

# MUNICIPAL SOLID WASTE PERMIT MAJOR AMENDMENT

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## PART III-ATTACHMENT G LANDFILL GAS MANAGEMENT PLAN



***NAME OF PROJECT: Beck Landfill***

***MSW PERMIT APPLICATION NO.: 1848A***

***OWNER: Nido, LTD (CN603075011)***

***OPERATOR: Beck Landfill (RN102310968)***

***CITY, COUNTY: Schertz, Guadalupe County***

*Major Amendment: September 2022*

*Revision 1-January 2023*

*Revision 2-March 2023*

*Revision 3-July 2023*

Prepared by:



Civil & Environmental Consultants, Inc.

Texas Registration Number F-38  
1221 S MoPac Expressway  
Suite 350,  
Austin, Texas 78746  
(512) 329-0006



## Contents

	<i>30 TAC §§330.159, 330.125, 330.371</i>
1.0 Introduction.....	1
2.0 Landfill Gas Management Plan.....	3
Introduction.....	3
Facility Boundary Monitoring Network .....	3
Gas Monitoring Probe Installation.....	3
3.0 Landfill Gas Monitoring Procedures.....	8
4.0 Landfill Gas Monitoring Exceedance Record Keeping and Reporting.....	9

## List of Figures

- Figure G-1 - Methane Monitoring Well Locations
- Figure G-2 - Proposed Landfill Gas Well Design
- Figure G-3 – Gas Vent Plan

## List of Appendices

- APPENDIX G-A**  
Gas Probe Installation Report
- APPENDIX G-B**  
Typical Gas Monitoring Data Form



## 1.0 Introduction

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30 TAC §§330.159, 330.125, 330.371

The site manager is responsible for executing the Landfill Gas Management Plan in order to ensure that the concentration of methane gas generated by the facility does not exceed 1.25% by volume in facility structures (excluding gas control or recovery system components, if any), and the concentration of methane gas does not exceed 5% by volume in monitoring points, probes, subsurface soils, or other matrices at the facility boundary defined by the legal description in the permit.

### Type and Frequency of Monitoring

Beck LF determined the type and frequency of monitoring based upon the factors described herein.

**Soil Conditions:** Within the LF perimeter flood control dike and along Lines D, E, F, G, and the northeastern side of A, the dominant soil type is mapped as Sunev loam, 0 to 1 percent slopes. This well drained soil may be up to 72 inches deep, comprised of up to 70% calcium carbonate, and is defined as Hydrologic Soil Group B. Along the northwestern side of Line A, the dominant soils type is the Barbarosa silty clay (0 to 1 percent slopes). This well drained soil may be up to 72 inches deep, comprised of clayey alluvium, and is defined as Hydrologic Soil Group C. Along Lines B and C, the dominant soil type is the Bosque and Seguin soils, frequently flooded. This well drained soil is typical of floodplains and may be up to 62 inches deep, comprised of up to 20% calcium carbonate, and defined as Hydrologic Soil Group B. These soils are not hydric.

**Hydraulic and Hydrologic Conditions:** The Landfill is constructed within an oxbow of the Cibolo Creek. The floor of the landfill is keyed into the Taylor-Navarro Shale, a clay formation that acts as a natural, impermeable liner. The landfill is enclosed by a slurry trench within a compacted clay embankment. The embankment and slurry trench were designed to isolate the landfill from communication with shallow, perched groundwater associated with the surrounding Cibolo Creek.

**Location of Facility Structures and Property Boundaries:** There are only three, permanent, enclosed structures within the facility boundary: the readymix plant office located approximately

885 feet from the toe of the embankment; the scalehouse located approximately 610 feet from the toe of the embankment, and an uninhabited house located approximately 1,030 feet from the perimeter embankment. These structures are shown on Figure D1-1 in Attachment D. All other structures at the facility are temporary. Monitoring of these enclosed structures is not proposed at this time. If the concentration of methane in the landfill gas monitoring probes approaches the LEL monitoring of these enclosed structures will be considered.

Utility Lines and Pipelines: The City of Schertz GIS information shows two utility lines that approximately parallel the northwest side of the landfill (along Lines B and C). One is an old wastewater line, constructed of clay pipe, the other is a cast-iron water line. However, Beck Landfill requested that the City of Schertz utility department mark any utilities crossing the site and only the wastewater line is present. The clay pipe wastewater line is approximately 150 to 200 feet northwest of the toe of the flood-control dike along which the landfill gas monitoring probes are installed. Utility trench gas vents will be installed where this line crosses the permit boundary. Gas vent TV-1 will be installed at the eastern end of the utility line and TV-2 will be installed at the western end. Figure G-3 shows the location of the sanitary sewer line and the proposed locations of TV-1 and TV-2. A typical detail for the utility trench gas vents is also included on this figure. The vents will be equipped with monitoring ports for routine monitoring. Vents will also be placed where any future utilities cross the permit boundary.

## 2.0 Landfill Gas Management Plan

### Introduction

This Landfill Gas Management Plan (“Plan”) has been developed for the Beck Landfill, a Type IV landfill in Schertz, Texas, as required by 30 Tex. Admin. Code (TAC) §330.63(g). This Plan addresses the requirements set forth in 30 TAC §330.371. The Plan describes the proposed system, including installation procedures, monitoring procedures, and procedures to assess the need for maintenance, repair, or replacement; and backup plans to be used if the monitoring system becomes ineffective or must be expanded. This Plan also outlines notification procedures and possible remediation activities, if required.

The requirements of this landfill gas management plan will be in effect through the remainder of the operating life of the landfill, landfill closure, and will continue for a period of 5 years after certification of final closure of the facility, unless altered by TCEQ. Any revisions to this plan will be submitted to TCEQ for review and approval. Information may be submitted to the Executive Director, to reduce gas monitoring and control. The information must demonstrate no potential for gas migration beyond the property boundary or into on-site structures. Gas monitoring shall be revised & maintained as needed; post-closure land use shall not interfere with the gas monitoring system and all utility trenches crossing the facility shall be vented & monitored.

### Facility Boundary Monitoring Network

Six landfill gas monitoring probes are to be installed along the northwest exterior toe of the flood control dike surrounding the landfill opposite grid markers 5, 10, 15, 20, 25 and 30 (Fig. 8). The nominal spacing between the landfill gas monitoring probes is 500 feet as measured along the top of the flood control dike. The probes will be labeled as MM-1 through MM-6 in the order presented above. A single probe is specified at each location to accommodate the heterogeneity of the alluvial deposits through which landfill gas might migrate,

### Gas Monitoring Probe Installation

The landfill gas monitoring probes will be drilled and installed by driller registered in the state of Texas under the supervision of a licensed professional geoscientist or engineer. The borings will be advanced using hollow-stem augers with samples visually classified and logged in accordance

with the Unified Soil Classification System (ASTM No. D-2487). If in the opinion of the supervising geologist or engineer, the materials encountered are too impermeable to allow migration of landfill gas emissions, the borings may be moved left or right along the toe of the flood control dike to find more suitable subsurface conditions for potential gas migration through the vadose zone.

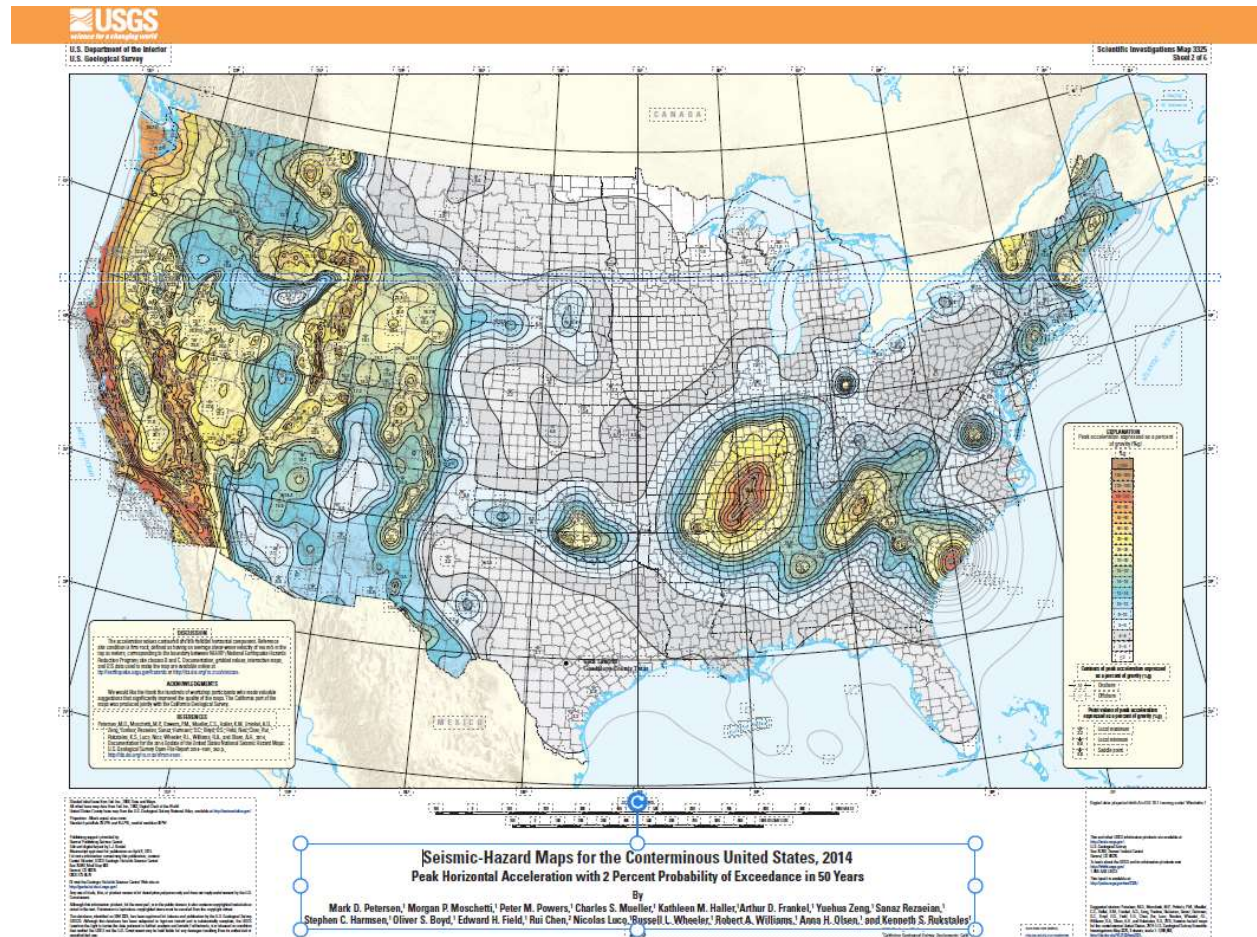
The probes (Fig. 9) will be screened with factory fabricated 1/2-inch diameter 0.010 inch Schedule 80 PVC screen from the total depth of the probe, less an end cap, to no less than 4 or 5 feet below the ground surface (Fig 8). A solid Schedule 80 PVC riser will extend upward from the screen to approximately 3 feet above the ground surface capped with a quick-connect device to allow purging and monitoring with the gas monitoring meter. All joints will either be threaded or use compression fittings; no glue or solvent-based welding is permitted.

A 20-40 mix of silica sand or concrete sand (ASTM C-33), as available, will be tremied around the probe screen to a minimum of 6 inches above the top of the screen. Followed by hydrated bentonite pellets to 6 inches below the ground surface. A lockable steel well-head protector will be installed over the riser and a 4-foot by 4-foot by 6-inch thick reinforced concrete pad poured around the steel well-head protector to stabilize and protect the well head. Pea gravel, or the equivalent, will be placed around the riser within the steel well-head protector to stabilize the monitoring probe, and one or more weep holes will be drilled into the bottom of the steel well-head protector to allow drainage of excess moisture. Concrete filled steel bollards will be installed around the surface pad as deemed necessary to provide additional protection to the well-head.

Boring/completion logs for the landfill gas monitoring robes will be prepared, submitted to TCEQ and to the Texas Department of Licensing and Regulation (DLR), and retained in the site operating record.

Installation of landfill gas monitoring probes around the remainder of the landfill is unnecessary. Should any landfill gas penetrate the slurry wall and flood control dike, it would either be discharged to the atmosphere or enter the vadose zone, which terminates at Cibolo Creek. The creek, then, is a barrier to landfill gas migration. Other than on the northwest side of the landfill, there are no structures in which landfill gas could accumulate between the landfill and the creek.

peak horizontal acceleration zone of 2-4% within the Horizontal Acceleration with 2% probability exceedance in 50 years. Therefore, the Beck Landfill does not appear to be at seismic risk (see below and Figure G5-a on the following page).



### Data on Unstable Areas (§330.559)

30 TAC 330.559 defines an unstable area as a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of a landfill's structural components responsible for preventing releases from the landfill. Unstable areas can include poor foundation conditions, areas susceptible to mass movement, and karst terrains. The owner or operator shall consider the following factors, at a minimum, when determining whether an area is unstable:

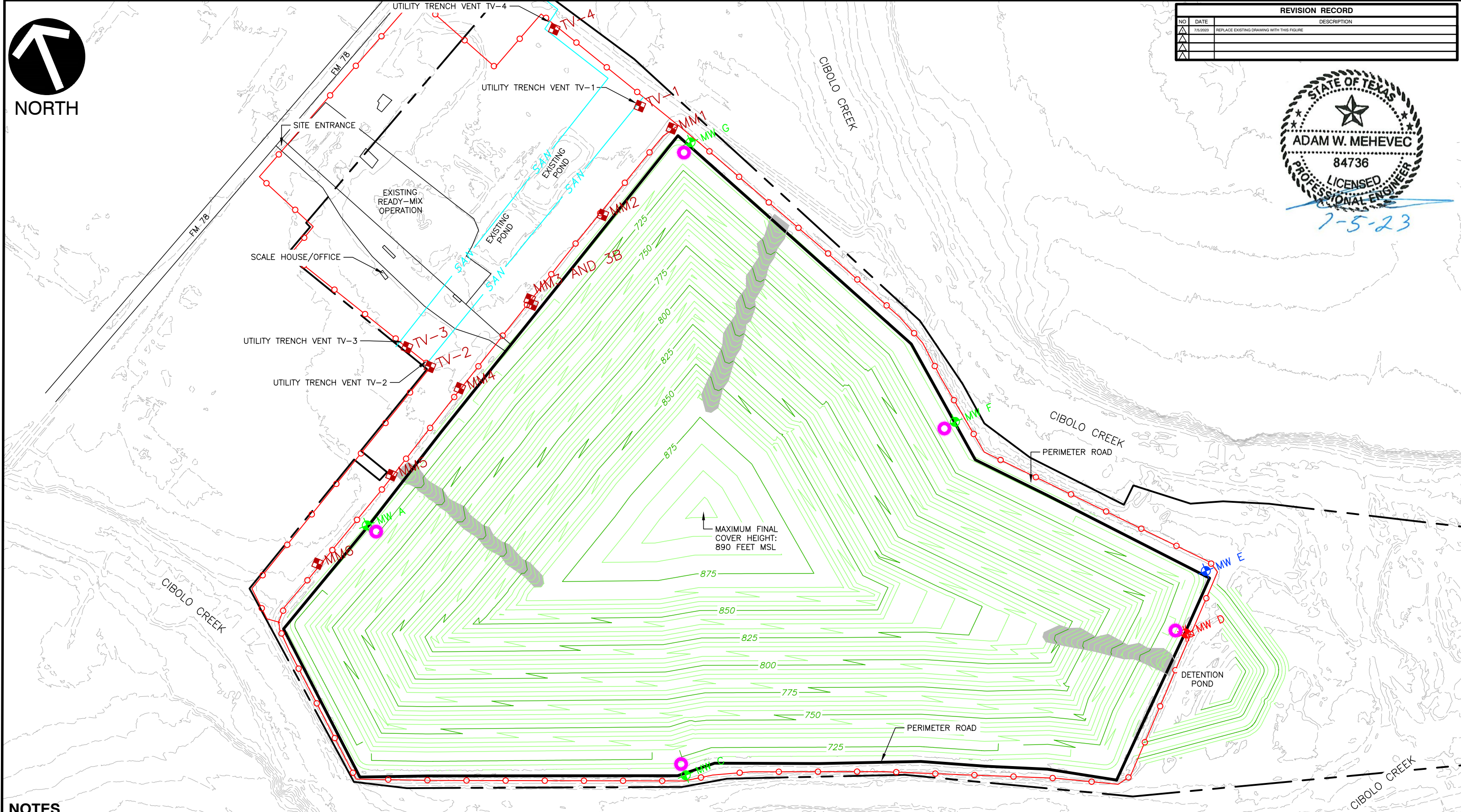
- (1) on-site or local soil conditions that may result in significant differential settling;
- (2) on-site or local geologic or geomorphologic features; and
- (3) on-site or local human-made features or events (both surface and subsurface).

The Beck Landfill excavates through Pleistocene-age terrace deposits (clay, sand and gravel) and into the undivided Cretaceous-age Navarro Group and Marlbrook Marl, which consist of clay and shale material (impermeable). No on-site geologic or geomorphologic features have been observed. No on-site or local

P:\310-000\311-653\CADD\DWG\SW01\311653-BECK LANDFILL GAS MONITORING PROBE LOCATION PLAN G-1.dwg[6-1] LS:(7/3/2023 - amehevec) - LP: 7/3/2023 5:00 PM



REVISION RECORD		
NO	DATE	DESCRIPTION
△	7/5/2023	REPLACE EXISTING DRAWING WITH THIS FIGURE
△		
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△		



**NOTES**  
 1 UTILITIES SHALL BE FIELD LOCATED TO ENSURE VENT IS PLACED WITHIN CONFINES OF THE UTILITY TRENCH.

**REFERENCE**  
 TOPOGRAPHIC INFORMATION FROM AERIAL SURVEY BY FIRMAK: (SEPTEMBER 15, 2021) AUGMENTED WITH A PORTION OF THE EXISTING GROUND SURFACE PREPARED BY CEC.

**SCALE IN FEET**  
 0 400 800

LEGEND	
	PROPOSED UTILITY TRENCH VENT
	EXISTING MONITOR WELL
	EXISTING GAS PROBE
	EXISTING PIEZOMETER
	MONITOR WELL TO BE REMOVED
	PROPOSED MONITOR WELL
	LANDFILL PERMIT BOUNDARY
	LANDFILL FOOTPRINT BOUNDARY
	EXISTING SANITARY SEWER LINE
	LANDFILL CONTOURS ARE TOP OF FINAL COVER.
	FENCE (BARBED-WIRE OR CHAIN LINK)

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**BECK COMPANIES**  
 NIDO, LTD  
 BECK LANDFILL  
 BEXAR COUNTY, TEXAS

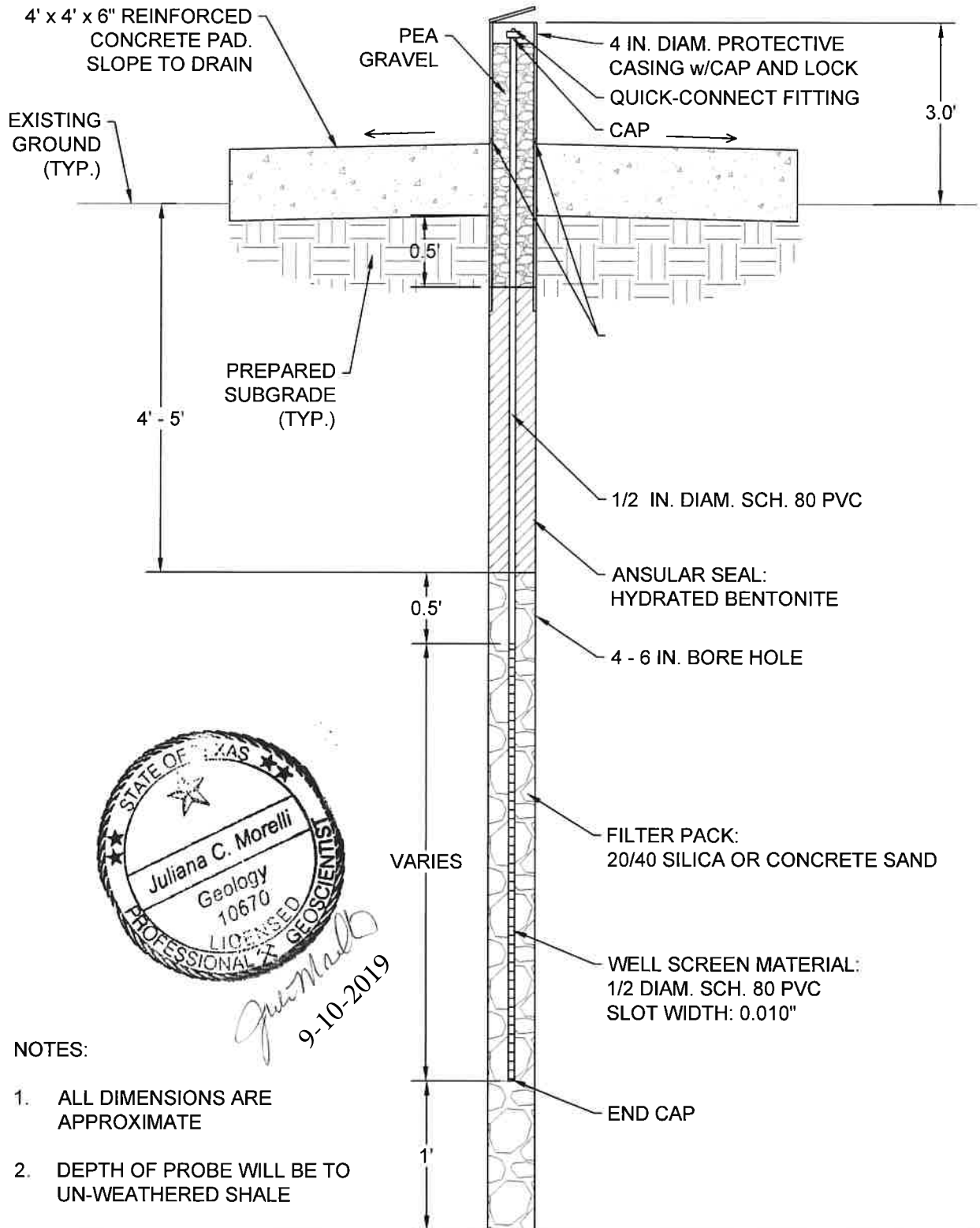
**METHANE MONITORING WELL LOCATIONS**

DRAWN BY:	MFV	CHECKED BY:	AWM	APPROVED BY:	AWM	FIGURE NO.:	G-1
DATE:	07/2023	DWG SCALE:	1" = 400'	PROJECT NO.:	311-653		



THIS DRAWING WAS PREPARED BY POWER ENGINEERS, INC. FOR A SPECIFIC PROJECT, TAKING INTO CONSIDERATION THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING OR ANY INFORMATION CONTAINED IN THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH POWER AND POWER'S CLIENT IS GRANTED.

REV1	ISSUE_FOR_CONSTRUCTION	08/20/19	SMT	JCM	JCM	
REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD



**NOTES:**

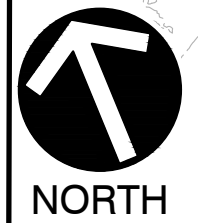
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2. DEPTH OF PROBE WILL BE TO UN-WEATHERED SHALE

POSTOAK\_GASPROBE.DWG

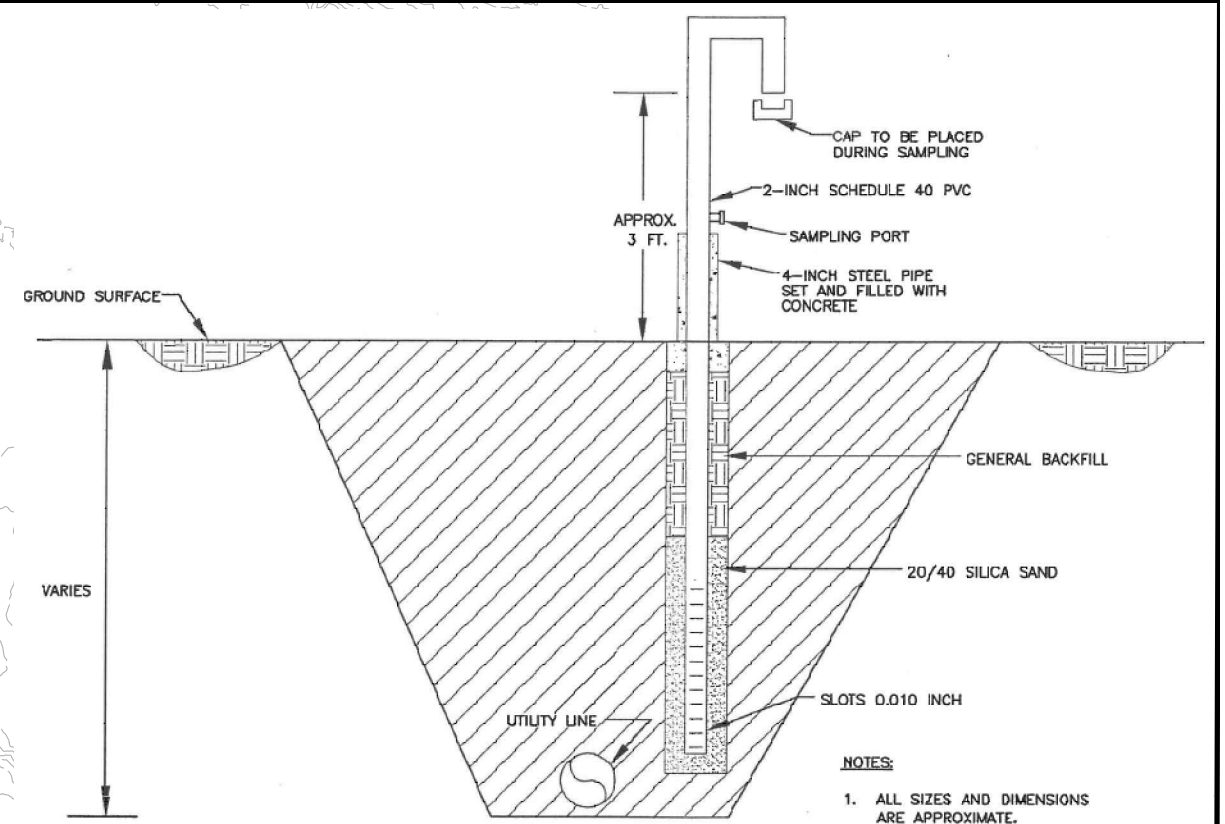
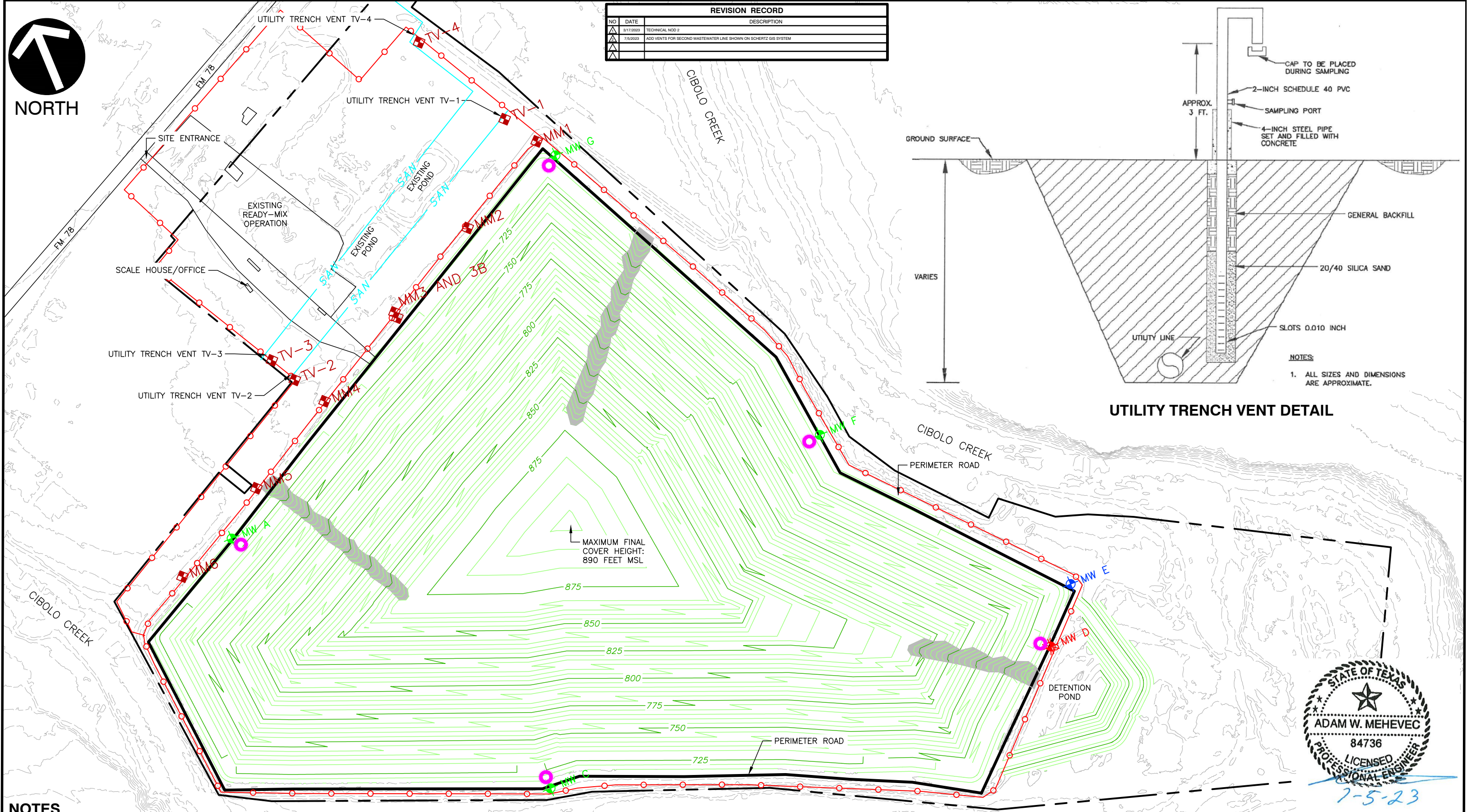
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		DRN	SMT	08/19/19		SCHERTZ, GUADALUPE COUNTY, TX	150051	1
		CKD	JCM	08/19/19		PROPOSED LANDFILL GAS WELL DESIGN		
N/A	N/A	SCALE:	NONE				DRAWING NUMBER	
REFERENCE DRAWINGS		FOR 8.5x11 DWG ONLY						

Figure G-2

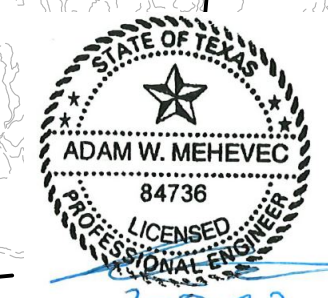
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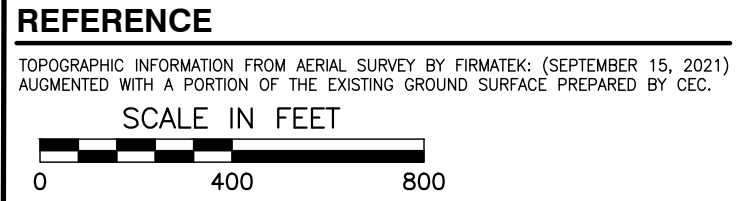
REVISION RECORD		
NO	DATE	DESCRIPTION
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2	7/5/2023	ADD VENTS FOR SECOND WASTEWATER LINE SHOWN ON SCHERTZ GIS SYSTEM



**UTILITY TRENCH VENT DETAIL**



**NOTES**  
 1. UTILITIES SHALL BE FIELD LOCATED TO ENSURE VENT IS PLACED WITHIN CONFINES OF THE UTILITY TRENCH.



**LEGEND**

	TV-1	PROPOSED UTILITY TRENCH VENT		LANDFILL PERMIT BOUNDARY
		EXISTING MONITOR WELL		LANDFILL FOOTPRINT BOUNDARY
		EXISTING GAS PROBE		EXISTING SANITARY SEWER LINE
		EXISTING PIEZOMETER		LANDFILL CONTOURS ARE TOP OF FINAL COVER.
		MONITOR WELL TO BE REMOVED		FENCE (BARBED-WIRE OR CHAIN LINK)
		PROPOSED MONITOR WELL		

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 BEXAR COUNTY, TEXAS

DRAWN BY:	MFV	CHECKED BY:	AWM	APPROVED BY:	AWM	FIGURE NO.:	G-3
DATE:	03/2023	DWG SCALE:	1" = 40'	PROJECT NO.:	311-653		

### **3.0 Landfill Gas Monitoring Procedures**

The concentration of methane in the landfill gas monitoring probes and vents will be measured on a quarterly basis per calendar year, with two of those monitoring times, to the extent possible, corresponding with sampling of the ground water monitoring wells at the landfill. More frequent monitoring may be used at locations where gas migration is occurring or accumulating. The integrity and labelling of the monitoring probes and vents, including the integrity of the steel, well-head protectors, locks, and concrete pads, will be inspected during or before each monitoring event and repairs or replacement made as needed. Repair or replacement of any landfill gas monitoring probes or vents will be documented and retained in the site operating record. Sampling for specified trace gases, may be required by the executive director when there is a possibility of acute or chronic exposure due to carcinogenic or toxic compounds. For the utility trench vents, the cap on the vent shall be closed for a minimum of thirty minutes before the concentration of methane is measured from the sampling port. Once the measurement has been taken, the cap on the vent will be removed and left open.

Beck Landfill uses a four-gas monitoring instrument, -- carbon monoxide, hydrogen sulfide, and oxygen in addition to methane and the LEL. This instrument is suitable for surface monitoring and for sampling the landfill gas monitoring probes and vents. Operation of the device should be in accordance with the instrument manual. If at any time the instrument fails, it will be repaired or replaced, TCEQ will be informed in writing, and the repair or replacement noted in the site operating record. Results of all methane monitoring events, including purge volumes, will be retained in the site operating record. Gas monitoring probes will also be monitored for water level with a water-level meter. The meter will be used to measure the depth to water within the monitoring probes. Results will be recorded on an appropriate data sheet, such as the Typical Gas Monitoring Data Form provided in Appendix G-B.

#### 4.0 Landfill Gas Monitoring Exceedance Record Keeping and Reporting

If methane gas is detected in excess of the following limits, the danger of explosion should be considered imminent. The contingency plan will be implemented if methane gas readings at any location exceed:

Location		Maximum Allowable Methane Concentration
On-Site Structures		1.25 percent
Permitted Boundary		5.00 percent

If the facility is performing quarterly landfill gas monitoring in accordance with Title 30 TAC §330.371 and methane is detected at a concentration above either of the limits specified in §330.371(a), then you must submit monitoring reports and take the following actions in accordance with §330.371(c):

1. Immediately take all necessary steps to ensure protection of human health and notify the Executive Director, local and county officials, emergency officials, and the public;
2. Within seven days of detection, place in the operating record the methane gas levels detected and a description of the steps taken to protect human health; and
3. Within 60 days of detection, implement a remediation plan for the methane gas releases, place a copy of the plan in the operating record, provide a copy to the executive director, and notify the executive director that the plan has been implemented. The plan shall describe the nature and extent of the problem and the proposed remedy. After review, the executive director may require additional remedial measures.

Procedures for notification and implementing a remediation plan are outlined below:

- Notification to the Executive Director shall be made in writing to the TCEQ region office, and to the TCEQ MSW Permits Section at the following address:

MC124

Municipal Solid Waste Permits Section  
Waste Permits Division  
Texas Commission on Environmental Quality  
P.O. BOX 13087  
Austin, Texas 78711-3087

- Notification to the local and county officials (mayors, council persons, and commissions), emergency officials (such as local volunteer and city/county fire departments and emergency medical personnel), adjacent property owners, and the public should include both verbal and follow up written communication. The notice should inform them about the developing situation at the facility, including which monitoring points are involved and the actions being taken. Records of those contacts must be maintained in the facility's site operating record as required by Title 30 TAC §330.125.
- If contingencies and plans for landfill gas remediation are not already part of the facility permit, a remediation plan should be submitted to the TCEQ as a permit modification pursuant to Title 30 TAC §305.70. The modification may propose a variety of changes to the site operations, and depending on the nature of the remedial action, different provisions of the §305.70 modification rule may apply. The permit modification should be submitted to the TCEQ at the address listed above within 60 days of detecting methane above the limits in Title 30 TAC §330.371(c). Note that §330.371(c) requires that the remediation plan also be implemented within 60 days of methane detection above limits; therefore owners and operators should not wait until the permit modification is issued to implement the remediation plan.

If Methane is detected above the limits in §330.371(a), more frequent monitoring (for example, monthly or weekly) may be necessary. During the period of more frequent monitoring, reports should still be submitted quarterly.

#### 4.1 Immediate Actions to Protect Human Health

The following actions will be taken immediately per Title 30 TAC §330.371(c)(1):

1. Inform the landfill manager and/or site engineer of the reading. If limits are exceeded in a building, the building will be evacuated in an orderly fashion as described in Section 4.3.4. A

representative of the owner or operator will contact (in writing and verbally):

- a) The MSW Permits Section, MC-124  
Texas Commission on Environmental Quality  
P.O. Box 13087  
Austin, Texas 78711-3087  
(512) 239-6784

The following county offices:

- b) TCEQ Region 13 – San Antonio Waste Section  
14250 Judson Road  
San Antonio, TX 78233-4480  
210-490-3096 (O); 210-545-4329 (Fax)
  - c) Guadalupe County EMS at 911
  - d) Schertz EMS  
1400 Schertz Parkway, Building 7  
Schertz, TX  
830-619-1400
  - e) The neighboring residents within approximately 1,000 feet of the reading location;  
and
  - f) The owners of the underground utilities which cross the facility property line within  
approximately 1,000 feet of the location of the readings.
2. Daily follow-up readings will be taken for one week.
3. If the follow-up readings suggest that there are methane gas levels greater than five percent methane by volume at the property line, then efforts will be made to determine the extent of the gas migration both along the property line and away from the property line.
- a) Typical efforts to determine the extent of the gas migration may include borehole sampling. Borehole sampling will only be performed when the locations of underground utilities and other potential hazards have been determined.

- b) Typical sampling along the property line may continue in either direction from the initial reading until the methane gas is not detected.
  - c) The location and results of the readings performed to determine the nature and extent of the gas migration will be reported to the landfill manager.
4. The landfill manager will be kept informed of the progress and results of the follow-up sampling.
5. A laboratory analysis of the gas (Method TO-14) will be performed within 30 days, if there are structures within 1,000 feet of the probe.

#### 4.2 Action Within Seven Days To Update The Operating Record

The following actions will be taken within seven days of the date of the initial readings exceeding maximum allowable methane gas concentrations:

- 1. Inform the landfill manager of the progress and results of the follow-up sampling.
- 2. The landfill manager will prepare a brief report, to be submitted the Executive Director and placed in the operating record, which describes the following:
  - a) The date, location, and magnitude of the initial readings which exceed the allowable maximum percent methane by volume);
  - b) The actions taken following the initial reading to protect human health; and
  - c) Information regarding the required notification of the Executive Director, local and county officials and residents within 1,000 feet of the reading.

#### 4.3 Action Within 60 Days To Implement A Remediation Plan

The following actions will be taken within sixty days of the date of the initial readings exceeding

maximum allowable methane gas concentrations.

1. The nature and extent of the gas migration problem will be determined. A remediation plan will be prepared to describe the nature and extent of any problem and proposed remedy.
2. The plan will be submitted to the Commission as a Class I permit modification. Implementation of the plan may begin prior to receiving approval from the Commission.
3. The remediation plan will be implemented. This will consist of starting a course of action to effect the proposed remedy. Reasonable efforts will be made to complete the course of action in a timely manner.
4. A copy of the remediation plan will be placed in the operating record.
5. The Executive Director will be provided with a copy of the remediation plan and notified that the plan has been implemented.



**APPENDIX G-A**  
**Gas Probe Installation Report**

# Methane Monitoring Point Installation Report

## BECK LANDFILL

Schertz, Guadalupe County, Texas

TERRACON PROJECT 90207061

July 17, 2020



### Prepared for:

Beck Companies

550 FM 78

Schertz, Texas 78154

### Prepared by:

Terracon Consultants, Inc.

San Antonio, Texas

6911 Blanco Road (210)641-2112  
San Antonio, TX 78216 terracon.com

# Terracon

Environmental



Facilities



Geotechnical



Materials

July 17, 2020

Mr. Grant Norman  
Beck Companies  
550 FM 78  
Schertz, Texas 78154

Telephone: 210-658-5174  
Cell: 210-410-8872  
Email: [gnorman@beckcompanies.com](mailto:gnorman@beckcompanies.com)

**Subject: Methane Monitoring Point Installation  
Beck Landfill  
550 FM 78  
Schertz, Guadalupe County, Texas  
Terracon Project No. 90207061**

Dear Mr. Norman:

Terracon Consultants, Inc. is pleased to submit this Methane Monitoring Point Installation Report for the Beck Landfill. If you have any questions or require additional information, please do not hesitate to contact myself or Mr. Quin Baber at your convenience.

Sincerely,

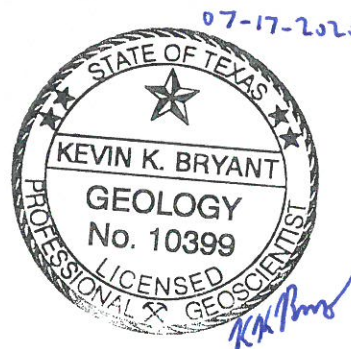
**Terracon**



Kevin Bryant, P.G.  
*Project Geologist*

Quin Baber, P.G.  
*Environmental Department Manager, Principal*

*Enclosure: Methane Monitoring Point Installation Report*



## TABLE OF CONTENTS

	<b>Page</b>
<b>1.0 INTRODUCTION</b> .....	1
1.1 Site Location.....	1
<b>2.0 METHANE MONITORING POINT INSTALLATION</b> .....	1
2.1 Methane Monitoring Probe Installation.....	1

## EXHIBITS

EXHIBIT 1	VICINTY MAP
EXHIBIT 2	METHANE MONITORING POINT LOCATION MAP

## PHOTO LOG

## BORING LOGS

**METHANE MONITORING POINT INSTALLATION REPORT  
BECK LANDFILL  
SCHERTZ, GUADALUPE COUNTY, TEXAS  
TERRACON PROJECT 90207061**

## **1.0 INTRODUCTION**

Terracon Consultants, Inc. was contracted by Beck Companies (client) for the installation of 6 methane monitoring probes at locations directed by the client. Methane monitoring points were installed as per the scope of work provided by the client in Terracon's proposal P90207061-R1 (dated April 16, 2020). Terracon mobilized to the site on June 8, 2020 to oversee the installation of the 6 methane monitoring points. The following is a summary of the observations and activities conducted by Terracon staff for the project.

### **1.1 SITE LOCATION**

Exhibit 1, a Vicinity Map, depicts the site in relation to surrounding properties along with the topographic elevation in the vicinity of the site. The site is located at 550 FM 78 in Schertz, Guadalupe County, Texas. Methane monitoring points were installed at locations designated by the client approximately 500 feet apart along the northern side of the existing dike, located at the northern perimeter of the landfill.

## **2.0 METHANE MONITORING POINT INSTALLATION**

### **2.1 METHANE MONITORING PROBE INSTALLATION**

Soil borings for methane monitoring points were advanced using a conventional drilling rig equipped with hollow-stem augers. Soil borings were advanced to depths ranging from 20 feet to 32.5 feet below ground surface (bgs). Methane monitoring points were installed in accordance with the specifications outlined in our proposal. Methane monitoring points were completed at the surface using approximately 3 feet of solid PVC riser fitted with a ball valve and barbed connector. All connections/joints were either threaded or compression fittings (no glue or other bonding agents were used).

During drilling activities, methane gas was detected using a Multi-Rae Lite instrument in soil boring MM-3 at concentrations as high as 4.5% in down-hole air readings in the 7.5-10-foot bgs interval. Therefore, the soil boring was flooded with water for safety reasons prior to continuing drilling activities. After completing the soil boring at MM-3, Mr. Grant Norman (client) asked that Terracon install an additional soil boring (MM-3b)

## **Methane Monitoring Point Installation**

Beck Lanfill ■ 550 FM 78, Schertz, Guadalupe County, Texas

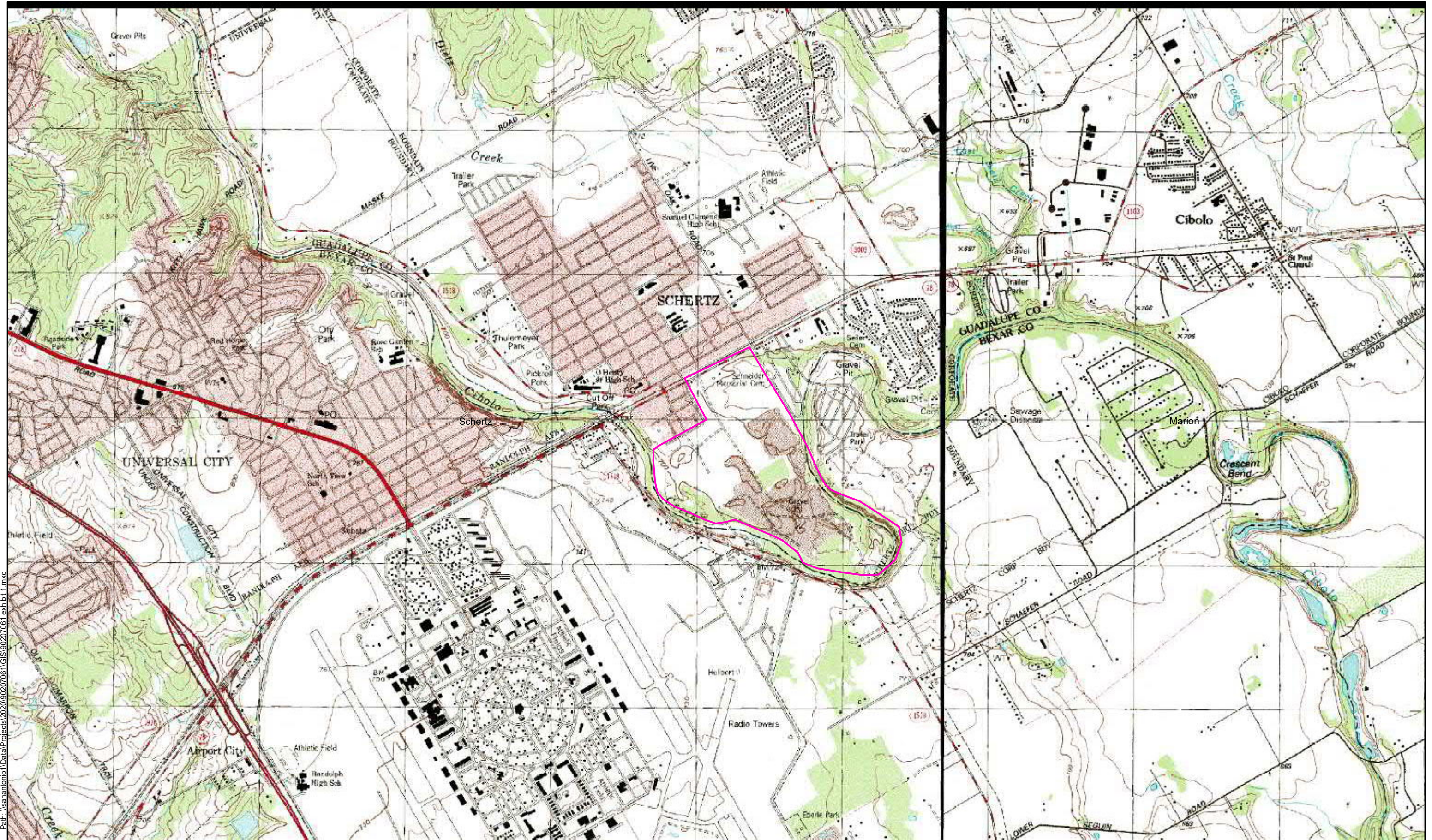
July 17, 2020 ■ Terracon Project No. 90207061



at a location chosen by him approximately 29 feet northwest of soil boring MM-3. The methane monitoring point set into the soil boring MM-3 was plugged and abandoned per Mr. Norman's instructions. Mr. Norman also asked that the methane monitoring point set at MM-3b be identified as MM-3 to simplify future sampling and reporting. Elevated methane concentrations exceeding the health and safety thresholds for the project were also encountered while drilling the soil borings MM-3b and MM-4. In soil boring MM-3b, the greatest concentration of methane (3.2% to 4.8%) was detected from 20 feet to 25 feet bgs interval. In soil boring MM-4, the greatest concentration of methane (approximately 6.9%) was detected from 12.5 feet to 15 feet bgs interval. Both soil borings MM-3b and MM-4 were flooded with water while drilling for safety reasons. Exhibit 2, a Methane Monitoring Point Location Map, depicts the site on an aerial photograph and denotes the locations of the seven soil borings methane monitoring points installed at the site (the methane monitoring point installed in soil boring MM-3 was plugged and abandoned prior to the completion of field activities). Soil boring logs, summarizing the soils noted along with the methane gas concentrations encountered in each soil boring, are provided at the end of this report. Additionally, photographs of field activities are also provided at the end of this report.

On June 17, 2020, Terracon returned to the site to install 10 additional soil borings to investigate for the potential presence of methane gas in the vicinity of those previous soil borings with the elevated methane concentrations detected during drilling (MM-3b and MM-4). Soil borings were advanced using a direct-push technology (DPT) soil sampling rig using a 60-inch long core barrel sampler. Soil boring locations were determined by Mr. Norman (client). Soil borings B-7 through B-15 were advanced to depths ranging from 20 feet to 25 feet bgs while soil boring B-16 was advanced to only 10 feet bgs. During drilling activities, the down-hole air in each soil boring was screened for methane gas at 5-foot intervals using a Landgem 5000 multi-gas meter. The majority of the soil borings did not have detectable concentrations of methane gas. However, soil boring B-9 had methane gas concentrations of 0.4% in the 10 feet to 15 feet bgs interval and 0.6% in the 15 feet to 20 feet bgs interval. In soil boring B-16, the methane gas concentration in the 0 feet to 5 feet bgs was 0.3% and in the 5 feet to 10 feet bgs interval the methane gas concentration was 2.0%. Exhibit 2 depicts the locations of soil borings B-7 through B-16.

## **EXHIBITS**



Path: \\sanantonio\1\Data\Projects\2020\90207061\GIS\90207061\_exhibit\_1.mxd

**Legend**

Site Boundary (Approximate)



Project Mng: KKB  
 Drawn By: KKB  
 Checked By: QB  
 Approved By: KKB

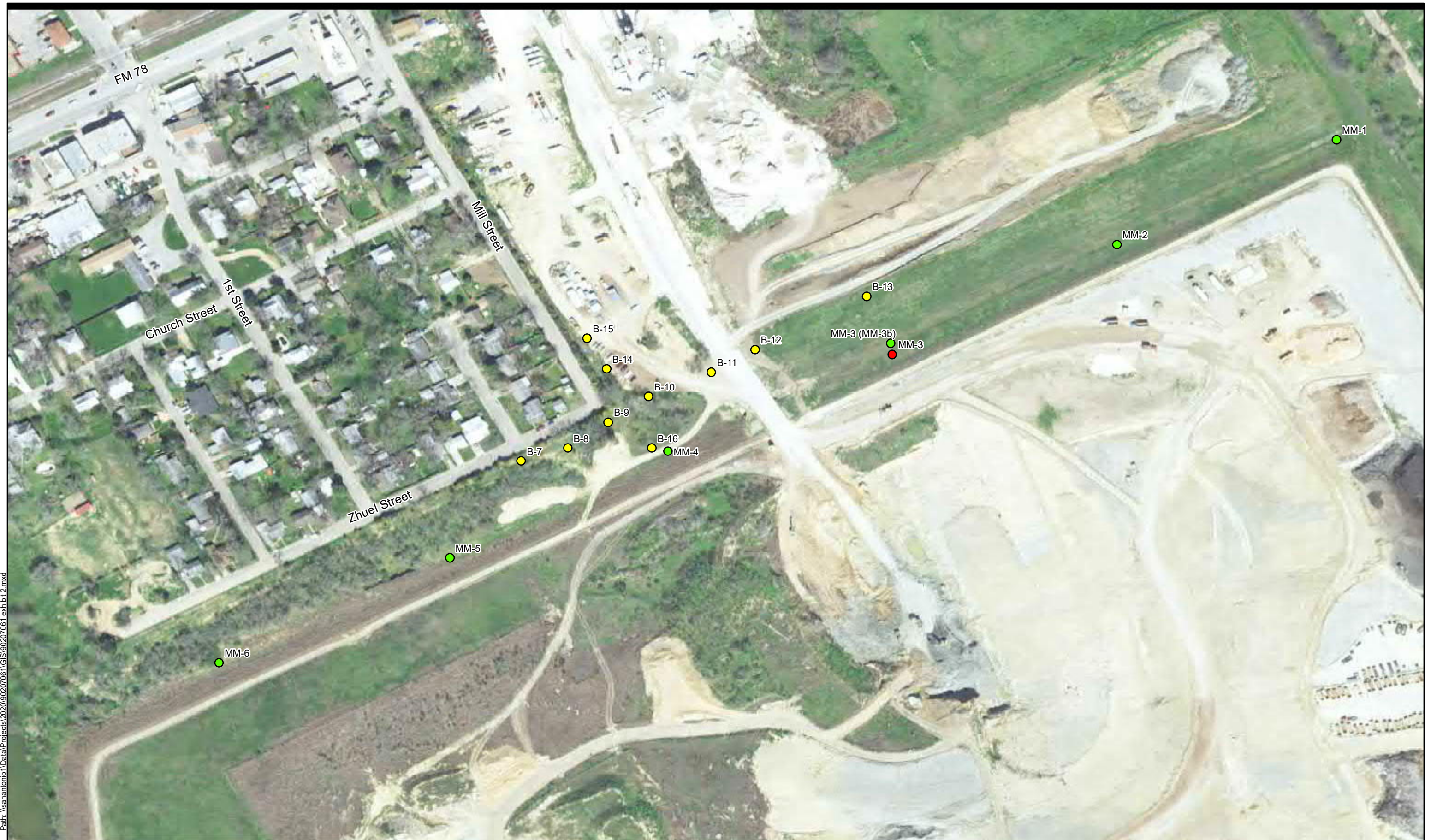
Project No. 90207061  
 Scale: 1 in = 2,000 ft  
 TBPE Firm No. F-3272  
 Date: 07-03-2020

**Terracon**  
 Consulting Engineers & Scientists  
 6911 Blanco Road San Antonio, TX 78216  
 PH (210) 641-2112 Fax (210) 641-2124

Vicinity Map  
**Beck Landfill**  
**550 FM 78**  
**Schertz, Guadalupe County, Texas**

Exhibit  
 1





Path: \\sanantonio\1\Data\Projects\2020\90207061\GIS\90207061 exhibit 2.mxd

**Legend**

- Methane Monitoring Points
- Methane Monitoring Points (Plugged and Abandoned)
- Soil Borings



Project Mngr: KKB  
 Drawn By: KKB  
 Checked By: QB  
 Approved By: KKB

Project No. 90207061  
 Scale: 1 in = 200 ft  
 TBPE Firm No. F-3272  
 Date: 07-03-2020

**Terracon**  
 Consulting Engineers & Scientists  
 6911 Blanco Road San Antonio, TX 78216  
 PH (210) 641-2112 Fax (210) 641-2124

Methane Monitoring Point Location Map	Exhibit
<b>Beck Landfill</b> 550 FM 78 Schertz, Guadalupe County, Texas	2

## PHOTO LOG



**Photo #1** View of drill rig at location MM-1.



**Photo #2** View of typical soil sample collected from the soil boring MM-1.



**Photo #3** View of technicians excavating the upper few feet of the soil boring MM-2 using a post-hole digger.



**Photo #4** View of typical soil sample collected from soil boring MM-2.



**Photo #5** View of technician collecting down-hole methane readings at soil boring MM-2.



**Photo #6** View of drill rig at location MM-2.



**Photo #7** View of soil sample from the bottom of the soil boring MM-2, showing Navaro Clay present.



**Photo #8** View of a drilling activities at soil boring location MM-3.



**Photo #9** View of drill rig set up at boring location MM-3b with the methane monitoring point installed at location MM-3 in foreground. Note that MM-3b is being drilled through the soil access ramp (gray clay and shale) constructed for site access for this project.



**Photo #10** Another view of drill rig set up at boring location MM-3b with the methane monitoring point installed at location MM-3 is visible in the left-side of the photograph. Gray soil access ramp is approximately 3 feet thick under rig.



**Photo #11** View of drill rig at soil boring location MM-4.



**Photo #12** View of methane monitoring point installed at soil borings MM-4.



**Photo #13** View of drill rig set up at soil boring MM-5.



**Photo #14** View of technician taking down-hole methane gas readings in soil boring MM-5.



**Photo #15** View of drill rig set up at soil boring MM-6.



**Photo #16** View of Navaro clay encountered at the bottom of the soil boring MM-6.



**Photo #17** View of technicians installing protective boxes and concrete pads at methane monitoring point MM-2.



**Photo #19** Typical view of soil cores collected from soil boring B-7.



**Photo #18** View of direct-push drill rig at soil boring B-7.



**Photo #20** View of drilling activities at soil boring B-8.



**Photo #21** View of technician backfilling soil boring B-8 after drilling activities were completed.



**Photo #22** View of drill rig at soil boring B-10.



**Photo #23** View of drill rig at the soil boring B-11.



**Photo #24** View of drill rig at soil boring B-13.





**Photo #25** View of drill rig at soil boring B-14.



**Photo #26** View of drill rig at soil boring B-15.



**Photo #27** Typical view of completed methane monitoring point and well pad installation. Installation of protective bollards (yellow poles) was completed the following day.

## **BORING LOGS**

# WELL LOG NO. MM-1

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55192° Longitude: -98.26233°	INSTALLATION DETAILS  Well Completion: Aboveground	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION						
5.0	<b>FILL - SANDY LEAN CLAY WITH GRAVEL (CL)</b> , brown, dry to moist, subangular to subrounded chert, less than 1-inch diameter. Volume is 20% gravel. Sand is coarse-grained. Fill is from construction of earthen dike.	Concrete grout 0.5 in. diameter schedule 40 PVC riser Hydrated bentonite				100	-
						100	0.0
						100	0.0
			5			100	0.0
	<b>SANDY LEAN CLAY (CL)</b> , low to medium plasticity, dark brown to brown, dry to moist, stiff to very stiff. Sand is fine-grained.	20/40 silica sand 0.5 in. diameter 0.010 PVC screen				50	0.0
10.5						100	0.0
	<b>LEAN CLAY/FAT CLAY (CL/CH)</b> , medium to high plasticity, brown, moist, soft.					50	0.0
14.0						100	0.0
	<b>CLAYEY GRAVEL (GC)</b> , brown and beige, dry to moist, some fine-to medium-grained sand, subangular to subrounded chert gravel, less than 1-inch diameter. Volume is 50-60% gravel. Alternating layers of 6-inch to 9-inch clay (similar to the 10.5-14 feet bgs interval).					50	0.0
						50	0.0
						50	0.0
						50	0.0
						50	0.0
22.3	Wet seam at 22-feet bgs.					100	0.0
	<b>FAT CLAY (CH)</b> , high plasticity, blue/gray and brown, moist, stiff to very stiff, Navarro clay.						
25.0			25				

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Hollow stem auger

Abandonment Method:

Notes:

Logged by: Kevin Bryant  
Hand dug to 20-inches bgs.

**WATER LEVEL OBSERVATIONS**

Water observed at 22 feet bgs.



Terracon

Well Started: 06-08-2020

Well Completed: 06-08-2020

Drill Rig: Hollow stem auger

Driller: Vortex

Project No.: 90207061

Exhibit: B-13

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX ENVIRONMENTAL SMART LOG 90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20

# WELL LOG NO. MM-1

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

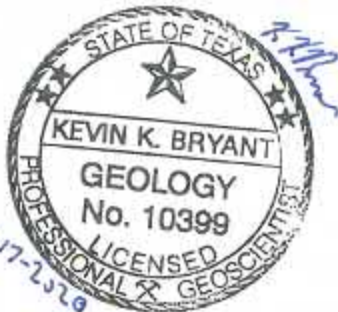
GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55192° Longitude: -98.26233°	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
	DEPTH MATERIAL DESCRIPTION					
	<i>Boring Terminated at 25 Feet</i>					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Hollow stem auger

Abandonment Method:

Notes:



**WATER LEVEL OBSERVATIONS**

*Water observed at 22 feet bgs.*



Well Started: 06-08-2020

Well Completed: 06-08-2020

Drill Rig: Hollow stem auger

Driller: Vortex

Project No.: 90207061

Exhibit: B-14

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATA\_TEMPLATE.GDT 7/17/20

# WELL LOG NO. MM-2

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55127° Longitude: -98.26369°	INSTALLATION DETAILS  Well Completion: Aboveground	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION						
5.0	<b>FILL - SANDY LEAN CLAY WITH GRAVEL (CL)</b> , brown/dark brown/dark gray/beige, dry to moist, subangular to subrounded chert, less than 1-inch diameter. Volume is 20% gravel. Sand is coarse-grained. Fill material is from construction of earthen dike.	Concrete grout 0.5 in. diameter schedule 40 PVC riser Hydrated bentonite				100	-
8.5	<b>LEAN TO FAT CLAY (CL/CH)</b> , medium to high plasticity, dark brown, dry, stiff.	20/40 silica sand 0.5 in. diameter 0.010 PVC screen	5			100	0.0
12.0	<b>SANDY LEAN CLAY (CL)</b> , low to medium plasticity, dark brown to brown, dry to moist, stiff to very stiff. Sand is fine-grained.		10			100	0.0
17.5	<b>LEAN TO FAT CLAY (CL/CH)</b> , medium to high plasticity, brown, moist, medium stiff.  At 16.5-feet bgs, trace coarse sand and trace gravel, subangular to subrounded, less than 0.5-inch diameter. Gravel is less than 5% volume.		15			50	0.3
20.0	<b>SANDY LEAN CLAY (CL)</b> , medium plasticity, orangish-brown to brown, moist to nearly wet, soft. Sand is fine-to-medium-grained.		20			75	0.3
24.0	<b>CLAYEY GRAVEL (GC)</b> , brown and beige, dry to moist, fine-to-medium-grained sand. Subangular to subrounded chert gravel, less than 1-inch diameter. Volume is 50-60% gravel. Alternating layers of clay and gravel.  Wet, mostly gravel at 22-feet bgs.		25			100	0.6
24.0	<b>FAT CLAY (CH)</b> , high plasticity, bluish gray and brown, moist, stiff to very stiff, Navarro clay.					100	0.4
						40	0.9
						100	0.9

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Hollow stem auger

Abandonment Method:

Notes:

Logged by: Kevin Bryant  
Hand dug to 2.5-feet bgs.



**WATER LEVEL OBSERVATIONS**

Water observed at 22 feet bgs.



Well Started: 06-08-2020

Well Completed: 06-08-2020

Drill Rig: Hollow stem auger

Driller: Vortex

Project No.: 90207061

Exhibit: B-15

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX ENVIRONMENTAL SMART LOG 90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20

# WELL LOG NO. MM-2

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

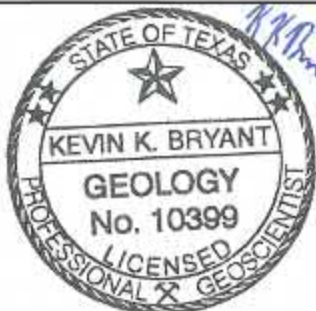
GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55127° Longitude: -98.26369°		DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
	DEPTH	MATERIAL DESCRIPTION					
	27.5	<b>FAT CLAY (CH)</b> , high plasticity, bluish gray and brown, moist, stiff to very stiff, Navarro clay. <i>(continued)</i>			X	100	0.9
<i>Boring Terminated at 27.5 Feet</i>							

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Hollow stem auger

Abandonment Method:

Notes:



**WATER LEVEL OBSERVATIONS**

Water observed at 22 feet bgs.



Well Started: 06-06-2020

Well Completed: 06-06-2020

Drill Rig: Hollow stem auger

Driller: Vortex

Project No.: 90207061

Exhibit: B-16

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATA\_TEMPLATE.GDT 7/17/20

# WELL LOG NO. MM-3

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55059° Longitude: -98.26506°	INSTALLATION DETAILS Well Completion: Aboveground	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION						
5.0	<b>FILL - SANDY LEAN CLAY WITH GRAVEL (CL)</b> , brown, dry to moist, subangular to subrounded chert, less than 1-inch diameter. Volume is 20% gravel. Fill material is from construction of earthen dike. Sand is coarse-grained.	Concrete grout 0.5 in. diameter schedule 40 PVC riser Hydrated bentonite			IS	100	-
9.0	<b>LEAN TO FAT CLAY (CL/CH)</b> , medium to high plasticity, dark brown, dry, stiff.	20/40 silica sand 0.5 in. diameter 0.010 PVC screen	5		X	75	0.0
17.0	<b>LEAN CLAY (CL)</b> , trace fine-grained sand, medium plasticity, brown, moist, stiff.		10		X	100	4.5
25.0	<b>SANDY SILTY CLAY (CL)</b> , fine-grained sand, medium plasticity, brown, moist, medium soft to stiff.		15		X	100	0.0
			20		X	100	0.0
			25		X	100	1.4

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Hollow stem auger

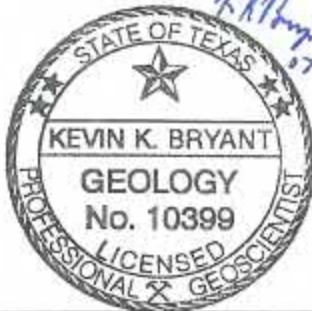
Abandonment Method:  
Plugged and abandoned on 06/11/2020

**Notes:**

Logged by: Kevin Bryant  
Hand dug to 2-feet bgs.  
Flooded borehole beginning at 10-feet bgs due to high methane readings.

**WATER LEVEL OBSERVATIONS**

Water observed at 25 feet bgs.



Well Started: 06-08-2020

Well Completed: 06-08-2020

Drill Rig: Hollow stem auger

Driller: Vortex

Project No.: 90207061

Exhibit: B-17

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20

# WELL LOG NO. MM-3

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

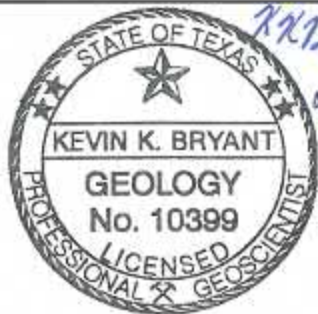
GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55059° Longitude: -98.26508°		DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
	DEPTH	MATERIAL DESCRIPTION					
0							
27.5		<b>GRAVEL (GW)</b> , brown, wet, dense, subrounded chert and limestone, less than 2-inch diameter.	27.5			10	0.1
29.0		<b>CLAYEY GRAVEL (GC)</b> , brown and beige, dry to moist, fine-to-medium-grained sand, Subangular to subrounded chert gravel, less than 1-inch diameter. Volume is 50-60% gravel. Alternating layers of clay and gravel.	29.0			100	-
32.5		<b>FAT CLAY (CH)</b> , high plasticity, blue/gray and brown, moist, stiff to very stiff. Navarro clay.	32.5			100	-
<i>Boring Terminated at 32.5 Feet</i>							

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Hollow stem auger

Abandonment Method:  
Plugged and abandoned on 06/11/2020

Notes:



**WATER LEVEL OBSERVATIONS**

Water observed at 25 feet bgs.



Well Started: 06-08-2020

Well Completed: 06-08-2020

Drill Rig: Hollow stem auger

Driller: Vortex

Project No.: 90207051

Exhibit: B-18

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207051 BORINGS GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20



# WELL LOG NO. MM-3B

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55066° Longitude: -98.26509°	INSTALLATION DETAILS Well Completion: Aboveground	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION						
3.0	<b>FILL - SHALE</b> , Light gray shale fill material used to construct soil ramp.	Concrete grout 0.5 in. diameter schedule 40 PVC riser Hydrated bentonite	3.0				0.0
8.5	<b>LEAN TO FAT CLAY (CL/CH)</b> , medium to high plasticity, dark brown, dry, stiff.		8.5				0.0
12.0	<b>LEAN CLAY (CL)</b> , with trace fine-grained sand, medium plasticity, brown, dry to moist, stiff.	20/40 silica sand 0.5 in. diameter 0.010 PVC screen	12.0				0.1
20.0	<b>SANDY LEAN CLAY (CL)</b> , fine-grained sand, brown, moist, medium soft to stiff.		20.0				0.0
22.0	<b>WELL GRADED SAND WITH CLAY (SW-SC)</b> , medium plasticity, brown and beige, dry to moist, medium dense to dense, fine-to-medium-grained sand.		22.0				0.1
	At 18-feet, increasing sand volume.						0.8
							0.3
							0.7
							3.3
	<b>CLAYEY GRAVEL (GC)</b> , brown, dry to moist, dense, subrounded chert, less than 0.75-inch diameter.						4.6

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Hollow stem auger

Abandonment Method:

Notes:

Logged by: Kevin Bryant

Flooded borehole beginning at 22.5-feet bgs due to high methane readings.  
Per client's request, the methane monitoring point installed at this location has been called "MM-3."

**WATER LEVEL OBSERVATIONS**

Water observed at 26 feet bgs.



Well Started: 06-09-2020

Well Completed: 06-09-2020

Drill Rig: Hollow stem auger

Driller: Vortex

Project No.: 90207061

Exhibit: B-19



THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20

# WELL LOG NO. MM-3B

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

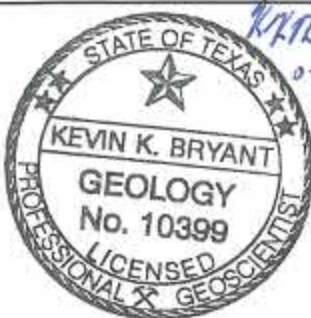
GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55066° Longitude: -98.26509°		DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
	DEPTH	MATERIAL DESCRIPTION					
	27.3	<b>CLAYEY GRAVEL (GC)</b> , brown, dry to moist, dense, subrounded chert, less than 0.75-inch diameter. <i>(continued)</i> Wet at 26-foot bgs.			X		3.3
	30.0	<b>FAT CLAY (CH)</b> , high plasticity, blue/gray to dark gray and orange-brown, moist, stiff to very stiff. Navarro clay			X		-
<b>Boring Terminated at 30 Feet</b>			30				

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Hollow stem auger

Abandonment Method:

Notes:



**WATER LEVEL OBSERVATIONS**

Water observed at 26 feet bgs.



Well Started: 06-09-2020

Well Completed: 06-09-2020

Drill Rig: Hollow stem auger

Driller: Vortex

Project No.: 90207061

Exhibit: B-20

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATA TEMPLATE.GDT 7/17/20

# WELL LOG NO. MM-4

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.54999° Longitude: -98.28647°	INSTALLATION DETAILS	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
		Well Completion: Aboveground					
	MATERIAL DESCRIPTION						
7.5	<b>SANDY SILTY CLAY (CL)</b> , fine-grained sand, medium plasticity, brown, dry to moist, medium soft to stiff.	Concrete grout 0.5 in. diameter schedule 40 PVC riser Hydrated bentonite	5	15	Hand	100	0.0
12.0	<b>SANDY LEAN CLAY (CL)</b> , low to medium plasticity, light brown, moist, soft to medium soft. Sand is mostly fine-grained.	20/40 silica sand 0.5 in. diameter 0.010 PVC screen	10		X	100	-
14.0	<b>CLAYEY SAND (SC)</b> , light brown, dry to moist, medium dense, mostly fine-to medium-grained sand. Some coarse-grained sand present.		15		X	100	0.7
15.0	<b>SANDY LEAN CLAY (CL)</b> , with trace subrounded chert gravel, less than 1-inch diameter, medium plasticity, light brown, moist, soft to medium soft.		15		X	50	0.8
15.5	<b>GRAVEL (GW)</b> , brown, wet, loose, subrounded to rounded chert gravel, less than 2-inch diameter.		15		X	66	0.8
16.0	<b>CLAYEY GRAVEL (GC)</b> , medium to high plasticity fines, brown and gray, dense.		15		X	66	6.9
18.0	<b>FAT CLAY (CH)</b> , high plasticity, bluish gray and brown, moist, stiff to very stiff. Navarro clay.		15		X	33	0.6
20.0	<b>Boring Terminated at 20 Feet</b>		20		X	100	-
			20		X	100	-

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Hollow stem auger

Abandonment Method:

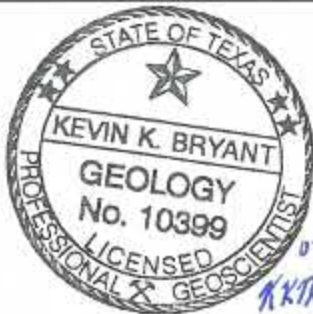
Notes:

Logged by: Kevin Bryant

Hand dug to 2-feet bgs.  
Flooded borehole beginning at 15-feet bgs due to high methane readings.

**WATER LEVEL OBSERVATIONS**

Water observed at 15 feet bgs.



Well Started: 06-09-2020

Well Completed: 06-09-2020

Drill Rig: Hollow stem auger

Driller: Vortex

Project No.: 90207061

Exhibit: B-21

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATA\_TEMPLATE.GDT 7/17/20

# WELL LOG NO. MM-5

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.54933° Longitude: -98.26782°	INSTALLATION DETAILS	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
		Well Completion: Aboveground					
DEPTH	MATERIAL DESCRIPTION						
0	<b>SILTY CLAY (CL)</b> , with fine-to medium-grained sand, low to medium plasticity, reddish brown, dry, stiff.	Concrete grout 0.5 in. diameter schedule 40 PVC riser Hydrated bentonite				100	-
7.5	At 6-feet, transitioning from reddish brown to orangish brown, stiff to hard.		5			100	-
10.0	<b>CLAYEY SAND (SC)</b> , orange-brown, dry, stiff to hard, sand is fine-grained.	20/40 silica sand 0.5 in. diameter 0.010 PVC screen				80	0.0
20.0	<b>CLAYEY GRAVEL (GC)</b> , medium plasticity, light brown to whitish brown, dry, medium dense to dense, subrounded to rounded chert gravel, less than 1.25-inch diameter. Volume is at least 50% gravel.		10			60	0.0
23.0	Increased gravel size to less than 2-inch diameter at 14-feet bgs.		15			90	0.0
25.0	Whitish-tan color, dry to moist at 16-feet bgs.		20			60	0.0
25.0	<b>GRAVELLY FAT CLAY (CL/CH)</b> , medium to high plasticity, moist, stiff to very stiff, subangular to subrounded chert gravel, approximately 0.5-0.75-inch diameter. Up to 25% gravel by volume. Mostly orange-brown with blue-gray streaks.		25			75	0.0
25.0	Coarse sand and little to no gravel at 22.5-feet bgs.					75	0.0
25.0	<b>FAT CLAY (CH)</b> , high plasticity, blue/gray and orange-brown, moist, stiff to very stiff. Navarro clay.					100	0.0

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

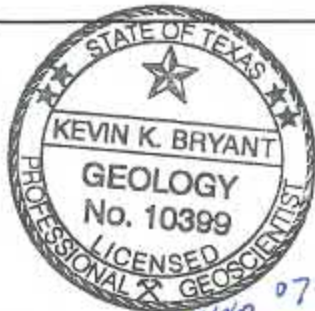
Advancement Method:  
Hollow stem auger

Abandonment Method:

Notes:

Logged by: Kevin Bryant

Hand dug to 2-feet bgs.



**WATER LEVEL OBSERVATIONS**

No free water observed.



Well Started: 06-10-2020

Well Completed: 06-10-2020

Drill Rig: Hollow stem auger

Driller: Vortex

Project No.: 90207061

Exhibit: B-22

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATA\_TEMPLATE.GDT 7/17/20

# WELL LOG NO. MM-5

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

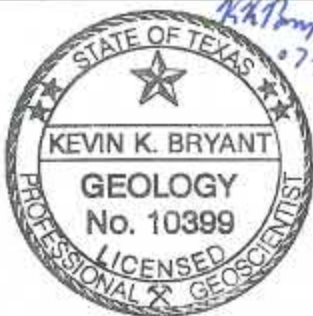
GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.54933° Longitude: -98.26782°	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
	DEPTH MATERIAL DESCRIPTION					
	<b>Boring Terminated at 25 Feet</b>					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Hollow stem auger

Abandonment Method:

Notes:



**WATER LEVEL OBSERVATIONS**

No free water observed.



Well Started: 06-10-2020

Well Completed: 06-10-2020

Drill Rig: Hollow stem auger

Driller: Vortex

Project No.: 90207061

Exhibit: B-23

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20

# WELL LOG NO. MM-6

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.54868° Longitude: -98.26925°	INSTALLATION DETAILS  Well Completion: Aboveground	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION						
0.5	<b>FILL - SHALE</b> , light gray, dry, loose. Used to construct soil ramp.	Concrete grout 0.5 in. diameter schedule 40 PVC riser Hydrated bentonite				100	-
	<b>CLAYEY GRAVEL (GC)</b> , medium plasticity fines, light gray to light brownish gray, dry to moist, subrounded to rounded chert, less than 2-inch diameter. Volume is at least 60% gravel and decreases with depth.					100	-
4.0	<b>LEAN CLAY WITH GRAVEL (CL)</b> , medium plasticity, brown, moist, stiff.					60	0.0
5.5	<b>LEAN CLAY (CL)</b> , medium plasticity, brown, medium soft, tree roots.	20/40 silica sand 0.5 in. diameter 0.010 PVC screen	5			66	0.0
6.5	<b>LEAN CLAY (CL)</b> , medium plasticity, brown, medium soft, tree roots.						
7.3	<b>SAND (SP)</b> , brown to light brown, dry, dense, fine-to-medium-grained.						
	<b>CLAYEY GRAVEL (GC)</b> , medium plasticity, light orange-brown, dry, dense, subrounded chert, less than 1-inch diameter. Volume is 50% to 70% gravel.					75	0.0
9.0	<b>SANDY LEAN CLAY (CL)</b> , medium plasticity, orangish brown, moist, stiff						
11.0	<b>CLAYEY GRAVEL (GC)</b> , light gray to whitish brown, dry, loose to medium dense, subrounded to rounded chert, less than 1-inch diameter. Volume is 60% to 80% gravel. Some medium-to-coarse-grained sand.					40	0.0
	At 17-foot bgs, 6-inch thick gravelly clay (CL) seam, stiff.					40	0.0
19.5	<b>SANDY LEAN CLAY (CL)</b> , low to medium plasticity, light orange-brown, dry to moist, stiff to very stiff, mostly fine-grained with few medium-grains.					50	0.0
20.3	<b>FAT CLAY (CH)</b> , high plasticity, blue/gray and brown, moist, stiff to very stiff. Navarro clay.					80	0.0
22.5	<b>Boring Terminated at 22.5 Feet</b>					100	0.0

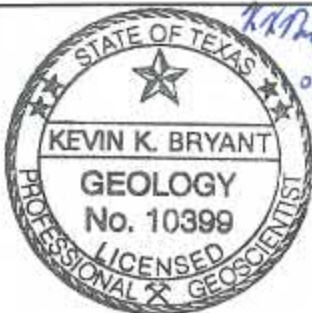
The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Hollow stem auger

Abandonment Method:

Notes:

Hand dug to 2-feet bgs.



**WATER LEVEL OBSERVATIONS**

No free water observed.



Well Started: 06-10-2020

Well Completed: 06-10-2020

Drill Rig: Hollow stem auger

Driller: Vortex

Project No.: 90207061

Exhibit: B-24

# BORING LOG NO. B-7

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.54993° Longitude: -98.26738°	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION					
3.0	<b>LEAN CLAY (CL)</b> , with trace fine grained sand, medium plasticity, dark brown, dry, stiff, roots.				60	0.0
6.0	<b>SANDY SILTY CLAY (CL)</b> , low to medium plasticity, light orange-brown, dry, stiff.					
14.5	<b>LEAN CLAY (CL)</b> , trace fine-grained sand, medium plasticity, orange-brown, dry, stiff.				100	0.0
16.0	At 11-feet, color transition to dark orange-brown clay. <b>SANDY LEAN CLAY (CL)</b> , fine-grained sand, low to medium plasticity, orange-brown to light orange-brown, dry, stiff to very stiff.				100	0.0
20.0	<b>CLAYEY GRAVEL (GC)</b> , whitish orange-brown to brown, dry, dense, subangular to subrounded chert, less than 1.5-inch diameter. Volume is 60-80% gravel.				75	0.0
<b>Boring Terminated at 20 Feet</b>		20				

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

**Advancement Method:**  
Direct Push Technology

**Abandonment Method:**  
Boring backfilled with bentonite  
Surface capped with concrete

**Notes:**

Logged by: Kevin Bryant

**WATER LEVEL OBSERVATIONS**

No free water observed.



Boring Started: 06-17-2020

Boring Completed: 06-17-2020

Drill Rig: Geoprobe

Driller: Vortex

Project No.: 90207061

Exhibit: B-9

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT, TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20

# BORING LOG NO. B-8

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 28.55001* Longitude: -98.26709*	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION					
4.0	<b>SILTY CLAY (CL)</b> , medium plasticity, brown, dry, medium soft to stiff, with trace fine-grained sand and trace rounded chert gravel, less than 1-inch diameter.	4.0			75	0.0
5	<b>SANDY LEAN CLAY (CL)</b> , low to medium plasticity, light orange-brown to light brown, dry, medium stiff to stiff, fine-grained.  At 6-feet, decreasing sand content.	5			80	0.0
10		10			85	0.0
13.0	<b>CLAYEY SAND (SC)</b> , light brown, dry to moist, medium dense, mostly fine to medium-grained sand with some coarse-grained sand present.	13.0			85	0.0
14.5	<b>GRAVEL (GW)</b> , brown, dry, loose, subrounded to rounded chert, less than 2-inch diameter.	14.5			75	0.0
20		20			90	0.0
23.5	At 23-feet, wet.	23.5				
25.0	<b>FAT CLAY (CH)</b> , high plasticity, blue/gray and brown, moist, stiff to very stiff, Navarro clay.	25.0				

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Direct Push Technology

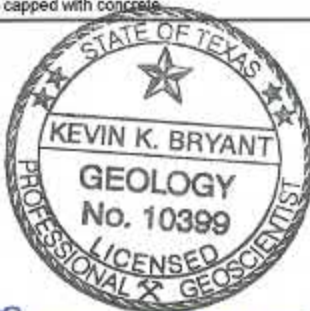
Abandonment Method:  
Boring backfilled with bentonite  
Surface capped with concrete

Notes:

Logged by: Kevin Bryant

**WATER LEVEL OBSERVATIONS**

Water observed at 23 feet bgs.



*Kevin K. Bryant* 07-17-2020



Boring Started: 06-17-2020

Boring Completed: 06-17-2020

Drill Rig: Geoprobe

Driller: Vortex

Project No.: 90207061

Exhibit: B-10

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GOT 7/17/20



# BORING LOG NO. B-8

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55001° Longitude: -98.26709°	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION					
	<i>Boring Terminated at 25 Feet</i>					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Direct Push Technology

Abandonment Method:  
Boring backfilled with bentonite  
Surface capped with concrete

Notes:

**WATER LEVEL OBSERVATIONS**

*Water observed at 23 feet bgs.*



Boring Started: 06-17-2020

Boring Completed: 06-17-2020

Drill Rig: Geoprobe

Driller: Vortex

Project No.: 90207051

Exhibit: B-11

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207051 BORINGS.GPJ\_TERRACON\_DATA\_TEMPLATE.GDT 7/17/20

# BORING LOG NO. B-9

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55017° Longitude: -98.26684°	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION					
4.5	<b>SANDY SILTY CLAY (CL)</b> , medium plasticity, brown, dry, medium soft to stiff, sand is fine-grained, few fine roots.	4.5			80	0.0
8.5	<b>SANDY LEAN CLAY (CL)</b> , low to medium plasticity, light orange-brown to light brown, dry, medium stiff to stiff, fine-grained	8.5			66	0.0
16.0	<b>CLAYEY GRAVEL (GC)</b> , medium to high plasticity, brown and gray, dry, loose, subrounded to rounded chert, less than 2-inch diameter.  Moist at 13-foot bgs.	16.0			80	0.4
16.5	<b>SANDY GRAVEL (GW)</b> , brown, wet, loose, coarse-grained	16.5				
20.0	<b>FAT CLAY (CH)</b> , high plasticity, blue and gray, moist, stiff to very stiff. Navarro clay.	20.0			100	0.6
<i>Boring Terminated at 20 Feet</i>		20				

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Direct Push Technology

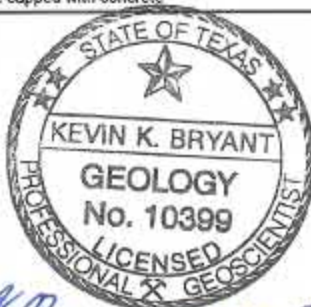
Abandonment Method:  
Boring backfilled with bentonite  
Surface capped with concrete

Notes:

Logged by: Kevin Bryant

**WATER LEVEL OBSERVATIONS**

*Water observed at 16 feet bgs.*



*Kevin K. Bryant 07-17-2020*



Boring Started: 06-17-2020

Boring Completed: 06-17-2020

Drill Rig: Geoprobe

Driller: Vortex

Project No.: 90207061

Exhibit: B-12

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20

# BORING LOG NO. B-10

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55033° Longitude: -98.26659°	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION					
3.0	<b>SANDY SILTY CLAY (CL)</b> , dark brown, dry to moist, fine-grained, scattered chert gravel less than 0.75-inch diameter. Grades to orange-brown with depth.				66	0.0
5.0	<b>LEAN CLAY (CL)</b> , medium plasticity, orange-brown, moist, stiff.					
8.5	<b>LEAN CLAY/FAT CLAY (CL/CH)</b> , medium to high plasticity, orange-brown, moist, medium soft to stiff.  Scattered fine-to-medium-grained sand at 7.5 feet bgs.				66	0.0
12.5	<b>CLAYEY GRAVEL (GC)</b> , medium to high plasticity, brown and gray, dry, loose, sub-rounded to rounded chert gravel, less than 2-inch diameter.					
14.0	<b>SANDY LEAN CLAY (CL)</b> , medium plasticity, brown to orange-brown, moist, soft to medium soft, fine-to-medium-grained.				75	0.0
17.0	<b>GRAVELLY FAT CLAY (CH)</b> , high plasticity, brown and gray, moist to nearly wet, soft to medium stiff, sub-rounded to rounded chert gravel, approximately 0.75-inch diameter. Volume is between 10% and 50% gravel.					
20.0	<b>FAT CLAY (CH)</b> , high plasticity, blue/gray and brown, moist, stiff to very stiff. Navarro clay.				100	0.0
<b>Boring Terminated at 20 Feet</b>		20				

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Direct Push Technology

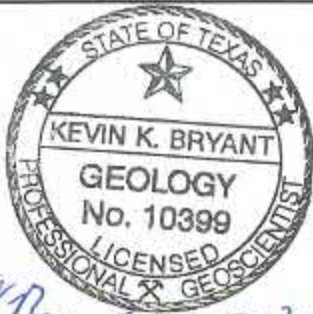
Abandonment Method:  
Boring backfilled with bentonite  
Surface capped with concrete

Notes:

Logged by: Kevin Bryant

**WATER LEVEL OBSERVATIONS**

*No free water observed.*



Terracon

Boring Started: 06-17-2020

Boring Completed: 06-17-2020

Drill Rig: Geoprobe

Driller: Vortex

Project No.: 90207061

Exhibit: B-1

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20

# BORING LOG NO. B-11

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55048° Longitude: -98.2662°	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION					
4.5	<b>FILL - CLAYEY GRAVEL (GC)</b> , brown to whitish-beige, dry, dense, subangular to subrounded chert gravel, up to 2-inch diameter. Volume is at least 75% gravel. Fill material is road base.				60	0.0
9.0	<b>LEAN CLAY (CL)</b> , low to medium plasticity, orange-brown, dry, stiff.	5			75	0.0
12.0	<b>SANDY LEAN CLAY (CL)</b> , medium plasticity, orange-brown, dry to moist, stiff.	10				
17.5	<b>LEAN CLAY/FAT CLAY (CL/CH)</b> , medium to high plasticity, orange-brown, moist, medium soft to stiff.	15			100	0.0
19.0	<b>CLAYEY GRAVEL (GC)</b> , medium to high plasticity fines, brown to whitish-beige, moist, dense.				100	0.0
20.0	<b>FAT CLAY (CH)</b> , high plasticity, blue/gray and brown, moist, stiff to very stiff, Navarro clay.	20				
	<b>Boring Terminated at 20 Feet</b>					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Direct Push Technology

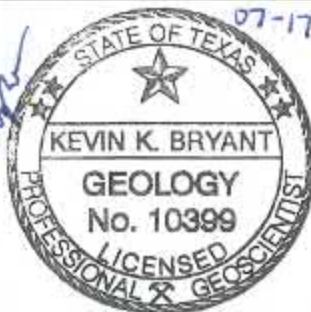
Abandonment Method:  
Boring backfilled with bentonite  
Surface capped with concrete

Notes:

Logged by: Kevin Bryant

**WATER LEVEL OBSERVATIONS**

*No free water observed.*



Boring Started: 06-17-2020

Boring Completed: 06-17-2020

Drill Rig: Geoprobe

Driller: Vortex

Project No.: 90207061

Exhibit: B-2

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GOT 7/17/20

# BORING LOG NO. B-12

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
	<b>LOCATION</b> Exhibit 2 Latitude: 29.55062° Longitude: -96.26593°					
2.5	<b>FILL - CLAYEY GRAVEL (GC)</b> , with sand, dry, loose to medium dense, subangular to subrounded chert gravel, approximately 2-inch diameter. Volume is at least 75% gravel. Fill material is road base.					
7.0	<b>LEAN CLAY/FAT CLAY (CL/CH)</b> , medium to high plasticity, grayish-brown, moist, stiff.	5			66	0.0
11.5	<b>LEAN CLAY (CL)</b> , medium plasticity, orangish-brown, dry to moist, stiff.	10			100	0.0
13.5	<b>LEAN CLAY (CL)</b> , medium plasticity, orange-brown, moist, medium soft to stiff, trace rounded chert gravel, less than 0.75-inch diameter.	15			100	-
19.0	<b>CLAYEY GRAVEL (GC)</b> , medium to high plasticity, brown to whitish-beige, moist, medium dense to dense, subrounded to rounded chert gravel, less than 2-inch diameter. Volume is at least 60% gravel. Scattered medium-to-coarse-grained sand.	15			100	0.0
20.0	<b>FAT CLAY (CH)</b> , high plasticity, blue/gray and brown, moist, stiff to very stiff. Navarro clay.	20				
<b>Boring Terminated at 20 Feet</b>						

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

**Advancement Method:**  
Direct Push Technology

**Abandonment Method:**  
Boring backfilled with bentonite  
Surface capped with concrete

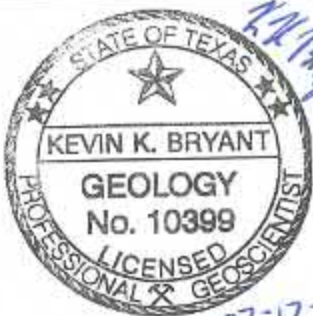
**Notes:**

Logged by: Kevin Bryant

No methane reading taken in 10-15-foot interval due to borehole collapse.

**WATER LEVEL OBSERVATIONS**

No free water observed.



Boring Started: 06-17-2020

Boring Completed: 06-17-2020

Drill Rig: Geoprobe

Driller: Vortex

Project No.: 90207061

Exhibit: B-3

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20

# BORING LOG NO. B-13

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55095° Longitude: -98.26524°	DEPTH (#)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION					
3.0	<b>LEAN CLAY (CL)</b> , medium plasticity, dark grayish-brown, dry to moist, stiff, few/fine roots.				75	0.0
6.0	<b>LEAN CLAY/FAT CLAY (CL/CH)</b> , with trace fine roots in 3-6 foot interval bgs, medium to high plasticity, brown, moist, medium soft to stiff.				100	0.0
13.0	<b>LEAN CLAY (CL)</b> , trace fine sand, low to medium plasticity, brown, dry to moist, stiff.				90	0.0
14.5	<b>SILTY SAND (SW-SM)</b> , medium plasticity, brown to orangish-brown, dry, loose, fine-to-medium-grained.					
18.0	<b>CLAYEY SAND (SC)</b> , brown to orange-brown, moist, medium dense, fine-to-medium-grained.  Medium-to-coarse-grained sand at 17 feet bgs.				90	0.0
21.0	<b>CLAYEY GRAVEL (GC)</b> , medium to high plasticity, brown to whitish-beige, dry to moist, dense, subangular to subrounded chert gravel, less than 2-inch diameter. Volume is at least 50% gravel.					
25.0	<b>FAT CLAY (CH)</b> , high plasticity, blue/gray and brown, moist, stiff to very stiff. Navarro clay.				100	0.0

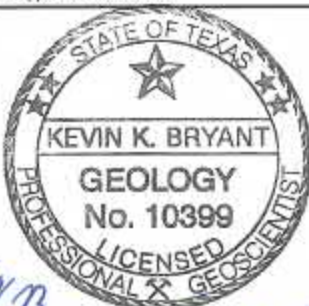
The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Direct Push Technology

Abandonment Method:  
Boring backfilled with bentonite  
Surface capped with concrete

Notes:

Logged by: Kevin Bryant



*Handwritten signature and date:* K.K. Bryant 07-17-2020

**WATER LEVEL OBSERVATIONS**

*No free water observed.*



Boring Started: 06-17-2020	Boring Completed: 06-17-2020
Drill Rig: Geoprobe	Driller: Vortex
Project No.: 90207061	Exhibit: B-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20

# BORING LOG NO. B-13

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55095° Longitude: -98.26524°	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION					
	Boring Terminated at 25 Feet					

The stratification lines represent the approximate transition between differing soil types and/or rock types, in-situ these transitions may be gradual or may occur at different depths than shown.

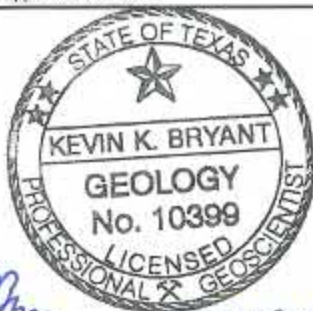
Advancement Method:  
Direct Push Technology

Abandonment Method:  
Boring backfilled with bentonite  
Surface capped with concrete

Notes:

**WATER LEVEL OBSERVATIONS**

*No free water observed.*



Boring Started: 06-17-2020

Boring Completed: 08-17-2020

Drill Rig: Geoprobe

Driller: Vortex

Project No.: 90207061

Exhibit: B-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATA\TEMPLATE.GDT 7/17/20

# BORING LOG NO. B-14

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.5505° Longitude: -99.26685°	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION					
4.0	<b>FILL - CLAYEY GRAVEL (GC)</b> , Loose, dry, light brown clayey gravel, 0-1 feet bgs. Crushed limestone, 1-2 feet bgs. Gray to dark gray, moist, clayey gravel, 2-3 feet bgs. Asphalt, moist clay, 3-4 feet bgs. Fill material used for parking area construction.				40	0.0
5.0	<b>CLAYEY SAND (CL)</b> , medium plasticity, dark grayish-brown, moist, stiff.					
12.0	<b>LEAN CLAY/FAT CLAY (CL/CH)</b> , medium to high plasticity, orangish-brown, moist, medium soft to stiff, silty.  Mostly fat clay (CH) at 9-feet bgs.  Scattered fine-grained sand at 10.5-feet bgs.	5 10			95	0.0
17.0	<b>CLAYEY GRAVEL (GC)</b> , brown to whitish beige, dry to moist, dense, subangular to subrounded chert gravel, less than 2-inch diameter. Volume is at least 60% gravel.	15			75	0.0
20.0	<b>FAT CLAY (CH)</b> , high plasticity, blue/gray and brown, moist, stiff to very stiff. Navarro clay.	20			90	0.0
<i>Boring Terminated at 20 Feet</i>						

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Direct Push Technology

Abandonment Method:  
Boring backfilled with bentonite  
Surface capped with concrete

Notes:

Logged by: Kevin Bryant



## Terracon

**WATER LEVEL OBSERVATIONS**

*No free water observed.*

Boring Started: 06-17-2020

Boring Completed: 06-17-2020

Drill Rig: Geoprobe

Driller: Vortex

Project No.: 90207061

Exhibit: B-6

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT: TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20



# BORING LOG NO. B-15

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55069° Longitude: -98.26697°	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION					
4.0	<b>FILL -</b> , Crushed limestone, 0-0.75 feet bgs. Clayey gravel, 0.75-4 feet bgs. Fill material used for parking area construction.				60	0.0
5	<b>LEAN CLAY/FAT CLAY (CL/CH)</b> , medium to high plasticity, orangish-brown, dry to moist, medium soft to stiff, silty.					
10	Trace coarse-sand at 8-feet bgs.				100	0.0
12.0	<b>FAT CLAY (CH)</b> , high plasticity, orangish-brown, moist, stiff.				100	0.0
15.0	<b>CLAYEY GRAVEL (GC)</b> , dry, brown.					
16.0	<b>LEAN CLAY/FAT CLAY (CL/CH)</b> , medium to high plasticity, orangish-brown, moist, stiff.					
18.0	<b>FAT CLAY (CH)</b> , high plasticity, blue/gray and brown, moist, stiff to very stiff. Navarro clay.				100	
20.0	<b>Boring Terminated at 20 Feet</b>					

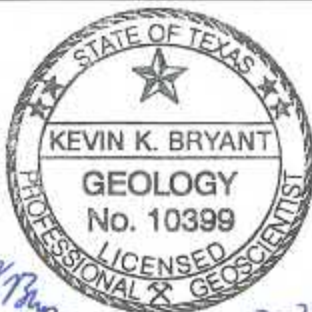
The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Direct Push Technology

Abandonment Method:  
Boring backfilled with bentonite  
Surface capped with concrete

Notes:

Logged by: Kevin Bryant



**WATER LEVEL OBSERVATIONS**

No free water observed.



Boring Started: 06-17-2020

Boring Completed: 06-17-2020

Drill Rig: Geoprobe

Driller: Vortex

Project No.: 90207061

Exhibit: B-7

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATA\_TEMPLATE.GDT 7/17/20

# BORING LOG NO. B-16

**PROJECT:** Beck Landfill Methane Well Installation

**CLIENT:** Beck Companies

**SITE:** 550 FM 78  
Schertz, TX

GRAPHIC LOG	LOCATION Exhibit 2 Latitude: 29.55001° Longitude: -98.26657°	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	Methane (percent)
DEPTH	MATERIAL DESCRIPTION					
7.0	<b>SILTY CLAY (CL)</b> , medium plasticity, brown, dry to moist, soft to medium stiff.	5			60	0.3
9.0	<b>SANDY LEAN CLAY (CL)</b> , low to medium plasticity, light brown, dry to moist, soft to medium stiff.					2.0
10.0	<b>LEAN CLAY/FAT CLAY (CL/CH)</b> , medium to high plasticity, orangish-brown, moist, stiff.	10				
<i>Boring Terminated at 10 Feet</i>						

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:  
Direct Push Technology

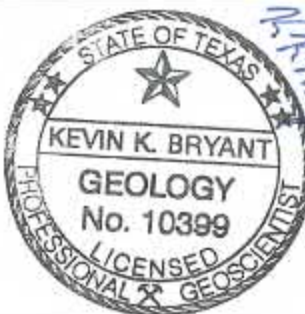
Abandonment Method:  
Boring backfilled with bentonite  
Surface capped with concrete

Notes:

Logged by: Kevin Bryant

**WATER LEVEL OBSERVATIONS**

*No free water observed.*



Boring Started: 06-17-2020

Boring Completed: 06-17-2020

Drill Rig: Geoprobe

Driller: Vortex

Project No.: 90207061

Exhibit: B-8

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TX\_ENVIRONMENTAL\_SMART\_LOG\_90207061 BORINGS.GPJ TERRACON\_DATATEMPLATE.GDT 7/17/20

**APPENDIX G-B**  
**Typical Gas Monitoring Data Form**

