1991)
Modulus of elasticity of the pipe material = 400,000 (Table 2.1, Uni-Bell 1991)
Compressive of PVC = 4000 psi (Uni-Bell 1991)
Modulus of Soil Reaction = 1,000 (Table 7.3 Uni-Bell, 1991)
Modulus of Soil Reaction for the Bedding = 1,000 (Table 7.3 Uni-Bell, 1991)
Modulus of Soil Reaction for the Trench = 1,000 (Table 7.3 Uni-Bell, 1991)
Maximum Proposed Height of Cover is less than 30', Minimum Cover = 2.0'
Trench Width = 36"
Radius of Pipe = 8.625/2 = 4.313 (PR-160), and 8.40/2 = 4.20
The water table is below all pipe trenches; therefore, no hydrostatic forces are acting on the pipe.

**Strain**

Strain is not a typical failure mode for PVC pipe. "On the basis of extensive investigation of PVC Sewer Pipes subjected to constant strain caused by deflection, it was found that the strain in pipe material caused by deflections up to 20% could not give rise to failure within a 50-year period" (Uni-Bell 1991).

**Pipe Design Criteria**

**Table IV A Pipe and Joint Specification**

| Pipe Diameter (in) | Linear Feet (ft) | Pipe Material | Pipe Specification | Tensile (psi) | Cell Class | Joint Specification |
|---|---|---|---|---|---|---|
| 8 | 3617 | PVC SDR 26 | ASTM 2241 | 7000 | 12454 | ASTM D3139/ASTM F477 |
| 8 | 493 | PVC SDR 26 | ASTM 3034 | 7000 | 12454 | ASTM D3212/ASTM F477 |

**Corrosion Resistance**

The proposed use of PVC pipe provides some inherent corrosion resistance. PVC pipe is a non-conductor of electricity and will not create an electrochemical reaction with acids, or bases (Uni-Bell 1991). Proposed manholes will be concrete. The manholes wil

**Odor Control**

All proposed pipe slopes are within the min/max as described within TCEQ Form F-0582. There are no significant design features within the system that would create a nuisance odor issue or require the need for specific odor control.

**Faults**

There was no visible faulting observed on the site or faults noted on the Geologic Map presented in the USGS Water-Resources Investigation Report (Frost Geosciences)

**Bedding**

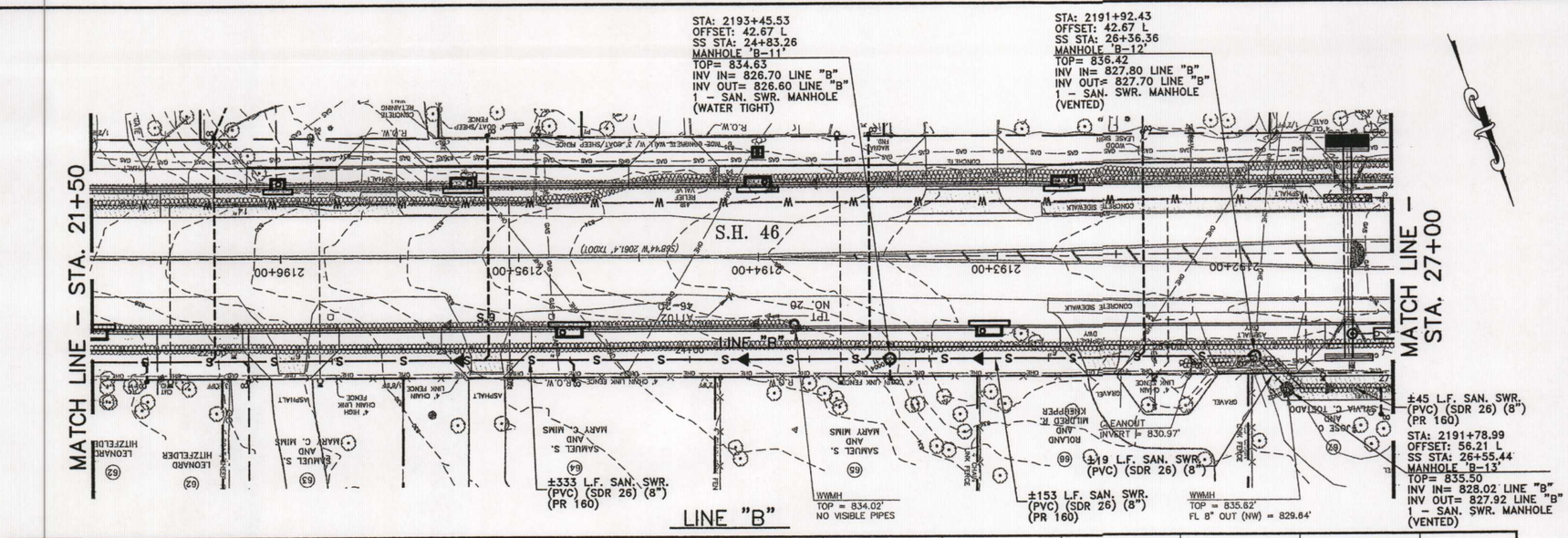
Pipe bedding will comply with ASTM D-2321 Class IA for materials and densification.

**Design Life**

This collection system has been designed to have a minimum structural lifespan of 50 years.

**Safety Considerations**

To ensure safety all aspects of construction shall be in strict accordance with OSHA Standards.




**RIGHT-OF-WAY FEATURES**

- TXDOT TYPE I MONUMNET
- TXDOT TYPE II MONUMNET

**EXISTING CONVENTIONAL FEATURES**

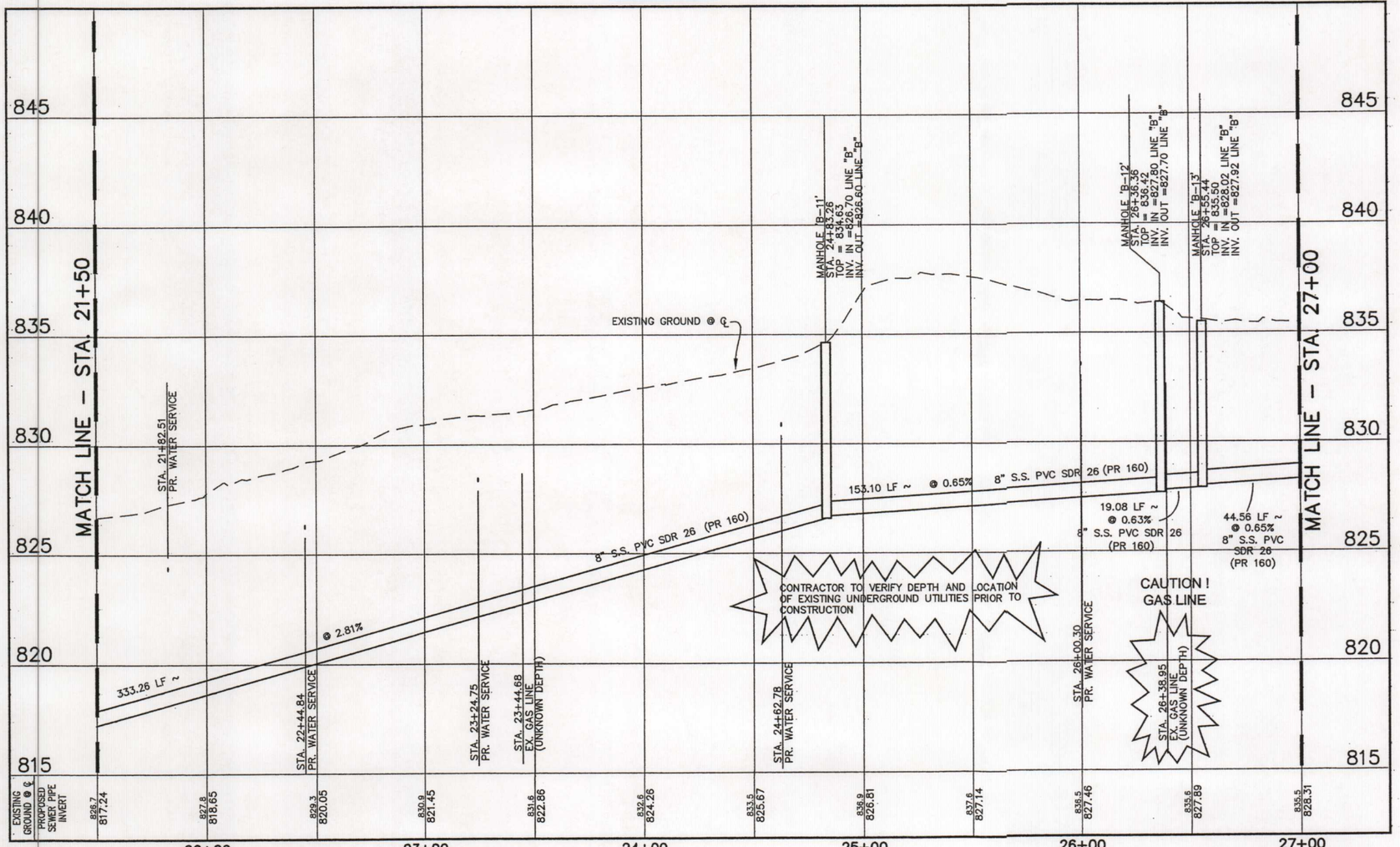
- FOUND IRON ROD
- FOUND IRON PIPE
- BENCHMARK
- POST
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- FAUCET
- SPRINKLER
- SEWER MANHOLE
- CLEANOUT
- STORM MANHOLE
- GAS METER
- POWER POLE
- ANCHOR GUY WIRE
- LAMP POST
- ROAD REFLECTOR
- TRAFFIC SIGNAL LIGHT
- TELEPHONE MANHOLE
- SIGN
- MAILBOX
- TREE
- SHRUB
- TPT NO. 18 — TRAVERSE CONTROL POINT (PROJECT CONTROL)
- TRAVERSE CONTROL POINT (FIELD CONTROL ONLY)

**CONVENTIONAL LINETYPE**

- EXISTING RIGHT OF WAY
- EXISTING WATER LINE
- EXISTING WASTEWATER LINE
- EXISTING GAS LINE
- EXISTING STORM DRAIN LINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING OVERHEAD TELEPHONE
- EXISTING UNDERGROUND ELECTRIC
- EXISTING UNDERGROUND TELEPHONE
- EXISTING WOOD FENCE
- EXISTING CHAINLINK FENCE
- EXISTING WROUGHT IRON FENCE
- EXISTING BARBED WIRE FENCE
- EXISTING LIVESTOCK FENCE
- EXISTING GUARDRAIL
- REMOVE OR ABANDON IN PLACE

**PROPOSED LINETYPE**

- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED RIGHT OF WAY
- PROPOSED EASEMENT LINE
- PROPOSED ROADWAY/SIDEWALK/DRIVEWAYS
- PROPOSED CUT AND RESTORE PAVEMENT/CURB
- PROPOSED CASING/ENCASEMENT




SCALE IN FEET
3 1.5 0 3 (V)
30 15 0 30 (H)

STATE OF TEXAS
SHAWN T. SCHORN
110272
LICENSED PROFESSIONAL ENGINEER
05/29/13

NBU

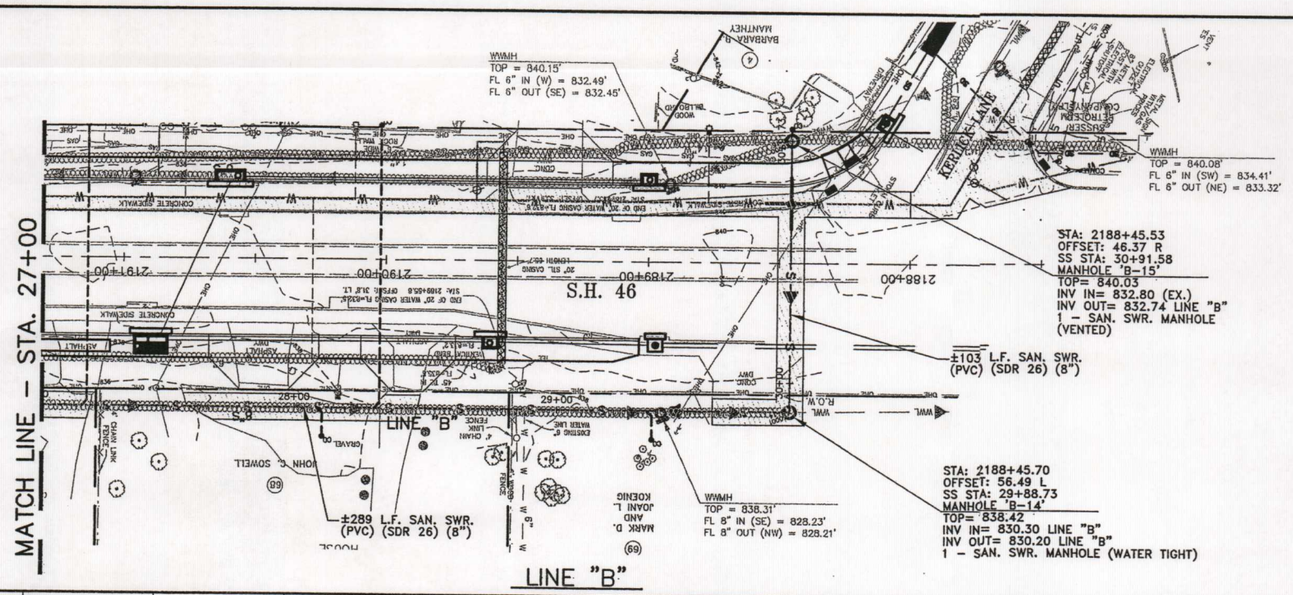
THE Schultz Group INC.

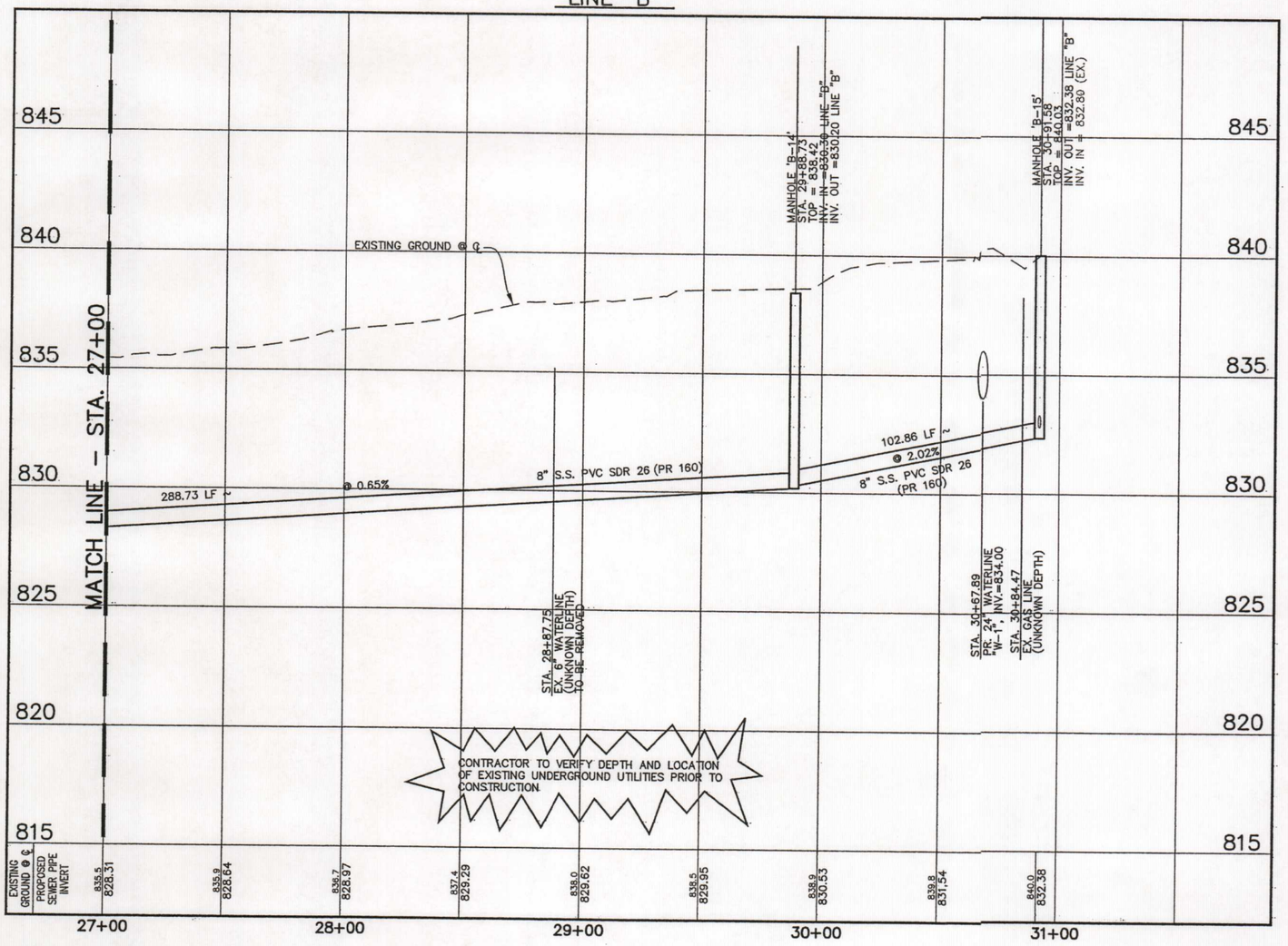
TEXAS REGISTERED ENGINEERING FIRM F-532. TEXAS LICENSED SURVEYING FIRM 100059-00.
CONSULTING ENGINEERS & LAND SURVEYORS
2461 LOOP 337 NEW BRAUNFELS, TEXAS 78130
PHONE (830) 606-3913 FAX (830) 625-2204

# PLAN AND PROFILE SANITARY SEWER LINE "B"

STA. 21+50 TO STA. 27+00

S5




## RIGHT-OF-WAY FEATURES

- TXDOT TYPE I MONUMNET
- TXDOT TYPE II MONUMNET

## EXISTING CONVENTIONAL FEATURES

- FOUND IRON ROD
- FOUND IRON PIPE
- BENCHMARK
- POST
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- FAUCET
- SPRINKLER
- SEWER MANHOLE
- CLEANOUT
- STORM MANHOLE
- GAS METER
- POWER POLE
- ANCHOR GUY WIRE
- LAMP POST
- ROAD REFLECTOR
- TRAFFIC SIGNAL LIGHT
- TELEPHONE MANHOLE
- SIGN
- MAILBOX
- TREE
- SHRUB
- TRAVERSE CONTROL POINT (PROJECT CONTROL) — TPT NO. 18
- TRAVERSE CONTROL POINT (FIELD CONTROL ONLY)

## CONVENTIONAL LINETYPE

- EXISTING RIGHT OF WAY
- EXISTING WATER LINE
- EXISTING WASTEWATER LINE
- EXISTING GAS LINE
- EXISTING STORM DRAIN LINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING OVERHEAD TELEPHONE
- EXISTING UNDERGROUND ELECTRIC
- EXISTING UNDERGROUND TELEPHONE
- EXISTING WOOD FENCE
- EXISTING CHAINLINK FENCE
- EXISTING WROUGHT IRON FENCE
- EXISTING BARBED WIRE FENCE
- EXISTING LIVESTOCK FENCE
- EXISTING GUARDRAIL
- REMOVE OR ABANDON IN PLACE

## PROPOSED LINETYPE

- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED RIGHT OF WAY
- PROPOSED EASEMENT LINE
- PROPOSED ROADWAY/SIDEWALK/DRIVEWAYS
- PROPOSED CUT AND RESTORE PAVEMENT/CURB
- PROPOSED CASING/ENCASEMENT

SCALE IN FEET
3 1.5 0 3 (V)
30 15 0 30 (H)

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# PLAN AND PROFILE SANITARY SEWER LINE "B"

STA. 27+00 TO STA. 30+91.58

S6

## TEXAS COMMISSION ON ENVIONMENTAL QUALITY ORGANIZED SEWAGE COLLECTION SYSTEM (SCS) – GENERAL CONSTRUCTION NOTES

1. THIS ORGANIZED SEWAGE COLLECTION SYSTEM MUST BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S (TCEQ) EDWARDS AQUIFER RULES 30 TEXAS ADMINISTRATIVE CODE (TAC) §§213.5(C) AND 217.51 – 217.70 AND 30 TAC CHAPTER 217, SUBCHAPTER D, AND ~~THE CITY OF~~NEW BRAUNFELS UTILITIES STANDARD SPECIFICATIONS.

2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROPOSED REGULATED PROJECT MUST BE PROVIDED WITH COPIES OF THE SEWAGE COLLECTION SYSTEM PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS MUST BE REQUIRED TO KEEP ON–SITE COPIES OF THE PLAN AND THE APPROVAL LETTER.

3. NO LATER THAN 48 HOURS PRIOR TO COMMENCING ANY REGULATED ACTIVITY, THE APPLICANT OR HIS AGENT MUST NOTIFY THE TCEQ SAN ANTONIO REGIONAL OFFICE, IN WRITING, OF THE DATE ON WHICH THE REGULATED ACTIVITY WILL BEGIN.

4. ANY MODIFICATION TO THE ACTIVITIES DESCRIBED IN THE REFERENCED SCS APPLICATION FOLLOWING THE DATE OF APPROVAL MAY REQUIRE THE SUBMITTAL OF AN SCS APPLICATION TO MODIFY THIS APPROVAL, INCLUDING THE PAYMENT OF APPROPRIATE FEES AND ALL INFORMATION NECESSARY FOR ITS REVIEW AND APPROVAL.

5. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS MUST BE INSTALLED PRIOR TO CONSTRUCTION, MUST BE MAINTAINED DURING CONSTRUCTION, AND MUST BE REMOVED WHEN SUFFICIENT VEGETATION IS ESTABLISHED TO CONTROL THE EROSION AND SEDIMENTATION AND THE CONSTRUCTION AREA IS STABILIZED.

6. THE SEWER LINE TRENCH DETAILS SHOWING THE CROSS SECTION WITH THE DIMENSIONS, PIPE PLACEMENT, AND BACKFILL INSTRUCTIONS ARE INCLUDED ON PLAN SHEETS D1–D4 OF THESE PLANS. ALL SEWER PIPES JOINTS MUST MEET THE REQUIREMENTS IN 30 TAC §§217.53(C) AND 217.65.

   GRAVITY LINES MUST HAVE A SDR 35 OR LESS. PRESSURIZED SEWER SYSTEMS MUST HAVE PIPE WITH A MINIMUM WORKING PRESSURE RATING OF 150 PSI.

   THE ASTM, ANSI, OR AWWA SPECIFICATION NUMBERS FOR THE PIPE(S) AND JOINTS ARE ASTM 2241, CELL CLASS 12454, ASTM D3139/ASTM F477 AND ASTM 3034, CELL CLASS 12454, ASTM D3212/ASTM F477.

   THE PIPE MATERIAL, THE PRESSURE CLASSES, AND THE SDR AND/OR DR DESIGNATIONS ARE PVC SDR–26, PR–160 AND PVC SDR–26.

7. IF ANY SENSITIVE FEATURES ARE DISCOVERED DURING THE WASTEWATER LINE TRENCHING ACTIVITIES, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPLICANT MUST IMMEDIATELY NOTIFY THE APPROPRIATE REGIONAL OFFICE OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY OF THE FEATURE DISCOVERED. A GEOLOGIST'S ASSESSMENT OF THE LOCATION AND EXTENT OF THE FEATURE DISCOVERED MUST BE REPORTED TO THAT REGIONAL OFFICE IN WRITING WITHIN TWO WORKING DAYS. THE APPLICANT MUST SUBMIT A PLAN FOR ENSURING THE STRUCTURAL INTEGRITY OF THE SEWER LINE OR FOR MODIFYING THE PROPOSED COLLECTION SYSTEM ALIGNMENT AROUND THE FEATURE. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE EXECUTIVE DIRECTOR HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY WHILE MAINTAINING THE STRUCTURAL INTEGRITY OF THE LINE.

8. SEWER LINES LOCATED WITHIN OR CROSSING THE 5–YEAR FLOODPLAIN OF A DRAINAGE WAY WILL BE PROTECTED FROM INUNDATION AND STREAM VELOCITIES WHICH COULD CAUSE EROSION AND SCOURING OF BACKFILL. THE TRENCH MUST BE CAPPED WITH CONCRETE TO PREVENT SCOURING OF BACKFILL, OR THE SEWER LINES MUST BE ENCASED IN CONCRETE. ALL CONCRETE SHALL HAVE A MINIMUM THICKNESS OF SIX (6) INCHES.

9. BLASTING PROCEDURES FOR PROTECTION OF EXISTING SEWER LINES AND OTHER UTILITIES WILL BE IN ACCORDANCE WITH THE NATIONAL FIRE PROTECTION ASSOCIATION CRITERIA. SAND IS NOT ALLOWED AS BEDDING OR BACKFILL IN TRENCHES THAT HAVE BEEN BLASTED. IF ANY EXISTING SEWER LINES ARE DAMAGED, THE LINES MUST BE REPAIRED AND RETESTED.

10. ALL MANHOLES CONSTRUCTED OR REHABILITATED ON THIS PROJECT MUST HAVE WATERTIGHT SIZE ON SIZE RESILIENT CONNECTORS ALLOWING FOR DIFFERENTIAL SETTLEMENT. IF MANHOLES ARE CONSTRUCTED WITHIN THE 100–YEAR FLOODPLAIN, THE COVER MUST HAVE A GASKET AND BE BOLTED TO THE RING. ~~WHERE~~ GASKETED MANHOLE COVERS ARE REQUIRED FOR MORE THAN THREE MANHOLES IN SEQUENCE OR FOR MORE THAN 1500 FEET, ALTERNATE MEANS OF VENTING WILL BE PROVIDED. BRICKS ARE NOT AN ACCEPTABLE CONSTRUCTION MATERIAL FOR ANY PORTION OF THE MANHOLE.

    THE DIAMETER OF THE MANHOLES MUST BE A MINIMUM OF FOUR FEET AND THE MANHOLE FOR ENTRY MUST HAVE A MINIMUM CLEAR OPENING DIAMETER OF 30 INCHES. THESE DIMENSIONS AND OTHER DETAILS SHOWING COMPLIANCE WITH THE COMMISSION'S RULES CONCERNING MANHOLES AND SEWER LINE/MANHOLE INVERTS DESCRIBED IN 30 TAC §217.55 ARE INCLUDED ON PLAN SHEETS D1–D4.

    IT IS SUGGESTED THAT ENTRANCE INTO MANHOLES IN EXCESS OF FOUR FEET DEEP BE ACCOMPLISHED BY MEANS OF A PORTABLE LADDER. THE INCLUSION OF STEPS IN A MANHOLE IS PROHIBITED.

11. WHERE WATER LINES AND NEW SEWER LINE ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).

12. WHERE SEWERS LINES DEVIATE FROM STRAIGHT ALIGNMENT AND UNIFORM GRADE ALL CURVATURE OF SEWER PIPE MUST BE ACHIEVED BY THE FOLLOWING PROCEDURE WHICH IS RECOMMENDED BY THE PIPE MANUFACTURER: ALL PROPOSED SEWER LINES SHALL NOT DEVIATE FROM UNIFORM GRADE OR STRAIGHT ALIGNMENT.

    IF PIPE FLEXURE IS PROPOSED, THE FOLLOWING METHOD OF PREVENTING DEFLECTION OF THE JOINT MUST BE USED: PIPE FLEXURE SHALL NOT OCCUR DURING CONSTRUCTION.

    SPECIFIC CARE MUST BE TAKEN TO ENSURE THAT THE JOINT IS PLACED IN THE CENTER OF THE TRENCH AND PROPERLY BEDDED IN ACCORDANCE WITH 30 TAC §217.54.

13. NEW SEWAGE COLLECTION SYSTEM LINES MUST BE CONSTRUCTED WITH STUB OUTS FOR THE CONNECTION OF ANTICIPATED EXTENSIONS. THE LOCATION OF SUCH STUB OUTS MUST BE MARKED ON THE GROUND SUCH THAT THEIR LOCATION CAN BE EASILY DETERMINED AT THE TIME OF CONNECTION OF THE EXTENSIONS. SUCH STUB OUTS MUST BE MANUFACTURED WYES OR TEES THAT ARE COMPATIBLE IN SIZE AND MATERIAL WITH BOTH THE SEWER LINE AND THE EXTENSION. AT THE TIME OF ORIGINAL CONSTRUCTION, NEW STUB–OUTS MUST BE CONSTRUCTED SUFFICIENTLY TO EXTEND BEYOND THE END OF THE STREET PAVEMENT. ALL STUB–OUTS MUST BE SEALED WITH A MANUFACTURED CAP TO PREVENT LEAKAGE. EXTENSIONS THAT WERE NOT ANTICIPATED AT THE TIME OF ORIGINAL CONSTRUCTION OR THAT ARE TO BE CONNECTED TO AN EXISTING SEWER LINE NOT FURNISHED WITH STUB OUTS MUST BE CONNECTED USING A MANUFACTURED SADDLE AND IN ACCORDANCE WITH ACCEPTED PLUMBING TECHNIQUES.

    ~~IF NO STUB OUT IS PRESENT AN ALTERNATE METHOD OF JOINING LATERALS IS SHOWN IN THE DETAIL ON PLAN SHEET ___ OF ___ (FOR POTENTIAL FUTURE LATERALS).~~ LATERALS ARE NOT PROPOSED WITH THIS PROJECT.

    THE PRIVATE SERVICE LATERAL STUB–OUTS MUST BE INSTALLED AS SHOWN ON THE PLAN AND PROFILE SHEETS ON PLAN SHEETS D1–D4 AND MARKED AFTER BACKFILLING AS SHOWN IN THE DETAIL ON PLAN SHEETS D1–D4.

14. TRENCHING, BEDDING AND BACKFILL MUST CONFORM WITH 30 TAC §217.54. THE BEDDING AND BACKFILL FOR FLEXIBLE PIPE MUST COMPLY WITH THE STANDARDS OF ASTM D–2321, CLASSES IA, IB, II OR III. RIGID PIPE BEDDING MUST COMPLY WITH THE REQUIREMENTS OF ASTM C 12 (ANSI A 106.2) CLASSES A, B OR C.

15. SEWER LINES MUST BE TESTED FROM MANHOLE TO MANHOLE. WHEN A NEW SEWER LINE IS CONNECTED TO AN EXISTING STUB OR CLEAN–OUT, IT MUST BE TESTED FROM EXISTING MANHOLE TO NEW MANHOLE. IF A STUB OR CLEAN–OUT IS USED AT THE END OF THE PROPOSED SEWER LINE, NO PRIVATE SERVICE ATTACHMENTS MAY BE CONNECTED BETWEEN THE LAST MANHOLE AND THE CLEANOUT UNLESS IT CAN BE CERTIFIED AS CONFORMING WITH THE PROVISIONS OF 30 TAC §213.5(C)(3)(E).

## TEXAS COMMISSION ON ENVIONMENTAL QUALITY ORGANIZED SEWAGE COLLECTION SYSTEM (SCS) – GENERAL CONSTRUCTION NOTES (Continued)

16. ALL SEWER LINES MUST BE TESTED IN ACCORDANCE WITH 30 TAC §217.57. THE ENGINEER MUST RETAIN COPIES OF ALL TEST RESULTS WHICH MUST BE MADE AVAILABLE TO THE EXECUTIVE DIRECTOR UPON REQUEST. THE ENGINEER MUST CERTIFY IN WRITING THAT ALL WASTEWATER LINES HAVE PASSED ALL REQUIRED TESTING TO THE APPROPRIATE REGIONAL OFFICE WITHIN 30 DAYS OF TEST COMPLETION AND PRIOR TO USE OF THE NEW COLLECTION SYSTEM. TESTING METHOD WILL BE:

    (a) For a collection system pipe that will transport wastewater by gravity flow, the design must specify an infiltration and exfiltration test or a low–pressure air test. A test must conform to the following requirements:

    (1) Low Pressure Air Test.

    (A) A low pressure air test must follow the procedures described in American Society For Testing And Materials (ASTM) C–828, ASTM C–924, or ASTM F–1417 or other procedure approved by the executive director, except as to testing times as required in Table C.3 in subparagraph (C) of this paragraph or Equation C.3 in subparagraph (B)(ii) of this paragraph.

    (B) For sections of collection system pipe less than 36 inch average inside diameter, the following procedure must apply, unless a pipe is to be tested as required by paragraph (2) of this subsection.

    (i) A pipe must be pressurized to 3.5 pounds per square inch (psi) greater than the pressure exerted by groundwater above the pipe.

    (ii) Once the pressure is stabilized, the minimum time allowable for the pressure to drop from 3.5 psi gauge to 2.5 psi gauge is computed from the following equation:

    Equation C.3

$$T = \frac{0.085 \times D \times K}{Q}$$

    Where:

    T = time for pressure to drop 1.0 pound per square inch gauge in seconds
    K = 0.000419 X D X L, but not less than 1.0
    D = average inside pipe diameter in inches
    L = length of line of same size being tested, in feet
    Q = rate of loss, 0.0015 cubic feet per minute per square foot internal surface

    (C) Since a K value of less than 1.0 may not be used, the minimum testing time for each pipe diameter is shown in the following Table C.3:

| Pipe Diameter *(inches)* | Minimum Time *(seconds)* | Maximum Length for Minimum Time *(feet)* | Time for Longer Length *(seconds/foot)* |
|---|---|---|---|
| 6 | 340 | 398 | 0.855 |
| 8 | 454 | 298 | 1.520 |
| 10 | 567 | 239 | 2.374 |
| 12 | 680 | 199 | 3.419 |
| 15 | 850 | 159 | 5.342 |
| 18 | 1020 | 133 | 7.693 |
| 21 | 1190 | 114 | 10.471 |
| 24 | 1360 | 100 | 13.676 |
| 27 | 1530 | 88 | 17.309 |
| 30 | 1700 | 80 | 21.369 |
| 33 | 1870 | 72 | 25.856 |

    (D) An owner may stop a test if no pressure loss has occurred during the first 25% of the calculated testing time.

    (E) If any pressure loss or leakage has occurred during the first 25% of a testing period, then the test must continue for the entire test duration as outlined above or until failure.

    (F) Wastewater collection system pipes with a 27 inch or larger average inside diameter may be air tested at each joint instead of following the procedure outlined in this section.

    (G) A testing procedure for pipe with an inside diameter greater than 33 inches must be approved by the executive director.

    (2) Infiltration/Exfiltration Test.

    (A) The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch of diameter per mile of pipe per 24 hours at a minimum test head of 2.0 feet above the crown of a pipe at an upstream manhole.

    (B) An owner shall use an infiltration test in lieu of an exfiltration test when pipes are installed below the groundwater level.

    (C) The total exfiltration, as determined by a hydrostatic head test, must not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of two feet above the crown of a pipe at an upstream manhole, or at least two feet above existing groundwater level whichever is greater.

    (D) For construction within a 25–year flood plain, the infiltration or exfiltration must not exceed 10 gallons per inch diameter per mile of pipe per 24 hours at the same minimum test head as in subparagraph (C) of this paragraph.

    (E) If the quantity of infiltration or exfiltration exceeds the maximum quantity specified, an owner shall undertake remedial action in order to reduce the infiltration or exfiltration to an amount within the limits specified. An owner shall retest a pipe following a remediation action.

    (b) If a gravity collection pipe is composed of flexible pipe, deflection testing is also required. The following procedures must be followed:

    (1) For a collection pipe with inside diameter less than 27 inches, deflection measurement requires a rigid mandrel.

    (A) Mandrel Sizing.

    (i) A rigid mandrel must have an outside diameter (OD) not less than 95% of the base inside diameter (ID) or average ID of a pipe, as specified in the appropriate standard by the ASTMs, American Water Works Association, UNI–BELL, or American National Standards Institute, or any related appendix.

    (ii) If a mandrel sizing diameter is not specified in the appropriate standard, the mandrel must have an OD equal to 95% of the ID of a pipe. In this case, the ID of the pipe, for the purpose of determining the OD of the mandrel, must equal be the average outside diameter minus two minimum wall thicknesses for OD controlled pipe and the average inside diameter for ID controlled pipe.

    (iii) All dimensions must meet the appropriate standard.

    (B) Mandrel Design.

    (i) A rigid mandrel must be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed.

    (ii) A mandrel must have nine or more odd number of runners or legs.

    (iii) A barrel section length must equal at least 75% of the inside diameter of a pipe.

    (iv) Each size mandrel must use a separate proving ring.

    (C) Method Options.
    (i) An adjustable or flexible mandrel is prohibited.

    (ii) A test may not use television inspection as a substitute for a deflection test.

## TEXAS COMMISSION ON ENVIONMENTAL QUALITY ORGANIZED SEWAGE COLLECTION SYSTEM (SCS) – GENERAL CONSTRUCTION NOTES (Continued)

(C) Method Options.

(i) An adjustable or flexible mandrel is prohibited.

(ii) A test may not use television inspection as a substitute for a deflection test.

(iii) If requested, the executive director may approve the use of a deflectometer or a mandrel with removable legs or runners on a case–by–case basis.

(2) For a gravity collection system pipe with an inside diameter 27 inches and greater, other test methods may be used to determine vertical deflection.

(3) A deflection test method must be accurate to within plus or minus 0.2% deflection.

(4) An owner shall not conduct a deflection test until at least 30 days after the final backfill.

(5) Gravity collection system pipe deflection must not exceed five percent (5%).

(6) If a pipe section fails a deflection test, an owner shall correct the problem and conduct a second test after the final backfill has been in place at least 30 days.

17. ALL MANHOLES MUST BE TESTED TO MEET OR EXCEED THE REQUIREMENTS OF 30 TAC §217.58.

(a) All manholes must pass a leakage test.

(b) An owner shall test each manhole (after assembly and backfilling) for leakage, separate and independent of the collection system pipes, by hydrostatic exfiltration testing, vacuum testing, or other method approved by the executive director.

(1) Hydrostatic Testing.

(A) The maximum leakage for hydrostatic testing or any alternative test methods is 0.025 gallons per foot diameter per foot of manhole depth per hour.

(B) To perform a hydrostatic exfiltration test, an owner shall seal all wastewater pipes coming into a manhole with an internal pipe plug, fill the manhole with water, and maintain the test for at least one hour.

(C) A test for concrete manholes may use a 24–hour wetting period before testing to allow saturation of the concrete.

(2) Vacuum Testing.

(A) To perform a vacuum test, an owner shall plug all lift holes and exterior joints with a non–shrink grout and plug all pipes entering a manhole.

(B) No grout must be placed in horizontal joints before testing.

(C) Stub–outs, manhole boots, and pipe plugs must be secured to prevent movement while a vacuum is drawn.

(D) An owner shall use a minimum 60 inch/lb torque wrench to tighten the external clamps that secure a test cover to the top of a manhole.

(E) A test head must be placed at the inside of the top of a cone section, and the seal inflated in accordance with the manufacturer's recommendations.

(F) There must be a vacuum of 10 inches of mercury inside a manhole to perform a valid test.

(G) A test does not begin until after the vacuum pump is off.

(H) A manhole passes the test if after 2.0 minutes and with all valv closed, the vacuum is at least 9.0 inches of mercury.

18. ALL PRIVATE SERVICE LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.

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

NBU

STATE OF TEXAS
SHAWN T. SCHORN
110272
LICENSED
PROFESSIONAL ENGINEER

Shawn T. Schorn
05/29/13

THE Schultz Group INC.
TEXAS REGISTERED ENGINEERING FIRM F–532 TEXAS LICENSED SURVEYING FIRM 100259–00
CONSULTING ENGINEERS & LAND SURVEYORS
2461 LOOP 337 NEW BRAUNFELS, TEXAS 78130
PHONE (830) 606–3913 FAX (830) 625–2204

GENERAL NOTES

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

November 9, 2012



Mr. Bryan Word
Dean Word Company, Ltd.
P.O. Box 310330
New Braunfels, Texas 78131

Re: Edwards Aquifer Protection Program, Comal County

NAME OF PROJECT: Lonestar Quarry; located approximately 1.2 miles northeast of Schwab Road and FM 482; New Braunfels, Texas

TYPE OF PLAN: Request for Extension of Time to Commence Regulated Activities Authorized by a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Edwards Aquifer Protection Program File No. 1603.04, Investigation No. 1041674
Regulated Entity Number: RN102870367

Dear Mr. Word:

On October 12, 2012, the Texas Commission on Environmental Quality (TCEQ) received your request for an extension of time to commence regulated activities related to the above referenced WPAP approval. The request has been reviewed for compliance with 30 TAC §213.4(h) and §213.13 which set forth the procedures for requesting an extension of time to commence regulated activities authorized by the approval and was found to be in general agreement with these procedures. Therefore, the request for an extension to the term of approval for the referenced project is granted. A summary of the dates of approval and expiration are as follows:

| Date of Original Approval: | October 13, 2009 |
|---|---|
| Date of Expiration: | October 13, 2011 |
| Date Extension Request Received | Date of Extension Expiration |
| August 17, 2011 | April 13, 2012 |
| March 08, 2012 | October 13, 2012 |
| October 12, 2012 | April 13, 2013 |

The request and fee were received in compliance with 30 TAC §213.4(h) and §213.13. As indicated in the rules, an extension may not be granted if the proposed regulated activities or

approved plan for the regulated activities have changed. As understood, there will be no changes or modifications to the originally approved plan. This request for extension expires on April 13, 2013. Should construction not commence before the end of the six (6) month period, another request for extension would be required to keep the Edwards aquifer Protection Plan validated.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Alex Grant of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210) 403-4035.

Sincerely,

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

LMB/AG/eg

cc: Mr. Gary Nicholls, P.E., Westward Environmental, Inc.
Mr. Octavio Garza, P.E., City of New Braunfels
Mr. Tom Hornseth, P.E., Comal County
Mr. Roland Ruiz, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC 212

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

April 23, 2012

Mr. Bryan Word
Dean Word Company, Ltd.
P.O. Box 310330
New Braunfels, Texas 78131

Re: Edwards Aquifer Protection Program, Comal County

NAME OF PROJECT: Lonestar Quarry; located approximately 1.2 miles northeast of Schwab Road and FM 482; New Braunfels, Texas

TYPE OF PLAN: Request for Extension of Time to Commence Regulated Activities Authorized by a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Edwards Aquifer Protection Program File No. 1603.03, Investigation No. 994714
Regulated Entity Number: RN102870367

Dear Mr. Word:

On March 8, 2012, the Texas Commission on Environmental Quality (TCEQ) received your request for an extension of time to commence regulated activities related to the above referenced WPAP approval. The request has been reviewed for compliance with 30 TAC §213.4(h) and §213.13 which set forth the procedures for requesting an extension of time to commence regulated activities authorized by the approval and was found to be in general agreement with these procedures. Therefore, the request for an extension to the term of approval for the referenced project is granted. A summary of the dates of approval and expiration is enclosed.

| Date of Original Approval: | October 13, 2009 |
|---|---|
| Date of Expiration: | October 13, 2011 |
| Date Extension Request Received | Date of Extension Expiration |
| August 17, 2011 | April 13, 2012 |
| March 8, 2012 | October 13, 2012 |

The request and fee were received in compliance with 30 TAC §213.4(h) and §213.13. As indicated in the rules, an extension may not be granted if the proposed regulated activity or approved plan for the regulated activity has changed. As understood, there will be no changes or

modifications to the originally approved plan. This request for extension expires on October 13, 2012. Should construction not commence before the end of the six (6) month period, another request for extension would be required to keep the Edwards Aquifer Protection Plan validated.

If you have any questions or require additional information, please contact Yuliya Dunaway of the Edwards Aquifer Protection Program with the San Antonio Regional Office at (210) 490-3096.

Sincerely,

for

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

MRV/YD/eg

cc: Mr. Gary Nicholls, P.E., Westward Environmental, Inc.
Mr. James C. Klein, P.E., City of New Braunfels
The Honorable Harold D. Baldwin, City of Schertz
Mr. Tom Hornseth, P.E., Comal County
Mr. Karl J. Dreher, Edwards Aquifer Authority
TCEQ Central Records, MC 212

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*



October 13, 2009

Mr. Bryan Word
Dean Word Company, Ltd.
P.O. Box 310330
New Braunfels, TX 78131

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: Lonestar Quarry; Located approximately 1.2 miles northeast of Schwab Rd. and FM 482; New Braunfels, Texas
TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer
Edwards Aquifer Protection Program ID No. 1603.01; Investigation No. 709676; Regulated Entity No. RN102870367

Dear Mr. Word:

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 Dean Word Company, Ltd. on November 14, 2008. Final review of the WPAP was completed after additional material was received on January 5, 2009, January 29, 2009 and February 4, 2009. 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.*

## BACKGROUND

The original WPAP was approved on January 29, 2001 for a quarry project of approximately 270 acres with 3.57 acres of impervious cover. The project included a rock crusher, asphalt plant, office, paved road, scale and scale house. An aboveground storage tank (AST) facility plan was also approved on January 29, 2001 for eleven AST structures placed within two separate containment areas. This proposed project is a new quarry adjacent to the north and south of the previously approved quarry.

## PROJECT DESCRIPTION

The proposed commercial project is a limestone quarry with a total area of approximately 1,923 acres and a proposed quarry pit of approximately 1,576 acres. Setback distance of sixty feet will be maintained

from the north and west property boundary and sixty feet from the Recharge Zone boundary in the southern portion of the site. Setbacks are not proposed for the eastern boundary since the adjacent site is also a quarry site. No permanent impervious cover is proposed for the new quarry area, however, temporary impervious cover (portable buildings or trailers, movable base pads) is proposed. A rock crusher, screen and conveyers, stockpile areas, wash water ponds, scale house and scales are proposed for the site. Quarrying will occur to an elevation no deeper than 695 feet above mean sea level (a.m.s.l.) in the southern portion of the site and 725 feet a.m.s.l. in the northern portion. Project wastewater will be collected in portable toilets and disposed of by a TCEQ registered waste disposal service.

## 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, the various controls described below will be utilized.

- An earthen berm composed of compacted soil and/or overburden constructed to a height of at least two feet tall with a two foot wide top of berm and stabilized with native grasses. This berm will be inspected weekly and after each rainfall. As the quarry expands, the berm will be relocated, as needed, to divert upgradient stormwater around the site or quarry pit and will capture onsite flows to prevent stormwater from leaving the site.

- Rock berms will be installed on the downgradient side of the initial quarry pit to intercept sediment-laden runoff and serve as a physical barrier of the limits disturbance. The designs of the proposed rock berms are variations from the design in the Edwards Aquifer Technical Guidance Manual (RG-348, 2005). These berms will use open graded three to five inch diameter rocks and be placed perpendicular to the flow line. The berms will be inspected weekly and after each rainfall. Sediment and debris will be removed when the sediment height reaches six inches or clogs the berm.

- A fifty foot natural vegetative buffer area will be maintained downgradient of disturbed areas and along the perimeter of the property except along the eastern boundary of the site.

- Permanent soil stabilization will occur inside and outside the quarry pit for disturbed areas capable of growing vegetation (i.e., soil material present). These areas will be seeded or hydroseeded with native vegetation. For interim soil stabilization, the soil material will either be relocated or BMPs, such as rock berms, will be implemented to limit runoff.

- Geologic feature recognition training will be required for all quarry equipment operators to aid in the recognition of geologic features uncovered during the quarrying process. In addition, a Professional Geoscientist will inspect the quarry at least annually for sensitive features. Sensitive features will be reported to the TCEQ in accordance with 30 TAC 213. Protection measures for sensitive features, within the quarry pit, include sealing the feature or proposing a variety of BMPs (e.g., rock berms) to prevent sediment-laden stormwater from entering the feature.

- Flex base pads, approximately 150 feet by 100 feet with a one foot high berm, will act as secondary containment during maintenance and fueling activities. These base pads can be located both inside and outside the quarry pit. The base pads located inside the quarry pit will only service equipment that is impractical to move outside the pit area.

- Natural buffer areas are proposed for sensitive features until quarrying activities advance near the feature's buffer area. These buffer areas, except the features in Dry Comal Creek, will be fenced in order to provide protection from accidental encroachment and disturbance. The construction fencing will be installed when quarrying activities advance or will advance near the feature in the

upcoming 12 months. When quarrying activities advance to a feature, a temporary seal is proposed for the sensitive feature until the feature is mined out.

- If necessary, mine dewatering will be accomplished in accordance with the Texas Pollutant Discharge Elimination System (TPDES) General Permit TX050000, Sector J. A water pump will remove collected water after sufficient settling time. Before the water is discharged, the water is tested to determine compliance with total suspended solid limitations of 45 mg/L daily maximum value and 25 mg/L daily average value. Rock berms and other erosion controls will be implemented to prevent soil erosion and scour.

A request was made for an exception to the requirement of implementing permanent BMPs at the site upon completion of construction. Based upon the plan review, the management practices described above, that there is no increase in permanent impervious cover and that all onsite stormwater will be retained in the quarry pit, the exception request is approved.

## GEOLOGY

According to the geologic assessment included with the application, the Buda Limestone, Del Rio Clay, Georgetown Formation and Edwards Limestone were all observed by the project geologist at the surface of the site. As detailed by the project geologist, 207 features were recorded in the geologic assessment and 31 features received a sensitive score. The San Antonio Regional Office site assessment conducted on December 18, 2008 revealed the site as described by the geologic assessment. Refer to the Geologic Assessment in the WPAP application for a listing of the sensitive features.

Natural buffers were proposed for the 28 sensitive features until quarrying activities advance near a feature and the feature is sealed and mined out. Buffers were not proposed for the three faults, S-110, S-118 and S-205, due to the length of these features. Construction fencing will be installed to delineate a sensitive feature's natural buffer area when quarrying activities advance to a feature within the upcoming 12 months. Features within Dry Comal Creek will not have the construction fencing since water flows could continually destroy or remove the fencing. To prevent pollutants and sediments from entering a sensitive feature while activities are within close proximity to the feature, the sensitive features will be temporarily sealed with topsoil, overburden, crushed limestone, concrete or flowable fill approximately 90 days before the feature is mined out.

## SPECIAL CONDITIONS

I. This approval does not authorize the construction or installation of aboveground storage tanks at this site nor does this approval authorize the construction or installation of aboveground storage tanks at the original site if that AST facility plan has expired.

II. As stated in the WPAP application, a Texas Licensed Professional Geoscientist will conduct at least annual surveys of the pit area looking for geologic feature. Records of the surveys shall be maintained at the site and made available for TCEQ review for the life of the project. Anytime any sensitive feature(s) is discovered, the TCEQ shall be notified and the geologic assessment report submitted in accordance with 30 TAC 213 (refer to Standard Condition 12).

III. The BMPs proposed in the application and/or described in this approval letter must be operational prior to any soil disturbing activities within a BMP's drainage area.

IV. Intentional discharges of sediment laden stormwater from regulated activities are not allowed. If dewatering of areas becomes necessary appropriate measures must be taken.

V. The exception request from permanent BMPs is approved based upon the discussion in the Permanent Pollution Abatement Measures Section of this letter. The exception request does not approve any impervious cover or other TSS generating activities in which the generated stormwater flows off the site and does not or will not be captured by the quarry pit. As stated by the project engineer during the January 21, 2009 meeting, the applicant understands that a modification is required if the above situation occurs at the site.

VI. This approval letter is being sent for regulated activities defined in Chapter 213. This approval does not constitute a Water Rights permit. Failure to obtain all necessary authorizations prior to commencing activities near or in Dry Comal Creek or a defined water course could result in enforcement actions. Information regarding the Water Rights Program and permit process, including the possibility that the activities presented in this WPAP may require a Water Rights Permit, was explicitly stated to the applicant and the authorized agents during the January 29, 2009 meeting.

VII. As stated in §213.8(a)(6), industrial wastewater discharges into or adjacent to waters in the state that could create additional pollutant loading is a prohibited activity on the Edwards Aquifer Recharge zone. Depending on the specifics of the activities at the site, a Texas Pollutant Discharge Elimination System (TPDES) permit or a Texas Land Application Permit (TLAP) and additional BMPs and measures may be required.

VIII. As stated in the application, additional well data information could result in changes to the quarry depth. Notify the TCEQ San Antonio Regional Office, in writing, of any changes proposed to the depth of the quarry pit. A modification to this approved WPAP may be required.

IX. Pursuant to 30 TAC §213.4(h)(3) and as stated in the Edwards Aquifer protection plan, this protection plan approval or extension will expire and no extension will be granted if more than 50% of the total construction has not been completed within 10 years from the initial approval of the plan. A new Edwards Aquifer protection plan must be submitted to the TCEQ with the appropriate fees for review and approval by the executive director prior to commencing or continuing any construction or regulated activities beyond 10 years. The Applicant must submit a status report for the project containing information regarding the percentage of the total project construction completed within 180 days prior to the expiration date of this plan approval. If at that time, the total project construction cannot be demonstrated to be at least 50% complete, the Applicant must submit a new Edwards Aquifer protection plan to the TCEQ for review and approval before continuing any construction or regulated activities beyond 10 years from the date of initial approval of the plan.

If a new Edwards Aquifer protection plan is submitted to the TCEQ under 30 TAC § 213.4(h)(3), the approved plan will continue in effect until the executive director makes a determination on the new plan.

## STANDARD CONDITIONS

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

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

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

Prior to Commencement of Construction:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

20. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new

regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

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

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

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

Sincerely,

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

MRV/CEF/eg

Enclosure: Deed Recordation Affidavit, Form TCEQ-0625

cc: Mr. Gary Nicholls, P.E., Westward Environmental, Inc.
Mr. James C. Klein, P.E., City of New Braunfels
The Honorable Harold D. Baldwin, City of Schertz
Mr. Tom Hornseth, P.E., Comal County
Ms. Velma Danielson, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC212

*Westward Environmental, Inc.*

*P.O. BOX 2205*
*BOERNE, TEXAS 78006*
*WWW.WESTWARDENV.COM*

August 8, 2011

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

Project No. 10173-19



Attn.: Richard Garcia

Subject: **Extension Request**
Water Pollution Abatement Plan (EAPP ID No. 1603.01)
Dean Word Company, Ltd. – CN600124812
Lonestar Quarry – RN102870367
Comal County, Texas

Dear Mr. Garcia,

On behalf of Dean Word Company, Ltd., Westward Environmental, Inc. is submitting this **Extension of Time** request for the above referenced Water Pollution Abatement Plan approved on October 13, 2009 for the Lonestar Quarry. A start of construction letter dated November 6, 2009 was submitted to the TCEQ Region 13 office prior to construction activities which started on November 9, 2009 and are on-going at this time. Due to the economic downturn over the past couple of years construction has not progressed as originally planned. This extension is being filled based on the expiration date of October 13, 2011 for the 2 year 10% construction language in the WPAP approval letter.

Westward Environmental, Inc. (WEI) will serve as the technical representative for Dean Word Company, Ltd. on this project. **Please ensure that WEI is copied on all correspondence including but not limited to the final TCEQ determination.** If you have any questions regarding this request, please contact our office.

Respectfully submitted,
WESTWARD ENVIRONMENTAL, INC.

Gary D. Nicholls, P.E.
Vice President

Distribution: Addressee (original + 4)
Mr. Bryan Word, P.E. – Dean Word Company, Ltd.
WEI 10173-19 file



*mb*

**Edwards Aquifer Protection Plan Extension Request**

__x__ Extension Request for a Water Pollution Prevention Plan (*TCEQ-10260)*

__x__ ATTACHMENT A - Approval Letter or Extension Approval

__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*)

**Extension Request for an**
**Edwards Aquifer Protection Plan**
Relating to 30 TAC §213.4(g)
Effective June 1, 1999

1. Regulated Entity information. If requested by an agent, attach the agent authorization form.

Regulated Entity Name: Lonestar Quarry

Customer (Applicant):
Contact Person: Bryan Word, P.E.
Entity: Dean Word Company, Ltd.
Mailing Address: P.O. Box 310330
City, State: New Braunfels, Texas Zip: 78131
Telephone: 830-606-5000 FAX: 830-606-5008

Agent/Engineer: Westward Environmental, Inc.
Contact Person: Gary D. Nicholls, P.E.
Mailing Address: 102 S. Main Street, 2nd Floor
City, State: Boerne, Texas Zip: 78006
Telephone: 830-249-8284 FAX: 830-249-0221

2. X **ATTACHMENT A - Approval Letter or Extension Approval.** Attach a copy of the last approval letter or the last approved extension.
Date of letter: October 13, 2009
Expiration date: October 13, 2011 – 10% within 2 years

3. X This extension request is submitted not earlier than sixty (60) days prior to the expiration date of an approved Edwards Aquifer protection plan or a previously approved extension.

4. X A completed fee form is attached. The fee for a six-month extension of time is $150.

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

Signature of Customer/Engineer

8-8-11
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.

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

October 13, 2009

Mr. Bryan Word
Dean Word Company, Ltd.
P.O. Box 310330
New Braunfels, TX 78131.

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: Lonestar Quarry; Located approximately 1.2 miles northeast of Schwab Rd. and FM 482; New Braunfels, Texas
TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer
Edwards Aquifer Protection Program ID No. 1603.01; Investigation No. 709676; Regulated Entity No. RN102870367

Dear Mr. Word:

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 Dean Word Company, Ltd. on November 14, 2008. Final review of the WPAP was completed after additional material was received on January 5, 2009, January 29, 2009 and February 4, 2009. 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.*

## BACKGROUND

The original WPAP was approved on January 29, 2001 for a quarry project of approximately 270 acres with 3.57 acres of impervious cover. The project included a rock crusher, asphalt plant, office, paved road, scale and scale house. An aboveground storage tank (AST) facility plan was also approved on January 29, 2001 for eleven AST structures placed within two separate containment areas. This proposed project is a new quarry adjacent to the north and south of the previously approved quarry.

## PROJECT DESCRIPTION

The proposed commercial project is a limestone quarry with a total area of approximately 1,923 acres and a proposed quarry pit of approximately 1,576 acres. Setback distance of sixty feet will be maintained

from the north and west property boundary and sixty feet from the Recharge Zone boundary in the southern portion of the site. Setbacks are not proposed for the eastern boundary since the adjacent site is also a quarry site. No permanent impervious cover is proposed for the new quarry area, however, temporary impervious cover (portable buildings or trailers, movable base pads) is proposed. A rock crusher, screen and conveyers, stockpile areas, wash water ponds, scale house and scales are proposed for the site. Quarrying will occur to an elevation no deeper than 695 feet above mean sea level (a.m.s.l.) in the southern portion of the site and 725 feet a.m.s.l. in the northern portion. Project wastewater will be collected in portable toilets and disposed of by a TCEQ registered waste disposal service.

## 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, the various controls described below will be utilized.

- An earthen berm composed of compacted soil and/or overburden constructed to a height of at least two feet tall with a two foot wide top of berm and stabilized with native grasses. This berm will be inspected weekly and after each rainfall. As the quarry expands, the berm will be relocated, as needed, to divert upgradient stormwater around the site or quarry pit and will capture onsite flows to prevent stormwater from leaving the site.

- Rock berms will be installed on the downgradient side of the initial quarry pit to intercept sediment-laden runoff and serve as a physical barrier of the limits disturbance. The designs of the proposed rock berms are variations from the design in the Edwards Aquifer Technical Guidance Manual (RG-348, 2005). These berms will use open graded three to five inch diameter rocks and be placed perpendicular to the flow line. The berms will be inspected weekly and after each rainfall. Sediment and debris will be removed when the sediment height reaches six inches or clogs the berm.

- A fifty foot natural vegetative buffer area will be maintained downgradient of disturbed areas and along the perimeter of the property except along the eastern boundary of the site.

- Permanent soil stabilization will occur inside and outside the quarry pit for disturbed areas capable of growing vegetation (i.e., soil material present). These areas will be seeded or hydroseeded with native vegetation. For interim soil stabilization, the soil material will either be relocated or BMPs, such as rock berms, will be implemented to limit runoff.

- Geologic feature recognition training will be required for all quarry equipment operators to aid in the recognition of geologic features uncovered during the quarrying process. In addition, a Professional Geoscientist will inspect the quarry at least annually for sensitive features. Sensitive features will be reported to the TCEQ in accordance with 30 TAC 213. Protection measures for sensitive features, within the quarry pit, include sealing the feature or proposing a variety of BMPs (e.g., rock berms) to prevent sediment-laden stormwater from entering the feature.

- Flex base pads, approximately 150 feet by 100 feet with a one foot high berm, will act as secondary containment during maintenance and fueling activities. These base pads can be located both inside and outside the quarry pit. The base pads located inside the quarry pit will only service equipment that is impractical to move outside the pit area.

- Natural buffer areas are proposed for sensitive features until quarrying activities advance near the feature's buffer area. These buffer areas, except the features in Dry Comal Creek, will be fenced in order to provide protection from accidental encroachment and disturbance. The construction fencing will be installed when quarrying activities advance or will advance near the feature in the

upcoming 12 months. When quarrying activities advance to a feature, a temporary seal is proposed for the sensitive feature until the feature is mined out.

- If necessary, mine dewatering will be accomplished in accordance with the Texas Pollutant Discharge Elimination System (TPDES) General Permit TX050000, Sector J. A water pump will remove collected water after sufficient settling time. Before the water is discharged, the water is tested to determine compliance with total suspended solid limitations of 45 mg/L daily maximum value and 25 mg/L daily average value. Rock berms and other erosion controls will be implemented to prevent soil erosion and scour.

A request was made for an exception to the requirement of implementing permanent BMPs at the site upon completion of construction. Based upon the plan review, the management practices described above, that there is no increase in permanent impervious cover and that all onsite stormwater will be retained in the quarry pit, the exception request is approved.

## GEOLOGY

According to the geologic assessment included with the application, the Buda Limestone, Del Rio Clay, Georgetown Formation and Edwards Limestone were all observed by the project geologist at the surface of the site. As detailed by the project geologist, 207 features were recorded in the geologic assessment and 31 features received a sensitive score. The San Antonio Regional Office site assessment conducted on December 18, 2008 revealed the site as described by the geologic assessment. Refer to the Geologic Assessment in the WPAP application for a listing of the sensitive features.

Natural buffers were proposed for the 28 sensitive features until quarrying activities advance near a feature and the feature is sealed and mined out. Buffers were not proposed for the three faults, S-110, S-118 and S-205, due to the length of these features. Construction fencing will be installed to delineate a sensitive feature's natural buffer area when quarrying activities advance to a feature within the upcoming 12 months. Features within Dry Comal Creek will not have the construction fencing since water flows could continually destroy or remove the fencing. To prevent pollutants and sediments from entering a sensitive feature while activities are within close proximity to the feature, the sensitive features will be temporarily sealed with topsoil, overburden, crushed limestone, concrete or flowable fill approximately 90 days before the feature is mined out.

## SPECIAL CONDITIONS

I. This approval does not authorize the construction or installation of aboveground storage tanks at this site nor does this approval authorize the construction or installation of aboveground storage tanks at the original site if that AST facility plan has expired.

II. As stated in the WPAP application, a Texas Licensed Professional Geoscientist will conduct at least annual surveys of the pit area looking for geologic feature. Records of the surveys shall be maintained at the site and made available for TCEQ review for the life of the project. Anytime any sensitive feature(s) is discovered, the TCEQ shall be notified and the geologic assessment report submitted in accordance with 30 TAC 213 (refer to Standard Condition 12).

III. The BMPs proposed in the application and/or described in this approval letter must be operational prior to any soil disturbing activities within a BMP's drainage area.

IV. Intentional discharges of sediment laden stormwater from regulated activities are not allowed. If dewatering of areas becomes necessary appropriate measures must be taken.

V. The exception request from permanent BMPs is approved based upon the discussion in the Permanent Pollution Abatement Measures Section of this letter. The exception request does not approve any impervious cover or other TSS generating activities in which the generated stormwater flows off the site and does not or will not be captured by the quarry pit. As stated by the project engineer during the January 21, 2009 meeting, the applicant understands that a modification is required if the above situation occurs at the site.

VI. This approval letter is being sent for regulated activities defined in Chapter 213. This approval does not constitute a Water Rights permit. Failure to obtain all necessary authorizations prior to commencing activities near or in Dry Comal Creek or a defined water course could result in enforcement actions. Information regarding the Water Rights Program and permit process, including the possibility that the activities presented in this WPAP may require a Water Rights Permit, was explicitly stated to the applicant and the authorized agents during the January 29, 2009 meeting.

VII. As stated in §213.8(a)(6), industrial wastewater discharges into or adjacent to waters in the state that could create additional pollutant loading is a prohibited activity on the Edwards Aquifer Recharge zone. Depending on the specifics of the activities at the site, a Texas Pollutant Discharge Elimination System (TPDES) permit or a Texas Land Application Permit (TLAP) and additional BMPs and measures may be required.

VIII. As stated in the application, additional well data information could result in changes to the quarry depth. Notify the TCEQ San Antonio Regional Office, in writing, of any changes proposed to the depth of the quarry pit. A modification to this approved WPAP may be required.

IX. Pursuant to 30 TAC §213.4(h)(3) and as stated in the Edwards Aquifer protection plan, this protection plan approval or extension will expire and no extension will be granted if more than 50% of the total construction has not been completed within 10 years from the initial approval of the plan. A new Edwards Aquifer protection plan must be submitted to the TCEQ with the appropriate fees for review and approval by the executive director prior to commencing or continuing any construction or regulated activities beyond 10 years. The Applicant must submit a status report for the project containing information regarding the percentage of the total project construction completed within 180 days prior to the expiration date of this plan approval. If at that time, the total project construction cannot be demonstrated to be at least 50% complete, the Applicant must submit a new Edwards Aquifer protection plan to the TCEQ for review and approval before continuing any construction or regulated activities beyond 10 years from the date of initial approval of the plan.

If a new Edwards Aquifer protection plan is submitted to the TCEQ under 30 TAC § 213.4(h)(3), the approved plan will continue in effect until the executive director makes a determination on the new plan.

## STANDARD CONDITIONS

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

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

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

Prior to Commencement of Construction:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

20. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new

regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

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

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

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

Sincerely,

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

MRV/CEF/eg

Enclosure: Deed Recordation Affidavit, Form TCEQ-0625

cc: Mr. Gary Nicholls, P.E., Westward Environmental, Inc.
Mr. James C. Klein, P.E., City of New Braunfels
The Honorable Harold D. Baldwin, City of Schertz
Mr. Tom Hornseth, P.E., Comal County
Ms. Velma Danielson, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC212

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

I **Bryan Word, P.E.**,
Print Name

**Partner**,
Title - Owner/President/Other

of **Dean Word Company, Ltd.**,
Corporation/Partnership/Entity Name

have authorized **Gary D. Nicholls, P.E.**
Print Name of Agent/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 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.

Bryan C. Ward
Applicant's Signature

7.18.2011
Date

THE STATE OF Texas §

County of Kendall §

BEFORE ME, the undersigned authority, on this day personally appeared Bryan Ward known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 18 day of July, 2011.

Charlie Tehas
NOTARY PUBLIC

Charlie Tehas
Typed or Printed Name of Notary

CHARLIE TEHAS
My Commission Expires
April 11, 2013

MY COMMISSION EXPIRES: 4/11/13

CHARLIE TEHAS
My Commission Expires
April 11, 2013

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

NAME OF PROPOSED REGULATED ENTITY: Lonestar Quarry
REGULATED ENTITY LOCATION: Comal County, Texas
NAME OF CUSTOMER: Dean Word Company, Ltd.
CONTACT PERSON: Bryan Word PHONE: 830-606-5000
(Please Print)

Customer Reference Number (if issued): CN 600124812 (nine digits)

Regulated Entity Reference Number (if issued): RN 102870367 (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 | 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 | 1 Each | $150.00 |

Bryan C Word
Signature

7-18-2011
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<br>5 < 10<br>10 < 40<br>40 < 100<br>100 < 500<br>= 500 | $1,500<br>$3,000<br>$4,000<br>$6,500<br>$8,000<br>$10,000 |
| Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur) | < 1<br>1 < 5<br>5 < 10<br>10 < 40<br>40 < 100<br>= 100 | $3,000<br>$4,000<br>$5,000<br>$6,500<br>$8,000<br>$10,000 |

**Organized Sewage Collection Systems and Modifications**

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

**Underground and Aboveground Storage Tank System Facility Plans and Modifications**

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

**Exception Requests**

| PROJECT | FEE |
|---|---|
| Exception Request | $500 |

**Extension of Time Requests**

| PROJECT | FEE |
|---|---|
| Extension of Time Request | $150 |

BRYAN CARL WORD AS TRUSTEE OF THE
BRYAN CARL WORD TRUST
PH. (830)743-0590
PO BOX 310330
NEW BRAUNFELS, TX 78131-0330

30-76/1140

2174

DATE July 18, 2011

PAY TO THE ORDER OF TCEQ $150.00

one hundred fifty and 00/100 ~~DOLLARS~~

Security Features Included. Details on Back.

Jefferson Bank
P.O. BOX 5190 • SAN ANTONIO, TEXAS 78201-0190 • (210) 734-4311

MEMO Extension EAPP 1603.01

MP

⑈114000763⑈ 2174 ⑈134551651⑈

SPECIALTY BLUE

© DELUXE WALLET OR DUPLICATE

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 Extension**

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

☒Yes ☐No Extension for approved Water Pollution Abatement Plan

| 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 600124812 | | RN 102870367 |

## 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:* |
|---|---|---|
| Dean Word Company, Ltd. | | |

| 10. Mailing Address: | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | P.O. Box 310330 | | | | | | | |
| | City | New Braunfels | State | TX | ZIP | 78131 | ZIP + 4 | 0330 |

| 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 ) 606-5000 | | ( 830 ) 606-5008 |

| 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)* |
|---|---|---|---|
| | 32036399767 | | |

**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)*

Lonestar Quarry

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 24. Street Address of the Regulated Entity: *(No P.O. Boxes)* | | | | | | | | |
| | City | | State | | ZIP | | ZIP + 4 | |
| 25. Mailing Address: | P.O. Box 310330 | | | | | | | |
| | City | New Braunfels | State | TX | ZIP | 78131 | ZIP + 4 | 0330 |

| | | | |
|---|---|---|---|
| 26. E-Mail Address: | | | |
| 27. Telephone Number | 28. Extension or Code | 29. Fax Number *(if applicable)* | |
| ( 830 ) 606-5000 | | ( 830 ) 606-5008 | |
| 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) |
| 1422 | | 212312 | |
| 34. What is the Primary Business of this entity? *(Please do not repeat the SIC or NAICS description.)* | | | |
| Construction | | | |

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

| | |
|---|---|
| 35. Description to Physical Location: | From San Antonio, take IH-35 North. Exit Schwab Rd. (Exit 180) and go left. Road will "T" into FM 482. Go right for about 1.2 miles. Site is accessed through an easement on another company's property. Please call Westward Environmental for access to the site. |

| 36. Nearest City | County | State | Nearest ZIP Code |
|---|---|---|---|
| Schertz | Comal | TX | 78132 |

| 37. Latitude (N) In Decimal: | | | 38. Longitude (W) In Decimal: | | |
|---|---|---|---|---|---|
| 29.6633 | | | 98.2125 | | |
| Degrees | Minutes | Seconds | Degrees | Minutes | Seconds |
| 29 | 39 | 48 | 98 | 12 | 45 |

**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: |

## SECTION IV: Preparer Information

| | | | |
|---|---|---|---|
| 40. Name: | Matt Bellos | 41. Title: | Project Manager |
| 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: | Dean Word Company, Ltd. | Job Title: | Partner |
| Name *(In Print)*: | Bryan Word | Phone: | ( 830 ) 606-5000 |
| Signature: | Bryan Word | Date: | 7-18-2011 |

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

September 26, 2011



Mr. Bryan Word
Dean Word Company, Ltd.
P.O. Box 310330
New Braunfels, Texas 78131

Re: Edwards Aquifer Protection Program, Comal County

NAME OF PROJECT: Lonestar Quarry; located approximately 1.2 miles northeast of Schwab Road and FM 482; New Braunfels, Texas

TYPE OF PLAN: Request for Extension of Time to Commence Regulated Activities Authorized by a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Edwards Aquifer Protection Program File No. 1603.02, Investigation No. 950680
Regulated Entity Number: RN102870367

Dear Mr. Word:

On August 17, 2011, the Texas Commission on Environmental Quality (TCEQ) received your request for an extension of time to commence regulated activities related to the above referenced WPAP approval. The request has been reviewed for compliance with 30 TAC §213.4(h) and §213.13 which set forth the procedures for requesting an extension of time to commence regulated activities authorized by the approval and was found to be in general agreement with these procedures. Therefore, the request for an extension to the term of approval for the referenced project is granted. A summary of the dates of approval and expiration is enclosed.

| | |
|---|---|
| Date of Original Approval: | October 13, 2009 |
| Date of Expiration: | October 13, 2011 |
| Date Extension Request Received | Date of Extension Expiration |
| August 17, 2011 | April 13, 2012 |

The request and fee were received in compliance with 30 TAC §213.4(h) and §213.13. As indicated in the rules, an extension may not be granted if the proposed regulated activity or

approved plan for the regulated activity has changed. As understood, there will be no changes or modifications to the originally approved plan. This request for extension expires on April 13, 2012. Should construction not commence before the end of the six (6) month period, another request for extension would be required to keep the Edwards Aquifer Protection Plan validated.

If you have any questions or require additional information, please contact Yuliya Dunaway of the Edwards Aquifer Protection Program with the San Antonio Regional Office at (210) 490-3096.

Sincerely,

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

MRV/YD/eg

cc: Mr. Gary Nicholls, P.E., Westward Environmental, Inc.
Mr. James C. Klein, P.E., City of New Braunfels
The Honorable Harold D. Baldwin, City of Schertz
Mr. Tom Hornseth, P.E., Comal County
Mr. Karl J. Dreher, Edwards Aquifer Authority
TCEQ Central Records, MC 212

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

September 28, 2011

Mr. Ian Whitehead
2828 Lakeshore Dr.
Canyon Lake, TX 78133

Re: Edwards Aquifer, Comal County

Name of Project: Hill Creek Subdivision, Lots 1-4; Located on the southwest corner of FM 306 and Potters Creek Road, Comal County, Texas

Type of Plan: Request for Approval of a Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer

Edwards Aquifer Protection Program ID No. 2998.00; Investigation No. 944287; Regulated Entity No. RN106186000

Dear Mr. Whitehead:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Application for the above-referenced project submitted to the San Antonio Regional Office by Pawelek & Moy, Inc. on behalf of Mr. Whitehead on July 25, 2011. Final review of the CZP was completed after additional material was received on September 15, 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 an area of approximately 16.156 acres. It will include the construction of 13 rental cottages and improvements (filling and leveling) to lots 2, 3, and 4. The impervious cover will be 0.998 acres (6.18 percent). According to a letter dated, June 28, 2011, signed by Robert Boyd, P.E., with Comal County, the site in the development 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, this small business will not have more than 20 percent impervious cover. Temporary BMPs and soil stabilization measures were designed using the TCEQ technical guidance document, *Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices* (2005) and will be used during the construction phases.

## Special Conditions

I. 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 format (Deed Recordation Affidavit, TCEQ-0625A) that you may use to deed record the approved CZP is enclosed.

II. The applicant requested a waiver to the requirement for other permanent BMPs for this commercial project because the development will have less than 20 percent impervious cover. Based on the TCEQ's Review of the proposed activities and the site conditions, the required waiver is hereby granted. If the percent impervious cover ever increases above 20 percent or the land use changes, the exemption for the whole site as described in the Contributing Zone Plan may no longer apply and the property owner must notify the San Antonio Regional Office of these changes.

III. Only the activities described in the Project Description of the CZP application are approved. Any additional activities, development, or impervious cover on Lots 2, 3, or 4 will require a new or modified CZP with appropriate water quality protection measures.

## 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 the Commencement of Construction:*

4. 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 Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.

5. Any modification to the activities described in the referenced CZP 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.

## 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, this small business will not have more than 20 percent impervious cover. Temporary BMPs and soil stabilization measures were designed using the TCEQ technical guidance document, *Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices* (2005) and will be used during the construction phases.

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*Prior to the Commencement of Construction:*

4. 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 Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.

5. Any modification to the activities described in the referenced CZP 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.

6. 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 name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.

7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) 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.

*During Construction:*

8. During the course of regulated activities related to this project, the applicant or his 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 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 significantly reduced. 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).

10. 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.

11. 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.

12. 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.

13. 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. 5, above.

*After Completion of Construction:*

14. Owners of permanent BMPs and measures must insure that the 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 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. Such 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 the 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 Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone 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. A Contributing Zone 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 Contributing Zone Plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

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

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

Sincerely,

for

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

MRV/CF/eg

Enclosure: Deed Recordation Affidavit, Form TCEQ-0625A

cc: Mr. Daryl Pawelek, P.E., Pawelek & Moy, Inc.
Mr. Thomas Hornseth, P.E., Comal County Engineer
Mr. Karl Dreher, General Manager, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC212

*Westward Environmental, Inc.*

*P.O. Box 2205*
*BOERNE, TEXAS*
*78006*



January 29, 2009

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

Project No. 10173-08



Attn.: Charlyne Fritz

Subject: Water Pollution Abatement Plan (WPAP) 2nd Response
Dean Word Company, Ltd. – CN600124812
Lonestar Quarry, New Braunfels Site – RN 102870367 (EAPP No.1603.01)
Comal County, Texas

Dear Ms. Fritz,

Attached please find Westward Environmental, Inc.'s (WEI) response to your letter dated January 23, 2009 regarding the Dean Word Company, Ltd., Lonestar Quarry Application dated November 11, 2008. Our response is as follows:

**Item # 1**

Best management practices that will contribute to water quality protection at the end of quarrying onsite include the perimeter earthen berm, which will be vegetated with native grasses, and the 50 foot wide perimeter natural vegetated buffer areas. It should be noted that the applicant is aware that if disturbed areas of the site are not ultimately mined as proposed in this application and those areas do not drain into the quarry pit, a modification to this plan will be required and permanent BMPs consistent with the applicable rules at that time will be required.

The applicant has also agreed to provide the following BMPs at the end of quarrying:
1) Upon completion of mining the quarry floor will be reinspected by a Professional Geoscientist in order to identify any features and rate the features sensitivity in accordance with the applicable rules and guidance in effect at that time. A BMP will be designed for any sensitive feature and these design(s) will be submitted with a geologic report of findings to the TCEQ for approval prior to implementation of any recommended action.
2) Any areas of soil or erodible material in the quarry that are able to support vegetation will be seeded or hydroseeded with native vegetation and watered as necessary until such vegetation is adequately established to mitigate erosion.

**Item # 2**

Interim stabilization measures inside the quarry pit will be carried out in areas where soil or erodible material is located upgradient of identified sensitive features in the quarry floor, or the soil or erodible

material will be relocated to another location where runoff from the material does not pose a potential threat to any sensitive features. Temporary BMPs such as rock berms will be used to protect any sensitive features inside the pit until the soil or erodible material is stabilized or moved. Interim stabilization will include the seeding or hydroseeding of the soil or erodible material and watering as necessary until the vegetation is adequately established to mitigate erosion.

Permanent stabilization measures inside the quarry pit will be carried out in areas where soil or erodible material is proposed to be left in the pit after the completion of mining. These areas will be seeded or hydroseeded with native vegetation and watered as necessary until such vegetation is adequately established to mitigate erosion.

**Item # 3**

**Rock berm Alt 1:**
The width of the Alt 1 rock berm in the direction of flow is equal to or greater than that of the TCEQ Technical Guidance Manual rock berm design (RG348 rock berm) and uses the same size rock, 3"-5" open graded, as the RG348 rock berm, therefore its ability to filter is equal to or greater than the RG348 rock berm and any technical justification that TCEQ has relied on for the RG348 rock berm design will also apply to the Alt 1 rock berm. Because the Alt 1 rock berm is larger in terms of cross sectional area it is more massive than the RG348 rock berm and this additional mass gives it comparable stability to that of the RG348 rock berm, which is stable due to its wire sheathing.

It should be noted that the rock berm detail, RG348 Fig. 1-28 on page 1-73, does not match the description given in Section 1.4.5 in terms of side slopes. As shown in Fig. 1-28, the width of the rock berm in the direction of flow is shorter than as described in the text, and shorter than our Alt1 rock berm. For which design in RG348, that described in the text or that shown in Fig. 1-28, does TCEQ have technical justification based on studies supported by existing or proposed performance monitoring studies?

Rock berms without wire sheathing are described and utilized in many guidance manuals including:

1. Massachusetts Department of Environmental Protection. 2003. "Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers and Municipal Officials".
2. USEPA, NPDES Website of BMPs (Filter Berms)

**Rock berm Alt2:**
The Alt2 rock berms are proposed for locations just downgradient of temporary earthen berms where normally there would be no additional BMP due to the preservation of a minimum 50' wide natural vegetated buffer. In other words, the minimum 50' wide natural vegetated buffer is the primary TBMP in place downgradient of the temporary earthen berms and the Alt2 rock berm is proposed as an additional, extra BMP which provides a physical barrier between the disturbed area and the natural vegetated buffer. If TCEQ prefers, the applicant will not construct any Alt2 rock berms as described in the plan and will not replace them with any other type of BMP or barrier.

**Item # 4**

The sensitive features identified onsite in the GA and their respective natural buffer areas as defined in RG348 Chapter 5 are shown on the attached Revised WPAP Site Plan. (No buffer areas for faults have been shown due to their size and isolated areas of sensitivity.) The buffer areas around sensitive features not located in the Dry Comal Creek "streambed" will be fenced in order to provide protection from accidental encroachment and/or land disturbance. When quarrying activities advance near a sensitive feature buffer, a limited amount of clearing in the buffer area will be performed in order that the proper equipment and materials can access the feature. The equipment and materials will be used to construct the temporary seal that will remain in place until the feature and surrounding area is mined out. The construction of fencing for particular sensitive features will take place when mining is proposed to advance near those features within the following 12 months. This timing is proposed due to the large size of the site and the long term nature of the project in order to alleviate the applicant from the requirement to maintain fencing for decades.

It is not practical to place fencing around the features in the Dry Comal Creek streambed because high stormwater flows during rain events will destroy any proposed fencing. Sensitive features identified in the geologic assessment in the streambed included S-9, S-155, S-187 and S-207. In lieu of fencing and in order to protect the aquifer from sediment in stormwater, the applicant proposes to protect open sensitive features in the streambed when mining activities are proposed to occur in upgradient areas by placing clean, washed aggregate and/or sand in the features. If this method is not appropriate or practical for any particular feature(s), another method of protection will be devised and submitted to TCEQ for approval prior to being carried out.

**Item # 5**

A summary of proposed BMPs for protection of the surface stream, stream bed, sensitive features in the stream bed and the aquifer is provided.

Disturbed areas of the site that are proposed to be quarried will be bordered on the downgradient side by a minimum 50' wide natural vegetated buffer (until quarrying advances into the stream bed itself), rock berm(s), temporary earthen berms on the downgradient and upgradient sides, the quarry pit itself, and the natural vegetated buffer areas and washed aggregate or sand fill of sensitive features as described in #4 herein.

Disturbed areas, such as temporary stockpile areas will be bordered on the downgradient side by a minimum 50' natural vegetated buffer, rock berm(s) and in some cases the quarry pit.

**Item # 6**

Ongoing annual quarry floor geologic inspections will be carried out throughout the life of the quarry. These inspections will be performed in order to identify potential features that could allow infiltration to the subsurface. In addition to these regular inspections, the applicant will also have a Professional Geoscientist conduct area specific geologic inspections in areas of the pit where wash water ponds are proposed to be constructed prior to starting construction of any wash water pond(s). At a minimum, any minor sensitive geologic feature identified in a proposed pond location will be sealed with compacted clay at least one foot thick. Other more significant features will be evaluated when they are

identified and an individual plan to seal the feature will be devised and submitted to TCEQ for approval prior to construction of the seal or pond.

Attached please find a replacement for the first page of Attachment B of the Exception Request originally submitted, which was found to contain a typographical error.

Respectfully submitted,
WESTWARD ENVIRONMENTAL, INC.


Gary Nicholls, P.E.
Vice President

Distribution: Addressee (original + 5 copies)
Bryan Word – Dean Word Company, Ltd
WEI 10173-08 file

Attachments Attachment B, Exception Request, page 1
Revised WPAP Site Plan, (2 sheets)

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Exception Form Attachment B**

**Documentation of Equivalent Water Quality Protection**

Equivalent water quality protection for the Edwards Aquifer will be provided at the proposed quarry site as demonstrated by the following.

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."* The notion is that stormwater, contaminated due to its contact with sediment resulting from a regulated activity, is going to leave the property where the regulated activity is taking place. This contaminated stormwater would then potentially enter surface water and be available for infiltration through a significant recharge feature in a downgradient streambed.

When the pit is established (typically 6-8 months), stormwater that contacts sediment in the quarry will be completely retained and will not be available for infiltration through significant recharge features in a streambed downgradient. In this manner, the quarry pit will serve to provide equivalent (actually superior due to its ability to retain 100% of the sediment loading associated with the average annual precipitation without discharge to the surface) water quality protection to the Edwards Aquifer.

Protection of the aquifer with regard to infiltration will be ensured because the quarry operator will report any geologic features uncovered during mining. These features will be protected, rated and dealt with as described in the Temporary Stormwater Section, Attachment D, herein. This method of protection is essentially the same as that used by utility trench contractors working in the recharge zone.

Similar Exception Requests to Permanent BMPs for quarrying activities have been granted (without calculations demonstrating 80% TSS removal) for other quarries over the Recharge and Contributing Zones based on the nature of the regulated activity, the BMPs provided, commission regulations and consistency with previous quarry approvals pursuant to 30 TAC 213.

The requested exception to the time limit for completion of construction of the proposed quarry will in no way cause any additional threat to water quality or the aquifer.

Clearing and quarrying is proposed to be initiated in relatively small portions of the site (<10 ac) over a long period of time. As each cleared area is mined, runoff from that area is no longer a concern in terms of stormwater runoff quality because the pit will retain the stormwater. Each area to be cleared and mined is similar to a separate, small project in that they will have their own temporary BMPs and the adjacent quarry pit to act

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

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

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

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

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

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

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

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

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

10. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE 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 ARID CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.

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

12. THE HOLDER OF ANY APPROVED 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.

FM 1863

KRUEGER CANYON

ZONE A

FINAL EARTHEN BERM & LIMITS OF DISTURBANCE

725' AMSL ESTIMATED QUARRY FLOOR ELEVATION

UNDISTURBED AREA

PIPELINE EASEMENT

CONSTRUCTION EXIT

TRUCK SCALE

SCALE HOUSE/TRAILER (NO SLAB ON GRADE)

EXISTING RANCH ROAD

ROCK BERM ALT. 2

FUTURE 5 AC. STOCKPILE AREA ③

ROCK BERM ALT. 1 (POSSIBLE LOCATION OF SW DISCHARGE)

ROCK BERM

APPROX. LOCATION OF STOCKPILE AREA ③

INTERIM EARTHEN BERM

INITIAL 10 AC PLANT & QUARRY AREA

APPROX. LOCATION OF INITIAL ROCK CRUSHING PLANT

APPROX. LOCATION OF INITIAL WASH WATER POND

WASH OUT PIT

FLEX BASE PAD

BASE PAD

ROAD EASEMENT

PROPERTY LINE & QUARRY BOUNDARY (LIMITS OF DISTURBANCE)

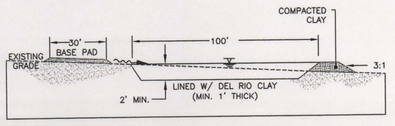
PREVIOUSLY APPROVED PROJECT LIMITS EAAP 1603.00

CURRENT PROJECT LIMIT & QUARRY BOUNDARY

NOTE: VEHICLE AND EQUIPMENT REFUELING, REPAIR AND MAINTENANCE WILL OCCUR ON FLEX BASE PAD(S) OUTSIDE THE QUARRY PIT AREA, AS PRACTICABLE.

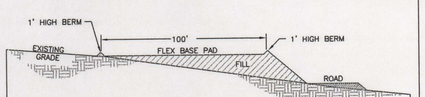
NOTE: FINAL EARTHEN BERMS OUTSIDE THE PIT WILL BE STABILIZED WITH NATIVE GRASSES.

DETAIL WASH OUT PIT ② SECTION B — N.T.S.




NOTE: MIN. 1' FREEBOARD

DETAIL FLEX BASE PAD ② SECTION D — N.T.S.



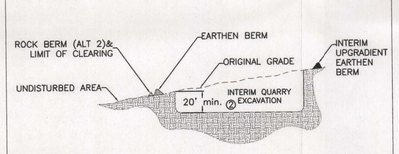

150'L X 100'W X 1'H = 15,000 CU. FT.
15,000 CU. FT. = 112,215 GAL.

GEOLOGIC FEATURE
SENSITIVE FEATURE
PROPERTY BOUNDARY
FAULT
INFERRED
USGS BLUE LINE
EARTHEN BERM
UNDISTURBED AREA
ZONE A CURRENT FLOOD PLAIN
ZONE A PROPOSED FEMA FLOOD PLAIN FIRM NO.S 48546300B0C & 4854630100C

0 400 800
1" = 400'

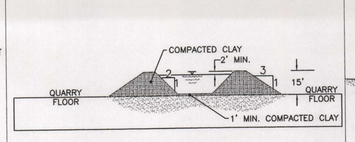
THE PROJECT SITE IS IN THE EDWARDS AQUIFER RECHARGE ZONE

SECTION A



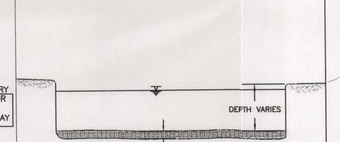

N.T.S.

DETAIL WASH WATER PONDS ② SECTION C




NOTE: 2' MIN. FREEBOARD WILL BE MAINTAINED — N.T.S

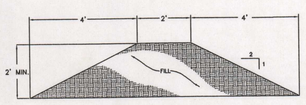
ALTERNATIVE WASH WATER PONDS ④




N.T.S.

MAINTENANCE PLAN

COMPACTED EARTHEN BERM



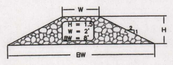

CONSTRUCTION NOTES

1. COMPACTED EARTHEN BERM

INSTALLATION:
COMPRISED OF SOIL AND OVERBURDEN MATTER EITHER GENERATED ONSITE OR DELIVERED FROM OFFSITE. COMPACT WITH HEAVY EQUIPMENT IN 12" (MAX) LIFTS.

MAINTENANCE:
INSPECT WEEKLY AND AFTER EACH RAINFALL. REPLACE AS NECESSARY.

ROCK BERM (RG-348)



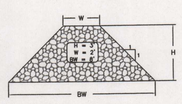

2. ROCK BERM

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 WEEKLY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6". REPLACE WHEN ROCK BECOMES CLOGGED WITH SEDIMENT.

ALTERNATE # 1 ROCK BERM (WEI)

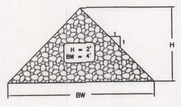



3. ALTERNATE #1 & #2 ROCK BERMS (WEI)

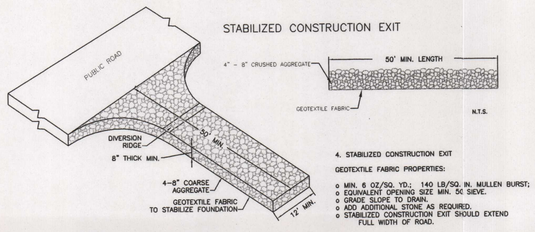
INSTALLATION:
AGGREGATE USED SHOULD BE COMPRISED OF OPEN GRADED 3-5" DIAMETER ROCK. BERM SHOULD BE PLACED PERPENDICULAR TO FLOW LINE.
BERM SHOULD BE BURIED IN A TRENCH APPROX. 4" DEEP.

MAINTENANCE:
INSPECT BERMS WEEKLY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6". REPLACE WHEN ROCK BECOMES CLOGGED WITH SEDIMENT.

ALTERNATE # 2 ROCK BERM (WEI)




STABILIZED CONSTRUCTION EXIT




N.T.S.

4. STABILIZED CONSTRUCTION EXIT

GEOTEXTILE FABRIC PROPERTIES:

- o MIN. 6 OZ/SQ. YD.; 140 LB/SQ. IN. MULLEN BURST;
- o EQUIVALENT OPENING SIZE MIN. 50 SIEVE.
- o GRADE SLOPE TO DRAIN.
- o ADD ADDITIONAL STONE AS REQUIRED.
- o STABILIZED CONSTRUCTION EXIT SHOULD EXTEND FULL WIDTH OF ROAD.

TCEQ-R13
JAN 29 2009
SAN ANTONIO

STATE OF TEXAS
GARY DANIEL NICHOLLS
90571
REGISTERED PROFESSIONAL ENGINEER


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


| REV. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| ① | DETAIL OF ACTUAL SIZE OF FEATURES | SM | 12/23/2008 |
| ② | REVISE CROSS SECTION A & ADD SECTS. B,C & D | DK | 01/02/2009 |
| ③ | ADD BASE PADS, WASHOUT PIT, RC & STK PILE LOCS. | DK | 01/02/2009 |
| ④ | ADD SENSITIVE FEATURES BUFFER | SM | 01/28/2009 |

| | | |
|---|---|---|
| COMPANY NAME: DEAN WORD COMPANY | DRAWN BY: SM | CHECKED BY: GDN |
| JOB NAME: WPAP – LONESTAR QUARRY | SCALE: 1" = 400' | |
| LOCATION: FM 482, COMAL CO., TEXAS | DATE: 09/18/2008 | |
| IMAGE: NONE | JOB NUMBER: 10173-08 | DRAWING: 173-08wpapmap_rev.dwg |
| DESCRIPTION: WPAP MAP – NORTH | | |

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

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

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

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

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

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

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

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

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

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

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

12. THE HOLDER OF ANY APPROVED 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
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SAN ANTONIO, TEXAS 78233
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FAX (210) 545-4329

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


GEOLOGIC FEATURE
SENSITIVE FEATURE
PROPERTY BOUNDARY
FAULT
INFERRED
USGS BLUE LINE
EARTHEN BERM
UNDISTURBED AREA
ZONE A CURRENT FLOOD PLAIN
ZONE A PROPOSED FEMA FLOOD PLAIN FIRM NO.S 4854630080C & 4854630100C

0 400 800
1" = 400'

THE PROJECT SITE IS IN THE EDWARDS AQUIFER RECHARGE ZONE

SECTION B-B




N.T.S.

## MAINTENANCE PLAN

COMPACTED EARTHEN BERM




CONSTRUCTION NOTES

1. COMPACTED EARTHEN BERM

INSTALLATION:
COMPRISED OF SOIL AND OVERBURDEN MATTER EITHER GENERATED ONSITE OR DELIVERED FROM OFFSITE. COMPACT WITH HEAVY EQUIPMENT IN 12" (MAX) LIFTS.

MAINTENANCE:
INSPECT WEEKLY AND AFTER EACH RAINFALL. REPLACE AS NECESSARY.

ROCK BERM (RG-348)




2. 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 WEEKLY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6". REPLACE WHEN ROCK BECOMES CLOGGED WITH SEDIMENT.

ALTERNATE # 1 ROCK BERM (WEI)




3. ALTERNATE #1 & #2 ROCK BERMS (WEI)

INSTALLATION:
AGGREGATE USED SHOULD BE COMPRISED OF OPEN GRADED 3-5" DIAMETER ROCK. BERM SHOULD BE PLACED PERPENDICULAR TO FLOW LINE.
BERM SHOULD BE BURIED IN A TRENCH APPROX. 4" DEEP.

MAINTENANCE:
INSPECT BERMS WEEKLY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6". REPLACE WHEN ROCK BECOMES CLOGGED WITH SEDIMENT.

ALTERNATE # 2 ROCK BERM (WEI)




STABILIZED CONSTRUCTION EXIT




4. STABILIZED CONSTRUCTION EXIT

GEOTEXTILE FABRIC PROPERTIES:

- o MIN. 6 OZ/SQ. YD.; 140 LB/SQ. IN. MULLEN BURST;
- o EQUIVALENT OPENING SIZE MIN. 50 SIEVE.
- o GRADE SLOPE TO DRAIN.
- o ADD ADDITIONAL STONE AS REQUIRED.
- o STABILIZED CONSTRUCTION EXIT SHOULD EXTEND FULL WIDTH OF ROAD.

NOTE: FINAL EARTHEN BERMS OUTSIDE THE PIT WILL BE STABILIZED WITH NATIVE GRASSES.

STATE OF TEXAS
GARY DANIEL NICHOLS
87220
LICENSED
PROFESSIONAL ENGINEER


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


| REV. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 1 | DETAIL OF ACTUAL SIZE OF FEATURES | SM | 12/23/2008 |
| 2 | REVISE CROSS SECTION A & ADD SECTS. B-C & D | DK | 01/02/2009 |
| 3 | ADD BASE PADS, WASHOUT PIT, RC & STK. PILE LOCS. | DK | 01/02/2009 |
| 4 | ADD SENSITIVE FEATURES BUFFER | SM | 01/28/2009 |

| | | |
|---|---|---|
| COMPANY NAME: DEAN WORD COMPANY | DRAWN BY: SM | CHECKED BY: GDN |
| JOB NAME: WPAP - LONESTAR QUARRY | SCALE: 1" = 400' | |
| LOCATION: FM 482, COMAL CO., TEXAS | DATE: 09/18/2008 | |
| IMAGE: NONE | JOB NUMBER | DRAWING |
| DESCRIPTION: WPAP MAP - SOUTH | 10173-08 | 173-08wpapmap_rev.dwg |

*Westward Environmental, Inc.*

*P.O. Box 2205*
*BOERNE, TEXAS*
*78006*

January 5, 2009

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

Project No. 10173-08



Attn.: Charlyne Fritz

Subject: Water Pollution Abatement Plan (WPAP) Response
Dean Word Company, Ltd. – CN600124812
Lonestar Quarry, New Braunfels Site – RN 102870367 (EAPP No.1603.01)
Georgetown, Williamson County, Texas

Dear Ms. Fritz,

Attached please find Westward Environmental, Inc.'s (WEI) response to your letter dated December 12, 2008 regarding the Dean Word Company, Ltd., Lonestar Quarry Application dated November 11, 2008. After you have had the chance to review this information we would like to request a meeting with the appropriate TCEQ personnel to discuss how the processing of our WPAP application can be accomplished in a manner that is consistent with our contemplated quarry operation plans, which obviously are very different from the nature of commercial developments that are typically the focus of the WPAP rules.

**Existing Quarry Information**

Please note that the subject WPAP application does not intend to alter or modify in any way the portion of the site previously approved by EAPP No. 1603.00.

**Item # 1**

The subject application has been prepared for the proposed site to operate essentially independent of the previously approved site. However, since the new site will not be physically separated from the existing site by a fence or a similar structure, company personal might foreseeably use the office building or toilets located at the existing site. The mobile service truck that will be used to fuel equipment and vehicles at the proposed quarry may use the bulk fuel tank(s) on the existing site to fill its tanks.

**Item # 2**

Dean Word Company, Ltd. is not proposing any modification to the previously approved quarry site; the subject application addresses a new site, therefore, a modification form or update to the site plan is not relevant to the subject project.

*PHONE: (830) 249-8284* *EMAIL: GENERAL@WESTWARDENV.COM* *FAX: (830) 249-0221*

## Charlyne Fritz - Lonestar quarry WPAP

**From:** "Gary Nicholls" <gnicholls@westwardenv.com>
**To:** "Charlyne Fritz" <CFritz@tceq.state.tx.us>
**Date:** 9/28/2009 4:23 PM
**Subject:** Lonestar quarry WPAP
**CC:** "Bryan Word" <bcword@deanword.com>, <tmathews@westwardenv.com>

Charly, in response to our phone conversation today I have reviewed the previous submittals. Our first response dated jan 5, 2009 stated under Item #23 that more than one base pad for maintenance and fueling would be built as required due to quarrying requirements. The response also states that the base pad will be constructed outside of the pit "as practicable". During one of our meetings regarding this project Bryan Word and I discussed with you and Lynn Bumguardner that it would be impractical for some vehicles and equipment to be fueled outside of the pit due to various reasons, such as the fact that some equipment moves very slowly and is not really intended to be relocated long distances such as those that will be required when the size of the quarry expands.

Word Company intends to construct one or perhaps multiple base pads for fueling/maintenance inside of the pit at some time in the future. The pads will be constructed as described in the WPAP and subsequent submittals. The base pads will be essentially level and be constructed of at least a one foot thick later of compacted base. The pad will be surrounded by a one foot high base berm. This configuration will mitigate there being any stormwater runoff from the pad, and will mitigate the contact of stormwater in the pit from contacting the base pad. Spills and leaks of hydrocarbons on the base pad will be cleaned up in a timely manner and properly disposed of, as described in the Temporary Stormwater Section Attachment A.

Please let me know if any additional information is needed. Thank you.

Gary Nicholls, P.E.

**WPAP Section (TCEQ-0584)**

**Item # 3**

The existing rock crushing plant, office, asphalt plant batch house, and conveyers are powered with electricity except for the burner of the asphalt plant which burns fuel oil.

**Item # 4**

During day to day operations approximately fifteen (15) quarry workers and staff will be onsite for the operations under this WPAP at any given time. See revision to Item #3 in the WPAP Application Form.

**Item # 5**

Due to the nature of the project, namely excavation and quarrying, no permanent structure or impervious cover will remain on-site after the operation ends; therefore there will be no additional impervious cover after the construction of the quarry is completed. A modification to this plan would be submitted in the future for any permanent impervious cover.

Any road improvements, stockpile areas or other temporary "impervious cover" will maintain a 50 foot wide vegetative buffer downgradient, rock berms and/or other temporary BMPs to control stormwater runoff. Roads will be realigned as needed throughout the project and will maintain a 50 foot vegetative buffer at each location. Eventually roads will be located in the quarry pit.

The future locations of temporary roads, stockpile areas, etc. are dependent on several factors including economic conditions and locations of mineable material in demand at that time. Exact future locations of these items cannot be determined at this time due to these highly variable factors.

**Item # 6**

See revised WPAP Attachment A and Temporary Stormwater Section Attachment B.

**Item # 7**

Pre-construction:
Calculations were made using the Rational Method for estimation of peak runoff rates. The Rational Method equation is $Q = C * I * A$, where Q is the peak flow rate, C is a dimensionless coefficient (runoff coefficient), I is the rainfall intensity, and A is the area.

A runoff coefficient, C, of 0.8 was used in the following calculations to represent the pre-construction, undisturbed area. This value is considered to be conservative and is intended to demonstrate potential runoff under severe rainfall conditions on relatively thin clayey soils.

Based on data from the Soil Conservation Service, USDA's "Urban hydrology for small watersheds" manual, the rainfall intensity of a 100 yr-24 hr event on this area would be 10 inches or 0.83 ft.

The area of the site in which the quarry pit is located is approximately 1,653 acres.

Q = C * I * A
Q = 0.83 ft * 0.8 * 1,653 acres
Q = 1,098 ac-ft

Therefore, the estimated runoff volume from the pre-construction conditions is 1,098 ac-ft for a 100 yr-24 hr design storm.

Post-construction:
Because the proposed project consists of the excavation of a quarry pit, stormwater runoff from the site after construction of the pit is expected to be zero due to the stormwater being contained and retained inside the pit.

For comparison, a quarry pit comprised of 200 acres and 100 feet deep would contain 20,000 acre-feet of water. This storage volume is significantly greater than the estimated runoff volume calculated from pre-construction conditions for the entire site (1,098 ac-ft). The proposed final quarry will be larger than 200 acres and approximately 95 feet deep below the lowest adjacent grade.

**Item # 8**

See revised 'Geologic Assessment' form.

**Item # 9**

After completion of mining at the site no uncontrolled stormwater discharges to Dry Comal Creek are expected to occur. During the initial stages of mining stormwater runoff in the disturbed areas will be controlled by the earthen berm/rock berm on the downgradient side of the cleared area and by the pit; no stormwater discharges are likely. However, in the event of unusually high rainfall, stormwater discharges during the initial stages of mining would most likely occur at the locations of the two rock berms adjacent to the initial 10 acre disturbed area as shown on the Revised WPAP Site Plan attached.

If necessary, as previously stated in Temporary Stormwater Section Attachment I, mine dewatering will be accomplished according to the TCEQ stormwater regulations noted in the TPDES General Permit No. TXR050000 under Sector J for Mineral Mining and Dressing Facilities.

Any dewatering required at the site would be accomplished using a pump to remove the water after solids have settled out and the water is tested and found to be in compliance with the numeric effluent limitations of TPDES General Permit No. TXR050000 Section J, (5)(ii) of 45 mg/L for a daily maximum and 25 mg/L for a daily average. These concentrations are lower than the estimated background concentration as stated in the Edwards Aquifer Technical Guidance Manual (RG-348) of 80 mg/L for undeveloped areas. The water would be discharged to a natural drainage area onto a rip rap pad such that soil erosion would be mitigated. Appropriate rock berm(s) would be constructed downgradient of the rip rap pad if needed.

**Temporary Stormwater Section (TCEQ-0602)**

**Item # 10**

See revised Temporary Stormwater Section Attachment B.

**Item # 11**

The content of the two pipelines that cross the site is natural gas. The pipelines are located in easements on the Dean Word Company, Ltd. property. Dean Word Company, Ltd. does not own the pipelines. Dean Word Company, Ltd. is not responsible for the relocation process and their related spill prevention measures. Dean Word Company, Ltd. may negotiate with the owner of the pipelines for relocation of the pipelines. A modification to the WPAP will be submitted if necessary.

**Item # 12**

The estimated area disturbed for the scale and scale house is less than 2,000 square feet (<0.05 ac.). The scale house will be a portable trailer type building and will not have a concrete slab. The rock crusher, wash water ponds and initial stockpile area will be located in the initial 10-acre disturbed area as described in the WPAP application and shown on the WPAP Site Plan. Additional stockpile areas may be constructed in the future an example of which is shown on the Revised WPAP Site Plan. The downgradient side of these stockpile areas would be bordered by a rock berm and a minimum 50 foot wide undisturbed vegetative buffer area.

**Item # 13**

a. Upgradient stormwater from the disturbed areas will be captured by the pit. Upgradient stormwater runoff from undisturbed areas will be diverted around the disturbed areas by the upgradient earthen berm, similar to Figure 1-3 of RG-348. See revised cross-section A-A on the Revised WPAP Site Plan.

b. Dean Word Company, Ltd. will utilize dust suppressors (such as partial enclosures and water sprays) on the rock crushing plant and/or a water truck to control dust emissions from roads and stockpiles.

c. As previously stated in the Temporary Stormwater Section Attachment C: "*Construction entrances/exits will be added where necessary to limit off site tracking.*" A construction exit is shown and labeled in the northeast portion of the site on the WPAP Site Plan. The details of this BMP are also shown on the Site Plan under 'Maintenance Plan'.

d. If necessary, as previously stated in Temporary Stormwater Section Attachment I, mine dewatering will be accomplished according to the TCEQ stormwater regulations noted in the TPDES General Permit No. TXR050000 under Sector J for Mineral Mining and Dressing Facilities.

Any dewatering required at the site would be accomplished using a pump to remove the water after solids have settled out and the water is tested and found to be in compliance with the numeric effluent limitations of TPDES General Permit No. TXR050000 Section J, (5)(ii) of 45 mg/L for a daily maximum and 25 mg/L for a daily average. These concentrations are lower than the estimated background concentration as stated in the Edwards Aquifer Technical Guidance Manual (RG-348) of 80 mg/L for undeveloped areas. The water would be discharged to a natural drainage area onto a rip

rap pad such that soil erosion would be mitigated. Appropriate rock berm(s) would be constructed downgradient of the rip rap pad if needed.

e. The amount of dust created by the rock crushing plant and its control methods will be regulated by the air permit authorization that Dean Word Company, Ltd. will seek with TCEQ's Air Permits Division Office of Permitting and Registration. This air permit authorization is unrelated to the subject WPAP application process. Water sprays and equipment enclosures will be used to control dust created by the rock crushing plant.

f. The amount of dust created by the screens and conveyors and its control methods will be regulated by the air permit authorization that Dean Word Company, Ltd. will seek with TCEQ's Air Permits Division Office of Permitting and Registration. This air permit authorization is unrelated to the subject WPAP application process. Water sprays and equipment enclosures will be used to control dust created by the screens and conveyors.

**Item # 14 & Item # 31**

We have not removed these sensitive features from Attachment E because Dean Word Company, Ltd. proposes to mine as described in the WPAP application. See Item #31.

**Item # 15**

a. The rock crusher, material stockpiles and material loading areas will initially be located within the area labeled as 'Initial Plant and Quarry Area'. As shown on the WPAP Site Plan and stated on the Temporary Stormwater Section Attachment C, two rock berms (ALT 1) will be constructed along the downgradient portion of the initial 10 acre quarry area. Then another rock berm (ALT 2) will be installed upgradient from the ALT 1 rock berms and downgradient from the initial quarry area. Next, clearing will be initiated in the initial 10 acre plant area and equipment will remove topsoil and push it in all directions from the middle of the proposed plant area creating an earthen berm approximately 2-6' high that will surround the 10 acres as shown on the attached WPAP Site Plan. These are the specific BMPs that will divert flows away from exposed soils, store flows and limit discharge of pollutants from exposed areas of the site.

The future locations of the material stockpiles and material loading areas will be bordered on the downgradient side by a rock berm and minimum of 50 feet of undisturbed vegetative buffer. The future location of the rock crusher will be in the quarry. The quarry will serve to store flows and control discharge of pollutants from exposed areas by virtue of its depth below the adjacent ground level.

b. Yes there will be screens and conveyor systems that transport materials as part of the rock crushing operations. The same BMPs mentioned in Item 15.a of this letter will control these systems. In the future the rock crushing plant, which includes the screens, and conveyors, and some stockpile areas will be located in the pit. In this case the pit will act as the specific temporary structural practice to store stormwater flows and control discharge of pollutants from exposed areas by virtue of its depth below the adjacent ground level.

**Item # 16**

Item #10 from the Temporary Stormwater Section (TCEQ-0602) reads "*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.*" The portion that has been underlined is not required by Chapter 213; as already quoted in the WPAP application. Chapter 30 TAC 213.5 (b)(4)(C)(viii)(IV)(D)(II)(c) states: "*For drainage locations serving less than ten acres, smaller sediment basins and/or sediment traps should be used. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction area unless a sediment basin providing storage for a calculated volume of runoff from a two-year, 24- hour storm or 3,600 cubic feet of storage per acre drained is provided. The executive director encourages the use of a combination of sediment and erosion control measures in order to achieve maximum pollutant removal.*"

In the WPAP application the option is marked that corresponds to the amount of land that will be disturbed at one time (< 10 ac). Dean Word Company, Ltd. proposes to initially disturb less than 10 acres and not expose any more than 10 acres at a time to disturbance activities under this WPAP. A quarry will be built beginning in this initial area of disturbance and the quarry will store flows and limit discharge of pollutants from exposed areas of the site, but will not meet the strict design criteria of RG-348 for sedimentation basins (in terms of discharge piping, drawdown time, etc.) or for sediment traps. Other BMPs such as those specifically listed in the rule will be used in combination to maximize pollutant removal. The quarry will expand in increments by disturbing less than 10 acres at a time.

The portion on the Form that is not required by rule in Chapter 213 is removed and instead the statement that represents the minimum control required by the rule is added. The controls noted in the application are what Dean Word Company, Ltd. proposes to use to control flows and runoff from the disturbed areas.

**Item # 17**

See updated Attachment I for inspection and maintenance of construction exits. As previously stated in the General Information Attachment C: "*Dean Word Company, Ltd. proposes to utilize wash water ponds inside of the quarry pit in order to recycle the water as necessary to wash aggregate.*" These ponds are not BMPs and are not intended to capture stormwater runoff or to act as stormwater sedimentation ponds. They are used to recycle process water as part of the rock crushing process. Therefore, they have not been included in Attachment I.

**Item # 18**

a. Interim Stabilization – Outside the pit: The purpose of soil stabilization is to control erosion and prevent pollutants from entering surface waters, streams and the aquifer through sensitive recharge features. Areas outside of the pit that are disturbed are generally drilled and blasted within 90 days. It is not feasible or appropriate to try to stabilize these areas with vegetation because 1) the topsoil has been removed and vegetation will not readily grow; 2) these areas will soon be excavated and; 3) other structural BMPs will be used to protect stormwater runoff quality from these areas in a manner consistent with customary and acceptable mining practices. As previously stated in the Temporary

Stormwater Section Attachment J: "*...because the soils overburden in these cleared areas have been removed and placed in an earthen berm adjacent to the cleared areas, erosion of these areas is mitigated. The earthen berms upgradient of the cleared areas divert upgradient stormwater away from cleared areas and earthen berms downgradient of cleared areas retain stormwater runoff from the cleared area.*" The proposed BMPs provide adequate protection for the area outside of the pit. Also as stated in Temporary Stormwater Section Attachment J, "*...It is not practical to be continually stabilizing small areas prior to their excavation and stabilizing the earthen berms that are frequently relocated.*"

b. Interim Stabilization – Inside the pit: As stated above the purpose of soil stabilization is to control erosion and prevent pollutants from entering surface waters, streams and the aquifer through sensitive recharge features. Again, as stated in Temporary Stormwater Section Attachment J: "*The disturbed soils in the quarry pit will be retained in the pit thereby eliminating the need for soil stabilization in the pit to prevent pollutants from entering surface waters or streams.*"

Infiltration of stormwater in the quarry floor through any geologic feature discovered to be a sensitive recharge feature will be mitigated by the proposed measures already discussed on Temporary Stormwater Section Attachment D and in General Information Attachment C: "*Any possibly sensitive geologic feature discovered by mining staff 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. After placement of the rock berm, the active work area of the quarry will be moved to another portion of the pit where the feature cannot be impacted by the continuing quarry operations. A Professional Geologist will be 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.*" and "*Dean Word Company, Ltd. proposes to provide geologic feature recognition training to quarry equipment operators and to have a Professional Geoscientist inspect the quarry at least annually for sensitive features. Any possibly sensitive geologic feature discovered by mining staff or the Professional Geoscientist will be evaluated by a Professional Geoscientist and if determined to be sensitive, will be reported to TCEQ. An appropriate method for addressing the feature will be formulated by a Professional Geoscientist or a Professional Engineer and upon approval by TCEQ, the method to protect the feature will be implemented.*" respectively. In addition it is not practical to stabilize areas of the pit with vegetation because often times areas of the pit will not be active for some period of time, then be reactivated.

c. Permanent Stabilization – Outside the pit: As shown on the WPAP Site Plan and discussed throughout the WPAP application, the final quarry pit will encompass the great majority of the site. The only areas that will be outside the final quarry pit will be the final earthen berms (which as already mentioned in the Temporary Stormwater Section Attachment J will be stabilized with native grasses prior to the completion of the quarry) and the areas that are labeled 'Undisturbed Area' on the Site Plan that do not require stabilization measures.

d. Permanent Stabilization – Inside the pit: A lack of maintenance of the temporary BMPs described in Attachment D (earthen berms, rock berms and vegetative buffers) will not adversely impact the ability of the quarry to retain sediment. Therefore, because the quarry will retain sediment without discharge

to the surface, even if the quarry is inactive, closed or completed, no permanent stabilization is necessary inside the pit.

**Item # 19**

No new stabilization measures have been included.

**Item # 20**

Note: As previously stated in the General Information Attachment C: "*Dean Word Company, Ltd. proposes to utilize wash water ponds inside of the quarry pit in order to recycle the water as necessary to wash aggregate.*" These ponds are not BMPs and are not intended to capture stormwater runoff or to act as stormwater sedimentation ponds. They are used to recycle process water as part of the rock crushing process inside the pit. There will be no waste water produced by the proposed operation because none of the process water will be discharged.

a. Wash water ponds are used to allow sedimentation of fine grain limestone particles that have been washed off of the aggregate materials during the screening process. After sufficient sedimentation, the wash water is reused in the screening process. This reduces the amount of water required for aggregate washing significantly. The fine grain limestone particles settle to the bottom of the ponds and lines the ponds. Utilizing fine-grained materials for lining wash water ponds is a long standing practice in the industry. It is expected that fine-grained materials will effectively serve to seal the wash water ponds. As stated in the WPAP application prior to construction of a wash water pond a Professional Geologist will observe the quarry floor in the proposed location and any sensitive feature will be identified and dealt with as described previously in Item #18.

b. Due to the nature and location of these ponds inside the pit, they will not have a drainage area. The only stormwater to enter the wash water ponds will be the rainfall that falls into the wash water ponds.

c. Due to the nature of these ponds and the fact that they are not BMPs and are not intended to capture stormwater runoff or to act as stormwater sedimentation ponds, they are not required to meet the requirements for temporary sedimentation ponds listed in Chapter 213. The initial wash water pond will have approximate dimensions of 300 feet by 100 feet by 15 feet deep (including freeboard of 2 feet).

d. The wash water ponds will require daily inspection by mining staff to ensure the proper operation of pumps and piping. Staff will also inspect wash water ponds for sediment capacity, leakage, and compacted clay dike integrity. Maintenance will be comprised of periodically removing sediment and transporting it to another location inside the pit where the material will be placed back into base product and/or stored for future use.

**Item # 21**

The Edwards Aquifer Technical Guidance Manual (RG-348) as its name clearly indicates is only a *guidance* document. This concept was addressed on a litigated case regarding a WPAP application for a quarry by Gregg Abbott, Attorney General of Texas. As stated in the TCEQ'S RESPONSE BRIEF IN THE DISTRICT COURT OF TRAVIS COUNTY, TEXAS Cause No. D-1-GV-05-04217 ARGUMENT AND AUTHORITY III. B. 2. regarding TCEQ rules are not limited to retention and

irrigation.: "Plaintiffs argument is based on the Edwards Aquifer Technical Guidance manual. This manual is not a rule; rather it is meant to provide technical guidance to engineers and planners on possible ways of complying with the rules." (emphasis added) RG-348 is not the sole source of technical and/or design procedures for projects over the Edwards Aquifer Recharge Zone and different techniques and designs are allowed when signed and sealed by a Texas Professional Engineer.

The alternative rock berms proposed on this application have been designed by a Texas licensed Professional Engineer based on his professional experience, industry practice and site-specific characteristics, to be adequate to fulfill the objectives of RG-348.

The proposed berms are more suitable for the proposed operation. No wire is included in the design; instead a higher, thicker berm is used to provide more filtering capacity and greater resistance to stormwater flows. The wire sheathing around the rock berms described in RG-348 is difficult to install and dispose of when the berm needs to be replaced. If strong flows destroy a berm with wire sheathing, the wire can become entangled around trees, fence posts, etc. downstream and this makes for difficulty in cleanup and proper disposal. In addition, it is nearly impossible to actually construct the rock berm as described in RG-348 because 2:1 side slopes cannot be maintained with the wire sheathing. The proposed berms are consistent with customary and acceptable quarrying practices for their maintenance and replacement. The berm detailed as ALT 1 is designed to be larger than the berm noted in RG-348 in order to provide better performance. The berm detailed by ALT 2 is better than a silt fence because it lasts longer without degradation, it withstands stronger flows and it does not become a solid waste after its useful life has ended. The rock berm and silt can easily be removed and reprocessed in the rock crushing plant. Rock is readily available onsite for the replacement of these proposed berms as needed and the better performance and easier construction and maintenance of the berms as designed herein ensure that the rock berms onsite will perform better than ones built per RG-348 specifications.

**Item # 22**

Initial wash water pond is shown. Future wash water ponds locations are unknown at this time. The initial rock crushing plant and initial stockpile area locations are shown on the Revised WPAP Site Plan. The entire plant may eventually move and/or conveyors may be added and the primary portion of the plant may be moved within the pit.

**Item # 23**

a. A clay-lined, impervious washout pit will be utilized as detailed on the Revised WPAP Site Plan. The clay lining will be a minimum of one to three feet thick. A base pad will drain to the washout pit. See the Revised WPAP Site Plan.
b. As noted in the WPAP General Information Attachment C a flex base pad approximately 150 feet by 100 feet surrounded by a one foot high base berm which will act as secondary containment will be used as a maintenance/fueling area. When quarrying requires the maintenance/fueling area to be relocated, a similar base pad and berm will be constructed at a location to be determined at that time. This area will be located outside the pit as practicable and used for vehicle refueling, repair, maintenance and parking as practicable. See the Revised WPAP Site Plan.
c. As practicable, fueling will occur outside the pit. Otherwise, mobile equipment refueling, repair, and maintenance will be accomplished with a mobile service truck with oil recovery. The requirements

under 40 CFR Chapter 112 as detailed in the Spill Prevention, Control, and Countermeasures Plan sought for the site will be followed.
d. The subject project is a private industrial site, therefore no parking for the public will be provided.

**Item # 24**

A clay-lined, impervious washout pit will be utilized as detailed on the Revised WPAP Site Plan. The clay lining will be a minimum of one to three feet thick. A base pad will drain to the vehicle and washout pit.

**Item # 25**

We have added a note on the Revised WPAP Site Plan and Project Description. Vehicle and equipment refueling, repair and maintenance shall occur on a compacted base pad outside the quarry pit area as practicable.

**Item # 26**

The nature of a 50+ year quarry operation makes it impossible to expect the operation to be 50% complete within a 10 year period, and thus a denial of our request for an exception to the 10-year requirement of 30 TAC§213.4(h)(3), in our view, makes this rule a substantive, rather than administrative, requirement, and the very type of situation for which an exception under the provisions of §213.9 was designed to be considered. Dean Word Company, Ltd. has obtained the support of Comal County for its long range plans for the future use of this quarry as a flood control structure or other use as a water resource. The significance of the long term investment in the development and operation of this project warrants that an exception to 30 TAC§213.4(h)(3) be allowed under §213.9. We look forward to discussing this with the appropriate representatives of TCEQ when we further meet to discuss our application.

**Item # 27**

Our exception request regarding permanent BMPs is not based solely on the lack of impervious cover proposed for the site. Our exception is based on the fact that the disturbed area of the site, the quarry, will retain stormwater runoff without discharge to the surface, thereby controlling TSS in runoff because no runoff from the site is anticipated. No permanent BMPs to control runoff are necessary. In terms of possible infiltration, regular inspections during quarry construction will be performed by a geologist as described in the WPAP application and any sensitive features discovered in the quarry will be dealt with as specified in the application and herein under Item #18. The use of many substantial temporary BMPs throughout the construction of the quarry will ensure that stormwater runoff quality is maintained as appropriate.

Any dewatering required at the site would be accomplished using a pump to remove the water after solids have settled out and the water is tested and found to be in compliance with the numeric effluent limitations of TPDES General Permit No. TXR050000 Section J, (5)(ii) of 45 mg/L for a daily maximum and 25 mg/L for a daily average. These concentrations are lower than the estimated background concentration as stated in the Edwards Aquifer Technical Guidance Manual (RG-348) of

80 mg/L for undeveloped areas. The water would be discharged to a natural drainage area onto a rip rap pad such that soil erosion would be mitigated.

**Item # 28**

The four water wells will remain in use until such time as clearing and blasting progresses to within 150'of each well. At that time an affected well would be plugged in accordance with Edwards Aquifer Authority and State requirements until it is quarried out.

**Item # 29**

At this time no well onsite will be abandoned. Should any be abandoned in future the well will be plugged and mined out as described in Item #28.

Dean Word Company, Ltd. has extended the well casing of feature S-87 approximately 2 feet above the ground elevation and put a locking lid on it in order to eliminate the possibility of pollutants entering the well. This well meets the requirements of the Texas Department of Licensing and Regulations.

**Item # 30**

Quarrying the streambed and removing features was not intended to act as a BMP; the proposed site is intended to be a quarry pit and as shown on the WPAP Site Plan the streambed is proposed to eventually be mined out. Sufficient protective measures including rock berms, earthen berms and the temporary sealing of any features discovered to be sensitive recharge features are proposed to be implemented in order to protect surface waters from sediment from clearing activities until the quarry expands to the streambed. Mining of the streambed and floodplain areas is vital to Comal County and the City of New Braunfels flood control planning for the future and therefore continue to be shown as a part of the quarry on the Revised WPAP Site Plan. The WPAP rules do not prohibit mining a stream bed, but rather require protection of downstream surface water, sensitive features and the aquifer from pollutants, for which our proposed WPAP includes reasonable and appropriate measures to prevent pollutants from entering such water sources.

**Item # 31**

Dean Word Company, Ltd. Intends to protect sensitive features until clearing encroaches to within 200 feet of a sensitive feature. At that time the feature will be sealed as described in the WPAP application to protect the aquifer from potential runoff from cleared areas. As described in Item #30 above, mining in the streambed is integral to the overall plan to protect flooding in Comal County, the City of New Braunfels and to reduce the National Flood Insurance Program insurance rates. Therefore, we maintain our request to temporarily seal and excavate features S-9, S-106, S110, S-118, S-123, S-124, S-155, S-187, S-198, S-203, S-205, and S-207.

**Item # 32**

See Revised WPAP Site Plan for the dimensions of the features. For the requested natural buffers see Item # 31 of this correspondence.

**Item # 33**

Please refer to the revised Geologic Narrative.

**Item # 34**

It has not been determined that any sensitive features identified onsite recharge the aquifer. It has only been determined that, according to the TCEQ Instructions to Geologists, some geologic features onsite rate as "sensitive" under TCEQ's definition. Topsoil and overburden are commonly used during mining operations over the recharge zone to temporarily seal features until they are mined out. Crushed limestone is also used to level areas for drilling aspects of the operation. These seals are in place approximately 90 days before the features are mined out.

For some types of features, such as caves and other deep, open features, the use of topsoil or overburden is not appropriate because of the possibility of additional sediment loading. These types of open features would be more appropriately sealed using clean rock fill with a concrete or flowable fill cap. The sensitive features identified onsite are generally infilled, therefore topsoil or overburden as a temporary seal is appropriate.

If open features are discovered onsite or if infilled features onsite are found to be open at depth, a professional geoscientist will inspect the feature and rate its sensitivity in accordance with current Chapter 213 guidance as discussed in Item #18. An appropriate method for temporarily sealing the sensitive features will be devised and carried out.

**Item # 35**

According to the Instructions to Geologists, the narrative is not intended to be long or duplicate what is provided in the geologic assessment table. Discussing each of the 207 features in detail would have made the narrative exceedingly long. All of the information requested for these features is contained in the table or on the geologic map. However, for ease in reviewing these features, the requested information is provided below:

**S-3** (size, location): S-3 is approximately 70' x 25' x 8' located in a drainage way in the central portion of the site. There is fine-grained sediment in the bottom of the depression with large boulders scattered around the area. Established bedrock was not observed here.
**S-19** (infilling, infiltration rate): S-19 has fine-grained sediment in the bottom of the feature with grasses growing in the center and around the area. Probability of rapid infiltration is very low (7).
**S-23** & **S-24** (one feature?): These features are separate and are located approximately 30' apart in a north to south direction and 39' apart from east to west. Coordinates in the table are reported as lat/long whereas UTM coordinates are used in the field. When the coordinates were converted, they were not far enough apart to receive enough separation in the lat/long format.
**S-91** (size, IR): ~22' x 22' x 1.5' with a low probability of rapid infiltration (IR 19) due to the presence of fine-grained sediment. This feature has trees growing around the northern side and is in a small catchment area.
**S-99** (size, IR): ~52' x 17' x 0.7' with a low probability of rapid infiltration (IR 19) due the presence of organic and coarse materials. There was soil observed at the bottom of the cavities. The area is also vegetated with grasses and small trees.

**S-101** (size, IR): ~125' x 15' x 21 with a low probability of rapid infiltration (IR 9) due to the location of this feature in a rock bluff. Most of the recharge would exit the feature into the drainage. However, three small cavities were observed to extend backwards and did not have an observable exit. Rain or runoff would not be able to directly access these features. Water would only be able to access these features if the water level in the creek was to reach them.
**S-108** (size, location, IR): ~25' x 17' x 0.6' located in a drainage with a low probability of rapid infiltration (IR 9) due to the presence of fine-grained sediment, organic material and some cementation in the fractures. These fractures were isolated.
**S-114** (size, location, IR): ~200' x 25' x 4' located in a drainage with a low probability of rapid infiltration (IR 9) due to the presence of fine-grained sediment and organic material. The designation of sink hole, instead of other feature in bedrock, was assigned due to the presence of established bedrock in this area of the drainage with noticeable topographic relief from the surrounding ground surface.
**S-116** (feature type, size): Closed depression that is ~35' x 35' x 15' which is currently being used as a stock tank. Given the presence of the Buda Limestone and Del Rio Clay in the bottom of this feature and the Edwards Limestone at the surface all around this feature, it would reason that it could have been a sinkhole at one time. However, the Del Rio Clay fills the bottom of this feature to a depth of a minimum of two feet thus severely restricting, possibly prohibiting, any infiltration. The feature is by definition a closed depression since there is a lack of an established rock rim. Even though there is a lack of a rim, the feature was designated a sink hole anyway and assigned 20 points in the GA table.
**S-127** (IR): Has a low probability of rapid infiltration (IR 9) due to the presence of fine-grained sediment, organic material and a persimmon tree growing in the feature.
**S-134** (feature type, location): Zone of Other Feature in Bedrock that consists of closed depressions located in a minor drainage way. It is anticipated that these were created during construction of the asphalt roadway that they are located adjacent to.
**S-173** (formation, infill): Edwards Limestone formation with coarse material infill.
**S-188** (feature type points): 20 points for a sink hole. This value was inadvertently left off the assessment table. Please refer to the modified table provided. The feature has an established rock rim around the feature and is infilled with fine-grained sediment and organic materials.
**S-193** (size, location): ~235' x 25' x 22' located in a drainage way in the north central portion of the site. One location within this feature did appear to have some soil sapping. However, the boulders in this feature are from the Buda and Edwards formations which indicate that they are float material and not established bedrock. After minimal digging in this area, only soil was uncovered. Due to the sunken appearance and openings in the topsoil, the probability for rapid infiltration is moderate.

**General Items**

**Item # 36**

There are no permanent fuel storage or aboveground static hydrocarbon storage tanks proposed for the subject project site at this time. Fuel storage at the existing site will be used to fill a mobile service truck that will fuel equipment and vehicles at the proposed facility. Authorization will be sought prior to any proposed fuel storage or aboveground static hydrocarbon storage tanks at the proposed site.

**Item # 37**

Typical materials used in blasting operations are blasting caps, detonation cord, primers and ANFO (ammonium nitrate containing less than 5% fuel oil). These materials will be stored on the existing quarry site and will not be stored on the proposed site. Varying quantities of these materials are stored in accordance with applicable federal and state laws. The Dean Word Company, Ltd. is licensed by ATF to store and handle these materials. Blasting operations will be handled by an experienced blasting operator.

Homeland Security issues preclude listing quantities of blasting material in open public records.

**Item # 38**

There are no rail lines, concrete batch plants or asphalt plants proposed for this site at this time.

These other facilities may be constructed at some time in the future. However, modification to this WPAP application will be submitted prior to construction.

**Item # 39**

Existing ranch roads will be used to allow access for various vehicles (pickup trucks, service trucks, product trucks, etc.) to and from the quarries.

Existing ranch roads will also continue to be utilized in the ongoing ranching and farming operations. They may also be amended and or upgraded to serve additional needs such as quarrying between the existing permitted quarry and the quarry expansion. As discussed previously, roads onsite will be treated using temporary BMPs including natural vegetated buffers of 50 feet downgradient width. At the conclusion of quarrying, roads will be located in the quarry.

**Item # 40**

At the time the quarry operation is completed, equipment will be unbolted and/or cut from concrete foundations and loaded on trucks for its removal of the site.

Permanent facilities such as concrete foundations will remain in place. Mobile equipment will likely remain onsite and parked on a base pad during quarry inactivity but removed in the event of quarry closure. We do not anticipate having any hazardous materials onsite, however, hazardous materials will be removed in accordance with regulations in effect at that time.

**Item # 41**

A WPAP modification will be submitted in case there is a change in the land use at the proposed site.

**Item # 42**

A disposal schedule will be administered for two portable toilets as necessary and recommended by the licensed waste handler. At present Dean Word Company, Ltd. contracts with High Sierra Toilet Company.

Westward Environmental, Inc. (WEI) will continue to serve as the technical representative for Dean Word Company, Ltd. on this project. **Please ensure that WEI is copied on all correspondence.** If you have any questions regarding this project, please contact our office.

Respectfully submitted,
WESTWARD ENVIRONMENTAL, INC.


Gary Nicholls, P.E.
Vice President

Distribution: Addressee (original + 5 copies)
Bryan Word – Dean Word Company, Ltd
WEI 10173-08 file

Attachments

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**General Information Form Attachment C**

## Project Description

Dean Word Company, Ltd. proposes to construct a limestone quarry on the subject tract of approximately 1923 acre in Comal County. Of the 1923 acre property, a quarry of approximately 185 acres as part of a 270 acre project area was previously approved under a WPAP, EAPP File No. 1603.00 on January 29, 2001. The proposed new quarry will be adjacent (north and south) to the previously approved quarry. The proposed quarry pit as shown on the WPAP Site Plan is approximately 1576 acres and its limits are setback to a distance of 60 feet from the property lines on the north and west portions and 60 feet from the Edwards Aquifer Recharge Zone Boundary on the south. There will be no setback on the portions of the east boundary that are adjacent to the existing quarry property if an agreement with that entity to quarry to the property line can be obtained. Otherwise the 60 foot setback will be extended around the entire site.

A mobile trailer will be used as a scale house and truck scales will be installed as shown on the WPAP Site Plan. A 10-acre area will be cleared and used to start the quarry excavation and accommodate the rock crushing plant that will process the limestone. Temporary BMPs consisting of earthen berms and rock berms will be utilized to control and treat stormwater runoff in the initial stages of construction. Within approximately 6-8 months the quarry pit will be large enough to store stormwater runoff from the disturbed areas of the quarry site.

The vegetation in the initial 10-acre and that from subsequent clearing areas of about 2 acres, will be burned onsite in accordance with 30 TAC 111, subchapter B. The ash shall be properly disposed of in accordance with 30 TAC 330 or 30 TAC 335, as applicable.

Dean Word Company, Ltd. proposes to utilize wash water ponds inside the quarry pit in order to recycle the water as necessary to wash aggregate. Fines from the crushing/washing process will ultimately line the bottom of the ponds. It is a long standing industry practice to use fines as a liner to seal the bottom of the recycle ponds in karst areas over the Recharge and/or Transition Zones. These fines when wet bind to each other and seal the bottom of the settling ponds. A portion of the fines will be removed from the pond to maintain adequate pond volume. These fines will be used to construct additional pond berms in the future and be reused in aggregate products or stored in protected areas of the quarry until needed.

Dean Word Company, Ltd. proposes to provide geologic feature recognition training to quarry equipment operators and to have a Professional Geoscientist inspect the quarry at least annually for sensitive features. Any possibly sensitive geologic feature discovered by mining staff or the Professional Geoscientist will be evaluated by a Professional Geoscientist and if determined to be sensitive, will be reported to TCEQ. An appropriate method for addressing the feature will be formulated by a Professional Geoscientist or a

**General Information Form Attachment C (continued)**

**Project Description (continued)**

Professional Engineer and upon approval by TCEQ, the method to protect the feature will be implemented.

As the quarry process continues throughout the life of the quarry (which is expected to be over 50 years but depends on numerous external factors) additional wash water ponds will be constructed at other locations inside the quarry pit. Prior to construction of a pond a Professional Geologist will observe the quarry floor in the proposed location. If a feature is found and is rated 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 or the proposed pond location will be changed. Construction of the pond will not begin in the area of the feature until the TCEQ approved method for addressing the feature has been carried out.

*Some existing ranch roads will be widened (to a maximum width of 72 feet) and improved with compacted base in order to accommodate truck traffic. Any road improvements will have a 50 foot vegetated buffer downgradient. Roads will be realigned as needed throughout the project and will maintain a 50 foot vegetated buffer at each location. Eventually roads will be mined out and located in the pit.

A flex base pad approximately 150 feet by 100 feet surrounded by a one foot high base berm which will act as secondary containment will be used as a maintenance/fueling area. When quarrying requires the maintenance/fueling area to be relocated, a similar base pad and berm will be constructed at a location to be determined at that time.

As part of a long term plan, another quarry operation could locate and operate simultaneously on a portion of the site yet to be determined (within the proposed quarry limits). In that case, similar TBMP's and measures will be used in order to prevent pollutants from entering surface streams, sensitive features or the aquifer.

*Changes in response to January 5, 2009 submittal – Item #13 c.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**General Information Form Attachment C (continued)**

**Project Description (continued)**

The geologic assessment included in this submittal covers approximately 1653 acres that correspond to the portions north and south of the project limits of the previously approved WPAP EAPP 1603.00.

A review of published water well and groundwater data from the Texas Water Development Board (TWDB) showed that there is no site specific water well data for the site. However, there are 4 wells at the site, including feature S-87.

A review of potentiometric surface maps obtained from the Edwards Aquifer Authority (*Edwards Aquifer Authority Synoptic Water Level Program 1999 – 2004, Report 06-02*) show that the potentiometric surface at the site ranges from 670' above mean sea level (a.m.s.l.) in the southern portion to 700' a.m.s.l. in the northern portion of the site. These potentiometric surfaces represent the highest conditions in the aquifer when the J-17 index well was at 701' a.m.s.l. Utilizing the TCEQ 25 foot vertical buffer above the maximum potentiometric surface places the final quarry floor elevation at 695' in the southern portion of the site and 725' in the northern portion.

Additionally, on May 1, 2008 a water level measurement was taken at feature S-87 by qualified Westward Environmental, Inc. personnel, which showed a water level of 209' below ground surface, the surface elevation at this location is estimated to be 863' above mean sea level (amsl). This would put the approximate groundwater elevation at 654' amsl. Utilizing the TCEQ 25 foot vertical buffer above the maximum potentiometric surface places the final quarry floor elevation at 679' amsl.

However, Dean Word Company, Ltd. recognizes the need for additional well data in order to properly support the later estimated groundwater elevation, therefore; until more well data is attained and submitted to TCEQ, Dean Word Company, Ltd. proposes to limit quarrying excavation to 695' above mean sea level (a.m.s.l.) in the southern portion and 725' a.m.s.l. in the northern portion of the site.

Stormwater flow to sensitive features will be protected by use of rock berms and flow to naturally occurring sensitive features will be maintained to the extent possible. Because the proposed land use calls for the removal by excavation of the sensitive features (S-6, S-7, S-9, S-11, S-27, S-37, S-38, S-44, S-79, S-87*, S-96, S-106, S-110, S-115, S-118, S-120, S-123, S-124, S-133, S-138, S-144, S-150, S-151, S-153, S-155, S-177, S-187, S-198, S-203, S-205, S-207) within the quarry limits, no permanent sealing of features is requested herein. However, in order to protect water quality during construction of the quarry, sensitive features will be temporarily sealed prior to their excavation.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**General Information Form Attachment C (continued)**

**Project Description (continued)**

* Dean Word Company, Ltd. has extended the well casing of feature S-87 approximately 2 feet above the ground elevation and put a locking lid on it in order to eliminate the possibility of pollutants entering the well.

Upon termination of quarrying activities, stormwater that is located in the quarry pits will not discharge to the surface; it will be retained in the pits. It is expected that the majority of stormwater retained in the pits after the termination of quarrying activities will evaporate or will be used for reclamation or construction endeavors.

Trash generated onsite will be disposed of in a dumpster and handled by a licensed waste service. No on-site sewage facility is proposed at this time. Portable toilets will be used.

*Changes in response to January 5, 2009 submittal – Item #29.

**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: Dean Word Company, Ltd. - Lonestar Quarry

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) |
| Eckrant – Rock Outcrop (ErG) | D | 0.9' |
| Rumple-Comfort Association (RUD) | C | 2.3' |
| Purves Clay (PuC) | D | 3.8' |
| Comfort Rock Outcrop (CrD) | D | 1.1' |
| Medlin-Eckrant Association undulating (MEC) | D | 6.6' & 1.4' |
| Medlin-Eckrant Association hilly (MED) | D | 6.6' & 1.4' |
| Denton Silty Clay (DeB) | D | 3' |
| Tarpley Clay (TaB) | D | 1.4' |

* 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" = 400 '

Site Geologic Map Scale 1" = 400 '
Site Soils Map Scale (if more than 1 soil type) 1" = 400 '

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 4 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.
0 The wells are not in use and will be properly abandoned.
*4 The wells are in use and comply with 16 TAC Chapter 76.
__ There are no wells or test holes of any kind known to exist on the project site.

*Changes in response to January 5, 2009 submittal – Item #8.

ADMINISTRATIVE INFORMATION

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

Date(s) Geologic Assessment was performed: April 8, 9, 10, 11, 15, 16, May 1, 19, 23 and 28, June 3, 4, 5, 6, 10, 12, 13, 16, 17, 24 and 26, July 11, 14, 25, 28 and 29 and August 1, 2008
Date(s)

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

Michelle M. Lee #6071
Print Name of Geologist

830-249-8284
Telephone

830- 249-0221
Fax

STATE OF TEXAS
MICHELLE M. LEE
GEOLOGY
6071
LICENSED
PROFESSIONAL GEOSCIENTIST

Michelle M. Lee
Signature of Geologist

January 5 2009
Date

Representing: Westward Environmental, 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 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.

*WEI Project No. 10173-007*
*December 22, 2008*

**Dean Word Company, Ltd.**
**Lonestar Quarry**

## GEOLOGIC ASSESSMENT ATTACHMENT D

### Geologic Narrative

**Overview:**

The site consists of two detached tracts of approximately 1653 acres located north and south of a previously approved (EAAP File No. 1603.00) 270 acres portion for a total site-wide acreage of 1923. The site is located approximately 7 to 8 miles southwest of New Braunfels, Texas. The geologic assessment was performed over the areas shown on the Geologic Map. Two hundred and ten (210) features were initially identified and mapped during this investigation. After review of the field data, two features, 125 and 172 were deleted from the tables since they were duplicated elsewhere. So as a result, a total of 208 features are recorded in this geologic assessment. Thirty four (34) of the 208 mapped features were classified as sensitive in accordance with the "Instructions for Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones" (TNRCC-0585-Instructions (Rev. 10-1-04)). The sensitive features are; twenty (20) zones of either solution cavities, solutioned enlarged fractures, sink holes and/or man made feature in bedrock, five (5) solution cavities, three (3) sink holes, three (3) faults, one (1) solutioned enlarged fracture and two (2) man made features in bedrock.

**Field Work:**

Field work was performed at the site on April 8, 9, 10, 11, 15, 16, May 1, 19, 23, 28, June 3, 4, 5, 6, 10, 12, 13, 16, 17, 24, 26, July 11, 14, 25, 28, 29 and August 1 2008 by Westward field personnel consisting of at least one registered Professional Geologist and up to 4 field technicians. Field transects were walked across the site using a 50-foot spacing. In areas of dense vegetative cover, historic site clearing, grubbing and earth moving activities, geologic or manmade features may have been altered or obscured at the time of site reconnaissance.

A good portion of the site in the central and southern areas has been cleared of trees and shrubs as part of ongoing agricultural (livestock grazing) practices onsite. As a result, there are numerous non-karst closed depressions that were created by the clearing activities. These areas were not marked as potential recharge features due to the presence of nearby uprooted tree(s) or piles of brush. Where non-karst closed depressions were observed without any nearby tree or brush, the feature was marked.

Geologic and manmade features were field logged, photographed, labeled and GPS coordinates were collected. GPS data are included on the Geologic Assessment Table.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

**Stratigraphy:**

The Buda Limestone, Del Rio Clay, Georgetown Formation and the Edwards Limestone were all observed at the surface of the site. The surface outcrops of the Del Rio Clay and Georgetown Formation were very minimal in comparison to the amount of Buda exposed. Isolated outcrops of Buda were observed in the southern, center and northern most portions of the site. The Edwards Limestone was observed at the surface across most of the site.

The detached 100 acre area to the extreme south is located adjacent to the main Balcones Escarpment where only the Edwards Limestone was observed at the surface. Evidence of faulting is visible in the exposed rocks along the entrance road to the site.

**Structure:**

The subject property is located in the Balcones Fault Zone, approximately seven to eight miles southwest of New Braunfels. There was aerial evidence as well as surface expression of faulting observed at the site. The Geologic Atlas of Texas, Austin Sheet, does show some faults on the project site with the main Balcones fault adjacent to southeast on the southern parcel boundary. The average fault trend in this section of the Balcones Fault Zone is approximately N45E. Features trending from N35E to N55E were assigned the extra 10 points for being aligned in the dominant fault trend direction.

Eight (8) faults were mapped during this investigation. There were three areas where the Buda Limestone was juxtaposed to the Edwards Limestone. The remaining faults were inter-formational within the Edwards. There is some evidence of horst/graben sequences as well. Along two of the faults, some large sinkholes were also observed.

**Karstic characteristics:**

One hundred and twenty eight (128) possible karst features were identified onsite during this assessment. A summary of features identified is as follows: seventy (70) solution cavities – five (5) of those are sensitive; twenty one (21) zones of solution cavities, solutioned enlarged fractures and/or sink holes - fifteen (15) of those zones are sensitive; twenty (20) sinkholes – three (3) are sensitive and seventeen (17) solution enlarged fractures –

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

none are sensitive. A total of two hundred and eight (208) geologic and manmade features were identified, reported and logged in Attachment B, the Geologic Assessment Table.

**Geologic and Manmade features are described below in alphabetical order.**

Caves
No caves were found at the time of this geologic assessment.

Cave Zone
No cave zones were found at the time of this geologic assessment.

Closed Depressions
**S-2, S-3, S-12, S-13, S-14, S-15, S-16, S-17, S-18, S-20, S-21, S-22, S-23, S-28, S-30, S-32, S-33, S-39, S-41, S-42, S-47, S-48, S-52, S-57, S-61, S-65, S-69, S-71, S-72, S-75, S-76, S-78, S-83, S-86, S-88, S-90, S-95, S-97, S-100, S-105, S-117, S-126, S-139, S-141, S-142, S-157, S-159, S-163, S-170, S-180, S-190, S-191, S-192, S-193, S-194, S-199, S-201, : Not Sensitive**
These features are non-karst closed depressions are infilled with either organic or fine grained materials. Features **S-17, S-41, S-57, S-61, S-159, S-163 and S-194** are stock ponds located in various locations across the site. Features **S-17, S-41** and **S-95** are not in the Edwards Limestone but are in the mapped recharge zone and were logged accordingly. Due to lack of evidence to suggest karst involvement, observed ability in some to hold water and amount of sediment observed, these features have a low to very low probability of rapid infiltration.

Closed depressions mapped in the creek are probably the result of stream scour that deposits debris differentially in the drainage. In areas where there was more than one of these features observed, they were combined into one. Some depressions in the central portion of the site were the result of uprooting large trees. Again, in areas where there was more than one depression in a close proximity, they were combined into one feature.

Faults
**S-84, S-93, S-98, S-179, S-182, S-197, S-210: Not sensitive**
**S-84** has beds dipping at approximately eight to ten degrees with a 90° strike. Fractures are approximately 1.5" – 2.5" apart and infilled with fine sediment to some gravel sized

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

particles. **S-93** traverses the entire site in a southwest to northeast trend. This fault juxtaposes the Buda Formation to the Edwards Limestone in the northeastern portion of the site. The downthrown side of the fault is soil covered versus the outcropping of massive, bedded limestone on the up thrown side. **S-98** was observed in an excavated area that exposed bedrock. It is within the Buda formation, is cemented and is also visible on aerial imagery. Probability of rapid infiltration is very low.

**S-179** is located on the northwestern portion of the property. Buda limestone outcrops and Del Rio Clay remnants were observed in the eastern bank of this drainage. **S-182** is visible in the north central portion of the site where Dry Comal Creek exits the property. Buda was observed juxtaposed to the Edwards in this area. The field located between **S-179** and **S-182** is topographically higher and has the Edwards at the surface. This is evident by all the chert at the surface as well as the rocks used in construction of the walls around the field. **S-197** appears to be an inter-formational fault within the Edwards. Flaggy limestone is adjacent to some highly solutioned limestone. The lineation of the fault does follow trend. **S-210** is the main Balcones Escarpment and consists of several smaller fault and collapse blocks. Possibly caused by the multiple movement and subsequent subsidence episodes that occurred during the uplift event.

Due to lack of evidence to suggest karst involvement and amount of sediment observed, these features have a low to very low probability of rapid infiltration.

**S-96: Sensitive**
**S-96** is located in the southern portion of the site and appears to trend in a northeast to southwest direction which is perpendicular to the main Balcones trend. Dipping beds of Edwards were observed to go underneath what appears to be the Del Rio and Buda Formations. Most of the fault plane is obscured and is filled with fine grained and organic sediment. However, the structure in this area is obscured, complicated and difficult to map based solely on surface observations.

Fractured Rock Outcrops:
Fractured rock outcrops that could be potential recharge features were not observed during this geologic assessment.

Man Made Features
**S-70, S-154 and S-178: Not Sensitive**

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

These features are operational water wells used for livestock purposes. All three wells are covered and have wind mill pumps. Probability of rapid infiltration is very low.

**S-87 and S-177: Sensitive**
**S-87** is an unplugged water well that is in excess of 300' in depth. The well is not capped or plugged at this time. Only a loose steel plate covers the well opening which is approximately 8" in diameter. The well will has been temporarily capped. **S-177** appears to be a cistern with an unknown depth. It is also unknown whether the bottom of the feature is sealed. The feature was holding water at the time of this assessment at an approximate level of 15' below ground surface. A loose steel plate is partially covering the feature. Probability of rapid infiltration is high.

Other Features in Bedrock
**S-164, S-176 and S-184: Not Sensitive**
**S-164** is a small depression in bedrock that is only four feet at its longest. It is infilled with fines and leaves. Probability of rapid infiltration is very low. **S-176** is located along the northern edge of the site in a drainage that crosses under FM 1863. It is in the Buda Limestone bedrock with fractures and closed depressions. The fractures are cemented or filled with sediment. There is evidence that the feature does hold water when it is not flowing off site. Since the Del Rio Clay underlies this feature, a low infiltration rate was assigned. **S-184** appears to be closed depression in the bedrock that is infilled with organic and fine grained materials. Probability of rapid infiltration is very low.

Sinkholes
**S-29, S-31, S-60, S-62, S-81, S-91, S-116, S-145, S-146, S-149, S-165, S-174, S-175, S-185, S-188, S-189 and S-200: Not Sensitive**
These features are sinkholes that were identified during this assessment. These features were mapped if an established rim of bedrock was present. Most of the features were filled with organic material that led way to soils. Vegetation in the form of oak trees to grasses was also observed in the immediate vicinity of these features. The probability of rapid infiltration is low.

**S-37, S-115 and S-203: Sensitive**
**S-37** trends N40E which added 10 more points to the feature making it sensitive. However, the infiltration rate is low to slightly moderate. **S-115** has two openings with one opening being at least 2.7' deep. Nothing was observed growing out of this feature.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

**S-203** is deeper than 3' with a trend of N50E. Probability of rapid infiltration here is moderate.

Solution Cavities
**S-1, S-4, S-5, S-10, S-19, S-24, S-25, S-34, S-35, S-40, S-43, S-45, S-46, S-49, S-50, S-51, S-53, S-55, S-56, S-58, S-59, S-63, S-64, S-66, S-67, S-68, S-74, S-77, S-80, S-89, S-94, S-102, S-103, S-104, S-109, S-111, S-112, S-113, S-125, S-128, S-129, S-130, S-131, S-132, S-135, S-136, S-140, S-143, S-152, S-158, S-160, S-162, S-166, S-168, S-171, S-173, S-183, S-186, S-195, S-196, S-202, S-204, S-206, S-208 and S-209: Not Sensitive**

Seventy (70) solution cavities were identified during at the time of this assessment. The above-referenced sixty four (64) were not sensitive. These features did not have an intermediate or high probability of rapid infiltration.

**S-11, S-38, S-124, S-133 and S-151: Sensitive**
**S-11** is 5.5' by 3.5' wide with evidence of water movement to the subsurface. Nothing was observed growing out if this feature and the ground nearby were covered with organic and fine grained sediments as well as some grasses. Probability of rapid infiltration is high. **S-38** has evidence of multiple connecting cavities with organic infilling and a moderate infiltration rate. **S-124** trends N45E with organic infilling and is located in the floodplain and a moderate infiltration rate. **S-133** is located in a drainage with horizontal extension back into the bedrock. It also trends N48E with only coarse rocks observed as the infilling. A low/moderate infiltration rate was given. **S-151** is a small clustered set of cavities located in the bottom of a drainage way with organic infilling. Infiltration is moderate.

Solutioned Enlarged Fractures
**S-26, S-36, S-54, S-73, S-80, S-82, S-85, S-92, S-107, S-108, S-119, S-121, S-137, S-147, S-161, S-167, S-169 and S-181: Not Sensitive**
The average density was 1 fracture per square foot. Average aperture was about 3". Most of these features were infilled with fine-grained and/or organic sediment. Probability of rapid infiltration is very low to low.

Vuggy Rock Outcrops
Vuggy rock outcrops that could be potential recharge features were not observed during this geologic assessment.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

Zone – Sink Holes
**S-114: Not Sensitive**
**S-114** is located in a drainage in the central portion of the site. The area is covered in fine-grained sediment and float material. The bottom of this area appeared to be sealed. Probability of rapid infiltration is low.

Zone – Sink Holes
**S-120: Sensitive**
**S-120** is an area of 2 large sink holes that measures approximately 9' by 3.7' and a maximum depth of greater than 5 ft. No vegetation was observed growing out of these features. Probability of rapid infiltration is moderate.

Zone – Closed Depressions
**S-207: Sensitive**
**S-207** is an area of several closed depressions that are deep with strong evidence of soil sapping. They are located in a drainage near the footwall of fault zone S-205. Rock was observed below the soil forming a rim feature and it was filled with larger rocks to an unknown depth. Probability of rapid infiltration is high.

Zone – Other
**S-134: Not Sensitive**
**S-134** is a zone of closed depressions in bedrock that appears to be cemented. Evidence that the feature holds water was observed at the time of this assessment.

Zone – Solution Cavities
**S-8, S-99, S-101, S-122, S-127, S-156: Not Sensitive**
**S-8** is a cavity with a N70E trend. Organic material was observed around the opening of this feature. A large tree root is also present in the cavity. Due to the presence of fine grained sediment in the bottom of the cavity, the infiltration rate is low.

**S-6, S-7, S-9, S-27, S-44, S-79, S-106, S-123, S-153, S-155, S-187, S-198: Sensitive**
**S-6** is a 30' long area of solution cavities along the hillside with a N40E trend. The depths ranged from a few inches to over three feet with coarse and organic infilling. Algae was observed in some of the cavities. **S-7** is an area of smaller solution cavities and enlarged fractures with a N10E trend. The surface is flat bedrock with the features extending vertically downward for approximately two feet.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

**S-27** is an area of cavities that have been mostly infilled with organic materials. The features have a low probability of rapid infiltration and a N40E trend causing this feature to be sensitive. **S-44** is a band of solution cavities that measures approximately 200' x 150' with organic and fine grained sediment infilling. The trend is N40E and has an

Zone – Solution Cavities
intermediate probability of rapid infiltration. **S-79** is three cavities that are solutioned more on the surface than the interior. **S-106** has openings up to 2.3' wide but with organic sediment infilling with a low/intermediate infiltration rate. **S-123** covers an area of approximately 100' x 28' and is located in a drainage. There are also fractured rock and vuggy rock in the same zone. Spiders were also observed in this zone. A moderate infiltration rate was assigned due to the presence of coarse grained infilling. **S-153**, **S-155** and **S-187** are located in a drainage and also had fractures associated with the feature. These features have a higher low infiltration rate due to the presence of grasses in the area. **S-198** is a cluster of cavities that extend downward into the bedrock and have a lower intermediate infiltration rate.

Zone – Faults
**S-110, S-118 and S-205**: Sensitive
**S-110** is in a drainage in the central portion of the site. Rock bluffs extend upwards of 20 ft only on the northern side of the drainage. The bedding planes in the rock have been broken and moved. Slump and collapse has also occurred. Fractures, solution cavities and closed depressions in bedrock and non bedrock were observed in this feature. **S-118** is located in the northern portion of the site. Steeply dipping beds as well as solution cavities and enlarged fractures were observed. A moderate infiltration rate was assigned. **S-205** has numerous cavities and closed depressions in rock. Polished slickensides were observed on the east wall. But the alignment and zone designation make the feature sensitive even though there is a low infiltration rate due to vegetation and cemented bottoms.

Zone – Solutioned Enlarged Fracture
**S-138 and S-144**: Sensitive
**S-138** is an area of solutioned enlarged fractures that extend approximately 45' long and 4' wide with an orientation of N50E. The dominant trend alignment added an extra 10 points to the overall score. The aperture averaged approximately 5" – 6" with a density of 1 fracture per square foot. Relative infiltration rate is low due to presence of vegetation and organic materials. **S-144** is a zone with solution enlarged fractures and

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**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

solution cavities that is approximately 70' long by 35' wide. A low to almost moderate infiltration rate was assigned due to some features having coarse material infilling. Others had fine and organic infilling.

Zone – Man Made Feature in Bedrock
**S-150**: Sensitive
**S-150** is an area of quarrying that has occurred numerous years ago. Located in the southern most portion of the detached parcel, the quarried areas are littered with large boulders and construction debris in the pits. Vertical walls throughout this feature could possibly indicate dimension stone quarrying. It is unknown if the walls are located along a fracture plane or not. The zone is approximately 410' long by 150' wide and is oriented at N50E. Where infilling was not obscured by rocks and debris, it was observed to be fine grained to coarse. Relative infiltration rate is low to almost moderate.

## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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 41.911 | 98 14.129 | SC | 20 | Ked | 3 | 2.5 | 1.5 | N60E | | 1 per | 2.5 | F | 13 | 33 | X | | X | | HILLSIDE |
| S-2 | 29 41.821 | 98 14.317 | CD | 5 | Ked | 7 | 3 | 1 | N30W | | | | F | 7 | 12 | X | | X | | FLOODPLAIN |
| S-3 | 29 41.756 | 98 14.315 | CD | 5 | Ked | 70 | 25 | 8 | varied | | | | F | 7 | 12 | X | | | X | FLOODPLAIN |
| S-4 | 29 41.755 | 98 14.169 | SC | 20 | Ked | 0.1 | 0.2 | 0.7 | none | | | | F | 14 | 34 | X | | X | | HILLSIDE |
| S-5 | 29 41.803 | 98 14.048 | SC | 20 | Ked | 5 | 4 | 2 | none | | | | O | 17 | 37 | X | | X | | HILLSIDE |
| S-6 | 29 41.874 | 98 14.257 | ZSC | 30 | Ked | 30 | 15 | >3 | N40E | 10 | | | C/O | 9 | 49 | | X | X | | HILLSIDE |
| S-7 | 29 41.702 | 98 14.272 | ZSC | 30 | Ked | 18 | 4 | 2 | N90E | | | | O/V | 20 | 50 | | X | X | | HILLSIDE |
| S-8 | 29 41.651 | 98 14.273 | ZSC | 30 | Ked | 13 | 2 | 1.5 | N70E | | | | O | 9 | 39 | X | | X | | HILLSIDE |
| S-9 | 29 41.643 | 98 14.434 | ZSCO | 30 | Ked | 400 | 30 | 10 | NS | | | | O/C | 25 | 55 | | X | | X | FLOODPLAIN |
| S-10 | 29 41.567 | 98 14.471 | SC | 20 | Ked | 1.5 | 0.8 | 1 | NS | | | | O | 15 | 35 | X | | X | | FLOODPLAIN |
| S-11 | 29 41.534 | 98 14.623 | SC | 20 | Ked | 5.5 | 3.5 | 5 | NS | | | | C/N | 35 | 55 | | X | X | | HILLSIDE |
| S-12 | 29 41.392 | 98 14.532 | CD | 5 | Ked | 12 | 4.5 | 0.9 | N25W | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-13 | 29 41.436 | 98 14.504 | CD | 5 | Ked | 5 | 5 | 1.3 | none | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-14 | 29 41.44 | 98 14.431 | CD | 5 | Ked | 5 | 4 | 1 | N50E | 10 | | | F | 11 | 26 | X | | X | | HILLSIDE |
| S-15 | 29 41.464 | 98 14.068 | CD | 5 | Kbu | 7 | 7 | 1.5 | none | | | | F | 7 | 12 | X | | X | | HILLSIDE |
| S-16 | 29 41.627 | 98 14.011 | CD | 5 | Ked | 12 | 6 | 1 | N40E | 10 | | | F | 11 | 26 | X | | X | | HILLSIDE |
| S-17 | 29 41.657 | 98 13.999 | CD | 5 | Kdr | 300 | 200 | 6 | N10E | | | | F | 5 | 10 | X | | X | | HILLSIDE |

* 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.
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Michelle M. Lee

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6071
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STATE OF TEXAS

Date January 5, 2009

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

| GEOLOGIC ASSESSMENT TABLE | | | PROJECT NAME: Dean Word 1765 Acre GA - New Braunfels | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | | | FEATURE CHARACTERISTICS | | | | | | | | | | | EVALUATION | | | PHYSICAL SETTING | | | |
| 1A | 1B * | 1C* | 2A | 2B | 3 | 4 | | | 5 | 5A | 6 | 7 | 8A | 8B | 9 | 10 | | 11 | | 12 |
| FEATURE ID | LATITUDE | LONGITUDE | FEATURE TYPE | POINTS | FORMATION | DIMENSIONS (FEET) | | | TREND (DEGREES) | DIP | DENSITY (NO/FT) | APERTURE (FEET) | INFILL | RELATIVE INFILTRATION RATE | TOTAL | SENSITIVITY | | CATCHMENT AREA (ACRES) | | TOPOGRAPHY |
| | | | | | | X | Y | Z | | 10 | | | | | | <40 | ≥40 | <1.6 | ≥1.6 | |
| S-18 | 29 41.715 | 98 14 | CD | 5 | Ked | 22 | 6 | 1.5 | EW | | | | F | 7 | 12 | X | | X | | HILLSIDE |
| S-19 | 29 41.737 | 98 13.964 | SC | 20 | Ked | 4 | 3 | 2 | N40E | 10 | | | F/N | 7 | 37 | X | | X | | HILLSIDE |
| S-20 | 29 41.666 | 98 13.869 | CD | 5 | Kbu | 15 | 7 | 3 | NS | | | | F | 7 | 12 | X | | X | | HILLSIDE |
| S-21 | 29 41.763 | 98 13.935 | CD | 5 | Ked | 13 | 4 | 0.8 | N30W | | | | F | 7 | 12 | X | | X | | HILLSIDE |
| S-22 | 29 41.702 | 98 13.912 | CD | 5 | Kdr | 11 | 8 | 2 | N40E | 10 | | | F | 7 | 22 | X | | X | | HILLTOP |
| S-23 | 29 41.563 | 98 14.087 | CD | 5 | Ked | 40 | 4 | 1.5 | N40E | 10 | | | F | 7 | 22 | X | | X | | HILLSIDE |
| S-24 | 29 41.559 | 98 14.094 | SC | 20 | Ked | 8 | 2 | 1.3 | NS | | | | F | 7 | 27 | X | | X | | HILLSIDE |
| S-25 | 29 41.544 | 98 14.105 | SC | 20 | Ked | 4 | 0.5 | 0.5 | NONE | | | | F/O | 7 | 27 | X | | X | | HILLSIDE |
| S-26 | 29 41.543 | 98 14.111 | SF | 20 | Ked | 3 | 0.5 | 2 | NONE | | 2 per | 0.3 | F | 7 | 27 | X | | X | | HILLSIDE |
| S-27 | 29 41.55 | 98 14.153 | ZSC | 30 | Ked | 14 | 3 | 1.2 | N40E | 10 | | | F | 15 | 55 | | X | X | | HILLSIDE |
| S-28 | 29 41.55 | 98 14.162 | CD | 5 | Ked | 5 | 3 | 0.7 | N35E | 10 | | | F | 5 | 20 | X | | X | | HILLSIDE |
| S-29 | 29 41.55 | 98 14.162 | SH | 20 | Ked | 4 | 3 | 1.5 | NONE | | | | F | 15 | 35 | X | | X | | HILLSIDE |
| S-30 | 29 41.525 | 98 14.196 | CD | 5 | Ked | 30 | 40 | 2 | N40E | 10 | | | F | 5 | 20 | X | | X | | HILLSIDE |
| S-31 | 29 41.533 | 98 14.192 | SH | 20 | Ked | 3 | 1 | 2 | N40E | 10 | | | F | 9 | 39 | X | | X | | HILLSIDE |
| S-32 | 29 41.431 | 98 14.335 | CD | 5 | Ked | 4 | 5 | 1 | NS | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-33 | 29 41.348 | 98 14.513 | CD | 5 | Ked | 7 | 4 | 1 | N40E | 10 | | | F/O | 5 | 20 | X | | X | | HILLSIDE |
| S-34 | 29 41.297 | 98 14.471 | SC | 20 | Ked | 0.7 | 0.3 | 2 | N30W | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-35 | 29 41.385 | 98 14.364 | SC | 20 | Ked | 1 | 0.4 | 1 | N30W | | | | O | 11 | 31 | X | | X | | HILLSIDE |

* 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 |

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| 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 |

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

## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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) | DOC | 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-36 | 29 41.425 | 98 14.286 | SF | 20 | Ked | 3 | 0.9 | 1 | NS | | | | O | 11 | 31 | X | | X | | HILLSIDE |
| S-37 | 29 41.411 | 98 14.269 | SH | 20 | Ked | 8 | 3 | 2 | N40E | 10 | | | C/O | 23 | 53 | | X | X | | HILLSIDE |
| S-38 | 29 41.432 | 98 14.255 | SC | 20 | Ked | 4 | 2 | 4 | NS | | | | O | 25 | 45 | | X | X | | HILLSIDE |
| S-39 | 29 41.417 | 98 14.229 | CD | 5 | Ked | 40 | 20 | 1 | N30W | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-40 | 29 41.53 | 98 14.093 | SC | 20 | Ked | 2 | 3 | 1 | NONE | | | | F | 11 | 31 | X | | X | | HILLSIDE |
| S-41 | 29 41.551 | 98 14.049 | CD | 5 | Kbu | 150 | 120 | 3 | N30W | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-42 | 29 41.553 | 98 14.015 | CD | 5 | Kbu | 15 | 6 | 2 | NS | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-43 | 29 41.545 | 98 13.969 | SC | 20 | Kbu | 3.5 | 1 | 1.5 | N20E | | | | F | 11 | 31 | X | | X | | HILLSIDE |
| S-44 | 29 41.549 | 98 13.98 | ZSC | 30 | Kbu | 200 | 150 | 4 | N40E | 10 | | | O/F | 20 | 60 | | X | X | | HILLSIDE |
| S-45 | 29 41.159 | 98 14.314 | SC | 20 | Ked | 2.5 | 1 | 1.5 | EW | | | | F | 11 | 31 | X | | X | | HILLSIDE |
| S-46 | 29 41.1 | 98 14.401 | SC | 20 | Ked | 0.3 | 0.2 | 2 | NONE | | | | C/O | 19 | 39 | X | | X | | HILLSIDE |
| S-47 | 29 41.155 | 98 14.218 | CD | 5 | Ked | 6 | 3.5 | 1 | NS | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-48 | 29 41.218 | 98 14.066 | CD | 5 | Ked | 6 | 4 | 2 | N30W | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-49 | 29 41.551 | 98 14.038 | SC | 20 | Kbu | 0.8 | 0.5 | 0.9 | NS | | | | F | 11 | 31 | X | | X | | HILLSIDE |
| S-50 | 29 41.491 | 98 14.057 | SC | 20 | Kbu | 3 | 1 | 2 | N30W | | | | F | 11 | 31 | X | | X | | HILLSIDE |
| S-51 | 29 41.43 | 98 14.114 | SC | 20 | Ked | 1.5 | 0.9 | 2 | N50W | | | | F | 11 | 31 | X | | X | | HILLSIDE |

* DATUM: NAD 83

| 2A TYPE | TYPE | 2B POINTS |
|---|---|---|
| C | Cave | 30 |
| SC | Solution cavity | 20 |
| SF | Solution-enlarged fracture(s) | 20 |
| F | Fault | 20 |
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| MB | Manmade feature in bedrock | 30 |
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## GEOLOGIC ASSESSMENT TABLE

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| LOCATION | | | FEATURE CHARACTERISTICS | | | | | | | | | | | | EVALUATION | | | PHYSICAL SETTING | | |
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| 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-52 | 29 41.378 | 98 14.228 | CD | 5 | Ked | 15 | 9 | 1 | EW | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-53 | 29 41.318 | 98 14.359 | SC | 20 | Ked | 2.5 | 1 | 1.3 | EW | | | | F/V | 11 | 31 | X | | X | | HILLSIDE |
| S-54 | 29 41.274 | 98 14.422 | SF | 20 | Ked | 13 | 1.2 | 2.8 | N20W | | 2per | 0.3 | F/V | 11 | 31 | X | | X | | HILLSIDE |
| S-55 | 29 41.272 | 98 14.419 | SC | 20 | Ked | 0.3 | 2 | 1 | NONE | | | | F/V | 11 | 31 | X | | X | | HILLSIDE |
| S-56 | 29 41.218 | 98 14.477 | SC | 20 | Ked | 2 | 1 | 2 | NONE | | | | F/V | 11 | 31 | X | | X | | HILLSIDE |
| S-57 | 29 41.247 | 98 14.353 | CD | 5 | Ked | 110 | 80 | 9 | NS | | | | F/V | 5 | 10 | X | | X | | HILLSIDE |
| S-58 | 29 41.289 | 98 14.226 | SC | 20 | Ked | 1 | 1.3 | 1.2 | NS | | | | F/V | 11 | 31 | X | | X | | HILLSIDE |
| S-59 | 29 41.327 | 98 14.222 | SC | 20 | Ked | 0.1 | 0.3 | 0.5 | NONE | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-60 | 29 41.371 | 98 14.06 | SH | 20 | Ked | 7 | 3.5 | 3 | N45E | 10 | | | F/O | 9 | 39 | X | | X | | HILLSIDE |
| S-61 | 29 41.444 | 98 13.971 | CD | 5 | Ked | 42 | 25 | 0.7 | NS | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-62 | 29 41.442 | 98 13.945 | SH | 20 | Ked | 5 | 2 | 3 | EW | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-63 | 29 41.455 | 98 13.906 | SC | 20 | Ked | 3 | 1.2 | >3 | NS | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-64 | 29 41.374 | 98 13..901 | SC | 20 | Ked | 4 | 2.6 | 1.4 | N10W | | | | F/O | 11 | 31 | X | | X | | HILLTOP |
| S-65 | 29 41.379 | 98 14.02 | CD | 5 | Ked | 15 | 8 | 1 | N40E | 10 | | | F/O | 5 | 20 | X | | X | | HILLSIDE |
| S-66 | 29 41.355 | 98 13.889 | SC | 20 | Ked | 2 | 1 | 1.5 | N20W | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-67 | 29 41.352 | 98 13.887 | SC | 20 | Ked | 0.2 | 0.2 | 1 | NONE | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-68 | 29 41.351 | 98 13.843 | SC | 20 | Ked | 0.7 | 1.3 | 1.4 | N50E | 10 | | | O | 9 | 39 | X | | X | | HILLSIDE |
| S-69 | 29 41.364 | 98 13.846 | CD | 5 | Ked | 7 | 7 | 2 | NONE | | | | F | 5 | 10 | X | | X | | HILLSIDE |

* 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.

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Date January 5, 2009

STATE OF TEXAS
MICHELLE M. LEE
GEOLOGY
6071
LICENSED



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

## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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-70 | 29 41.157 | 98 14.053 | MB | 30 | Ked | 0.7 | 0.7 | 300 | NONE | | WELL | | F/O | 7 | 37 | X | | X | | HILLSIDE |
| S-71 | 29 41.292 | 98 13.769 | CD | 5 | Ked | 5 | 3 | 1.5 | N50W | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-72 | 29 41.297 | 98 13.761 | CD | 5 | Ked | 5 | 2 | 1.8 | EW | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-73 | 29 41.08 | 98 13.798 | SF | 20 | Ked | 3.5 | 8 | 1.1 | N40E | 10 | 1 per | 0.4 | F/O | 7 | 37 | X | | X | | HILLSIDE |
| S-74 | 29 41.108 | 98 13.626 | SC | 20 | Ked | 6 | 3.5 | >2 | NS | | | | F/O | 14 | 34 | X | | X | | HILLSIDE |
| S-75 | 29 41.018 | 98 13.676 | CD | 5 | Ked | 7 | 4 | 1.3 | N70E | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-76 | 29 41.041 | 98 14.231 | CD | 5 | Ked | 10 | 4 | 0.5 | N46E | 10 | | | F/O | 10 | 25 | X | | X | | HILLTOP |
| S-77 | 29 41.02 | 98 14.247 | SC | 20 | Ked | 1.2 | 1 | 1.5 | N70E | | | | F/O | 5 | 25 | X | | X | | HILLSIDE |
| S-78 | 29 40.93 | 98 14.304 | CD | 5 | Ked | 7 | 7 | 1.2 | NONE | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-79 | 29 40.933 | 98 14.233 | ZSCSF | 30 | Ked | 50 | 30 | 0.6 | N84E | | | | F/O | 27 | 57 | | X | X | | HILLSIDE |
| S-80 | 29 40.912 | 98 14.081 | SC | 20 | Ked | 8 | 6 | 1.5 | N28E | | | | F/O | 7 | 27 | X | | X | | HILLSIDE |
| S-81 | 29 40.859 | 98 14.056 | SH | 20 | Ked | 7 | 5 | 2.5 | N20W | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-82 | 29 40.8 | 98 14.035 | SF | 20 | Ked | 3 | 1 | 2 | N94W | | | | F/O | 19 | 39 | X | | X | | HILLSIDE |
| S-83 | 29 40.611 | 98 13.56 | CD | 5 | Ked | 8 | 10 | 1.2 | N23W | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-84 | 29 40.482 | 98 13.792 | F | 20 | Ked | 14 | 40 | ? | EW | | | | F/O | 11 | 31 | X | | | X | DRAINAGE |
| S-85 | 29 40.496 | 98 13.76 | SF | 20 | Ked | 6 | 8 | 0.2 | NS | | | | F/O | 11 | 31 | X | | | X | DRAINAGE |
| S-86 | 29 40.76 | 98 13.385 | CD | 5 | Ked | 7 | 8.5 | 1 | N4W | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-87 | 29 40.796 | 98 13.35 | MB | 30 | Ked | 0.7 | 0.7 | >200 | NONE | | WELL | | F/O | 35 | 65 | | X | X | | HILLSIDE |

* 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.

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

| GEOLOGIC ASSESSMENT TABLE | | | PROJECT NAME: Dean Word 1765 Acre GA - New Braunfels | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | | | FEATURE CHARACTERISTICS | | | | | | | | | | | EVALUATION | | | PHYSICAL SETTING | | | |
| 1A | 1B * | 1C* | 2A | 2B | 3 | 4 | | | 5 | 5A | 6 | 7 | 8A | 8B | 9 | 10 | | 11 | | 12 |
| FEATURE ID | LATITUDE | LONGITUDE | FEATURE TYPE | POINTS | FORMATION | DIMENSIONS (FEET) | | | TREND (DEGREES) | DIP | DENSITY (NO/FT) | APERTURE (FEET) | INFILL | RELATIVE INFILTRATION RATE | TOTAL | SENSITIVITY | | CATCHMENT AREA (ACRES) | | TOPOGRAPHY |
| | | | | | | X | Y | Z | | 10 | | | | | | <40 | >40 | <1.6 | >1.6 | |
| S-88 | 29 40.903 | 98 13.462 | CD | 5 | Ked | 10 | 14 | 1 | E38S | | | | F | 5 | 10 | X | | X | | HILLTOP |
| S-89 | 29 40.937 | 98 13.648 | SC | 20 | Ked | 4 | 8 | 1 | E40S | | | | F | 9 | 29 | X | | X | | HILLSIDE |
| S-90 | 29 40.931 | 98 13.664 | CD | 5 | Ked | 8 | 10 | 1 | E30S | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-91 | 29 40.899 | 98 13.691 | SH | 20 | Ked | 22 | 22 | 1.5 | NONE | | | | F | 19 | 39 | X | | X | | HILLSIDE |
| S-92 | 29 40.827 | 98 13.69 | SF | 20 | Kbu | 1 | 1 | 2 | NONE | | | | O | 17 | 37 | X | | X | | HILLSIDE |
| S-93 | 29 41.55 | 98 13.933 | F | 20 | Ked | 3780 | 2 | 0 | N45E | 10 | | | F | 9 | 39 | X | | X | | HILLSIDE |
| S-94 | 29 40.508 | 98 13.765 | SC | 20 | Ked | 1.2 | 0.7 | 0.7 | NONE | | | | F | 5 | 25 | X | | X | | HILLSIDE |
| S-95 | 29 40.674 | 98 13.739 | CD | 5 | Kbu | 15 | 15 | 5 | NONE | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-96 | 29 40.668 | 98 13.739 | F | 20 | Ked | | 3 | 1 | N45E | 10 | | | C/O | 25 | 55 | | X | X | | HILLSIDE |
| S-97 | 29 40.707 | 98 13.844 | CD | 5 | Kbu | 13 | 13 | 4.3 | NONE | | | | F | 15 | 20 | X | | | X | DRAINAGE |
| S-98 | 29 41.544 | 98 14.044 | F | 20 | Kbu | 3905 | 1 | 0.3 | N48E | 10 | | | F/O | 7 | 37 | X | | X | | HILLSIDE |
| S-99 | 29 41.977 | 98 14.439 | ZSC | 20 | Ked | 52 | 17 | 0.7 | N30E | | | | O | 19 | 39 | X | | | X | DRAINAGE |
| S-100 | 29 41.819 | 98 14.350 | CD | 5 | Ked | 30 | 10 | 1.4 | NS | | | | O | 7 | 12 | X | | X | | FLOODPLAIN |
| S-101 | 29 41.870 | 98 14.440 | ZSC | 30 | Ked | 125 | 15 | 21 | NS | | | | O | 9 | 39 | X | | X | | CLIFF |
| S-102 | 29 42.049 | 98 14.596 | SC | 20 | Ked | 3 | 1.1 | 0.7 | N21W | | | | O | 9 | 29 | X | | X | | HILLSIDE |
| S-103 | 29 42.061 | 98 14.597 | SC | 20 | Ked | 0.7 | 0.3 | 0.5 | N20W | | | | O | 11 | 31 | X | | X | | HILLSIDE |
| S-104 | 29 42.149 | 98 14.699 | SC | 20 | Ked | 4.6 | 1.3 | 1.2 | N40E | 10 | | | V | 9 | 39 | X | | X | | HILLSIDE |

* 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 |
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Date January 5 2009

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## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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) | MAX | 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-105 | 29 42.113 | 98 14.697 | CD | 5 | Ked | 80 | 45 | 3 | N27W | | | | F/O | 5 | 10 | X | | | X | HILLSIDE |
| S-106 | 29 41.836 | 98 14.473 | ZSC | 30 | Ked | 19 | 2.5 | 1.3 | NS | | | | O | 17 | 47 | | X | X | | HILLTOP |
| S-107 | 29 41.678 | 98 14.322 | SF | 20 | Ked | 1 | 0.3 | 0.7 | N10W | | | | F/O | 9 | 29 | X | | X | | FLOODPLAIN |
| S-108 | 29 41.675 | 98 14.360 | SF | 20 | Ked | 25 | 17 | 0.6 | N40E | 10 | | | F/O | 9 | 39 | X | | | X | FLOODPLAIN |
| S-109 | 29 41.783 | 98 14.450 | SC | 20 | Ked | 7 | 4 | >4 | N15W | | | | F/O | 19 | 39 | X | | X | | FLOODPLAIN |
| S-110 | 29 41.620 | 98 14.402 | ZF | 30 | Ked | 2880 | 34 | 25 | N45E | 10 | | | O/C | 19 | 59 | | X | | X | DRAINAGE |
| S-111 | 29 41.824 | 98 14.624 | SC | 20 | Ked | 0.7 | 0.7 | 1.4 | NONE | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-112 | 29 41.841 | 98 14.603 | SC | 20 | Ked | 1.3 | 0.6 | 0.8 | NS | | | | F/O | 17 | 37 | X | | X | | HILLSIDE |
| S-113 | 29 41.831 | 98 14.626 | SC | 20 | Ked | 3.1 | 2.1 | 0.9 | NS | | | | F/O | 15 | 35 | X | | X | | HILLSIDE |
| S-114 | 29 41.582 | 98 14.484 | ZSH | 30 | Ked | 200 | 25 | >4 | N60E | | | | F/O | 9 | 39 | X | | | X | DRAINAGE |
| S-115 | 29 41.779 | 98 14.691 | SH | 20 | Ked | 20 | 3 | 2.7 | N35E | 10 | | | O | 19 | 49 | | X | X | | HILLSIDE |
| S-116 | 29 41.825 | 98 14.729 | SH/CD | 20 | Kdr | 35 | 35 | 15 | NONE | | | | F/O | 11 | 31 | X | | | X | HILLSIDE |
| S-117 | 29 41.890 | 98 14.788 | CD | 5 | Ked | 62 | 25 | 7.3 | NS | | | | F/O | 19 | 24 | X | | | X | DRAINAGE |
| S-118 | 29 41.890 | 98 14.788 | ZFSC | 30 | Ked | 270 | 38 | 7 | N75E | | | | O/N | 25 | 55 | | X | | X | DRAINAGE |
| S-119 | 29 41.808 | 98 14.718 | SF | 20 | Ked | 3.3 | 0.2 | 0.7 | N15W | | | | O | 15 | 35 | X | | X | | HILLSIDE |
| S-120 | 29 41.727 | 98 14.696 | ZSH | 30 | Ked | 9.5 | 3.7 | >5 | N115E | | | | N/C | 30 | 60 | | X | X | | HILLSIDE |
| S-121 | 29 41.537 | 98 14.601 | SF | 20 | Ked | 2.7 | 0.8 | 0.3 | N10E | | | | F/O | 12 | 32 | X | | X | | HILLSIDE |
| S-122 | 29 41.899 | 98 14.950 | ZSC | 30 | Ked | 10.1 | 6.1 | 0.7 | N15W | | | | F/O | 7 | 37 | X | | X | | HILLSIDE |
| S-123 | 29 41.549 | 98 14.704 | ZSC | 30 | Ked | 100 | 28 | >3 | N50W | | | | N/C | 22 | 52 | | X | | X | FLOODPLAIN |
| S-124 | 29 41.560 | 98 14.743 | SC | 20 | Ked | 2 | 0.6 | 0.9 | N45E | 10 | | | F/O | 17 | 47 | | X | X | | FLOODPLAIN |

* DATUM: NAD 83

| 2A TYPE | TYPE | 2B POINTS |
|---|---|---|
| C | Cave | 30 |
| SC | Solution cavity | 20 |
| SF | Solution-enlarged fracture(s) | 20 |
| F | Fault | 20 |
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| MB | Manmade feature in bedrock | 30 |
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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) | ROW | 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-126 | 29 39.923 | 98 13.040 | CD | 5 | Ked | 7 | 3.7 | 1.4 | N50E | 10 | | | F/O | 15 | 30 | X | | X | | HILLSIDE |
| S-127 | 29 39.982 | 98 12.878 | ZSC | 30 | Ked | 13 | 1.6 | 1.1 | N70E | | | | F/O | 9 | 39 | X | | X | | HILLSIDE |
| S-128 | 29 39.944 | 98 12.911 | SC | 20 | Ked | 0.8 | 0.6 | 1.7 | NONE | | | | F/O | 9 | 29 | X | | X | | HILLSIDE |
| S-129 | 29 39.903 | 98 12.995 | SC | 20 | Ked | 4.4 | 3.1 | 1.9 | EW | | | | F/O | 19 | 39 | X | | X | | HILLSIDE |
| S-130 | 29 39.788 | 98 13.152 | SC | 20 | Ked | 3.1 | 0.7 | 0.9 | N60E | | | | O | 15 | 35 | X | | X | | HILLSIDE |
| S-131 | 29 39.849 | 98 12.976 | SC | 20 | Ked | 0.6 | 0.5 | 0.4 | NONE | | | | F/O | 8 | 28 | X | | X | | HILLSIDE |
| S-132 | 29 39.891 | 98 12.933 | SC | 20 | Ked | 0.3 | 0.3 | 1.5 | NONE | | | | N/C | 10 | 30 | X | | X | | HILLSIDE |
| S-133 | 29 39.852 | 98 12.911 | SC | 20 | Ked | 2.1 | 0.5 | 2.3 | N48E | 10 | | | N/C | 19 | 49 | | X | | X | DRAINAGE |
| S-134 | 29 39.848 | 98 12.935 | ZO | 30 | Ked | 25 | 3 | 4.3 | N30W | | | | F/O | 7 | 37 | X | | | X | DRAINAGE |
| S-135 | 29 39.773 | 98 13.111 | SC | 20 | Ked | 1.4 | 1.1 | 0.9 | N25E | | | | F/O | 17 | 37 | X | | X | | HILLSIDE |
| S-136 | 29 39.734 | 98 13.199 | SC | 20 | Ked | 2.1 | 1 | 0.7 | N20W | | | | F/O | 8 | 28 | X | | X | | HILLSIDE |
| S-137 | 29 39.746 | 98 13.152 | SF | 20 | Ked | 3.6 | 0.1 | 1.1 | EW | | | | O/C | 11 | 31 | X | | X | | HILLSIDE |
| S-138 | 29 39.769 | 98 13.057 | ZSF | 30 | Ked | 45 | 4 | 2.3 | N50E | 10 | 1 per | 0.6 | C | 15 | 55 | | X | X | | HILLSIDE |
| S-139 | 29 39.793 | 98 13.005 | CD | 5 | Ked | 14 | 5.1 | 2.3 | NS | | 1 per | 0.7 | F/C | 5 | 10 | X | | | X | DRAINAGE |
| S-140 | 29 39.874 | 98 12.830 | SC | 20 | Ked | 1.4 | 0.7 | 2.3 | N30W | | | | O/C | 11 | 31 | X | | X | | HILLSIDE |
| S-141 | 29 39.854 | 98 12.797 | CD | 5 | Ked | 22 | 18 | 4 | N70E | | | | F/O | 11 | 16 | X | | X | | HILLSIDE |
| S-142 | 29 39.835 | 98 12.830 | CD | 5 | Ked | 28 | 13 | 2 | EW | | | | F/O | 11 | 16 | X | | X | | HILLSIDE |
| S-143 | 29 39.807 | 98 12.869 | SF | 20 | Ked | 10 | 0.9 | 0.7 | N65E | | 1 per | 0.9 | F/O | 13 | 33 | X | | | | HILLSIDE |
| S-144 | 29 39.776 | 98 12.932 | ZSFSC | 30 | Ked | 70 | 35 | 1.5 | N75E | | | | F/O | 17 | 47 | | X | X | | HILLSIDE |
| S-145 | 29 39.770 | 98 12.962 | SH | 20 | Ked | 9 | 2.4 | 2.3 | N85E | | 2 per | 0.8 | O/C | 19 | 39 | X | | X | | HILLSIDE |
| S-146 | 29 39.716 | 98 13.078 | SH | 20 | Ked | 6.1 | 3 | 0.9 | N80E | | | | O/F | 11 | 31 | X | | X | | HILLSIDE |

* 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 |

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Michelle M. Lee

Date January 5, 2009

MICHELLE M. LEE
GEOLOGY
6071
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TCEQ-0585-Table (Rev. 10-01-04)

## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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-147 | 29 39.713 | 98 13.078 | SF | 20 | Ked | 2 | 0.2 | 0.7 | NS | | 1 per | 0.2 | C/N | 10 | 30 | X | | X | | HILLSIDE |
| S-149 | 29 39.679 | 98 13.166 | SH | 20 | Ked | 7.5 | 4.3 | 2.1 | N60W | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-150 | 29 39.649 | 98 13.198 | ZMB | 30 | Ked | 410 | 150 | 15 | N50E | 10 | | | F/O | 15 | 55 | | X | X | | HILLSIDE |
| S-151 | 29 39.748 | 98 12.964 | SC | 20 | Ked | 6 | 6 | 1.8 | NONE | | | | O | 25 | 45 | | X | | X | DRAINAGE |
| S-152 | 29 39.757 | 98 12.915 | SC | 20 | Ked | 0.9 | 0.7 | >2 | N15E | | | | O | 11 | 31 | X | | X | | HILLSIDE |
| S-153 | 29 39.747 | 98 12.892 | ZSCFR | 30 | Ked | 164 | 17 | 1.6 | N20S | | | | N/C | 20 | 50 | | X | | X | DRAINAGE |
| S-154 | 29 41.279 | 98 14.667 | MB | 30 | Ked | 0.7 | 0.7 | 3 | NONE | | WELL | | N/C | 9 | 39 | X | | X | | HILLSIDE |
| S-155 | 29 41.650 | 98 14.927 | ZSC | 30 | Ked | 115 | 65 | 6 | N70E | | | | C/O | 15 | 45 | | X | | | FLOODPLAIN |
| S-156 | 29 41.846 | 98 15.124 | ZSC | 30 | Ked | 12 | 1.8 | 1.4 | N70E | | | | O/C | 9 | 39 | X | | X | | HILLTOP |
| S-157 | 29 41.784 | 98 15.104 | CD | 5 | Ked | 13 | 2.6 | 1.1 | N50E | 10 | | | O/F | 15 | 30 | X | | X | | FLOODPLAIN |
| S-158 | 29 41.464 | 98 14.859 | SC | 20 | Ked | 2.3 | 0.7 | 0.8 | EW | | | | O/F | 10 | 30 | X | | X | | HILLSIDE |
| S-159 | 29 41.687 | 98 15.125 | CD | 5 | Ked | 120 | 75 | 2.5 | N20W | | | | F/O | 5 | 10 | X | | X | | FLOODPLAIN |
| S-160 | 29 41.727 | 98 15.117 | SC | 20 | Ked | 1.8 | 0.8 | 0.9 | N40E | 10 | | | O/F | 9 | 39 | X | | X | | FLOODPLAIN |
| S-161 | 29 41.796 | 98 15.182 | SF | 20 | Ked | 6.7 | 4.3 | 1.7 | E40S | | | | O | 15 | 35 | X | | X | | HILLTOP |
| S-162 | 29 41.540 | 98 15.021 | SC | 20 | Ked | 5 | 3 | 24 | E30S | | | | O/C | 17 | 37 | X | | X | | FLOODPLAIN |
| S-163 | 29 41.308 | 98 14.929 | CD | 5 | Ked | 109 | 55 | 4.6 | N80W | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-164 | 29 41.277 | 98 14.910 | O | 5 | Ked | 4 | 3.1 | 0.8 | N80W | | | | F/O | 10 | 15 | X | | | X | HILLSIDE |
| S-165 | 29 41.274 | 98 14.901 | SH | 20 | Ked | 5.3 | 3.4 | 1.7 | N70W | | | | O/C | 15 | 35 | X | | X | | HILLSIDE |
| S-166 | 29 41.230 | 98 14.912 | SC | 20 | Ked | 3.6 | 0.8 | 1.2 | E10S | | | | F/O | 9 | 29 | X | | X | | HILLSIDE |
| S-167 | 29 41.199 | 98 14.857 | SF | 20 | Ked | 11 | 0.7 | 1.3 | N50E | 10 | | | F/O | 9 | 39 | X | | X | | HILLSIDE |

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

| GEOLOGIC ASSESSMENT TABLE | | | PROJECT NAME: Dean Word 1765 Acre GA - New Braunfels | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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) | ROD | DENSITY (NO/FT) | APERTURE (FEET) | INFILL | RELATIVE INFILTRATION RATE | TOTAL | SENSITIVITY | | CATCHMENT AREA (ACRES) | | TOPOGRAPHY |
| | | | | | | X | Y | Z | | 10 | | | | | | <40 | >40 | <1.8 | >1.8 | |
| S-168 | 29 41.158 | 98 14.871 | SC | 20 | Ked | 0.5 | 0.3 | 0.7 | NS | | | | O | 10 | 30 | X | | X | | HILLSIDE |
| S-169 | 29 41.196 | 98 14.939 | SF | 20 | Ked | 4 | 0.6 | 0.9 | N70E | | | | O | 10 | 30 | X | | X | | HILLSIDE |
| S-170 | 29 42.018 | 98 14.289 | CD | 5 | Ked | 85 | 35 | 2.9 | N45E | 10 | | | F | 10 | 25 | X | | | X | FLOODPLAIN |
| S-171 | 29 41.950 | 98 14.439 | SC | 20 | Ked | 0.7 | 0.7 | 1.9 | NONE | | | | O/C | 10 | 30 | X | | | X | FLOODPLAIN |
| S-173(2) | 29 42.671 | 98 14.110 | SC | 20 | Ked | 4 | 0.6 | >2 | N50E | 10 | | | C/O | 7 | 37 | X | | X | | HILLTOP |
| S-174(3) | 29 42.658 | 98 14.175 | SH | 20 | Kbu | 4 | 3 | 1.3 | N40E | 10 | | | C/O | 7 | 37 | X | | X | | HILLSIDE |
| S-175(4) | 29 42.660 | 98 14.184 | SH | 20 | Kbu | 4.6 | 2.1 | 1.7 | EW | | | | C/O | 7 | 27 | X | | X | | HILLSIDE |
| S-176(5) | 29 42.679 | 98 14.254 | O | 5 | Kbu | 40 | 30 | 2.1 | N45E | 10 | | | N/C | 7 | 22 | X | | | X | DRAINAGE |
| S-177(6) | 29 42.456 | 98 14.596 | MB | 30 | Ked | 6 | 6 | ? | NONE | | CISTERN | | N | 50 | 80 | | | X | | FLOODPLAIN |
| S-178(7) | 29 42.426 | 98 14.637 | MB | 30 | Ked | 0.7 | 0.7 | ? | NONE | | WELL | | N | 7 | 37 | X | | X | | FLOODPLAIN |
| S-179(8) | 29 42.521 | 98 14.674 | F | 20 | Kbu | 640 | 21 | 0.6 | N10E | | | | F/O | 7 | 27 | X | | | X | DRAINAGE |
| S-180(9) | 29 42.478 | 98 14.156 | CD | 5 | Ked | 6 | 6 | 2 | EW | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-181(10) | 29 42.537 | 98 14.266 | SF | 20 | Ked | 8 | 1 | 1 | N40E | 10 | | | F/O | 9 | 39 | X | | X | | HILLSIDE |
| S-182(11) | 29 42.579 | 98 14.277 | F | 20 | Ked | 4480 | 16 | 0.6 | N44E | 10 | | | F/O | 9 | 39 | X | | X | | DRAINAGE |
| S-183(12) | 29 42.591 | 98 14.236 | SC | 20 | Ked | 1.3 | 0.9 | 1.1 | N55E | 10 | | | O/C | 7 | 37 | X | | X | | HILLSIDE |
| S-184(13) | 29 42.628 | 98 14.139 | O | 5 | Ked | 11 | 3 | 1 | NS | | | | F/O | 7 | 12 | X | | X | | HILLSIDE |
| S-185(14) | 29 42.636 | 98 14.164 | SH | 20 | Ked | 7 | 1.4 | 0.8 | N40E | 10 | | | C/O | 9 | 39 | X | | X | | HILLSIDE |
| S-186(15) | 29 42.651 | 98 14.197 | SC | 20 | Ked | 0.4 | 0.4 | 0.9 | NONE | | | | F/C | 11 | 31 | X | | X | | HILLSIDE |
| S-187(16) | 29 42.419 | 98 14.354 | ZSCO | 30 | Ked | 50 | 15 | | N20W | | | | F/C | 15 | 45 | | X | | X | DRAINAGE |
| S-188(17) | 29 42.424 | 98 14.368 | SH | 20 | Ked | 4 | 3 | 1 | N30E | | | | F/O | 11 | 31 | X | | X | | FLOODPLAIN |

* 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 |
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| CD | Non-karst closed depression | 5 |
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|---|---|
| N | None, exposed bedrock |
| C | Coarse - cobbles, breakdown, sand, gravel |
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MICHELLE M. LEE GEOLOGY 6071 LICENSED



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

## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| LOCATION | | | FEATURE CHARACTERISTICS | | | | | | | | | | | EVALUATION | | | PHYSICAL SETTING | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| FEATURE ID | LATITUDE | LONGITUDE | FEATURE TYPE | POINTS | FORMATION | DIMENSIONS (FEET) | | | TREND (DEGREES) | DOUBLE 10 | DENSITY (NO/FT) | APERTURE (FEET) | INFILL | RELATIVE INFILTRATION RATE | TOTAL | SENSITIVITY | | CATCHMENT AREA (ACRES) | TOPOGRAPHY |
| | | | | | | X | Y | Z | | | | | | | | <40 | >40 | <1.6 | >1.6 | |
| S-189(18) | 29 42.407 | 98 14.422 | SH | 20 | Ked | 5 | 1 | 2 | N20W | | | | O/C | 19 | 39 | X | | X | | FLOODPLAIN |
| S-190(19) | 29 42.409 | 98 14.429 | CD | 5 | Ked | 5 | 3 | 0.9 | N10W | | | | F | 7 | 12 | X | | X | | FLOODPLAIN |
| S-191(20) | 29 42.339 | 98 14.494 | CD | 5 | Ked | 30 | 8 | 1 | N70E | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-192(21) | 29 42.360 | 98 14.452 | CD | 5 | Ked | 7 | 4 | 2 | NS | | | | F | 15 | 20 | X | | X | | HILLSIDE |
| S-193(22) | 29 42.356 | 98 14.291 | CD | 5 | Ked | 235 | 25 | 22 | N20W | | | | C/O | 25 | 30 | X | | | X | DRAINAGE |
| S-194(23) | 29 42.300 | 98 14.470 | CD | 5 | Ked | 250 | 175 | 2.4 | N75E | | | | F | 7 | 12 | X | | X | | HILLSIDE |
| S-195(24) | 29 42.238 | 98 14.636 | SC | 20 | Ked | 0.9 | 0.7 | 1 | N10W | | | | F | 15 | 35 | X | | X | | HILLSIDE |
| S-196(25) | 29 42.255 | 98 14.370 | SC | 20 | Ked | 2.1 | 0.7 | 1.5 | N40E | 10 | | | C/O | 9 | 39 | X | | X | | HILLSIDE |
| S-197(26) | 29 42.209 | 98 14.360 | F | 20 | Ked | 60 | 4 | | E-W | | | | F/O | 19 | 39 | X | | X | | HILLSIDE |
| S-198(27) | 29 42.283 | 98 14.084 | ZSC | 30 | Ked | 83 | 3 | >3 | N10E | | | | O/F | 20 | 50 | | X | X | | FLOODPLAIN |
| S-199(28) | 29 42.254 | 98 13.998 | CD | 5 | Ked | 60 | 35 | 3 | NS | | | | F | 7 | 12 | X | | | X | DRAINAGE |
| S-200(29) | 29 42.188 | 98 14.433 | SH | 20 | Ked | 7 | 3.4 | 2.1 | NS | | | | V/O | 19 | 39 | X | | X | | HILLSIDE |
| S-201(30) | 29 42.213 | 98 14.137 | CD | 5 | Ked | 33 | 7 | 1.3 | NS | | | | F | 7 | 12 | X | | | X | DRAINAGE |
| S-202(31) | 29 42.217 | 98 14.029 | SC | 20 | Ked | 1.3 | 1.2 | 0.7 | NONE | | | | F/O | 7 | 27 | X | | X | | HILLSIDE |
| S-203(32) | 29 42.192 | 98 14.201 | SH | 20 | Ked | 8 | 4.2 | >3 | N50E | 10 | | | O/C | 25 | 55 | | X | X | | FLOODPLAIN |
| S-204(33) | 29 42.178 | 98 14.235 | SC | 20 | Ked | 0.5 | 0.4 | 1.1 | NONE | | | | F/O | 17 | 37 | X | | X | | HILLSIDE |
| S-205(34) | 29 42.178 | 98 14.130 | ZF | 30 | Ked | 6140 | 25 | 15 | N40E | 10 | | | F/O | 5 | 45 | | X | | X | DRAINAGE |
| S-206(35) | 29 42.128 | 98 14.129 | SC | 20 | Ked | 0.3 | 0.3 | 0.8 | NONE | | | | N/C | 15 | 35 | X | | X | | HILLSIDE |
| S-207(36) | 29 42.098 | 98 14.208 | ZCD | 30 | Ked | 26 | 5 | 4 | N50E | 10 | | | O/N | 35 | 75 | | X | | X | DRAINAGE |
| S-208(37) | 29 42.087 | 98 14.173 | SC | 20 | Ked | 1.1 | 0.9 | 1.7 | NONE | | | | O/F | 17 | 37 | X | | X | | FLOODPLAIN |
| S-209(38) | 29 42.062 | 98 14.040 | SC | 20 | Ked | 2.7 | 1.4 | 0.8 | N75E | | | | F | 5 | 25 | X | | X | | HILLSIDE |
| S-210 | 29 39.66 | 98 12.98 | F | 20 | Ked | 2600 | 35 | 7 | N50E | 10 | | | F | 9 | 39 | X | | | X | HILLSIDE |

* 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 |
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Date January 5, 2004

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

**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: Dean Word Company, Ltd. - Lonestar Quarry

**REGULATED ENTITY INFORMATION**

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

2. Total site acreage (size of property): ~ 1923

3. Projected population: *~15

*Changes in response to January 5, 2009 submittal - Item #4.

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 | 0 | ÷ 43,560 = | 0 |
| Total Impervious Cover | 0 | ÷ 43,560 = | 0 |
| Total Impervious Cover ÷ Total Acreage x 100 = 0 | | | 0 |

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

## WASTEWATER TO BE GENERATED BY THE PROPOSED PROJECT

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

| | |
|---|---|
| 100% Domestic | 40 gallons/day |
| __% Industrial | ____ gallons/day |
| __% Commingled | ____ gallons/day |

TOTAL 40 gallons/day ***This number is based on twenty employees using two portable toilets at the site.***

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.

N/A Sewage Collection System (Sewer Lines):
__ Private service laterals from the wastewater generating facilities will be connected to an existing SCS.
__ Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.

__ The SCS was previously submitted on _____.
__ The SCS was submitted with this application.
__ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to executive director approval.

The sewage collection system will convey the wastewater to the _____ (name) Treatment Plant. The treatment facility is:
__ existing.
__ proposed.

16. 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" = 400 '.

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):
Comal County Engineer's Office – Preliminary FEMA Floodplain FIRM Map Number 48091C0430F and 48091C0440F dated March 10, 2006

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. ***Final contours are unknown at this time; the final floor elevation will depend on several variables such as rock quality and operational considerations unforeseeable at the time. However, at this time the final floor elevations are estimated to be 725' in the north portion and 695' on the south portion of the site.***

__ 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 4 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)
0 The wells are not in use and have been properly abandoned.
0 The wells are not in use and will be properly abandoned.
4 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.
__ **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. X 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.
**** At the conclusion of the project, a vegetated berm and the pit itself will contain stormwater on site.***

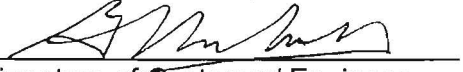
## ADMINISTRATIVE INFORMATION

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:

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



Signature of Customer/ Engineer

1-5-09
Date

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**WPAP Attachment A**

## Factors Affecting Water Quality

The major factor that could potentially affect water quality is sediment in stormwater runoff after the clearing of vegetation *and from other at-grade activities such as product stockpiles and the initial crushing and screening process. More remote factors include fuels and lubricants from vehicles and equipment, and trash/debris items.

Earthen berms and vegetated buffers located downgradient of the disturbed area(s) are proposed to capture sediment and control the flow of stormwater. Rock berms will also be constructed where stormwater flows leave the active project areas. Normal vehicle maintenance and repairs will be performed on site. Any spills or leaks will be cleaned up in a timely manner and will be disposed of properly. A trash receptacle will be placed onsite for use by employees and visitors.

*Changes in response to January 5, 2009 submittal – Item #6.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**WPAP Attachment B**

## Volume and Character of Stormwater

Due to the use of Temporary BMPs during construction the character of stormwater runoff which is expected to occur from the proposed project will be essentially the same as prior to the site. As quarrying activities continue, the volume of stormwater runoff from the site will be reduced because the quarry pit will ultimately retain the anticipated onsite and upgradient stormwater runoff.

*Pre-construction:
Calculations were made using the Rational Method for estimation of peak runoff rates. The Rational Method equation is Q = C * I * A, where Q is the peak flow rate, C is a dimensionless coefficient (runoff coefficient), I is the rainfall intensity, and A is the area.

A runoff coefficient, C, of 0.8 was used in the following calculations to represent the pre-construction, undisturbed area. This value is considered to be conservative and is intended to demonstrate potential runoff under severe rainfall conditions on relatively thin clayey soils.

Based on data from the Soil Conservation Service, USDA's "Urban hydrology for small watersheds" manual, the rainfall intensity of a 100 yr-24 hr event on this area would be 10 inches or 0.83 ft.

The area of the site in which the quarry pit is located is approximately 1,653 acres.

Q = C * I * A
Q = 0.83 ft * 0.8 * 1,653 acres
Q = 1,098 ac-ft

Therefore, the estimated runoff volume from the pre-construction conditions is 1,098 ac-ft for a 100 yr-24 hr design storm.

Post-construction:
Because the proposed project consists of the excavation of a quarry pit, stormwater runoff from the site after construction of the pit is expected to be zero due to the stormwater being contained and retained inside the pit.

For comparison, a quarry pit comprised of 200 acres and 100 feet deep would contain 20,000 acre-feet of water. This storage volume is significantly greater than the estimated runoff volume calculated from pre-construction conditions for the entire site (1,098 ac-ft). The proposed final quarry will be larger than 200 acres and approximately 95 feet deep below the lowest adjacent grade.
*Changes in response to January 5, 2009 submittal – Item #7.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Temporary Stormwater Section Attachment B**

**Potential Sources of Contamination**

Potential sources of contamination in the project area are the soil, *rock crushing activities, in-plant roads, material loading areas, stockpiles, fuels and lubricants from vehicles and equipment, and trash/debris items.

The content of the two pipelines that cross the site is natural gas. The pipelines are located in easements on the Dean Word Company, Ltd. property. Dean Word Company, Ltd. does not own the pipelines. Dean Word Company, Ltd. is not responsible for the relocation process and their related spill prevention measures. Dean Word Company, Ltd. may negotiate with the owner of the pipelines for relocation of the pipelines. A modification to the WPAP will be submitted if necessary.

*Changes in response to January 5, 2009 submittal – Item #6, 10-11.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Temporary Stormwater Section Attachment C**

## Sequence of Major Activities

First two rock berms (ALT 1) will be constructed along the downgradient portion of the initial 10 acre quarry area, then another rock berm (ALT 2) will be installed upgradient from the ALT 1 rock berms and downgradient from the initial quarry area. Next, clearing will be initiated in the initial 10 acre plant area and equipment will remove topsoil and push it in all directions from the middle of the proposed plant area creating an earthen berm approximately 2-6' high that will surround the 10 acres as shown on the attached WPAP Site Plan. After clearing is completed, excavation of the quarry pit will begin. A portable rock crushing plant will be set up and crushing and screening operations started in order to make product for use onsite and shipment offsite.

*The estimated area disturbed for the scale and scale house is less than 2,000 square feet (<0.05 ac.). The scale house will be a portable trailer type building and will not have a concrete slab. The rock crusher, wash water ponds and initial stockpile area will be located in the initial 10-acre disturbed area as described in the WPAP application and shown on the WPAP Site Plan. Additional stockpile areas may be constructed in the future an example of which is shown on the Revised WPAP Site Plan. The downgradient side of these stockpile areas would be bordered by a rock berm and a minimum 50 foot wide undisturbed vegetative buffer area.

Construction activities proposed for the wash water pond in the existing quarry pit include building earthen berms approximately 15 feet high with 2 to 1 (H:V) sloped sides. The berms of the pond will be comprised of compacted limestone rock that has been mined in the area.

When the pit is large enough, the portable rock crusher will be relocated into the pit. It is estimated that this will take three (3) to four (4) months. Portions of the site, less than 10 acres, will be cleared in stages as the quarrying progresses ultimately encompassing the areas labeled "Final Quarry Limits and Earthen Berm" on the attached WPAP Site Plan. The cleared topsoil will be used to construct ever-expanding berms surrounding the cleared area.

Construction entrances/exits will be added where necessary to limit off site tracking. Last, a mobile trailer will be placed for use as a scale house and truck scales will be installed as shown on the WPAP Site Plan.

*Changes in response to January 5, 2009 submittal – Item #12.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Temporary Stormwater Section Attachment D**

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

a.) How BMPs and measures will prevent pollution of surface water, groundwater and stormwater that originates upgradient from the site and flows across the site.

Rock berms will be installed downgradient of the initial plant area as shown on the WPAP Site Plan. As the initial plant area is cleared, equipment will remove topsoil and push it in all directions from the middle of the proposed plant area creating earthen berms. The earthen berm on the upgradient side of the initial plant area will be a minimum of 2 feet high and will prevent upgradient flows from contacting the disturbed soils in the initial plant area. The earthen berm on the downgradient side of the initial plant area will be approximately 4-6 feet high and will store runoff from the disturbed initial plant area until the quarry excavation commences and runoff is retained in the quarry. See cross-section A-A in the WPAP Site Plan. Two rock berms will also be constructed downgradient of the initial plant area to treat any stormwater flow leaving the plant site.

*Upgradient stormwater from the disturbed areas will be captured by the pit. Upgradient stormwater runoff from undisturbed areas will be diverted around the disturbed areas by the upgradient earthen berm, similar to Figure 1-3 of RG-348. See Section a on the Revised WPAP Site Plan.

As the size of the quarry expands, the earthen berms will expand throughout the life of the project to the "Final Earthen Berm" limits shown on the WPAP Site Plan.

b.) 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 site.

It is not expected that any significant amount of groundwater will be encountered in the quarry excavation or as surface flow in disturbed areas of the site.

The earthen berm on the downgradient side of the initial plant area will be approximately 4-6 feet high and will store runoff from the disturbed initial plant area until the quarry excavation commences and runoff is retained in the quarry. As the size of the quarry expands, the earthen berms will expand throughout the life of the project to the "Final Earthen Berm" limits, as shown on the WPAP Site Plan.

Two rock berms will also be constructed downgradient of the initial plant area to treat any stormwater flow leaving the plant site.

*Changes in response to January 5, 2009 submittal – Item #13.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Temporary Stormwater Section Attachment D (continued)**

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

c.) How BMPs and measures will prevent pollutants from entering surface streams, sensitive features or the aquifer.

Earthen and rock berms will be constructed as shown on the attached WPAP Site Plan to prevent pollutants from entering surface streams, sensitive features and the aquifer. As the initial plant area is cleared and topsoil is removed, an earthen berm will be constructed as shown on the Site Plan. The earthen berm on the upgradient side of the initial plant area will be a minimum of 2 feet high and will prevent upgradient flows from contacting the disturbed soils in the initial plant area.

In addition, a natural vegetated buffer with a minimum width of 50 feet will be maintained between the edge of disturbance for the quarry activities and the property lines. This natural vegetated buffer will serve as a final treatment for stormwater runoff leaving the active portion of the site.

Sensitive features located within the final quarry footprint will be temporarily sealed during development of the quarry (see Attachment E). Sensitive features will be sealed when quarrying progresses near the drainage area of the feature. A vegetative buffer will be maintained around each sensitive feature until each is temporarily sealed.

d.) 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.

To the maximum extent practicable TBMPs such as rock berms and natural vegetated areas upgradient of the sensitive features will maintain flow to naturally-occurring sensitive features identified in the geologic assessment, TCEQ inspections or during excavation, blasting, or construction. These types of BMP's slow the flow of water allowing for sedimentation, but allow the flow to be maintained. Earthen berms and the quarry, which store flows, will be used as pollution prevention measures to mitigate runoff from larger disturbed areas. These larger disturbed areas have a greater potential to contain sediment, therefore retention of flows will be used to provide a higher level of protection of water quality of the aquifer.

Any possibly sensitive geologic feature discovered by mining staff 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. After

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

placement of the rock berm, the active work area of the quarry will be moved to another portion of the pit where the feature cannot be impacted by the continuing quarry operations. A Professional Geologist will be 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.

*If necessary, as previously stated in Temporary Stormwater Section Attachment I, mine dewatering will be accomplished according to the TCEQ stormwater regulations noted in the TPDES General Permit No. TXR050000 under Sector J for Mineral Mining and Dressing Facilities.

Any dewatering required at the site would be accomplished using a pump to remove the water after solids have settled out and the water is tested and found to be in compliance with the numeric effluent limitations of TPDES General Permit No. TXR050000 Section J, (5)(ii) of 45 mg/L for a daily maximum and 25 mg/L for a daily average. These concentrations are lower than the estimated background concentration as stated in the Edwards Aquifer Technical Guidance Manual (RG-348) of 80 mg/L for undeveloped areas. The water would be discharged to a natural drainage area onto a rip rap pad such that soil erosion would be mitigated. Appropriate rock berm(s) would be constructed downgradient of the rip rap pad if needed.

*Changes in response to January 5, 2009 submittal – Item #13.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Temporary Stormwater Section Attachment F**

## Structural Practices

Temporary best management practices proposed for the limestone quarry include rock berms and earthen berms. The rock berms are used to limit runoff discharge of sediment. The earthen berms are used to store flows and limit runoff discharge of pollutants from exposed areas of the site as well as to divert flows away from exposed (disturbed) soils. Natural vegetative buffers will be left in place in areas not disturbed and will treat runoff from upgradient disturbed areas.

* The rock crusher, material stockpiles and material loading areas will initially be located within the area labeled as 'Initial Plant and Quarry Area'. As shown on the WPAP Site Plan and stated on the Temporary Stormwater Section Attachment C, two rock berms (ALT 1) will be constructed along the downgradient portion of the initial 10 acre quarry area. Then another rock berm (ALT 2) will be installed upgradient from the ALT 1 rock berms and downgradient from the initial quarry area. Next, clearing will be initiated in the initial 10 acre plant area and equipment will remove topsoil and push it in all directions from the middle of the proposed plant area creating an earthen berm approximately 2-6' high that will surround the 10 acres as shown on the attached WPAP Site Plan. These are the specific BMPs that will divert flows away from exposed soils, store flows and limit discharge of pollutants from exposed areas of the site.

The future locations of the material stockpiles and material loading areas will be bordered on the downgradient side by a rock berm and minimum of 50 feet of undisturbed vegetative buffer. The future location of the rock crusher will be in the quarry. The quarry will serve to store flows and control discharge of pollutants from exposed areas by virtue of its depth below the adjacent ground level.

*Changes in response to January 5, 2009 submittal – Item #15.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Temporary Stormwater Section Attachment I**

**Inspection and Maintenance for BMPs**

The earthen and rock berms *and construction exit 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.) Any erosion of berms should be backfilled and compacted as soon as possible. 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.

The construction exit will be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment and replacement of stone with clean stone. All sediment spilled, dropped, washed or tracked onto public rights-of-way should be removed immediately.

During construction phases of the quarry 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. Ultimately the Lonestar Quarry will be authorized to discharge stormwater under the TPDES General Permit No. TXR050000 for industrial activities. Requirements of the general permit include maintaining a SWP3 which includes inspections of stormwater best management practices and sampling of stormwater that is discharged from the site. If necessary, mine dewatering will be performed in accordance with the numeric effluent limitations noted in the TPDES General Permit No. TXR050000.

*Changes in response to January 5, 2009 submittal – Item #17.

Dean Word Company, Ltd.
*Best Management Practices Inspection Report Form*

Lonestar Quarry
Temporary Stormwater Section Attachment I

| | | Rock Berms | | Earthen Berms | Construction Entrances/Exits | |
|---|---|---|---|---|---|---|
| Date | Inspected By | >6" silt retained | rock berm clogged | erosion of earthen berm | trackout | sediment-laden rock |
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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.

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 sides of the fence in affected areas.
* silt fencing torn or clogged - replace fencing material as needed if torn or water flow is stopped.

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

Earthen Berm

* Erosion of earthen berm - rebuild berm

Construction Entrances/Exits

* trackout
* sediment-laden rock

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

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

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

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

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

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

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

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

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

10. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE 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 ARID CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.

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

12. THE HOLDER OF ANY APPROVED 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.

FM 1863

KRUEGER CANYON

ZONE A

FINAL EARTHEN BERM & LIMITS OF DISTURBANCE

725' AMSL ESTIMATED QUARRY FLOOR ELEVATION

UNDISTURBED AREA

ROCK BERM ALT. 2

FUTURE 5 AC. STOCKPILE AREA ③

ROCK BERM ALT. 1 (POSSIBLE LOCATION OF SW DISCHARGE)

INTERIM EARTHEN BERM

APPROX. LOCATION OF INITIAL STOCKPILE AREA ③

INITIAL 10 AC PLANT & QUARRY AREA ③

APPROX. LOCATION OF INITIAL ROCK CRUSHING PLANT

APPROX. LOCATION OF INITIAL WASH WATER POND

WASH OUT PIT

FLEX BASE PAD

BASE PAD

ROCK BERM

CONSTRUCTION EXIT

TRUCK SCALE

SCALE HOUSE/TRAILER (NO SLAB ON GRADE)

EXISTING RANCH ROAD

PIPELINE EASEMENT

ROAD EASEMENT

PROPERTY LINE & QUARRY BOUNDARY (LIMITS OF DISTURBANCE)

PREVIOUSLY APPROVED PROJECT LIMITS EAAP 1603.00

CURRENT PROJECT LIMIT & QUARRY BOUNDARY

GEOLOGIC FEATURE
SENSITIVE FEATURE
PROPERTY BOUNDARY
FAULT
INFERRED
USGS BLUE LINE
EARTHEN BERM
UNDISTURBED AREA
ZONE A CURRENT FLOOD PLAIN
ZONE A PROPOSED FEMA FLOOD PLAIN FIRM NO.S 4854630080C & 4854630100C

0 400 800
1" = 400'

THE PROJECT SITE IS IN THE EDWARDS AQUIFER RECHARGE ZONE

SECTION A

ROCK BERM (ALT 2)& LIMIT OF CLEARING; EARTHEN BERM; ORIGINAL GRADE; INTERIM UPGRADIENT EARTHEN BERM; UNDISTURBED AREA; INTERIM QUARRY 20' min. ② EXCAVATION

N.T.S.

DETAIL WASH WATER PONDS ② SECTION C

COMPACTED CLAY; 2' MIN.; QUARRY FLOOR; QUARRY FLOOR

NOTE: 2' MIN. FREEBOARD WILL BE MAINTAINED

N.T.S

DETAIL WASH OUT PIT ② SECTION B

N.T.S.

COMPACTED CLAY; EXISTING GRADE; 30' BASE PAD; 100'; 3:1; 2' MIN.; LINED W/ DEL RIO CLAY (MIN. 1' THICK)

NOTE: MIN. 1' FREEBOARD

DETAIL FLEX BASE PAD SECTION D ②

N.T.S.

1' HIGH BERM; EXISTING GRADE; 100'; FLEX BASE PAD; FILL; 1' HIGH BERM; ROAD

150'L X 100'W X 1'H = 15,000 CU. FT.
15,000 CU. FT. = 112,215 GAL.

MAINTENANCE PLAN

COMPACTED EARTHEN BERM

4' 2' 4'; 2' MIN.; FILL; 2:1

CONSTRUCTION NOTES

1. COMPACTED EARTHEN BERM

INSTALLATION:
COMPRISED OF SOIL AND OVERBURDEN MATTER EITHER GENERATED ONSITE OR DELIVERED FROM OFFSITE. COMPACT WITH HEAVY EQUIPMENT IN 12" (MAX) LIFTS.

MAINTENANCE:
INSPECT WEEKLY AND AFTER EACH RAINFALL. REPLACE AS NECESSARY.

ROCK BERM (RG-348)

W; H = 1'; W = 2'; SW = 4'; 2:1; H; BW

2. 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 WEEKLY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6". REPLACE WHEN ROCK BECOMES CLOGGED WITH SEDIMENT.

ALTERNATE # 1 ROCK BERM (WEI)

W; H = 2' W = 4' SW = 6'; 1; 1; H; BW

3. ALTERNATE #1 & #2 ROCK BERMS (WEI)

INSTALLATION:
AGGREGATE USED SHOULD BE COMPRISED OF OPEN GRADED 3-5" DIAMETER ROCK. BERM SHOULD BE PLACED PERPENDICULAR TO FLOW LINE.
BERM SHOULD BE BURIED IN A TRENCH APPROX. 4" DEEP.

MAINTENANCE:
INSPECT BERMS WEEKLY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6". REPLACE WHEN ROCK BECOMES CLOGGED WITH SEDIMENT.

ALTERNATE # 2 ROCK BERM (WEI)

1; 1; H = 2' SW = 4'; H; BW

STABILIZED CONSTRUCTION EXIT

PUBLIC ROAD; DIVERSION RIDGE; 8" THICK MIN.; 50' MIN.; 4-8" COARSE AGGREGATE; GEOTEXTILE FABRIC TO STABILIZE FOUNDATION; 12' MIN.; 4" - 8" CRUSHED AGGREGATE; 50' MIN. LENGTH; GEOTEXTILE FABRIC

N.T.S.

4. STABILIZED CONSTRUCTION EXIT

GEOTEXTILE FABRIC PROPERTIES:

- o MIN. 6 OZ/SQ. YD.; 140 LB/SQ. IN. MULLEN BURST;
- o EQUIVALENT OPENING SIZE MIN. 50 SIEVE.
- o GRADE SLOPE TO DRAIN.
- o ADD ADDITIONAL STONE AS REQUIRED.
- o STABILIZED CONSTRUCTION EXIT SHOULD EXTEND FULL WIDTH OF ROAD.

NOTE: VEHICLE AND EQUIPMENT REFUELING, REPAIR AND MAINTENANCE WILL OCCUR ON FLEX BASE PAD(S) OUTSIDE THE QUARRY PIT AREA, AS PRACTICABLE.

NOTE: FINAL EARTHEN BERMS QUTSIDE THE PIT WILL BE STABILIZED WITH NATIVE GRASSES.

STATE OF TEXAS
GARY DANIEL NICHOLS
82522
1-5-09
REGISTERED PROFESSIONAL ENGINEER


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


| REV. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| ① | DETAIL OF ACTUAL SIZE OF FEATURES | SM | 12/23/2008 |
| ② | REVISE CROSS SECTION A & ADD SECTS, B,C & D | DK | 01/02/2009 |
| ③ | ADD BASE PADS, WASHOUT PIT, RC & STK PILE LOCS. | DK | 01/02/2009 |

| | | |
|---|---|---|
| COMPANY NAME: DEAN WORD COMPANY | DRAWN BY: SM | CHECKED BY: GDN |
| JOB NAME: WPAP – LONESTAR QUARRY | SCALE: 1" = 400' | |
| LOCATION: FM 482, COMAL CO., TEXAS | DATE: 09/18/2008 | |
| IMAGE: NONE | JOB NUMBER: 10173-08 | DRAWING: 173-08wpapmap_rev.dwg |
| DESCRIPTION: WPAP MAP – NORTH | | |

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

November 18, 2008

RECEIVED
NOV 2 0 2008
COUNTY ENGINEER

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

Re: Edwards Aquifer, Comal County
PROJECT NAME: Lonestar Quarry, located approximately 1.2, miles northeast of the Schwab Road and FM 482 intersection, New Braunfels, Comal County, 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.: 1603.01

Dear Mr. Hornseth:

The enclosed WPAP application received on November 14, 2008, is being forwarded to you pursuant to the Edwards Aquifer Rules. The Texas Commission on Environmental Quality (TCEQ) is required by 30 TAC Chapter 213 to provide copies of all applications to affected incorporated cities and underground water conservation districts for their comments prior to TCEQ approval.

Please forward your comments to this office by December 13, 2008.

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

Sincerely

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

LMB/eg

1603.01

# WATER POLLUTION ABATEMENT PLAN (WPAP)



## DEAN WORD COMPANY, LTD.
## Lonestar Quarry Site



## COMAL COUNTY, TEXAS

Submitted to: TCEQ, Region 13 Office, San Antonio

**November 2008**

Prepared by: *WESTWARD ENVIRONMENTAL, INC.*
Boerne, Texas
Project No. 10173-08

*Westward Environmental, Inc.*

*P.O. Box 2205*
*BOERNE, TEXAS*
*78006*

November 11, 2008

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

Project No. 10173-08

Attn.: Richard Garcia

Subject: Water Pollution Abatement Plan (WPAP) and Geologic Assessment (GA) Application
Dean Word Company, Ltd – CN600124812
Lonestar Quarry, New Braunfels, Comal County, Texas

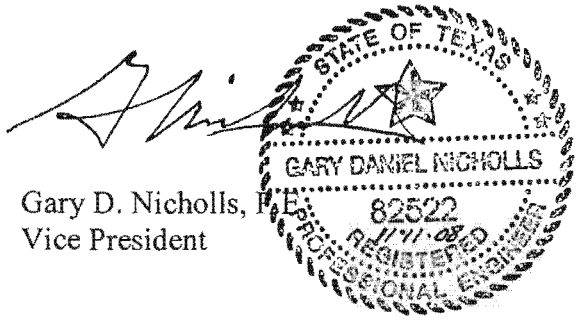
Dear Mr. Garcia,

Dean Word Company, Ltd. proposes to construct a limestone quarry at a site comprised of approximately 1923 acres located on the north side of FM 482 approximately 3.5 miles southwest of the intersection of FM 482 and IH-35 in Comal County, Texas.

Please find attached the original and three copies of the Dean Word Company, Ltd., Lonestar Quarry 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.

If you or your staff have any questions regarding this application, please call our office at (830) 249-8284. Please copy our office on all correspondence and final determination.

Respectfully submitted,
WESTWARD ENVIRONMENTAL, INC.




Gary D. Nicholls, P.E.
Vice President

Distribution: Addressee (original + 3)
Bryan Word – Dean Word Company, Ltd
WEI 10173-08 file

*SHT*

**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: Dean Word Company, Ltd. - Lonestar Quarry
COUNTY: Comal STREAM BASIN: Dry Comal Creek

EDWARDS AQUIFER: X RECHARGE ZONE
___ TRANSITION ZONE

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

**CUSTOMER INFORMATION**

1. Customer (Applicant):

Contact Person: Bryan Word
Entity: Dean Word Company, Ltd.
Mailing Address: P.O. Box 310330
City, State: New Braunfels, Texas Zip: 78131
Telephone: (830) 606-5000 FAX: (830) 606-5008

Agent/Representative (If any):

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

2. X This project is inside the city limits of New Braunfels.
X This project is outside the city limits but inside the ETJ (extra-territorial jurisdiction) of New Braunfels and Schertz, 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.

From San Antonio, take IH-35 North. Exit Schwab Rd. (Exit 180) and go left. Road will "T" into FM 482. Go right about 1.2 miles. Site is accessed through an easement on another company's property. Please call Westward Environmental for access to the site

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
X Existing industrial site
__ Existing residential site
X 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. 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 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:

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

Signature of Customer/Engineer

11-7-08
Date

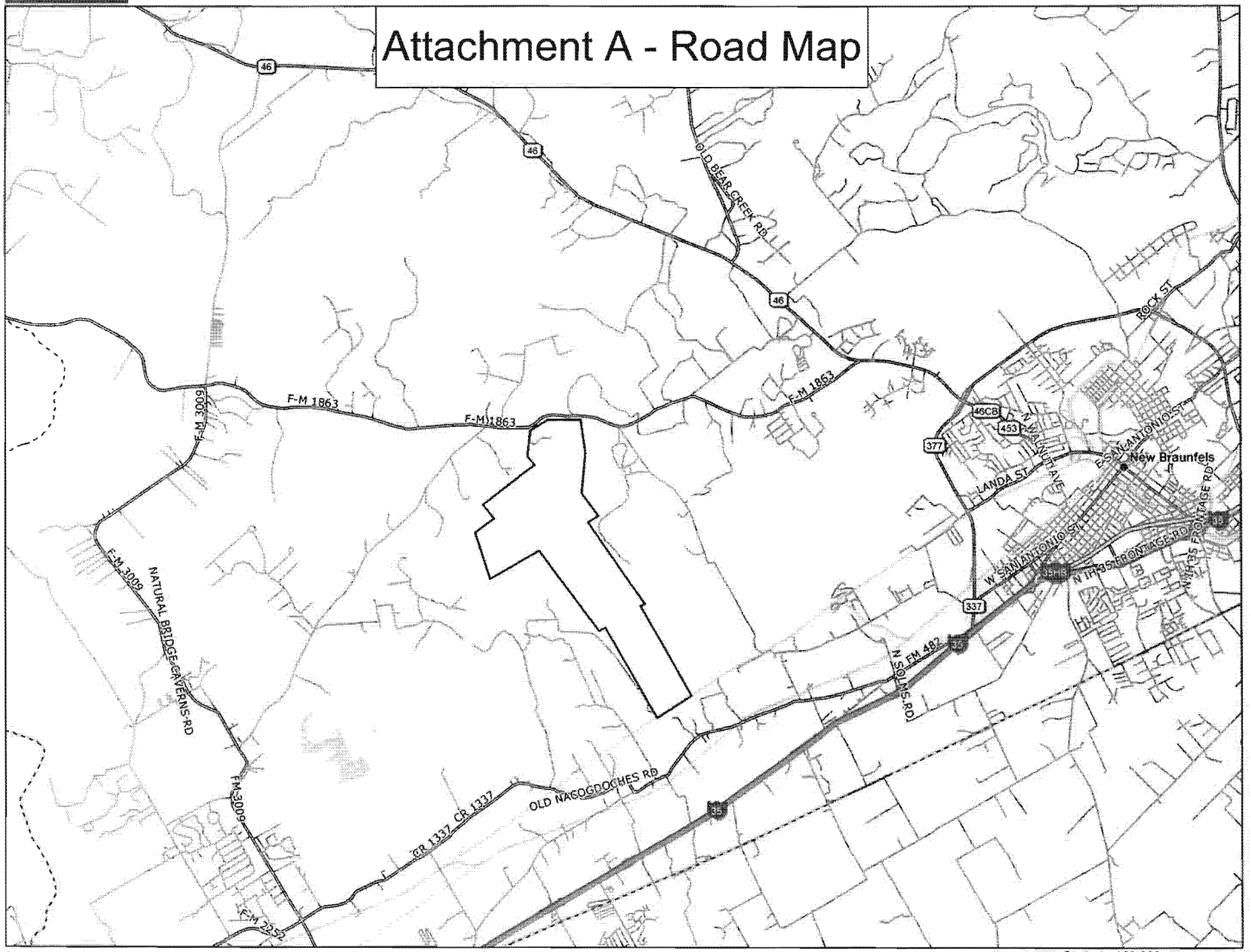
**If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.**

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.

DeLORME

Street Atlas USA® 2007

# Attachment A - Road Map






TN

MN (5.2°E)

Scale 1 : 100,000

1" = 1.58 mi

Data Zoom 11-0

**Bat Cave Quad**

**New Braunfels West Quad**

Note: This dataset represents the geographic areas identified in TCEQ rules as being subject to regulation under the Edwards Aquifer Protection Program. The coverage was derived from existing official hard copy maps, containing regulatory boundaries based on previous geologic interpretation of the Edwards Aquifer Recharge, Transition, Contributing and Contributing Within the Transition zones, as defined in 30 TAC 213.

0 2,000 4,000

Feet

1 inch equals 2,000 feet

N W E S

Drainage Path from Site

Edwards Aquifer Recharge Zone

Edwards Aquifer Transition Zone


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


| REV | DESCRIPTION | BY: | DATE: |
|---|---|---|---|
| | | | |
| COMPANY NAME: DEAN WORD CO., LTD. | | DRAWN BY: SM | CHECKED BY: GDN |
| JOB NAME: WPAP APPLICATION | | SCALE: 1" = 2000' | |
| LOCATION: LONESTAR QUARRY, NEW BR., TX | | DATE: 09/16/2008 | |
| IMAGE: AERIALS EXPRESS, 2006 | | JOB NUMBER: | DRAWING NAME: |
| DESCRIPTION: USGS/Edwards Rchge Zone Map | | 10173-08 | 173-08-AttachB.mxd |

# New Braunfels West Quad

Note: This dataset represents the geographic areas identified in TCEQ rules as being subject to regulation under the Edwards Aquifer Protection Program. The coverage was derived from existing official hard copy maps, containing regulatory boundaries based on previous geologic interpretation of the Edwards Aquifer Recharge, Transition, Contributing and Contributing Within the Transition zones, as defined in 30 TAC 213.

0 2,000 4,000

Feet

1 inch equals 2,000 feet

N W E S

Drainage Path from Site

Edwards Aquifer Recharge Zone

Edwards Aquifer Transition Zone


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


| REV | DESCRIPTION | BY: | DATE: |
|---|---|---|---|
| | | | |
| COMPANY NAME: DEAN WORD CO., LTD. | | DRAWN BY: SM | CHECKED BY: GDN |
| JOB NAME: WPAP APPLICATION | | SCALE: 1" = 2000' | |
| LOCATION: LONESTAR QUARRY, NEW BR., TX | | DATE: 09/16/2008 | |
| IMAGE: AERIALS EXPRESS, 2006 | | JOB NUMBER: | DRAWING NAME: |
| DESCRIPTION: USGS/Edwards Rchge Zone Map | | 10173-08 | 173-08-AttachB2.mxd |

# New Braunfels East Quad

Note: This dataset represents the geographic areas identified in TCEQ rules as being subject to regulation under the Edwards Aquifer Protection Program. The coverage was derived from existing official hard copy maps, containing regulatory boundaries based on previous geologic interpretation of the Edwards Aquifer Recharge, Transition, Contributing and Contributing Within the Transition zones, as defined in 30 TAC 213.

0 2,000 4,000

Feet

1 inch equals 2,000 feet

N W E S

Drainage Path from Site

Edwards Aquifer Recharge Zone

Edwards Aquifer Transition Zone


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


| REV. | DESCRIPTION | BY: | DATE: |
|---|---|---|---|
| | | | |
| COMPANY NAME: DEAN WORD CO., LTD. | | DRAWN BY: SM | CHECKED BY: GDN |
| JOB NAME: WPAP APPLICATION | | SCALE: 1" = 2000' | |
| LOCATION: LONESTAR QUARRY, NEW BR., TX | | DATE: 09/16/2008 | |
| IMAGE: AERIALS EXPRESS, 2006 | | JOB NUMBER: | DRAWING NAME: |
| DESCRIPTION: USGS/Edwards Rchge Zone Map | | 10173-08 | 173-08-AttachB3.mxd |

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**General Information Form Attachment C**

## Project Description

Dean Word Company, Ltd. proposes to construct a limestone quarry on the subject tract of approximately 1923 acre in Comal County. Of the 1923 acre property, a quarry of approximately 185 acres as part of a 270 acre project area was previously approved under a WPAP, EAPP File No. 1603.00 on January 29, 2001. The proposed new quarry will be adjacent (north and south) to the previously approved quarry. The proposed quarry pit as shown on the WPAP Site Plan is approximately 1576 acres and its limits are setback to a distance of 60 feet from the property lines on the north and west portions and 60 feet from the Edwards Aquifer Recharge Zone Boundary on the south. There will be no setback on the portions of the east boundary that are adjacent to the existing quarry property if an agreement with that entity to quarry to the property line can be obtained. Otherwise the 60 foot setback will be extended around the entire site.

A mobile trailer will be used as a scale house and truck scales will be installed as shown on the WPAP Site Plan. A 10-acre area will be cleared and used to start the quarry excavation and accommodate the rock crushing plant that will process the limestone. Temporary BMPs consisting of earthen berms and rock berms will be utilized to control and treat stormwater runoff in the initial stages of construction. Within approximately 6-8 months the quarry pit will be large enough to store stormwater runoff from the disturbed areas of the quarry site.

The vegetation in the initial 10-acre and that from subsequent clearing areas of about 2 acres, will be burned onsite in accordance with 30 TAC 111, subchapter B. The ash shall be properly disposed of in accordance with 30 TAC 330 or 30 TAC 335, as applicable.

Dean Word Company, Ltd. proposes to utilize wash water ponds inside of the quarry pit in order to recycle the water as necessary to wash aggregate. Fines from the crushing/washing process will ultimately line the bottom of the ponds. It is a long standing industry practice to use fines as a liner to seal the bottom of the recycle ponds in karst areas over the Recharge and/or Transition Zones. These fines when wet bind to each other and seal the bottom of the settling ponds. A portion of the fines will be removed from the pond to maintain adequate pond volume. These fines will be used to construct additional pond berms in the future and be reused in aggregate products or stored in protected areas of the quarry until needed.

Dean Word Company, Ltd. proposes to provide geologic feature recognition training to quarry equipment operators and to have a Professional Geoscientist inspect the quarry at least annually for sensitive features. Any possibly sensitive geologic feature discovered by mining staff or the Professional Geoscientist will be evaluated by a Professional Geoscientist and if determined to be sensitive, will be reported to TCEQ. An appropriate method for addressing the feature will be formulated by a Professional Geoscientist or a

**General Information Form Attachment C (continued)**

**Project Description (continued)**

Professional Engineer and upon approval by TCEQ, the method to protect the feature will be implemented.

As the quarry process continues throughout the life of the quarry (which is expected to be over 50 years but depends on numerous external factors) additional wash water ponds will be constructed at other locations inside the quarry pit. Prior to construction of a pond a Professional Geologist will observe the quarry floor in the proposed location. If a feature is found and is rated 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 or the proposed pond location will be changed. Construction of the pond will not begin in the area of the feature until the TCEQ approved method for addressing the feature has been carried out.

A flex base pad approximately 150 feet by 100 feet surrounded by a one foot high base berm which will act as secondary containment will be used as a maintenance/fueling area. When quarrying requires the maintenance/fueling area to be relocated, a similar base pad and berm will be constructed at a location to be determined at that time.

As part of a long term plan, another quarry operation could locate and operate simultaneously on a portion of the site yet to be determined (within the proposed quarry limits). In that case, similar TBMP's and measures will be used in order to prevent pollutants from entering surface streams, sensitive features or the aquifer.

The geologic assessment included in this submittal covers approximately 1653 acres that correspond to the portions north and south of the project limits of the previously approved WPAP EAPP 1603.00.

A review of published water well and groundwater data from the Texas Water Development Board (TWDB) showed that there is no site specific water well data for the site. However, there are 4 wells at the site, including feature S-87.

A review of potentiometric surface maps obtained from the Edwards Aquifer Authority (*Edwards Aquifer Authority Synoptic Water Level Program 1999 – 2004, Report 06-02*) show that the potentiometric surface at the site ranges from 670' above mean sea level (a.m.s.l.) in the southern portion to 700' a.m.s.l. in the northern portion of the site. These potentiometric surfaces represent the highest conditions in the aquifer when the J-17 index well was at 701' a.m.s.l. Utilizing the TCEQ 25 foot vertical buffer above the maximum potentiometric surface places the final quarry floor elevation at 695' in the southern portion of the site and 725' in the northern portion.

## General Information Form Attachment C (continued)

### Project Description (continued)

Additionally, on May 1, 2008 a water level measurement was taken at feature S-87 by qualified Westward Environmental, Inc. personnel, which showed a water level of 209' below ground surface, the surface elevation at this location is estimated to be 863' above mean sea level (amsl). This would put the approximate groundwater elevation at 654' amsl. Utilizing the TCEQ 25 foot vertical buffer above the maximum potentiometric surface places the final quarry floor elevation at 679' amsl.

However, Dean Word Company, Ltd. recognizes the need for additional well data in order to properly support the later estimated groundwater elevation, therefore; until more well data is attained and submitted to TCEQ, Dean Word Company, Ltd. proposes to limit quarrying excavation to 695' above mean sea level (a.m.s.l.) in the southern portion and 725' a.m.s.l. in the northern portion of the site.

Stormwater flow to sensitive features will be protected by use of rock berms and flow to naturally occurring sensitive features will be maintained to the extent possible. Because the proposed land use calls for the removal by excavation of the sensitive features (S-6, S-7, S-9, S-11, S-27, S-37, S-38, S-44, S-79, S-87*, S-96, S-106, S-110, S-115, S-118, S-120, S-123, S-124, S-133, S-138, S-144, S-150, S-151, S-153, S-155, S-177, S-187, S-198, S-203, S-205, S-207) within the quarry limits, no permanent sealing of features is requested herein. However, in order to protect water quality during construction of the quarry, sensitive features will be temporarily sealed prior to their excavation.

* Dean Word Company, Ltd plans to, in the near future, extend the well casing of feature S-87 approximately 2 feet above the ground elevation. This will change the rating of S-87 to not sensitive.

Upon termination of quarrying activities, stormwater that is located in the quarry pits will not discharge to the surface; it will be retained in the pits. It is expected that the majority of stormwater retained in the pits after the termination of quarrying activities will evaporate or will be used for reclamation or construction endeavors.

Trash generated onsite will be disposed of in a dumpster and handled by a licensed waste service. No on-site sewage facility is proposed at this time. Portable toilets will be used.

**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: Dean Word Company, Ltd. - Lonestar Quarry

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) |
| Eckrant – Rock Outcrop (ErG) | D | 0.9' |
| Rumple-Comfort Association (RUD) | C | 2.3' |
| Purves Clay (PuC) | D | 3.8' |
| Comfort Rock Outcrop (CrD) | D | 1.1' |
| Medlin-Eckrant Association undulating (MEC) | D | 6.6' & 1.4' |
| Medlin-Eckrant Association hilly (MED) | D | 6.6' & 1.4' |
| Denton Silty Clay (DeB) | D | 3' |
| Tarpley Clay (TaB) | D | 1.4' |

* 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" = 400 '

Site Geologic Map Scale 1" = 400 '
Site Soils Map Scale (if more than 1 soil type) 1" = 400 '

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 4 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.
1 The wells are not in use and will be properly abandoned.
3 The wells are in use and comply with 16 TAC Chapter 76.
__ There are no wells or test holes of any kind known to exist on the project site.

ADMINISTRATIVE INFORMATION

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

Date(s) Geologic Assessment was performed: April 8, 9, 10, 11, 15, 16, May 1, 19, 23 and 28, June 3, 4, 5, 6, 10, 12, 13, 16, 17, 24 and 26, July 11, 14, 25, 28 and 29 and August 1, 2008
Date(s)

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

Michelle M. Lee #6071
Print Name of Geologist

830-249-8284
Telephone

830- 249-0221
Fax


Michelle M. Lee
Signature of Geologist

November 6, 2008
Date

Representing: Westward Environmental, 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 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.**
Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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 41.911 | 98 14.129 | SC | 20 | Ked | 3 | 2.5 | 1.5 | N60E | | 1 per | 2.5 | F | 13 | 33 | X | | X | | HILLSIDE |
| S-2 | 29 41.821 | 98 14.317 | CD | 5 | Ked | 7 | 3 | 1 | N30W | | | | F | 7 | 12 | X | | X | | FLOODPLAIN |
| S-3 | 29 41.756 | 98 14.315 | CD | 5 | Ked | 70 | 25 | 8 | varied | | | | F | 7 | 12 | X | | | X | FLOODPLAIN |
| S-4 | 29 41.755 | 98 14.169 | SC | 20 | Ked | 0.1 | 0.2 | 0.7 | none | | | | F | 14 | 34 | X | | X | | HILLSIDE |
| S-5 | 29 41.803 | 98 14.048 | SC | 20 | Ked | 5 | 4 | 2 | none | | | | O | 17 | 37 | X | | X | | HILLSIDE |
| S-6 | 29 41.874 | 98 14.257 | ZSC | 30 | Ked | 30 | 15 | >3 | N40E | 10 | | | C/O | 9 | 49 | | X | X | | HILLSIDE |
| S-7 | 29 41.702 | 98 14.272 | ZSC | 30 | Ked | 18 | 4 | 2 | N90E | | | | O/V | 20 | 50 | | X | X | | HILLSIDE |
| S-8 | 29 41.651 | 98 14.273 | ZSC | 30 | Ked | 13 | 2 | 1.5 | N70E | | | | O | 9 | 39 | X | | X | | HILLSIDE |
| S-9 | 29 41.643 | 98 14.434 | ZSCO | 30 | Ked | 400 | 30 | 10 | NS | | | | O/C | 25 | 55 | | X | | X | FLOODPLAIN |
| S-10 | 29 41.567 | 98 14.471 | SC | 20 | Ked | 1.5 | 0.8 | 1 | NS | | | | O | 15 | 35 | X | | X | | FLOODPLAIN |
| S-11 | 29 41.534 | 98 14.623 | SC | 20 | Ked | 5.5 | 3.5 | 5 | NS | | | | C/N | 35 | 55 | | X | X | | HILLSIDE |
| S-12 | 29 41.392 | 98 14.532 | CD | 5 | Ked | 12 | 4.5 | 0.9 | N25W | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-13 | 29 41.436 | 98 14.504 | CD | 5 | Ked | 5 | 5 | 1.3 | none | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-14 | 29 41.44 | 98 14.431 | CD | 5 | Ked | 5 | 4 | 1 | N50E | 10 | | | F | 11 | 26 | X | | X | | HILLSIDE |
| S-15 | 29 41.464 | 98 14.068 | CD | 5 | Kbu | 7 | 7 | 1.5 | none | | | | F | 7 | 12 | X | | X | | HILLSIDE |
| S-16 | 29 41.627 | 98 14.011 | CD | 5 | Ked | 12 | 6 | 1 | N40E | 10 | | | F | 11 | 26 | X | | X | | HILLSIDE |
| S-17 | 29 41.657 | 98 13.999 | CD | 5 | Kdr | 300 | 200 | 6 | N10E | | | | F | 5 | 10 | X | | X | | HILLSIDE |

* 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 |

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Michelle M. Lee

Date 11.13.08

STATE OF TEXAS
MICHELLE M. LEE
GEOLOGY
6071
LICENSED
PROFESSIONAL GEOSCIENTIST
11.13.08

Michelle M. Lee

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

Yellow highlighted rows indicate sensitive features. Grey highlighted rows indicate feature is located in a formation other than Edwards Limestone

## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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-18 | 29 41.715 | 98 14 | CD | 5 | Ked | 22 | 6 | 1.5 | EW | | | | F | 7 | 12 | X | | X | | HILLSIDE |
| S-19 | 29 41.737 | 98 13.964 | SC | 20 | Ked | 4 | 3 | 2 | N40E | 10 | | | F/N | 7 | 37 | X | | X | | HILLSIDE |
| S-20 | 29 41.666 | 98 13.869 | CD | 5 | Kbu | 15 | 7 | 3 | NS | | | | F | 7 | 12 | X | | X | | HILLSIDE |
| S-21 | 29 41.763 | 98 13.935 | CD | 5 | Ked | 13 | 4 | 0.8 | N30W | | | | F | 7 | 12 | X | | X | | HILLSIDE |
| S-22 | 29 41.702 | 98 13.912 | CD | 5 | Kdr | 11 | 8 | 2 | N40E | 10 | | | F | 7 | 22 | X | | X | | HILLTOP |
| S-23 | 29 41.563 | 98 14.087 | CD | 5 | Ked | 40 | 4 | 1.5 | N40E | 10 | | | F | 7 | 22 | X | | X | | HILLSIDE |
| S-24 | 29 41.559 | 98 14.094 | SC | 20 | Ked | 8 | 2 | 1.3 | NS | | | | F | 7 | 27 | X | | X | | HILLSIDE |
| S-25 | 29 41.544 | 98 14.105 | SC | 20 | Ked | 4 | 0.5 | 0.5 | NONE | | | | F/O | 7 | 27 | X | | X | | HILLSIDE |
| S-26 | 29 41.543 | 98 14.111 | SF | 20 | Ked | 3 | 0.5 | 2 | NONE | | 2 per | 0.3 | F | 7 | 27 | X | | X | | HILLSIDE |
| S-27 | 29 41.55 | 98 14.153 | ZSC | 30 | Ked | 14 | 3 | 1.2 | N40E | 10 | | | F | 15 | 55 | | X | X | | HILLSIDE |
| S-28 | 29 41.55 | 98 14.162 | CD | 5 | Ked | 5 | 3 | 0.7 | N35E | 10 | | | F | 5 | 20 | X | | X | | HILLSIDE |
| S-29 | 29 41.55 | 98 14.162 | SH | 20 | Ked | 4 | 3 | 1.5 | NONE | | | | F | 15 | 35 | X | | X | | HILLSIDE |
| S-30 | 29 41.525 | 98 14.196 | CD | 5 | Ked | 30 | 40 | 2 | N40E | 10 | | | F | 5 | 20 | X | | X | | HILLSIDE |
| S-31 | 29 41.533 | 98 14.192 | SH | 20 | Ked | 3 | 1 | 2 | N40E | 10 | | | F | 9 | 39 | X | | X | | HILLSIDE |
| S-32 | 29 41.431 | 98 14.335 | CD | 5 | Ked | 4 | 5 | 1 | NS | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-33 | 29 41.348 | 98 14.513 | CD | 5 | Ked | 7 | 4 | 1 | N40E | 10 | | | F/O | 5 | 20 | X | | X | | HILLSIDE |
| S-34 | 29 41.297 | 98 14.471 | SC | 20 | Ked | 0.7 | 0.3 | 2 | N30W | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-35 | 29 41.385 | 98 14.364 | SC | 20 | Ked | 1 | 0.4 | 1 | N30W | | | | O | 11 | 31 | X | | X | | HILLSIDE |

* 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.

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Date 11.13.08

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PROFESSIONAL GEOSCIENTIST

Michelle M. Lee 11.13.08



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

## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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-36 | 29 41.425 | 98 14.286 | SF | 20 | Ked | 3 | 0.9 | 1 | NS | | | | O | 11 | 31 | X | | X | | HILLSIDE |
| S-37 | 29 41.411 | 98 14.269 | SH | 20 | Ked | 8 | 3 | 2 | N40E | 10 | | | C/O | 23 | 53 | | X | X | | HILLSIDE |
| S-38 | 29 41.432 | 98 14.255 | SC | 20 | Ked | 4 | 2 | 4 | NS | | | | O | 25 | 45 | | X | X | | HILLSIDE |
| S-39 | 29 41.417 | 98 14.229 | CD | 5 | Ked | 40 | 20 | 1 | N30W | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-40 | 29 41.53 | 98 14.093 | SC | 20 | Ked | 2 | 3 | 1 | NONE | | | | F | 11 | 31 | X | | X | | HILLSIDE |
| S-41 | 29 41.551 | 98 14.049 | CD | 5 | Ked | 150 | 120 | 3 | N30W | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-42 | 29 41.553 | 98 14.015 | CD | 5 | Kbu | 15 | 6 | 2 | NS | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-43 | 29 41.545 | 98 13.969 | SC | 20 | Kbu | 3.5 | 1 | 1.5 | N20E | | | | F | 11 | 31 | X | | X | | HILLSIDE |
| S-44 | 29 41.549 | 98 13.98 | ZSC | 30 | Kbu | 200 | 150 | 4 | N40E | 10 | | | O/F | 20 | 60 | | X | X | | HILLSIDE |
| S-45 | 29 41.159 | 98 14.314 | SC | 20 | Ked | 2.5 | 1 | 1.5 | EW | | | | F | 11 | 31 | X | | X | | HILLSIDE |
| S-46 | 29 41.1 | 98 14.401 | SC | 20 | Ked | 0.3 | 0.2 | 2 | NONE | | | | C/O | 19 | 39 | X | | X | | HILLSIDE |
| S-47 | 29 41.155 | 98 14.218 | CD | 5 | Ked | 6 | 3.5 | 1 | NS | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-48 | 29 41.218 | 98 14.066 | CD | 5 | Ked | 6 | 4 | 2 | N30W | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-49 | 29 41.551 | 98 14.038 | SC | 20 | Kbu | 0.8 | 0.5 | 0.9 | NS | | | | F | 11 | 31 | X | | X | | HILLSIDE |
| S-50 | 29 41.491 | 98 14.057 | SC | 20 | Kbu | 3 | 1 | 2 | N30W | | | | F | 11 | 31 | X | | X | | HILLSIDE |
| S-51 | 29 41.43 | 98 14.114 | SC | 20 | Ked | 1.5 | 0.9 | 2 | N50W | | | | F | 11 | 31 | X | | X | | HILLSIDE |

* 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 |

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

| GEOLOGIC ASSESSMENT TABLE | | | PROJECT NAME: Dean Word 1765 Acre GA - New Braunfels | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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-52 | 29 41.378 | 98 14.228 | CD | 5 | Ked | 15 | 9 | 1 | EW | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-53 | 29 41.318 | 98 14.359 | SC | 20 | Ked | 2.5 | 1 | 1.3 | EW | | | | F/V | 11 | 31 | X | | X | | HILLSIDE |
| S-54 | 29 41.274 | 98 14.422 | SF | 20 | Ked | 13 | 1.2 | 2.8 | N20W | | 2per | 0.3 | F/V | 11 | 31 | X | | X | | HILLSIDE |
| S-55 | 29 41.272 | 98 14.419 | SC | 20 | Ked | 0.3 | 2 | 1 | NONE | | | | F/V | 11 | 31 | X | | X | | HILLSIDE |
| S-56 | 29 41.218 | 98 14.477 | SC | 20 | Ked | 2 | 1 | 2 | NONE | | | | F/V | 11 | 31 | X | | X | | HILLSIDE |
| S-57 | 29 41.247 | 98 14.353 | CD | 5 | Ked | 110 | 80 | 9 | NS | | | | F/V | 5 | 10 | X | | X | | HILLSIDE |
| S-58 | 29 41.289 | 98 14.226 | SC | 20 | Ked | 1 | 1.3 | 1.2 | NS | | | | F/V | 11 | 31 | X | | X | | HILLSIDE |
| S-59 | 29 41.327 | 98 14.222 | SC | 20 | Ked | 0.1 | 0.3 | 0.5 | NONE | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-60 | 29 41.371 | 98 14.06 | SH | 20 | Ked | 7 | 3.5 | 3 | N45E | 10 | | | F/O | 9 | 39 | X | | X | | HILLSIDE |
| S-61 | 29 41.444 | 98 13.971 | CD | 5 | Ked | 42 | 25 | 0.7 | NS | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-62 | 29 41.442 | 98 13.945 | SH | 20 | Ked | 5 | 2 | 3 | EW | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-63 | 29 41.455 | 98 13.906 | SC | 20 | Ked | 3 | 1.2 | >3 | NS | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-64 | 29 41.374 | 98 13..901 | SC | 20 | Ked | 4 | 2.6 | 1.4 | N10W | | | | F/O | 11 | 31 | X | | X | | HILLTOP |
| S-65 | 29 41.379 | 98 14.02 | CD | 5 | Ked | 15 | 8 | 1 | N40E | 10 | | | F/O | 5 | 20 | X | | X | | HILLSIDE |
| S-66 | 29 41.355 | 98 13.889 | SC | 20 | Ked | 2 | 1 | 1.5 | N20W | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-67 | 29 41.352 | 98 13.887 | SC | 20 | Ked | 0.2 | 0.2 | 1 | NONE | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-68 | 29 41.351 | 98 13.843 | SC | 20 | Ked | 0.7 | 1.3 | 1.4 | N50E | 10 | | | O | 9 | 39 | X | | X | | HILLSIDE |
| S-69 | 29 41.364 | 98 13.846 | CD | 5 | Ked | 7 | 7 | 2 | NONE | | | | F | 5 | 10 | X | | X | | HILLSIDE |

* DATUM: NAD 83

| 2A TYPE | TYPE | 2B POINTS |
|---|---|---|
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| SC | Solution cavity | 20 |
| SF | Solution-enlarged fracture(s) | 20 |
| F | Fault | 20 |
| O | Other natural bedrock features | 5 |
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| 12 TOPOGRAPHY |
|---|
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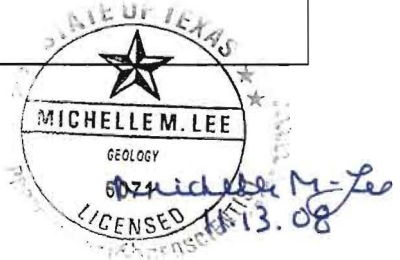


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## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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-70 | 29 41.157 | 98 14.053 | MB | 30 | Ked | 0.7 | 0.7 | 300 | NONE | | WELL | | F/O | 7 | 37 | X | | X | | HILLSIDE |
| S-71 | 29 41.292 | 98 13.769 | CD | 5 | Ked | 5 | 3 | 1.5 | N50W | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-72 | 29 41.297 | 98 13.761 | CD | 5 | Ked | 5 | 2 | 1.8 | EW | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-73 | 29 41.08 | 98 13.798 | SF | 20 | Ked | 3.5 | 8 | 1.1 | N40E | 10 | 1 per | 0.4 | F/O | 7 | 37 | X | | X | | HILLSIDE |
| S-74 | 29 41.108 | 98 13.626 | SC | 20 | Ked | 6 | 3.5 | >2 | NS | | | | F/O | 14 | 34 | X | | X | | HILLSIDE |
| S-75 | 29 41.018 | 98 13.676 | CD | 5 | Ked | 7 | 4 | 1.3 | N70E | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-76 | 29 41.041 | 98 14.231 | CD | 5 | Ked | 10 | 4 | 0.5 | N46E | 10 | | | F/O | 10 | 25 | X | | X | | HILLTOP |
| S-77 | 29 41.02 | 98 14.247 | SC | 20 | Ked | 1.2 | 1 | 1.5 | N70E | | | | F/O | 5 | 25 | X | | X | | HILLSIDE |
| S-78 | 29 40.93 | 98 14.304 | CD | 5 | Ked | 7 | 7 | 1.2 | NONE | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-79 | 29 40.933 | 98 14.233 | ZSCSF | 30 | Ked | 50 | 30 | 0.6 | N84E | | | | F/O | 27 | 57 | | X | X | | HILLSIDE |
| S-80 | 29 40.912 | 98 14.081 | SC | 20 | Ked | 8 | 6 | 1.5 | N28E | | | | F/O | 7 | 27 | X | | X | | HILLSIDE |
| S-81 | 29 40.859 | 98 14.056 | SH | 20 | Ked | 7 | 5 | 2.5 | N20W | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-82 | 29 40.8 | 98 14.035 | SF | 20 | Ked | 3 | 1 | 2 | N94W | | | | F/O | 19 | 39 | X | | X | | HILLSIDE |
| S-83 | 29 40.611 | 98 13.56 | CD | 5 | Ked | 8 | 10 | 1.2 | N23W | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-84 | 29 40.482 | 98 13.792 | F | 20 | Ked | 14 | 40 | ? | EW | | | | F/O | 11 | 31 | X | | | X | DRAINAGE |
| S-85 | 29 40.496 | 98 13.76 | SF | 20 | Ked | 6 | 8 | 0.2 | NS | | | | F/O | 11 | 31 | X | | | X | DRAINAGE |
| S-86 | 29 40.76 | 98 13.385 | CD | 5 | Ked | 7 | 8.5 | 1 | N4W | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-87 | 29 40.796 | 98 13.35 | MB | 30 | Ked | 0.7 | 0.7 | >200 | NONE | | WELL | | F/O | 35 | 65 | | X | X | | HILLSIDE |

* 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.
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Date 11.13.08

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Michelle M. Lee 11.13.08



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

## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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 |
| | | | | | Ked | X | Y | Z | | 10 | | | | | | <40 | >40 | <1.6 | >1.6 | |
| S-88 | 29 40.903 | 98 13.462 | CD | 5 | Kdk | 10 | 14 | 1 | E38S | | | | F | 5 | 10 | X | | X | | HILLTOP |
| S-89 | 29 40.937 | 98 13.648 | SC | 20 | Ked | 4 | 8 | 1 | E40S | | | | F | 9 | 29 | X | | X | | HILLSIDE |
| S-90 | 29 40.931 | 98 13.664 | CD | 5 | Ked | 8 | 10 | 1 | E30S | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-91 | 29 40.899 | 98 13.691 | SH | 20 | Ked | 22 | 22 | 1.5 | NONE | | | | F | 19 | 39 | X | | X | | HILLSIDE |
| S-92 | 29 40.827 | 98 13.69 | SF | 20 | Kbu | 1 | 1 | 2 | NONE | | | | O | 17 | 37 | X | | X | | HILLSIDE |
| S-93 | 29 41.55 | 98 13.933 | F | 20 | Ked | 3780 | 2 | 0 | N45E | 10 | | | F | 9 | 39 | X | | X | | HILLSIDE |
| S-94 | 29 40.508 | 98 13.765 | SC | 20 | Ked | 1.2 | 0.7 | 0.7 | NONE | | | | F | 5 | 25 | X | | X | | HILLSIDE |
| S-95 | 29 40.674 | 98 13.739 | CD | 5 | Kbu | 15 | 15 | 5 | NONE | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-96 | 29 40.668 | 98 13.739 | F | 20 | Ked | | 3 | 1 | N45E | 10 | | | C/O | 25 | 55 | | X | X | | HILLSIDE |
| S-97 | 29 40.707 | 98 13.844 | CD | 5 | Kbu | 13 | 13 | 4.3 | NONE | | | | F | 15 | 20 | X | | | X | DRAINAGE |
| S-98 | 29 41.544 | 98 14.044 | F | 20 | Ked/Kb | 3905 | 1 | 0.3 | N48E | 10 | | | F/O | 7 | 37 | X | | X | | HILLSIDE |
| S-99 | 29 41.977 | 98 14.439 | ZSC | 20 | Ked | 52 | 17 | 0.7 | N30E | | | | O | 19 | 39 | X | | | X | DRAINAGE |
| S-100 | 29 41.819 | 98 14.350 | CD | 5 | Ked | 30 | 10 | 1.4 | NS | | | | O | 7 | 12 | X | | X | | FLOODPLAIN |
| S-101 | 29 41.870 | 98 14.440 | ZSC | 30 | Ked | 125 | 15 | 21 | NS | | | | O | 9 | 39 | X | | X | | CLIFF |
| S-102 | 29 42.049 | 98 14.596 | SC | 20 | Ked | 3 | 1.1 | 0.7 | N21W | | | | O | 9 | 29 | X | | X | | HILLSIDE |
| S-103 | 29 42.061 | 98 14.597 | SC | 20 | Ked | 0.7 | 0.3 | 0.5 | N20W | | | | O | 11 | 31 | X | | X | | HILLSIDE |
| S-104 | 29 42.149 | 98 14.699 | SC | 20 | Ked | 4.6 | 1.3 | 1.2 | N40E | 10 | | | V | 9 | 39 | X | | X | | HILLSIDE |

* 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 |
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| Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed |

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## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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-105 | 29 42.113 | 98 14.697 | CD | 5 | Ked | 80 | 45 | 3 | N27W | | | | F/O | 5 | 10 | X | | | X | HILLSIDE |
| S-106 | 29 41.836 | 98 14.473 | ZSC | 30 | Ked | 19 | 2.5 | 1.3 | NS | | | | O | 17 | 47 | | X | X | | HILLTOP |
| S-107 | 29 41.678 | 98 14.322 | SF | 20 | Ked | 1 | 0.3 | 0.7 | N10W | | | | F/O | 9 | 29 | X | | X | | FLOODPLAIN |
| S-108 | 29 41.675 | 98 14.360 | SF | 20 | Ked | 25 | 17 | 0.6 | N40E | 10 | | | F/O | 9 | 39 | X | | | X | FLOODPLAIN |
| S-109 | 29 41.783 | 98 14.450 | SC | 20 | Ked | 7 | 4 | >4 | N15W | | | | F/O | 19 | 39 | X | | X | | FLOODPLAIN |
| S-110 | 29 41.620 | 98 14.402 | ZF | 30 | Ked | 2880 | 34 | 25 | N45E | 10 | | | O/C | 19 | 59 | | X | | X | DRAINAGE |
| S-111 | 29 41.824 | 98 14.624 | SC | 20 | Ked | 0.7 | 0.7 | 1.4 | NONE | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-112 | 29 41.841 | 98 14.603 | SC | 20 | Ked | 1.3 | 0.6 | 0.8 | NS | | | | F/O | 17 | 37 | X | | X | | HILLSIDE |
| S-113 | 29 41.831 | 98 14.626 | SC | 20 | Ked | 3.1 | 2.1 | 0.9 | NS | | | | F/O | 15 | 35 | X | | X | | HILLSIDE |
| S-114 | 29 41.582 | 98 14.484 | ZSH | 30 | Ked | 200 | 25 | >4 | N60E | | | | F/O | 9 | 39 | X | | | X | DRAINAGE |
| S-115 | 29 41.779 | 98 14.691 | SH | 20 | Ked | 20 | 3 | 2.7 | N35E | 10 | | | O | 19 | 49 | | X | X | | HILLSIDE |
| S-116 | 29 41.825 | 98 14.729 | CD/SH | 20 | Kdr/Kbu | 35 | 35 | 15 | NONE | | | | F/O | 11 | 31 | X | | | X | HILLSIDE |
| S-117 | 29 41.890 | 98 14.788 | CD | 5 | Ked | 62 | 25 | 7.3 | NS | | | | F/O | 19 | 24 | X | | | X | DRAINAGE |
| S-118 | 29 41.890 | 98 14.788 | ZFSC | 30 | Ked | 270 | 38 | 7 | N75E | | | | O/N | 25 | 55 | | X | | X | DRAINAGE |
| S-119 | 29 41.808 | 98 14.718 | SF | 20 | Ked | 3.3 | 0.2 | 0.7 | N15W | | | | O | 15 | 35 | X | | X | | HILLSIDE |
| S-120 | 29 41.727 | 98 14.696 | ZSH | 30 | Ked | 9.5 | 3.7 | >5 | N115E | | | | N/C | 30 | 60 | | X | X | | HILLSIDE |
| S-121 | 29 41.537 | 98 14.601 | SF | 20 | Ked | 2.7 | 0.8 | 0.3 | N10E | | | | F/O | 12 | 32 | X | | X | | HILLSIDE |
| S-122 | 29 41.899 | 98 14.950 | ZSC | 30 | Ked | 10.1 | 6.1 | 0.7 | N15W | | | | F/O | 7 | 37 | X | | X | | HILLSIDE |
| S-123 | 29 41.549 | 98 14.704 | ZSC | 30 | Ked | 100 | 28 | >3 | N50W | | | | N/C | 22 | 52 | | X | | X | FLOODPLAIN |
| S-124 | 29 41.560 | 98 14.743 | SC | 20 | Ked | 2 | 0.6 | 0.9 | N45E | 10 | | | F/O | 17 | 47 | | X | X | | FLOODPLAIN |

* DATUM: NAD 83

| 2A TYPE | TYPE | 2B POINTS |
|---|---|---|
| C | Cave | 30 |
| SC | Solution cavity | 20 |
| SF | Solution-enlarged fracture(s) | 20 |
| F | Fault | 20 |
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TCEQ-0585-Table (Rev. 10-01-04)

## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| LOCATION | | | FEATURE CHARACTERISTICS | | | | | | | | | | | | EVALUATION | | | PHYSICAL SETTING | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1A | 1B * | 1C* | 2A | 2B | 3 | 4 | | | 5 | 6A | 6 | 7 | 8A | 8B | 9 | 10 | | 11 | | 12 |
| FEATURE ID | LATITUDE | LONGITUDE | FEATURE TYPE | POINTS | FORMATION | DIMENSIONS (FEET) | | | TREND (DEGREES) | DOG | 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-126 | 29 39.923 | 98 13.040 | CD | 5 | Ked | 7 | 3.7 | 1.4 | N50E | 10 | | | F/O | 15 | 30 | X | | X | | HILLSIDE |
| S-127 | 29 39.982 | 98 12.878 | ZSC | 30 | Ked | 13 | 1.6 | 1.1 | N70E | | | | F/O | 9 | 39 | X | | X | | HILLSIDE |
| S-128 | 29 39.944 | 98 12.911 | SC | 20 | Ked | 0.8 | 0.6 | 1.7 | NONE | | | | F/O | 9 | 29 | X | | X | | HILLSIDE |
| S-129 | 29 39.903 | 98 12.995 | SC | 20 | Ked | 4.4 | 3.1 | 1.9 | EW | | | | F/O | 19 | 39 | X | | X | | HILLSIDE |
| S-130 | 29 39.788 | 98 13.152 | SC | 20 | Ked | 3.1 | 0.7 | 0.9 | N60E | | | | O | 15 | 35 | X | | X | | HILLSIDE |
| S-131 | 29 39.849 | 98 12.976 | SC | 20 | Ked | 0.6 | 0.5 | 0.4 | NONE | | | | F/O | 8 | 28 | X | | X | | HILLSIDE |
| S-132 | 29 39.891 | 98 12.933 | SC | 20 | Ked | 0.3 | 0.3 | 1.5 | NONE | | | | N/C | 10 | 30 | X | | X | | HILLSIDE |
| S-133 | 29 39.852 | 98 12.911 | SC | 20 | Ked | 2.1 | 0.5 | 2.3 | N48E | 10 | | | N/C | 19 | 49 | | X | | X | DRAINAGE |
| S-134 | 29 39.848 | 98 12.935 | ZO | 30 | Ked | 25 | 3 | 4.3 | N30W | | | | F/O | 7 | 37 | X | | | X | DRAINAGE |
| S-135 | 29 39.773 | 98 13.111 | SC | 20 | Ked | 1.4 | 1.1 | 0.9 | N25E | | | | F/O | 17 | 37 | X | | X | | HILLSIDE |
| S-136 | 29 39.734 | 98 13.199 | SC | 20 | Ked | 2.1 | 1 | 0.7 | N20W | | | | F/O | 8 | 28 | X | | X | | HILLSIDE |
| S-137 | 29 39.746 | 98 13.152 | SF | 20 | Ked | 3.6 | 0.1 | 1.1 | EW | | | | O/C | 11 | 31 | X | | X | | HILLSIDE |
| S-138 | 29 39.769 | 98 13.057 | ZSF | 30 | Ked | 45 | 4 | 2.3 | N50E | 10 | 1 per | 0.6 | C | 15 | 55 | | X | X | | HILLSIDE |
| S-139 | 29 39.793 | 98 13.005 | CD | 5 | Ked | 14 | 5.1 | 2.3 | NS | | 1 per | 0.7 | F/C | 5 | 10 | X | | | X | DRAINAGE |
| S-140 | 29 39.874 | 98 12.830 | SC | 20 | Ked | 1.4 | 0.7 | 2.3 | N30W | | | | O/C | 11 | 31 | X | | X | | HILLSIDE |
| S-141 | 29 39.854 | 98 12.797 | CD | 5 | Ked | 22 | 18 | 4 | N70E | | | | F/O | 11 | 16 | X | | X | | HILLSIDE |
| S-142 | 29 39.835 | 98 12.830 | CD | 5 | Ked | 28 | 13 | 2 | EW | | | | F/O | 11 | 16 | X | | X | | HILLSIDE |
| S-143 | 29 39.807 | 98 12.869 | SF | 20 | Ked | 10 | 0.9 | 0.7 | N65E | | 1 per | 0.9 | F/O | 13 | 33 | X | | | | HILLSIDE |
| S-144 | 29 39.776 | 98 12.932 | ZSFSC | 30 | Ked | 70 | 35 | 1.5 | N75E | | | | F/O | 17 | 47 | | X | X | | HILLSIDE |
| S-145 | 29 39.770 | 98 12.962 | SH | 20 | Ked | 9 | 2.4 | 2.3 | N85E | | 2 per | 0.8 | O/C | 19 | 39 | X | | X | | HILLSIDE |
| S-146 | 29 39.716 | 98 13.078 | SH | 20 | Ked | 6.1 | 3 | 0.9 | N80E | | | | O/F | 11 | 31 | X | | X | | HILLSIDE |

* 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 |

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|---|---|
| N | None, exposed bedrock |
| C | Coarse - cobbles, breakdown, sand, gravel |
| O | Loose or soft mud or soil, organics, leaves, sticks, dark colors |
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| V | Vegetation. Give details in narrative description |
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**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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-147 | 29 39.713 | 98 13.078 | SF | 20 | Ked | 2 | 0.2 | 0.7 | NS | | 1 per | 0.2 | C/N | 10 | 30 | X | | X | | HILLSIDE |
| S-149 | 29 39.679 | 98 13.166 | SH | 20 | Ked | 7.5 | 4.3 | 2.1 | N60W | | | | F/O | 11 | 31 | X | | X | | HILLSIDE |
| S-150 | 29 39.649 | 98 13.198 | ZMB | 30 | Ked | 410 | 150 | 15 | N50E | 10 | | | F/O | 15 | 55 | | X | X | | HILLSIDE |
| S-151 | 29 39.748 | 98 12.964 | SC | 20 | Ked | 6 | 6 | 1.8 | NONE | | | | O | 25 | 45 | | X | | X | DRAINAGE |
| S-152 | 29 39.757 | 98 12.915 | SC | 20 | Ked | 0.9 | 0.7 | >2 | N15E | | | | O | 11 | 31 | X | | X | | HILLSIDE |
| S-153 | 29 39.747 | 98 12.892 | ZSCFR | 30 | Ked | 164 | 17 | 1.6 | N20S | | | | N/C | 20 | 50 | | X | | X | DRAINAGE |
| S-154 | 29 41.279 | 98 14.667 | MB | 30 | Ked | 0.7 | 0.7 | 3 | NONE | | WELL | | N/C | 9 | 39 | X | | X | | HILLSIDE |
| S-155 | 29 41.650 | 98 14.927 | ZSC | 30 | Ked | 115 | 65 | 6 | N70E | | | | C/O | 15 | 45 | | X | | | FLOODPLAIN |
| S-156 | 29 41.846 | 98 15.124 | ZSC | 30 | Ked | 12 | 1.8 | 1.4 | N70E | | | | O/C | 9 | 39 | X | | X | | HILLTOP |
| S-157 | 29 41.784 | 98 15.104 | CD | 5 | Ked | 13 | 2.6 | 1.1 | N50E | 10 | | | O/F | 15 | 30 | X | | X | | FLOODPLAIN |
| S-158 | 29 41.464 | 98 14.859 | SC | 20 | Ked | 2.3 | 0.7 | 0.8 | EW | | | | O/F | 10 | 30 | X | | X | | HILLSIDE |
| S-159 | 29 41.687 | 98 15.125 | CD | 5 | Ked | 120 | 75 | 2.5 | N20W | | | | F/O | 5 | 10 | X | | X | | FLOODPLAIN |
| S-160 | 29 41.727 | 98 15.117 | SC | 20 | Ked | 1.8 | 0.8 | 0.9 | N40E | 10 | | | O/F | 9 | 39 | X | | X | | FLOODPLAIN |
| S-161 | 29 41.796 | 98 15.182 | SF | 20 | Ked | 6.7 | 4.3 | 1.7 | E40S | | | | O | 15 | 35 | X | | X | | HILLTOP |
| S-162 | 29 41.540 | 98 15.021 | SC | 20 | Ked | 5 | 3 | 24 | E30S | | | | O/C | 17 | 37 | X | | X | | FLOODPLAIN |
| S-163 | 29 41.308 | 98 14.929 | CD | 5 | Ked | 109 | 55 | 4.6 | N80W | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-164 | 29 41.277 | 98 14.910 | O | 5 | Ked | 4 | 3.1 | 0.8 | N80W | | | | F/O | 10 | 15 | X | | | X | HILLSIDE |
| S-165 | 29 41.274 | 98 14.901 | SH | 20 | Ked | 5.3 | 3.4 | 1.7 | N70W | | | | O/C | 15 | 35 | X | | X | | HILLSIDE |
| S-166 | 29 41.230 | 98 14.912 | SC | 20 | Ked | 3.6 | 0.8 | 1.2 | E10S | | | | F/O | 9 | 29 | X | | X | | HILLSIDE |
| S-167 | 29 41.199 | 98 14.857 | SF | 20 | Ked | 11 | 0.7 | 1.3 | N50E | 10 | | | F/O | 9 | 39 | X | | X | | HILLSIDE |

* 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 |

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Michelle M. Lee

Date 11.13.08

MICHELLE M. LEE
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6071
LICENSED

Michelle M. Lee
11.13.08

## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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-168 | 29 41.158 | 98 14.871 | SC | 20 | Ked | 0.5 | 0.3 | 0.7 | NS | | | | O | 10 | 30 | X | | X | | HILLSIDE |
| S-169 | 29 41.196 | 98 14.939 | SF | 20 | Ked | 4 | 0.6 | 0.9 | N70E | | | | O | 10 | 30 | X | | X | | HILLSIDE |
| S-170 | 29 42.018 | 98 14.289 | CD | 5 | Ked | 85 | 35 | 2.9 | N45E | 10 | | | F | 10 | 25 | X | | | X | FLOODPLAIN |
| S-171 | 29 41.950 | 98 14.439 | SC | 20 | Ked | 0.7 | 0.7 | 1.9 | NONE | | | | O/C | 10 | 30 | X | | | X | FLOODPLAIN |
| S-173(2) | 29 42.671 | 98 14.110 | SC | 20 | Kbu Ked | 4 | 0.6 | >2 | N50E | 10 | | | C/O | 7 | 37 | X | | X | | HILLTOP |
| S-174(3) | 29 42.658 | 98 14.175 | SH | 20 | Kbu | 4 | 3 | 1.3 | N40E | 10 | | | C/O | 7 | 37 | X | | X | | HILLSIDE |
| S-175(4) | 29 42.660 | 98 14.184 | SH | 20 | Kbu | 4.6 | 2.1 | 1.7 | EW | | | | C/O | 7 | 27 | X | | X | | HILLSIDE |
| S-176(5) | 29 42.679 | 98 14.254 | O | 5 | Kbu | 40 | 30 | 2.1 | N45E | 10 | | | N/C | 7 | 22 | X | | | X | DRAINAGE |
| S-177(6) | 29 42.456 | 98 14.596 | MB | 30 | Ked | 6 | 6 | ? | NONE | | CISTERN | | N | 50 | 80 | | X | X | | FLOODPLAIN |
| S-178(7) | 29 42.426 | 98 14.637 | MB | 30 | Ked | 0.7 | 0.7 | ? | NONE | | WELL | | N | 7 | 37 | X | | X | | FLOODPLAIN |
| S-179(8) | 29 42.521 | 98 14.674 | F | 20 | Kbu | 640 | 21 | 0.6 | N10E | | | | F/O | 7 | 27 | X | | | X | DRAINAGE |
| S-180(9) | 29 42.478 | 98 14.156 | CD | 5 | Ked | 6 | 6 | 2 | EW | | | | F/O | 5 | 10 | X | | X | | HILLSIDE |
| S-181(10) | 29 42.537 | 98 14.266 | SF | 20 | Ked | 8 | 1 | 1 | N40E | 10 | | | F/O | 9 | 39 | X | | X | | HILLSIDE |
| S-182(11) | 29 42.579 | 98 14.277 | F | 20 | Ked | 4480 | 16 | 0.6 | N44E | 10 | | | F/O | 9 | 39 | X | | X | | DRAINAGE |
| S-183(12) | 29 42.591 | 98 14.236 | SC | 20 | Ked | 1.3 | 0.9 | 1.1 | N55E | 10 | | | O/C | 7 | 37 | X | | X | | HILLSIDE |
| S-184(13) | 29 42.628 | 98 14.139 | O | 5 | Ked | 11 | 3 | 1 | NS | | | | F/O | 7 | 12 | X | | X | | HILLSIDE |
| S-185(14) | 29 42.636 | 98 14.164 | SH | 20 | Ked | 7 | 1.4 | 0.8 | N40E | 10 | | | C/O | 9 | 39 | X | | X | | HILLSIDE |
| S-186(15) | 29 42.651 | 98 14.197 | SC | 20 | Ked | 0.4 | 0.4 | 0.9 | NONE | | | | F/C | 11 | 31 | X | | X | | HILLSIDE |
| S-187(16) | 29 42.419 | 98 14.354 | ZSCO | 30 | Ked | 50 | 15 | | N20W | | | | F/C | 15 | 45 | | X | | X | DRAINAGE |
| S-188(17) | 29 42.424 | 98 14.368 | SH | | Ked | 4 | 3 | 1 | N30E | | | | F/O | 11 | 11 | X | | X | | FLOODPLAIN |

* 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.

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Date 11.13.08

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## GEOLOGIC ASSESSMENT TABLE

**PROJECT NAME:** Dean Word 1765 Acre GA - New Braunfels

| 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 |
| | | | | | | X | Y | Z | | 10 | | | | | | <40 | >40 | <1.6 | >1.6 | |
| S-189(18) | 29 42.407 | 98 14.422 | SH | 20 | Ked | 5 | 1 | 2 | N20W | | | | O/C | 19 | 39 | X | | X | | FLOODPLAIN |
| S-190(19) | 29 42.409 | 98 14.429 | CD | 5 | Ked | 5 | 3 | 0.9 | N10W | | | | F | 7 | 12 | X | | X | | FLOODPLAIN |
| S-191(20) | 29 42.339 | 98 14.494 | CD | 5 | Ked | 30 | 8 | 1 | N70E | | | | F | 5 | 10 | X | | X | | HILLSIDE |
| S-192(21) | 29 42.360 | 98 14.452 | CD | 5 | Ked | 7 | 4 | 2 | NS | | | | F | 15 | 20 | X | | X | | HILLSIDE |
| S-193(22) | 29 42.356 | 98 14.291 | CD | 5 | Ked | 235 | 25 | 22 | N20W | | | | C/O | 25 | 30 | X | | | X | DRAINAGE |
| S-194(23) | 29 42.300 | 98 14.470 | CD | 5 | Ked | 250 | 175 | 2.4 | N75E | | | | F | 7 | 12 | X | | X | | HILLSIDE |
| S-195(24) | 29 42.238 | 98 14.636 | SC | 20 | Ked | 0.9 | 0.7 | 1 | N10W | | | | F | 15 | 35 | X | | X | | HILLSIDE |
| S-196(25) | 29 42.255 | 98 14.370 | SC | 20 | Ked | 2.1 | 0.7 | 1.5 | N40E | 10 | | | C/O | 9 | 39 | X | | X | | HILLSIDE |
| S-197(26) | 29 42.209 | 98 14.360 | F | 20 | Ked | 60 | 4 | | E-W | | | | F/O | 19 | 39 | X | | X | | HILLSIDE |
| S-198(27) | 29 42.283 | 98 14.084 | ZSC | 30 | Ked | 83 | 3 | >3 | N10E | | | | O/F | 20 | 50 | | X | X | | FLOODPLAIN |
| S-199(28) | 29 42.254 | 98 13.998 | CD | 5 | Ked | 60 | 35 | 3 | NS | | | | F | 7 | 12 | X | | | X | DRAINAGE |
| S-200(29) | 29 42.188 | 98 14.433 | SH | 20 | Ked | 7 | 3.4 | 2.1 | NS | | | | V/O | 19 | 39 | X | | X | | HILLSIDE |
| S-201(30) | 29 42.213 | 98 14.137 | CD | 5 | Ked | 33 | 7 | 1.3 | NS | | | | F | 7 | 12 | X | | | X | DRAINAGE |
| S-202(31) | 29 42.217 | 98 14.029 | SC | 20 | Ked | 1.3 | 1.2 | 0.7 | NONE | | | | F/O | 7 | 27 | X | | X | | HILLSIDE |
| S-203(32) | 29 42.192 | 98 14.201 | SH | 20 | Ked | 8 | 4.2 | >3 | N50E | 10 | | | O/C | 25 | 55 | | X | X | | FLOODPLAIN |
| S-204(33) | 29 42.178 | 98 14.235 | SC | 20 | Ked | 0.5 | 0.4 | 1.1 | NONE | | | | F/O | 17 | 37 | X | | X | | HILLSIDE |
| S-205(34) | 29 42.178 | 98 14.130 | ZF | 30 | Ked | 6140 | 25 | 15 | N40E | 10 | | | F/O | 5 | 45 | | X | | X | DRAINAGE |
| S-206(35) | 29 42.128 | 98 14.129 | SC | 20 | Ked | 0.3 | 0.3 | 0.8 | NONE | | | | N/C | 15 | 35 | X | | X | | HILLSIDE |
| S-207(36) | 29 42.098 | 98 14.208 | ZCD | 30 | Ked | 26 | 5 | 4 | N50E | 10 | | | O/N | 35 | 75 | | X | | X | DRAINAGE |
| S-208(37) | 29 42.087 | 98 14.173 | SC | 20 | Ked | 1.1 | 0.9 | 1.7 | NONE | | | | O/F | 17 | 37 | X | | X | | FLOODPLAIN |
| S-209(38) | 29 42.062 | 98 14.040 | SC | 20 | Ked | 2.7 | 1.4 | 0.8 | N75E | | | | F | 5 | 25 | X | | X | | HILLSIDE |
| S-210 | 29 39.66 | 98 12.98 | F | 20 | Ked | 2600 | 35 | 7 | N50E | 10 | | | F | 9 | 39 | X | | | X | HILLSIDE |

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

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Date 11.13.08

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11.13.08



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

**ATTACHMENT B**
**Soil Profile and**
**Narrative of Soil Units**

Seventeen different soil types are located in the project area. However, of those 17, only eight soil types are present on the subject property included in the Water Pollution Abatement Plan (WPAP) area of this project. The ten soil types in the assessment area are: Eckrant – Rock Outcrop (ErG), Rumple-Comfort Association (RUD), Purves Clay (PuC), Comfort Rock Outcrop (CrD), Medlin-Eckrant Association undulating (MEC), Medlin-Eckrant Association hilly (MED), Denton Silty Clay (DeB) and Tarpley Clay (TaB).

1) Eckrant Rock Outcrop Complex (ErG) 8 to 30 percent

- Shallow, clayey soils and rock outcrops on uplands
- Slopes are convex and range from 8 to 30 percent
- Eckrant soil makes up 70% of unit with rock outcrops making the remainder
- Typically 10" thick with abundant cobbles and stone
- Soil is well drained
- Surface runoff is rapid
- Moderately slow permeability
- Low water capacity
- Water erosion is a severe hazard
- Soils are used for rangeland or wildlife habitats

2) Purves Clay (PuC) – 1 to 5 percent slopes

- This soil is well drained and surface runoff is medium
- Permeability is moderately slow with a shallow root zone
- The water capacity is very low and water erosion is a moderate hazard
- The underlying material is a indurated and fractured limestone
- This is a shallow gently sloping soil on uplands
- Typically, the unit dark gray and is typically 45" thick
- The lower layer is approximately 10% coarse limestone fragments

3) Comfort-Rock (CrD) – complex and undulating

- The surface layer is a dark brown and extremely stony clay and about 6" thick
- Cobbles and stones as much as 4' across cover about 45% of the surface
- The sub-soil is a dark, reddish brown and extends about 13"
- The surface layer is a dark brown and extremely stony clay and about 6" thick
- Cobbles and stones as much as 4' across cover about 45% of the surface
- The sub-soil is a dark, reddish brown and extends about 13"
- The soils are well drained and surface runoff is low to medium
- Permeability is slow and the available water capacity is very low
- The root zone is shallow and water erosion is a slight hazard

4) Medlin-Eckrant Association undulating (MED) – 1 to 8 percent slopes

- The Medlin soil is on slightly concave slopes and the Eckrant soil is on convex slopes
- A typical area is 50% Medlin soil and 30% Eckrant soil
- The Medlin soils can be up to 80" thick and are good for rangeland use
- The Eckrant soils are typically 17" deep and are not suited for crops but are for rangeland
- The Medlin soil is well drained and surface runoff is rapid
- Permeability is very slow and water enters rapidly when the soil is cracked and dry but slowly when wet
- Severe water erosion hazard
- The Eckrant soil is well drained and surface runoff is rapid
- Permeability is moderately slow and the available water capacity is very low
- Water erosion is a severe hazard.

5) Medlin-Eckrant Association hilly (MED) – 8 to 30 percent slopes

- The Medlin soil is on slightly concave slopes and the Eckrant soil is on convex slopes
- A typical area is 50% Medlin soil and 45% Eckrant soil
- The Medlin soils can be up to 80" thick and are good for rangeland use
- The Eckrant soils are typically 17" deep and are not suited for crops but are for rangeland
- The Medlin soil is well drained and surface runoff is rapid
- Permeability is very slow and water enters rapidly when the soil is cracked and dry but slowly when wet
- The rooting zone is deep but the clay impedes root development thus creating a severe water erosion hazard
- The Eckrant soil is well drained and surface runoff is rapid
- Permeability is moderately slow and the available water capacity is very low
- Water erosion is a severe hazard.

6) Rumple –Comfort Association (RUD) – undulating 1 to 8 percent slopes

- The Rumple interval is very stony and about 28" thick cherty loam with limestone
- The underlying unit is indurated limestone fragments
- The Comfort soil is an extremely stony clay and is underlain by indurated, fractured limestone
- Rumple soil makes up about 60% and the Comfort soil comprises about 20% of the unit
- Slopes are plane or convex
- This Comfort soil is dark brown and dark reddish brown that is mildly alkaline. Both soils are well drained and surface runoff is medium
- Runoff from large areas is much slower than from local areas because some of the water enters caves, sinkholes, rock crevices and streambeds
- Permeability is moderately slow in the Rumple and slow in the Comfort
- The available water capacity is very low for both
- The rooting zone is shallow in the Comfort and moderately deep in the Rumple
- Water erosion is moderate for both.

7) Denton Silty Clay (DeB) 1 to 3 percent slopes

- Moderately deep, gently sloping soil on valley slopes
- Slopes are slightly convex to concave in long narrow areas
- Typical thickness is up to 36" and is underlain by fractured limestone interbedded with calcareous marl
- The soils is moderately alkaline and well drained
- Surface runoff is medium
- Permeability is slow
- Medium available water capacity
- Water erosion is a moderate hazard
- The soil is used as rangeland, cropland and pastureland

8) Tarpley Clay (TaB) 1 to 3 percent slopes

- Shallow, gently sloping soil on a plane to slightly concave slopes
- Typical thickness is 17' which is underlain by fractured, indurated limestone bedrock
- Well drained
- Surface runoff is medium
- Very low available water capacity
- Water erosion is a moderate hazard
- The soil is used for rangeland, pastureland and cropland

Attachment C
Stratigraphic Column

| System | Series | Group | Formation | Member | Thickness (feet) | Lithology | Field ID |
|---|---|---|---|---|---|---|---|
| | Comanchean | Washita | Buda | | 40-50 | Buff, light gray dense mudstone | Porcelaneous limestone with calcite-filled veins |
| | | | Del Rio | | 40-50 | Blue green to yellow brown clay | Marker fossil: *Ilmatogyra arietna* |
| | | | Georgetown | | 2-20 | Reddish brown, gray to light tan marly limestone | Marker fossil: *Waconella wacoensis* |
| | | Fredricksburg (Edwards) | Person | Cyclic & Marine Members undivided | 80-90 | Mudstone to packstone; miliolid grainstone; chert | Thin graded cycles; massive beds to relatively thin beds; cross-bedding |
| | | | | Leached & Collapsed Members undivided | 70-90 | Crystalline limestone; mudstone to grainstone; chert; collapsed breccia | Bioturbated iron-stained beds separated by massive limestone beds; stromatolitic limestone |
| | | | | Regional Dense Member | 20-24 | Dense; argillaceous mudstone | Wispy iron oxide stains |
| | | | Kainer | Grainstone Member | 50-60 | Miliolid grainstone; mudstone to wackestone; chert | White cross-bedded grainstone |
| | | | | Kirschberg Evaporite Member | 50-60 | Highly altered crystalline limestone; chalky mudstone; chert | Boxwork voids, with neospar and travertine frame |
| | | | | Dolomitic Member | 110-130 | Mudstone to grainstone; crystalline limestone; chert | Massively bedded light gray, *Toucasia* abundant |
| | | | | Basal Nodular Member | 50-60 | Shaly, nodular limestone; mudstone and miliolid grainstone | Massive, nodular and mottled, *Exogyra texana* |
| | | | | Basal Nodular Member | 50-60 | Shaly, nodular limestone; mudstone and miliolid grainstone | Massive, nodular and mottled, *Exogyra texana* |
| | | | Keys Valley Marl | | 40-50 | soft, white marl and shale | *Exogyra texana, Gryphea, mucronata* |

*WEI Project No. 10173-007*
*November 6, 2008*

**Dean Word Company, Ltd.**
**Lonestar Quarry**

## GEOLOGIC ASSESSMENT ATTACHMENT D

### Geologic Narrative

**Overview:**

The site consists of two detached tracts of approximately 1653 acres located north and south of a previously approved (EAAP File No. 1603.00) 270 acres portion for a total site-wide acreage of 1923. The site is located approximately 7 to 8 miles southwest of New Braunfels, Texas. The geologic assessment was performed over the areas shown on the Geologic Map. Two hundred and ten (210) features were initially identified and mapped during this investigation. After review of the field data, ~~two~~ Three features, 125, 148 and 172 were deleted from the tables since they were duplicated elsewhere. So as a result, a total of 207 features are recorded in this geologic assessment. Thirty four (34) of the 207 mapped features were classified as sensitive in accordance with the "Instructions for Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones" (TNRCC-0585-Instructions (Rev. 10-1-04)). The sensitive features are; twenty (20) zones of either solution cavities, solutioned enlarged fractures, sink holes and/or man made feature in bedrock, five (5) solution cavities, three (3) sink holes, three (3) faults, one (1) solutioned enlarged fracture and two (2) man made features in bedrock.

**Field Work:**

Field work was performed at the site on April 8, 9, 10, 11, 15, 16, May 1, 19, 23, 28, June 3, 4, 5, 6, 10, 12, 13, 16, 17, 24, 26, July 11, 14, 25, 28, 29 and August 1 2008 by Westward field personnel consisting of at least one registered Professional Geologist and up to 4 field technicians. Field transects were walked across the site using a 50-foot spacing. In areas of dense vegetative cover, historic site clearing, grubbing and earth moving activities, geologic or manmade features may have been altered or obscured at the time of site reconnaissance.

A good portion of the site in the central and southern areas has been cleared of trees and shrubs as part of ongoing agricultural (livestock grazing) practices onsite. As a result, there are numerous non-karst closed depressions that were created by the clearing activities. These areas were not marked as potential recharge features due to the presence of nearby uprooted tree(s) or piles of brush. Where non-karst closed depressions were observed without any nearby tree or brush, the feature was marked.

Geologic and manmade features were field logged, photographed, labeled and GPS coordinates were collected. GPS data are included on the Geologic Assessment Table.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

**Stratigraphy:**

The Buda Limestone, Del Rio Clay, Georgetown Formation and the Edwards Limestone were all observed at the surface of the site. The surface outcrops of the Del Rio Clay and Georgetown Formation were very minimal in comparison to the amount of Buda exposed. Isolated outcrops of Buda were observed in the southern, center and northern most portions of the site. The Edwards Limestone was observed at the surface across most of the site.

The detached 100 acre area to the extreme south is located adjacent to the main Balcones Escarpment where only the Edwards Limestone was observed at the surface. Evidence of faulting is visible in the exposed rocks along the entrance road to the site.

**Structure:**

The subject property is located in the Balcones Fault Zone, approximately seven to eight miles southwest of New Braunfels. There was aerial evidence as well as surface expression of faulting observed at the site. The Geologic Atlas of Texas, Austin Sheet, does show some faults on the project site with the main Balcones fault adjacent to southeast on the southern parcel boundary. The average fault trend in this section of the Balcones Fault Zone is approximately N45E. Features trending from N35E to N55E were assigned the extra 10 points for being aligned in the dominant fault trend direction.

Eight (8) faults were mapped during this investigation. There were three areas where the Buda Limestone was juxtaposed to the Edwards Limestone. The remaining faults were inter-formational within the Edwards. There is some evidence of horst/graben sequences as well. Along two of the faults, some large sinkholes were also observed.

**Karstic characteristics:**

One hundred and twenty eight (128) possible karst features were identified onsite during this assessment. A summary of features identified is as follows: seventy (70) solution cavities – five (5) of those are sensitive; twenty one (21) zones solution cavity, solutioned enlarged fracture and/or sink holes - fifteen (15) of those zones are sensitive; twenty (20 sinkholes – three (3) are sensitive and seventeen (17) solution enlarged fractures –

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

none are sensitive. A total of two hundred and ~~eight~~ seven (207) geologic and manmade features were identified, reported and logged in Attachment B, the Geologic Assessment Table.

**Geologic and Manmade features are described below in alphabetical order.**

Caves
No caves were found at the time of this geologic assessment.

Cave Zone
No cave zones were found at the time of this geologic assessment.

Closed Depressions
**S-2, S-3, S-12, S-13, S-15, S-16, S-17, S-18, S-20, S-21, S-22, S-28, S-32, S-33, S-39, S-41, S-42, S-47, S-48, S-52, S-57, S-61, S-65, S-69, S-71, S-72, S-75, S-76, S-78, S-83, S-86, S-88, S-90, S-95, S-97, S-100, S-105, S-117, S-126, S-139, S-141, S-142, S-157, S-159, S-163, S-170, S-180, S-190, S-191, S-192, S-193, S-194, S-199, S-201, : Not Sensitive**
These features are non-karst closed depressions are infilled with either organic or fine grained materials. Features **S-17, S-41, S-57, S-61, S-98, S-159, S-163 and S-194** are stock ponds located in various locations across the site. Features **S-17, S-41** and **S-95** are not in the Edwards Limestone but are in the mapped recharge zone and were logged accordingly. Due to lack of evidence to suggest karst involvement, observed ability in some to hold water and amount of sediment observed, these features have a low to very low probability of rapid infiltration.

Faults
**S-84, S-93, S-98, S-179, S-182, S-197, S-210: Not sensitive**
**S-84** has beds dipping at approximately eight to ten degrees with a 90° strike. Fractures are approximately 1.5" – 2.5" apart and infilled with fine sediment to some gravel sized particles. **S-93** traverses the entire site in a southwest to northeast trend. This fault juxtaposes the Buda Formation to the Edwards Limestone in the northeastern portion of the site. The downthrown side of the fault is soil covered versus the outcropping of massive, bedded limestone on the up thrown side.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

**S-179** is located on the northwestern portion of the property. Buda limestone outcrops and Del Rio Clay remnants were observed in the eastern bank of this drainage. **S-182** is visible in the north central portion of the site where Dry Comal Creek exits the property. Buda was observed juxtaposed to the Edwards in this area. The field located between **S-179** and **S-182** is topographically higher and has the Edwards at the surface. This is evident by all the chert at the surface as well as the rocks used in construction of the walls around the field. **S-197** appears to be an inter-formational fault within the Edwards. Flaggy limestone is adjacent to some highly solutioned limestone. The lineation of the fault does follow trend. **S-210** is the main Balcones Escarpment and consists of several smaller fault and collapse blocks. Probably caused by the multiple movement and subsequent subsidence episodes that occurred during the uplift event.

Due to lack of evidence to suggest karst involvement and amount of sediment observed, these features have a low to very low probability of rapid infiltration.

**S-96: Sensitive**
**S-96** is located in the southern portion of the site and appears to trend in a northeast to southwest direction which is perpendicular to the main Balcones trend. Dipping beds of Edwards were observed to go underneath what appears to be the Del Rio and Buda Formations. Most of the fault plane is obscured and is filled with fine grained and organic sediment. However, the structure in this area is obscured, complicated and difficult to map based solely on surface observations.

Fractured Rock Outcrops:
Fractured rock outcrops that could be potential recharge features were not observed during this geologic assessment.

Man Made Features
**S-70, S-154 and S-178: Not Sensitive**
These features are operational water wells used for livestock purposes. All three wells are covered and have wind mill pumps. Probability of rapid infiltration is very low.

**S-87 and S-177: Sensitive**
**S-87** is an unplugged water well that is in excess of 300' in depth. The well is not capped or plugged at this time. Only a loose steel plate covers the well opening which is approximately 8" in diameter. The well will be properly plugged and abandoned. **S-177** appears to be a cistern with an unknown depth. It is also

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**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

unknown whether the bottom of the feature is sealed. The feature was holding water at the time of this assessment at an approximate level of 15' below ground surface. A loose steel plate is partially covering the feature. Probability of rapid infiltration is high.

Other Features in Bedrock

**S-176 and S-184: Not Sensitive**

**S-176** is located along the northern edge of the site in a drainage that crosses under FM 1863. It is in the Buda Limestone bedrock with fractures and closed depressions. The fractures are cemented or filled with sediment. There is evidence that the feature does hold water when it is not flowing off site. Since the Del Rio Clay underlies this feature, a low infiltration rate was assigned. **S-184** appears to be closed depression in the bedrock that is infilled with organic and fine grained materials. Probability of rapid infiltration is very low.

Sinkholes

**S-29, S-31, S-60, S-62, S-81, S-91, S-116, S-145, S-146, S-149, S-165, S-174, S-175, S-185, S-188, S-189 and S-200: Not Sensitive**

These features are sinkholes that were identified during this assessment. These features were mapped if an established rim of bedrock was present. Most of the features were filled with organic material that led way to soils. Vegetation in the form of oak trees to grasses was also observed in the immediate vicinity of these features. The probability of rapid infiltration is low.

**S-37, S-115 and S-203: Sensitive**

**S-37** trends N40E which added 10 more points to the feature making it sensitive. However, the infiltration rate is low to slightly moderate. **S-115** has two openings with one opening being at least 2.7' deep. Nothing was observed growing out of this feature. **S-203** is deeper than 3' with a trend of N50E. Probability of rapid infiltration here is moderate.

Solution Cavities

**S-1, S-4, S-5, S-10, S-19, S-24, S-25, S-34, S-35, S-40, S-43, S-45, S-46, S-49, S-50, S-51, S-53, S-55, S-56, S-58, S-59, S-63, S-64, S-66, S-67, S-68, S-74, S-77, S-80, S-89, S-94, S-102, S-103, S-104, S-109, S-111, S-112, S-113, S-125, S-128, S-129, S-130, S-131, S-132, S-135, S-136, S-140, S-143, S-152, S-158, S-160, S-162, S-166, S-168, S-171, S-173, S-183, S-186, S-195, S-196, S-202, S-204, S-206, S-208 and S-209: Not Sensitive**

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

Seventy (70) solution cavities were identified during at the time of this assessment. The above-referenced sixty four (65) were not sensitive. These features did not have an intermediate or high probability of rapid infiltration.

**S-11, S-38, S-124, S-133 and S-151: Sensitive**
**S-11** is 5.5' by 3.5' wide with evidence of water movement to the subsurface. Nothing was observed growing out if this feature and the ground nearby were covered with organic and fine grained sediments as well as some grasses. Probability of rapid infiltration is high. **S-38** has evidence of multiple connecting cavities with organic infilling and a moderate infiltration rate. **S-124** trends N45E with organic infilling and is located in the floodplain and a moderate infiltration rate. **S-133** is located in a drainage with horizontal extension back into the bedrock. It also trends N48E with only coarse rocks observed as the infilling. A low/moderate infiltration rate was given. **S-151** is a small clustered set of cavities located in the bottom of a drainage way with organic infilling. Infiltration is moderate.

Solutioned Enlarged Fractures
**S-26, S-36, S-54, S-73, S-80, S-85, S-92, S-107, S-108, S-119, S-121, S-137, S-147, S-161, S-167, S-169 and S-181: Not Sensitive**
The average density was 1 fracture per square foot. Average aperture was about 3". Most of these features were infilled with fine-grained and/or organic sediment. Probability of rapid infiltration is very low to low.

Vuggy Rock Outcrops
Vuggy rock outcrops that could be potential recharge features were not observed during this geologic assessment.

Zone – Sink Holes
**S-120: sensitive**
**S-120** is an area of 2 large sink holes that measures approximately 9' by 3.7' and a maximum depth of greater than 5 ft. No vegetation was observed growing out of these features. Probability of rapid infiltration is moderate.

Zone – Closed Depressions
**S-207: Sensitive**

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

**S-207** is an area of several closed depressions that are deep with strong evidence of soil sapping. They are located in a drainage near the footwall of fault zone S-205. Rock was observed below the soil forming a rim feature and it was filled with larger rocks to an unknown depth. Probability of rapid infiltration is high.

Zone – Solution Cavities

**S-8, S-99, S-101, S-122, S-127, S-156: Not Sensitive**

**S-8** is a cavity with a N70E trend. Organic material was observed around the opening of this feature. A large tree root is also present in the cavity. Due to the presence of fine grained sediment in the bottom of the cavity, the infiltration rate is low.

**S-6, S-7, S-9, S-27, S-44, S-79, S-106, S-123, S-153, S-155, S-187, S-198: Sensitive**

**S-6** is a 30' long area of solution cavities along the hillside with a N40E trend. The depths ranged from a few inches to over three feet with coarse and organic infilling. Algae was observed in some of the cavities. **S-7** is an area of smaller solution cavities and enlarged fractures with a N10E trend. The surface is flat bedrock with the features extending vertically downward for approximately two feet.

**S-27** is an area of cavities that have been mostly infilled with organic materials. The features have a low probability of rapid infiltration and a N40E trend causing this feature to be sensitive. **S-44** is a band of solution cavities that measures approximately 200' x 150' with organic and fine grained sediment infilling. The trend is N40E and has an intermediate probability of rapid infiltration. **S-79** is three cavities that are solutioned more on the surface than the interior. **S-106** has openings up to 2.3' wide but with organic sediment infilling with a low/intermediate infiltration rate. **S-123** covers an area of approximately 100' x 28' and is located in a drainage. There are also fractured rock and vuggy rock in the same zone. Spiders were also observed in this zone. A moderate infiltration rate was assigned due to the presence of coarse grained infilling. **S-153**, **S-155** and **S-187** are located in a drainage and also had fractures associated with the feature. These features have a higher low infiltration rate due to the presence of grasses in the area. **S-198** is a cluster of cavities that extend downward into the bedrock and have a lower intermediate infiltration rate.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Geologic Assessment Attachment D (continued)**

**Geologic Narrative (continued)**

Zone – Faults
**S-110, S-118 and S-205**: Sensitive
**S-110** is in a drainage in the central portion of the site. Rock bluffs extend upwards of 20 ft only on the northern side of the drainage. The bedding planes in the rock have been broken and moved. Slump and collapse has also occurred. Fractures, solution cavities and closed depressions in bedrock and non bedrock were observed in this feature. **S-118** is located in the northern portion of the site. Steeply dipping beds as well as solution cavities and enlarged fractures were observed. A moderate infiltration rate was assigned. **S-205** has numerous cavities and closed depressions in rock. Polished slickensides were observed on the east wall. But the alignment and zone designation make the feature sensitive even though there is a low infiltration rate due to vegetation and cemented bottoms.

Zone – Solutioned Enlarged Fracture
**S-138 and S-144**: Sensitive
**S-138** is an area of solutioned enlarged fractures that extend approximately 45' long and 4' wide with an orientation of N50E. The dominant trend alignment added an extra 10 points to the overall score. The aperture averaged approximately 5" – 6" with a density of 1 fracture per square foot. Relative infiltration rate is low due to presence of vegetation and organic materials. **S-144** is a zone with solution enlarged fractures and solution cavities that is approximately 70' long by 35' wide. A low to almost moderate infiltration rate was assigned due to some features having coarse material infilling. Others had fine and organic infilling.

Zone – Man Made Feature in Bedrock
**S-150**: Sensitive
**S-150** is an area of quarrying that has occurred numerous years ago. Located in the southern most portion of the detached parcel, the quarried areas are littered with large boulders and construction debris in the pits. Vertical walls throughout this feature could possibly indicate dimension stone quarrying. It is unknown if the walls are located along a fracture plane or not. The zone is approximately 410' long by 150' wide and is oriented at N50E. Where infilling was not obscured by rocks and debris, it was observed to be fine grained to coarse. Relative infiltration rate is low to almost moderate.

FM 1863

KRUEGER CANYON

ZONE A

ZONE AE

Kbu

Ked

Kdr

Kgt

S-1 S-2 S-3 S-4 S-5 S-6 S-7 S-8 S-9 S-10 S-11 S-12 S-13 S-14 S-15 S-16 S-17 S-18 S-19 S-20 S-21 S-22 S-23 S-24 S-25 S-26 S-27 S-28 S-29 S-30 S-31 S-32 S-33 S-34 S-35 S-36 S-37 S-38 S-39 S-40 S-41 S-42 S-43 S-44 S-45 S-46 S-47 S-48 S-49 S-50 S-51 S-52 S-53 S-54 S-55 S-56 S-57 S-58 S-59 S-60 S-61 S-62 S-63 S-64 S-65 S-66 S-67 S-68 S-69 S-70 S-71 S-72 S-73 S-74 S-75 S-76 S-77 S-78 S-79 S-80 S-81 S-82 S-83 S-84 S-85 S-86 S-87 S-88 S-89 S-90 S-91 S-92 S-93 S-94 S-95 S-96 S-97 S-98 S-99 S-100 S-101 S-102 S-103 S-104 S-105 S-106 S-107 S-108 S-109 S-110 S-111 S-112 S-113 S-114 S-115 S-116 S-117 S-118 S-119 S-120 S-121 S-122 S-123 S-124 S-154 S-155 S-156 S-157 S-158 S-159 S-160 S-161 S-162 S-163 S-164 S-165 S-166 S-167 S-168 S-169 S-170 S-171 S-173 S-174 S-175 S-176 S-177 S-178 S-179 S-180 S-181 S-182 S-183 S-184 S-185 S-186 S-187 S-188 S-189 S-190 S-191 S-192 S-193 S-194 S-195 S-196 S-197 S-198 S-200 S-201 S-202 S-203 S-204 S-205 S-206 S-207 S-208 S-209

FINAL EARTHEN BERM & LIMITS OF DISTURBANCE

UNDISTURBED AREA

725' amsl Estimated Quarry Floor Elevation

ROCK BERM

ROCK BERM ALT. 1

ROCK BERM ALT. 2

INTERIM EARTHEN BERM

Initial 10 ac Plant & Quarry Area

APPROX. LOCATION OF INITIAL WASH WATER POND

CONSTRUCTION EXIT

TRUCK SCALE

SCALE HOUSE/TRAILER (NO SLAB ON GRADE)

PIPELINE EASEMENT (WILL BE RELOCATED)

EXISTING RANCH ROAD

ROAD EASEMENT

PROPERTY LINE & QUARRY BOUNDARY (LIMITS OF DISTURBANCE)

CURRENT PROJECT LIMIT & QUARRY BOUNDARY

PREVIOUSLY APPROVED PROJECT LIMITS EAAP 1603.00

- GEOLOGIC FEATURE
- SENSITIVE FEATURE
- PROPERTY BOUNDARY
- FAULT
- INFERRED

GEOLOGIC UNITS

Kbu: Buda Limestone
Kdr: Del Rio Clay
Ked: Edwards Limestone
Kgt: Georgetown Formation
Qle: Leona Formation

0 400 800

1" = 400'

THE PROJECT SITE IS IN THE EDWARDS AQUIFER RECHARGE ZONE

STATE OF TEXAS
MICHELLE M. LEE
GEOLOGY
6071
LICENSED
ENVIRONMENTAL SCIENTIST
11-11-08


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


| REV. | DESCRIPTION | BY | DATE |
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|---|---|---|
| COMPANY NAME: DEAN WORD COMPANY | DRAWN BY: DK | CHECKED BY: GDN |
| JOB NAME: GEOLOGIC ASSESMENT | SCALE: 1" = 400' | |
| LOCATION: FM 482, COMAL CO., TEXAS | DATE: 08/11/2008 | |
| IMAGE: NONE | JOB NUMBER | DRAWING |
| DESCRIPTION: GEOLOGY MAP – NORTH | 10173-07 | 173-07GAMAP.dwg |

RECEIVED NOV 14 2008 SAN ANTONIO

S-34
S-54
S-55
S-58
S-57
S-56
S-48
EXISTING RANCH ROAD
S-71
S-72
EXISTING RANCH ROAD
S-45
S-47
S-70
AREA
S-46
S-74
S-73
S-76
S-77
S-75
PROPERTY LINE & QUARRY BOUNDARY (LIMITS OF DISTURBANCE)
FINAL EARTHEN BERM & LIMITS OF DISTURBANCE
S-78
S-79
S-80
S-89
S-90
S-91
S-88
Kgt
Kdr
Kbu
S-81
S-92
S-82
Kdr
S-87
S-86
Ked
Kgt
Kbu
S-97
S-96
S-95
CURRENT PROJECT LIMIT & QUARRY BOUNDARY
Ked
S-83
UNDISTURBED AREA
EXISTING RANCH ROAD
PREVIOUSLY APPROVED PROJECT LIMITS EAAP 1603.00
S-94
S-85
S-84
U
D
Kdr
Kbu
EXISTING QUARRY
Ked
UNDISTURBED AREA
ZONE A
EASEMENT
S-127
S-128
PROPERTY LINE & QUARRY BOUNDARY (LIMITS OF DISTURBANCE)
S-126
PREVIOUSLY APPROVED PROJECT LIMITS EAAP 1603.00
S-129
S-132
S-140
Ked
S-133
S-131
S-134
S-141
S-142
CURRENT PROJECT LIMIT & QUARRY BOUNDARY
S-143
RECHARGE ZONE
TRANSITION ZONE
FINAL EARTHEN BERM & LIMITS OF DISTURBANCE
S-139
S-130
S-135
S-138
S-145
S-144
S-152
S-153
S-151
(695' amsl) Estimated Quarry Floor Elevation
S-210
S-137
S-136
S-146
S-147
B
S-149
S-150
B
Qle
RECHARGE ZONE
TRANSITION ZONE
UNDISTURBED AREA
Qle
ZONE A
ZONE AE

- GEOLOGIC FEATURE
- SENSITIVE FEATURE
- PROPERTY BOUNDARY
- FAULT
- INFERRED

GEOLOGIC UNITS

Kbu: Buda Limestone
Kdr: Del Rio Clay
Ked: Edwards Limestone
Kgt: Georgetown Formation
Qle: Leona Formation

N

0 400 800

1" = 400'

THE PROJECT SITE IS IN THE EDWARDS AQUIFER RECHARGE ZONE

TCE - 713
NOV 14 2008
SAN ANTONIO

STATE OF TEXAS
MICHELLE M. LEE
GEOLOGY
6071
LICENSED
PROFESSIONAL GEOSCIENTIST
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| COMPANY NAME: DEAN WORD COMPANY | DRAWN BY: DK | CHECKED BY: GDN |
| JOB NAME: GEOLOGIC ASSESMENT | SCALE: 1" = 400' | |
| LOCATION: FM 482, COMAL CO., TEXAS | DATE: 08/11/2008 | |
| IMAGE: AERIALS EXPRESS, 2006 | JOB NUMBER | DRAWING |
| DESCRIPTION: GEOLOGY MAP - SOUTH | 10173-07 | 173-07GAMAP.dwg |

FM 1863

ZONE A

KRUEGER CANYON

FINAL EARTHEN BERM & LIMITS OF DISTURBANCE

725' amsl
Estimated Quarry Floor Elevation

UNDISTURBED AREA

PIPELINE EASEMENT (WILL BE RELOCATED)

CONSTRUCTION EXIT

TRUCK SCALE

SCALE HOUSE/TRAILER (NO SLAB ON GRADE)

EXISTING RANCH ROAD

ROAD EASEMENT

ROCK BERM

ROCK BERM ALT. 1

ROCK BERM ALT. 2

INTERIM EARTHEN BERM

Initial 10 ac Plant & Quarry Area

APPROX. LOCATION OF INITIAL WASH WATER POND

PROPERTY LINE & QUARRY BOUNDARY (LIMITS OF DISTURBANCE)

CURRENT PROJECT LIMIT & QUARRY BOUNDARY

PREVIOUSLY APPROVED PROJECT LIMITS EAAP 1603.00

UNDISTURBED

RUD
DeB
TaB
CrD
MEC
KrB
RaD
AnB
MED
PuC
CRD

- GEOLOGIC FEATURE
- SENSITIVE FEATURE
- PROPERTY BOUNDARY

SOIL UNITS

- CrD: Comfort–Rock
- DeB: Denton Silty Clay
- Erg: Eckrant–Rock
- MEC: Medlin–Eckrant association, undulating
- MED: Medlin–Eckrant association, hilly
- PuC: Purves clay
- Rud: Rumple–Comfort association, undulating
- SuB: Sunev clay loam

0 400 800
1" = 400'

THE PROJECT SITE IS IN THE EDWARDS AQUIFER RECHARGE ZONE

TCEQ-R13
NOV 14 2008
SAN ANTONIO


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


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| COMPANY NAME: DEAN WORD COMPANY | DRAWN BY: DK | CHECKED BY: GDN |
| JOB NAME: GEOLOGIC ASSESMENT | SCALE: 1" = 400' | |
| LOCATION: FM 482, COMAL CO., TEXAS | DATE: 08/11/2008 | |
| IMAGE: AERIALS EXPRESS, 2006 | JOB NUMBER | DRAWING |
| DESCRIPTION: SOILS MAP – NORTH | 10173-07 | 173-07GAMAP.dwg |



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| LOCATION: FM 482, COMAL CO., TEXAS | DATE: 08/11/2008 | |
| IMAGE: AERIALS EXPRESS, 2006 | JOB NUMBER | DRAWING |
| DESCRIPTION: SOILS MAP - SOUTH | 10173-07 | 173-07GAMAP.dwg |

**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: Dean Word Company, Ltd. - Lonestar Quarry

## REGULATED ENTITY INFORMATION

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

2. Total site acreage (size of property): ~ 1923

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 | 0 | ÷ 43,560 = | 0 |
| Total Impervious Cover | 0 | ÷ 43,560 = | 0 |
| Total Impervious Cover ÷ Total Acreage x 100 = 0 | | | 0 |

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

## WASTEWATER TO BE GENERATED BY THE PROPOSED PROJECT

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

| | |
|---|---|
| 100% Domestic | 40 gallons/day |
| __% Industrial | _____ gallons/day |
| __% Commingled | _____ gallons/day |

TOTAL 40 gallons/day ***This number is based on twenty employees using two portable toilets at the site.***

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.

N/A Sewage Collection System (Sewer Lines):

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

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

__ The SCS was previously submitted on _____.
__ The SCS was submitted with this application.
__ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to executive director approval.

The sewage collection system will convey the wastewater to the _____ (name) Treatment Plant. The treatment facility is:
__ existing.
__ proposed.

16. 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" = 400 '.

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):
Comal County Engineer's Office – Preliminary FEMA Floodplain FIRM Map Number 48091C0430F and 48091C0440F dated March 10, 2006

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. ***Final contours are unknown at this time; the final floor elevation will depend on several variables such as rock quality and operational considerations unforeseeable at the time. However, at this time the final floor elevations are estimated to be 725' in the north portion and 695' on the south portion of the site.***

__ 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 4 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)
0 The wells are not in use and have been properly abandoned.
0 The wells are not in use and will be properly abandoned.
4 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.
__ **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. X 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.
**** At the conclusion of the project, a vegetated berm and the pit itself will contain stormwater on site.***

**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:

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

Signature of Customer/ Engineer

11-7-08
Date

**Dean Word Company, Ltd.**
**Lonestar Quarry**

## WPAP Attachment A

### Factors Affecting Water Quality

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

Earthen berms and vegetated buffers located downgradient of the disturbed area(s) are proposed to capture sediment and control the flow of stormwater. Rock berms will also be constructed where stormwater flows leave the active project areas. Normal vehicle maintenance and repairs will be performed on site. Any spills or leaks will be cleaned up in a timely manner and will be disposed of properly. A trash receptacle will be placed onsite for use by employees and visitors.

## WPAP Attachment B

### Volume and Character of Stormwater

Due to the use of Temporary BMPs during construction the character of stormwater runoff which is expected to occur from the proposed project will be essentially the same as prior to the site. As quarrying activities continue, the volume of stormwater runoff from the site will be reduced because the quarry pit will ultimately retain the anticipated onsite and upgradient stormwater runoff.

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

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

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

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

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

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

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

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

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

10. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE 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 ARID CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.

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

12. THE HOLDER OF ANY APPROVED 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.

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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.

FM 1863

KRUEGER CANYON

ZONE A

FINAL EARTHEN BERM & LIMITS OF DISTURBANCE

725' amsl
Estimated Quarry Floor Elevation

UNDISTURBED AREA

PIPELINE EASEMENT (WILL BE RELOCATED)

CONSTRUCTION EXIT

TRUCK SCALE

SCALE HOUSE/TRAILER (NO SLAB ON GRADE)

EXISTING RANCH ROAD

ROAD EASEMENT

ROCK BERM

ROCK BERM ALT 1

ROCK BERM ALT. 2

INTERIM EARTHEN BERM

Initial 10 ac Plant & Quarry Area

APPROX. LOCATION OF INITIAL WASH WATER POND

PROPERTY LINE & QUARRY BOUNDARY (LIMITS OF DISTURBANCE)

CURRENT PROJECT LIMIT & QUARRY BOUNDARY

PREVIOUSLY APPROVED PROJECT LIMITS EAAP 1603.00

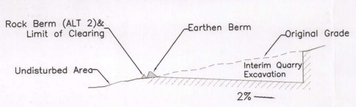
- GEOLOGIC FEATURE
- SENSITIVE FEATURE
- PROPERTY BOUNDARY
- FAULT
- INFERRED
- EARTHEN BERM
- UNDISTURBED AREA

FLOOD PLAIN
- ZONE A
- ZONE AE

0 400 800
1" = 400'

THE PROJECT SITE IS IN THE EDWARDS AQUIFER RECHARGE ZONE

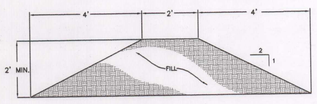
SECTION A-A




Not to scale

## MAINTENANCE PLAN

### COMPACTED EARTHEN BERM



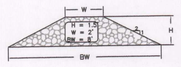

CONSTRUCTION NOTES

1. COMPACTED EARTHEN BERM

INSTALLATION:
COMPRISED OF SOIL AND OVERBURDEN MATTER EITHER GENERATED ONSITE OR DELIVERED FROM OFFSITE. COMPACT WITH HEAVY EQUIPMENT IN 12" (MAX) LIFTS.

MAINTENANCE:
INSPECT WEEKLY AND AFTER EACH RAINFALL. REPLACE AS NECESSARY.

### ROCK BERM (RG-348)



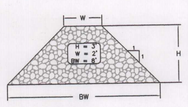

2. ROCK BERM

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 WEEKLY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6". REPLACE WHEN ROCK BECOMES CLOGGED WITH SEDIMENT.

### ALTERNATE # 1 ROCK BERM (WEI)

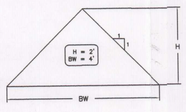



3. ALTERNATE #1 & #2 ROCK BERMS (WEI)

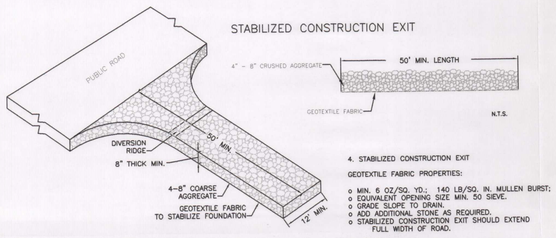
INSTALLATION:
AGGREGATE USED SHOULD BE COMPRISED OF OPEN GRADED 3-5" DIAMETER ROCK. BERM SHOULD BE PLACED PERPENDICULAR TO FLOW LINE.
BERM SHOULD BE BURIED IN A TRENCH APPROX. 4" DEEP.

MAINTENANCE:
INSPECT BERMS WEEKLY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6". REPLACE WHEN ROCK BECOMES CLOGGED WITH SEDIMENT.

### ALTERNATE # 2 ROCK BERM (WEI)




### STABILIZED CONSTRUCTION EXIT




4. STABILIZED CONSTRUCTION EXIT

GEOTEXTILE FABRIC PROPERTIES:
- MIN. 6 OZ/SQ. YD.; 140 LB/SQ. IN. MULLEN BURST;
- EQUIVALENT OPENING SIZE MIN. 50 SIEVE.
- GRADE SLOPE TO DRAIN.
- ADD ADDITIONAL STONE AS REQUIRED.
- STABILIZED CONSTRUCTION EXIT SHOULD EXTEND FULL WIDTH OF ROAD.

NOTE: FINAL EARTHEN BERMS OUTSIDE THE PIT WILL BE STABILIZED WITH NATIVE GRASSES.

STATE OF TEXAS
GARY DANIEL NICHOLLS
82922
LICENSED PROFESSIONAL ENGINEER
11-12-08


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


| REV. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| | | | |

| | | |
|---|---|---|
| COMPANY NAME: DEAN WORD COMPANY | DRAWN BY: SM | CHECKED BY: GDN |
| JOB NAME: WPAP - LONESTAR QUARRY | SCALE: 1" = 400' | |
| LOCATION: FM 482, COMAL CO., TEXAS | DATE: 09/18/2008 | |
| IMAGE: NONE | JOB NUMBER | DRAWING |
| DESCRIPTION: WPAP MAP - NORTH | 10173-08 | 173-08WPAPMAP.dwg |

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

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

APPROX. LOCATION OF INITIAL WASH WATER POND

EXISTING RANCH ROAD

EXISTING RANCH ROAD

FINAL EARTHEN BERM & LIMITS OF DISTURBANCE

PROPERTY LINE & QUARRY BOUNDARY (LIMITS OF DISTURBANCE)

ZONE A

CURRENT PROJECT LIMIT & QUARRY BOUNDARY

UNDISTURBED AREA

PREVIOUSLY APPROVED PROJECT LIMITS EAAP 1603.00

EXISTING QUARRY

UNDISTURBED AREA

ZONE A

EASEMENT

PREVIOUSLY APPROVED PROJECT LIMITS EAAP 1603.00

CURRENT PROJECT LIMIT & QUARRY BOUNDARY

PROPERTY LINE & QUARRY BOUNDARY (LIMITS OF DISTURBANCE)

FINAL EARTHEN BERM & LIMITS OF DISTURBANCE

RECHARGE ZONE TRANSITION ZONE

Estimated Quarry Floor Elevation 695' amsl

RECHARGE ZONE TRANSITION ZONE

UNDISTURBED AREA

ZONE AE

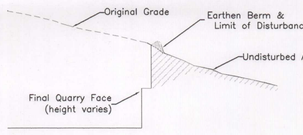
NOTE: FINAL EARTHEN BERMS OUTSIDE THE PIT WILL BE STABILIZED WITH NATIVE GRASSES.

- GEOLOGIC FEATURE
- SENSITIVE FEATURE
- PROPERTY BOUNDARY
- FAULT
- INFERRED
- EARTHEN BERM
- UNDISTURBED AREA
- FLOOD PLAIN
- ZONE A
- ZONE AE

0 400 800
1" = 400'

THE PROJECT SITE IS IN THE EDWARDS AQUIFER RECHARGE ZONE

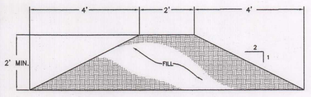
SECTION B-B




Not to scale

## MAINTENANCE PLAN

### COMPACTED EARTHEN BERM



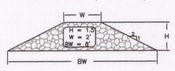

CONSTRUCTION NOTES

1. COMPACTED EARTHEN BERM

INSTALLATION:
COMPRISED OF SOIL AND OVERBURDEN MATTER EITHER GENERATED ONSITE OR DELIVERED FROM OFFSITE. COMPACT WITH HEAVY EQUIPMENT IN 12" (MAX) LIFTS.

MAINTENANCE:
INSPECT WEEKLY AND AFTER EACH RAINFALL. REPLACE AS NECESSARY.

### ROCK BERM (RG-348)



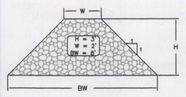

2. ROCK BERM

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 WEEKLY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6". REPLACE WHEN ROCK BECOMES CLOGGED WITH SEDIMENT.

### ALTERNATE # 1 ROCK BERM (WEI)

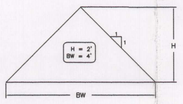



3. ALTERNATE #1 & #2 ROCK BERMS (WEI)

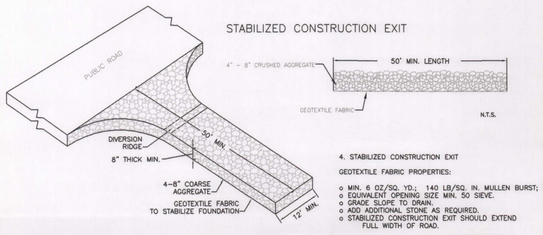
INSTALLATION:
AGGREGATE USED SHOULD BE COMPRISED OF OPEN GRADED 3-5" DIAMETER ROCK. BERM SHOULD BE PLACED PERPENDICULAR TO FLOW LINE.
BERM SHOULD BE BURIED IN A TRENCH APPROX. 4" DEEP.

MAINTENANCE:
INSPECT BERMS WEEKLY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6". REPLACE WHEN ROCK BECOMES CLOGGED WITH SEDIMENT.

### ALTERNATE # 2 ROCK BERM (WEI)




### STABILIZED CONSTRUCTION EXIT




4. STABILIZED CONSTRUCTION EXIT

GEOTEXTILE FABRIC PROPERTIES:

- o MIN. 6 OZ/SQ. YD.; 140 LB/SQ. IN. MULLEN BURST;
- o EQUIVALENT OPENING SIZE MIN. 50 SIEVE.
- o GRADE SLOPE TO DRAIN.
- o ADD ADDITIONAL STONE AS REQUIRED.
- o STABILIZED CONSTRUCTION EXIT SHOULD EXTEND FULL WIDTH OF ROAD.

STATE OF TEXAS
GARY DANIEL NICHOLLS
82522
REGISTERED
PROFESSIONAL ENGINEER

RECEIVED
NOV 14 2008
SAN ANTONIO


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


| REV. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| | | | |

| | | |
|---|---|---|
| COMPANY NAME: DEAN WORD COMPANY | DRAWN BY: SM | CHECKED BY: GDN |
| JOB NAME: WPAP - LONESTAR QUARRY | SCALE: 1" = 400' | |
| LOCATION: FM 482, COMAL CO., TEXAS | DATE: 09/18/2008 | |
| IMAGE: NONE | JOB NUMBER | DRAWING |
| DESCRIPTION: WPAP MAP - SOUTH | 10173-08 | 173-08WPAPMAP.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: Dean Word Company, Ltd. - Lonestar Quarry

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

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

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

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

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

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

**SEQUENCE OF CONSTRUCTION**

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

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

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

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

9. 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.~~ Per 30 TAC 213.5 (b)(4)(C)(viii)(IV)(D)(II)(c) "At a minimum, silt fencing, vegetative buffer strips or equivalent sediment controls are required for all down slope boundaries."

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/~~Agent~~ ENGR

Signature of Customer/~~Agent~~ ENGR

11-7-08
Date

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Temporary Stormwater Section Attachment A**

## 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 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 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 run on during rainfall to the extent that it doesn't compromise clean up activities.

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

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

## Spill Response Actions (continued)

### General Measures (continued)

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

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

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

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

### Cleanup

**(1)** Clean up leaks and spills immediately.

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

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

### Minor Spills

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

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

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

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

**(5)** Contain the spread of the spill.

**(6)** Recover spilled materials.

**Spill Response Actions (continued)**

**Minor Spills (continued)**
**(7)** Clean the contaminated area and properly dispose of contaminated materials.

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

Spills should be cleaned up immediately:

**(1)** Contain spread of the spill.

**(2)** Notify the project foreman immediately.

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

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

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

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

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

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

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

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

## Spill Response Actions (continued)

### Significant/Hazardous Spills (continued)

**(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 11 Austin | (512) 339-2929 |

### Vehicle and Equipment Maintenance

(1) Minor vehicle maintenance tasks (changing of tires, oil and oil filters) will be performed on a designated maintenance area located away from drainage courses, to prevent the runon of stormwater and the runoff of spills. A flex base pad of approximately 150 feet by 100 feet surrounded by a one foot high base berm which will act as secondary containment will be constructed for this purpose. When quarrying requires the maintenance area to be relocated, a similar base pad and berm will be constructed at a location to be determined at that time.

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

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

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

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

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

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

(8) Oil filters disposed of in 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.

**Vehicle and Equipment Fueling**

(1) Vehicle fueling will be performed on a designated fueling area located away from drainage courses, to prevent the runon of stormwater and the runoff of spills. A flex base pad of approximately 150 feet by 100 feet surrounded by a one foot high base berm which will act as secondary containment will be constructed for this purpose. When quarrying requires the fueling area to be relocated, a similar base pad and berm will be constructed at a location to be determined at that time.

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

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

**Dean Word Company, Ltd.**
**Lonestar Quarry**

## 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

**Dean Word Company, Ltd.**
**Lonestar Quarry**

## Temporary Stormwater Section Attachment B

### Potential Sources of Contamination

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

## Temporary Stormwater Section Attachment C

### Sequence of Major Activities

First two rock berms (ALT 1) will be constructed along the downgradient portion of the initial 10 acre quarry area, then another rock berm (ALT 2) will be installed upgradient from the ALT 1 rock berms and downgradient from the initial quarry area. Next, clearing will be initiated in the initial 10 acre plant area and equipment will remove topsoil and push it in all directions from the middle of the proposed plant area creating an earthen berm approximately 2-6' high that will surround the 10 acres as shown on the attached WPAP Site Plan. After clearing is completed, excavation of the quarry pit will begin. A portable rock crushing plant will be set up and crushing and screening operations started in order to make product for use onsite and shipment offsite.
Construction activities proposed for the wash water pond in the existing quarry pit include building earthen berms approximately 15 feet high with 2 to 1 (H:V) sloped sides. The berms of the pond will be comprised of compacted limestone rock that has been mined in the area. The pond will also utilize existing quarry walls that are greater than 25 feet in height.

When the pit is large enough, the portable rock crusher will be relocated into the pit.
It is estimated that this will take three (3) to four (4) months. Portions of the site, less than 10 acres, will be cleared in stages as the quarrying progresses ultimately encompassing the areas labeled "Final Quarry Limits and Earthen Berm" on the attached WPAP Site Plan. The cleared topsoil will be used to construct ever-expanding berms surrounding the cleared area.

Construction entrances/exits will be added where necessary to limit off site tracking. Last, a mobile trailer will be placed for use as a scale house and truck scales will be installed as shown on the WPAP Site Plan.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Temporary Stormwater Section Attachment D**

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

a.) How BMPs and measures will prevent pollution of surface water, groundwater and stormwater that originates upgradient from the site and flows across the site.

Rock berms will be installed downgradient of the initial plant area as shown on the WPAP Site Plan. As the initial plant area is cleared, equipment will remove topsoil and push it in all directions from the middle of the proposed plant area creating earthen berms. The earthen berm on the upgradient side of the initial plant area will be a minimum of 2 feet high and will prevent upgradient flows from contacting the disturbed soils in the initial plant area. The earthen berm on the downgradient side of the initial plant area will be approximately 4-6 feet high and will store runoff from the disturbed initial plant area until the quarry excavation commences and runoff is retained in the quarry. See cross-section A-A in the WPAP Site Plan. Two rock berms will also be constructed downgradient of the initial plant area to treat any stormwater flow leaving the plant site.

As the size of the quarry expands, the earthen berms will expand throughout the life of the project to the "Final Earthen Berm" limits shown on the WPAP Site Plan.

b.) 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 site.

It is not expected that any significant amount of groundwater will be encountered in the quarry excavation or as surface flow in disturbed areas of the site.

The earthen berm on the downgradient side of the initial plant area will be approximately 4-6 feet high and will store runoff from the disturbed initial plant area until the quarry excavation commences and runoff is retained in the quarry. As the size of the quarry expands, the earthen berms will expand throughout the life of the project to the "Final Earthen Berm" limits, as shown on the WPAP Site Plan.

Two rock berms will also be constructed downgradient of the initial plant area to treat any stormwater flow leaving the plant site.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Temporary Stormwater Section Attachment D (continued)**

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

c.) How BMPs and measures will prevent pollutants from entering surface streams, sensitive features or the aquifer.

Earthen and rock berms will be constructed as shown on the attached WPAP Site Plan to prevent pollutants from entering surface streams, sensitive features and the aquifer. As the initial plant area is cleared and topsoil is removed, an earthen berm will be constructed as shown on the Site Plan. The earthen berm on the upgradient side of the initial plant area will be a minimum of 2 feet high and will prevent upgradient flows from contacting the disturbed soils in the initial plant area.

In addition, a natural vegetated buffer with a minimum width of 50 feet will be maintained between the edge of disturbance for the quarry activities and the property lines. This natural vegetated buffer will serve as a final treatment for stormwater runoff leaving the active portion of the site.

Sensitive features located within the final quarry footprint will be temporarily sealed during development of the quarry (see Attachment E). Sensitive features will be sealed when quarrying progresses near the drainage area of the feature. A vegetative buffer will be maintained around each sensitive feature until each is temporarily sealed.

d.) 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.

To the maximum extent practicable TBMPs such as rock berms and natural vegetated areas upgradient of the sensitive features will maintain flow to naturally-occurring sensitive features identified in the geologic assessment, TCEQ inspections or during excavation, blasting, or construction. These types of BMP's slow the flow of water allowing for sedimentation, but allow the flow to be maintained. Earthen berms and the quarry, which store flows, will be used as pollution prevention measures to mitigate runoff from larger disturbed areas. These larger disturbed areas have a greater potential to contain sediment, therefore retention of flows will be used to provide a higher level of protection of water quality of the aquifer.

Any possibly sensitive geologic feature discovered by mining staff 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. After

placement of the rock berm, the active work area of the quarry will be moved to another portion of the pit where the feature cannot be impacted by the continuing quarry operations. A Professional Geologist will be 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.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

## Temporary Stormwater Section Attachment E

**Request to Temporarily Seal a Feature**

The ultimate proposed land-use at the site is limestone quarrying. Each of the naturally occurring sensitive features identified in the Geologic Assessment that are located within the proposed quarrying footprint will eventually be mined out. In order to protect the aquifer from possible contamination of water containing sediment during construction of the quarry, Dean Word Company Ltd. requests to temporarily seal naturally occurring sensitive features S-6, S-7, S-9, S-11, S-27, S-37, S-38, S-44, S-79, S-87*, S-96, S-106, S-110, S-115, S-118, S-120, S-123, S-124, S-133, S-138, S-144, S-150, S-151, S-153, S-155, S-177, S-187, S-198, S-203, S-205 and S-207. Flow will be maintained to each of these features until such time as quarrying progresses near the feature, at which time each will be sealed with topsoil, overburden, base material or flowable fill/concrete in order to create an impermeable plug in the feature. These temporary seals need only to provide protection for a relatively short period of time in that the features will be mined out.

The alternative to sealing these features would be to not seal them, which would pose a greater threat to the aquifer, due to the potential for sediment to enter in stormwater runoff from adjacent disturbed areas. It is not reasonable or practical to avoid mining near or upgradient of sensitive features due to their location and spacing onsite. Mining around the sensitive features would create a safety hazard within the quarry because the features would be left atop pinnacles that would likely be unstable. These pinnacles would be prone to collapse and would create unsafe working conditions within the quarry area. In addition, the removal of the upgradient drainage area would essentially eliminate flow to the features, thereby eliminating their capability to recharge the aquifer.

List of naturally occurring sensitive features to be temporarily sealed and mined out:
S-6, S-7, S-9, S-11, S-27, S-37, S-38, S-44, S-79, S-87*, S-96, S-106, S-110, S-115, S-118, S-120, S-123, S-124, S-133, S-138, S-144, S-150, S-151, S-153, S-155, S-177, S-187, S-198, S-203, S-205, S-207

* Dean Word Company, Ltd plans to, in the near future, extend the well casing of feature S-87 approximately 2 feet above the ground elevation, this will make S-87 not sensitive and will eliminate the need for temporarily sealing it.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

## Temporary Stormwater Section Attachment F

### Structural Practices

Temporary best management practices proposed for the limestone quarry include rock berms and earthen berms. The rock berms are used to limit runoff discharge of sediment. The earthen berms are used to store flows and limit runoff discharge of pollutants from exposed areas of the site as well as to divert flows away from exposed (disturbed) soils. Natural vegetative buffers will be left in place in areas not disturbed and will treat runoff from upgradient disturbed areas.

## Temporary Stormwater Section Attachment I

### Inspection and Maintenance for BMPs

The earthen and rock berms 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.) Any erosion of berms should be backfilled and compacted as soon as possible. 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.

During construction phases of the quarry 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. Ultimately the Lonestar Quarry will be authorized to discharge stormwater under the TPDES General Permit No. TXR050000 for industrial activities. Requirements of the general permit include maintaining a SWP3 which includes inspections of stormwater best management practices and sampling of stormwater that is discharged from the site. If necessary, mine dewatering will be performed in accordance with the numeric effluent limitations noted in the TPDES General Permit No. TXR050000.

| | | Rock Berms | | Earthen Berms |
|---|---|---|---|---|
| Date | Inspected By | >6" silt retained | rock berm clogged | erosion of earthen berm |
| | | | | |
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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.

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 sides of the fence in affected areas.
* silt fencing torn or clogged - replace fencing material as needed if torn or water flow is stopped.

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

Earthen Berm

* Erosion of earthen berm - rebuild berm

**Dean Word Company, Ltd.**
**Lonestar Quarry**

## Temporary Stormwater Section Attachment J

### Schedule of Soil Stabilization Practices

Interim Stabilization

A. Outside the Pit:
Cleared areas and interim earthen berms may be disturbed for more than 14 days without stabilization because it is not practical to be continually stabilizing small areas prior to their excavation and stabilizing the earthen berms that are frequently relocated. The operator requires ample space in areas to be blasted for drilling and related equipment. It is a common industry practice to clear areas that are 2 or 3 times the proposed blast pattern width. These cleared areas will remain cleared until they are blasted. This timing depends upon many factors such as shot sizes, depths, production and sales rates, quality of rock, etc.

Because the soils overburden in these cleared areas have been removed and placed in an earthen berm adjacent to the cleared areas, erosion of these areas is mitigated. The earthen berms upgradient of the cleared areas divert upgradient stormwater away from cleared areas and earthen berms downgradient of cleared areas retain stormwater runoff from the cleared area.

B. Inside the Pit:
Roads and stockpile areas do not need to be stabilized, the requirement for soil stabilization exists in order to control erosion and prevent pollutants from entering surface waters, streams and the aquifer through sensitive recharge features. The disturbed soils in the quarry pit will be retained in the pit thereby eliminating the need for soil stabilization in the pit to prevent pollutants from entering surface waters or streams. The BMP discussed in the WPAP Temporary Stormwater Section Attachment D (7.d.) will mitigate infiltration of stormwater into the quarry floor. The proposed measures already stated in the Project Description will also mitigate infiltration of stormwater. In addition it is not practical to stabilize areas of the pit with vegetation because often times areas of the pit will not be active for some period of time, then be reactivated.

Permanent Stabilization

A. Outside the Pit:
Final earthen berms outside the pit will be stabilized with native grasses. The 60 foot (some areas are over 60 feet) buffer of undisturbed area along the lease line will remain undisturbed so no stabilization practices will be needed.

B. Inside the Pit

The disturbed soils in the quarry pit will be retained in the pit thereby eliminating the need for soil stabilization. The BMP discussed in the WPAP Temporary Stormwater Section Attachment D (d.) will mitigate infiltration of stormwater into the quarry floor. Therefore, since the disturbed areas will be located in the pit no soil stabilization is expected to be necessary at the completion of the project.

**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: Dean Word Company, LTD

**Permanent best management practices (BMPs) and measures that will be used during and after construction is completed. *_Per TCEQ, the word 'permanent' as used on this application refers exclusively and specifically to 'the duration of the project' and it implies no obligation for maintenance requirements after the project 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.

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

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

   N/A 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.

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

N/A 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.

N/A The permanent sealing of or diversion of flow from a naturally-occurring "sensitive" or "possibly sensitive" feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed for any naturally-occurring "sensitive" or "possibly sensitive" features on this site.

X **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.

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

**Responsibility for maintenance of permanent BMPs and measures after construction is complete.** ***Per TCEQ, the word 'permanent' as used on this application refers exclusively and specifically to 'the duration of the project' and it implies no obligation for maintenance requirements after the project is completed.***

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

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

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

Gary Nicholls, P.E.
Print Name of Customer/~~Agent~~ ENGR

Signature of Customer/~~Agent~~ ENGR

11-11-08
Date

**Dean Word Company, Ltd.**
**Lonestar Quarry**

## Permanent Stormwater Section Attachment B

### BMPs for Upgradient Stormwater

Rock berms will be installed downgradient of the initial plant area as shown on the WPAP Site Plan. As the initial plant area is cleared, equipment will remove topsoil and push it in all directions from the middle of the proposed plant area creating earthen berms. The earthen berm on the upgradient side of the initial plant area will be a minimum of 2 feet high and will prevent upgradient flows from contacting the disturbed soils in the initial plant area. The earthen berm on the downgradient side of the initial plant area will be approximately 4-6 feet high and will store runoff from the disturbed initial plant area until the quarry excavation commences and runoff is retained in the quarry. See cross-section A-A in the WPAP Site Plan. Two rock berms will also be constructed downgradient of the initial plant area to treat any stormwater flow leaving the plant site.

As the size of the quarry expands, the earthen berms will expand throughout the life of the project to the "Final Earthen Berm" limits shown on the WPAP Site Plan.

## Permanent Stormwater Section Attachment C

### BMPs for On-site Stormwater

It is not expected that any significant amount of groundwater will be encountered in the quarry excavation or as surface flow in disturbed areas of the site.

The earthen berm on the downgradient side of the initial plant area will be approximately 4-6 feet high and will store runoff from the disturbed initial plant area until the quarry excavation commences and runoff is retained in the quarry. As the size of the quarry expands, the earthen berms will expand throughout the life of the project to the "Final Earthen Berm" limits, as shown on the WPAP Site Plan.

Two rock berms will also be constructed downgradient of the initial plant area to treat any stormwater flow leaving the plant site.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

## Permanent Stormwater Section 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:

Earthen and rock berms will be constructed as shown on the attached WPAP Site Plan to prevent pollutants from entering surface streams, sensitive features and the aquifer. As the initial plant area is cleared and topsoil is removed, an earthen berm will be constructed as shown on the Site Plan. The earthen berm on the upgradient side of the initial plant area will be a minimum of 2 feet high and will prevent upgradient flows from contacting the disturbed soils in the initial plant area.

In addition, a natural vegetated buffer with a minimum width of 50 feet will be maintained between the edge of disturbance for the quarry activities and the property lines. This natural vegetated buffer will serve as a final treatment for stormwater runoff leaving the active portion of the site.

Sensitive features located within the final quarry footprint will be temporarily sealed during development of the quarry (see Temporary Stormwater Section Attachment E). Sensitive features will be sealed when quarrying progresses near the drainage area of the feature. A vegetative buffer will be maintained around each sensitive feature until each is temporarily sealed.

## Permanent Stormwater Section Attachment E

### Request to Seal (Remove) Naturally Ocurring Sensitive Features

30 TAC 213.5 (b)(4)(C)(iv)(I) states: "The permanent sealing of, or diversion of, flow from a naturally occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure should be avoided." The applicant has described numerous Temporary and Permanent BMPs that will be implemented at the site for the purpose of protecting the Edwards Aquifer in compliance with 30 TAC 213, especially from stormwater runoff from the site.

The following information is provided as justification as to why no reasonable and practicable alternative exist.

It is not reasonable or practicable to avoid mining out sensitive features (S-6, S-7, S-9, S-11, S-27, S-37, S-38, S-44, S-79, S-87, S-96, S-106, S-110, S-115, S-118, S-120, S-123, S-124, S-133, S-138, S-144, S-150, S-151, S-153, S-155, S-177, S-187, S-198, S-203, S-205, S-207) and their upgradient watershed due to their location onsite with respect to

## Permanent Stormwater Section Attachment E

**Request to Seal (Remove) Naturally Ocurring Sensitive Features (continued)**

proposed undisturbed areas. Simply mining around the sensitive features would create a safety hazard within the quarry because the features would be left atop pinnacles that would be very tall and slender. These pinnacles would be prone to collapse and wouldcreate unsafe working conditions within the quarry area. The sensitive features spacing, both between each other and from the undisturbed areas is too great to reasonably avoid mining them out because an excessive amount of limestone reserves would have to be left in place.

## Permanent Stormwater Section Attachment F

**Construction Plans**

See WPAP Site Plan.

## Permanent Stormwater Section Attachment G

**Inspection, Maintenance, Repair and Retrofit Plan**

The earthen berms and rock berms 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 example Inspection Form.) Any erosion of berms should be backfilled and compacted as soon as possible.

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.

**Recharge And Transition Zone**
Exception Request Form
30 TAC §213.9 Effective June 1, 1999

Regulated Entity Name: Dean Word Company, Ltd. - Lonestar Quarry

1. X **ATTACHMENT A - Nature of Exception.** A narrative description of the nature of each exception requested is provided as **ATTACHMENT A** at the end of this form. All provisions of 30 TAC §213 Subchapter A for which an exception is being requested have been identified in the description.

2. X **ATTACHMENT B - Documentation of Equivalent Water Quality Protection.** Documentation demonstrating equivalent water quality protection for the Edwards Aquifer is provided as **ATTACHMENT B** at the end of this form.

**ADMINISTRATIVE INFORMATION**

3. X One (1) original and three (3) copies of the completed application has been submitted to the appropriate regional office of the TCEQ.

4. X The applicant understands that no exception will be granted for a prohibited activity in Chapter 213.

5. X The applicant understands that prior approval under this section must be obtained from the executive director for the exception to be authorized.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **RECHARGE AND TRANSITION ZONE EXCEPTION REQUEST FORM** application is hereby submitted for TCEQ review and executive director approval. The request was prepared by:

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

Signature of Customer/Engineer Date 11-7-08

**Dean Word Company, Ltd.**
**Lonestar Quarry**

§213.9 (a)

On behalf of Dean Word Company, Ltd. we are respectfully requesting an exception to the requirement for permanent pollution abatement measures and an exception to the timeframe requirement specified on §213.4 (a)(3) at the proposed Lonestar Quarry in Comal County. The required information is included in this packet.

§213.9 (b)

(1) Name: Dean Word Company, Ltd
Mr. Bryan Word, Partner
Address: P.O. Box 310330, New Braunfels, Texas 78131
Telephone: (830) 606-5000

(2) Site/Project Name: Lonestar Quarry
Site/Project Location: The site is located on the north side of FM 482 approximately 3.5 miles southwest of the intersection of FM 482 and IH-35 in Comal County, Texas as shown on Attachment A map.

(3) Exception: See Attachment A – Nature of Exceptions

(4) Justification: See Attachment B – Documentation of Equivalent Water Quality Protection

(5) Executive Director request for Information: Additional information regarding this exceptions request will be provided upon request of the Executive Director

§213.9 (c)

An exception fee is not required with this application according to TCEQ staff because it is included in the Water Pollution Abatement Plan Application for the site. An Application Fee Form has been included with this WPAP application.

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Exception Form Attachment A**

**Nature of Exceptions**

**Permanent Pollution Abatement Measures:**
Dean Word Company, Ltd hereby requests an exception, in accordance with 30 TAC 213.9, to the requirement to implement permanent best management practices (BMPs) at the conclusion of construction at the subject site. This requirement is set forth generally in 30 TAC 213.5 and more specifically in 30 TAC 213.5(b)(4)(D)(ii) which states in subsection (I) *"BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction."*

The concept behind the requirement for permanent BMPs is that development increases impervious cover, which in turn increases runoff quantity. This increased runoff quantity carries with it an increased concentration of total suspended solids (TSS). Therefore, permanent BMPs are required to detain and treat the runoff prior to its discharge from the site.

This concept is not applicable to the subject quarry development for the following reasons. First, a quarry does not significantly increase impervious cover. The subject quarry site will not have an increase in impervious cover from existing conditions. Secondly, the subject quarry development will not increase runoff from the site. In fact runoff from the site will be reduced from predevelopment quantities. The project will basically create a large basin which will not receive a significant volume of runoff from upgradient areas and which will not discharge to surface waters since it is much deeper than the lowest adjacent grade. Stormwater that is retained in the pits will not flow out of the pits due to their great depth. Therefore, the technical basis to implement permanent BMPs, namely an increase in impervious cover, and an increase in runoff quantity (and associated increase in runoff TSS concentration), will not occur at the subject site, so permanent BMPs should not be required at the site.

This exception from permanent BMPs, if granted, will be recorded in the county deed records, with a notice that if land use changes, the exemption for the whole site as described in the property boundaries required by §213.4(g) of this title, may no longer apply and the property owner must notify the appropriate regional office of these changes.

**Timeframe requirement specified on §213.4 (a)(3):**
Dean Word Company, Ltd hereby requests an exception, in accordance with 30 TAC 213.9, to the requirement specified on §213.4 (a)(3) that states *"An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50% of the total construction has not been completed within ten years from the initial approval of a plan."*

**Dean Word Company, Ltd.**
**Lonestar Quarry**

**Exception Form Attachment A**

**Nature of Exceptions (continued)**

Quarries, by nature, are long term projects. The subject site will likely take as many as 50 years or even more to mine. Furthermore, it is not possible to know at this time how long the quarrying will take, many variables such as rock quality and market demands are involved and their variability makes in part for the extended length of the process and makes it difficult to estimate what percentage will be completed ten years from now.

The rules in Chapter 213 were intended for projects that have a much smaller project life than quarries do, therefore due to the different nature of the activities proposed on the subject WPAP application, Dean Word Company, Ltd believes that an exception to §213.4 (a)(3) should be granted.

**RTI HOT MIX LTD**
**Kucera Site**

**Exception Form Attachment B**

**Documentation of Equivalent Water Quality Protection**

Equivalent water quality protection for the Edwards Aquifer will be provided at the proposed quarry site as demonstrated by the following.

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."* The notion is that stormwater, contaminated due to its contact with sediment resulting from a regulated activity, is going to leave the property where the regulated activity is taking place. This contaminated stormwater would then potentially enter surface water and be available for infiltration through a significant recharge feature in a downgradient streambed.

When the pit is established (typically 6-8 months), stormwater that contacts sediment in the quarry will be completely retained and will not be available for infiltration through significant recharge features in a streambed downgradient. In this manner, the quarry pit will serve to provide equivalent (actually superior due to its ability to retain 100% of the sediment loading associated with the average annual precipitation without discharge to the surface) water quality protection to the Edwards Aquifer.

Protection of the aquifer with regard to infiltration will be ensured because the quarry operator will report any geologic features uncovered during mining. These features will be protected, rated and dealt with as described in the Temporary Stormwater Section, Attachment D, herein. This method of protection is essentially the same as that used by utility trench contractors working in the recharge zone.

Similar Exception Requests to Permanent BMPs for quarrying activities have been granted (without calculations demonstrating 80% TSS removal) for other quarries over the Recharge and Contributing Zones based on the nature of the regulated activity, the BMPs provided, commission regulations and consistency with previous quarry approvals pursuant to 30 TAC 213.

The requested exception to the time limit for completion of construction of the proposed quarry will in no way cause any additional threat to water quality or the aquifer.

Clearing and quarrying is proposed to be initiated in relatively small portions of the site (<10 ac) over a long period of time. As each cleared area is mined, runoff from that area is no longer a concern in terms of stormwater runoff quality because the pit will retain the stormwater. Each area to be cleared and mined is similar to a separate, small project in that they will have their own temporary BMPs and the adjacent quarry pit to act

**Documentation of Equivalent Water Quality Protection (continued)**

as a retention pond. Therefore the amount of time to accomplish the project will have no adverse effect on the quality of stormwater runoff from the site or on the aquifer.

WEI believes that the Exceptions Request and information provided herein, demonstrates sufficiently that granting both exceptions to Dean Word Company, Ltd will provide equivalent water quality protection as intended by 30 TAC 213.

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

I **Bryan Word, P.E.**,
Print Name

**Partner**,
Title - Owner/President/Other

of **Dean Word Company, Ltd.**,
Corporation/Partnership/Entity Name

have authorized **Gary D. Nicholls, P.E.**
Print Name of Agent/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 applicants who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

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

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

Applicant's Signature — Date: 9.17.08

THE STATE OF Texas §

County of Kendall §

BEFORE ME, the undersigned authority, on this day personally appeared Bryan Ward 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 17th day of September, 2008.

NOTARY PUBLIC

Charlie Tehas
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 4/11/09

CHARLIE TEHAS
MY COMMISSION EXPIRES
April 11, 2009

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

NAME OF PROPOSED REGULATED ENTITY: Lonestar Quarry
REGULATED ENTITY LOCATION: New Braunfels, Comal County, Texas, 78132
NAME OF CUSTOMER: Dean Word Company, Ltd.
CONTACT PERSON: Bryan Word PHONE: (830) 625-6325
(Please Print)

Customer Reference Number (if issued): CN 600124812 (nine digits)

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

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

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

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

☐ **Austin Regional Office**

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

■ **San Antonio Regional Office**

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

**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 | 1923 | 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 | $ |

Signature

9.17.08
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<br>5 < 10<br>10 < 40<br>40 < 100<br>100 < 500<br>≥ 500 | $1,500<br>$3,000<br>$4,000<br>$6,500<br>$8,000<br>$10,000 |
| Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur) | < 1<br>1 < 5<br>5 < 10<br>10 < 40<br>40 < 100<br>≥ 100 | $3,000<br>$4,000<br>$5,000<br>$6,500<br>$8,000<br>$10,000 |

**Organized Sewage Collection Systems and Modifications**

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

**Underground and Aboveground Storage Tank System Facility Plans and Modifications**

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

**Exception Requests**

| PROJECT | FEE |
|---|---|
| Exception Request | $500 |

**Extension of Time Requests**

| PROJECT | FEE |
|---|---|
| Extension of Time Request | $150 |

**DEAN WORD COMPANY, LTD.**
PH. 830-625-2365 P.O. BOX 310330
**NEW BRAUNFELS, TEXAS 78131-0330**

**No.** 006100

September 18, 2008

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

**DOLLARS**

**JPMORGAN CHASE BANK**
**NEW BRAUNFELS, TEXAS**

**DEAN WORD COMPANY, LTD.**

⑈006100⑈ ⑆111001150⑆ ⑈0580025802⑈

**DEAN WORD COMPANY, LTD.**
New Braunfels, Texas 78131

PLEASE DETACH AND KEEP THIS STATEMENT
RECEIPT NOT REQUIRED RETURN BOTH PARTS IF ERROR IS FOUND.
BY ENDORSEMENT THE CHECK IS ACCEPTED IN FULL PAYMENT OF FOLLOWING.

TCEQ

# TCEQ Core Data Form

TCEQ Use Only

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

## SECTION I: General Information

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

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

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

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

☒ Yes ☐ No — New Water Pollution Abatement Plan Aplication

| 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 600124812 | | RN |

## SECTION II: Customer Information

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

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

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

**7. General Customer Information**

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State) ☒ No Change**

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

| 8. Type of Customer: | | | |
|---|---|---|---|
| ☐ Corporation | ☐ Individual | ☐ Sole Proprietorship- D.B.A | |
| ☐ City Government | ☐ County Government | ☐ Federal Government | ☐ State Government |
| ☐ Other Government | ☐ General Partnership | ☐ Limited Partnership | ☐ Other: |

**9. Customer Legal Name** *(If an individual, print last name first: ex: Doe, John)* — *If new Customer, enter previous Customer below* — *End Date:*

**10. Mailing Address:**

City | State | ZIP | ZIP + 4

**11. Country Mailing Information** *(if outside USA)*

**12. E-Mail Address** *(if applicable)*

**13. Telephone Number** ( ) -

**14. Extension or Code**

**15. Fax Number** *(if applicable)* ( ) -

**16. Federal Tax ID** *(9 digits)*

**17. TX State Franchise Tax ID** *(11 digits)*

**18. DUNS Number** *(if applicable)*

**19. TX SOS Filing Number** *(if applicable)*

**20. Number of Employees**

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

**21. Independently Owned and Operated?**

☐ Yes ☐ No

## SECTION III: Regulated Entity Information

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

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information ☐ No Change** *(See below)*

**If "NO CHANGE" is checked and Section I is complete, skip to Section IV, Preparer Information.

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

Lonestar Quarry

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 24. Street Address of the Regulated Entity: *(No P.O. Boxes)* | | | | | | | | |
| | City | | State | | ZIP | | ZIP + 4 | |
| 25. Mailing Address: | P.O. Box 310330 | | | | | | | |
| | City | New Braunfels | State | TX | ZIP | 78131 | ZIP + 4 | 0330 |

| 26. E-Mail Address: | | |
|---|---|---|
| 27. Telephone Number | 28. Extension or Code | 29. Fax Number *(if applicable)* |
| ( 830 ) 606-5000 | | ( 830 ) 606-5008 |

| 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) |
|---|---|---|---|
| 1422 | | 212312 | |

| 34. What is the Primary Business of this entity? *(Please do not repeat the SIC or NAICS description.)* |
|---|
| Construction |

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

| 35. Description to Physical Location: | From San Antonio, take IH-35 North. Exit Schwab Rd. (Exit 180) and go left. Road will "T" into FM 482. Go right for about 1.2 miles. Site is accessed through an easement on another company's property. Please call Westward Environmental for access to the site. |
|---|---|

| 36. Nearest City | County | State | Nearest ZIP Code |
|---|---|---|---|
| Schertz | Comal | TX | 78132 |

| 37. Latitude (N) In Decimal: | 29.6633 | | 38. Longitude (W) In Decimal: | 98.2125 | |
|---|---|---|---|---|---|
| Degrees | Minutes | Seconds | Degrees | Minutes | Seconds |
| 29 | 39 | 48 | 98 | 12 | 45 |

**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: |

## SECTION IV: Preparer Information

| 40. Name: | Sergio Martinez | 41. Title: | Consultant |
|---|---|---|---|

| 42. Telephone Number | 43. Ext./Code | 44. Fax Number | 45. E-Mail Address |
|---|---|---|---|
| ( 830 ) 249-8284 | | ( 830 ) 249-0221 | smartinez@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: | Dean Word Company, Ltd. | Job Title: | Partner | |
|---|---|---|---|---|
| Name *(In Print)*: | Bryan Word | | Phone: | ( 830 ) 606-5000 |
| Signature: | | | Date: | |