#### SUBSURFACE INVESTIGATION REPORT

For

# PESCADITO ENVIRONMENTAL RESOURCE CENTER TYPE I MUNICIPAL SOLID WASTE MANAGEMENT FACILITY LAREDO, WEBB COUNTY, TEXAS MSW PERMIT NO. 2374

Prepared for

CB&I

Dallas, Texas

On behalf of

# RANCHO VIEJO WASTE MANAGEMENT, LLC

Prepared by

-25-15

GEOLOGY 259

RABA KISTNER ENVIRONMENTAL, INC.

San Antonio, Texas

**PROJECT NO. ASF13-140-00** 

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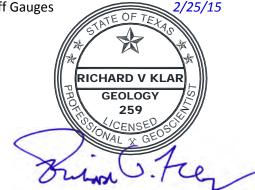
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#### 1.0 INTRODUCTION

This Subsurface Investigation Report was prepared to present a discussion of subsurface investigation activities and findings for a municipal solid waste (MSW) permit application (MSW Permit No. 2374) for the proposed Pescadito Environmental Resource Center facility. As depicted on the attached *Site Location Map (Figure 1)*, the proposed facility is located on an approximate 12,194-acre ranch property, located about 18 miles east of Laredo off of U.S. Highway 59 in rural south-central Webb County, Texas. Rancho Viejo Waste Management, LLC is seeking approval from the Texas Commission on Environmental Quality (TCEQ) MSW Permits Section to construct a new Type I municipal solid waste management facility at the site. The total size of the proposed MSWLF facility to be permitted is approximately 1,100 acres, which includes a municipal solid waste management landfill (MSWLF) unit comprising approximately 800 to 850 acres. As depicted on *Figure 1*, the proposed MSW facility is fully contained within the larger 12,194-acre ranch property boundary, which is owned by an affiliate company.

Subsurface investigation activities documented and discussed herein were conducted as a collaborative effort between Raba Kistner Environmental, Inc. (RKEI) and our affiliate company, Raba Kistner Consultants, Inc. (RKCI). This Subsurface Investigation Report (SIR) is intended to accompany the Geotechnical Data Report (GDR) for this permit application that was prepared under separate cover by RKCI.

#### 2.0 FIELD EXPLORATION PROGRAM

The total size of the proposed facility is approximately 1,100 acres (i.e., proposed permit boundary), although the area of the proposed Type I MSW landfill unit will comprise approximately 800 to 850 acres. As described in more detail in the following subsections, the field exploration program, which formed the basis of the subsurface investigation for this site, was accomplished in four (4) discrete phases conducted from November 2009 through January 2012.

The approved Soil Boring Plan (SBP) for this project consists of an original SBP dated February 1, 2011 and a revised SBP submitted on March 21, 2011. The revised SBP was approved by TCEQ in a letter dated April 11, 2011. A copy of the referenced acceptance letter is included herein as *Appendix A*. Subsurface investigation for the proposed facility permit boundary area was collectively evaluated by the installation of a total of 57 exploratory soil borings, 19 piezometers, and 2 exploratory test pits at the locations shown on the *Boring/Test Pit Location Map (Figure 2)*.

As presented on *Figure 2*, soil borings installed during preliminary study phases (i.e., Phases I and II) are designated as B-1 through B-26 (excluding B-9), whereas borings installed following TCEQ approval of the SBP (i.e., Phase III) are designated as B-9, B-101 through B-126, B-11A, B-109A, B-114A, and DB-1, respectively. Borehole geophysical logging was conducted in selected Phase III borings and an adjacent ranch water-supply well as part of the Phase III study effort. Exploratory test pits (Phase IV) designated as TP-1 and TP-2 were conducted as the final subsurface investigation effort in January 2012. The geographic positions and elevations of all borings, piezometers, and test pits were obtained by **RKEI** using survey-grade (real-time kinematic) global positioning system (GPS) technology and therefore, are considered accurate to within 1 meter ground surface resolution. In all instances, geographic survey data was tied to existing benchmarks established for this project along the perimeter of the proposed landfill permit boundary by a registered professional land surveyor (RPLS). The geographic positions and elevations established for soil borings, piezometers, test pits, and staff gauges installed to evaluate

water levels in four existing surface water impoundments are provided in *Table 1 – Soil Boring/Test Pit/Staff Gauge Position Table*.

Boring logs containing information specified pursuant to §330.63(e)(4) generated following the completion of all phases of subsurface investigation in addition to a key to terms and symbols are provided in *Appendix B*. As part of the field exploration program, borehole geophysical logs were obtained to complement borehole logging data at the majority of Phase III (open-hole) boring locations. Additionally, geophysical logs were obtained at 7 of the 9 cased piezometers installed as part of the Phase I and II study effort the existing water-supply well located on the adjacent ranch property completed to a depth of about 1,166 feet within the underlying Yegua Aquifer. The location of the water-supply well is provided on *Figure 2*. Geophysical logs for all borehole logging activities are provided in *Appendix C*.

The following sections present a more detailed discussion of subsurface investigation activities and findings.

#### 2.1 SOIL BORING PLAN

The number and depths of borings installed to achieve site characterization objectives was determined in consultation with the TCEQ MSW Waste Permits section as part of the formal regulatory review process. The SBP was formally approved by the TCEQ MSW Waste Permits Section in correspondence dated April 11, 2011 and proposed installation of 27 additional soil borings to depths ranging from 120 to 160 feet below ground surface (bgs), 10 of which would be converted to piezometers, for a combined total of 57 soil borings and 19 piezometers. In addition to the soil borings and piezometers explicitly proposed as part of the Boring Location Plan, borings/piezometers designated as B-11A, B-109A, and B-114A were installed to further evaluate shallow groundwater conditions associated with saturated soil conditions observed at adjacent borings. As further discussed in *Section 2.3.1*, boring DB-1 was advanced to a depth of 502 feet bgs to further evaluate hydrogeologic conditions within the underlying Yegua-Jackson Group formation to facilitate collection of deep geophysical logging data.

Collective subsurface characterization activities for the proposed landfill permit boundary area was therefore evaluated by the installation of a total of 57 exploratory soil borings, 19 piezometers, borehole geophysical logging, and 2 exploratory test pits at the locations shown on *Figure 2*. Information pertaining to the installation of exploratory soil borings advanced during all phases of subsurface investigation, including drilling and sampling methods, is summarized in the following tables.

Summary of Exploratory Borings – Phase I

Soil Boring	Installation Date	Depth (Feet bgs)	Drilling Method	Sampling Method
B-1	11/09/09	95.7	ARD/HSA	SSP
B-2	11/12/09	77.5	ARD	SSP

# **Notes:**

ARD – Air Rotary Drill HSA – Hollow Stem Auger Drill SSP – Split Spoon Sample

# Summary of Exploratory Borings – Phase II

Soil	Installation	Depth	Drilling	Sampling
Boring	Date	(Feet bgs)	Method	Method
B-3	06/09/10	160	RSD	RSTS
B-4	07/01/10	120	RSD	RSTS
B-5	06/29/10	160	RSD	RSTS
B-6	06/13/10	160	RSD	RSTS
B-7	07/07/10	160	RSD	RSTS
B-8	06/26/10	120	RSD	RSTS
B-10	07/14/10	120	RSD	RSTS
B-11	06/10/10	160	RSD	RSTS
B-12	06/25/10	160	RSD	RSTS
B-13	06/11/10	160	RSD	RSTS
B-14	06/23/10	160	RSD	RSTS
B-15	06/24/10	120	RSD	RSTS
B-16	06/25/10	160	RSD	RSTS
B-17	06/23/10	120	RSD	RSTS
B-18	07/15/10	160	RSD	RSTS
B-19	06/22/10	160	RSD	RSTS
B-20	07/15/10	120	RSD	RSTS
B-21	07/19/10	160	RSD	RSTS
B-22	07/18/10	120	RSD	RSTS
B-23	07/15/10	120	RSD	RSTS
B-24	07/23/10	160	RSD	RSTS
B-25	07/20/10	120	RSD	RSTS
B-26	07/22/10	160	RSD	RSTS
B-27	07/22/10	120	RSD	RSTS

# Notes:

RSD – RotoSonic Drill RSTS – RotoSonic Tube Sample

# Summary of Exploratory Borings – Phase III

Soil	Installation	Depth	Drilling	Sampling
Boring	Date	(Feet bgs)	Method	Method
B-9	4/5/11	160	RSD	RSTS
B-11A	06/25/11	104	RSD	RSTS
B-101	07/06/11	151	WRD	MPB/Core
B-102	07/09/11	160	WRD	MPB/Core
B-103	04/06/11	120	RSD	RSTS
B-104	04/07/11	120	RSD	RSTS
B-105	04/06/11	160	RSD	RSTS
B-106	07/10/11	120	MRD	MPB/Core
B-107	04/08/11	160	RSD	RSTS
B-108	04/09/11	120	RSD	RSTS
B-109	04/11/11	160	RSD	RSTS
B-109A	06/25/11	85	RSD	RSTS
B-110	05/11/11	120	RSD	RSTS
B-111	05/10/11	120	RSD	RSTS

B-112	05/05/11	160	RSD	RSTS
B-113	04/13/11	160	RSD	RSTS
B-114	05/03/11	120	RSD	RSTS
B-114A	05/25/11	20	RSD	RSTS
B-115	05/09/11	120	RSD	RSTS
B-116	04/15/11	160	RSD	RSTS
B-117	05/02/11	120	RSD	RSTS
B-118	04/29/11	160	RSD	RSTS
B-119	04/19/11	160	RSD	RSTS
B-120	04/18/11	120	RSD	RSTS
B-121	05/08/11	120	RSD	RSTS
B-122	04/16/11	160	RSD	RSTS
B-123	04/29/11	160	RSD	RSTS
B-124	05/06/11	160	RSD	RSTS
B-125	04/17/11	121	RSD	RSTS
B-126	05/07/11	160	RSD	RSTS
DB-1	06/07/11	502	RSD	RSTS

# Notes:

RSD - RotoSonic Drill

RSTS - RotoSonic Tube Sample

WRD - Wet Rotary Drill

Core - NX Core Sample

MPB - Modified Pitcher Barrel Sample

# Summary of Test Pit Investigation - Phase IV

Soil Boring	Installation Date	Depth (Feet bgs)	Drilling Method	Sampling Method
TP-1	1/16/12	21	Excavator	Undisturbed Block and Push Tube
TP-2	1/17/12	26	Excavator	Undisturbed Block and Push Tube

As summarized on *Table 2 – Summary of Soil Boring/Test Pit Depths and Elevations*, all exploratory borings/test pits with the exception of B-114A and TP-1 were advanced to depths ranging from approximately 7 to 474.5 feet into the unweathered portion of the Yegua-Jackson Group formation (Stratum IV). The following sections provide a more detailed discussion of subsurface investigation activities and findings.

# 2.2 PRELIMINARY ASSESSMENT (PHASES I AND II)

#### 2.2.1 Soil Borings

The subsurface investigation (Phase I) initiated in November 2009 consisted of 2 initial borings designated as B-1 and B-2, both of which were converted to permanent piezometers. Initial study borings were installed by Vortex Drilling, Inc. There were significant difficulties achieving target exploration depths and obtaining representative soil/rock samples utilizing conventional hollow-stem auger and air-rotary drilling methods due to presence of thinly interbedded rock units (i.e., sandstone, siltstone, and claystone). Boring B-1 reached a total depth of 95.7 feet and B-2 reached a total depth of 78.5 feet.

The Phase II investigation consisted of 24 borings advanced using RotoSonic drilling methods to achieve targeted (full-design) depth into the Yegua-Jackson Group formation. These borings were drilled by Boart Longyear Company and designated as B-3 through B-8, and B-10 through B-27. A total of 7 of the Phase II borings were converted to permanent piezometers (B-6, B-10, B-13, B-18, B-24, B-26, and B-27). Phase II investigation efforts were completed in July 2010 and resulted in the installation of a total of 24 borings and 7 piezometers. As presented in the preceding Summary of Exploratory Borings — Phase II table in Section 2.1, the boring depths ranged from 120 to 160 feet deep. As depicted on Figure 2, Phase II exploratory borings were installed at an approximate 1,000 feet to 1,500 feet grid spacing.

Although the application of RotoSonic drilling methods was able to penetrate the Yegua-Jackson strata efficiently and obtain near-continuous core samples, the samples obtained from the RotoSonic drilling process were considered suitable only for classification testing purposes and did not provide undisturbed samples necessary to fulfill required geotechnical testing applications (i.e., permeability). Further, the RotoSonic drilling methods used to recover the majority of the soil samples employed high frequency mechanical vibration that, in some instances, may have disturbed the soils such that structural features characteristic of stiff, overconsolidated clayey soils typical of the Yegua-Jackson and/or associated with formation secondary porosity (i.e., fissuring, fracturing and/or jointing) were obscured during visual examination of the samples. However, features indicative of active weathering processes along clay parting surfaces, including ferrous staining and/or mineralization associated with the presence and migration of subsurface water, were not obscured as the result of the drilling process and are noted in the boring logs where encountered. All borings not completed as piezometers were plugged with a Portland cement/bentonite grout slurry to the ground surface in accordance with State of Texas requirements following completion of drilling, sampling, and observation activities.

## 2.2.2 Piezometers

On the basis of logging observations, shallow groundwater was first observed at depths of about 17 to 20 feet in open borings, but consistently rose to depths of about 4 to 12 feet in open borings after about 24 hours. It is considered likely that RotoSonic drilling methods introduced disturbance to the surrounding soil strata, thereby enhancing localized effective porosity and influencing water levels initially observed in open borings and screened piezometers. It is possible that disturbance around the borehole could have caused hydraulic communication along the entire depth of the borehole, possibly bypassing the screened piezometer interval, and allowing infiltration of shallow groundwater. The RotoSonic drilling method also introduces water into the borehole to provide cooling of the drilling tool and casing. Borings purposely left open to maximum depths of 10 feet remained dry during 24-48 hour periods of observation.

In an attempt to evaluate the hydraulic interconnectivity of shallow groundwater present in subsurface soil units, Phase I and II piezometers were installed and generally screened within the following discrete depth intervals: 10 to 30 feet, 30 to 45 feet, 40 to 60 feet, 45 to 60 feet, and 60 to 75 feet. Subsequent to the completion of well surging activities necessary to remove drilling artifacts, water levels at all piezometer locations achieved consistent static elevations.

## 2.3 SUBSURFACE INVESTIGATION (PHASE III)

The Phase III program was initiated in April 2011 following approval of the Boring Location Plan and involved the installation of 31 additional borings, generally ranging in depths from about 120 to 160 feet, including 10 that were converted to piezometers. Drilling activities associated with the Phase III study effort were completed in July 2011. Note that borings identified throughout this report by an "A" after the boring number represent extra "twin" borings used for piezometer installation only and were drilled in the vicinity of the original boring some time after it had been completed. The following subsections provide a detailed discussion of Phase III assessment activities and findings.

# 2.3.1 Soil Borings and Piezometers

Phase III field activities were conducted during April through July 2011, and involved the advancement and sampling of 31 soil borings. Phase III study borings were designated as B-9, B-101 through B-126, B-11A, B-109A, B-114A, and DB-1, respectively. As presented on *Figure 2*, boring locations were installed to tighten the grid pattern established during the completion of Phase II assessment activities. As is evident from the map, these borings are uniformly distributed and located within about 500 to 1,100 feet of each other. With the exception of a single 502-foot depth boring designated as DB-1, boring depths ranged from 120 feet to 160 feet below ground surface.

Given their familiarity with site conditions, Boart Longyear Company was engaged to install the majority of Phase III study borings and associated piezometers. With the exception of borings B-101, B-102, and B-106, RotoSonic methods were employed for the Phase III study effort resulting in the acquisition of relatively continuous soil samples comprised of 5 to 20 foot long sample runs. In harder depth intervals containing interbedded sandstone and siltstone units, it was necessary to collect samples along shorter sample runs to promote continuous recoveries. Once extruded from the sampling device, the intact samples were visually identified and then cut into manageable lengths for visual classification and geotechnical sample preservation purposes. The samples obtained from the RotoSonic drilling method were utilized for classification testing purposes only as these were not undisturbed and therefore not suitable for geotechnical testing requirements.

In an unsuccessful initial attempt to obtain additional undisturbed geotechnical samples for permeability testing, borings B-101, B-102, and B-106 were installed and sampled by Geoprojects International, Inc., a qualified drilling contractor specializing in conventional soil/rock coring techniques, using wet rotary drilling techniques. Samples were obtained in conjunction with this drilling effort using standard NX-coring methods in addition to a modified Pitcher Barrel Sampler.

Similar to the Phase II study, borings were allowed to remain open for periods of about 24 to 48 hours following the completion of sampling activities to allow for the collection of water level measurements. As further discussed in *Section 4.1* of this report, a total of 10 piezometers were installed in conjunction with the Phase III study effort to further evaluate shallow groundwater conditions throughout the proposed landfill area, including areas where thicker sand lenses/bedding units were indicated within the targeted exploration interval by adjacent boring log data. Following the completion of drilling and sampling activities, all borings that were not completed as piezometers to evaluate shallow groundwater conditions were plugged in accordance with State of Texas requirements as described with respect to Phase II activities. Depth to water measurements observed during drilling at all study boring locations in addition to most recent static levels are presented on boring logs provided in *Appendix B*.

In the furtherance of site characterization goals, a single deep boring designated as DB-1 was installed within the northwest portion of the site to a depth of 502 feet below existing ground surface. The referenced boring was installed to further evaluate conditions within the unweathered Yegua-Jackson Group formation (Stratum IV) and confirm the absence of a perennial aquifer to depths of at least 500 feet below the proposed landfill. In addition to visual logging and classification of soil strata, the entire depth of the borehole was logged using borehole geophysical methods in a consistent manner with other Phase III study borings.

# 2.3.2 Borehole Geophysical Logging

Borehole geophysical logging activities were conducted as part of the Phase III study to further evaluate geologic/hydrogeologic conditions and augment existing site characterization data obtained as the result of borehole sampling and logging efforts. Specifically, borehole geophysical logging was conducted to evaluate subtle lithologic variations in logged stratigraphy (i.e., predominantly clays and sandy clays with scattered, sand, sandstone, and siltstone intervals). In all instances, geophysical logging activities were conducted by Geo Cam, a qualified services provider headquartered in San Antonio, Texas. Borehole geophysical logging efforts were conducted in accordance with the following schedule:

- Select PVC-cased Phase I and II piezometers (i.e., B-1, B-2, B-10, B-18, B-24, and B-27), which were installed to depths ranging from 45 to 75 feet bgs, were logged utilizing electromagnetic (EM) induction conductivity, single-point electrical resistivity, and natural gamma methods.
- A majority of open Phase III borings, generally ranging from 120 to 160 feet bgs in depth, and deep boring DB-1 advanced to a depth of 502 feet bgs, were logged utilizing electrical resistivity, spontaneous potential, natural gamma, and caliper methods. Due to borehole collapse, it was not possible to obtain geophysical logs at borings B-110, B-114, and B-120. Due to the shallow depth of boring B-114A, geophysical logging was not conducted.
- An existing water-supply well located on the adjacent ranch property that is utilized to support agricultural and livestock operations for the surrounding ranch property and located approximately 1,000 feet southwest of the proposed permit boundary was logged to its total depth of 1,166 feet bgs utilizing single-point electrical resistivity, spontaneous potential, natural gamma, and caliper methods.

In general, borehole geophysical logging results at both cased piezometers and open borings confirmed that the subsurface stratigraphy is dominated by clays and sandy clays containing thinly to very thinly interbedded sandstone, siltstone, and claystone layers, with isolated thicker occurrences of sand, sandstone and siltstone, particularly with increasing depth into the unweathered portion of the Yegua-Jackson Group formation (i.e. Stratum IV discussed below). Geophysical logging results were also considered with respect to the screened interval depths of piezometers B-11A, B-101, B-102, B-106, B-109A, B-114A, B-115, B-118, B-124, and B-126 based on the interpreted occurrence of thicker sand and/or sandstone lenses/bedding units within discrete borehole depth intervals.

Borehole geophysical of deep boring DB-1 was conducted to facilitate correlation of site-specific borehole geophysical data to data generated by others for similar depth intervals in connection with

surrounding (deep) oilfield borehole geophysical logging activities. Borehole geophysical logging of an adjacent ranch water-supply well to a depth of about 1,166 feet was also conducted for similar correlation purposes. The location of the water-supply well is presented on *Figure 2*. Copies of all referenced geophysical logging data generated in conjunction with the collective subsurface investigation effort for this site are provided in *Appendix C*.

# 2.4 SUBSURFACE INVESTIGATION (PHASE IV)

Two exploratory test pits, designated as TP-1 and TP-2, were excavated in January 2012 to supplement the results of the previous Phase I-III investigations and to provide undisturbed soil samples for geotechnical testing purposes (e.g., permeability testing). Test pits were excavated in the east-central portion of the site. Test pit locations are shown on *Figure 2*. Specific objectives of the test pit installations were as follows:

- (i) examine larger-scale subsurface soil structural relationships and formational contacts;
- (ii) further evaluate the occurrence and quantity of shallow groundwater and the relationship of subsurface soil unit hydraulic connection(s); and
- (iii) provide representative, undisturbed soil samples for laboratory in-situ vertical axis and horizontal axis coefficient of permeability testing for all four subsurface strata previously identified in Phases I-III.

Test pits were installed by Ellis and Ellis, Inc., a local excavation contractor, utilizing a tracked hydraulic excavator (i.e., Caterpillar 330D). As presented on *Figure 2*, test pit locations were selected in relatively close proximity to each other in areas initially inferred to possess greater and lesser accumulations of Recent-Pleistocene (R-P) sediments discussed in *Section 3.1*. Test pit TP-1, located at a slightly lower surface elevation and in close proximity to the mapped extent of the 100-year floodplain associated with the unnamed tributary of San Juanita Creek, was expected to exhibit a greater thickness of R-P sediments relative to the upland TP-2 location. The pits were excavated to uniform depths of 21 feet bgs (TP-1) and 26 feet bgs (TP-2). Detailed descriptions of soil conditions encountered during the test pit excavation process are provided on *Table 3 – Summary of Observations During Test Pit Installation* with corresponding primary stratum designations. All four identified strata described in *Section 3.0* were encountered and sampled successfully.

Test pit TP-1 was left open for approximately 24 hours following excavation in order to evaluate the nature and occurrence of near-surface shallow groundwater seepage at this location. As indicated on *Table 3*, slight groundwater seepage was initially observed in TP-1 in the north (upgradient) face of the excavation at 7 feet bgs during excavation through the contact between the Recent-Pleistocene (Stratum I discussed below) and subsequently observed in the highly-weathered Yegua-Jackson (Stratum II discussed below) at a depth of approximately 11 to 11.5 feet bgs along a bedding contact within the uppermost, very weathered Yegua-Jackson. However, the observed seepage, for the most part, was observed to have dried up overnight and no accumulation of groundwater was observed in TP-1 throughout the 24-hour observation period. No indication of shallow groundwater seepage or accumulation was observed during excavation of TP-2 to a total depth of 26 feet bgs.

Following the completion of sample collection and logging efforts, test pits were backfilled using excavated soils. Soils were placed and compacted using the hydraulic excavator in approximate 1 to 2 foot lifts. Backfilling resulted in near-restoration to original ground surface contours.

#### 3.0 DISCUSSION OF SITE STRATIGRAPHY

As described previously herein, the existing subsurface characterization of the proposed landfill permit boundary is supported by a total of 57 soil borings, 19 piezometers, 2 test pits, and borehole geophysical logging of selected borings and the nearby ranch well. The subsurface conditions encountered at the boring locations are depicted on boring logs provided in *Appendix B* and represent an interpretation of the subsurface conditions based on collective field logging efforts, visual examination of field samples, and laboratory classification testing results of selected field samples. It should be noted that the lines designating the interfaces between individual strata on the boring logs represent approximate boundaries, and transitions between strata are in many instances gradual. Materials classification testing results (i.e., soils properties) for laboratory samples are discussed separately in the Geotechnical Data Report for this permit application.

As indicated previously, it was noted that the RotoSonic drilling methods used to recover the majority of the soil samples employed high frequency mechanical vibration that, in some instances, disturbed the soils such that structural features characteristic of stiff, overconsolidated clayey soils typical of the Yegua-Jackson and/or associated with formation secondary porosity (i.e., fissuring, fracturing and/or jointing) may have been obscured during visual examination of the samples. However, features indicative of weathering along clay parting surfaces including ferrous staining and/or mineralization associated with the presence and migration of subsurface water, which were not obscured as the result of the drilling process, are noted in the boring logs where encountered.

Boring and test pit information indicates that the subsurface stratigraphy at the site consists predominantly of clay and sandy clay soils containing very thinly interbedded sandstone, siltstone, and claystone rock units. Below the surficial Recent-Pleistocene (R-P) deposits, the samples of soil strata encountered in the borings to depths on the order of 160 feet below existing ground surface are typical of the Yegua-Jackson Group formation. Interpretive geologic cross sections were developed on the basis of boring log and test pit data. Cross sections are labeled A-A' through J-J' and provided on *Figures 4 through 13*, respectively. The locations of geologic cross sections are depicted on *Figure 3 – Cross-Section Index Map*. As presented on the referenced figures, four primary stratigraphic units have been designated at the site based upon review and interpretation of boring logs and geologic sections, in addition to consideration of borehole geophysical logging data, and test pit information and photographs. The following sections provide a description and discussion of primary stratigraphic units.

#### 3.1 STRATUM I – RECENT-PLEISTOCENE SOILS

This stratum consists of Recent-Pleistocene (R-P) deposits and generally corresponds to surface and near-surface soil strata logged within low-lying portions of the site underlain by Quaternary Alluvium (Qal) as designated on the published geologic maps of the area, in addition to upland areas having little to no topographic slope. This stratum consists of clays and sandy clays, with limited sand and occasional gravel and cobbles. The clays are stiff to firm, brown to light brown, and occur at ground surface (where present) to depths of approximately 18 feet bgs.

At most boring/test pit locations the base of Stratum I may be identified by the presence of a thin gravel layer containing a wide variety of igneous and sedimentary rock types. Stratum I was not identified at all boring locations and is inferred to be absent in areas of the site having a slight to moderate topographic slope adjacent to upland areas. Seasonally, perched subsurface water may be encountered in this stratum. Based on observations during test pit excavation, an ephemeral fresh water lens appears to be present following rainfall events to depths on the order of 1 to 3 feet bgs, which controls the thickness of the plant root zone.

#### 3.2 STRATUM II – HIGHLY WEATHERED EOCENE RESIDUUM

This stratum corresponds to highly weathered surface and near-surface Eocene age soil strata logged throughout the majority of the site, both below the Qal, and in upland areas designated on the *Geologic Atlas of Texas Laredo Sheet (1976)* geologic map as the Yegua-Jackson Group formation (Y-J). This stratum is essentially a weathered-in-place (residual) soil horizon exhibiting similar structure and layering as underlying, less-weathered materials. This stratum consists of predominantly clay with minor sandy clay with ferrous staining, calcareous nodules, and organic (plant root) materials. The clays are fissured, stiff to hard, overconsolidated, and brown to light reddish brown with some brownish gray to greenish gray layers. At some locations, gypsum (selenite) and ironstone concretions were encountered. This stratum occurs from ground surface (where exposed) or below Stratum I soils to depths of up to 10 feet bgs, with a maximum thickness of 10 feet. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria established by Terzaghi and Peck in *Soil Mechanics in Engineering Practice* (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values.

As a result of post-Eocene geologic processes, Stratum II is not uniformly developed or laterally continuous throughout the site; and therefore was not always identified discretely in boring logs. In many instances, Stratum II was not logged as a separate unit, but simply described as the uppermost weathered portion of Stratum III as described below. Seasonally, the perched shallow subsurface water associated with Stratum I may also be encountered in this stratum. Based on observations during test pit excavation, an ephemeral fresh water lens appears to be present following rainfall events to depths on the order of 1 to 3 feet bgs, which controls the thickness of the plant root zone. Below this depth, scattered ephemeral saline water lenses occur throughout the remaining vertical extent of weathered Stratum II and/or Stratum III soils.

#### 3.3 STRATUM III – WEATHERED EOCENE SOILS

This near-surface stratum underlies Stratum I and Stratum II throughout the site and is considered to represent Eocene sediments associated with the upper weathered (e.g., ferrous stained) surface of the Yegua-Jackson Group formation (Y-J). This stratum consists of clay and sandy, silty clay with thinly to very thinly interbedded claystone, siltstone, and sandstone seams and lenses (i.e., bedding units typically 1 to 2 feet or less). The clays are fissured, hard, overconsolidated, light brown and brown to reddish brown with some olive to pale yellow layers, with scattered greenish gray to gray mottling and ferrous staining, and have a blocky structure. Stratum III is encountered at depths ranging from approximately 2 to 39 feet bgs, and ranges from approximately 8 to 33 feet in total thickness.

This stratum is generally differentiated from Stratum IV as defined below by its consistently weathered appearance along partings (i.e., ferrous and carbonaceous staining), isolated presence of weathered zones containing groundwater, and the less frequent occurrence of interbedded sandstone, siltstone, or

claystone layers. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values.

#### 3.4 STRATUM IV – RELATIVELY UNWEATHERED EOCENE SOILS

This stratum underlies Strata III throughout the site, was encountered to total exploration depth for the landfill project on the order of 160 to 500 feet (based on single deep boring, DB-1), and is considered to represent relatively unweathered Eocene soils of the Yegua-Jackson Group formation (Y-J). This stratum consists predominantly of clay and sandy, silty clay, with thinly to very thinly interbedded claystone, siltstone and sandstone seams and lenses (i.e., bedding units 1 to 2 feet or less). The clays are hard and fractured, overconsolidated, light green to green and greenish gray (with some dark gray to gray and brown to reddish brown layer with scattered greenish gray mottling) with some ferrous staining, and have a blocky (intensely fissured) structure. Stratum IV is encountered throughout the site at depths ranging from approximately 16 feet to greater than 160 feet bgs, and has a thickness exceeding 144 feet.

As indicated on boring logs, this stratum is complexly interbedded and does exhibit significant variation in the nature and occurrence of indurated materials, although very thinly interbedded claystone units are most frequently encountered throughout. Although relatively unweathered relative to Stratum III, zones of localized weathering indicated by ferrous staining and weathered surfaces of clay partings are present likely in association with shallow groundwater movement. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values.

#### 3.5 DISCUSSION OF SOIL CONDITIONS

As discussed in the preceding section, interpretation of collective site characterization data supports the designation of four primary stratigraphic units, each defined by grouping soils that possess similar physical and engineering characteristics (i.e., Recent-Pleistocene soils [Stratum II], highly weathered Eocene soil residuum [Stratum II], weathered Eocene soils [Stratum III], and relatively unweathered Eocene soils [Stratum IV]). Descriptions of these primary stratigraphic units are summarized on interpretive cross sections (Figures 4 through 13). Further discussion of site-specific geologic conditions is provided in the following paragraphs.

As presented on cross sections and boring logs, the nature and occurrence of primary stratigraphic units was found to be quite uniform within site boundaries. Except for a mantle of alluvial soils throughout the central portion of the site associated with the unnamed tributary of San Juanita Creek, subsurface soils consist predominantly of clays and sandy clays characteristic of the Yegua-Jackson Group formation. The extent of the alluvial soils is best illustrated on cross sections C-C', E-E', H-H', I-I', and J-J' (Figures 6, 8, 11, 12, and 13, respectively). Throughout the remainder of the site not directly influenced by surface drainage processes associated with the San Juanita Creek tributary, the relative thickness of the Stratum III and Stratum IV primary stratigraphic units is essentially uniform.

Although zones of significant weathering corresponding to Stratum II/III undifferentiated generally mimic surface topography and are most pronounced below existing surface drainage (i.e., 100-yr floodplain) areas, these zones extend to depths on the order of 20 to 40 feet bgs, corresponding to

elevations of about 520 to 500 feet MSL. In order to better illustrate site-specific geologic conditions independent of map scale, a stylized rendering of subsurface soil conditions was developed and is presented as Figure 14 - Conceptual Geologic Section. The referenced figure was developed based on review of interpretive geologic sections in addition to direct observations of primary stratigraphic units exposed during excavation of the exploratory test pits (Phase IV). Salient information presented on the conceptual section is summarized below:

- Upland areas occurring primarily within the north and east portions of the site are characterized by a thin veneer of Stratum I soils, which in many areas, have been eroded and washed into adjacent low-lying or basin areas on associated with broad, but relatively shallow, surface drainage features. In gently sloping upland areas throughout the site, Stratum I soils are mostly eroded away, with remaining residual gravels observed at the ground surface.
- Based on observations during test pit excavation, an ephemeral fresh water lens appears to be present following rainfall events to depths on the order of 1 to 3 feet bgs, which controls the thickness of the plant root zone. Below this depth, scattered ephemeral saline water lenses occur throughout the remaining vertical extent of weathered Stratum II and/or Stratum III soils.
- Highly weathered residuum (Stratum II) present along gently sloping upland areas throughout the site are not well developed or laterally continuous owing to dissection by surface drainage features and the associated accumulation of Stratum I alluvial soils. Stratum II is the uppermost, highly weathered portion of underlying Stratum III sediments not always identified in boring logs.
- Stratum III soils were encountered at relatively consistent depth intervals throughout the site indicating a zone of weathering consistently on the order of 20 to 40 feet thick.

As discussed in more detail in the Geotechnical Data Report for this permit application, subsurface investigation has demonstrated the presence of very stiff to hard, overconsolidated, clayey soils typical of the Yegua-Jackson Group formation from near ground surface to the maximum exploration depths on the order of 120 to 160 feet bgs. Fat clays (CH) and lean clays (CL) represent the predominant soil types observed in all study borings and the test pits. Thinly interbedded layers of clayey sands (CL), poorly graded sands (SP), silts (ML), and elastic silts (MH) were also repeatedly observed within Eocene strata. Typically at depths below about 20 to 40 feet, corresponding to the top of the relatively unweathered Eocene strata (Stratum IV), frequent very thinly interbedded rock strata consisting of fine-grained sandstone, siltstone, and claystone were observed within clay soils.

# 4.0 GROUNDWATER DATA

Information developed in conjunction with subsurface investigation activities pertaining to the nature and occurrence of shallow groundwater at the site, within the depth interval of exploration in the Yegua-Jackson Group formation (aquifer), is provided herein. To the depths explored as part of this investigation, the obtained groundwater data indicates the following conditions to be present at the site:

- Groundwater quantity appears to be limited and occurs intermittently.
- Shallow subsurface water present below the plant root zone appears to be very saline.

- Groundwater appears to be associated with thicker silt or sand units and/or secondary structure
  (i.e., fractures and clay partings) observed in the predominantly clayey soils of the YeguaJackson Group formation.
- Because of the high clay content, subsurface strata described in **Section 3.0** would appear to be relatively and/or practically impermeable.

The following discussion provides a description of piezometer installation activities and water level measurements, in addition to other pertinent groundwater observations obtained in conjunction with drilling activities, test pit observations and at staff gauges installed at the four surface water impoundments located within the site boundaries.

#### 4.1 PIEZOMETER INSTALLATION

As presented on *Figure 15 – Piezometer/Staff Gauge Location Map*, a total of 19 soil borings installed during the three assessment phases were converted to permanent piezometers constructed in accordance with applicable TCEQ and Texas Department of Licensing and Regulation (TDLR) requirements. Piezometers were generally distributed across the proposed landfill area to allow for good spatial distribution of groundwater monitoring points, but concentrated along the landfill perimeter and inferred downgradient (south) boundary. Piezometers installed during the initial phases of investigation are designated as B-1, B-2, B-6, B-10, B-13, B-18, B-24, B-26, and B-27, whereas piezometers installed following approval of the Soil Boring Plan are designated as B-11A, B-101, B-102, B-106, B-109A, B-114A, B-115, B-118, B-124, and B-126, respectively.

On the basis of preliminary observations during the initial drilling programs, which indicated essentially dry drilling conditions, piezometers were installed and screened to evaluate zones (contiguous depth intervals) where perched lenses of shallow groundwater or apparent groundwater seepage was identified. Observations during drilling predominantly did not indicate matrix saturation conditions, but rather that the occurrence of shallow groundwater throughout the exploration depth interval is limited primarily to zones of weathering along clay partings and fractures. Very thin zones of matrix saturation were observed only in association with isolated sand lenses encountered throughout the SITE. Direct observations made in conjunction with test pit installation (TP-1) indicated first shallow groundwater seepage at the Stratum II/III interface at a depth of about 11 to 11.5 feet bgs. As reported previously, however, groundwater seepage at TP-1 was observed to have dried up overnight, for the most part, and did not result in a significant (measureable) groundwater accumulation in the excavation following the completion of an approximate 24-hr observation period.

In an attempt to evaluate the occurrence of shallow groundwater present in subsurface soil units, piezometers installed during Phase I and II study efforts were screened at several discrete (15 to 20 feet) intervals between 10 to 75 feet relative to existing ground surface. Deeper piezometers installed as part of the Phase III study effort targeted deeper intervals within Stratum IV on the order of about 60 to 84 feet and 80 to 113 feet, respectively. Phase III piezometers designated as B-11A, B-109A, and B-114A, respectively, were installed to further evaluate the presence of shallow groundwater associated with sand/silt or sandstone intervals reported in conjunction with borehole logging efforts, as these may represent zones of localized saturation. As presented on *Figure 15* and depicted on geologic cross sections presented on *Figures 4 through 13*, specific screen depth intervals correlate to the following:

~10 to 45 ft well screen: Stratum I/III, Stratum III, and Stratum III/IV

~30 to 60 ft well screen: Stratum IV

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~60 to 84 ft well screen: Stratum IV
~80 to 113 ft well screen: Stratum IV

Construction details for all piezometers installed as part of the collective subsurface investigation program are provided on *Table 4 – Summary of Piezometer Construction Details and Screen Elevations*, which includes pertinent monitoring point construction details such as installation date, installation contractor, total well depths, well screen information, top-of-casing elevations, etc. Well construction diagrams were also prepared to graphically illustrate information summarized on the referenced table and are provided as *Appendix D*. State of Texas Well Reports prepared by the licensed well installation contractors (i.e., Vortex Drilling, Inc., Boart Longyear Drilling Services, and Geoprojects International, Inc.) are provided as *Appendix E*.

Following installation, all piezometers were surged by the installation contractor prior to the acquisition of static depth to water measurements to remove drilling artifacts (i.e., remove fine sediments from filter packs). Very slow recharge rates were generally observed during this process, and it was noted that piezometers at all locations were purged essentially to dryness following the removal of one well volume of water. Typically, water levels did not fully recover following purging activities for periods of 24 to 48 hours. Due to slow recharge conditions, surging activities were conducted over the course of several days at most piezometer locations, irrespective of screen depth interval.

#### 4.2 WATER LEVEL MEASUREMENTS

# 4.2.1 Observations During Drilling

On the basis of logging observations made during all phases of exploratory drilling, shallow groundwater, where encountered, was first observed at depths of about 4.5 to 31 feet in open borings, but consistently rose to depths of about 4 to 12 feet after about 24 to 48 hours of observation, irrespective of boring depth, provided that borings were deep enough to penetrate into Stratum III or IV (i.e., generally greater than 10 feet). As reported on soil boring logs in *Appendix B*, the presence of wet soil or matrix saturated conditions was only observed in about 7 of the 57 exploratory boring locations installed as part of the collective subsurface assessment effort. Indications of shallow subsurface water or groundwater observed above 35 to 40 feet bgs (i.e., within stratigraphic units overlying Stratum IV) during soil boring logging activities are summarized as follows:

- Wet soil conditions and free water were observed in hard greenish gray and gray sandy clay (Stratum III) from 26 to 31.5 feet bgs in boring B-6, which was located in a topographically higher upland area.
- Free water was observed in hard brown clay (Stratum III) from 17 to 18 feet bgs in boring B-13.
- Wet to saturated soil conditions and free water were observed in a sand lens with scattered gravel (Stratum I, at the interface with Stratum II) from 7 to 13 feet bgs in boring B-18.
- Wet to saturated soil conditions and free water were observed in firm light brown clay (Stratum I) from 4.5 to 10 feet bgs and firm light brown to brown clay (Stratum II) from 10 to 12 feet bgs in boring B-19.
- Saturated soil conditions were noted in hard tan to greenish gray clay with fine-grained sand (Stratum III) at 25 feet bgs in boring B-101 which was located in a topographically higher upland area.

- Wet soil conditions were noted in stiff to hard light brown sandy clay (Stratum I) from 8 to 12 feet bgs and in poorly graded fine sand (Stratum II) from 21.5 to 23 feet bgs in boring B-120.
- Saturated conditions were noted in a lens of poorly graded tan sand (Stratum I) from 10 to 12 feet bgs in boring B-114.

Saturated matrix conditions and/or free water were not observed at depths less than 35 to 40 feet bgs in any of the remaining 50 soil borings advanced and logged at the site during the subsurface investigation. Below 35 to 40 feet bgs, observations during drilling predominantly indicated very limited matrix saturation conditions and only in association with isolated sand lenses and that the occurrence of shallow groundwater throughout the exploration depth interval was limited to these lenses and zones of weathering along clay partings and fractures.

It was noted in conjunction with the field exploration effort that sonic drilling is analogous to driving a pipe into the ground using repeated blows of a hammer. Subsurface materials in front of the pipe are either displaced (forced) into the pipe or outside. In hard materials, the material contacted by the pipe leading edge must be pulverized so that it can be displaced and allow the pipe to advance. Sonic drilling recovers a near-continuous core (sample); however, the drilling/sampling procedure causes disturbance to the sample. As a consequence, the samples are typically unsuitable for geotechnical testing that requires an "undisturbed" sample. In sonic drilling in hard materials, water is used to cool the bit (pipe leading edge), assist in displacement of the pulverized material (cuttings), lubricate the drill casing/sampling barrel (pipe), and stabilize the borehole. Exposure of the pulverized material to water sometimes creates a "paste" or "skin" on the recovered sample. Recovered samples logged as "moist" or "slightly moist" condition were based solely on observations of the sample interior or matrix and not the outer skin condition and/or infrequently observed slight penetration of drilling water in some disturbed samples.

#### 4.2.2 Water Levels Measured in Piezometers

Following piezometer installation and the completion of surging activities, static water levels were generally obtained following the completion of all phases of subsurface exploration. A summary of static water level measurements obtained at respective piezometer locations is provided as *Table 5 – Summary of Static Water Level Measurements – Piezometers*. As presented on the referenced table, water levels have generally exhibited a decreasing trend throughout the monitoring period likely associated with persistent drought conditions experienced by the region during 2010 and 2011. On average, water level measurements at individual piezometer locations associated with the most recent gauging event conducted on January 10, 2012 are on the order of 0.5 to 4 feet lower than recorded immediately following piezometer installation. Maximum overall water level declines are noted for older piezometers installed as part of the initial Phase I and II study efforts.

Although the occurrence of shallow groundwater is primarily limited to fractures and horizontal partings within respective stratigraphic units, water level contour maps were generated for the shallow groundwater using a contouring algorithm that assumed homogeneous, isotropic subsurface conditions. Water level contour maps were initially generated utilizing all available piezometer data for each the following piezometer gauging events distributed throughout the full duration of the subsurface investigation program in order to evaluate seasonal fluctuations in groundwater levels as indicated below. Hydraulic interconnection between near-surface and deeper stratigraphic units was a primary assumption for these combined data plots.

- Combined Water Level Contour Map 10/19/10 (Figure 16)
- Combined Water Level Contour Map 3/23/11 (Figure 17)
- Combined Water Level Contour Map 7/19-20/11 (Figure 18)
- Combined Water Level Contour Map 1/10/12 (Figure 19)

Based on review of initial plots, it was observed that dissimilar static water levels were present between adjacent piezometers at a number of locations in association with both the 7/19-20/11 and 1/10/12 data plots, primarily in association with piezometers screened at relatively deep intervals (Phase III piezometer screen depths installed between 60 to 113 feet) within Stratum IV. As presented on *Figures 18 and 19*, these differences in static water level elevations appear to represent the presence of sinks or mounds in an otherwise gently sloping water table surface. In all instances, water level elevations reported for deep piezometers are approximately 1.5 to 4.5 feet greater than at adjacent shallow piezometers and likely represent increased pressure conditions within the deeper Stratum IV interval. These differences are best illustrated by comparison of water level elevations for B-10 to B-106 and B-109A, and B-24 to B-124 and B-126.

To further evaluate shallow groundwater conditions, data presented on *Figures 18 and 19* pertaining to shallow (i.e., 10 to 60 feet) and deep (i.e., 60 to 113 feet) piezometer screen depths were plotted and contoured separately for each well gauging event. These water level contour maps are provided as *Figures 20 and 21* (Shallow Water Level Contour Map with Staff Gauge Data – 7/19-20/11 and Deep Water Level Contour Map – 7/19-20/11, respectively) and *Figures 22 and 23* (Shallow Water Level Contour Map with Staff Gauge Data – 1/10/12 and Deep Water Level Contour Map – 1/10/12, respectively), associated with the 7/19-20/11 and 1/10/12 gauging events, respectively. When considered separately as presented on referenced figures, plotted water level contour data for designated shallow and deep depth intervals generally do not indicate sharp perturbations.

Assuming that sufficient connectivity exists for groundwater flow to occur, groundwater gradients are consistently on the order of 0.007 to 0.008 ft/ft to the south-southwest.

# 4.2.3 Staff Gauge Measurements

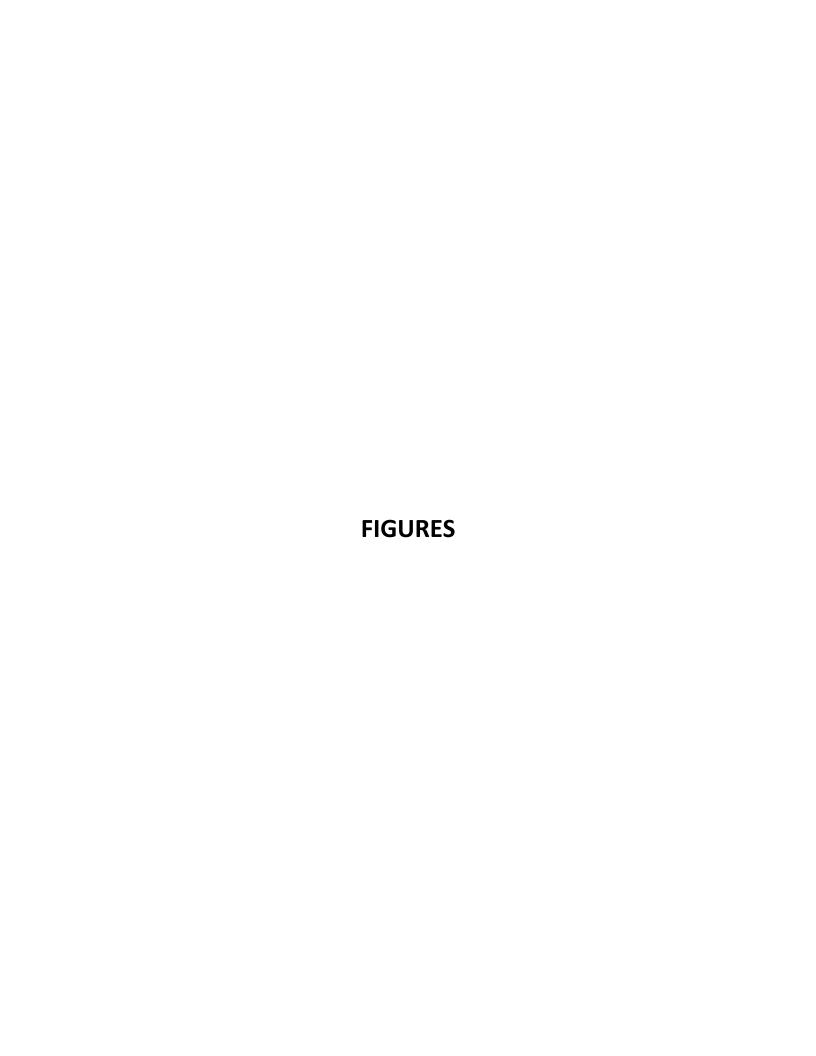
At the onset of Phase III study efforts, fixed measurement stations or staff gauges were installed adjacent to four existing (perennial) surface water impoundments as depicted on *Figure 15* to augment/correlate groundwater gauging data obtained at piezometer locations. Staff gauges were designated as SG-1 through SG-4. A summary of water level measurements obtained at respective staff gauge locations from May 2011 through January 2012 is provided as *Table 6 – Summary of Static Water Level Measurements – Staff Gauges*. Review of water level elevations indicates relatively consistent water levels for various gauging events although "dry conditions" were noted for select events at SG-2 and SG-4 locations. It should be noted that dry staff gauge readings do not indicate that the ponds were completely dry, but merely that the installed staff gauges were stranded on dry ground by dropping water levels in the perennial ponds.

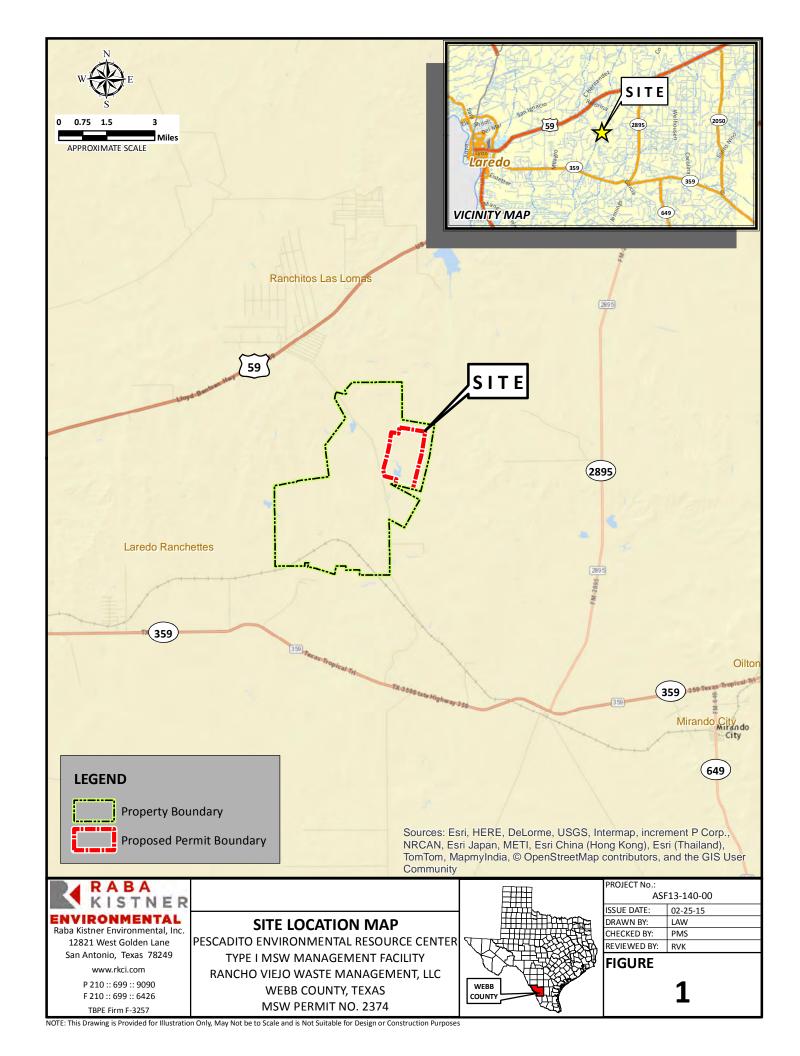
Although water levels in surface water impoundments was observed to fluctuate in direct response to rainfall events, water level measurements obtained during dry conditions correspond favorably with groundwater elevations reports at adjacent piezometers. In particular, water level elevations reported at SG-4 were typically measured within 0.5 to 2.5 feet of shallow groundwater levels at the adjacent B-114A piezometer. To better illustrate this, water level measurements from staff gauges

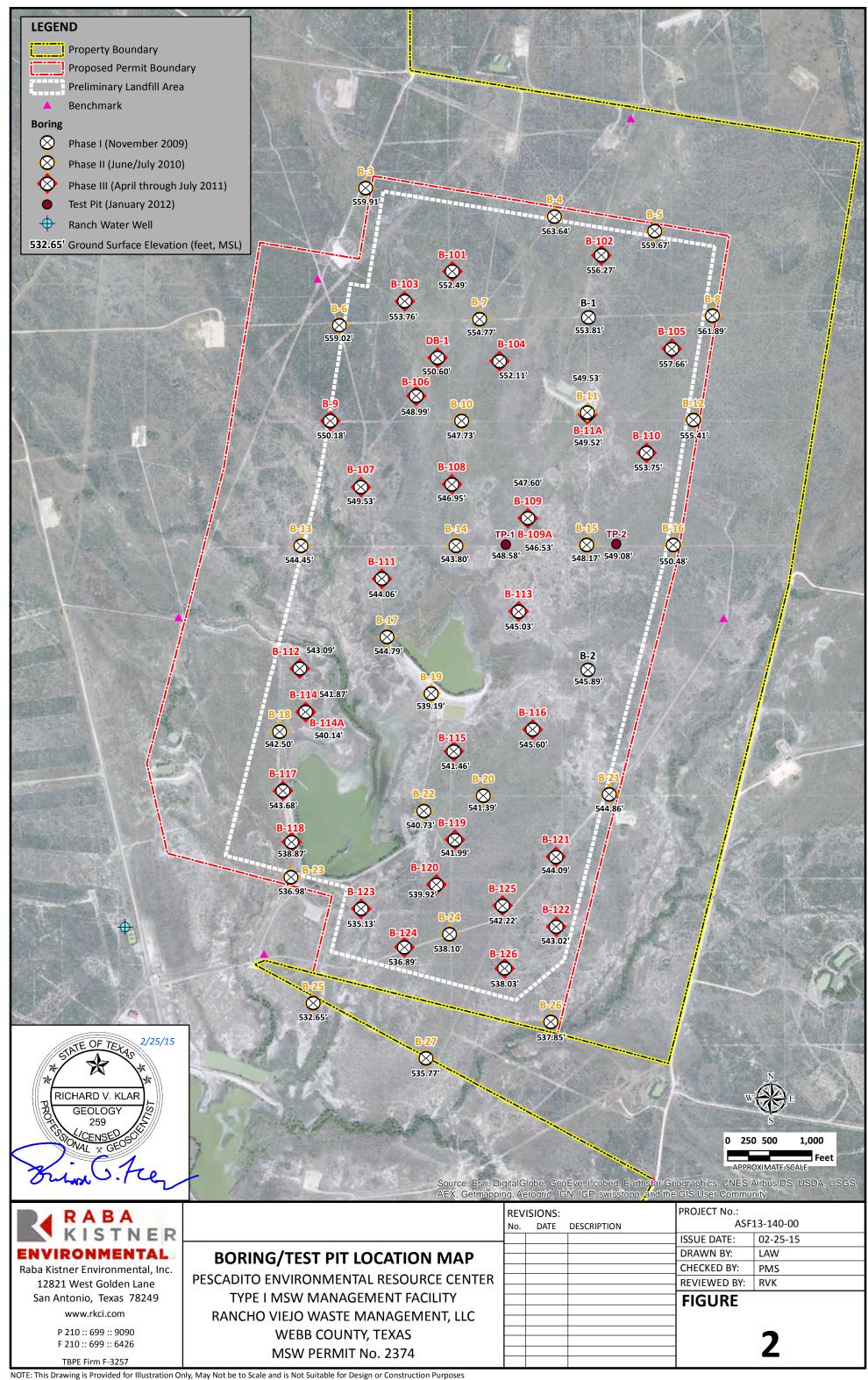
were included in water level contour plots provided on *Figures 20 and 22*. Collective piezometer gauging and soil boring logging data suggest a possible relationship between the relatively consistent water levels observed in the surface water impoundments (stock tanks) and the localized occurrences of shallow groundwater observed in proximal soil borings and piezometers.

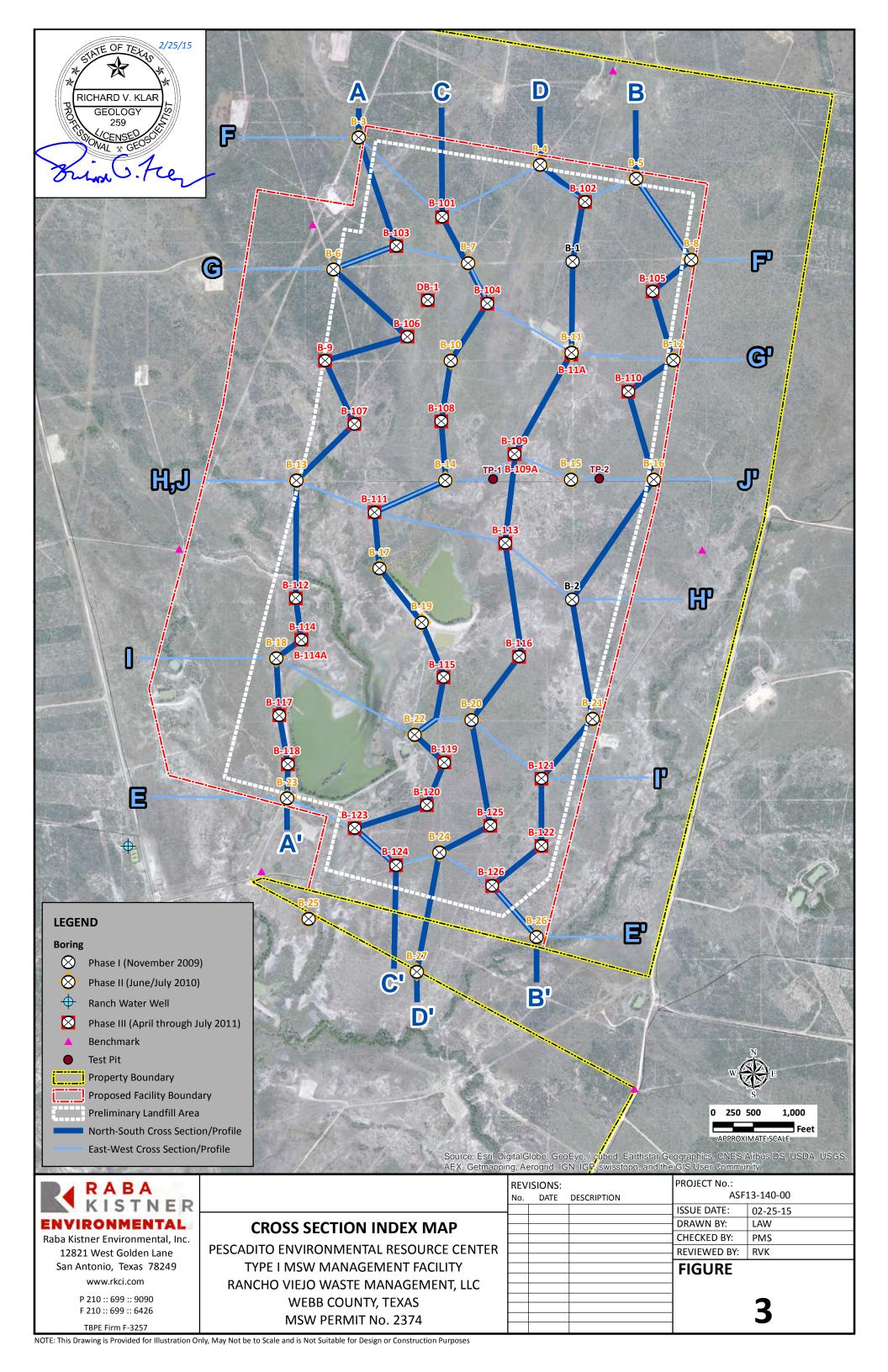
#### 4.2.4 Observations From Test Pits

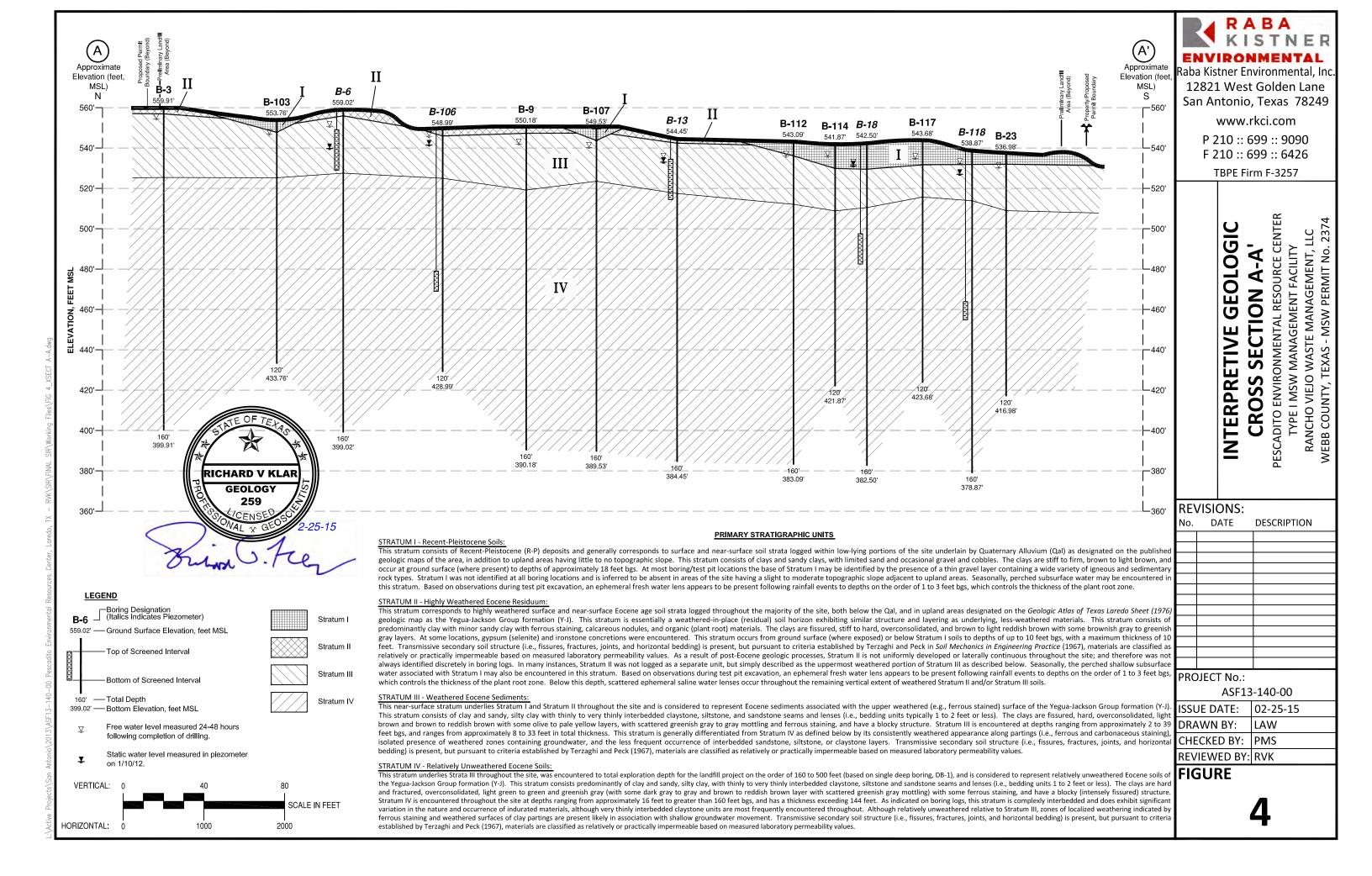
Test pit TP-1 was left open for approximately 24 hours following excavation in order to evaluate the nature and occurrence of near-surface shallow groundwater seepage at this location. As indicated on *Table 3*, slight groundwater seepage was observed in TP-1 during excavation in the north (upgradient) face of the excavation at 7 feet bgs during excavation through the contact between the Recent-Pleistocene (Stratum I), and subsequently observed in the highly weathered Yegua-Jackson (Stratum II) at a depth of approximately 11 to 11.5 feet bgs along a bedding contact within the uppermost, very weathered Yegua-Jackson (Stratum II). However, the observed seepage, for the most part, was observed to have dried up overnight and no accumulation of groundwater was observed in TP-1 throughout the 24-hour observation period. No indication of shallow groundwater seepage or accumulation was observed during excavation of TP-2 to a total depth of 26 feet bgs.

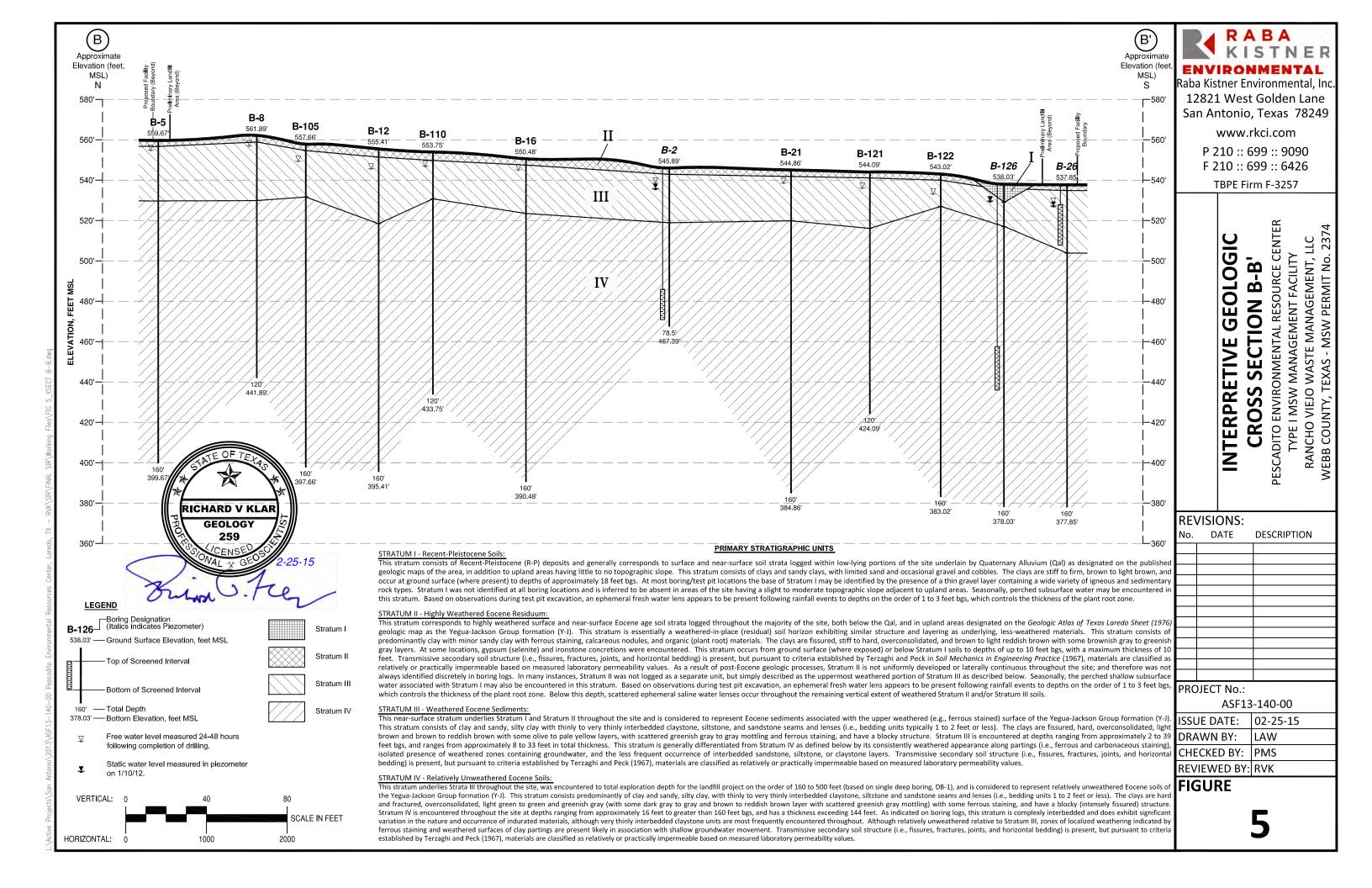


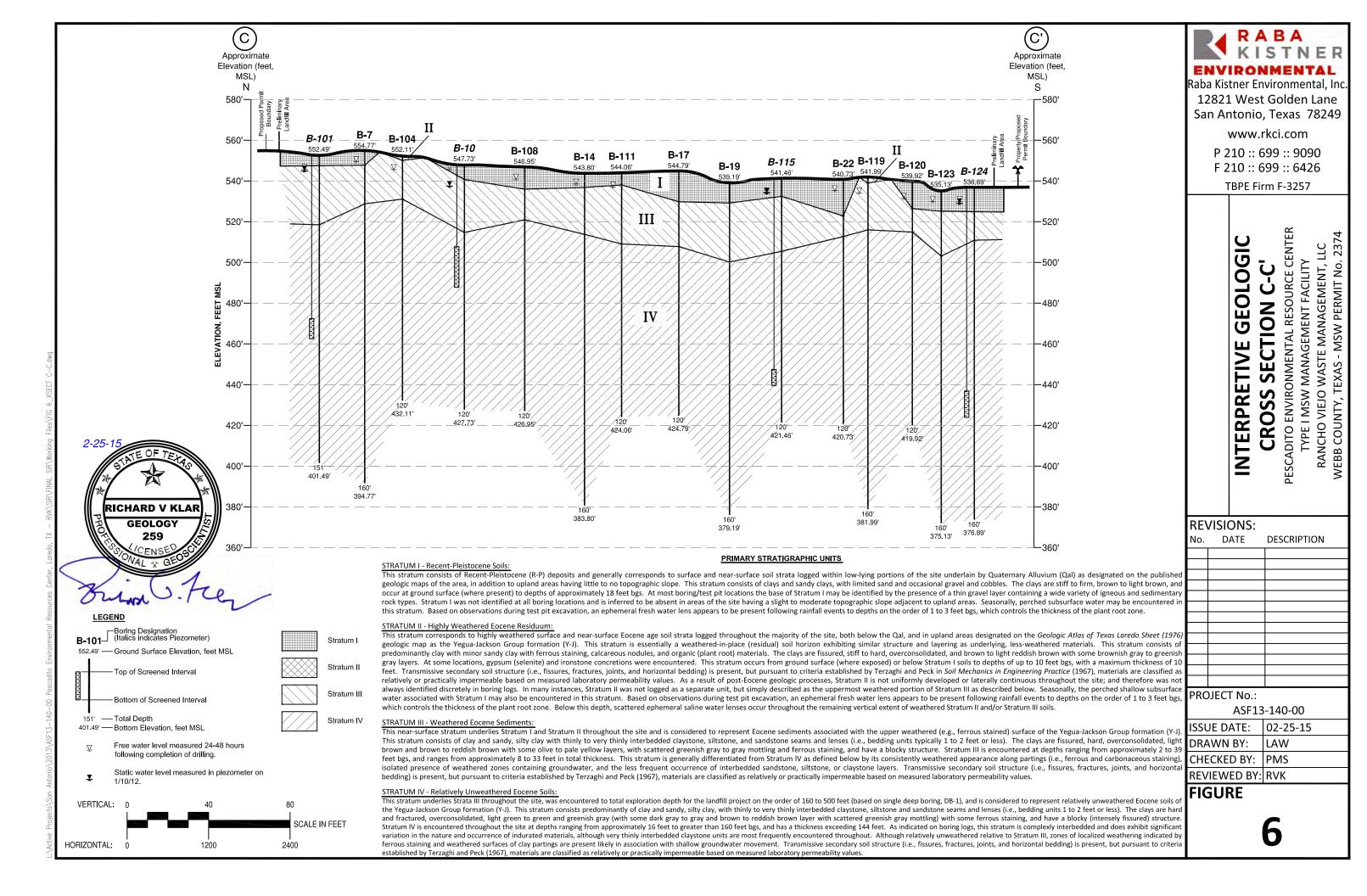


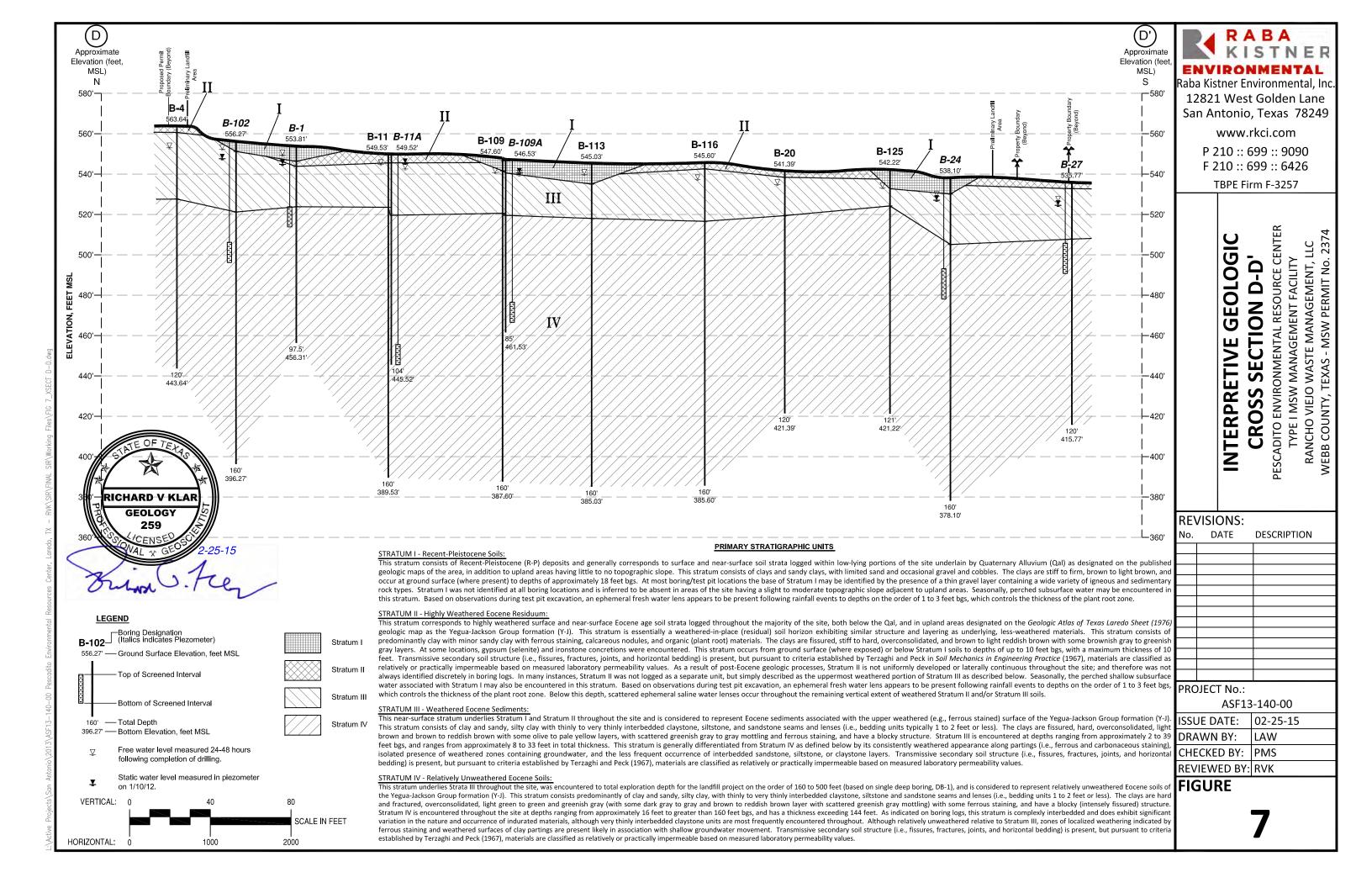


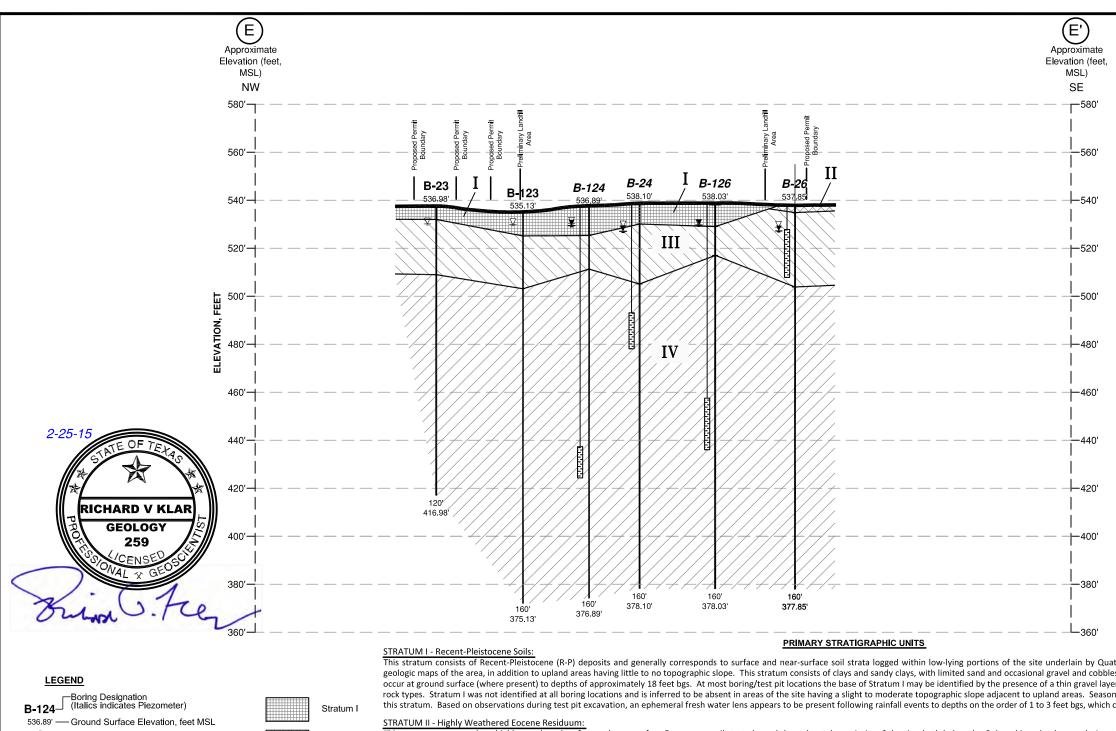


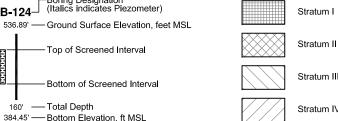




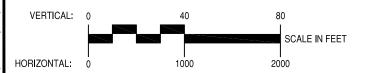








- Free water level measured 24-48 hours following completion of drilling.
- Static water level measured in piezometer ₹



This stratum consists of Recent-Pleistocene (R-P) deposits and generally corresponds to surface and near-surface soil strata logged within low-lying portions of the site underlain by Quaternary Alluvium (Qal) as designated on the published geologic maps of the area, in addition to upland areas having little to no topographic slope. This stratum consists of clays and sandy clays, with limited sand and occasional gravel and cobbles. The clays are stiff to firm, brown to light brown, and occur at ground surface (where present) to depths of approximately 18 feet bgs. At most boring/test pit locations the base of Stratum I may be identified by the presence of a thin gravel layer containing a wide variety of igneous and sedimentar rock types. Stratum I was not identified at all boring locations and is inferred to be absent in areas of the site having a slight to moderate topographic slope adjacent to upland areas. Seasonally, perched subsurface water may be encountered in this stratum. Based on observations during test pit excavation, an ephemeral fresh water lens appears to be present following rainfall events to depths on the order of 1 to 3 feet bgs, which controls the thickness of the plant root zone.

This stratum corresponds to highly weathered surface and near-surface Eocene age soil strata logged throughout the majority of the site, both below the Qal, and in upland areas designated on the Geologic Atlas of Texas Laredo Sheet (1976) geologic map as the Yegua-Jackson Group formation (Y-J). This stratum is essentially a weathered-in-place (residual) soil horizon exhibiting similar structure and layering as underlying, less-weathered materials. This stratum consists of predominantly clay with minor sandy clay with ferrous staining, calcareous nodules, and organic (plant root) materials. The clays are fissured, stiff to hard, overconsolidated, and brown to light reddish brown with some brownish gray to greenish gray layers. At some locations, gypsum (selenite) and ironstone concretions were encountered. This stratum occurs from ground surface (where exposed) or below Stratum I soils to depths of up to 10 feet bgs, with a maximum thickness of 10 feet. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria established by Terzaghi and Peck in Soil Mechanics in Engineering Practice (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values. As a result of post-Eocene geologic processes, Stratum II is not uniformly developed or laterally continuous throughout the site; and therefore was not always identified discretely in boring logs. In many instances, Stratum II was not logged as a separate unit, but simply described as the uppermost weathered portion of Stratum III as described below. Seasonally, the perched shallow subsurface water associated with Stratum I may also be encountered in this stratum. Based on observations during test pit excavation, an ephemeral fresh water lens appears to be present following rainfall events to depths on the order of 1 to 3 feet bgs. which controls the thickness of the plant root zone. Below this depth, scattered ephemeral saline water lenses occur throughout the remaining vertical extent of weathered Stratum II and/or Stratum III soils.

#### STRATUM III - Weathered Eocene Sediments:

This near-surface stratum underlies Stratum I and Stratum II throughout the site and is considered to represent Eocene sediments associated with the upper weathered (e.g., ferrous stained) surface of the Yegua-Jackson Group formation (Y-J). This stratum consists of clay and sandy, silty clay with thinly to very thinly interbedded claystone, siltstone, and sandstone seams and lenses (i.e., bedding units typically 1 to 2 feet or less). The clays are fissured, hard, overconsolidated, light brown and brown to reddish brown with some olive to pale yellow layers, with scattered greenish gray to gray mottling and ferrous staining, and have a blocky structure. Stratum III is encountered at depths ranging from approximately 2 to 39 feet bgs, and ranges from approximately 8 to 33 feet in total thickness. This stratum is generally differentiated from Stratum IV as defined below by its consistently weathered appearance along partings (i.e., ferrous and carbonaceous staining), CHECKED BY: PMS isolated presence of weathered zones containing groundwater, and the less frequent occurrence of interbedded sandstone, siltstone, or claystone layers. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizont bedding) is present, but pursuant to criteria established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values.

#### STRATUM IV - Relatively Unweathered Eocene Soils:

This stratum underlies Strata III throughout the site, was encountered to total exploration depth for the landfill project on the order of 160 to 500 feet (based on single deep boring, DB-1), and is considered to represent relatively unweathered Eocene soils of the Yegua-Jackson Group formation (Y-J). This stratum consists predominantly of clay and sandy, silty clay, with thinly to very thinly interbedded claystone, siltstone and sandstone seams and lenses (i.e., bedding units 1 to 2 feet or less). The clays are hard and fractured, overconsolidated, light green to green and greenish gray (with some dark gray to gray and brown to reddish brown layer with scattered greenish gray mottling) with some ferrous staining, and have a blocky (intensely fissured) structure. Stratum IV is encountered throughout the site at depths ranging from approximately 16 feet to greater than 160 feet bgs, and has a thickness exceeding 144 feet. As indicated on boring logs, this stratum is complexly interbedded and does exhibit significant variation in the nature and occurrence of indurated materials, although very thinly interbedded claystone units are most frequently encountered throughout. Although relatively unweathered relative to Stratum III, zones of localized weathering indicated by ferrous staining and weathered surfaces of clay partings are present likely in association with shallow groundwater movement. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values

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GEOLOGIC

PESCADITO ENVIRONMENTAL RESOURCE CENTER TYPE I MSW MANAGEMENT FACILITY **SECTION E-E CROSS** 

DESCRIPTION

**REVISIONS:** 

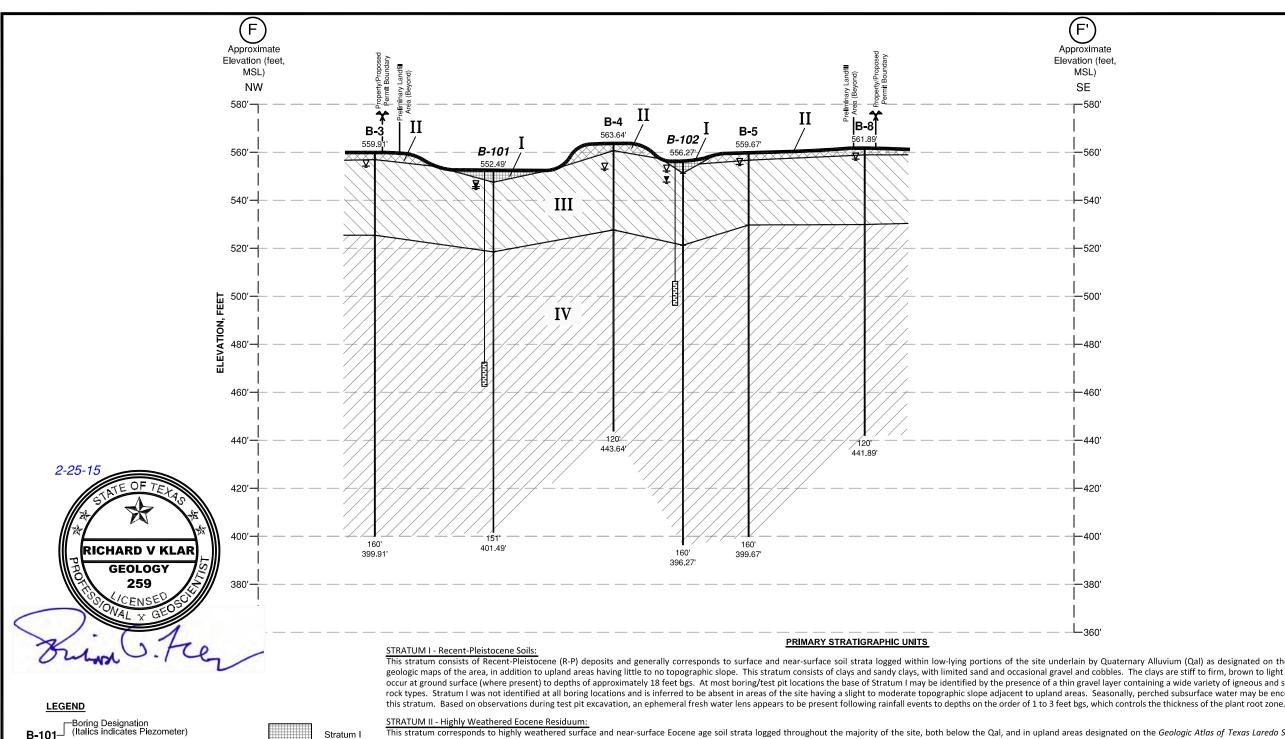
DATE

INTERPRETIVE

PRC	DJECT No.:	
	ASF13	3-140-00
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REVIEWED BY: RVK **FIGURE** 

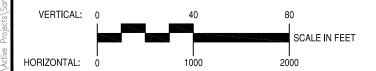
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Free water level measured 24-48 hours following completion of drilling.

Static water level measured in piezometer on 1/10/12



This stratum consists of Recent-Pleistocene (R-P) deposits and generally corresponds to surface and near-surface soil strata logged within low-lying portions of the site underlain by Quaternary Alluvium (Qal) as designated on the published geologic maps of the area, in addition to upland areas having little to no topographic slope. This stratum consists of clays and sandy clays, with limited sand and occasional gravel and cobbles. The clays are stiff to firm, brown to light brown, an occur at ground surface (where present) to depths of approximately 18 feet bgs. At most boring/test pit locations the base of Stratum I may be identified by the presence of a thin gravel layer containing a wide variety of igneous and sedimentar rock types. Stratum I was not identified at all boring locations and is inferred to be absent in areas of the site having a slight to moderate topographic slope adjacent to upland areas. Seasonally, perched subsurface water may be encountered

This stratum corresponds to highly weathered surface and near-surface Eocene age soil strata logged throughout the majority of the site, both below the Qal, and in upland areas designated on the Geologic Atlas of Texas Laredo Sheet (1970) geologic map as the Yegua-Jackson Group formation (Y-J). This stratum is essentially a weathered-in-place (residual) soil horizon exhibiting similar structure and layering as underlying, less-weathered materials. This stratum consists o predominantly clay with minor sandy clay with ferrous staining, calcareous nodules, and organic (plant root) materials. The clays are fissured, stiff to hard, overconsolidated, and brown to light reddish brown with some brownish gray to greenis gray layers. At some locations, gypsum (selenite) and ironstone concretions were encountered. This stratum occurs from ground surface (where exposed) or below Stratum I soils to depths of up to 10 feet bgs, with a maximum thickness of 1 feet. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria established by Terzaghi and Peck in Soil Mechanics in Engineering Practice (1967), materials are classified a relatively or practically impermeable based on measured laboratory permeability values. As a result of post-Eocene geologic processes, Stratum II is not uniformly developed or laterally continuous throughout the site; and therefore was not always identified discretely in boring logs. In many instances, Stratum II was not logged as a separate unit, but simply described as the uppermost weathered portion of Stratum III as described below. Seasonally, the perched shallow subsurface water associated with Stratum I may also be encountered in this stratum. Based on observations during test pit excavation, an ephemeral fresh water lens appears to be present following rainfall events to depths on the order of 1 to 3 feet bgs which controls the thickness of the plant root zone. Below this depth, scattered ephemeral saline water lenses occur throughout the remaining vertical extent of weathered Stratum II and/or Stratum III soils.

## STRATUM III - Weathered Eocene Sediments:

Stratum III

Stratum IV

This near-surface stratum underlies Stratum I and Stratum II throughout the site and is considered to represent Eocene sediments associated with the upper weathered (e.g., ferrous stained) surface of the Yegua-Jackson Group formation (Y-J This stratum consists of clay and sandy, silty clay with thinly to very thinly interbedded claystone, siltstone, and sandstone seams and lenses (i.e., bedding units typically 1 to 2 feet or less). The clays are fissured, hard, overconsolidated, ligh brown and brown to reddish brown with some olive to pale yellow layers, with scattered greenish gray to gray mottling and ferrous staining, and have a blocky structure. Stratum III is encountered at depths ranging from approximately 2 to 35 feet bgs, and ranges from approximately 8 to 33 feet in total thickness. This stratum is generally differentiated from Stratum IV as defined below by its consistently weathered appearance along partings (i.e., ferrous and carbonaceous staining isolated presence of weathered zones containing groundwater, and the less frequent occurrence of interbedded sandstone, siltstone, or claystone layers. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizont bedding) is present, but pursuant to criteria established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values.

# STRATUM IV - Relatively Unweathered Eocene Soils:

This stratum underlies Strata III throughout the site, was encountered to total exploration depth for the landfill project on the order of 160 to 500 feet (based on single deep boring, DB-1), and is considered to represent relatively unweathered Eocene soils of the Yegua-Jackson Group formation (Y-J). This stratum consists predominantly of clay and sandy, silty clay, with thinly to very thinly interbedded claystone, siltstone and sandstone seams and lenses (i.e., bedding units 1 to 2 feet or less). The clays are hard and fractured, overconsolidated, light green to green and greenish gray (with some dark gray to gray and brown to reddish brown layer with scattered greenish gray mottling) with some ferrous staining, and have a blocky (intensely fissured) structure. Stratum IV is encountered throughout the site at depths ranging from approximately 16 feet to greater than 160 feet bgs, and has a thickness exceeding 144 feet. As indicated on boring logs, this stratum is complexly interbedded and does exhibit significant variation in the nature and occurrence of indurated materials, although very thinly interbedded claystone units are most frequently encountered throughout. Although relatively unweathered relative to Stratum III, zones of localized weathering indicated by ferrous staining and weathered surfaces of clay partings are present likely in association with shallow groundwater movement. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values

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PESCADITO ENVIRONMENTAL RESOURCE CENTER TYPE I MSW MANAGEMENT FACILITY GEOLOGIC **SECTION F-F** INTERPRETIVE **CROSS** 

DESCRIPTION

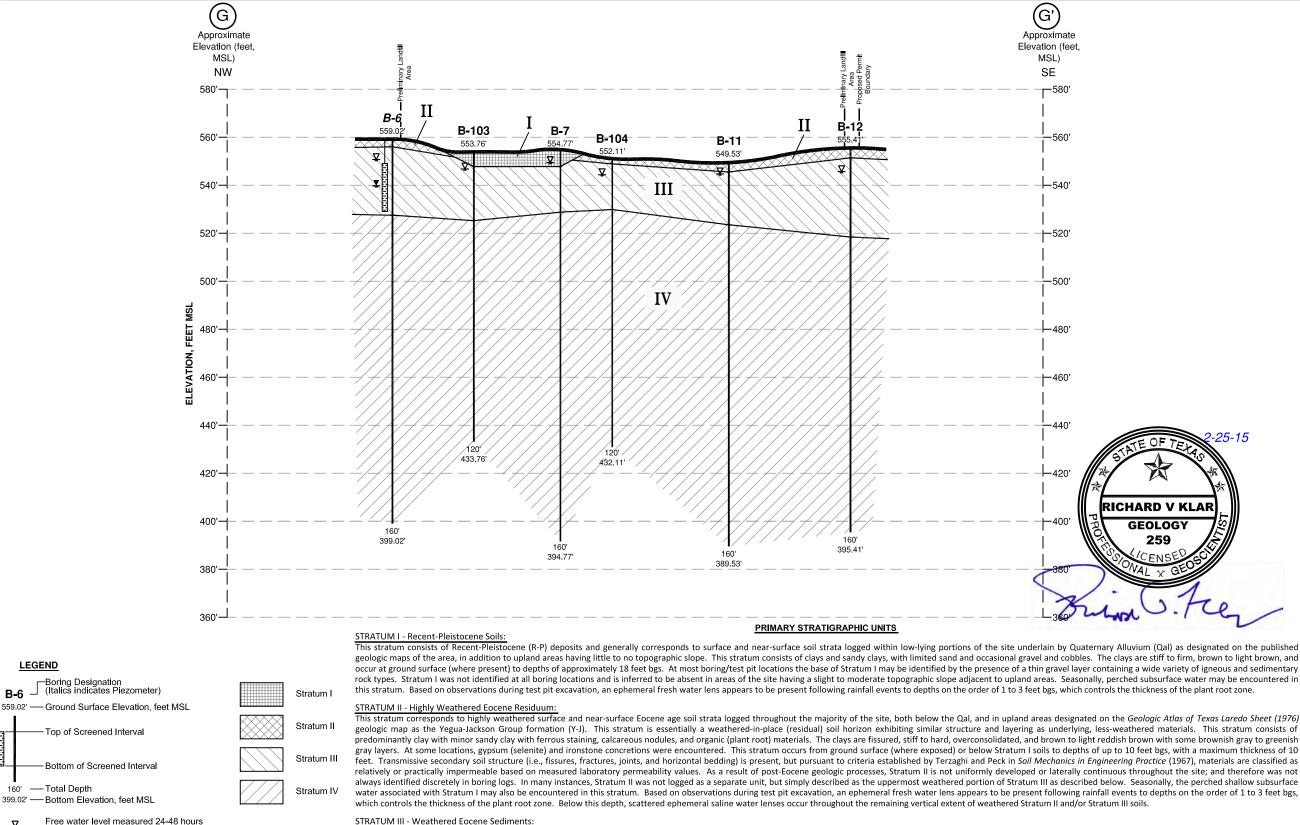
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), al	CHE	CKED BY:	PMS
	REV	IEWED BY:	RVK



This near-surface stratum underlies Stratum I and Stratum II throughout the site and is considered to represent Eocene sediments associated with the upper weathered (e.g., ferrous stained) surface of the Yegua-Jackson Group formation (Y-J).

This stratum consists of clay and sandy, silty clay with thinly to very thinly interbedded claystone, siltstone, and sandstone seams and lenses (i.e., bedding units typically 1 to 2 feet or less). The clays are fissured, hard, overconsolidated, light

brown and brown to reddish brown with some olive to pale yellow layers, with scattered greenish gray to gray mottling and ferrous staining, and have a blocky structure. Stratum III is encountered at depths ranging from approximately 2 to 39 feet bgs, and ranges from approximately 8 to 33 feet in total thickness. This stratum is generally differentiated from Stratum IV as defined below by its consistently weathered appearance along partings (i.e., ferrous and carbonaceous staining),

isolated presence of weathered zones containing groundwater, and the less frequent occurrence of interbedded sandstone, siltstone, or claystone layers. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizont

This stratum underlies Strata III throughout the site, was encountered to total exploration depth for the landfill project on the order of 160 to 500 feet (based on single deep boring, DB-1), and is considered to represent relatively unweathered Eocene soils of

the Yegua-Jackson Group formation (Y-J). This stratum consists predominantly of clay and sandy, silty clay, with thinly to very thinly interbedded claystone, siltstone and sandstone seams and lenses (i.e., bedding units 1 to 2 feet or less). The clays are hard and fractured, overconsolidated, light green to green and greenish gray (with some dark gray to gray and brown to reddish brown layer with scattered greenish gray mottling) with some ferrous staining, and have a blocky (intensely fissured) structure. Stratum IV is encountered throughout the site at depths ranging from approximately 16 feet to greater than 160 feet bgs, and has a thickness exceeding 144 feet. As indicated on boring logs, this stratum is complexly interbedded and does exhibit significant variation in the nature and occurrence of indurated materials, although very thinly interbedded claystone units are most frequently encountered throughout. Although relatively unweathered relative to Stratum III, zones of localized weathering indicated by ferrous staining and weathered surfaces of clay partings are present likely in association with shallow groundwater movement. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria

bedding) is present, but pursuant to criteria established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values.

established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values

STRATUM IV - Relatively Unweathered Eocene Soils:

LEGEND

VERTICAL:

HORIZONTAL:

following completion of drilling.

Static water level measured in piezomete

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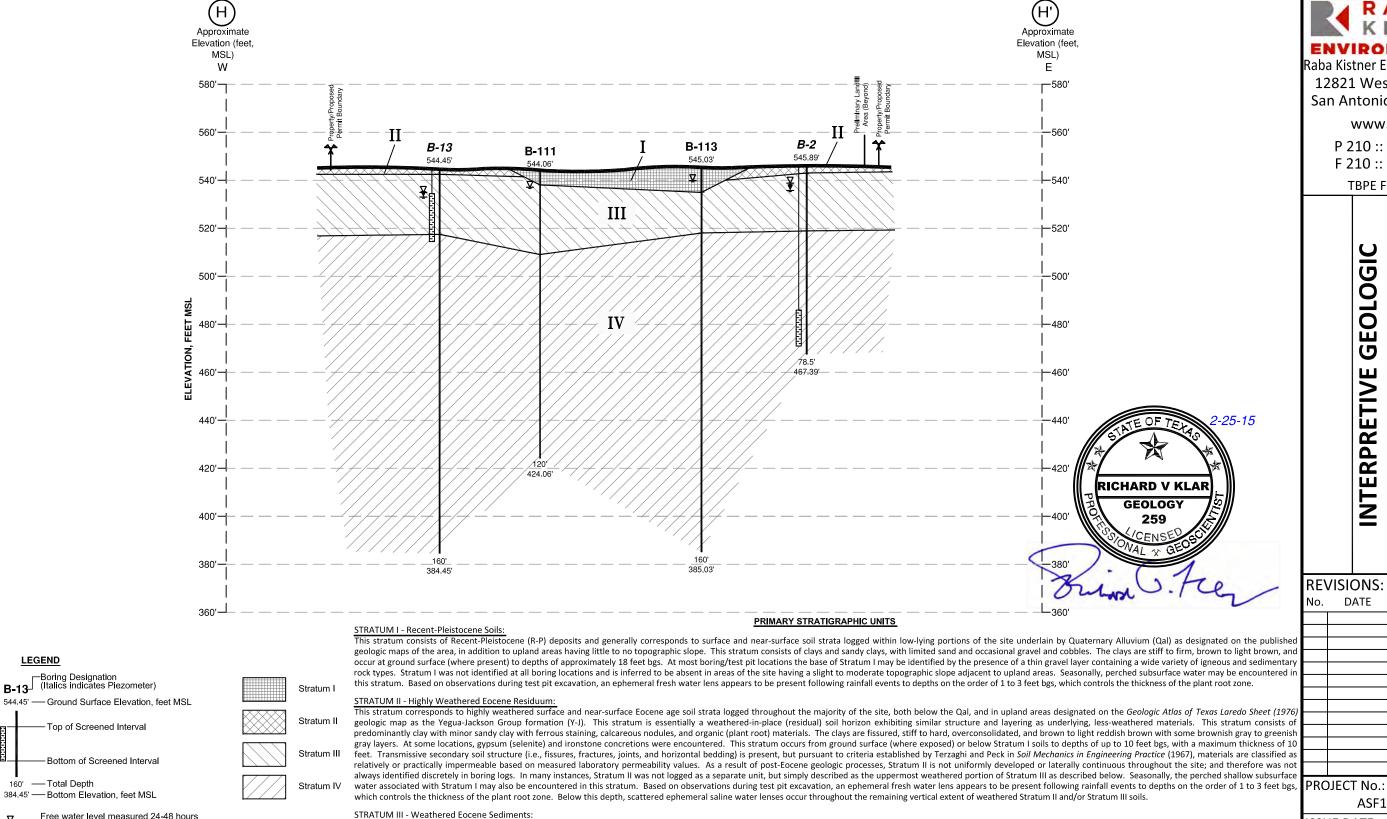
PESCADITO ENVIRONMENTAL RESOURCE CENTER TYPE I MSW MANAGEMENT FACILITY GEOLOGIC **SECTION G-G** INTERPRETIVE **CROSS** 

REVISIONS:

No.	DATE	DESCRIPTION			
PRC	PROJECT No.:				
	ASF13-140-00				

ISSUE DATE: 02-25-15 DRAWN BY: LAW

CHECKED BY: PMS REVIEWED BY: RVK



following completion of drilling.

on 1/10/12.

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VERTICAL:

HORIZONTAL:

Static water level measured in piezometer

This near-surface stratum underlies Stratum I and Stratum II throughout the site and is considered to represent Eocene sediments associated with the upper weathered (e.g., ferrous stained) surface of the Yegua-Jackson Group formation (Y-J).

This stratum consists of clay and sandy, silty clay with thinly to very thinly interbedded claystone, siltstone, and sandstone seams and lenses (i.e., bedding units typically 1 to 2 feet or less). The clays are fissured, hard, overconsolidated, light

brown and brown to reddish brown with some olive to pale yellow layers, with scattered greenish gray to gray mottling and ferrous staining, and have a blocky structure. Stratum III is encountered at depths ranging from approximately 2 to 39

feet bgs, and ranges from approximately 8 to 33 feet in total thickness. This stratum is generally differentiated from Stratum IV as defined below by its consistently weathered appearance along partings (i.e., ferrous and carbonaceous staining),

isolated presence of weathered zones containing groundwater, and the less frequent occurrence of interbedded sandstone, siltstone, or claystone layers. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizonta

This stratum underlies Strata III throughout the site, was encountered to total exploration depth for the landfill project on the order of 160 to 500 feet (based on single deep boring, DB-1), and is considered to represent relatively unweathered Eocene soils of

the Yegua-Jackson Group formation (Y-J). This stratum consists predominantly of clay and sandy, silty clay, with thinly to very thinly interbedded claystone, siltstone and sandstone seams and lenses (i.e., bedding units 1 to 2 feet or less). The clays are hard and fractured, overconsolidated, light green to green and greenish gray (with some dark gray to gray and brown to reddish brown layer with scattered greenish gray mottling) with some ferrous staining, and have a blocky (intensely fissured) structure.

Stratum IV is encountered throughout the site at depths ranging from approximately 16 feet to greater than 160 feet bgs, and has a thickness exceeding 144 feet. As indicated on boring logs, this stratum is complexly interbedded and does exhibit significant variation in the nature and occurrence of indurated materials, although very thinly interbedded claystone units are most frequently encountered throughout. Although relatively unweathered relative to Stratum III, zones of localized weathering indicated by ferrous staining and weathered surfaces of clay partings are present likely in association with shallow groundwater movement. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria

bedding) is present, but pursuant to criteria established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values.

established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values.

STRATUM IV - Relatively Unweathered Eocene Soils:

SCALE IN FEET

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PESCADITO ENVIRONMENTAL RESOURCE CENTER TYPE I MSW MANAGEMENT FACILITY GEOLOGIC **SECTION H-H** INTERPRETIVE **CROSS** 

DEVICIONS

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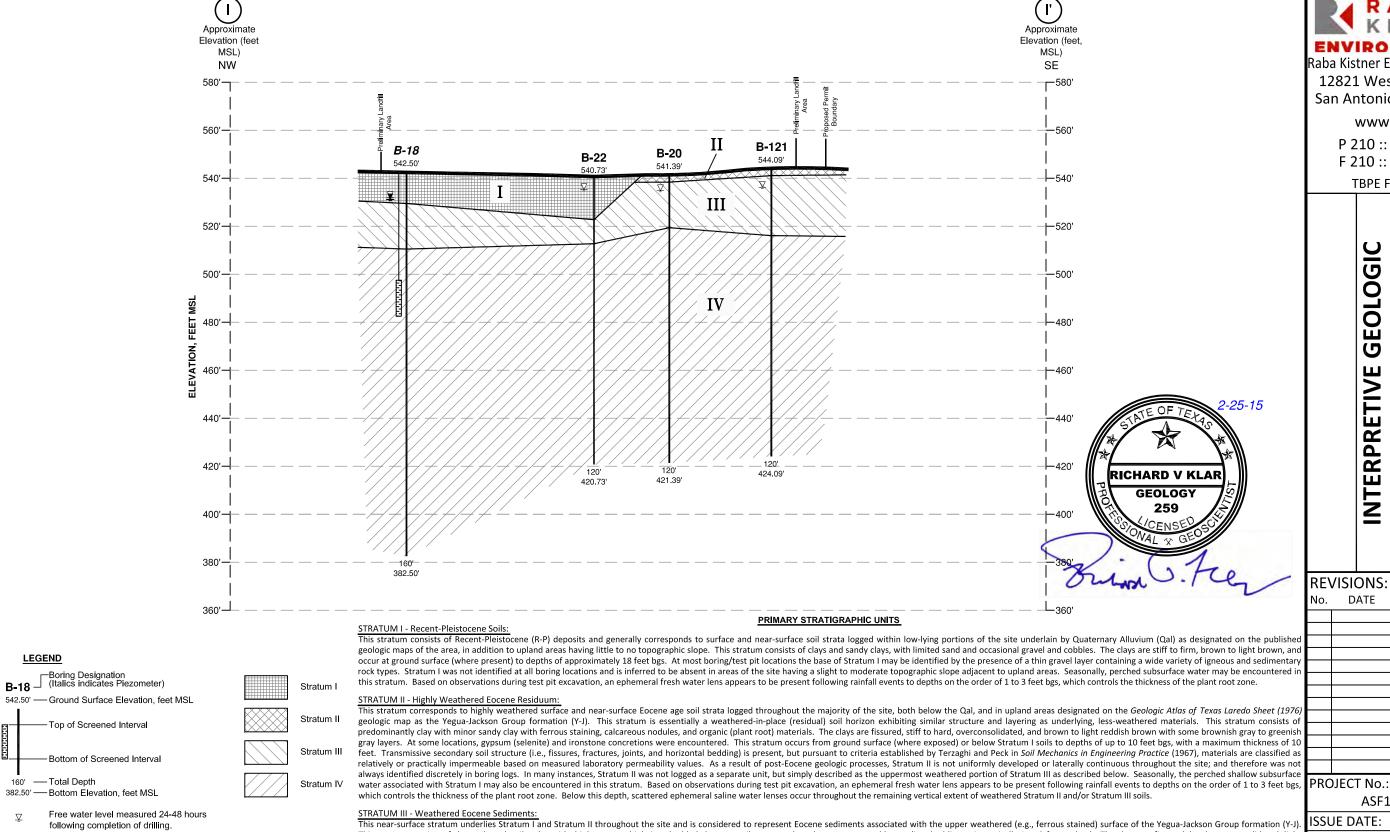
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This stratum consists of clay and sandy, silty clay with thinly to very thinly interbedded claystone, siltstone, and sandstone seams and lenses (i.e., bedding units typically 1 to 2 feet or less). The clays are fissured, hard, overconsolidated, light

brown and brown to reddish brown with some olive to pale yellow layers, with scattered greenish gray to gray mottling and ferrous staining, and have a blocky structure. Stratum III is encountered at depths ranging from approximately 2 to 39

feet bgs, and ranges from approximately 8 to 33 feet in total thickness. This stratum is generally differentiated from Stratum IV as defined below by its consistently weathered appearance along partings (i.e., ferrous and carbonaceous staining).

isolated presence of weathered zones containing groundwater, and the less frequent occurrence of interbedded sandstone, siltstone, or claystone layers. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizonta

This stratum underlies Strata III throughout the site, was encountered to total exploration depth for the landfill project on the order of 160 to 500 feet (based on single deep boring, DB-1), and is considered to represent relatively unweathered Eccene soils of

the Yegua-Jackson Group formation (Y-J). This stratum consists predominantly of clay and sandy, silty clay, with thinly to very thinly interbedded claystone, siltstone and sandstone seams and lenses (i.e., bedding units 1 to 2 feet or less). The clays are hard and fractured, overconsolidated, light green to green and greenish gray (with some dark gray to gray and brown to reddish brown layer with scattered greenish gray mottling) with some ferrous staining, and have a blocky (intensely fissured) structure.

Stratum IV is encountered throughout the site at depths ranging from approximately 16 feet to greater than 160 feet bgs, and has a thickness exceeding 144 feet. As indicated on boring logs, this stratum is complexly interbedded and does exhibit significant variation in the nature and occurrence of indurated materials, although very thinly interbedded claystone units are most frequently encountered throughout. Although relatively unweathered relative to Stratum III, zones of localized weathering indicated by ferrous staining and weathered surfaces of clay partings are present likely in association with shallow groundwater movement. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria

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established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values

STRATUM IV - Relatively Unweathered Eocene Soils:

LEGEND

VERTICAL:

HORIZONTAL:

Static water level measured in piezometer

SCALE IN FEET

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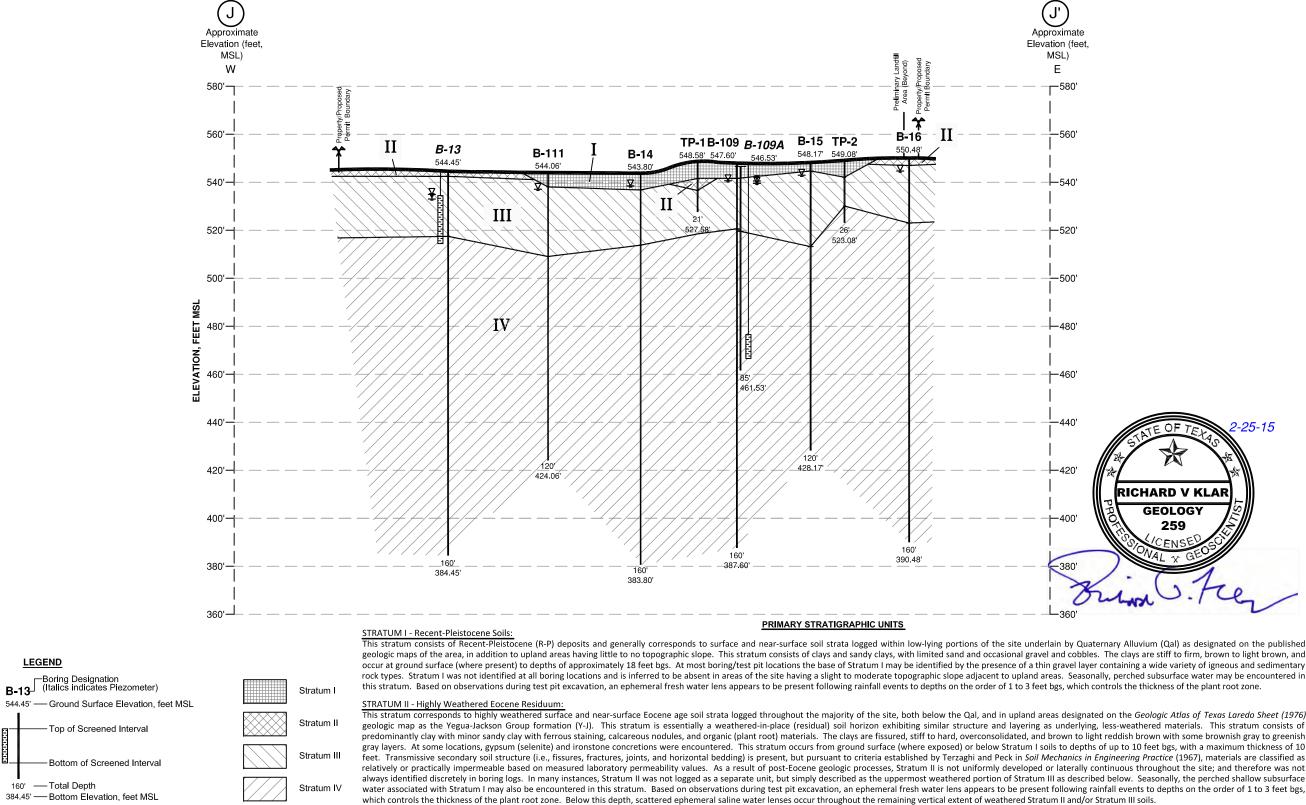
PESCADITO ENVIRONMENTAL RESOURCE CENTER TYPE I MSW MANAGEMENT FACILITY GEOLOGIC **SECTION I-I** INTERPRETIVE **CROSS** 

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No.	DATE	DESCRIPTION
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02-25-15 DRAWN BY: LAW

CHECKED BY: PMS REVIEWED BY: RVK



GEOLOGIC INTERPRETIVE

predominantly clay with minor sandy clay with ferrous staining, calcareous nodules, and organic (plant root) materials. The clays are fissured, stiff to hard, overconsolidated, and brown to light reddish brown with some brownish gray to greenish feet. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria established by Terzaghi and Peck in Soil Mechanics in Engineering Practice (1967), materials are classified as always identified discretely in boring logs. In many instances, Stratum II was not logged as a separate unit, but simply described as the uppermost weathered portion of Stratum III as described below. Seasonally, the perched shallow subsurface

## STRATUM III - Weathered Eocene Sediments:

**LEGEND** 

— Total Depth

VERTICAL: 0

HORIZONTAL:

Free water level measured 24-48 hours

Static water level measured in piezometer

following completion of drilling.

This near-surface stratum underlies Stratum I and Stratum II throughout the site and is considered to represent Eocene sediments associated with the upper weathered (e.g., ferrous stained) surface of the Yegua-Jackson Group formation (Y-J). This stratum consists of clay and sandy, silty clay with thinly to very thinly interbedded claystone, siltstone, and sandstone seams and lenses (i.e., bedding units typically 1 to 2 feet or less). The clays are fissured, hard, overconsolidated, light brown and brown to reddish brown with some olive to pale yellow layers, with scattered greenish gray to gray mottling and ferrous staining, and have a blocky structure. Stratum III is encountered at depths ranging from approximately 2 to 39 feet bgs, and ranges from approximately 8 to 33 feet in total thickness. This stratum is generally differentiated from Stratum IV as defined below by its consistently weathered appearance along partings (i.e., ferrous and carbonaceous staining). isolated presence of weathered zones containing groundwater, and the less frequent occurrence of interbedded sandstone, siltstone, or claystone layers. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizonta bedding) is present, but pursuant to criteria established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values.

#### STRATUM IV - Relatively Unweathered Eocene Soils:

This stratum underlies Strata III throughout the site, was encountered to total exploration depth for the landfill project on the order of 160 to 500 feet (based on single deep boring, DB-1), and is considered to represent relatively unweathered Eocene soils of the Yegua-Jackson Group formation (Y-J). This stratum consists predominantly of clay and sandy, silty clay, with thinly to very thinly interbedded claystone, siltstone and sandstone seams and lenses (i.e., bedding units 1 to 2 feet or less). The clays are hard and fractured, overconsolidated, light green to green and greenish gray (with some dark gray to gray and brown to reddish brown layer with scattered greenish gray mottling) with some ferrous staining, and have a blocky (intensely fissured) structure. Stratum IV is encountered throughout the site at depths ranging from approximately 16 feet to greater than 160 feet bgs, and has a thickness exceeding 144 feet. As indicated on boring logs, this stratum is complexly interbedded and does exhibit significant variation in the nature and occurrence of indurated materials, although very thinly interbedded claystone units are most frequently encountered throughout. Although relatively unweathered relative to Stratum III, zones of localized weathering indicated by ferrous staining and weathered surfaces of clay partings are present likely in association with shallow groundwater movement. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values.

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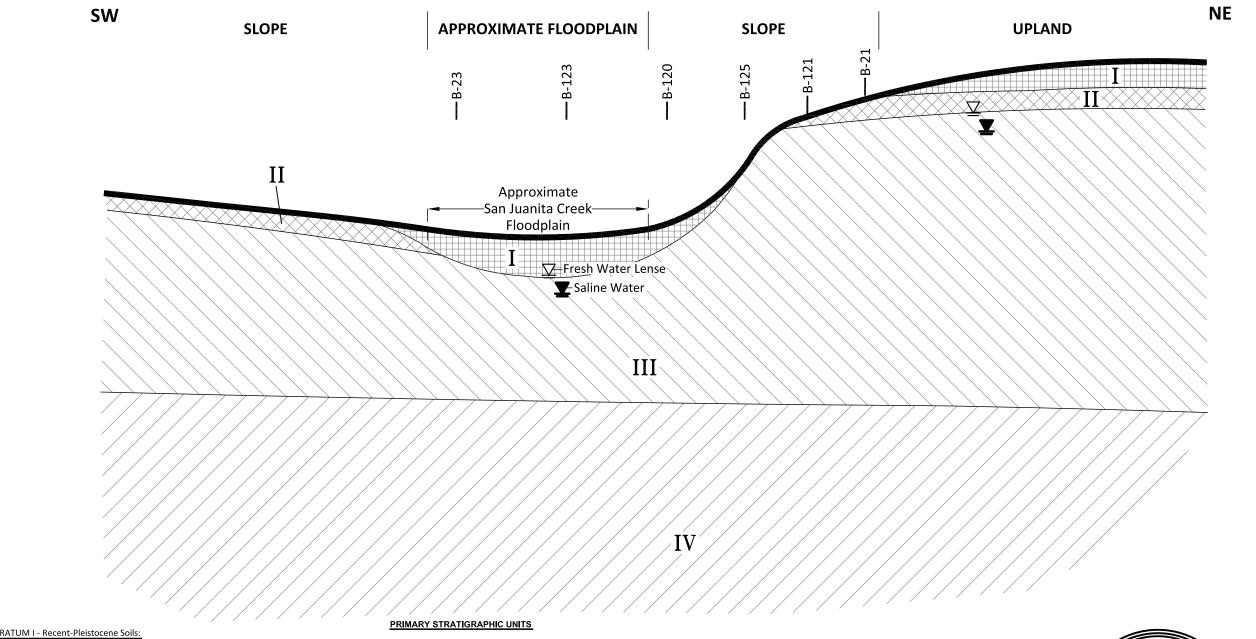
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PESCADITO ENVIRONMENTAL RESOURCE CENTER TYPE I MSW MANAGEMENT FACILITY SECTION **CROSS** 

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STRATUM I - Recent-Pleistocene Soils

This stratum consists of Recent-Pleistocene (R-P) deposits and generally corresponds to surface and near-surface soil strata logged within low-lying portions of the site underlain by Quaternary Alluvium (Qal) as designated on the published geologic maps of the area, in addition to upland areas having little to no topographic slope. This stratum consists of clays and sandy clays, with limited sand and occasional gravel and cobbles. The clays are stiff to firm, brown to light brown, and occur at ground surface (where present) to depths of approximately 18 feet bgs. At most boring/test pit locations the base of Stratum I may be identified by the presence of a thin gravel layer containing a wide variety of igneous and sedimentary rock types. Stratum I was not identified at all boring locations and is inferred to be absent in areas of the site having a slight to moderate topographic slope adjacent to upland areas. Seasonally, perched subsurface water may be encountered in this stratum. Based on observations during test pit excavation, an ephemeral fresh water lens appears to be present following rainfall events to depths on the order of 1 to 3 feet bgs, which controls the thickness of the plant root zone.

# STRATUM II - Highly Weathered Eocene Residuum:

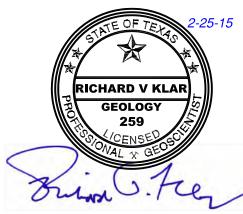
This stratum corresponds to highly weathered surface and near-surface Eocene age soil strata logged throughout the majority of the site, both below the Qal, and in upland areas designated on the Geologic Atlas of Texas Laredo Sheet (1976) geologic map as the Yegua-Jackson Group formation (Y-J). This stratum is essentially a weathered-in-place (residual) soil horizon exhibiting similar structure and layering as underlying, less-weathered materials. This stratum consists of predominantly clay with minor sandy clay with ferrous staining, calcareous nodules, and organic (plant root) materials. The clays are fissured, stiff to hard, overconsolidated, and brown to light reddish brown with some brownish gray to greenish gray layers. At some locations, gypsum (selenite) and ironstone concretions were encountered. This stratum occurs from ground surface (where exposed) or below Stratum I soils to depths of up to 10 feet bgs, with a maximum thickness of 10 feet. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria established by Terzaghi and Peck in Soil Mechanics in Engineering Practice (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values. As a result of post-Eocene geologic processes, Stratum II is not uniformly developed or laterally continuous throughout the site; and therefore was not always identified discretely in boring logs. In many instances, Stratum II was not logged as a separate unit, but simply described as the uppermost weathered portion of Stratum III as described below. Seasonally, the perched shallow subsurface water associated with Stratum I may also be encountered in this stratum. Based on observations during test pit excavation, an ephemeral fresh water lens appears to be present following rainfall events to depths on the order of 1 to 3 feet bgs, which controls the thickness of the plant root zone. Below this depth, scattered ephemeral saline water lenses occur throughout the remaining

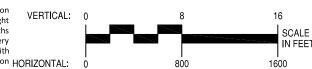
# STRATUM III - Weathered Eocene Sediments:

This near-surface stratum underlies Stratum I and Stratum II throughout the site and is considered to represent Eocene sediments associated with the upper weathered (e.g., ferrous stained) surface of the Yegua-Jackson Group formation (Y-J). This stratum consists of clay and sandy, silty clay with thinly to very thinly interbedded claystone, siltstone, and sandstone seams and lenses (i.e., bedding units typically 1 to 2 feet or less). The clays are fissured, hard, overconsolidated, light brown and brown to reddish brown with some olive to pale yellow layers, with scattered greenish gray to gray mottling and ferrous staining, and have a blocky structure. Stratum III is encountered at depths ranging from approximately 2 to 39 feet bgs, and ranges from approximately 8 to 33 feet in total thickness. This stratum is generally differentiated from Stratum IV as defined below by its consistently weathered appearance along partings (i.e., ferrous and carbonaceous staining), isolated presence of weathered zones containing groundwater, and the less frequent occurrence of interbedded sandstone, siltstone, or claystone layers. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on measured laboratory permeability values.

# STRATUM IV - Relatively Unweathered Eocene Soils:

This stratum underlies Strata III throughout the site, was encountered to total exploration depth for the landfill project on the order of 160 to 500 feet (based on single deep boring, DB-1), and is considered to represent relatively unweathered Eocene soils of the Yegua-Jackson Group formation (Y-J). This stratum consists predominantly of clay and sandy, silty clay, with thinly to very thinly interbedded claystone, siltstone and sandstone seams and lenses (i.e., bedding units 1 to 2 feet or less). The clays are hard and fractured, overconsolidated, light green to green and greenish gray (with some dark gray to gray and brown to reddish brown layer with scattered greenish gray mottling) with some ferrous staining, and have a blocky (intensely fissured) structure. Stratum IV is encountered throughout the site at depths ranging from approximately 16 feet to greater than 160 feet bgs, and has a thickness exceeding 144 feet. As indicated on boring logs, this stratum is complexly interbedded and does exhibit significant variation in the nature and occurrence of indurated materials, although very thinly interbedded claystone units are most frequently encountered throughout. Although relatively unweathered relative to Stratum III, zones of localized weathering indicated by ferrous staining and weathered surfaces of clay partings are present likely in association with shallow groundwater movement. Transmissive secondary soil structure (i.e., fissures, fractures, joints, and horizontal bedding) is present, but pursuant to criteria established by Terzaghi and Peck (1967), materials are classified as relatively or practically impermeable based on HORIZONTAI measured laboratory permeability values.





Raba Kistner Environmental, Inc 12821 West Golden Lane San Antonio, Texas 78249

www.rkci.com

P 210 :: 699 :: 9090 F 210 :: 699 :: 6426 TBPE Firm F-3257

SECTION **GEOLOGIC** 

PESCADITO ENVIRONMENTAL RESOURCE CENTER
TYPE I MSW MANAGEMENT FACILITY
RANCHO VIEJO WASTE MANAGEMENT, LLC
WEBB COUNTY, TEXAS - MSW PERMIT No. 2374

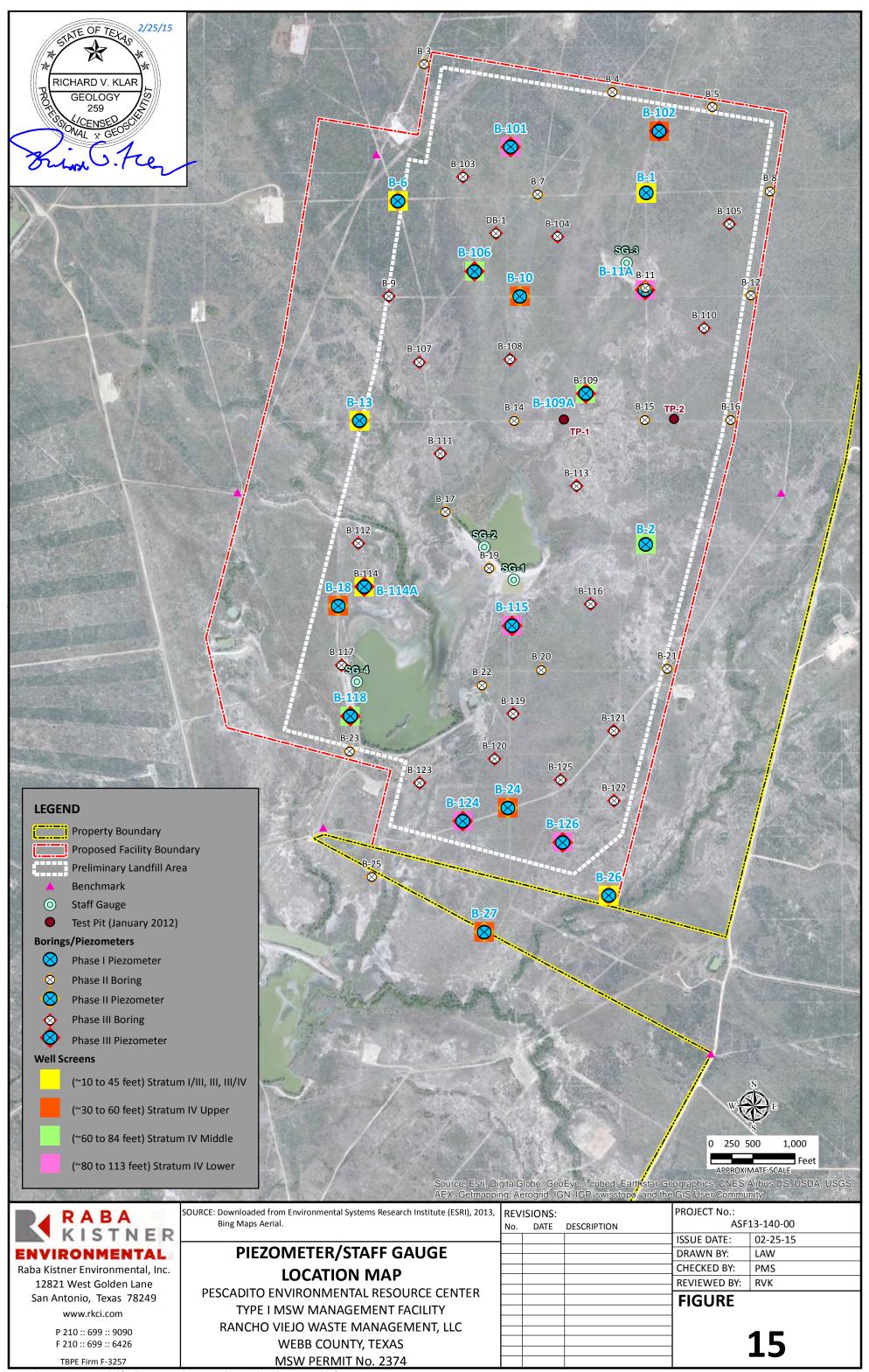
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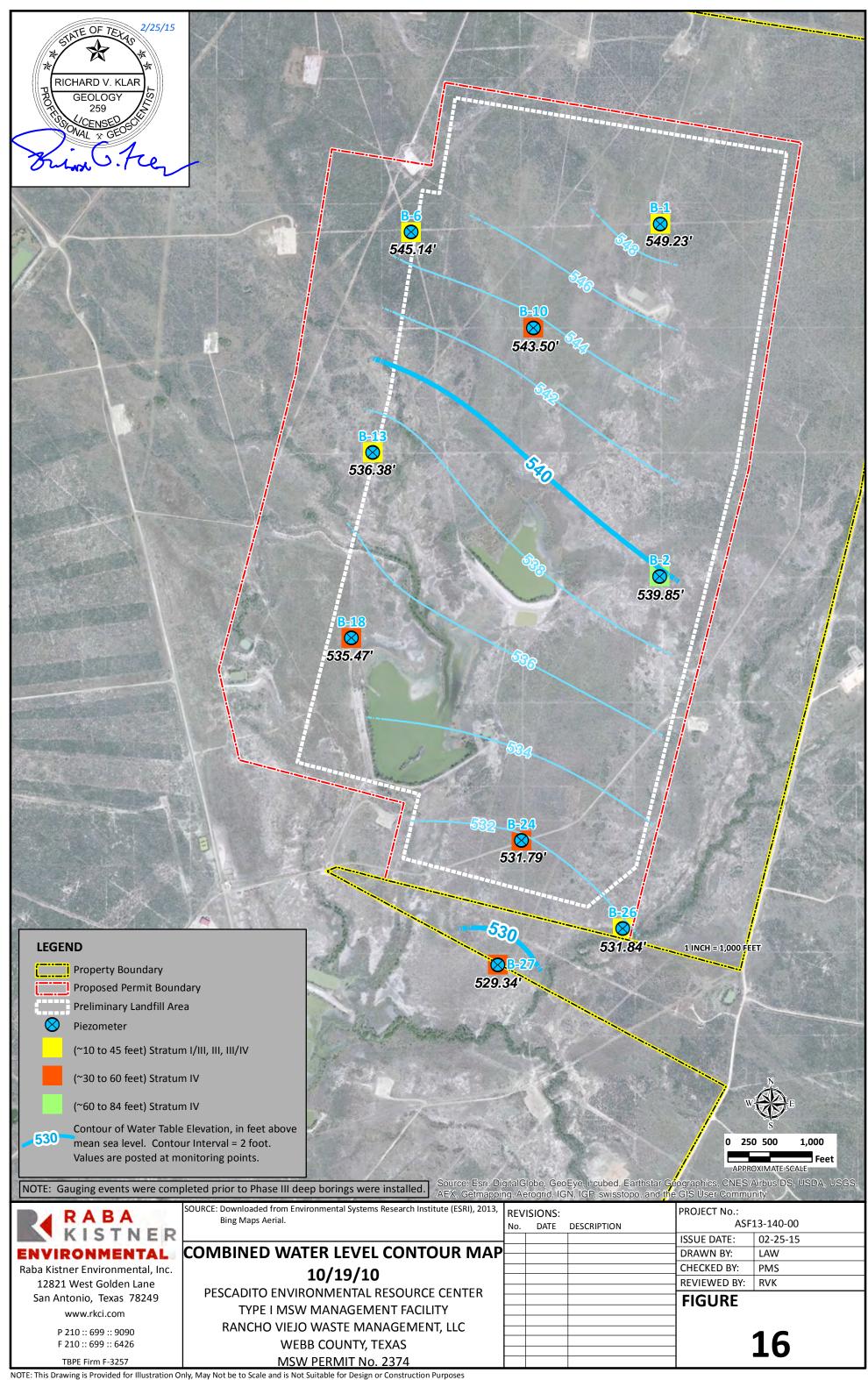
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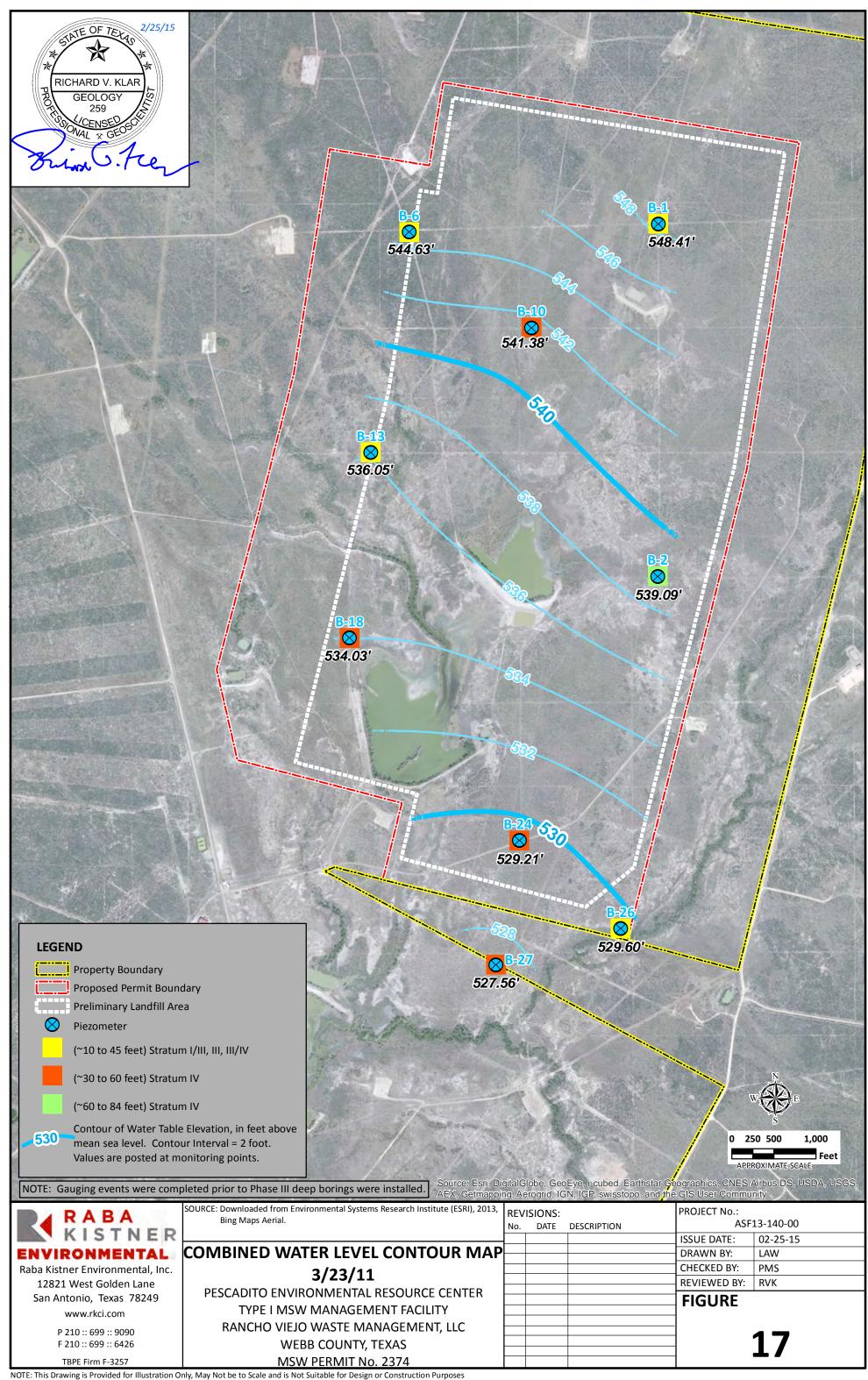
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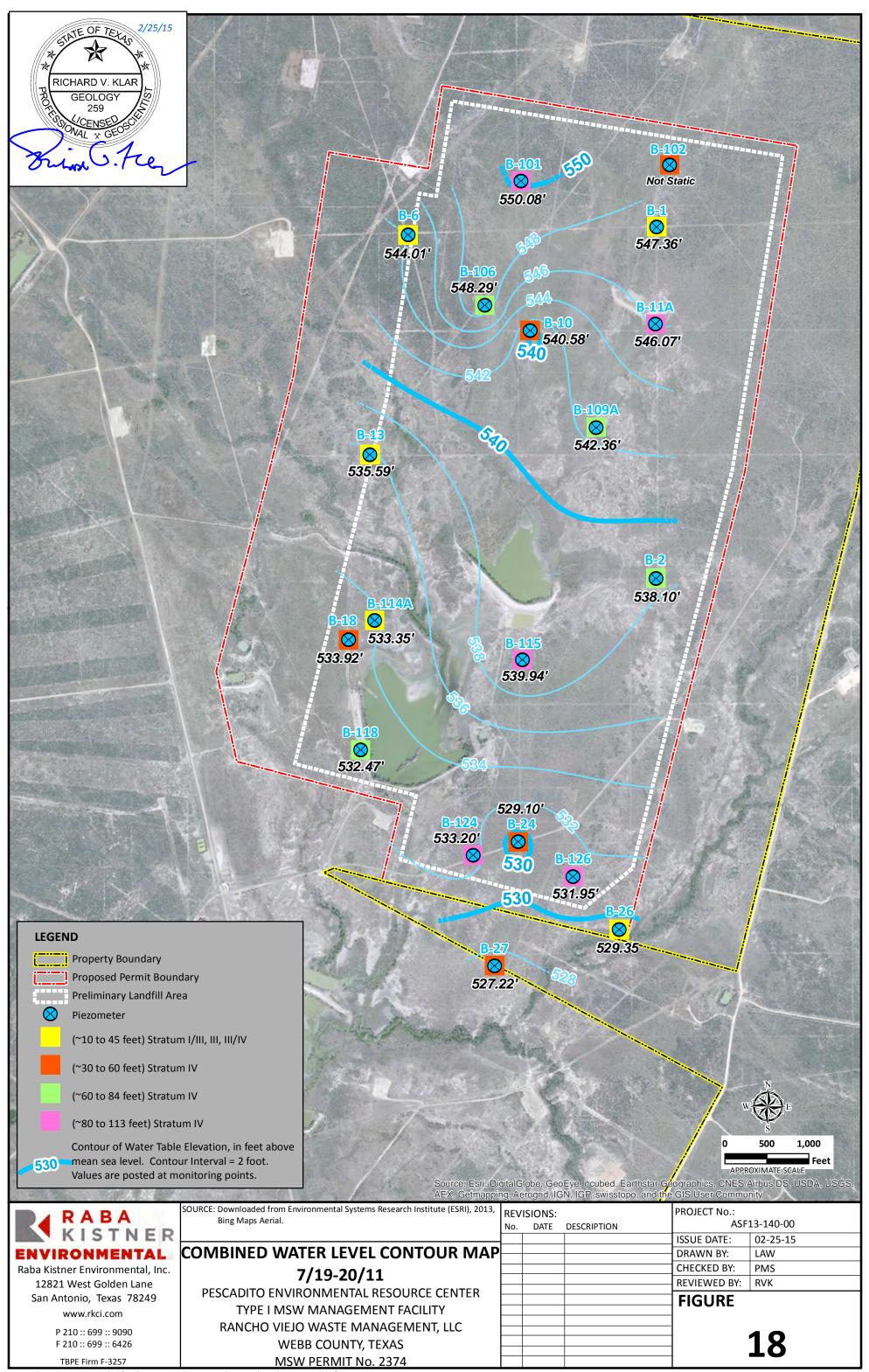
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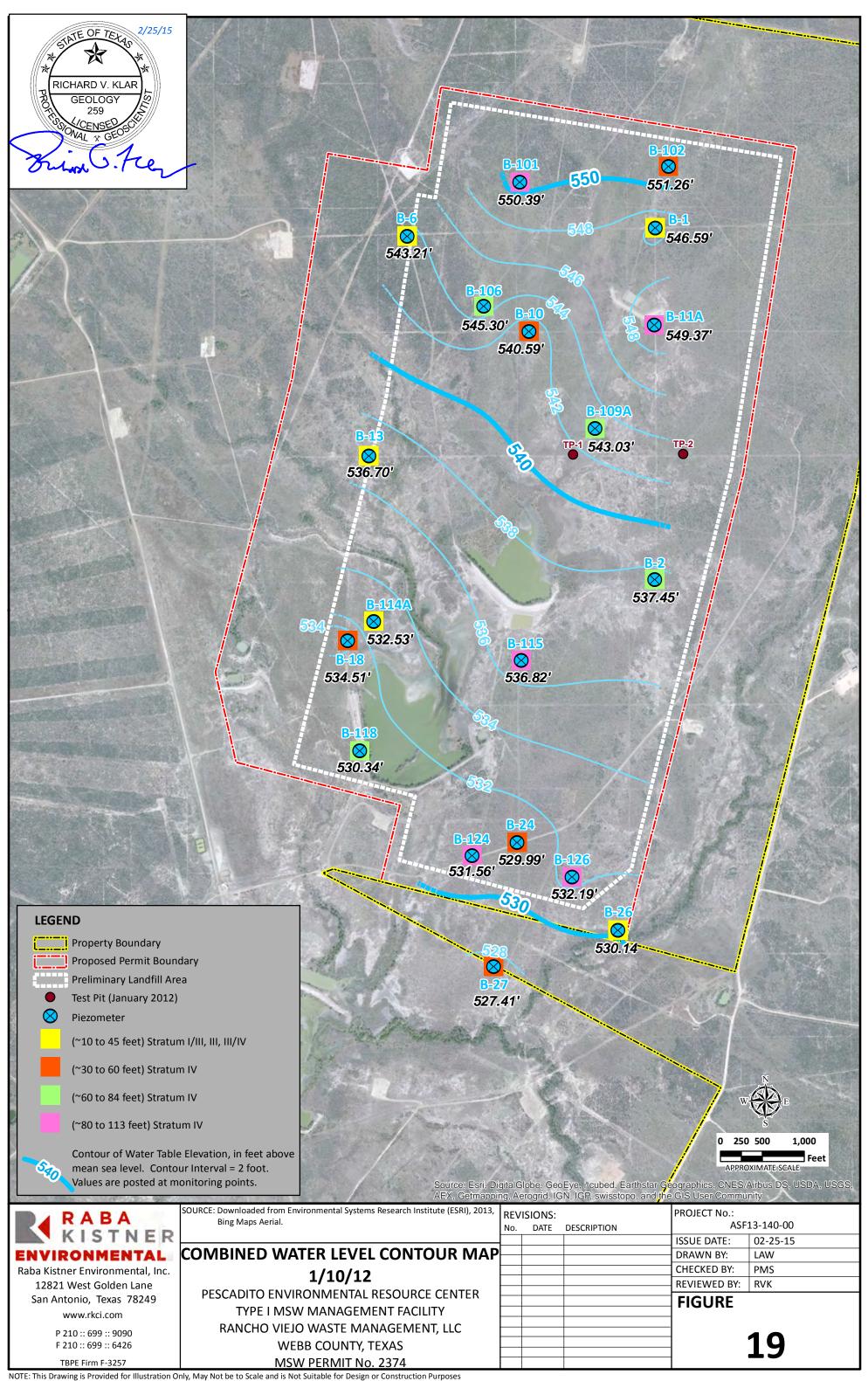
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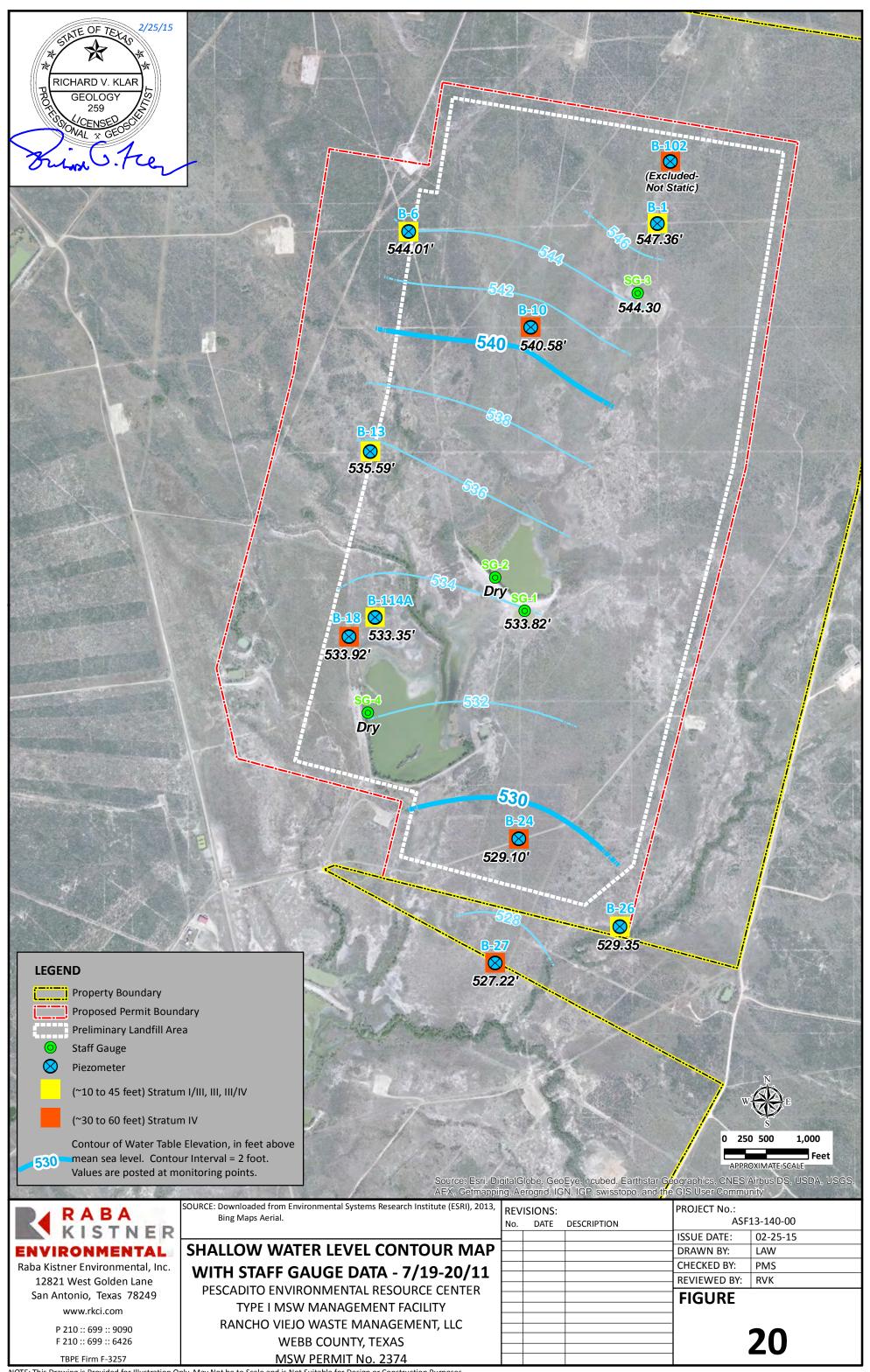


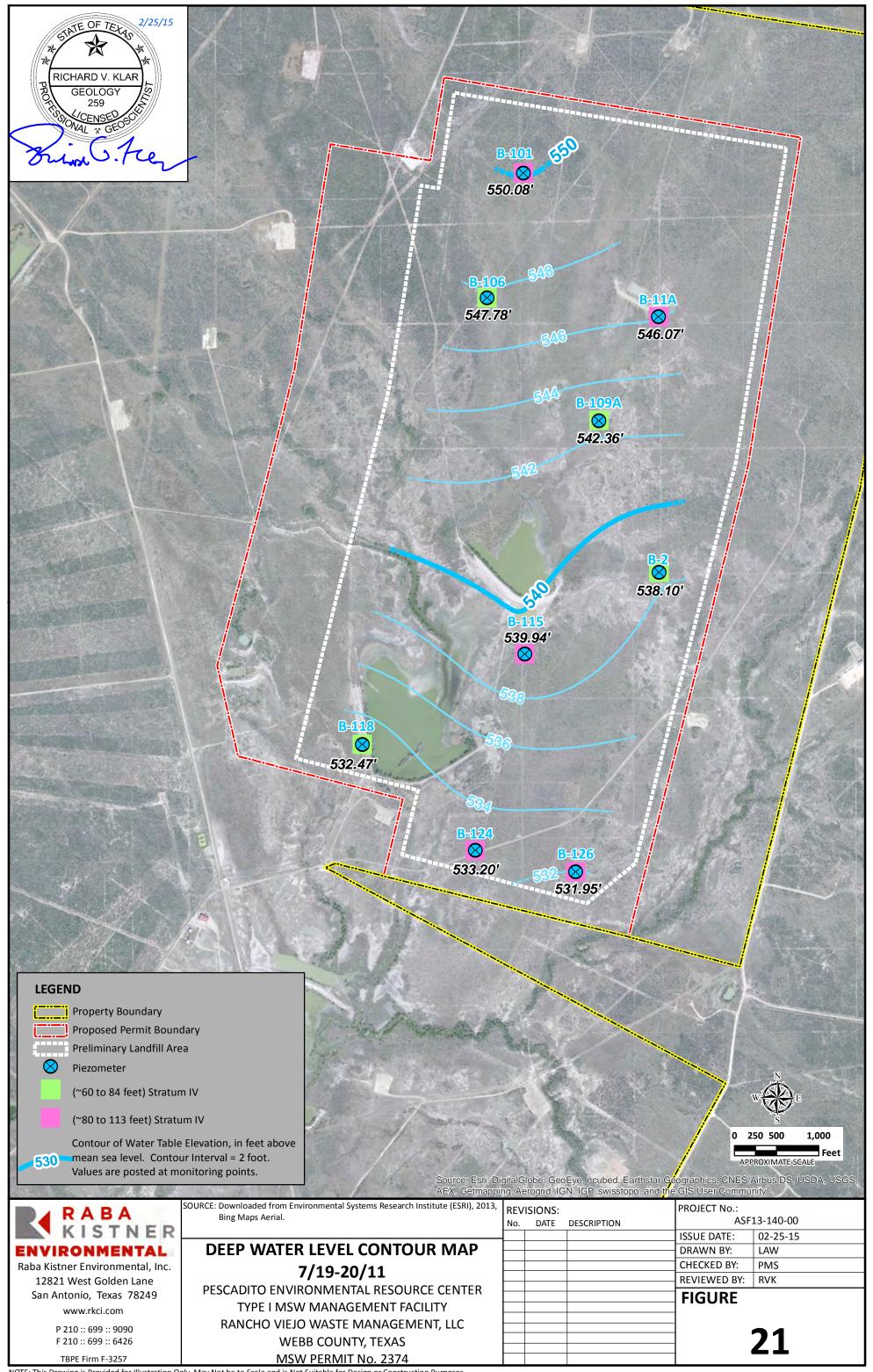


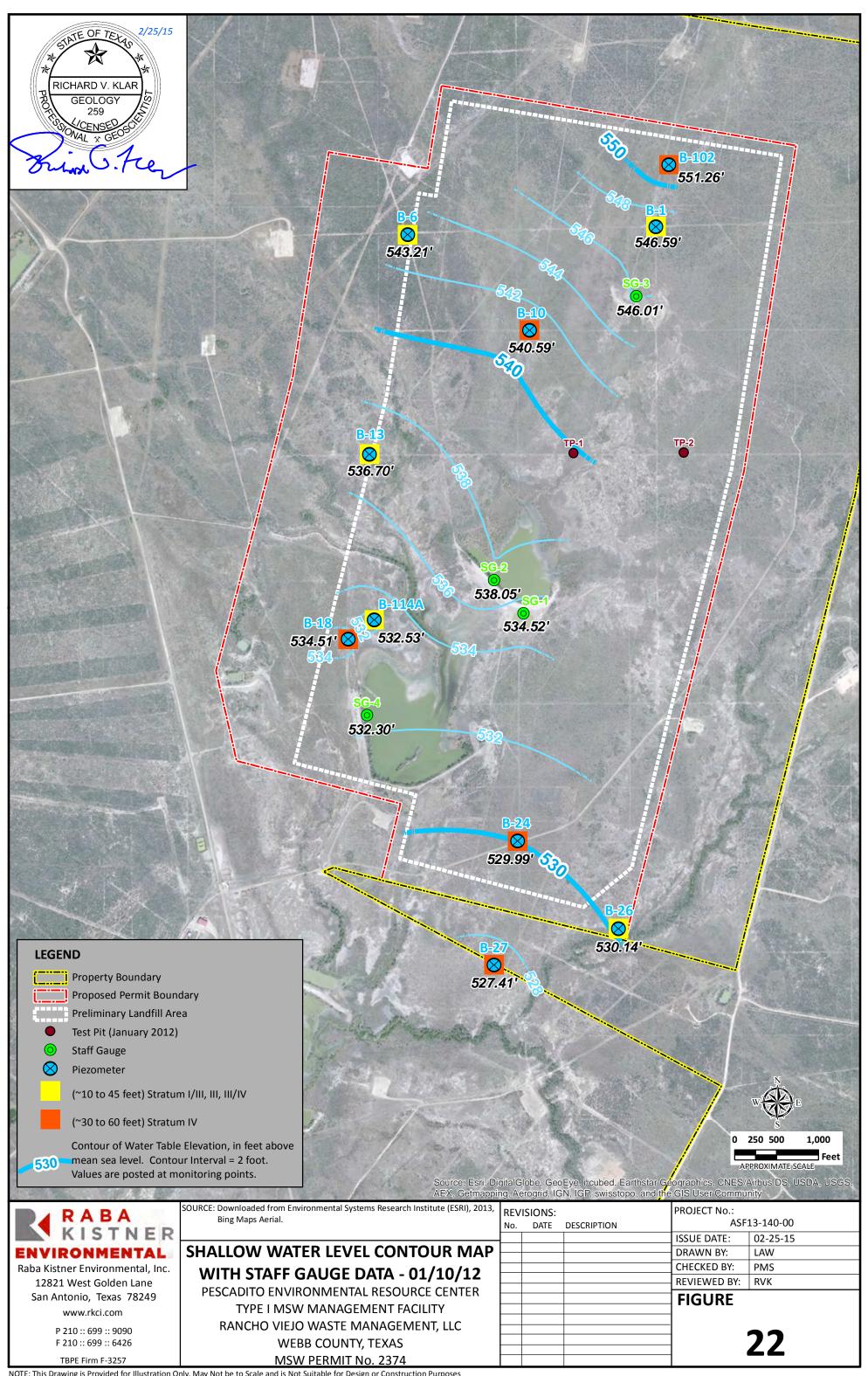


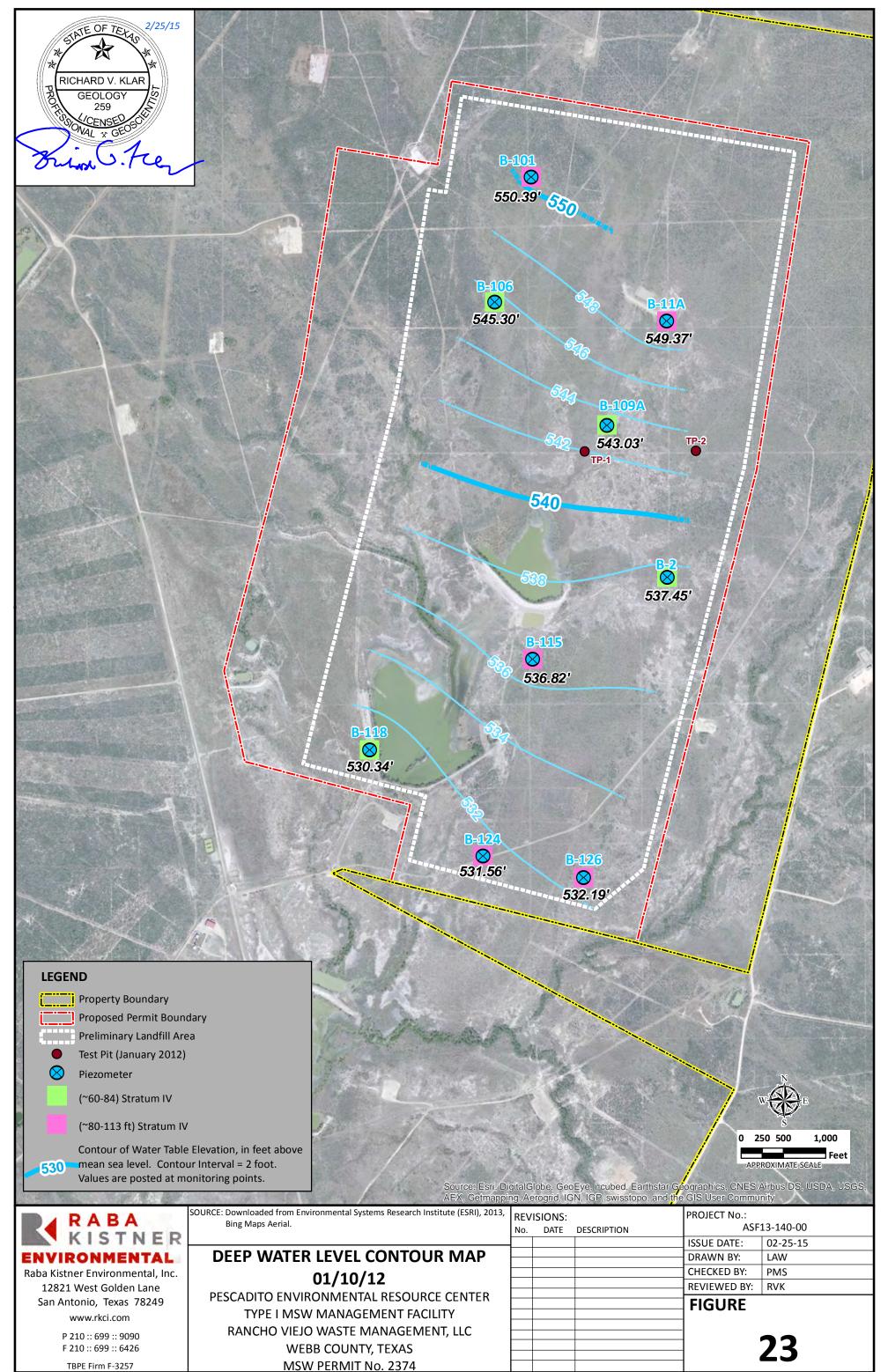














# TABLE 1 SOIL BORING/TEST PIT/STAFF GAUGE POSITION TABLE

#### SOIL BORING/TEST PIT/STAFF GAUGE POSITION TABLE

Pescadito Environmental Resource Center
Type I MSW Management Facility
Rancho Viejo Waste Management, LLC
Webb County, Texas
MSW Permit No. 2374

Soil Boring/Test		Ground Surface	Geogr	aphic	State Plan	e (TX-South)
Pit/Staff Gauge	Survey Date	Elevation (feet,	Longitude	Latitude	Easting	Northing
Designation		MSL (NAD 83))	hddd°mm'ss.s"	hddd°mm'ss.s"	(feet)	(feet)
SOIL BORINGS						
B-1	10/19/2010	553.81	-99°09 15.67252	27°34 28.69043	772273.60	17098253.56
B-2	10/19/2010	545.89	-99°09 15.81350	27°33 47.13971	772239.16	17094057.78
B-3	10/19/2010	559.91	-99°09 45.27954	27°34 43.68767	769617.37	17099781.90
B-4	10/19/2010	563.64	-99°09 20.32337	27°34 40.54554	771861.32	17099452.87
B-5	10/19/2010	559.67	-99°09 07.04395	27°34 38.71716	773055.27	17099262.05
B-6	10/19/2010	559.02	-99°09 48.65062	27°34 27.59904	769305.50	17098158.84
B-7	10/19/2010	554.77	-99°09 30.27359	27°34 28.37174	770959.56	17098228.21
B-8	10/19/2010	561.89	-99°08 59.34976	27°34 28.87048	773742.49	17098264.15
B-9	5/3/2011	550.18	-99°09 49.85489	27°34 16.53325	769191.25	17097041.97
B-10	10/19/2010	547.73	-99°09 32.54381	27°34 16.37950	770748.95	17097018.28
B-11	10/19/2010	549.53	-99°09 15.93379	27°34 17.32189	772244.14	17097105.67
B-11A	7/21/2011	549.52	-99°09 15.82777	27°34 17.39297	772185.30	17097065.63
B-12	10/19/2010	555.41	-99°09 01.86660	27°34 16.50955	773509.58	17097017.09
B-13	10/19/2010	544.45	-99°09 53.75188	27°34 01.70887	768832.69	17095546.84
B-14	10/19/2010	543.80	-99°09 33.28350	27°34 01.77077	770674.68	17095543.42
B-15	10/19/2010	548.17	-99°09 15.97600	27°34 01.88521	772232.26	17095546.87
B-16	10/19/2010	550.48	-99°09 04.64405	27°34 01.76411	773251.96	17095529.37
B-17	10/19/2010	544.79	-99°09 42.37214	27°33 50.88992	769851.03	17094448.94
B-18	10/19/2010	542.50	-99°09 56.49292	27°33 39.85212	768574.38	17093341.02
B-19	10/19/2010	539.19	-99°09 36.51160	27°33 44.30858	770374.96	17093781.59
B-20	10/19/2010	541.39	-99°09 29.59867	27°33 32.29043	770990.76	17092564.74
B-21	10/19/2010	544.86	-99°09 12.67810	27°33 32.54666	772513.69	17092582.70
B-22	10/19/2010	540.73	-99°09 37.43785	27°33 30.48970	770284.30	17092386.59
B-23	10/19/2010	536.98	-99°09 54.94697	27°33 22.74159	768704.40	17091612.45
B-24	10/19/2010	538.10	-99°09 34.42010	27°33 16.00877	770548.25	17090922.87
B-25	10/19/2010	532.65	-99°09 51.97500	27°33 07.80343	768963.93	17090102.58
B-26	10/19/2010	537.85	-99°09 20.86833	27°33 05.79338	771762.56	17089884.96
B-27	10/19/2010	535.77	-99°09 37.34558	27°33 01.36532	770277.21	17089445.54
B-101	7/21/2011	552.49	-99°09 33.79834	27°34 34.05733	770576.93	17098756.73

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#### SOIL BORING/TEST PIT/STAFF GAUGE POSITION TABLE

Pescadito Environmental Resource Center
Type I MSW Management Facility
Rancho Viejo Waste Management, LLC
Webb County, Texas
MSW Permit No. 2374

Soil Boring/Test		<b>Ground Surface</b>	Geogr	aphic	State Plan	e (TX-South)
Pit/Staff Gauge	Survey Date	Elevation (feet,	Longitude	Latitude	Easting	Northing
Designation		MSL (NAD 83))	hddd°mm'ss.s"	hddd°mm'ss.s"	(feet)	(feet)
SOIL BORINGS						
B-102	7/21/2011	556.27	-99°09 14.10831	27°34 35.88118	772349.59	17098931.67
B-103	5/3/2011	553.76	-99°09 40.05169	27°34 30.61699	770080.87	17098459.53
B-104	5/3/2011	552.11	-99°09 27.53319	27°34 23.59018	771203.64	17097744.07
B-105	5/3/2011	557.66	-99°09 04.75992	27°34 25.08419	773253.69	17097884.31
B-106	7/21/2011	548.99	-99°09 38.54204	27°34 19.36845	770142.44	17097275.74
B-107	5/3/2011	549.53	-99°09 45.82069	27°34 08.75679	769550.16	17096254.79
B-108	5/3/2011	546.95	-99°09 33.82255	27°34 09.10708	770630.04	17096284.51
B-109	5/3/2011	547.60	-99°09 23.75147	27°34 05.09403	771534.22	17095874.54
B-109A	7/21/2011	546.53	-99°09 23.81677	27°34 05.14058	771460.08	17095832.16
B-110	5/3/2011	553.75	-99°09 08.08633	27°34 12.81205	772947.96	17096646.60
B-111	5/3/2011	544.06	-99°09 43.17785	27°33 57.92788	769782.25	17095160.03
B-112	5/3/2011	543.09	-99°09 53.86791	27°33 47.35922	768814.61	17094097.85
B-113	5/3/2011	545.03	-99°09 24.97624	27°33 54.15080	771418.25	17094770.05
B-114	5/3/2011	541.87	-99°09 53.07040	27°33 42.25926	768883.67	17093582.47
B-114A	7/21/2011	540.14	-99°09 53.46745	27°33 42.25242	768779.90	17093534.96
B-115	7/21/2011	541.46	-99°09 33.22013	27°33 37.64035	770599.56	17093059.69
B-116	5/3/2011	545.60	-99°09 23.09477	27°33 40.22916	771580.26	17093363.35
B-117	5/3/2011	543.68	-99°09 56.07198	27°33 32.97719	768608.60	17092646.59
B-118	7/21/2011	538.87	-99°09 54.90247	27°33 26.93711	768642.70	17091989.17
B-119	5/3/2011	541.99	-99°09 33.49257	27°33 27.22666	770637.64	17092055.23
B-120	5/3/2011	539.92	-99°09 35.78451	27°33 21.96451	770428.60	17091524.93
B-121	5/3/2011	544.09	-99°09 20.44820	27°33 25.65966	771810.79	17091890.87
B-122	5/3/2011	543.02	-99°09 19.96015	27°33 17.02162	771850.19	17091018.37
B-123	5/3/2011	535.13	-99°09 45.71248	27°33 19.11181	769533.57	17091241.54
B-124	5/3/2011	536.89	-99°09 39.92993	27°33 14.59186	769983.70	17090735.50
B-125	5/3/2011	542.22	-99°09 27.02918	27°33 19.48726	771215.27	17091270.66
B-126	5/3/2011	538.03	-99°09 26.78413	27°33 11.99201	771165.43	17090466.81
DB-1	12/29/2011	550.60	-99°09 35.71860	27°34 23.87799	770467.22	17097776.98



#### SOIL BORING/TEST PIT/STAFF GAUGE POSITION TABLE

Pescadito Environmental Resource Center
Type I MSW Management Facility
Rancho Viejo Waste Management, LLC
Webb County, Texas
MSW Permit No. 2374

Soil Boring/Test		<b>Ground Surface</b>	Geogr	aphic	State Plan	e (TX-South)
Pit/Staff Gauge	Survey Date	Elevation (feet,	Longitude	Latitude	Easting	Northing
Designation		MSL (NAD 83))	hddd°mm'ss.s"	hddd°mm'ss.s"	(feet)	(feet)
TEST PITS						
TP-1	12/29/2011	548.58	-99°09 26.94209	27°34 02.43268	771245.69	17095607.29
TP-2	12/29/2011	549.08	-99°09 11.04230	27°34 02.11784	772676.36	17095568.06
STAFF GAUGES						
SG-1	7/21/2011	536.26	-99°09 32.68225	27°33 42.76707	770650.66	17093577.12
SG-2	7/21/2011	538.47	-99°09 37.01549	27°33 47.07673	770262.94	17094014.33
SG-3	7/21/2011	546.81	-99°09 18.35166	27°34 20.49050	771959.82	17097379.59
SG-4	7/21/2011	533.10	-99°09 53.58063	27°33 30.87891	768763.73	17092386.57

#### NOTES:

- 1. A Leica System 1200 survey grade satellite based global positioning system (GPS) was used for the survey which incorporates satellites managed by the Department of Defense to allow for accurate geographic position measurement worldwide. Raw GPS data were collected using the Leica System 1200 Real Time Kinematic (RTK) rover interfaced with a Leica System 1200 base station. Use of the coupled RTK rover and the stationary base station provided for real time correction of raw GPS observables and generally afforded sub-meter position accuracy.
- 2. Geographic coordinates are additionally presented in State Plane TX-South Zone 5 in feet.
- 3. Reference datum is North American Datum (NAD) 83
- 4. GPS data were collected by Richard Sample, Jason Smith and Clint Laffere (RKEI Geoscience Professionals)



# TABLE 2

# SUMMARY OF SOIL BORING/TEST PIT DEPTHS AND ELEVATIONS

#### SUMMARY OF SOIL BORING/TEST PIT DEPTHS AND ELEVATIONS

Pescadito Environmental Resource Center Type I MSW Management Facility Rancho Viejo Waste Management, LLC Webb County, Texas MSW Permit No. 2374

				IIIL NO. 2374		
Soil Boring/ Test Pit Designation	Installation Date	Ground Surface Elevation (feet,MSL)	Soil Boring/ Test Pit Total Depth (feet)	Soil Boring/Test Pit Total Depth Elevation (feet, MSL)	Top of Stratum IV Elevation (feet,MSL) (Unweathered Y-J <sup>(2)</sup> )	Depth of Penetration into Stratum IV (feet) (Unweathered Y-J <sup>(2)</sup> )
SOIL BORINGS	5					
B-1	11/9/2009	553.81	97.5	456.31	523.81	67.5
B-2	11/12/2009	545.89	78.5	467.39	518.89	51.5
B-3	6/9/2010	559.91	160.0	399.91	525.41	125.5
B-4	7/1/2010	563.64	120.0	443.64	527.64	84.0
B-5	6/29/2010	559.67	160.0	399.67	529.67	130.0
B-6	6/13/2010	559.02	160.0	399.02	527.52	128.5
B-7	7/7/2010	554.77	160.0	394.77	528.77	134.0
B-8	6/26/2010	561.89	120.0	441.89	529.89	88.0
B-9	4/5/2011	550.18	160.0	390.18	519.18	129.0
B-10	7/14/2010	547.73	120.0	427.73	514.73	87.0
B-11	6/10/2010	549.53	160.0	389.53	523.53	134.0
B-11A	6/25/2011	549.52	104.0	445.52	519.52	74.0
B-12	6/25/2010	555.41	160.0	395.41	518.41	123.0
B-13	6/11/2010	544.45	160.0	384.45	517.45	133.0
B-14	6/23/2010	543.80	160.0	383.80	513.80	130.0
B-15	6/24/2010	548.17	120.0	428.17	513.17	85.0
B-16	6/25/2010	550.48	160.0	390.48	523.48	133.0
B-17	6/23/2010	544.79	120.0	424.79	507.79	83.0
B-18	7/15/2010	542.50	160.0	382.50	510.50	128.0
B-19	6/22/2010	539.19	160.0	379.19	500.19	121.0
B-20	7/15/2010	541.39	120.0	421.39	519.39	98.0
B-21	7/19/2010	544.86	160.0	384.86	519.86	135.0
B-22	7/18/2010	540.73	120.0	420.73	512.73	92.0
B-23	7/15/2010	536.98	120.0	416.98	508.98	92.0
B-24	7/23/2010	538.10	160.0	378.10	505.10	127.0
B-25	7/20/2010	532.65	120.0	412.65	499.65	87.0
B-26	7/22/2010	537.85	160.0	377.85	503.85	126.0
B-27	7/22/2010	535.77	120.0	415.77	510.77	95.0
B-101	7/6/2011	552.49	151.0	401.49	518.49	117.0
B-102	7/9/2011	556.27	160.0	396.27	521.27	125.0
B-103	4/6/2011	553.76	120.0	433.76	525.26	91.5
B-104	4/7/2011	552.11	120.0	432.11	531.11	99.0
B-105	4/6/2011	557.66	160.0	397.66	531.66	134.0
B-106	7/10/2011	548.99	120.0	428.99	524.99	96.0
B-107	4/8/2011	549.53	160.0	389.53	523.53	134.0
B-108	4/9/2011	546.95	120.0	426.95	520.95	94.0



#### SUMMARY OF SOIL BORING/TEST PIT DEPTHS AND ELEVATIONS

Pescadito Environmental Resource Center Type I MSW Management Facility Rancho Viejo Waste Management, LLC Webb County, Texas MSW Permit No. 2374

Soil Boring/ Test Pit Designation	Installation Date	Ground Surface Elevation (feet,MSL)	Soil Boring/ Test Pit Total Depth (feet)	Soil Boring/Test Pit Total Depth Elevation (feet, MSL)	Top of Stratum IV Elevation (feet,MSL) (Unweathered Y-J <sup>(2)</sup> )	Depth of Penetration into Stratum IV (feet) (Unweathered Y-J <sup>(2)</sup> )
SOIL BORINGS	5					
B-109	4/11/2011	547.60	160.0	387.60	520.60	133.0
B-109A	6/25/2011	546.53	85.0	461.53	519.53	58.0
B-110	5/11/2011	553.75	120.0	433.75	530.75	97.0
B-111	5/10/2011	544.06	120.0	424.06	509.06	85.0
B-112	5/5/2011	543.09	160.0	383.09	512.09	129.0
B-113	4/13/2011	545.03	160.0	385.03	518.03	133.0
B-114	5/3/2011	541.87	120.0	421.87	508.87	87.0
B-114A	6/25/2011	540.14	20.0	520.14	Not Encountered <sup>(1)</sup>	Not Encountered <sup>(1)</sup>
B-115	5/9/2011	541.46	120.0	421.46	505.46	84.0
B-116	4/15/2011	545.60	160.0	385.60	516.60	131.0
B-117	5/2/2011	543.68	120.0	423.68	515.68	92.0
B-118	4/29/2011	538.87	160.0	378.87	513.87	135.0
B-119	4/19/2011	541.99	160.0	381.99	515.99	134.0
B-120	4/18/2011	539.92	120.0	419.92	514.92	95.0
B-121	5/8/2011	544.09	120.0	424.09	516.09	92.0
B-122	4/16/2011	543.02	160.0	383.02	527.02	144.0
B-123	4/29/2011	535.13	160.0	375.13	503.13	128.0
B-124	5/6/2011	536.89	160.0	376.89	510.89	134.0
B-125	4/17/2011	542.22	121.0	421.22	524.22	103.0
B-126	5/7/2011	538.03	160.0	378.03	517.03	139.0
DB-1	6/7/2011	550.60	502.0	48.60	523.10	474.5
TEST PITS						
TP-1	1/16/2012	548.58	21.0	527.58	Not Encountered <sup>(1)</sup>	Not Encountered <sup>(1)</sup>
TP-2	1/17/2012	549.08	26.0	523.08	530.08	7.0

#### NOTES:



 $<sup>{\</sup>bf 1.} \ \ {\bf Not \ Encountered; borehole \ or \ test \ pit \ not \ deep \ enough \ to \ penetrate \ into \ Stratum \ IV.}$ 

<sup>2.</sup> Unweathered Y-J = Unweathered Eocene age sedimentary deposits of the Yegua Formation (Y) or Jackson Group (J).

# **TABLE 3**

# SUMMARY OF OBSERVATIONS DURING TEST PIT INSTALLATION

#### SUMMARY OF OBSERVATIONS DURING TEST PIT INSTALLATION

Pescadito Environmental Resource Center

Type I MSW Management Facility - Rancho Viejo Waste Management, LLC

Webb County, Texas

MSW Permit No. 2374

Test Pit		Surface Elevation	Total	Geologic		Boring Log	Stratum
Designation	Date Excavated		Depth	Formation	Depth Interval	Lithologic Description	Designation
Designation		(feet above MSL))	(feet)	Tormation	(feet)	, ,	Designation
						CLAY; sandy, soft to firm, brown to dark brown, moist	
				Recent		- scattered plant roots to 3'	
				Pleistocene	0 - 7	- calcareous nodules and flocculated appearance from 3' to 7'	l*
				(R-P)		- gravel layer from 6.5' to 7'	
						- sand increasing below 6.5'	
TP-1	1/16/2012	548.58	21			CLAY; weathered, blocky, firm to stiff, tan to light greenish-gray, moist	
					7 - 12	- large gypsum (selenite) crystals from 7' to 9'	II*
				Eocene (Y-J)		- slight apparent groundwater seepage from 11' to 11.5'	
				Locelle (1-3)		CLAY; blocky, hard, greenish-gray to reddish-brown with green mottling,	
					12 - 21	moist, with ferrous staining in soil partings	III*
						- reddish-brown with green mottling from 12' to 14' and 18' to 21'	
				Recent		CLAY; silty, light brown to tan, soft to firm, moist, with scattered	
				Pleistocene	0 - 7	calcareous nodules	
				(R-P)		- plant roots to 3'	, ,
				(11-1-)		- flocculated appearance from 2' to 4'	
						CLAY; stiff to hard, brown and tan to reddish and greenish-brown, moist,	
						with ferrous and black carbonaceous staining along partings	
TP-2	1/16-17/2012	549.08	26			- calcareous nodules from 5' to 10'	
	1,10 17,2012	3 13.00	20		7 - 19	- thinly interbedded very fine-grained brown sandstone from 11.5' to	III*
				Eocene (Y-J)		- zone of oxidation with iron nodule formation from 13' to 14'	
				20000 (1.0)		- light green to brown lenticular very fine-grained sandstone	
						from 14' to 14.5' (not continuous)	
						CLAY; hard, tan to light green and light brown, moist, with scattered very	
					19 - 26	thinly interbedded clay-shale and scattered calcareous nodules	IV*
						- general absence of unweathered characteristics along clay partings	

\* Discrete samples were taken In order to facilitate geotechnical testing requirements.

Bring French

2/25/15

RICHARD V KLAR GEOLOGY

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### **TABLE 4**

# SUMMARY OF PIEZOMETER CONSTRUCTION DETAILS AND SCREEN ELEVATIONS

#### SUMMARY OF PIEZOMETER CONSTRUCTION DETAILS AND SCREEN ELEVATIONS

Pescadito Environmental Resource Center Type I MSW Management Facility Rancho Viejo Waste Management, LLC Webb County, Texas MSW Permit No. 2374

			Well TOC	Well					Well Co	nstruction Det	ails			
Well	Date	Installation	Elevation	Total	Borehole	Well Casing	Well	Approximate	Concrete	Grout/	Filter Pack	Filter Pack	Well Screen	Well Screen
Designation	Installed	Contractor	(feet)	Depth	Diameter	Diameter	Casing	Riser Height	Seal	<b>Bentonite Seal</b>	Interval	Type	Interval	Size
			(leet)	(feet)	(inches)	(inches)	Type	(feet)	(feet)	(feet)	(feet)		(feet)	(inches)
B-1	11/10/2009	Vortex	555.61	45	8	2	PVC	1.80	0-2	2-28	28-45	10-20 Silica	30-45	0.010
B-2	11/12/2009	Vortex	547.59	75	8	2	PVC	1.70	0-2	2-58	58-75	10-20 Silica	60-75	0.010
B-6	6/13/2010	Boart Longyear	562.48	30	6	2	PVC	3.46	0-2	2-8	8-30	20-40 Silica	10-30	0.010
B-10	7/14/2010	Boart Longyear	550.86	60	6	2	PVC	3.13	0-2	2-38	38-60	20-40 Silica	40-60	0.010
B-11A	6/25/2011	Boart Longyear	553.59	104	6	2	PVC	4.07	0-2	2-92	92-104	20-40 Silica	94-104	0.010
B-13	6/12/2010	Boart Longyear	548.14	30	6	2	PVC	3.69	0-2	2-8	8-30	20-40 Silica	10-30	0.010
B-18	7/17/2010	Boart Longyear	545.85	60	6	2	PVC	3.35	0-2	2-43	43-60	20-40 Silica	45-60	0.010
B-24	7/23/2010	Boart Longyear	541.03	60	6	4	PVC	2.93	0-2	2-43	43-60	20-40 Silica	45-60	0.010
B-26	7/22/2010	Boart Longyear	540.79	30	6	4	PVC	2.94	0-2	2-8	8-30	20-40 Silica	10-30	0.010
B-27	7/22/2010	Boart Longyear	538.66	45	6	4	PVC	2.89	0-2	2-28	28-45	20-40 Silica	30-45	0.010
B-101	7/7/2011	GeoProjects	557.96	90	6	2	PVC	5.47	0-3	3-78	78-92	20-40 Silica	80-90	0.010
B-102	7/9/2011	GeoProjects	559.89	60	6	2	PVC	3.62	0-3	3-48	48-62	20-40 Silica	50-60	0.010
B-106	7/10/2011	GeoProjects	550.29	80	6	2	PVC	1.30	0-3	3-68	68-82	20-40 Silica	70-80	0.010
B-109A	6/25/2011	Boart Longyear	549.04	80	6	2	PVC	2.51	0-2	2-68	68-80	20-40 Silica	70-80	0.010
B-114A	6/25/2011	Boart Longyear	542.62	20	6	2	PVC	2.48	0-2	2-8	8-20	20-40 Silica	10-20	0.010
B-115	5/9/2011	Boart Longyear	543.95	102	6	2	PVC	2.49	0-2	2-92	92-105	20-40 Silica	94-102	0.010
B-118	4/29/2011	Boart Longyear	542.20	84	6	2	PVC	3.33	0-2	2-73	73-85	20-40 Silica	75-84	0.010
B-124	5/6/2011	Boart Longyear	539.45	113	6	2	PVC	2.56	0-2	2-98	98-113	20-40 Silica	100-113	0.010
B-126	5/7/2011	Boart Longyear	540.55	102	6	2	PVC	2.52	0-2	2-78	77-105	20-40 Silica	80.5-102	0.010

#### NOTES:

- 1. Well construction details obtained from State of Texas Well Reports in addition to Raba Kistner field notes.
- 2. TOC = top of casing



# **TABLE 5**

SUMMARY OF STATIC WATER LEVEL MEASUREMENTS – PIEZOMETERS

Pescadito Environmental Resource Center
Type I MSW Management Facility
Rancho Viejo Waste Management, LLC
Webb County, Texas
MSW Permit No. 2374

Piezometer Designation	Piezometer Installation Date	Boring Total Depth (feet, bgs)	Piezometer Total Depth (feet, TOC)	Screened Interval (feet, bgs)	TOC Elevation <sup>(1)</sup> (feet, NAD 83)	Measure- ment Date	Depth to Water (feet, TOC)	Groundwater Elevation (feet, NAD 83)
						6/12/2010	4.42	551.20
						6/13/2010	4.33	551.28
						6/14/2010	4.25	551.36
						6/16/2010	4.17	551.45
						6/22/2010	4.42	551.20
						6/25/2010	6.01	549.60
						6/28/2010	6.50	549.11
						7/21/2010	6.00	549.61
						8/11/2010	6.08	549.53
						10/19/2010	6.38	549.23
						2/3/2011	7.40	548.21
	44 /40 /2000	07.5	40.00	(20 45)	FFF 64	3/23/2011	7.20	548.41
B-1	11/10/2009	97.5	48.08	(30 - 45)	555.61	4/7/2011	7.29	548.32
						4/12/2011	7.41	548.20
						4/19/2011	7.40	548.21
						4/26/2011	7.39	548.22
						4/30/2011	7.58	548.03
						5/24/2011	7.68	547.93
						6/5/2011	7.87	547.74
						6/14/2011	7.94	547.67
						6/22/2011	8.04 8.10	547.57
						6/29/2011 7/11/2011	8.15	547.51 547.46
						7/11/2011	8.25	547.36
						1/10/2012	9.02	546.59
						6/12/2010	7.08	540.51
						6/13/2010	6.92	540.67
						6/14/2010	6.92	540.67
						6/16/2010	6.83	540.76
						6/22/2010	6.87	540.72
						6/25/2010	6.92	540.67
						6/28/2010	6.99	540.60
						7/6/2010	7.50	540.09
B-2	11/12/2009	78.5	76.33	(60 - 75)	547.59	7/7/2010	7.58	540.01
	,,,			(33 33)		7/13/2010	7.42	540.17
						7/16/2010	7.33	540.26
						7/21/2010	7.58	540.01
						8/11/2010	7.79	539.80
						10/19/2010	7.74	539.85
						2/3/2011	8.50	539.09
						3/23/2011	8.50	539.09
						4/7/2011	8.99	538.60



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MSW Permit No. 2374

Piezometer Designation	Piezometer Installation Date	Boring Total Depth (feet, bgs)	Piezometer Total Depth (feet, TOC)	Screened Interval (feet, bgs)	TOC Elevation <sup>(1)</sup> (feet, NAD 83)	Measure- ment Date	Depth to Water (feet, TOC)	Groundwater Elevation (feet, NAD 83)
						4/12/2011	8.93	538.66
						4/19/2011	9.08	538.51
						4/26/2011	9.05	538.54
						4/30/2011	9.16	538.43
						5/24/2011	9.21	538.38
B-2	11/12/2009	77.5	76.33	(60 - 75)	547.59	6/5/2011	9.29	538.30
	11/12/2003	77.5	70.55	(00 73)	347.55	6/14/2011	9.33	538.26
						6/22/2011	9.39	538.20
						6/29/2011	9.44	538.15
						7/11/2011	9.44	538.15
						7/19/2011	9.49	538.10
						1/10/2012	10.14	537.45
						6/14/2010	18.33	544.15
						6/16/2010	18.75	543.73
						6/22/2010	18.58	543.90
						6/25/2010	18.75	543.73
						6/28/2010	18.67	543.81
						7/6/2010	21.50	540.98
						7/7/2010	21.50	540.98
						7/13/2010	20.08	542.40
						7/16/2010	19.25	543.23
						7/21/2010	18.42	544.06
						8/11/2010	18.10	544.38
						10/19/2010	17.34	545.14
						2/3/2011	17.80	544.68
B-6	6/13/2010	160.0	33.88	(10 - 30)	562.48	3/23/2011	17.85	544.63
						4/7/2011	20.73	541.75
						4/12/2011	20.41	542.07
						4/19/2011	20.02	542.46
						4/26/2011	19.70	542.78
						4/30/2011	19.53	542.95
						5/24/2011	18.80	543.68
						6/5/2011	18.61	543.87
						6/14/2011	18.54	543.94
						6/22/2011	18.49	543.99
						6/29/2011	18.45	544.03
						7/11/2011	18.47	544.01
						7/19/2011	18.47	544.01
						1/10/2012	19.27	543.21
						7/16/2010	1.83	549.03
B-10	7/14/2010	120.0	55.31	(40 - 60)	550.86	7/19/2010	7.08	543.78
						7/21/2010	7.00	543.86



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Piezometer Designation	Piezometer Installation Date	Boring Total Depth (feet, bgs)	Piezometer Total Depth (feet, TOC)	Screened Interval (feet, bgs)	TOC Elevation <sup>(1)</sup> (feet, NAD 83)	Measure- ment Date	Depth to Water (feet, TOC)	Groundwater Elevation (feet, NAD 83)
						8/11/2010	7.42	543.44
						10/19/2010	7.36	543.50
						2/3/2011	8.50	542.36
						3/23/2011	9.48	541.38
						4/7/2011	9.21	541.65
						4/12/2011	9.54	541.32
						4/19/2011	9.31	541.55
						4/26/2011	9.63	541.23
B-10	7/14/2010	120.0	55.31	(40 - 60)	550.86	4/30/2011	9.79	541.07
						5/24/2011	9.89	540.97
						6/5/2011	9.99	540.87
						6/14/2011	10.01	540.85
						6/22/2011	10.08	540.78
						6/29/2011	10.21	540.65
						7/11/2011	10.28	540.58
						7/19/2011	10.28	540.58
						1/10/2012	10.27	540.59
2444	6 /25 /2011	404	107.05	(94 - 104)	553.59	7/11/2011	5.50	548.09
B-11A	6/25/2011	104	107.95			7/19/2011	7.52	546.07
						1/10/2012	4.22	549.37
						6/14/2010	9.50	538.64
						6/16/2010	9.52	538.62
						6/22/2010	9.58	538.56
						6/25/2010	9.75	538.39
						6/28/2010 7/6/2010	9.58 12.42	538.56 535.72
						7/8/2010	12.42	535.72
						7/13/2010	12.33	535.81
						7/13/2010	12.35	535.89
						7/10/2010	11.25	536.89
						8/11/2010	11.42	536.72
B-13	6/12/2010	160.0	32.83	(10 - 30)	548.14	10/19/2010	11.76	536.38
						2/3/2011	11.34	536.80
						3/23/2011	12.09	536.05
					4/7/2011	11.97	536.17	
					4/12/2011	11.82	536.32	
					4/19/2011	12.06	536.08	
					4/26/2011	12.19	535.95	
					4/30/2011	12.23	535.91	
						5/24/2011	12.20	535.94
						6/5/2011	12.33	535.81
						6/14/2011	12.43	535.71



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Piezometer Designation	Piezometer Installation Date	Boring Total Depth (feet, bgs)	Piezometer Total Depth (feet, TOC)	Screened Interval (feet, bgs)	TOC Elevation <sup>(1)</sup> (feet, NAD 83)	Measure- ment Date	Depth to Water (feet, TOC)	Groundwater Elevation (feet, NAD 83)
						6/22/2011	11.48	536.66
					[	6/29/2011	12.52	535.62
B-13	6/12/2010	160.0	32.83	(10 - 30)	548.14	7/11/2011	12.48	535.66
						7/19/2011	12.55	535.59
						1/10/2012	11.44	536.70
						7/21/2010	10.58	535.27
						8/11/2010	10.33	535.52
						10/19/2010	10.38	535.47
						2/3/2011	10.80	535.05
						3/23/2011	11.82	534.03
						4/7/2011	10.99	534.86
						4/12/2011	10.99	534.86
						4/19/2011	11.14	534.71
B-18	7/17/2010	120.0	63.50	(45 - 60)	545.85	4/26/2011	11.28	534.57
	.,,			(10 00)		4/30/2011	11.09	534.76
						5/24/2011	10.92	534.93
								534.32
						6/14/2011		534.34
						6/22/2011	5/14/2011     11.51     534.       5/22/2011     11.52     534.       5/29/2011     11.65     534.	534.33
					6/29/2011 11.65 7/11/2011 11.88	534.20		
								533.97
						7/19/2011	11.93	533.92
						1/10/2012	11.34	534.51
						8/11/2010	9.21	531.82
						10/19/2010	9.24	531.79
						2/3/2011	9.30	531.73
						3/23/2011	11.82	529.21
						4/7/2011	10.80	530.23
						4/12/2011	10.80	530.23
						4/19/2011	10.94	530.09
						4/26/2011	11.04	529.99
B-24	7/23/2010	160.0	62.76	(45 - 60)	541.03	4/30/2011	11.09	529.94
						5/24/2011	11.31	529.72
						6/5/2011	11.46	529.57
						6/14/2011	11.59	529.44
					6/22/2011	11.70	529.33	
						6/29/2011	11.79	529.24
						7/11/2011	11.87	529.16
						7/19/2011	11.93	529.10
						1/10/2012	11.04	529.99
B-26	7/22/2010	160.0	32.42	(10 - 30)	540.79	8/11/2010	9.08	531.70
	.,,			(======================================	2 .3.,3	10/19/2010	8.95	531.84



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Piezometer Designation	Piezometer Installation Date	Boring Total Depth (feet, bgs)	Piezometer Total Depth (feet, TOC)	Screened Interval (feet, bgs)	TOC Elevation <sup>(1)</sup> (feet, NAD 83)	Measure- ment Date	Depth to Water (feet, TOC)	Groundwater Elevation (feet, NAD 83)
						2/3/2011	10.40	530.39
						3/23/2011	11.19	529.60
						4/7/2011	11.29	529.50
						4/12/2011	11.23	529.56
						4/19/2011	11.36	529.43
						4/26/2011	11.38	529.41
						4/30/2011	11.40	529.39
B-26	7/22/2010	160.0	32.42	(10 - 30)	540.79	5/24/2011	11.18	529.61
						6/5/2011	11.41	529.38
						6/14/2011	11.59	529.20
						6/22/2011	11.48	529.31
						6/29/2011	11.56	529.23
						7/11/2011	11.45	529.34
						7/19/2011	11.44	529.35
						1/10/2012	10.65	530.14
						8/11/2010	9.25	529.41
						10/19/2010	9.32	529.34
					2/3/2011	10.50	528.16	
						3/23/2011	11.10	527.56
						4/7/2011	10.96	527.70
						4/12/2011	10.98	527.68
					7/11/2011 11.45 529.34 7/19/2011 11.44 529.35 1/10/2012 10.65 530.14  8/11/2010 9.25 529.41 10/19/2010 9.32 529.34 2/3/2011 10.50 528.16 3/23/2011 11.10 527.56 4/7/2011 10.96 527.70 4/12/2011 10.98 527.68 4/19/2011 11.04 527.62 4/26/2011 11.08 527.58 5/24/2011 10.98 527.68 6/5/2011 11.28 527.38 6/14/2011 11.37 527.29 6/22/2011 11.41 527.55	527.62		
							11.08	527.58
B-27	7/22/2010	120.0	47.78	(30 - 45)		4/30/2011	11.11	527.55
						5/24/2011	10.98	527.68
							11.28	527.38
						6/14/2011	11.37	527.29
								527.25
						6/29/2011	11.48	527.18
						7/11/2011	11.43	527.23
						7/19/2011	11.44	527.22
						1/10/2012	11.25	527.41
B-101	7/7/2011	151	88.01	(80 - 90)	557.96	7/20/2011	7.88	550.08
	.,.,2022			(== 55)	221.00	1/10/2012	7.57	550.39
B-102	7/9/2011	160	64.01	(50 - 60)	559.89	7/20/2011	24.81 <sup>(5)</sup>	535.08
	., -,			(== 00)	223.00	1/10/2012	8.63	551.26
B-106	7/10/2011	120	83.16	(70 - 80)	552.29	7/20/2011	4.51	547.78
	, ==, ===			(1.5.00)	22.20	1/10/2012	7.50	544.79
						7/11/2011	6.20	542.84
B-109A	6/25/2011	85	84.41	(70 - 80)	549.04	7/19/2011	6.68	542.36
						1/10/2012	6.01	543.03



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Piezometer Designation	Piezometer Installation Date	Boring Total Depth (feet, bgs)	Piezometer Total Depth (feet, TOC)	Screened Interval (feet, bgs)	TOC Elevation <sup>(1)</sup> (feet, NAD 83)	Measure- ment Date	Depth to Water (feet, TOC)	Groundwater Elevation (feet, NAD 83)
B-114A	6/25/2011	20	23.02	(10 - 20)	542.62	6/29/2011	18.55 <sup>(5)</sup>	524.07
						7/11/2011	9.22	533.40
						7/19/2011	9.27	533.35
						1/10/2012	10.09	532.53
B-115	5/9/2011	120	104.48	(94 - 102)	543.95	7/11/2011	4.00	539.95
						7/19/2011	4.01	539.94
						1/10/2012	7.13	536.82
B-118	4/29/2011	160	87.88	(75 - 84)	542.20	6/29/2011	9.68	532.52
						7/11/2011	9.64	532.56
						7/19/2011	9.73	532.47
						1/10/2012	11.86	530.34
B-124	5/6/2011	160	117.06	(100 - 113)	539.45	6/29/2011	10.73 <sup>(5)</sup>	528.72
						7/11/2011	6.20	533.25
						7/19/2011	6.25	533.20
						1/10/2012	7.89	531.56
B-126	5/7/2011	160	105.95	(80.5 - 102)	540.55	6/29/2011	11.88 <sup>(5)</sup>	528.67
						7/11/2011	8.64	531.91
						7/19/2011	8.60	531.95
						1/10/2012	8.36	532.19

#### **NOTES:**

- 1. A Leica System 1200 survey grade satellite based global positioning system (GPS) was used for the survey which incorporates satellites managed by the Department of Defense to allow for accurate geographic position measurement worldwide. Raw GPS data were collected using the Leica System 1200 Real Time Kinematic (RTK) rover interfaced with a Leica System 1200 base station. Use of the coupled RTK rover and the stationary base station provided for real time correction of raw GPS observables and generally afforded sub-meter position accuracy. The units were equipped with Intuicom® radios to transmit and receive laterally coordinated positional data between each of the units.
- 2. bgs = below ground surface
- 3. NAD 83 = north american datum 1983
- 4. TOC = top of casing
- 5. Water level not static post-development purging.



# **TABLE 6**

SUMMARY OF STATIC WATER LEVEL MEASUREMENTS – STAFF GAUGES

#### **SUMMARY OF STATIC WATER LEVEL MEASUREMENTS - STAFF GAUGES**

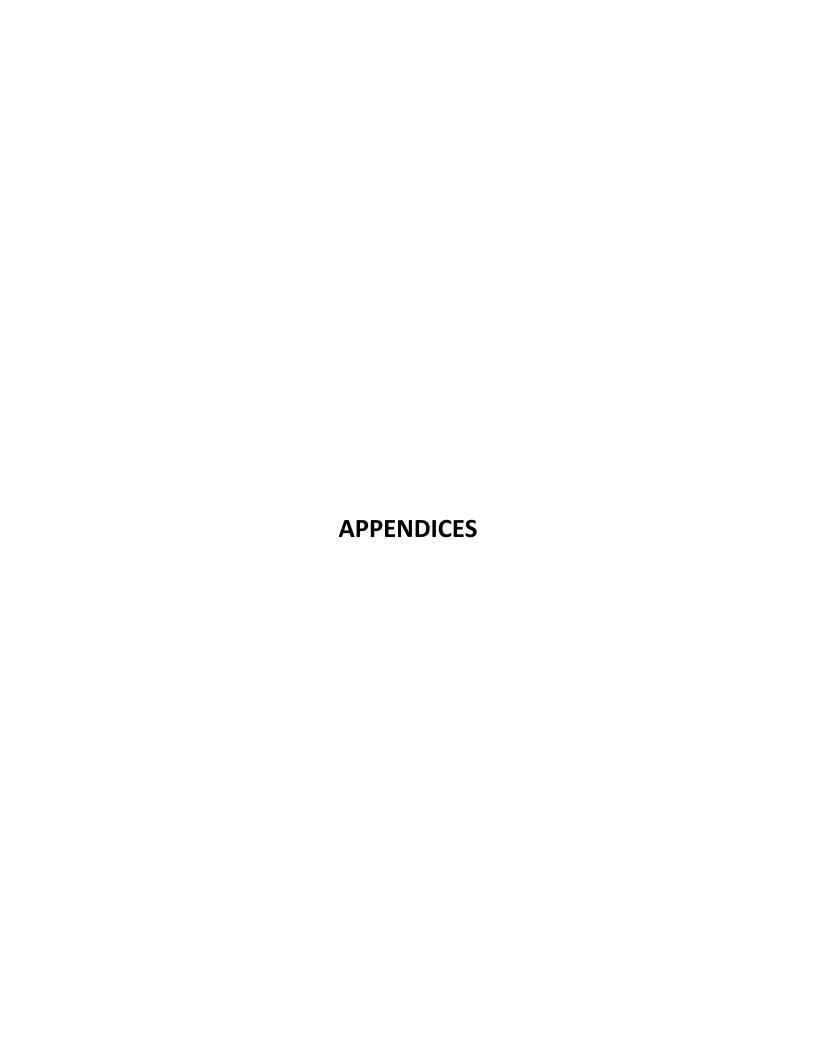
Pescadito Environmental Resource Center
Type I MSW Management Facility
Rancho Viejo Waste Management, LLC
Webb County, Texas
MSW Permit No. 2374

Staff Gauge Designation	Ground Surface Elevation (feet, NAD 83)	Measurement Date	Top of T-Post Elevation (feet, NAD 83)	Depth to Water (feet, Top of T- Post)	Surface Water Elevation (feet, NAD 83)
		5/24/2011		4.79	535.43
		6/5/2011		5.02	535.20
		6/22/2011	540.22	5.50	534.72
SG-1 (B-19 Tank)	536.26	6/29/2011		6.81	533.41
		7/11/2011		5.60	534.62
		7/20/2011		6.40	533.82
		1/10/2012		5.70	534.52
		5/24/2011		4.91	537.92
		6/5/2011		NM	Dry
		6/22/2011		5.30	537.53
SG-2 (B-17 Tank)	538.47	6/29/2011	542.83	NM	Dry
		7/11/2011		NM	Dry
		7/20/2011		NM	Dry
		1/10/2012		4.78	538.05
		5/24/2011		4.81	546.19
		6/5/2011		5.10	545.90
		6/22/2011		5.60	545.40
SG-3 (B-11A Tank)	546.81	6/29/2011	551.00	6.21	544.79
		7/11/2011		5.80	545.20
		7/20/2011		6.70	544.30
		1/10/2012		4.99	546.01
		5/24/2011		4.31	533.11
		6/5/2011		4.57	532.85
	533.10	6/22/2011		5.10	532.32
SG-4 (Burrito Tank)		6/29/2011	537.42	5.74	531.68
		7/11/2011		5.30	532.12
		7/20/2011		NM	Dry
		1/10/2012		5.12	532.30

#### **NOTES:**

- A Leica System 1200 survey grade satellite based global positioning system (GPS) was used for the survey which incorporates
  satellites managed by the Department of Defense to allow for accurate geographic position measurement worldwide. Raw
  GPS data were collected using the Leica System 1200 Real Time Kinematic (RTK) rover interfaced with a Leica System 1200 base
  station. Use of the coupled RTK rover and the stationary base station provided for real time correction of raw GPS observables
  and generally afforded sub-meter position accuracy.
- 2. NM = not measured
- 3. Reference datum is North American Datum (NAD) 83





# APPENDIX A TCEQ APPROVAL LETTER – APRIL 21, 2011

Bryan W. Shaw, Ph.D., Chairman
Buddy Garcia, Commissioner
Carlos Rubinstein, Commissioner
Mark R. Vickery, P.G., Executive Director



### TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 11, 2011

Mr. James Neyens, P.E. Project Manager TRC Solutions 505 East Huntland Drive Suite 250 Austin, Texas 78752

Re: Rancho Viejo – Webb County

Proposed Municipal Solid Waste (MSW) Type I Landfill

**Proposed Site Investigation** 

Tracking Nos. 14595775 & 14641992

Dear Mr. Neyens:

The Texas Commission on Environmental Quality (TCEQ) received a revised soil boring plan (SBP) on March 22, 2011, for the proposed municipal solid waste landfill facility referenced above. The revised plan was submitted in response to a notice of deficiency letter dated March 7, 2011 for the original SBP dated February 1, 2001. The original and revised SBPs were submitted by you on behalf of Rancho Viejo Waste Management, LLC (RVWM), Geoffrey Connor, attorney for RVWM, and Raba-Kistner Consultants, Inc.

The original and revised SBPs provide a description and results of previously installed soil borings and piezometers performed during preliminary subsurface investigations. These preliminary investigations were conducted to evaluate the feasibility of developing an approximately 800 to 850-acre Type I MSW landfill at the 12,194 acre property. The revised SBP proposes installation of an additional 27 borings ranging in depth from 120 to 160 feet, including 10 soil borings that will be converted to temporary piezometers, for a combined total of 53 borings and 19 piezometers. Our review of the revised plan indicates that it complies with the Municipal Solid Waste Regulations. This letter constitutes approval of your plan.

Please be advised that under Title 30 Texas Administrative Code, Chapter 330, Section 330.63(e)(4)(B), the uppermost aquifer and any hydraulically interconnected aquifers below the site must be identified, as well as the underlying confining unit. It is anticipated that this SBP, when implemented, will accurately characterize the in-situ geologic, hydrologic, and engineering properties of the surface and subsurface strata at this site. Although this plan appears to comply with the Municipal Solid Waste Regulations concerning site investigations, additional soil borings and piezometers could be required by the Commission should the data generated by this revised SBP prove to be inconclusive.

If you should find it necessary to modify this approved plan, another plan detailing any proposed modifications must be submitted to the Commission for approval before implementation of the modifications.

Mr. James Neyens, P.E. Page 2 April 11, 2011

If you have questions regarding this letter, please contact me by telephone at (512) 239-6669, or in writing at the address on our letterhead (please include mail code MC 124 on the first line of our address).

Sincerely,

David R. Dippel, P.G.

Municipal Solid Waste Permits Section

Waste Permits Division

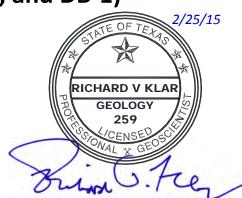
Texas Commission on Environmental Quality

DRD/fp

### **APPENDIX B**

## **BORING LOGS AND KEY TO TERMS AND SYMBOLS**

(Boring Logs B-1 through B-26, B-11A, B-109A, B-114A, B-101 through B-126, and DB-1)

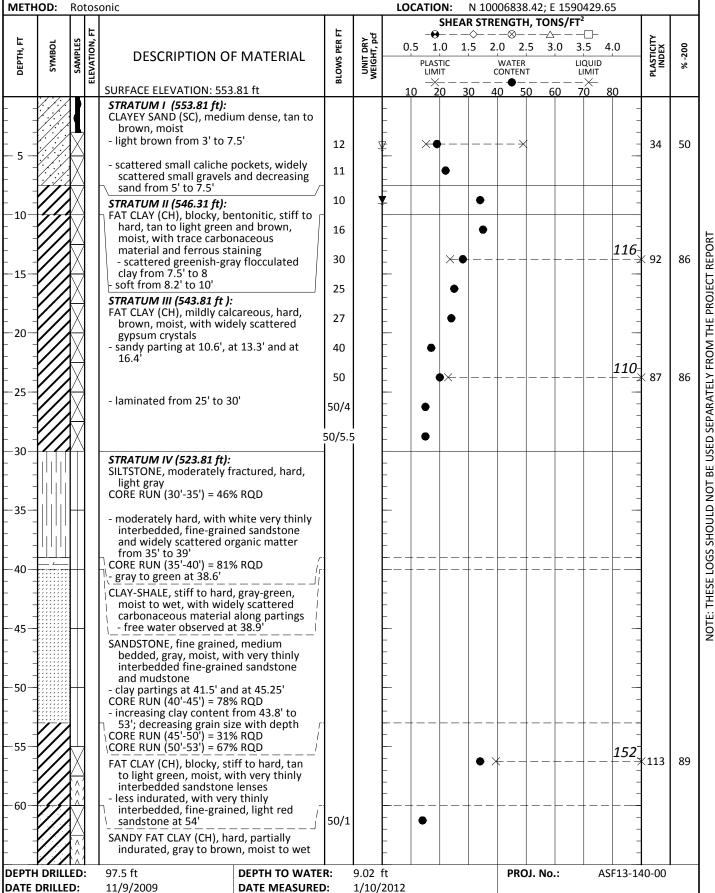


#### LOG OF BORING NO. B-1

Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC TBPE Firm Registration No. F-3257 Webb County, Texas - MSW Permit No. 2374



**DRILLING** 



#### **LOG OF BORING NO. B-1**

Pescadito Environmental Resource Center - Type I MSW



Management Facility - Rancho Viejo Waste Management, LLC
Webb County, Texas - MSW Permit No. 2374

TBPE Firm Registration No. F-3257 **DRILLING** LOCATION: N 10006838.42; E 1590429.65 METHOD: Rotosonic SHEAR STRENGTH, TONS/FT<sup>2</sup> **BLOWS PER FT** - -->-- $--\otimes---\triangle$ UNIT DRY WEIGHT, pcf SAMPLES PLASTICITY INDEX ELEVATION, 2.0 2.5 3.0 3.5 SYMBOL 0.5 1.0 1.5 **DESCRIPTION OF MATERIAL** PLASTIC LIMIT WATER CONTENT LIQUID LIMIT SURFACE ELEVATION: 553.81 ft SANDY FAT CLAY (CH), hard, partially 50/2 72 65 indurated, gray to brown, moist to wet (continued) sandstone stringer from 68' to 70' free water observed at 70' 50/5 FAT CLAY (CH), hard, gray, moist to wet, with very thinly interbedded indurated siltstone 95 - increasing indurated siltstone layers 74 81 from 75' to 95' NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT 80 50 85 - moist, with glauconite from 85' to 95' 50/6 90 95 FAT CLAY (CH), blocky, hard, very dark 50/6  $\times$ 43 brown to reddish-brown with gray mottling, moist to wet - free water observed at 95' -100-**Boring Terminated** -105 -110-115 -120--125-

**DEPTH TO WATER:** 

**DATE MEASURED:** 

9.02 ft

1/10/2012

PROJ. No.:

ASF13-140-00

**DEPTH DRILLED:** 

**DATE DRILLED:** 

97.5 ft

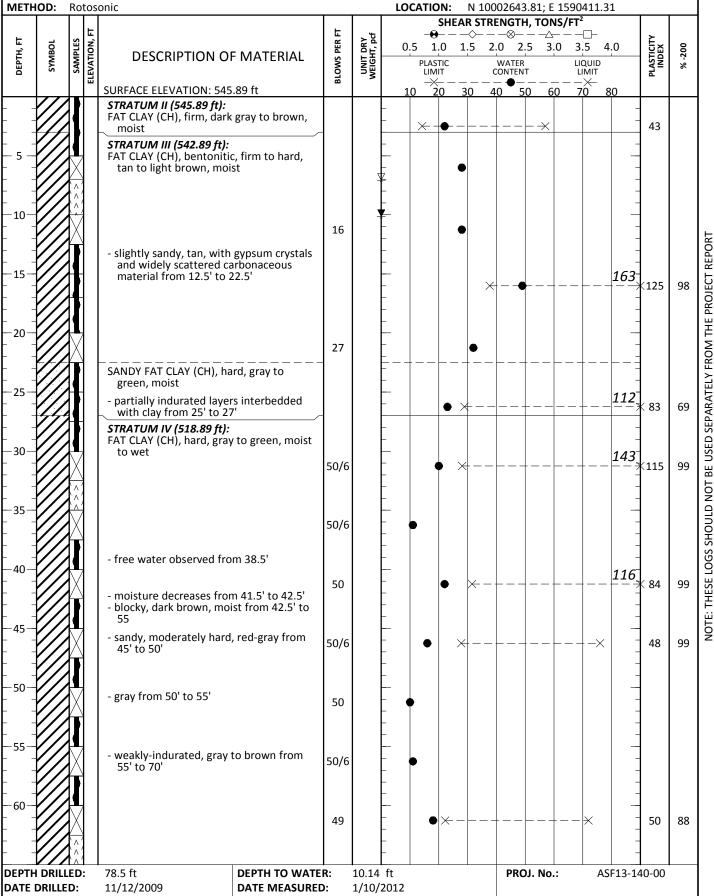
11/9/2009

### LOG OF BORING NO. B-2

Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC TBPE Firm Registration No. F-3257



Webb County, Texas - MSW Permit No. 2374 **DRILLING** LOCATION: Rotosonic



DRILLING METHOD: **LOCATION:** N 10002643.81; E 1590411.31 Rotosonic

METHOD:	Rotos	onic				L	OCAT						90411.3	31		
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DEPTH, FT	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5		1.5		2.5		3.5 4	4.0	PLASTICITY INDEX	% -200
	=	SURFACE ELEVATION: 545	.89 ft	B.	>		10	× -	30	- <del>-</del> -40 •		 60	$-\times$	80		
		STRATUM IV (518.89 ft): FAT CLAY (CH), hard, gray to wet (continued)				- - -		20						- - -	-	
70-		- soft, gray to green, sligh 70' to 75'	ntly moist from			<u> </u>								-	-	
		- free water observed f	rom 70' to 75'			-								-		
75		SILTSTONE, sandy, model moist	rately hard, gray,			  -  -			-+-			_ -		-		
-80-		Boring Terminated				- - -	+		- + -				-			
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85 						 - -								-		
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METHOD: Roto	sc	onic		1			OC/	ATIO					5.94; [ <b>1, TO</b> I		7768.:	24			4
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SYMBOL SAMPLES FIEVATION ET	[]	DESCRIPTION OF	MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5	- 1		L,5	-	) 2 VATER	.5 3	_	3.5 LIQUID	4.0	PLASTICITY	20 EX	
DEF SY SY IS SAI				l ov	MES			PLAST LIMI	T		CC	NTEN	Т		LIMIT		A,	≝   %	١
	4	SURFACE ELEVATION: 559	.91 ft				10	<u>×</u>	0 :	30	40	5	0 6	50	− <u>≻</u> 70	80	_		_
- 5 -		STRATUM II (559.91 ft): FAT CLAY (CH), hard, browneddish-brown, moist, watter and ferrous stail - cherty gravels at ground - blocky, light green from	ning nd surface			-  -  -  -			8							-	- - - -		
		STRATUM III (556.91 ft): FAT CLAY (CH), calcareous				- - -			❸<					ļ + — -		91	- - - - ★ 65	98	3
10		- light green from 10' 12'				_				•						-	- - - -		
-15		- fractured, moisture deci	roacing from 15'			- - -						•				-	- - -		0
		to 34.5' - reddish-brown with som mottling, with ferrous s	ne greenish-gray taining along			-  -  -						0					- - -		
-20-		partings from 17' to 34.	5'			- - -						•				-	- - -		
25						-						0 0 A				-	- - -		
						- - -			×-	-	- -	0-		-×			40	10	0
30						<u> </u>						0				-	- - -		
35	-	STRATUM IV (525.41 ft): SANDY LEAN CLAY (CL), h	ard, dark brown	-		_						0				-	- - -		
40		to light brown with gre- mottling, slightly moist, weakly-cemented clay a - trace siltstone fragme	enish-gray with some and siltstone			- - -						•					- - -		
		to 37'	1115 110111 34.3			- - -						<b>9</b>					- - -		
45		- brown with green mottl	ing and very			- - -						<b>0</b>				-	- - -		
-50		thinly interbedded silts 57'	tone from 45' to			- - -						0				-	- - -		
						-  -  -						0					- - -		
-55		Made Control				_ _ _						0				-	- - - -		
60		- blocky, fractured, with s greenish-gray glauconit 67'	ome e from 57' to			- - - - -						<b>8 8 8</b>				-	- - - - - - -		
DEPTH DRILLED: DATE DRILLED:		160.0 ft 6/9/2010	DEPTH TO WATE		5.58 6/9/2							PRC	)J. No	).:	Α	SF13-:	_ <del> </del>  40-0	0	$\dashv$



NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

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70		₩		moist to moist				-										-		
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_		1		reddish-brown with gre	enish-gray			F										4		
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100-				<ul> <li>blocky, fractured, dark b brown with greenish-gra</li> </ul>	rown to light ay mottling		107	_	•	,		(	₽					$\exists$		
_		18		from 99' to 102'				-										-		
_				<ul> <li>calcareous, green to ligh 102' to 106'</li> </ul>	it green from							'	•							
105								_				•	9					-		
_		1		LEAN CLAY (CL), hard, red	dish-brown				-		_   _		8			T —				
-				with light green pockets to moist, with greenish-	s, slightly moist			-				`						-		
110 <del>-</del>		18		and some caliche pocke	ts			Ē.				•	8					$\exists$		
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DRILLING METHOD:

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- 		- calcareous from 146' to	148'			- -				•				-		
150		FAT CLAY (CH), blocky, fr dark brown to brown v greenish-gray mottling to moist	actured, hard, vith , slightly moist			- - - -				0				- - - -		
155		- greenish-gray below 15	4'			- - - -				•				- - - -		
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DRILLING

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			with caliche pockets an	d some organic				-													
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-			pockets and ferrous sta	ining along			F											-			
-10-			partings				₹ .														
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-60-			- dark green to green silts	stone layers			L						_					$\exists$			
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DEPTH			120.0 ft	DEPTH TO WATE		10.67							PRO.	J. No	.:	A	ASF1	3-14	0-00		
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- 70 - 70 - 70 75			FAT CLAY (CH), hard, gree light gray with some da mottling, slightly moist ferrous staining, caliche weakly-cemented thin (continued)  - free water observed fro	ork gray to moist, with e pockets, and siltstone layers		95	- - - - - - -		<b>&gt;</b> ×		- <del> </del>		. — —		169 	<b>(143</b>	90
-80			- silty, sandy gray with da greenish-gray mottling	ark gray to from 85' to 88'			- - - - - - - - -				<ul><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li></ul>						
- 90 - 90 90 			FAT CLAY (CH), hard, bro reddish-brown with gre mottling and pinkish-gi moist, with caliche poc	wn to eenish-gray ray mottling, kets	_	106	 - - - - - -	•	×-		• • • • • • • • • • • • • • • • • • •					21	99 100
-100-			- caliche pockets increasi	ng from 107' to			- - - - - - - -				<b>8 8 9</b>						
-110			109' - blocky, fractured from 1	_			- - - - - - - -				0 0						
-120- 			Boring Terminated												- - - - - - - - -		
DEPTH DRI DATE DRIL			120.0 ft 7/1/2010	DEPTH TO WATE		10.67 7/1/2					PRC	J. No.	•	AS	F13-14	0-00	



METH	IOD:	Rotos	onic					OCAT				7849.8			06.98				╛
		⊩				_ ا		_				NGTH, -⊗			<u>_</u>				
F,	ğ	SAMPLES ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0			_∞ 0 2.5					PLASTICITY INDEX	00	
ОЕРТН, FT	SYMBOL	SAMPLES EVATION, I	DESCRIPTION O	F MATERIAL	WS	투		PL	ASTIC	-		WATER		LIQL	JID '		ASTI	% -200	
-	<u>~</u>	S ELE			B10	"			MIT			ONTENT		LIM ——×			చ		
	///		SURFACE ELEVATION: 559	).67 ft		-	-	10	20	30	40	50	60	− –× 	80				4
t :		1881	STRATUM II (559.67 ft): FAT CLAY (CH), stiff, brov	vn to			L	•											
[ -		18	reddish-brown, moist,	with caliche	1		Γ_												
<b>├</b>		1881	pockets and some orga	nic matter			₽	•								-			
<u> </u>		1381	STRATUM III (556.67 ft): FAT CLAY (CH), hard, red	ldish-brown with			Ē												
-			greenish-gray to gray n	nottling, slightly			L									-			
F -		∤ <b>%</b> ∤	moist				-					•				-			
-10-							L												1
10 -		1381					F					•				-			Ι.
-		1881	- caliche pockets from 12	' to 14'			H									-			15
		183	culience pockets from 12	10 14			F					•				1			6
-15-		<b>∤</b> ∰					$\vdash$					•				-			۱º
L :							Ĺ					•							1
-							L					•				-			ESE LOGS SHOLLID NOT BE LISED SEPARATELY FROM THE PROJECT REPORT
<b>-</b> -		181	- light brown with ferrou partings from 18' to 20	s staining along			F					•				-			=
_20_			partings from 18 to 20																
		<b>∤</b> ∦∤					F		•	$\times +$		-• + -	-	-+	$\times$	-	49	100	5
F -		1311					F									-			
-25-		<b>                                      </b>										•							15
<u> </u>		1984					H									-			
-		1881					F					0				-			6
		<b>188</b> 1	- reddish-brown with gre	en and			F	•				•				4			2
<del>-30-</del>	44	<del>188</del> 1	greenish-gray mottling	, with ferrous	1			+				_							2
-		1881	staining along partings				-					•				-			
-	///		STRATUM IV (529.67 ft): FAT CLAY (CH), blocky, ha	ard, wet to			F									7			15
F		∤ <b>∦</b> ∤	moist, with ferrous sta - free water observed fro	ining			F					•				-			}
<del>-35-</del>			- free water observed fro	m 30' to 34'															=
		1881					F									-			
F -		181					-					•				-			0
40-		187	- fractured, dark green a	nd dark gray															8
- <sup>'</sup>		<b>∤</b> ∦∤	- fractured, dark green as sandstone layers from	39' to 62'			-					•				-			
-		1881					F									-			
							Ĺ					•							[
<del></del> 45		<b> </b>					$\vdash$					•				$\dashv$			OTE: T
t :		131					Ė												1
-												•				4			
F		1881					H		• >	$\leftarrow -$	+	- 🔂 — –	+ -		×	-	58	99	
<del>-50-</del>							L					•							
		1311					F					•				-			
-		181					F	•				0				-			
-55-		1881					L									4			
		181					F					•				-			1
t -							Ė									-			
ļ -	///	<b> }</b>			1		ļ.					•				4			
-60-	///	<b>18</b> 1			1		$\vdash$					•				-			
		<b>∤</b> ₩1					Ė												
		<b>1</b>	- very thinly interbedded 62' to 68'	sandstone from			F					•				-			
<b>-</b>	///		62' to 68'				H									$\dashv$			
DEPTH	DRILL	ED:	160.0 ft	DEPTH TO WATE	R:	4.75	ft		- 1			PROJ.	No.:		ASF1	3-14	0-00		1
DATE	DRILLE	D:	6/29/2010	DATE MEASURE	<b>)</b> :	6/29/		0											
				1															_



METH	OD:	Rot	tos	onic				L	OC/	ATIC					80; E :			8			╛
						<sub> -</sub>									, TONS						
F, F	BOL	SAMPLES	NO N,	DECODIDETON		BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5	1	.0	1.5	2.0	2.5	<u></u>	3	-L- 5 4	1.0	PLASTICITY INDEX	8	
БЕРТН, FT	SYMBOL	SAME	VAT	DESCRIPTION OF	MATERIAL	SWC				PLAS'	TIC		W	ATER NTENT		LI	QUID IMIT	1	LAST	% -200	
ا ا		"	ᆲ	SURFACE ELEVATION: 559	67 ft	B10	23							•	0 60		$\times$	20	_		
	///	188	Н	<b>STRATUM IV (529.67 ft):</b>	.67 11				10		0	30	40	€ 50	0 60	) /	/ <del>/                                   </del>	30			┨
[ ]		184		FAT CLAY (CH), blocky, ha	rd, wet to			F										-			
				moist, with ferrous stail (continued)	ning									•				-			
-70-		<b>1</b> 88		,				_						•				-			
		18		- fractured, dark gray to g	reen. with			L										-			
		184		sandstone layers (appro	oximately 1-3			-						•				-			
 75		181		inches thick) from 71' to	0.80			L						•				_			
- /s 		18						-	_									-			Ι.
		1)(												•				-			[
		<b>1</b> 881						-						0				-			1 5
<del>-80-</del>		<b>1</b>		- dark gray to gray sandst	one layers and					•		¥-		•			L	112	* 83	98	[
		18		an increase of green sai	nd from 80' to			-										-			
		18		05				_						•				-			[
-85-		H		- green, wet, with dark gr	ay laminated			H										-	-		TACATA TOTICAA TIIT MACATA VITTMAAATO ATOL TA TOM A II IOI 19 200 I 1911
		181		sandstone layers from 8	35' to 123'			_						0				-			
		1						-										-			
-90-		1881		- free water observed fro	m 85' to 95'			L			•			•				-			
		1						-										-			١
		1						-						•				-			[
		1						-										-			
95 		<b>1</b>						-						0				-			=
		$\mathcal{H}$						-										-	-		֓֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓
		18						F						•				-	1		
-100-		18		- dark gray sandstone laye	ers from 100' to									•				-			2
[ ]		18		102'				F										-			5
		18		- fractured from 100' to	123									•				-			۲
105		18						L.										-			[3
		181						L						•				-			[
		$\mathcal{H}$						-										-			
- 110		181												•				-			I.F. TEGI
- 110		$\mathcal{H}$						-										-			
								_		•>	<b>←</b> −	†-		• 😝 —			†	-	59	98	
								-						•				-			
115 -		18																-			
		181						-						•				-			
		18						-										-			
-120-		181						H						•				-			
								F						•				-	1		
-		<del>/                                      </del>		FAT CLAY (CH), calcareous		+		<u> </u>	+-			+-	-					<u> </u>	1		
- 125		1		to reddish-brown with	greenish-gray			Ē.						•				_	]		
-			$  \  $	and gray mottling, sligh - reddish-brown from 126	tly moist 5' to 130'			F						•				-	-		
[ ]		14		readistr brown from 120	0 130			-										-	]		
-								F						•				-	1		
DEPTH			<u>'</u>	160.0 ft	DEPTH TO WATE	R:	4.75					•			l. No.:		AS	F13-1	40-00	-	1
DATE [	DRILLE	D:		6/29/2010	DATE MEASURE	D:	6/29/	2010	)												



DRILLING METHOD: Rotosonic

**LOCATION:** N 10007849.80; E 1591206.98

IVIEIF	T.		Sonic		1	Г	т'	CATI			rrength,						
E		SI			H H	₽			<b>)</b> –	$-\diamondsuit-$	⊗					<u>È</u>	c
ОЕРТН, FT	SYMBOL	SAMPLES FI EVATION ET	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pdf			1	1,5	2.0 2.5 WATER	3.0		3.5 4.0	J	PLASTICITY INDEX	% -200
DE	&	SA			BLOV	5			STIC //IT		WATER CONTENT			LIMIT		4	%
			SURFACE ELEVATION: 559		<u> </u>			10 (	← – 20	30	40 50	60	)	<del>70</del> 80	)		
			FAT CLAY (CH), calcareou	us, hard, brown greenish-grav			ŀ				8				-		
Ι.			to reddish-brown with and gray mottling, slig	htly moist			F								4		
- 135-		181	(continued)				L				•						
_ 133			- brown to reddish-brow	un vuith			F								-		
_ :		181	greenish-gray mottling	from 136' to			Ė				•						
L			139'				F								-		
_140 _											•				_		
-		1881					H				•				-		
<u> </u>							F								4		
-145							F										
_							-				•				_		
							L								_		
-150-			- caliche pockets from 15	50' to 160'			$\vdash$				•				_		
			- callette pockets from 13	50 (0 100			L								_		
							H								-		
- 155-							L				•				_		
-							-								-		
Ē :							F								-		
_ _160_					<u>L</u>	<u> </u>			L_	1_				1	-		
	-		Boring Terminated				F								-		
	1						L								-		
465	1						-								=		
165 -	1						_								_		
-	1						L										
							F								-		
_170-	1																
	-						-								-		
	1						L								-		
-175-	1						$\vdash$								-		
	1						Ė										
-	1						-								-		
 180	]						F								4		
-	1						Ł										
	-						F								-		
- 185-	1						L								_		
L	1						ŀ								-		
ļ :	1						Ė								-		
100	1						F								-		
190- -	]						F								=		
<u> </u>	1						F								-		
	-						F								=		
DEPTH	I I DRILL	ED:	160.0 ft	DEPTH TO WATE	R:	4.75	ft		1		PROJ	. No.:	:	ASF	 13-14	<b>I</b> 10-00	
	DRILLE		6/29/2010	DATE MEASURE		6/29/		0									



DRILLING METHOD: Rotosonic

**LOCATION:** N 10006731.93; E 1587462.83

METHOL	):   	Rotos	onic		1	1	LO	CATIC						7462.83	3		
		آ ا			=	=		-8		\R STR -				Γ <del>΄</del> □-		<b> </b>	
<b>DEPTH, FT</b>	SYMBOL	SAMPLES ELEVATION, F	DESCRIPTION O	Ε ΜΑΤΕΡΙΔΙ	BLOWS PER FT	UNIT DRY WEIGHT, pcf	0	1	1		2,0 2			3,5 4,	.0	PLASTICITY INDEX	-200
DEP.	¥	SAN	DESCRIPTION O	1 1017 (1 21(1) (2	Š	VEIG		PLAS LIM	TIC IIT		WATER CONTEN	R NT	L	IQUID LIMIT		PLAS	%
		=	SURFACE ELEVATION: 559	9.02 ft	=	_		$\stackrel{\times}{10}$	<u></u>	 30     4	• 40 • 5	50 6	 60	−≻ 70 8	0		
//	7		STRATUM II (559.02 ft):				_		8		,			70 0	_		
1/2			FAT CLAY (CH), hard, broggreenish-gray, moist to	wn to			F								-		
			with ferrous staining, f	locculated clay,	1					8	,						
- 5 - <b>/</b>		<del>}</del> }	and some organic matt				<u> </u>								_		
		8	STRATUM III (556.02 ft): FAT CLAY (CH), hard, bro	wn to			L	×	1		-	*			_	32	69
{/		<b>X</b>	reddish-brown with so	me		<u> </u>	<b>₽</b>								_		
·//		3	greenish-gray mottling with scattered glaucon	, slightly moist,			-								-		
-10-		881	- caliche pockets from 5'	to 12'							•				_		
1/		8	·				-								-		
		<b>8</b>					_				•				_		
-15-		881					-				0				_		
		₩.					_								_		
		<b>X</b> I					F				•				-		
-20-		8				1 3									_		
<sup>20</sup> -		881					F				•				_		
							-								-		
1/							F								_		
-25-		81					-				•				_		
			SANDY FAT CLAY (CH), ha	-	1			†		T	₩.	T		TI			
		881	greenish-gray to gray, v - free water observed f	wet from 26' to 21 5'			-	×-	<b>↓</b>	-	-	-\-X			-	41	62
-30-		₹}	- sandstone lenses from 3				_								_		
~ 1/2							-				0				-		
		8	STRATUM IV (527.52 ft):				_								_		
-//		8	FAT CLAY (CH), blocky, fra brown to light brown, s	actured, nard, slightly moist,			F				•				-		
-35-		<b>X</b>	with scattered fine-gra	ined sandstone											_		
-//		<b>3</b>	lenses				F								_		
		881					┝				•				-		
-40-		***					<u> </u>				_				_		
		81	- greenish-gray to green,	with very thinly			ŀ				•				-		
		387	interbedded sandstone	from 41' to 47'			F								_		
+//		8	- free water observed fro	om 44' to 47'			F								_		
-45		<b>3</b>	ince water observed no	7111 <del>4 4 10 4</del> 7			_				•				_		
		<del>}</del>	- brown to light gray with	n ciltatone			F				•				_		
			- brown to light gray with fragments from 47' to !	51'			_				•				_		
-50-		8					<u> </u>								_		
1/			- dark green to greenish-	gray from 51' to	1		Ė								_		
1			53' - dark brown to reddish-l	-			F								_		
-55-			to 62'	DIOMILITOM 53			L								_		
~ <del> </del>							-				•				-		
1/					1		L								_	١	400
1/							ŀ		×	†	- ● -	† <del></del> -	- -X		_	41	100
-60-					1		F								_		
1/					1		Ē								_		
1/			<ul> <li>greenish-gray to dark graph slightly moist from 62'</li> </ul>	reen, moist to to 74'	1		-				•				-		
			J ,		<u> </u>	<u> </u>	<u> </u>				1	1					
DEPTH DI			160.0 ft	DEPTH TO WATE		19.27					PRO	OJ. No	).:	ASI	F13-14	40-00	
DATE DR	ILLEL	<i>)</i> :	6/13/2010	DATE MEASUREI	J:	1/10/	ZU1Z										



METH	IOD:	Roto	sonic				LC	CATI						87462.8	3			╛
					  -	_		_6				TH, TC — — —						
Ŧ,	BOL	SAMPLES ELEVATION. FT	DECCRIPTION O		BLOWS PER FT	UNIT DRY WEIGHT, pcf	(							3.5	1.0	PLASTICITY INDEX	8	
ОЕРТН, FT	SYMBOL	SAMI	DESCRIPTION O	FIVIATERIAL	SWC	FIG		PLA	STIC /IIT		WA <sup>-</sup> CON1	ER		LIQUID LIMIT		LAST L	% -200	
		=	SURFACE ELEVATION: 559	0 02 ft	BL	- >		10 →	$\leftarrow$ $-$ -	 30	1	)— — –	60	$-\times$	80			
	///	1881	STRATUM IV (527.52 ft):					10	20	30	40	50	00	70	30 .			1
-			FAT CLAY (CH), blocky, fr brown to light brown,	actured, hard,			ŀ								-	-		
-			I with scattered fine-gra	ined sandstone			_				•	'			-			
<del>-70-</del>			lenses (continued)				L					,			-	-		
<u> </u>		1991					_								-			
-							-				•	•			-	-		
- 75-		181	LEAN CLAY (CL), hard, da	rk brown and	1			<del> </del>		†-		. † – -	-	-				
├ <sup>'</sup> -		1881	dark green with reddis	h-brown			_				\ \*\				-	-		
-		1881	mottling, moist to sligh siltstone layers and sor	me ferrous			_					,			-			2
		<del>188</del> 1	staining				-								-	1		1 1 1
80 							_				•	•			-	1		Ϊ́
-							_					•			-			ESE I OGS SHOLLID NOT BE LISED SEBABATELY EROM THE PROJECT REDORT
-			- caliche pockets from 83	3' to 127'			-					,			_			<u> </u>
<del>-</del> 85-							-								-	1		
-		181					F				•	•			_	1		5
-							L					,			-	1		
—90 <i>—</i>		1881					_					,			_			Į
-		1881					L								-	1		}
-							-				•	•			-	-		15
 95 <i>-</i> -															_	1		1 5
							-				•	•			-	-		] [
-		1881													-	1		-
-							-				•	'			-			
100 -		1881					_					,			-	1		
		<del>188</del> 1					F								-	-		
_		1881				106	-		<del>*</del>	-×	<   €	•			-	16	100	0
-105-			- light green mottling fro	m 104.5' to 107'			H					,			_	-		9
							Ė				•							
-		181					ŀ				•	•			-	1		T. J. L.
-110-							Ē.					,			_	1		[
							_								-	1		2
							_				•	)			-	-		
- 115		<b>73</b> 81					L					,			-	1		
- 113		<del>131</del> 1					-				'				-	-		
		1881									•	)			-			
-	<b>\</b> ///						F								-	1		
120 -	1///	134					F									1		
-	\ <i>///</i>	181					ŀ				•	,			-	1		
- 1	<b>V</b> ///						F								-	1		
125-	<b>\</b> ///						<u> </u>				•	'			-	1		
-	V/V				-		F-	4	-	+-	_ _€	<u> </u>			. <del> </del>			
լ -	]					100	L		•	*-	X	•			-	13	99	
DEST.		H	160.0 ft	DEDTH TO		10.25	Ĺ.				+-				2542.1	10.00		-
DEPTH DATE			160.0 ft 6/13/2010	DEPTH TO WATE		19.27 1/10/					P	ROJ. N	0.:	AS	SF13-1	40-00		
DATE	DIVILLE	٠٠.	0/ 13/ 2010	PATE WIEASUREL	<i>,</i> .	1/10/	2012											┙



DRILLING METHOD:

Rotosonic

METHOD:	Roto	sonic				L	OCA	TION:		1000673				3		
				_						TRENGTI						
DEPTH, FT SYMBOL	SAMPLES	DESCRIPTION O	- MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5	1.0 PLASTIC LIMIT	1,5	2.0 2 WATER	.5 3	.0	3.5 4 LIQUID LIMIT	1,0	PLASTICITY INDEX	% -200
		SURFACE ELEVATION: 559	.02 ft				10	<del></del> -	30	40 5	0 6	0	−× 70 8	80		
-135		SILT (ML), calcareous, ver brown and dark green wereddish-brown mottling slightly moist, with silts and some ferrous stain LEAN CLAY (CL), hard, cal	with g, moist to itone fragments ing (continued) careous, dark		97				×-		, , , — —			-	21	98
140		brown and dark green was reddish-brown mottling slightly moist, with silts and some ferrous stain FAT CLAY (CH), hard, green water observed from	g, moist to     itone fragments   ing			- - - - - -				9				- - - - -		
 -145		SANDSTONE				_								_		
		FAT CLAY (CH), hard, gree	enish-gray, moist			_ _ _				₩-•-				184	(144	96
-150 - - -										0				- - -		
155		- free water observed fro	m 149' to 157'			_				•				- -		
160					- — —	- - 		_	_	• •				_		ļ
  		Boring Terminated				_								_		
165 -  						_								 - -		
- 170-														- - -		
  						_ _ _								- - -		
175 -   														-		
 -180 -  														- - - -		
 185 - 						- - -								-		
  -190 -						- - -								-   -   -   -		
 														-   -   -		
DEPTH DRII DATE DRILL		160.0 ft 6/13/2010	DEPTH TO WATER DATE MEASURED:		19.27 1/10/		2			PRO	OJ. No	.:	AS	F13-14	0-00	



DRILLING METHOD:

Rotosonic

METHOD:	Rotos	onic				LC	CATIC					89116.0	)7		
	-			ı.	١					ENGTH, —⊗— –					
DEPTH, FT SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	(	),5 1 PLAS	.0 :	1.5 2	.0 2.5 WATER		3.5 4	4.0	PLASTICITY INDEX	% -200
	=	SURFACE ELEVATION: 554	l 77 ft	H			10 2	<u>_</u>		-	60	X	80	_	
5 -		STRATUM I (554.77 ft): FAT CLAY (CH), firm, brown, moist, with caliscattered gravel and somatter	vn to light che pockets.		-	• •						70	- - - - - -		
10-		STRATUM III (547.77 ft): FAT CLAY (CH), hard, ligh green-brown mottling, ferrous staining along p	moist, with			- - - - - -			0				- - - -		
-15-		- green to greenish-gray	from 18' to 26'			- - - - -			8	<ul><li>↔</li><li>↔</li></ul>			-		
-25-		STRATUM IV (528.77 ft): LEAN CLAY (CL), hard, gre light gray, moist to wel seams, some ferrous st thinly interbedded san	eenish-gray to c, with gray caining and very			- - - - - - -				<b>8</b>			-		
-35		- free water observed fro				- - - - - -				•			- - - - - -		
40-		FAT CLAY (CH), blocky, ha reddish-brown with gre light gray mottling, mo caliche pockets and ver interbedded brown sar	eenish-gray and ist, with some ry thinly ndstone			- - - - -				8			- - - -		
-45-   50-		- greenish-gray from 44' - light reddish-brown fro				- - - -				•			- - - -		
- 55						- - - - - -				<b>8 9 9</b>			-		
-60-		- greenish-gray to green	from 58' to 64'			- - - - - -				<b>8 9 9 9</b>			- - - - - -		
DEPTH DRIL	LED:	160.0 ft	DEPTH TO WATE	г. П	5.33	⊢ ft		1		PROJ	. No.:	Δ'	I SF13-14	.0-00	
DATE DRILLI		7/7/2010	DATE MEASURED		7/7/2										



DESCRIPTION OF MATERIAL  SHEAR STRENGTH, TONS/FT²  O.5 1.0 1.5 2.0 2.5 3.0 3.5 4  PLASTIC WATER LIQUID LIMIT CONTENT LIMIT	4.0		
DESCRIPTION OF MATERIAL    Sa   Sa   O.5 1.0 1.5 2.0 2.5 3.0 3.5	4.0		1
E   E   E   E   DESCRIPTION OF MATERIAL   S   E   PLASTIC WATER LIQUID		<u>E</u> ≅	8
B   S   B   B   B   CONTENT LIMIT CONTENT LIMIT		PLASTICITY INDEX	% -200
l	80		
SANDY FAT CLAY (CH), hard, light brown	<u>8U</u> _		$\top$
to reddish-brown with greenish-gray mottling, slightly moist to moist, with	-	-	
V V V V V V V V V V V V V V V V V V V	-		
sandstone (continued)	_	-	
	-		
green sand with sandstone fragments from 72' to 76'	-	-	
75 - 75 - 75 - 75 - 75 - 75 - 75 - 75 -	_		
- dark green to brown sand with very	-	1	
thinly interbedded sandstone from 76'		1	
to 82'	-	1	
	-	1	
- caliche pockets from 82' to 86'	-	-	
		1	
	_	-	
	-	53	96
- brown sand from 88' to 90'	-	1	
FAT CLAY (CH), hard, light greenish-gray to green, slightly moist, with scattered	-	1	
caliche pockets			
	-	1	
	-		
- laminated sandstone from 96' to 98'	-	1	
	-	1	
- brown to reddish-brown with	-	1	
greenish-gray mottling from 100 to	-	1	
132' - laminated sandstone from 102' to 104'	-	1	
- caliche pockets from 104' to 108'	_	1	
	-	1	
	-	1	
	-	1	
	_		
- dark green to gray laminated sandstone	-	1	
from 112' to 116'	-	-	
	-	1	
- dark gray to green laminated sandstone layers from 116' to 132'	-	-	
layers from 116 to 132	-		
120-	_	-	
	-		
	06	1	
	96	74	98
	-	-	
	-	1	
	-	1	
DEPTH DRILLED: 160.0 ft DEPTH TO WATER: 5.33 ft PROJ. No.: A	SF13-1	<del>1</del> 40-00	
<b>DATE DRILLED:</b> 7/7/2010 <b>DATE MEASURED:</b> 7/7/2010			



DRILLING METHOD:

Rotosonic

**LOCATION:** N 10006808.07; E 1589116.07

METHOD:	Roto	osonic				LC	CATIO			.000680				.07			
		<u>.</u>		  -						rengī — —⊗-							
DEPTH, FT	SAMPLES	DESCRIPTION C	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	(	_	.0		2.0 WATE	2,5				PLASTICITY	INDEX	% -200
	=	SURFACE ELEVATION: 55	4.77 ft	18	>		$_{10} \rightarrow$		30	40		 60	$-\times$	80	"		
	<b>18</b> 1		,			_			]	₩			70			T	
135		FAT CLAY (CH), blocky, c brown to reddish-brow greenish-gray to light slightly moist, with sar fragments Core barrel broke, samp 136' to 147' was not co	vn with gray mottling, ndstone le interval from			· - - - - - - -							-	_	 - - - - - - - -		
-140-   						<del>-</del> - -									- - - -		
145															-		
- - -150 - - - - - - - - - - - - - - - - - - -		SANDY LEAN CLAY (CL), reddish-brown with gr light gray mottling, slig caliche pockets and so sandstone lenses - light greenish-gray to g to 160'	eenish-gray to ghtly moist, with attered			- - - - - -				9 9					- - - - - - - - - - - - - - - - - - -		
160		Boring Terminated				- - - - 			. – –	•					- - - - -		
						-									-		
 -165						_  _									- - - -		
						- - -											
  - 175-						- - -									_		
1/3						- - -									-		
180 						- - -									- - - -		
  -185 -  						- - - - -									- - - - -		
 190-   						- - - -									- - - - - - - -		
DEPTH DRIL		160.0 ft 7/7/2010	DEPTH TO WATE DATE MEASURED		5.33 1 7/7/2		1	1		PR	OJ. No	0.:	Δ	SF13	-140-0	00	



DRILLING METHOD:

Rotosonic

METHOD:	Rotos	onic				LC	OCATI							397.89			
				l <sub>E</sub>	١					TREN				_			
DEPTH, FT	SAMPLES ELEVATION, FT	DESCRIPTION O	E MATEDIAI	BLOWS PER FT	UNIT DRY WEIGHT, pcf					2.0				5 4.0	)	PLASTICITY INDEX	-200
DEPT SYM	SAM	DESCRIPTION O	r IVIA I EKIAL	ows	VEIG		PLA LII	STIC MIT		W.A CON	ATER ITENT		LIQ	UID MIT		PLAST	%
	=	SURFACE ELEVATION: 561	89 ft	1 H				<u>~</u> – 20	 30		● 50	 60		← ) 80	,	_	
- ///	<b>78</b>	STRATUM II (561.89 ft):				-				1							
F +//		FAT CLAY (CH), stiff to ha	rd, brown to			ŀ									-		
		and some organic matt	er /				+										
- 5 - //		STRATUM III (558.89 ft):				H									-		
		FAT CLAY (CH), hard, ligh light green, slightly mo	t brown and ist, with ferrous		Z	Į.									1		
		staining along partings	and caliche			-									-		
		pockets															
F - 1//						-		$\bullet$ $\times$	_	_(	€ -	_	$\times$		-	43	87
						Ė									1		
├ <i>-</i> ///						-				(	❷				-		
15-																	
├ <i>-{//</i>						-									-		
						-				'	❷				1		
-20-						_				(	❷				-		
						_				,					1		
├ <i>-{//</i>		- reddish-brown from 23	' to 32'			-									-		
25-		- reduisii-brown from 25	10 32							'	8						
						-				(	8				-		
1//											_						
						-		•	$\times   -$	-+*	<b>8</b> - -	-+		$-\times$	-	49	96
30-		- free water observed fro	m 30' to 32'							,							
H 44	<del>41</del>	STRATUM IV (529.89 ft).	•	-													
		FAT CLAY (CH), hard, bro	wn and green,			-			•	•	8				1		
-35-		moist - yellow from 35' to 40'				-									_		
		yellow from 35 to 40				-				(	❷				1		
		- silty from 38' to 40'				-									-		
-40- <b>/</b> /		- caliche pockets from 3	38' to 42'			_	'			'	•				$\exists$		
├ <i>-{//</i>		- laminated sandstone la 42'	yers from 40' to			-				(	€				-		
		- free water observed fro	m 42' to 46'			_		•			8				4		
45-		- light reddish-brown wit	h ferrous			-					₽				-		
F <sup>43</sup> - //		staining from 44' to 46	İ							'					_		
		- greenish-gray, wet to sa very thinly interbedded	iturated, with d sandstone			L				•	8						
		from 46' to 56'				-				(	❷				4		
<del>-50-</del>																	
						-					8				-		
-55-						-				Ι.					_		
[ <u> </u>		- caliche pockets and feri	ous staining			Ė				'							
├ <i>-{//</i>		from 56' to 57' - gray, slightly moist, with				L									-		
-60-		interbedded sandstone	e from 57' to 93'			L				'							
⊦ ¨ <i>{//</i>						ŀ				.					-		
						Ė					_						
<b>├</b> <i>-{//</i>						F	•				❷				-		
DEPTH DRIL	LED:	120.0 ft	DEPTH TO WATE	R:	7.08	ft	-	1			PROJ.	No.:		ASF	13-14	0-00	
DATE DRILL	ED:	6/26/2010	DATE MEASURED	<b>)</b> :	6/26/	2010	)										

# **LOG OF BORING NO. B-8**

Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC
Webb County, Texas - MSW Permit No. 2374

TBPE Firm Registration No. F-3257



**DRILLING** 

LOCATION: N 10006854.96; E 1591897.89 METHOD: Rotosonic SHEAR STRENGTH, TONS/FT<sup>2</sup> ELEVATION, FT **BLOWS PER FT**  $- - \diamondsuit -\otimes$  $-\!\!\wedge\!\!-$ UNIT DRY WEIGHT, pcf PLASTICITY INDEX SAMPLES 3.0 SYMBOL 0.5 2.0 2.5 3.5 1.0 1.5 **DESCRIPTION OF MATERIAL** PLASTIC LIMIT WATER CONTENT LIQUID LIMIT SURFACE ELEVATION: 561.89 ft 40 7Ó STRATUM IV (529.89 ft): FAT CLAY (CH), hard, brown and green, moist (continued) 102 76 100  $\times$ - green from 76' to 79' NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT - gray from 79' to 93' -80 85 45 96 90 FAT CLAY (CH), hard, gray, slightly moist, € with very thinly interbedded sandstone -95 - greenish-gray from 98' to 107' 100 105 45 98 - green, with ferrous staining and caliche pockets from 107' to 120' 110 -120 **Boring Terminated** -125-**DEPTH DRILLED:** 120.0 ft **DEPTH TO WATER:** 7.08 ft PROJ. No.: ASF13-140-00 **DATE DRILLED:** 6/26/2010 **DATE MEASURED:** 6/26/2010

METH	OD:	Roto	sonic				L	OCA	ATIO							37353.0	)5			╛
		╽╽			<sub>E</sub>	_ ا								<b>I, TO</b> I — <u>—</u> △				1.		1
F,	30L	SAMPLES FI EVATION ET	DECORIDE	05.44.750141	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5		.0	1.5	2.0	) ິ 2.	.5 3	.0	3.5	4.0	PLASTICITY	8	1
ОЕРТН, FT	SYMBOL	SAMI	DESCRIPTION	OF MATERIAL	SWC	FIE			PLAS LIMI	TIC		V	VATER	т		LIQUID LIMIT	_	ISI	% -200	1
<u> </u>		"		FFO 10 ft	BLC	~>	1						-			$-\times$		-		1
	///	XX	SURFACE ELEVATION: STRATUM II (550.18)		+	$\vdash$		10		0	30	40	5	0 6	50	70	80	+		┨
1			LEAN CLAY (CL), calca	reous, stiff to hard,			_				•							]		1
+	///	<b>3</b>	brown and light bro	own, moist, with scattered gynsum			-	+		•	<u> </u>	+								
- 5 -			crystals	scattered gypsam						•	•						-	1		1
			STRATUM III (547.18	ft):			-			•	•							-		1
		1981	LEAN CLAY (CL), hard, brown and reddish-	, brown to light brown with		7												1		1
-		1881	greenish mottling, r moist, with weakly-	noist to slightly			F						0					-		1
-10			moist, with weakly-	indurated layers													-			1
-		1881					-					•						4		1
		X					F						0					-		1
-15-							Ē.						Ü				-	]		
+		1881	- ferrous staining alor	ng nartings at 16'			F						0					1		1
1			- siltstone from 16'	to 18.5'			-											]		1
		88					F				•							-		1
-20										×-							-	28	95	
-							-					•						- 20	33	-
							Ė					•						1		-
25-							_										-	-		١
		<b> </b>					Ė					•						1		-
7							-						_					]		1
<u></u>							-						•					1		1
30	44												0				_			1
+			- Driller's Note: Inject harder below 31'	ted more water,			-						U					-		1
1		1881	STRATUM IV (519.18	ft):			Ĺ						0					1		1
-35			LEAN CLAY (CL), hard	gray to light gray			_										-	-		1
1			and greenish, slight scattered very thinl	ly moist, with v interhedded									•					1		1
-			siltstone seams and	transitions to			F											-		1
-40 <del>-</del>			claystone										•				-			1
.							F						•					-		1
		18																1		1
-							F						0					4		1
-45-	777		LEAN CLAY (CL), block		1			+-			+-					+		1		
-		1881	reddish-brown to b	rown and light			-						0					4		1
1			brown with light great to slightly moist	een mottling, moist			Ė						0					1		1
-50-			,				_										-	4		1
-							-						0					-		1
]		1381					F											]		١
							F						€					-		1
·55							_						0				-	]		1
						1	F						•					-		
						1	<u> </u>						•					1		
-60-							-										-	-		
	///					1	E						•					1		
							F											-		
🕇						L	<u>L</u>		×		1	_†	*					_ 25	100	١
	DRILL		160.0 ft	DEPTH TO WATE	R:	8.20						$\top$	PRC	J. No	.:	AS	SF13-1	140-00	)	1
	DRILLE	D٠	4/5/2011	DATE MEASURE	D:	4/5/2	011													- 1



METHOD: Rotos					LO	CATIC				615.30 <b>GTH, T</b>		87353. <b>FT</b> ²	05			1
DEPTH, FT SYMBOL SAMPLES ELEVATION, FT			BLOWS PER FT	JRY T, pcf	0			<> 1.5		>— - 2.5			4.0	Σ Σ	0	
SYMBOL SAMPLES EVATION,	DESCRIPTION O	F MATERIAL	OWS F	UNIT DRY WEIGHT, pcf		PLAS	1		WA			LIQUID		PLASTICITY INDEX	% -200	
	SURFACE ELEVATION: 550	).18 ft	BL	_ >	1	$\stackrel{\square}{\rightarrow}$ 10 $\stackrel{\square}{2}$	<u> </u>	30	- <del>-</del> - €	50	60	×	80	_		
-70	LEAN CLAY (CL), blocky, be reddish-brown to brown brown with light green to slightly moist (conting glauconitic, light brown greenish-mottling from	n and light mottling, moist nued) n with 1 69' to 75'			- - - - - - -				•	•			- - - - - -			
-80	LEAN CLAY (CL), hard, red brown with green mott slightly moist - very fine-grained sand	ling, moist to			- - - -				•				-	-		CT REPORT
					- - - -				•				-	-		ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
90					- - - - -					•			- - -	-		PARATELY FRO
95					- - - - -				•	•			- - -	-		T BF USED SE
-100					- - - -				•				-	-		SHOULD NO
- -105 - - - -	- glauconite coatings alor 103' to 116'	ng partings from			-  - -	)	<b>*</b> -	. – –		• -×			-	34	98	
110					- - - -				•	•			-	-		HT -3TON
-115	- light brown below 116'				  - -				•				-			
120	LEAN CLAY (CL), glauconi greenish-gray and light	brown, slightly			- - - - - - - - -			. – –		•			- - - - - - -			
DEPTH DRILLED: DATE DRILLED:	moist, with very thinly siltstone and/or claysto 160.0 ft 4/5/2011	DEPTH TO WATER DATE MEASURED		8.20 f 4/5/20						PROJ. I	No.:	Д	\SF13-1	40-00		



DRILLING METHOD: Rotosonic

**LOCATION:** N 10005615.30; E 1587353.05

IVIETH		Noto	Soffic				Τ'	OCATI			TRENGTH						
ᇤ		S S			R FI	R. pcf			<b>9</b> — —	>-	$\otimes$	— — <u></u>				ĔŲ	
БЕРТН, FT	SYMBOL	SAMPLES	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0 STIC	1,5	2.0 2. WATER			3.5 4.0	'	PLASTICITY INDEX	% -200
DE	ر ا	S   F			BLO\	5			STIC MIT ———		WATER CONTENT	г — — –		LIMIT		7	8
	///		SURFACE ELEVATION: 550			-	_	10	← – 20	30	40 50	0 6	0	− <u>≻</u> 70 80			
			LEAN CLAY (CL), glaucon greenish-gray and light	itic, hard, t brown, slightly			L				•						
			greenish-gray and light moist, with very thinly siltstone and/or clayst	interbedded			_								_		
 135			sitistone and/or clayst	one (continueu)							•				_		
			- no glauconite from 136	S! to 142 5!			-								=		
			- no glauconite nom 150	10 142.5			Ė										
							-				•				-		
140 							F								-		
	1///				-		Ŀ-	- 4 – –	-	-				+	=		
<u> </u>			LEAN CLAY (CL), hard, lig reddish-brown and bro	own, slightly			F		*-	-+-	<del>  - •</del> ×				-	27	100
145 -			moist	, , ,			F										
-							F				•				-		
							Ė				•				1		
<del></del> 150															-		
							F				•						
			- glauconitic, light gray, v	with very thinly			L								-		
155			interbedded siltstone	from 153' to 155'			-								-		
							L				•				-		
	///						-				8				-		
_ _160_			<u> </u>		<u> </u>	<b>∤</b> — —	F	- 4	-	- 4 -					]		
			Boring Terminated				L										
-							F								-		
- 165							L								_		
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							F								-		
 170							L										
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- 							Ė										
475							-								-		
175 -							F								_		
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180 							F								_		
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-	]						F								4		
185 -							F								$\exists$		
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- -	]						þ								_		
-190-	-						$\vdash$								-		
	]						Ē								4		
_							E								-		
רכידי	 		160.0 ft	DEDTH TO WATE	<u> </u>	0.30	<u></u>				PD-0	I M-		A C E		10.00	
DEPTH DATE			160.0 ft 4/5/2011	DEPTH TO WATE		8.20 4/5/2					PRO	J. No.	:	ASF:	L3-14	10-00	
JAIL	- IVIELE	<u> </u>	., 5, 2011	JATE WILASONEI		7/ 5/ 2											



METHOD:	Rotos	sonic				LC	CATIC						8909.9	4			
	-			-	_					RENGT — —⊗-					1.		
H, FT	SAMPLES ELEVATION, FT	DECORPTION	C	BLOWS PER FT	UNIT DRY WEIGHT, pcf		),5 1	.0 1	1.5	2.0	2.5	3.0	3.5 4	1.0	PLASTICITY INDEX	8	
DEPTH, FT	SAME	DESCRIPTION O	FMATERIAL	Swc	FE		PLAS LIM	STIC		WATE	R NT		LIQUID LIMIT		IS S	% -200	
	"	CLIDEACE ELEVATION. FA	7 70 ft	BIC	~>	1				- — • 40			$-\times$		-		
		SURFACE ELEVATION: 547 STRATUM I (547.73 ft):	7.73 IL				10 2	20	30	40	50 (	60	70 8	80			┨
		FAT CLAY (CH), stiff to v	ery firm, light			\$	0	•						_	1		
├ <i>-{///</i>	$\frac{1}{2}$	brown to dark brown, caliche pockets and or	moist, with			-								-			1
5 - 1//	181	culture pockets and on	Suriie mutter				•	1						_	1		
- ·///						-		•						-	1		
	18	STRATUM III (540.73 ft):		1										<b>—</b>	1		
	181	FAT CLAY (CH), hard, ligh	t brown, moist			Ŀ				•				-	1		1
10-	187	- reddish-brown with ligh	nt gray mottling			¥								-	1		1
	<b>18</b> 1	from 10' to 13'				-				•				-	-		Ιğ
	<b>1</b>	- sandy from 13' to 15'												-	1		19
-15-	$\mathcal{H}$					-								_	1		ESE I OGS SHOLLI D NOT BE LISED SEPABATELY EROM THE PROJECT REPORT
	181	<ul> <li>reddish-brown with fer along partings and scat</li> </ul>	tered green			L				•				-	1		=
	<del>18</del> H	fine-grained sand pock	ets from 15' to			-								-	-		
-20-	181	27'				L				•				_	1		
- 20 - ///						-								-			
	181					L				•				-			
///						_								-			
-25-	181													_	1		
						F								-	]		
	181					-								-	1		
_30_														_	1		
		- ferrous staining from 30	0' to 33'			-								-	1		<u>-</u>
															1		=
F ////	18	STRATUM IV (514.73 ft): SANDY LEAN CLAY (CL), I	nard			-				•				-	1		
-35-	1881	greenish-gray to light g	gray, moist, with											-	1		
F -{///		very thinly interbedded - free water observed f	d sandstone from 33' to 37'			-								-	1		5
		Tree water observed i	10111 33 10 37							•				-	1		1
<del>-</del> 40-						-								-	1		] 2
	1881									•				-	1		12
F -{///	<del>                                     </del>					-	L							-	┨	l	-
L <sub>45</sub> -1///					120	L	•	<del>-</del>	+×	•				_	12	57	NOTE: TE
F ~ \///	<b> }</b>					-				•				-	-		}
		- free water observed from	om 47' to 51'											-	1		
F -{///	181					-				•				-	-		
-50-///				_		L	↓	L	↓		<u> </u>		1		1		
- <i></i>		FAT CLAY (CH), calcareou	ıs, hard, dark			-				•				-	-		
	1311	greenish-gray to green very thinly interbedded	d sandstone											-			
-55-	<del>                                     </del>					-								-	-		
[ <i>[///</i>	131					L				•				-	1		
├ <i>-{///</i>		- brown to reddish-brow	n from 57' to 60'			-								-	-		
60	13(			]		L	↓	L	1		1		1		1		
F ~ -{///	<b> </b>	LEAN CLAY (CL), hard, lig to green, slightly moist	ht greenish-gray			F								-	-		
t 1///		to green, slightly moist				L								-	1		
<b>├</b> <i>¥///</i>						-								-	-		
DEPTH DRILI	19⊒\ _ .ED:	120.0 ft	DEPTH TO WATE	R:	10.27	r ft		1			OJ. No	 ).:	AS	 SF13-1	40-00	I	1
DATE DRILLE		7/14/2010	DATE MEASURED		1/10/										- 00		
		· · ·															┙



METHO	OD:	Ro	tos	onic				LC	CAT						'.35; E			9.94				1
			ᇤ			  -	_		_						I, TOI — -△			_				
F,	BOL	SAMPLES	oN,	DECCRIPTION OF		BLOWS PER FT	UNIT DRY WEIGHT, pcf	(		1.0					5 3		3.5			PLASTICITY INDEX	00	
ОЕРТН, FT	SYMBOL	SAMI	VATI	DESCRIPTION OF	- IVIATERIAL	SWC	FIE		PL	AST	IC T		Ņ	VATER	т		LIQUII	D		LAST	% -200	
			EE	SURFACE ELEVATION: 547	72 f+	BL(	- >							-			-X- 70			Δ.		
	///		Н	LEAN CLAY (CL), hard, ligh					10		<u>)</u>	30	40	5	0 6	0	70	80				1
F 7		18		to green, slightly moist	(continued)			F						0					4			
$\vdash$		播						-						Ω					-			
[-70-]	///	18						_						•					4			
┞╶┤		188						-						•					-			
[		131																	1			
┡╶╴ᡶ								-			×	. L .	- 4	<b>X</b>					-	18	97	
<del>- 75 -</del>	///	131									, ,			, •						10		
<b>├</b> -{	///	<b>1</b>						-						•					-			5
t		131		- dark brown with greenis	sh-gray mottling			Ĺ														}
<b>⊢</b> 80−		<b>1</b> }}{		from 78' to 82' - laminated sandstone I				-											$\dashv$			-
t 1				to 88'	ayers from 78			L														}
┞╶┼				- dark brown to brown fro	om 82' to 85'			-											-			}
- -85-	///							L						•								TACATA TOTIONA THE MOAT VIETA AVAIT ATTILLED TO A HIGH 300 HIGH
L °		188						L						•					-			[
+		1881						-						•					-			1 6
[		18		FAT CLAY (CH), hard, dark	gray to dark				T -			Ţ-					T					
<del> </del> −90−	///	1881		green, slightly moist, w sandstone lenses	ith scattered			-						•					$\dashv$			Į
[	///	18		sanastone lenses				-														100
$\vdash$ $\vdash$	///	18						-						•					-			[
_95_	///	18																				1 5
$\vdash$ " $+$		18						-						•					-			1
<u> </u>	///	1																				-
ŀ Ł		188						-						•					_			2
100-	///	<b>1</b>						L														=
		<b>1</b>												€					-			5
+	1//	<del>1</del>		IFAN CLAY (CL) hard bro		1			+-	-		+-					+-					٥
105		1)((		LEAN CLAY (CL), hard, bro reddish-brown with gre	enish-gray and			_						•					4			2
┞╶┼		⅓₩		olive mottling, slightly i caliche pockets	noist, with			-											-			ļ.
[ ]		<b>1</b>		curiere poekets				Ė						•								Į
├ <u>.</u> -{		₩						F											-			T GTC
110		188												•					٦			2
┞╶┼	///	1						-											-			
[ ]		18							•	,	×-	-	- +	₩						23	100	
115	///	$\mathbb{R}$				-			+-			+-					+-					
t 1				FAT CLAY (CH), hard, dark brown, slightly moist, w	ith verv thinly			L						0								ı
ŀ Ł				interbedded sandstone	, ,			-						•					-			
120		3				L	$l_{}$	L	1_	_L		↓_	$_{L}$			L_	1_	L	_		l	
120				Boring Terminated				-											-			
<u> </u>								L											-			
								F											7			
125								L											$\dashv$			
[ ]																						
┞┤								ŀ											-			
							L	Ĺ														1
DEPTH			:	120.0 ft	DEPTH TO WATE		10.27							PRO	J. No	.:		ASF1	.3-14	0-00		
DATE D	KILLE	:ט:		7/14/2010	DATE MEASURE	J:	1/10/	2012														



METHOD:	Roto	sonic			1	LO	CAT						90404.6	52	1	
_   .	اً الآ			Ē	ֻ ל			<b>⊕</b> – –		TRENG —⊗		△ –	$-\!\!\!\!\!-\!\!\!\!\!\!\!-$		   ≥	
DEPTH, FT	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	-	1	1.0	1.5		2.5			4.0	PLASTICITY INDEX	-200
SY DE	SAL			3LOW	WEG		LI	ASTIC MIT		CONT	EK ENT		LIQUID		PLA:	%
		SURFACE ELEVATION: 549	.53 ft			1	10	× – 20	30	40	50	60	−× 70	80		
- 5 -		FAT CLAY (CH), firm, brow brown, moist, with scat matter and ferrous stai STRATUM III (545.53 ft): FAT CLAY (CH), blocky, st	tered organic ning			<b>9</b> - - - - -								- - -		
10		brown to light brown, s with ferrous staining al and scattered caliche p	slightly moist, ong partings			- - - -				8				- - -		
-15						-  -  -  -  -				8				- - -		
20						- - - - -				0				- - -		
25-		STRATUM IV (523.53): FAT SANDY CLAY (CH), ha	ard			-  				•				-		
30		greenish-gray to green, with very thinly interbe and siltstone - ferrous staining from 30	, slightly moist, edded sandstone			- - - -				000000000000000000000000000000000000000				- -		
35		- dark green with greenis from 33' to 47'	h-gray mottling			- - - -			*-			-		118	< 88	80
40						- - - -				0				- - -		
45						-  - 	<u> </u>							-		
50-		SILT (ML), blocky, very de to green, with very thir clay-shale layers - wet to saturated from - moist from 47.5' to 63'	nly interbedded			- - - - -				9				- -		
- - - - - - -		- ferrous staining from 53 - dark brown to brown w greenish-gray mottling	ith		88	- - - - -		•	*-	0				- - - -	18	97
-60— - - - -		- brown to reddish-brown	n with			 - - -				0				-		
EPTH DRIL		160.0 ft 6/10/2010	DEPTH TO WATER DATE MEASURED		4.83 6/10/			,	'	PI	ROJ. N	o.:	AS	SF13-14	40-00	



RILLIN 1ETHC		Rotos	onic	,,				OCATI	ON:	N:	100056	590.98	; E 15	59040	4.62			
		<sub> -</sub>			ŀ.						TRENG							
ᄩ	ğ	SAMPLES ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0		2.0		3.0	3.5	4.0		PLASTICITY INDEX	8
БЕРТН, FT	SYMBOL	AMP	DESCRIPTION O	F MATERIAL	WS F	1 H		PLA	STIC		WA	TER		LIQUI			ASTI	% -200
ا ۃ	S	s  3			BLO	WE		111	MIT		CONT	ENT		LIMI <sup>-</sup>			5_	"`
_		2005	SURFACE ELEVATION: 549					10 ^	×	30	40	50	60	× 70	80			
	Ш		greenish-gray mottlir	ng, moist to			-					,				-		
	Ш		slightly moist, with la siltstone layers from	63' to 78'					_									
7	Ш	1881	, , , , , , , , , , , , , , , , , , , ,						•	*-		×					16	99
70-	Ш	8					_									$\dashv$		
1	Ш											•				-		
4	Ш						_		$\times$	-  ->	×   •					_	12	100
$\dashv$	Ш	34					-	•		′	^   •					-	12	100
5	Ш	}									- 6							
4	Ш		CILT (NAL) blooks some de				_									4		
+	///		SILT (ML), blocky, very dent to green, with very thin	ense, dark green nlv interbedded				+	-	- + -		• <del> </del> -		-+-				
30-	///		l clay-shale layers	· .														
Ŭ <b>∤</b>			<ul><li>- wet to saturated from (continued)</li></ul>	n 47' to 47.5'			_				•					4		
	///	<del>                                      </del>	া- dark brown to brown, v	vith scattered			-									-		
1			caliche pockets from 7						•	•						1		
35— <b>/</b>			FAT CLAY (CH), hard, gre				_									-		
	///	1881	green, moist to slightly	moist			_		•	•						-		
1			- reddish-brown from 7				Į.									4		
	///		- free water observed fro	om 82' to 82.5'			_				•					-		
0-	///															一		
	///	<b>  3</b>						+	-	- 4 -		- + -	_	_+_				
1		<b> 8</b>	LEAN CLAY (CL), hard, remoist to slightly moist	ddish-brown,			-	•	×	←		Ď.				-	20	91
5—		$\mathbb{R}$	moist to slightly moist															
Ĭ -{		}					-				•	•				-		
1							-									-		
7		1881					_					•				4		
00 -		38	SILTY SAND (SM), very de					+	-			- + -	-	- + -			6	36
	:   :   :	34	to light brown with gre	enish-gray													U	30
$\pm$		}	mottling, moist to sligh	ntly moist				+	-	- + -		_ +	- -	_ + -				
)5	///	1881	FAT CLAY (CH), hard, dar	k brown to light			-				•					-		
'` <b>-</b>	///		brown with greenish-g moist to slightly moist	ray mottling,														
+	///		- brown from 103' to 114	<b>!</b> '			-									-		
1	///											•						
.0-/		<b>18</b> 31					_									4		
1	///	1981					-					,				-		
1																4		
	///	1881	- greenish-gray to green	from 114' to			-					•				-		
15	///	H	118'	110111114 (0														
	///	88					_				•	•				-		
1	///	<del>                                      </del>	- silty, dark brown to bro	wn with			-									-		
0-1	///	88	greenish-gray mottling								•	•						
	///	<b>18</b>	137'				F									-		
1							Ė				•	•				=		
Z							L				•	•				7		
25-	///	<b>18</b> }					-					•				$\dashv$		
1	///						Ľ				•	•				1		
1	///					103	-		•	$\times$ $ -$		$\rightarrow$				-	28	99
	///						<u> </u>									_		
PTH	DRILL		160.0 ft	DEPTH TO WATE		4.83					Р	ROJ. N	lo.:		ASF1	3-14	0-00	
	RILLE	_	6/10/2010	DATE MEASURED		6/10/	204	`			1							



DRILLING METHOD:

Rotosonic

METH	OD:	Rotos	onic				L	OCATI		N 1	0005690	).98; E	1590	0404.6	2		
		⊩			  -	l			SHE	AR ST	RENGTI — -⊗-	H, TON	IS/FT	·z			
ОЕРТН, FT	ğ	SAMPLES ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0	1.5	2.0 2	.5 3.	0 3	 3.5 4	.0	PLASTICITY INDEX	8
🛔	SYMBOL	AMP	DESCRIPTION OF	MATERIAL	l SW	FE			STIC MIT		WATER		LI	IQUID	-	ASTI	% -200
^	"	s  EE		6	BLO	⊃≅		LII	<u> </u>		•			-IMIT -≻ 70 8		굽	
	///	138	SURFACE ELEVATION: 549.					10	20	30	40 5	0 6	0 7	70 8	30		
t :			FAT CLAY (CH), hard, dark brown with greenish-gra	brown to light ay mottling,							•						
			brown with greenish-gra moist to slightly moist (a	continued)			L				•				-		
- 135							-										
- 133 -		1881										$\vdash \times \mid$				30	100
-			SANDY FAT CLAY (CH), har	-d - — — — — — — —				+		+-		<del> </del>		+			
_			greenish-gray to green,	moist													
<del>-</del> 140-							-				●						
_							_										
							_				•				-		
- 145							L				€						
- 143							L				•				-		
-							-								-		
[ ]		1881					Ē				•				]		
150-							_										
_			FAT CLAY (CH), hard, brow					<b>T</b>		1-		† — —		†			
			reddish-brown with gree mottling, slightly moist, interbedded clay-shale a	enish-gray			-								-		
- 155			interbedded clay-shale a	and siltstone							•						
- <sup>-</sup>							ŀ								-		
<u> </u>			- light green and reddish r 156' to 160'	nottling from			Ė				€						
							-				•				-		
_160_			Boring Terminated		<del> </del>	<del> </del>		+		+-	- <del>  -</del> -	<del> </del>		+			
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- -165-															1 4		
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185							L										
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-190- -	1						Ė										
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L			150.0 %	DEDTI: 70	<u> </u>	1.00	<u></u>					<u> </u>			[ ]	0.00	
DEPTH				DEPTH TO WATE		4.83 6/10/		1			PRC	DJ. No.	:	AS	F13-14	·U-UU	
DATE	DRILLE	υ.	0/ 10/ 2010	DATE MEASURED	<i>)</i> .	0/ IU/	ZUIC	,									

## **LOG OF BORING NO. B-11A**

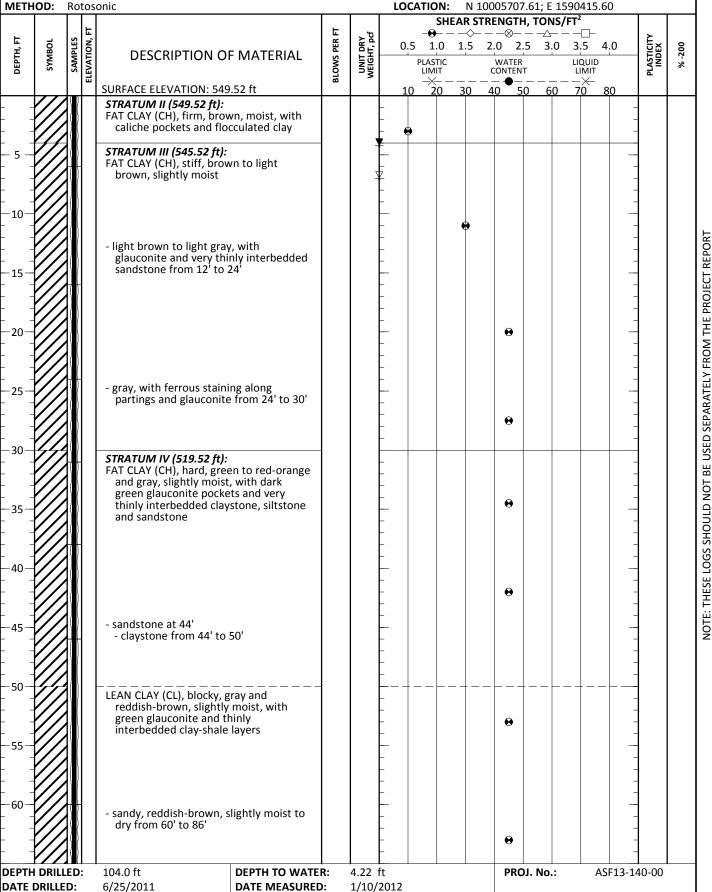
Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC TBPE Firm Registration No. F-3257 Webb County, Texas - MSW Permit No. 2374



**DRILLING** 

Rotosonic

**LOCATION:** N 10005707.61; E 1590415.60





DRILLING METHOD:

Rotosonic

**LOCATION:** N 10005707.61: F 1590415.60

METHO	OD:	Roto	sc	onic					LOC	CATIC				0570					.60			╛
		Π,				_					SHE	AR	STRE	NGT	н, т	ONS	S/FT	2				1
ь	7		ž			K	₽ď		0.		<del>-</del> –	<b>-</b> ♦		_⊗_ 0 2		2.0		-⊡- .5	4.0	ÌÈ∪		
ОЕРТН, FT	SYMBOL	SAMPLES	}	DESCRIPTION OF	MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.			1.5				3.0		QUID		PLASTICITY INDEX	% -200	
B	S	S				l o	S i			PLAS LIM	IIT		C	WATE	ŇΤ		L	IMIT		\{ \} =	%	
			_	SURFACE ELEVATION: 549	.52 ft				10	$\stackrel{\times}{\sim}$	<u>20                                    </u>	30	4	0 !	50	60	7	×- 0	80			╛
	///			LEAN CLAY (CL), blocky, g reddish-brown, slightly green glauconite and th interbedded clay-shale	ray and			-												-		
t 1	///	<b> </b>	1	reddish-brown, slightly	moist, with ninly			F												-		
[ ]	///		1	interbedded clay-shale	layers			Ĺ												1		
<del>-70-</del>			1	(continuea)				$\vdash$												4		
t 1			1	<ul><li>sandstone fragments at</li><li>ferrous staining from</li></ul>	70' to 86'			Ė												1		
F }	///		1	remode stamming monning				F												]		
├ <del>【</del>	///	Ш	1					F												-		
[75]	///		1											•								
├ <b>-</b> {			1					F						0						4		불
├ ┤			1					F												-		18
$\begin{bmatrix} -80 \end{bmatrix}$			1					F												4		₩
<b>├</b>			1					F												-		18
			1					Ė												1		18
├ -		ł W	1					F												4		1 #
85	///		1					$\vdash$												-		‡
F ₹				FAT CLAY (CH), hard, gree green, moist to slightly thinly interbedded sand	nish-gray to																	₫
+ $+$			1	green, moist to slightly	moist with very			F												-		=
L <sub>90</sub> _			1	tilling interbedded saint	1310110			L												_		15
~			1					F												4		Į.Ā
├ <b>ぱ</b>	///		1					F												=		NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
[ }	///		1					F												]		DS
<b>-95</b> -			1					F												4		JSE
			1					L												_		]   
			1					F												4		15
<b>├</b> ,,,, <del>-</del>			1	- sand content increasing	from 98' to 104'			F												-		۱ž
100			1																	7		13
├ -			1					F												-		옷
	<i>   </i>		L			L	l	Ŀ.			L_				1_	_L		L	_L_	1_	<b>1</b>	35.5
105			1	Boring Terminated				F												4		١ĕ
F -			1					r												1		SE
			1					F												]		=
F			1					F												-		🗒
110			1																	7		19
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-115-			1					F												4		
			1					F												4		
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F -			1					F												=		
120			1																	_		
			1					F												4		
-			-					-												+		
125																				1	1	
			-					F												-		
								L												1	1	
-								-												-	1	
DEPTH	DRIII	ED:	_	104.0 ft	DEPTH TO WATE	L R:	4.22	ft			1			PR	DJ. N	lo∴			\SF13	 -140-00	)	1
DATE D				6/25/2011	DATE MEASURED		1/10/		L2					- •••				,	13			
																						_



DRILLING METHOD:

Rotosonic

METHOD:	Rotos	onic				LC	CATIC			005607			9.97		
	-			<sub> -</sub>						ENGTH					
DEPTH, FT SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	C	0.5 1 PLAS LIM	.0 1 TIC IT	5 2	2.0 2. WATER CONTENT	5 3.0	3.5 LIQU LIMI	4.0 ID	PLASTICITY	% -200
	=	SURFACE ELEVATION: 555	5.41 ft	=	_		$10 \stackrel{\times}{2}$	0 3	 30	◆ 40 50	 0 60	×	- 80		
		STRATUM II (555.41 ft): FAT CLAY (CH), firm to ha to green, slightly moist	ard, light brown			- - -	0					70		-	
5 - 5		FAT CLAY (CH), firm, light moist, with ferrous stai partings and scattered - light yellow from 4' to	ining along caliche pockets	_	7	- - 7			8					 - - - -	
-10- - - - -15-		- blocky, reddish-brown f	rom 10' to 12'			- - - -				8				- - - - - - - - -	
20		- light brown to reddish-l green color from 18' to	22'			- - - -			•	9				- - - - -	
25		- brown to light brown w from 22' to 31'	ith green color			- - - -				8				- - - - -	
-30		- reddish-brown with gre ferrous staining from 3	en color and 1' to 37'			- - - - -				<b>.</b>					
-40		STRATUM IV (518.41 ft): FAT CLAY (CH), blocky, ha light brown, slightly mo staining and very thinly sandstone	ard, green and pist, with ferrous						•	• • • • • • • • • • • • • • • • • • •					
-45 -		- light gray to green from	44' to 50'			- - - -				9				_ _ _ _	
50		- light gray, with scattere staining from 50' to 72'	d ferrous							•				-	
-55- 60- 60-					85	- - - - - -		ו		8 8 8				 54     	81
DEPTH DRIL	LED:	160.0 ft	DEPTH TO WATE		9.75			1	1		J. No.:		ASF13	-140-00	)
DATE DRILLI	ED:	6/25/2010	DATE MEASUREI	D:	6/25/	2010									



METH	IOD:	Roto	sonic				L	OCA						12; E 1		69.97	7			╛
		<sub> -</sub>			<sub> -</sub>									TONS		_				ı
Ē	30.	SAMPLES ELEVATION. FT	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5	1.	0 :	1.5	2.0	2.5	3.0	3.5	<b>.</b> 4.	0	PLASTICITY INDEX	8	
ОЕРТН, FT	SYMBOL	ATI	DESCRIPTION O	FMATERIAL	Swc	FER		P	LIMI	ΓIC			/ATER NTENT		LIQU	JID		LAST	% -200	
	"	"   "		- 11 ft	BIC	>>							<b>-</b>		× 70			<u>a</u>		ı
	///		SURFACE ELEVATION: 555 STRATUM IV (518.41 ft):					10	20	0	30	40	50	60	70	8	0			┨
-			FAT CLAY (CH), blocky, ha	ard, green and			_										_			ı
-		181	light brown, slightly mo staining and very thinly	oist, with ferrous			-						•				_			ı
- -70-		<b>18</b> 1	sandstone (continued)	/ interpedued																ı
<b>├</b> ′ -							L						•				_			ı
<u> </u>		1881	- gray to light gray from	72' to 89'			L										_			
[ ]		181	8.4, 10 118.118.4, 110.11				F						•							ı
<del>-75</del> -		181					H						•				-			ı
-							_										]			[
		<b> </b>					F										-			ءِ ا
-80-		134																		
- " -		1381					F										_			ایٰ
t :																				
							L						•				_			ESE I OGS SHOLLI D'NOT BE LISED SEBABATELY EDOM THE BROIECT BEDOET
<del>-85-</del>		181											•				_			ļ
Γ -			- fractured from 86' to 89	9'			F						0							5
├ -			- increased thin sandstor from 87' to 97'	ne interbeds		103	-		•				•				-		47	;
90			- free water observed fro	om 87' to 97'			L										_			
							F										-			
<u> </u>																				]
-							-										_			1
<del>-</del> 95−		<b>1</b>											•				_			=
			L		-			+-			4-		+ -		_ + -					<u>ا</u> ا
-		1881	FAT CLAY (CH), hard, gray slightly moist	y to light gray,			-						•				-			[
100-			Singificity motion				Ē.						0							2
├ -		1881					-						•				-			=
_		1881	- blocky, gray from 102' t	o 116'									•				]			=
-  -  -							-										-			١
-105 -		1881											•							
		<del>18</del> }					-										100			
<u> </u>		181				102		•		$\times$	-	-	<b>⊕</b> -	-+-			100 <sub>-</sub>	74	99	IF.
-110-							L										_			[
-		181					-						•				-			2
-							F										_			
		181					-						•				-			
115-																				
		<del>                                      </del>	- gray to green from 116	' to 121'			-						•				-			
-		1881						•					•				_			
-120-							-						•				_			
<u> </u>	1//		FAT CLAY (CH), hard, bro	-	1		<u> </u>	+-			†-	- -	8	-	- † :					
	///		slightly moist, with ver	y thinly			F						9				_			
125		181	interbedded sandstone	9			-				(	•	•				_			ı
125 -	///						F										$\exists$			
-	///	<b>∤</b> ∦}					H						•				-			
F -	///						F										=			
DEPTH	/ / /	ED∙ T∰∏	160.0 ft	DEPTH TO WATE	R.	9.75	L						<del>Q</del> PROJ.	No ·		Λςι	-13-14	L 10-00	<u> </u>	+
DATE			6/25/2010	DATE MEASURE		9.75 6/25/		0					FAUJ	140		ASI	13-14	+0-00		
			-, -0, -010	3 III. 130 ILL	•	J, _J/	_01	-												┙



DRILLING METHOD: **LOCATION:** N 10005607.42; E 1591669.97 Rotosonic

METH	IOD:	Roto	sonic				L	DCATIO			.000560				97			1
		<sub> -</sub>			<sub> -</sub>	١		6	SHE	AR ST	FRENGT — —⊗—	н, то	NS/F	T′_				
Ę	9	SAMPLES ELEVATION. FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf	Ι,				2.0 2				1.0	PLASTICITY INDEX	9	
ОЕРТН, FT	SYMBOL	SAMPLES EVATION. I	DESCRIPTION O	F MATERIAL	WS P	<u> </u>   <u> </u>   <u> </u>		PLAS LIN	1		WATE			LIQUID LIMIT	1	ASTÍ	% -200	
=	S	S S			B.G	5₹		LIM	1IT <		CONTE	NT 		LIMIT		3_	0,	
	ļ,,		SURFACE ELEVATION: 555	5.41 ft				<u>10 →</u>	<u>20</u>	30	40	50 (	60	−× 70	80			1
-		184	- light brown to gray from - caliche pockets from	n 129' to 131'			-								-	-		
├ -		181	FAT CLAY (CH), hard, bro	129 to 131 wn to green.			-				•				-	1		
		14	FAT CLAY (CH), hard, bro slightly moist, with ver interbedded sandstone	y thinly			_								-	1		
135-			interbedded sandstone	e (continued)			-								-	1		
-		1881													-	1		
						100	Ē.										00	
-		181				103	-	•	×-				†	- ->	-	56	93	
140		181	- sandstone from 140' to	146'											-			
-							F								-			
-		1381					F								-	1		2
- -145-		13(1)													_	1		#
143							F				•				-	-		
-		181					-								-	1		⊋
							Ė									1		HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
150-		1881					_				•				-	-		∓
-		<b>1981</b>					-								-	1		≥
		<b> </b>					Ē				●				-			\
-		<del>                                     </del>					-								-	-		≿
155-											●				-	1		<del> </del>
		1881					Ē	•							-	]		] AR
-		1981					-	-							-	1		S
160					L	l		<b>⊥</b>	L_	1_		<u> </u>	.L_			L		16
-	-		Boring Terminated				-								-	-		ΙĎ
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L 1/3-	-						F								-	-		≥
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180-	-						$\vdash$								-	-		
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185	1														-	1		
<u> </u>	-						F								-	4		
-	1						-								-	1		
190-	1						L								-	1		
<u> </u>	-						F								-	1		
<u> </u>	1						L								-	1		
	]						F									]		
DEDT	   DRILL		160.0 ft	DEPTH TO WATE	D.	<b> </b> 9.75	L				DD:	OJ. No	<u>.                                    </u>		E12 1	40.00		1
DATE			160.0 ft 6/25/2010	DATE MEASURE		9.75 6/25/		1			PR	OJ. NO	).:	A	SF13-1	40-00		
DATE	DIVILLE	. ت	0/23/2010	DATE WIEASUREL	<i>-</i> .	0/23/	2010	•										L



METH	IOD:	Rotos	sonic				LC	CAT							6999.9	94			4
		╽╽ <sub>┢</sub>			<sub> -</sub>	_		_					I, TON — -△				1.		
F.	ğ	SAMPLES ELEVATION, FT	DECODIDETION O	E & & & TEDIA !	BLOWS PER FT	UNIT DRY WEIGHT, pcf							5 3.			1.0	PLASTICITY INDEX	8	
ОЕРТН, FT	SYMBOL	VATI	DESCRIPTION O	F MATERIAL	SWC			PLA	ASTIC MIT			/ATER	<u>'</u>	L	.IQUID LIMIT		AST	% -200	
^	"	"   🖁		1 4 F E4	BIC	~>			× – 20			•-			-×-		=		
	///	181	SURFACE ELEVATION: 544 STRATUM II (544.45 ft):	1.45 II				10	20	30	40	50	0 60	<u> </u>	/0 3	80			┨
-			FAT CLAY (CH), soft, dark	brown to	1		•			_						ļ	1		
-			brown, moist, with scar matter	ttered organic			Ð										1		
- 5 -			STRATUM III (542.45 ft):													-	1		
-		181	FAT CLAY (CH), hard, bro	wn with			₩												
		<del>     </del>	greenish-gray mottling with caliche pockets	, slightly moist,			ļ.												
		<b> 8</b>	· '				\$	•									+		
10-		<b>13</b> 81	- silty, reddish-brown fro	m 10' to 12'			<b>↓</b>		A							-			
-							ŧ										1		
-		181	- ferrous staining along p	artings from 13'			Ē €	)											آو
-15-	<b>///</b>	1881	to 15'				-									-	-		ESE I OGS SHOIII D NOT BE LISED SEPARATELY EROM THE PROJECT REPORT
												•							1
-		181	- free water observed fro	m 17' to 18'			-					0					+		1 8
-20-		$\mathcal{H}$	- silty, dark gray, with fer	rous staining			Ė.									-			Ιž
-			and scattered clay-shall from 19' to 27'	e fragments			-					•							2
			11011113 1027				F										1		1
							-					0							}
25 <i>-</i> -							F					•				-	1		
-	111	<del>                                      </del>	STRATUM IV (517.45 ft):																S
-		181	FAT CLAY (CH), hard, red	dish-brown to			F					0					1		2
-30-		<b>138</b> 1	gray, slightly moist - ferrous staining from	27' to 35'			-					0				-	1		
-							F												ä
-		181					-					•					1		5
_ <sub>35</sub> _												0				_			2
-		1881	- reddish-brown from 35	' to 45'			-					•					1		=
-		<del>1881</del>					-					_							] =
- -40-		181					L		$\times$			-€-	$-\times$				33	99	١٤
- 40							_					0							-
<u> </u>							L					_							
-												0							NOTE: TE
<del>-45-</del>	111	1381	FAT CLAY (CH), hard, gre	- — — — — — — — — en to grav.			<u> </u>	<del> </del>		- † -	-	- <del>-</del> -			+	<u> </u>	1		
	<i>\//</i>	141	slightly moist, with ver	y thinly			F					_					-		
<u> </u>		1881	interbedded siltstone a - brown with greenish-gr				L					•							
-50-	<b>///</b>	<b>188</b> 1	47' to 57'	,			$\vdash$					0				-	-		
t :							L					0					1		
-							-					•					-		
- 55-		1984					L										1		
F -							F					•					+		
<u> </u>			- greenish-gray to green	with laminated			-					Ω							
<u> </u> -			siltstone layers from 5	7' to 63'			F					•					-		
-60-		<b>1</b> 81										0				-	1		
ļ -		<b>∤</b> ∦}					-										$\exists$		
			- brown with greenish-gr	ay mottling and			-					-							
DEDT	///	ED: ₩			D.	11 44	f+				+	<b>⊕</b>	I N/-			E12.4	40.00	<u> </u>	+
1	1 DRILL Drille		160.0 ft 6/11/2010	DEPTH TO WATE		11.44 1/10/						PKU	J. No.		AS	or13-1	40-00		
2715	J.VILLE	<u></u>	0, 11, 2010	DATE WILASONEL		1/10/	2012												┙



METHOD		Rotos	sonic T		1		LC	CATIO			.00041 <b>FRENG</b>				.94			
	_	S F			ㅂ	ي وح	_		<b>)</b> ——	->-	$\otimes$						.	_
рертн, гт	SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		1	1	1.5	2.0 WAT	2.5	3.0	3.5 LIQUID	4.0	j	INDEX	9-500
	<u>ک</u>	SA ELEV			BLOV	NE SE		PLAS LIN	11T ( :		CONT	ENT		LIMIT	,	6	=	%
			SURFACE ELEVATION: 544		1			10 2	← — · 20	30	40	50	60	70 70	80	+	$\dashv$	
			dark brown with lam layers from 63' to 69'				-				8					1		
			FAT CLAY (CH), hard, gre slightly moist, with ver	en to gray, v thinlv			_									+		
-70-			interbedded siltstone a	and sandstone			_				8					7		
			(continued) - greenish-gray to green layers from 69' to 71'	with sandstone			_									1		
			layers from 69' to 71' - free water observed from	om 71' to 75'			-				8					-		
-75			Thee water observed he	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,												1		
							-				8					+		
							_	e×					$\downarrow$			],	13	71
-80-							_									₫ ゙	<sup>-</sup>	, 1
			- free water observed fro	om 80' to 86'			-	•								+		
							-									7		
-85-								•								1		
			FAT CLAY (CH), hard, dar		1			-9	-	+-		- +	-	- + -				
1			brown, slightly moist, winterbedded siltstone	with thinly			F				9	'				7		
90-											8					_		
		$\Re$	- green to gray from 90'	to 94'			-									-		
							-				8	'				1		
95			- silt to siltstone, blocky	from 94' to 108'							8					_		
			,				-									+		00
							-		×	7-	$-+$ $\bullet$	-			$^{-+\times}$	1,	51	99
100-							_				8					1		
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105											8					Ⅎ		
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							-				8	'				1		
110-		$\mathbb{R}$					L				8					Ⅎ		
110							-				8					-		
							_									1		
115			- dark gray mottling from	113' to 115.5'			L				8					_		
113							-				8					+		
			L		1			↓		1_		·	_	_	_	. 🗍		
120-			FAT CLAY (CH), hard, dar to green, slightly moist	k greenish-gray with verv thinly							8					_		
120			interbedded clay-shale	,,,			-									7,	ا .	100
							-		<del>×</del> -		-+-8		T			1 5	6	100
125-			- dark gray from 124' to 2	128'			-				8					+		
123			3.2,	-			ļ.									-		
1/							-				8	'				1		
			- dark greenish-gray to g	reen from 128'							8					1		
EPTH DE			160.0 ft	DEPTH TO WATE		11.44					P	ROJ. N	o.:	-	ASF13-	140-	00	
ATE DRI	ILLE	J:	6/11/2010	DATE MEASUREI	ט:	1/10/	2012											



DRILLING METHOD:

Rotosonic

METH	IOD:	Rotos	onic				L	OC.	ATIO			0004119				94			_
		l l⊨			  -	_ ا				SHEA	R ST	RENGTH — ⊗—	H, TON	NS/F	T⁴ —□-				
F.	l g	on,	DECODIDATION O	-	PER	DRY II, pc		0.5		0 1	Š	2.0 2	.5 3	.0		4.0	<u>5</u> ₩	% -200	
ОЕРТН, FT	SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION O	FIVIATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf			PLAST	ΓIC T		WATER	т		LIQUID LIMIT	'	PLASTICITY INDEX	%	
-			SURFACE ELEVATION: 544	1.45 ft	BL	- >		10	$\rightarrow\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!$		 30	40 5		0	$-\times$	80			
	///		to 150'	1.45 10				10		<u>U</u> 3		40 5	0 6		70				1
-							-					•				-	_		
			FAT CLAY (CH), hard, dar	k greenish-gray												-			
-135-			FAT CLAY (CH), hard, dar to green, slightly moist interbedded clay-shale	, with very thinly			-									-	-		
-			interbeduca day shale	(continucu)								•				-			
-		₩					-									-	-		
140		1881										•				_			
	<b>///</b>	1381					-									-	-		_
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-		1881					-					•				-			REF
145		1381														-			
<u> </u>												•				-			2
[ ]							F					•				] -	-		14
150-		1881	- brown with greenish-gr	av and dark grav								•				-	1	99	=
		1881	- brown with greenish-gr mottling from 150' to 1	160'			-			\/							-	99	Š
										$\times$		-				1-×	61	99	5
155-		1)(					-									-			ATE
-		186					Ė					•				-			AR.
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160			 	- — — — — — — —	L	<del> </del>	<u> </u>	4.			ļ			L_	<del>-</del>	_	1		- ISED
-	1		Boring Terminated				-									-	1		NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
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103 -	-						-									-	-		١ź
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DEPTH	I I DRILL	ED:	160.0 ft	DEPTH TO WATE	R:	11.44	ft				-	PRC	)J. No.	.:	Α	SF13-1	40-00		1
	DRILLE		6/11/2010	DATE MEASURED		1/10/		2											



DRILLING METHOD:

Rotosonic

LOCATION: N 10004123.11: F 1588841.86

METHOD:	Rotos	sonic				L	OCAT						588841	.86		
				<del>.</del>								TONS	/FT² — —□-			
DEPTH, FT SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION O	ENANTEDIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0				3.0		4.0	PLASTICITY INDEX	-200
SYM	SAM	DESCRIPTION O	FIVIATERIAL	LOWS	UNIT VEIGH		LI	ASTIC IMIT	•	CO	ATER NTENT	•	LIQUID LIMIT		PLAST INC	<b>%</b>
	=	SURFACE ELEVATION: 543	3.80 ft	<u>—</u>	-		10	× -	30	40	<b>●</b> — - 50	60	−-× 70	80		
- 5 -		STRATUM I (543.80 ft): FAT CLAY (CH), firm to st light brown, moist, wit pockets, organic matte gravel	h caliche 📗 📗		<u>-</u>	<del>0</del>								-	- - - -	
-10		STRATUM III (536.80 ft): FAT CLAY (CH), stiff to ha light brown to reddishgreenish-gray to gray n to slightly moist, with falong partings and calid	brown with nottling, moist errous staining			- - - - - -					Α.			-	- - - - -	
-15-		- greenish-gray mottling	from 15' to 16'			- - - -					<b>9 9 9</b>			-		
-20						- - - -	•				<b>9 9 9</b>			-	- - - - -	
-25- 						- - - -					<b>.</b>			-	- - - -	
-30		STRATUM IV (513.80 ft): FAT CLAY (CH), hard, gree green, moist to wet, wi interbedded sandstone - free water observed f	th very thinly			- - - -	×		_		8				43	76
		LEAN CLAY (CL), hard, da to slightly moist				- - -		•			• •				- - -	
-40- - - -						- - - -	>	<del>-</del>	_		•×			-	32	98
-45-  		- greenish-gray from 48'	to 50'			- - - -					8			-	- - - - -	
-50-  		- brown to light brown w interbedded sandstone	ith very thinly from 50' to 56'			- - - -	>	<u> </u>	_	-×	• •			-	20	89
-55-		- dark brown with greeni and ferrous staining fro - light brown from 58' to	sh-gray mottling om 56' to 58' 66'			- - - -	•  ×			-×	<ul><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li></ul>			-	- - - - - - - - - - - - - - - - - - -	75
		160.0 %	DEDTH TO WATER		F 33	<u> -</u>					<b>8</b>	. No.:		NCF13.	140.00	
DEPTH DRILLE DATE DRILLE		160.0 ft 6/23/2010	DEPTH TO WATER DATE MEASURED		5.33 6/23/		)				PKUJ	. INO.:	F	ASF13-1	140-00	



DRILLING METHOD:

Rotosonic

LOCATION: N 10004123.11: F 1588841.86

METHOD:	Rotos	sonic				L	OCAT			1000412				86		
				l E	_		_			TRENG					1.	
DEPTH, FT SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION O	E NANTEDINI	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5	1.0		2.0			3.5	4.0	PLASTICITY INDEX	-200
DEPT	SAM	DESCRIPTION O	FIVIATENIAL	ows.	VEIGH		PL L	ASTIC IMIT		WATE CONTE	R NT		LIQUID LIMIT		PLAS	%
	=	SURFACE ELEVATION: 543	3.80 ft	18	^		10.	× -	30	<b>●</b>	 50	 60	-×- 70	80		
///		LEAN CLAY (CL), hard, da	rk brown, moist			-		Ĭ								
t 1/2	<b>/8</b>	to slightly moist (contin	nued) -			<u> </u>	1	LL.				L_			1	
- <i> </i>		FAT CLAY (CH), hard, gre- slightly moist to moist,	enish-gray,			-									-	
70-		staining and very thinly	interbedded							•				-		
<b>├ - ₹</b> //		sandstone - dark brown, with lamin	ated siltstone			-				•				-	1	
		l lavers from 72' to 73'				F				•						
75		- light gray to light brown sandstone lenses from	73' to 77'											-		
F +//						-									-	
						Ē				•						
-80-										•				-		
						-									1	
						_									1	
-85-										•				-	1	
<b>- //</b>						-				•				.	-	
90		LEAN CLAY (CL), hard, bro		1			+-		-+-		+	-				
F 1//		reddish-brown with gro	eenish-grav			F				0					1	
t 1//		mottling, slightly moist staining and scattered	caliche pockets				•			•					1	
<b>-</b> 95-		- green mottling from 92	' to 100 <sup>i</sup>			_				•				-	-	
[ <i>1//</i>		- increase of caliche pock	cets from 96' to			_									1	
t 1//		98'														
100-//						_								-	-	
[ <i>1//</i>						Ė				•					1	
t <i>1//</i>		L				_						<u> </u>				
105		FAT CLAY (CH), hard, green gray and brown to redo	enish-gray to			-								_	-	
		slightly moist				-									1	
		- greenish-gray mottling, interbedded sandstone					•			•						
110-						-				•				-	1	
						-									1	
						L										
115						F								-	-	
[ <b>//</b> /		- free water observed fro	om 116' to 117'			ļ.									1	
		- light brown to brown w	ith sandstone			-									1	
120-		fragments from 118' to	120'			F				•				_	-	
		FAT CLAY (CH), hard, red	- — — — — — — — dish-brown with			<u> </u>	+-	-	- † -	- <del>-</del>	+	- -	- +		1	
├ <i>-{//</i>		greenish-gray mottling with ferrous staining a	, slightly moist,			L									1	
125		interbedded sandstone				Ē.				•				-	1	
‡ <i>‡//</i>		- greenish-gray to green 130'	110111 123 10			L				•					1	
├ <i>-{//</i>						F				•					1	
		160.0.0	DEDE::	<u></u>		Ľ.								<u> </u>	1	
DEPTH DRI DATE DRILI		160.0 ft 6/23/2010	DEPTH TO WATE		5.33 6/23/		)			PR	OJ. No	o.:	А	SF13-1	40-00	
DATE DRILL	LED.	0/23/2010	DATE WEASUREL	٠.	0/23/	ZU1(	,									



DRILLING METHOD:

LOCATION: N 10004123.11: F 1588841.86 Rotosonic

METH	IOD:	Rotos	onic					LOC	ATIO			1000412				.86				1
		l I⊢								SHE	AR <sub>S</sub>	TRENGT	H, TO	NS/F	T²_					
Ε	۵ ا	N, F			ER F	, Pg.		0.5		.0	1.5	2.0 2		<u></u> 5— —	3.5	4.0		È×	0	
ОЕРТН, FT	SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf			PLAS LIMI			WATER	₹		LIQUID	)		PLASTICITY INDEX	% -200	
=	S	EEV S			BLO	Į⋽ÿ			LIMI	IT 		CONTEN	IT 		LIMIT			۲_ ا	•	
			SURFACE ELEVATION: 543				_	10	) 2	0	30	40 5	<u>50 (</u>	60	-X- 70	80	_			1
		1881	FAT CLAY (CH), hard, red greenish-gray mottling	dish-brown with			F					•					-			
			with ferrous staining an	nd very thinly			Ė					•					1			
			interbedded sandstone	e (continued)			F										-			
-135-		1881	- dark gray from 131' to 1	attered caliche			H										$\dashv$			
			- reddish-brown, with sca pockets from 132' to 14	40'			Ľ										1			
		<b> </b>					-					€					-			
- -140-																				
140			- dark green sandstone fi	ragments from			_					•					-			١.
-			140' to 141' - greenish-gray to green	with some grav			F										-			1 🛱
		1881	mottling from 141' to 1	145'			Ė			•		•								EP (
145-			FAT CLAY (CLL) Is and also		-			-+			- + -		<del> </del>	-	- + -					1 5
<u> </u>		╏┇	FAT CLAY (CH), hard, dar brown, moist, with sca	k brown to light ttered caliche			L					•					1			HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
F -	///		pockets and scattered	very thinly			F										]			18
<u> </u>			interbedded sandstone	2			-										-			<u>=</u>
-150- -																				=
-							F					•					-			<u>ا</u> ةٍ
-			- dark gray and greenish-	grav mottling.																=
155-			- dark gray and greenish- with increase in caliche	pockets from			_										1			眉
-		1881	153' to 160'				-					●					-			₩
																	1			Į,
-		1881					F					•					-			
_160_		X <b>=</b> (	Boring Terminated		<del> </del>	<del> </del>	<u> </u>	-+			+-		<del> </del>	-	- + -			+		S
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- 175							L										ユ			NOTE: TH
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180-	1						H										-			
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-190-	-						$\vdash$										$\dashv$			
	1						L													
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F -	1						F										+			
DEPTH	DRILL	ED:	160.0 ft	DEPTH TO WATE	R:	5.33					•	PRO	OJ. No	·:	,	ASF13	3-140	)-00		1
DATE	DRILLE	D:	6/23/2010	DATE MEASURED	D:	6/23/	201	LO_												_



DRILLING METHOD:

Rotosonic

LOCATION: N 10004132.69: F 1590398.88

METHOD:	Rotos	onic				L	OCATI			1000413			98.88			4
	⊩			ŀ-			_4			TRENGT			1_			
DEPTH, FT	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5 PLA			2.0 2 WATE	2.5 3.		4.0	PLASTICITY INDEX	% -200	
-	=	SURFACE ELEVATION: 548	17 ft	BL	>			— — 20	 30	- <del>-</del> 40 €		×		"		
		STRATUM I (548.17 ft): FAT CLAY (CH), firm, brow organic matter and scar	vn, moist, with				10	20	30	40 :	50 60	70	- 60	-		
5		STRATUM III (544.67 ft): FAT CLAY (CH), hard, lighgray, slightly moist, with staining and scattered and brown from 7' to 8 light yellow from 8' to 1	h ferrous caliche pockets '		7	<del>-</del> - - - -				<b>8 8 9</b>				-		
15-		- light brown from 15' to	25'			- - - - - -			•	0 0						THE PROJECT REPORT
-25 25 30 		- dark brown from 25' to - light gray to greenish-gr scattered ferrous staini partings from 26' to 35	ray, with ng along			- - - - - - -			•	0 0 0				- - - - - - - - - - - - - - - - - - -		HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
35 - 40 - 40 -		STRATUM IV (513.17 ft): FAT CLAY (CH), blocky, had to green, moist, with veinterbedded sandstonel adark green sandstone la 39'	ery thinly lyers from 35' to			- - - - - - -				0 0						A TON GILIOHS SECTION BY
45		- free water observed fro				- - - - -			*	•			160	- 5_ - *136 - - -	100	۱Ē
50-		- dark gray to greenish-gr from 48' to 52' - greenish-gray to gray fr				- - - -				•				- - - - - -		
55 60 60 		- dark brown to reddish-k greenish-gray mottling				- - - - - -	•			0 0 0						
DEPTH DRIL DATE DRILLI		120.0 ft 6/24/2010	DEPTH TO WATER DATE MEASURED:		5.25 6/24/		)			PR	OJ. No.		ASF13-	140-00		



METHOD:	Roto	sonic				LO	CATIC					90398.88	3		
				┕	<b>4.</b>					ENGTH, −⊗−					
DEPTH, FT	SAMPLES FI EVATION: FT	DESCRIPTION OF	NANTEDIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	0				.0 2.5			0	PLASTICITY INDEX	% -200
DEPT SYIV	SAM	DESCRIPTION OF	WATERIAL	Swo.	KEIGH		PLAS LIM	TIC IT	(	WATER		LIQUID LIMIT		PLAST	%
	=	SURFACE ELEVATION: 548	.17 ft	18		1	10 =>	<u> </u>	0 4	0 50	60	≻ 70 80	, l	_	
-70 - -75 - -80 -		- dark gray to gray with d siltstone inclusions and mottling 64' to 66' STRATUM IV (513.17 ft): FAT CLAY (CH), blocky, ha to green, moist, with ve interbedded sandstone - greenish-gray with sand from 66' to 70' - free water observed fro	ark brown greenish-gray  rd, dark green ery thinly (continued) stone lenses				•			<ul><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><li>0</li><l< th=""><th></th><th></th><th></th><th></th><th></th></l<></ul>					
85		SANDY LEAN CLAY (CL), h gray, slightly moist	ard, dark gray to			- 	       		 X	0	-		-  - -	20	52
90						- - - - -	×			<b>-</b> ₩				33	55
-100		SANDY FAT CLAY (CH), bloom reddish-brown with gree mottling, moist, with call dark brown to reddish-be mottling, with very thin sandstone from 97' to 1	enish-gray Iliche pockets Irown with gray			- ( - ( - ( - ( - ( - ( - ( - ( - ( - (	•			• • • • • • • • • • • • • • • • • • •					
-105 - - - -		- free water observed fro	m 105' to 108'			 - -	×			<b>⊕</b> - <b>⊕</b> -		-+ imes	_	59	67
110						- - - -				<b>9 9 9</b>			- - - -		
115						- - - -	•			•					
-120- 		Boring Terminated								_ ❷			 - - - - -		
DEPTH DRIL		120.0 ft 6/24/2010	DEPTH TO WATE		5.25 6/24/					PROJ	. No.:	ASF	- - 13-14	10-00	

## LOG OF BORING NO. B-16

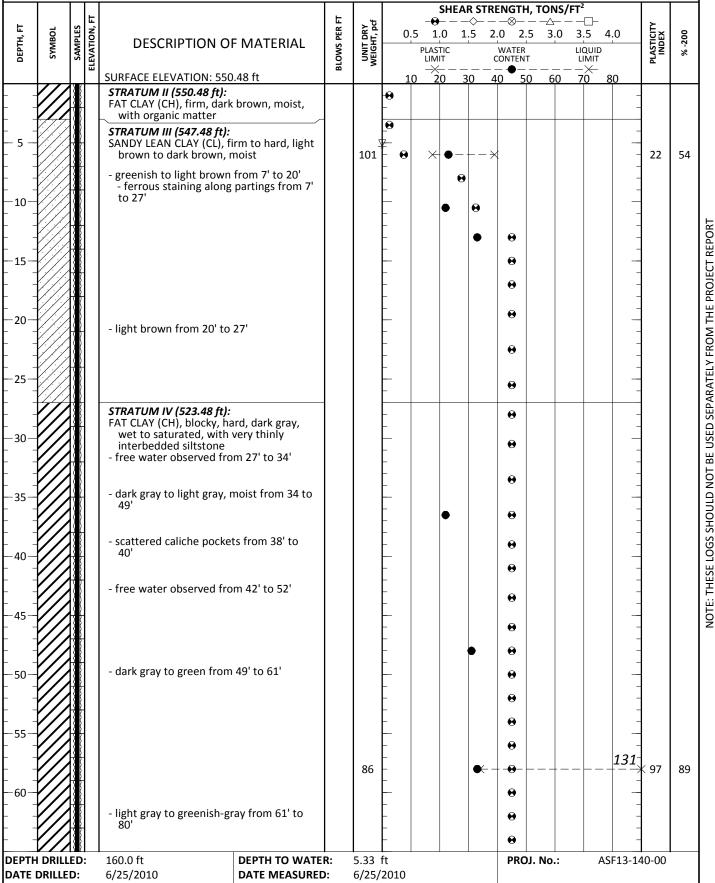
Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC TBPE Firm Registration No. F-3257 Webb County, Texas - MSW Permit No. 2374



**DRILLING** METHOD:

Rotosonic

LOCATION: N 10004119.20; E 1591418.30





DRILLING METHOD:

Rotosonic

LOCATION: N 10004119.20: F 1591418.30

METHO	DD:	Rot	OS	onic					OC.	ATIO				4119.				3.30				1
			닖			  -								IGTH ⊗—				_				
F.	ğ	SAMPLES	ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5					-⊗-			3.5			PLASTICITY INDEX	-500	
ОЕРТН, FT	SYMBOL	AMP	Ĭ	DESCRIPTION O	F MATERIAL	WS F	FE			PLAS	TIC	<u> </u>	w	ATER		-	LIQUII			ASTI	% -2(	
5	S	S				BLO	5₩			LIMI			_ CO	NTENT			LIMIT			٦	•	
	,,,		_	SURFACE ELEVATION: 550	.48 ft				10		0	30	40	50	) 6	0	-X- 70	80				1
├ <b>- !</b>		1881		STRATUM IV (523.48 ft):	ard dark gray			-						•					-			
	///	1381		FAT CLAY (CH), blocky, ha wet to saturated, with	very thinly																	
<b>├</b> - <b>!</b>	///	XX		interbedded siltstone (	continued)			L						•					-			
<del></del> 70	///	<b> </b> 88						⊢						•					-			
	///	1381																				
		188						L						•					-			
	///	1881						-			•			•					-			
<sup>-75</sup> -	///	138		- free water observed fro	m 75' to 80'																	
Ľ		138						F											-			5
	///	188												•								1 2
-80-Z		188						Ē											4			
<b> </b>	///	H						F											-			15
		1881												•								
├ <b>- </b>	//			-========		-		<u> </u>	. 4 .			4-	-	+		<u> </u>	-					[
<del>-85</del> −	///	<b>∤</b> 8}		FAT CLAY (CH), hard, browneddish-brown with green	wn to en mottling			$\vdash$						•				1	14			[
I I	///			slightly moist, with sca	ttered		112			•	×		-+-	€-		<del> </del>		- +		92	98	1
├ <b>-</b>				sandstone lenses				F			×	- -	- † -	•		† – ·		-+	< -	56		18
	///	1881		- greenish-gray from 89'	to 90'			F						•					-			[
-90- -	///			- brown to reddish-brown	n with			_														5
		188		greenish-gray mottling	from 90' to 100'			F											-			3
	///	181						-						•					-			5
_95_	///	$ \langle \rangle \rangle$						L														
	///	<b> </b>						F						•					-			TECET OF THE BELIEF SEPARATELY EDOM THE BELIEF
├ <b>-</b>	///	1881						-											-			-
														•					4			2
100-	///	1881		groonish gray wat to sa	sturated from			-						•					-			1
				- greenish-gray, wet to sa 100' to 104'	iturateu mom									•								13
├ <b>-</b>	///	<b> 3</b>		- free water observed fro	m 102' to 104'			-						•					_			
\ <del> </del>	///	H		- brown to light brown fr	om 104' to 108'			F											-			١٤
105 -				brown to light brown in	0111 104 10 100									0								}
├ <b>-</b> [	///	1881						F						•					-			4
├ <b>- /</b>		188		- dark greenish-gray to gi	een from 108'			F						Ω					-			ŀ
110	///			to 122'	200									•								T GTC
├ <b>ॉ</b> -	///	1881						-						•					-			Ì
	///	H)						Ė														ı
<b>├</b> - <b>/</b>	///	13181						L						•					-			
115		H						-											-			
	///	1881												0					1			ı
<b>├</b> - <b>/</b>	///	1381						ŀ						•					-			
120		H						F											-			ı
120	777		Ì	SANDY LEAN CLAY (CL), h	ard, dark gray to		120	F	7	<u> </u>	==-	7-		€			7-			23	71	
├ -{	///			brown with greenish-gr	ray mottling,			F											-			
	///			IIIUISL				Ė						8								
125								L						•					4			
├ - ぱ	///							F											-			
	///													•								
├	///							F						•					-			
DEPTH	<u>/·//</u>	ED∙ ΓÆ∏		160.0 ft	DEPTH TO WATE	R:	5.33	L ft						PRO.	I. No			ΔSF1	   3_1/	0-00		1
DATE D				6/25/2010	DATE MEASURED		6/25/		0							••		ו וכרי	.5 14			
				0, 20, 2010	DATE WILASONEL	•	5, 25/	-01	~													1



DRILLING METHOD:

Rotosonic

LOCATION: N 10004119.20: F 1591418.30

METH	IOD:	Roto	sc	onic					LO	CATIC			L00041:				8.30				1
		<sub> </sub>	-			<b>⊢</b>	l						TRENG								1
Ē	ğ	LES	3			PER F	T, Pc		0.				2.0			3.5			ĘZ.	0	
ОЕРТН, FT	SYMBOL	SAMPLES	{	DESCRIPTION O	- MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf			PLAS	TIC	_	WATI	ER_		LIQUI	D '		PLASTICITY INDEX	% -200	
^	"	"			40.5	BLC	>≥			LIM —×	<u></u>		CONTE — — •			LIMI X 70			٦		
	777		+	SURFACE ELEVATION: 550				┢	_1	0 2	20	30	40	50	60	70	80				┨
			1	SANDY LEAN CLAY (CL), h brown with greenish-gr	ard, dark gray to ay mottling,			L													1
		1)((	1	moist (continued)	, 0,			F					•					4			1
- 135			1					-										-			
133		181	╁	- dark brown, moist to we	et from 135' to	-		Γ.	- 4			- 4 –		4	-	_	-	-7			1
-		1881	1	136'				F					•					-			
			1	FAT CLAY (CH), hard, brown, slightly moist	_			F										7			
<del></del> 140			1	- light gray, with sandstor from 137' to 138'	ne fragments			H										$\exists$			1
 			1	- light brown to dark brown	wn from 138' to			Ē										7			
		181	1	146'				F					•					- 1			
 <del></del> 145			1					L										4			2
Γ -			1	- gray to light gray with g	roonich			F										- 1			ان
 			1	mottling, with very thir	llv interbedded								•								2
-			$\perp$	green sandstone from 2	146' to 160'	-		-	- +			-		+	-	- + -	- –  -				=
_150_			1	FAT CLAY (CH), hard, brown eddish-brown with great	wn to			F					•								F
			1	mottling, slightly moist	, with scattered			-					•					-			
		<b>1</b>	1	caliche pockets				Ė													"
-155-			1					F					•					_			
			1	- blocky from 156' to 160				-													2
			1	blocky from 150 to 100				Ē					•					7			1 27
160		1881	1					F					•					- 1			[ [
160 -	Ĭ		Ī	Boring Terminated		F	† <del>-</del> -					1		T							JESE I OGS SHOLLI D NOT BE LISED SEPARATELY EROM THE PROJECT REPORT
	1		1					ŀ										-			#
	1		1					Ė										- 1			2
<del></del> 165	1		1					H										-			=
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 170	1		1					L													5
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			1																		=
	-		1					-										4			NOTE: T
175 -	1		1															$\exists$			
	-		1					ŀ										4			
	1		1					Ŀ										1			
- 180	]		1					Ē										4			
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185 - -	]							F										7			
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-190-	-							$\vdash$										$\dashv$			
	1							Ė													
	-							F										-			
		$\coprod$	$\perp$					L													
	DRILL			160.0 ft	DEPTH TO WATE		5.33		_				PF	OJ. N	o.:	_	ASF1	3-14	0-00	_	
DATE	DRILLE	D:		6/25/2010	DATE MEASURED	): 	6/25/	201	LO												



ORILLING METHOD: Roto	sor	nic		,		L	OCAT							88022	2.80			
	-			<sub>E</sub>	ļ <sub>4.</sub>		_				RENG — —			′FT⁴ 				
SYMBOL SAMPLES	<u>;</u>	DECCRIPTION OF		BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0			2.0				4.0		PLASTICITY INDEX	8
SYMBOL SAMPLES	<u> </u>	DESCRIPTION OF	- MATERIAL	SWS			PL	ASTI	С		WAT	ER		LIQUII			AST	% -200
				B <sub>C</sub> C	⊃≱			IMIT			CONT			LIMIT X			۲	
	_	SURFACE ELEVATION: 544	.79 ft	-			10	<u>×</u> 20	3	0	40	50	60	× 70	80			
		STRATUM I (544.79 ft): CLAYEY SAND (SC), mediu	ım dense			-										+		
		brown to light brown, n	noist			₩										1		
		- fill dirt from levee to 1	.0'			-										-		
5 — :///						F <sub>a</sub>										-		
1///						- ❸										1		
-{:///H						-										-		
10 1///						-										1		
10-1/-		- brown, with organic ma	tter and													4		
		scattered gravel from 1	0' to 15'			-										- 1		
1///8						Ė	<b>*</b> ×	· <del> </del> -		-×						1	21	49
15	$\perp$			-											_			
		STRATUM III (529.79 ft): FAT CLAY (CH), hard, redo	lish-hrown with			F					8					-		
		some greenish-gray and	l light green		1	0										]		
		mottling, moist to slight - trace of ferrous staining	tly moist			F										+		
20		17'				L	•	•			8					1		
		- light brown from 17' to				F					8					1		
		<ul> <li>gray to light gray, with f along partings and scat</li> </ul>	errous staining tered very thinly			❷	$\times$		$- \rightarrow$	<u> </u>						-	16	49
25		interbedded sandstone	from 20' to 29'															
						-										4		
						-										-		
		- brown to reddish-brown									8					1		
30		greenish-gray to gray m	ottling from 28'			-					8					-		
		to 32' - caliche pockets from 2	8' to 37'			-	١.				8					1		
		- greenish-gray mottling f	rom 29' to 32'			F	'	~			"					7		
						F										-		
35											•							
	$\vdash$	a== -=		-											_			
		STRATUM IV (507.79 ft): FAT CLAY (CH), hard, brow	vn to			-										-		
40		reddish-brown with gre	enish-gray to													4		
		gray mottling, slightly n	noist, with			F					8					-		
		caliche pockets - light brown to gray, wi	ith very thinly			-					8					-		
		interbedded sandstone	from 37' to 43'								•					]		
45		- greenish-gray to gray fro	om 43° to 50°			-					8					-		
																1		
						F					8					4		
						-					"					-		
50						Γ.										4		
					1	⊦ •					8					+		
						Ė										1		
55—						$\vdash$			×		- -8	$+\times$				$\dashv$	30	93
						F					8					+		
		- some light green mottlir	ng from 57' to			F	•				8					]		
		59'				-										+		
60						L					8					$\exists$		
					1	F										]		
					1	F										+		
		-				<u> </u>					8					_1		
EPTH DRILLED:		120.0 ft	DEPTH TO WATE		-						P	ROJ. N	lo.:		ASF1	3-140	0-00	
ATE DRILLED:	(	6/23/2010	DATE MEASURE	D:	-													



/IETHOD: Rotos	onic I				LO	CATIC				3025.7 <b>IGTH,</b>			2.80			
F			ᄩ	<sup>*</sup>		-0	<b>)</b> — —	$-\diamondsuit-$		$\otimes$ $-$					≥	
SYMBOL SAMPLES EVATION, I	DESCRIPTION O	Ε ΜΔΤΕΡΙΔΙ	F. F.	F. H.	0.		1	1,5		2,5	3.0	3.5	4.0		TICIT	% -200
SYMBOL SAMPLES ELEVATION, FT	DESCRIPTION O	INATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		PLAS LIM			CO	ATER NTENT		LIQUII	•		PLASTICITY INDEX	%
	SURFACE ELEVATION: 544				1	$_{0}\overset{\rightarrow}{_{2}}$	20	30	40	<u>50</u>	60	−-× 70	80			
	- light gray to greenish-g 67'	ray from 64' to			-					•				-		
	- reddish-brown from 67	' to 69'			-	•				•				4		
70										• -	L.	_				
-//	LEAN CLAY (CL), hard, gre slightly moist, with cali	eenish-gray, che nockets			-									4		
	Singificity misses, with con-	ene poekets			-					•				7		
75					-	>	<del>*</del> –	-	- -	$\Theta \times$				4	29	86
					-					0				Ⅎ		
					-					•				4		
80	FAT CLAY (CH), hard, dar	k gray to gray,						-   -			-	_ † _		-1		
	slighty moist to moist, interbedded sandstone	with very thinly			-					•				₫		
					-					9				-		
35					- - •					•				4		
					-									1		
					-									Ⅎ		
00-	- greenish-gray from 89'	to 93'			-					•				$\dashv$		
					-									1		
	FAT CLAY (CH), calcareou	 ıs, hard, brown			+			+-	- -	●	-	-+-	-	-1		
95	to reddish-brown with mottling, slightly moist	greenish-gray			-					•				-		
	motering, singificity motor	•			-					•				7		
					-					•				4		
00-					-					•				$\exists$		
	- brown to light brown w sandstone layers from	rith scattered			-					•				4		
	sanustone layers from	101 (0 107			-					•				4		
05					-	•								_		
	- greenish-gray with gray	mottling from			-									-		
	- greenish-gray with gray 107' to 116'				-					0				7		
10-					-					•				7		
					-					•				Ⅎ		
15					-									-		
15	light harrow for an 44 Cl t	- 4201			-					•				7		
	- light brown from 116' t	0 120			-					•				1		
20	L		L		-					•	L	_				
	Boring Terminated				- ]									-		
]					- -									1		
25					-									$\exists$		
					-									+		
					-									7		
		I	<u> </u>		_				_							
PTH DRILLED: ATE DRILLED:	120.0 ft 6/23/2010	DEPTH TO WATE		-						PROJ.	No.:		ASF1	3-14	0-00	



DRILLING METHOD: Rotosonic

**LOCATION:** N 10001912.98; E 1586750.43

METHOD: Ro	otos	onic				LC	CATIO					586750.	43		
H   12   23	F,			iii Fi	RY pcf		-0		<	-⊗		— — <u>—</u>	4.0	È∪	0
DEPTH, FT SYMBOL SAMPLES	ELEVATION, FT	DESCRIPTION OF		BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5 1. PLAST LIMI	TIC T		O 2.5 WATER ONTENT	3.0	LIQUID LIMIT	4.0	PLASTICITY INDEX	% -200
5		SURFACE ELEVATION: 542.!  STRATUM I (542.50 ft):  FAT CLAY (CH), hard, dark with organic matter				- - - - -	10 20	0 3	0 40	50	60	70	80		
		SAND, firm, light brown, w saturated, with scattered	 et to d gravel			-  •		<del>K-</del>		— — <del>-</del> ;	× -  -	_	_	32	70
		- free water observed fro	om 7' to 13'		<u> </u>	•							-		
-15		STRATUM III (529.50 ft): FAT CLAY (CH), calcareous to reddish-brown with g greenish-gray mottling, I	ray and						•	€			-   -   -		
20		<ul> <li>soft, brown to light brow saturated, with gray to g clayey sand layers from</li> <li>free water observed fron</li> </ul>	reenish-gray 18' to 26'		•	- - - -				•					
25-	} }	- hard, moist, with scatter pockets from 26' to 29'	ed caliche			- - - -				8			- - -		
-30-		- brown to dark gray from	29' to 32'			_				0			_		
35		FAT CLAY (CH), hard, reddi brown with greenish-gra mottling, moist, with sca pockets and very thinly i sandstone - red-gray to gray mottling	y and gray ttered caliche nterbedded			- - - - -				e e			- - - -		
-40- 		- caliche pockets from 42'	to 74'			 - -				8			-		
45	} } }					_  _ _				8			- - -		
-50-	} } }					_ 				8			- - -		
-55-	} } } }					_  _ _				•			-		
-60		groon gardeter - for-	sta from Calls			- - - -				•			- - -		
DEPTH DRILLED DATE DRILLED:			DEPTH TO WATER DATE MEASURED		11.34 1/10/					₽ROJ	. No.:		SF13-14	10-00	



DRILLING

IOCATION: N 10001912 98: F 1586750.43

METHOD:	: [	Rotos	onic				L	00	ATIC							86750.	43			╛
		ь			<sub> -</sub>	_			<u>-</u> Ω	SHE	AR S	TRE	NGTH -⊗-	I, TOI — —∧	NS/F	T² —□-				
H, H		SAMPLES ELEVATION, F	DECEDIDATION OF		BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5			1.5	2.	0 2.	5 3	.0	3.5	4.0	PLASTICITY INDEX	% -200	
DEPTH, FT		SAM	DESCRIPTION O	FIVIATERIAL	ows				PLAS'	TIC	•	C	WATER ONTENT	-		LIQUID LIMIT	•	IN IN IN	%	
-		=	SURFACE ELEVATION: 542	50 ft	l g	- >		10	$\rightarrow\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!$		30		•— ) 5(		 50	$-\times$	80			
			65'	50 10			-				30_	41	9 €	<u> </u>		70	- BU			1
├ <i>-{//</i>			STRATUM IV (510.50 ft): FAT CLAY (CH), hard, redo	dish-hrown to			F										138	1		
			brown with greenish-gr	rav and grav			_			•		)	<b>ו</b> −				130	96	97	
<del>-70-</del>		**	mottling, moist, with so pockets and very thinly	cattered caliche interbedded													-			
F 7/			sandstone (continued) - greenish-gray to light gr				F						0				-			
			74'	een nom os to			-						•				-	1		
75-							H										-	1		
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<b> </b>							-						•				-	1		P. P.
85-				6 051: 041			Ē.										_	1		불
			- green sandstone lenses	from 85' to 94'			_						•				-			ĮΣ
F - 1/2							-						•				-	1		\ H.
90							_													眉
							_						0				-	1		ARA
F 7/							_						0				-	1		SE
95			FAT CLAY (CH), hard, dark	- — — — — — — — - k brown to				+			1-					+				ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
F *//		8	brown, slightly moist, w sandstone layers	vith scattered			-						•				-	1		l Ä
			sanastone layers				-						0				-	1		15
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115													•				-	1		
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<b> </b>							F						•				-	-		
120			FAT CLAY (CH), hard, red-	gray with	1			†			†-	. –					- <del></del>	1		
t 1//			greenish-gray mottling, with scattered sandsto	, slightly moist, ne layers			F						•				-	1		
F. 1/							F										-	-		
125			- green to light green from	111 124 10 132			<u> </u>						0				-	1		
<b>├  </b>							-										-	1		
F 1//							F						0				-	1		
DEPTH DR	ILLE	Mail D:	160.0 ft	DEPTH TO WATE	R:	11.34	ft			I			PRO	J. No	.:	A	 SF13-1	40-00		1
DATE DRIL	LLEC	): 	7/15/2010	DATE MEASURED	D:	1/10/	201	2												



DRILLING METHOD:

Rotosonic

LOCATION: N 10001912.98: F 1586750.43

METH	IOD:	Rotos	onic				<u> </u>	OC.	ATIO		N 1	100019	12.98	; E 15	86750	0.43				1
		<sub> -</sub>			  -	l			Ω.	SHE	AR S	TRENG 	TH, T	ONS/	'FT <sup>2</sup>					l
Ē	۵	LES ON, I			PER F	T, pc		0.5		.0	1.5	2.0	2.5	3.0	3.5			ĘZ.	8	1
ОЕРТН, FT	SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf			PLAS'			WAT			LIQUII	D '		PLASTICITY INDEX	% -200	1
^	"	S   H			BLO	⊃≋			LIM	IT 		•			LIMIT			٦		1
	1	1387	SURFACE ELEVATION: 542		-			10	<u>~</u> 2	0	30	40		60	70 70	80	-			-
├ -	///		FAT CLAY (CH), hard, red greenish-gray mottling	-gray with . slightly moist.			-					0					-			l
-	///		with scattered sandsto	ne layers			_										4			
	///	<b> 8</b>	(continued)	grav mottling			-					•					-			
135		1881	- greenish-gray and dark with scattered ferrous 132' to 144'	staining from																
-			132' to 144'				_					•					4			
<u> </u>		131					L													l
140-	<b>///</b>											•					4			
-	<b>///</b>	H					-										-			_
	///	<b>13K</b> I										•					1			۱Ã
<b>-</b>	<b>///</b>	Ж	- reddish-brown to brow	n with			-										-			E E
145	///	1881	greenish-gray mottling	from 144' to								0								ᇈ
-			160'				-										-			Į₫
	1///						Ė			*	4-		$\rightarrow$ $\times$				1	29	99	HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
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-		1881					-					0					-			EPA
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	DRILL		160.0 ft	DEPTH TO WATE		11.34						PI	ROJ. N	lo.:	'	ASF13	3-14	0-00		1
DATE	DRILLE	D:	7/15/2010	DATE MEASURED	): 	1/10/	<b>201</b>	2												



METHOD: Ro	tos	onic				LC	CATI					0.71;			9.18			
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SYMBOL SAMPLES	ELEVATION, F	DECCRIPTION OF		BLOWS PER FT	UNIT DRY WEIGHT, pcf	C						.5 3					PLASTICITY INDEX	-200
SYMI	VATI	DESCRIPTION OF	- MATERIAL	SWC	I FIE		PLA	STIC MIT		(	WATER	R IT		LIQUII	D .		LAST	% -2
	=	CLIDEACE ELEVATION, E20	10 ft	B10	3	1		√— — 20						-X-			4	
	Н	SURFACE ELEVATION: 539 STRATUM I (539.19 ft):	.19 π	1		-	10	20	30	4(	) 5	0 6	60	/0	80	$\dashv$		
		FAT CLAY (CH), firm, brov	vn to light			•										1		
	1	brown, wet to saturate	d, with some			-										-		
		organic matter	4.51. 4.01			- 0	<i>,</i>									-		
	1	- free water observed fro	m 4.5' to 10'			_										4		
	1					-				8						-		
	↓ I					_					•					1		
-10	┨	CTDATUBA III (520 40 fs).		-			-				•		+					
		STRATUM III (529.19 ft): FAT CLAY (CH), firm to ha	rd, light brown					*-	- <del> </del> ×		•						12	52
	1	to brown, wet to satura	ated			-					_					4		
		<ul> <li>free water observed fi</li> <li>ferrous staining along p</li> </ul>	rom 10' to 12' artings 12' to 19'			-					0					-		
-15-	1										0					4		
	↓ I					-					O					-		
	]										0					1		
-20-		- dark brown from 19' to	20'			_					•					-		
	<b>∤</b>					L	<u> </u>	L					L					
$=$ $\pi$ $\Pi$ $\mathbb{R}$		ELASTIC SILT (MH), very o				-					•							
<del>       </del>	1	brown to reddish-brow greenish-gray mottling,				-					0					-		
-25-	↓	slightly moist	1110131 10								•							
<u> </u>	1	- reddish-brown with cald	caroous material			-					•					-		
<b>                                      </b>		below 27'	areous material			_					0							
-30-	1					_					0					=		
						-					•					-		
711118	1					F					•					4		
<del>       </del>	1					-										-		
-35						_	•	×-	- † -	- +	-—	<del> </del> ×					33	95
						-					0					-		
	]																	
-40-		STRATUM IV (500.19 ft):				_					•					-		
	1	SANDY FAT CLAY (CH), ha light green, wet to satu				_												
		scattered sandstone lei	nses			-					•					4		
//	1	- free water observed fi	rom 39' to 50'			-					Ω					-		
-45-	<b>↓</b>					_					•					_		
	1					-					0					-		
							>	$\leftarrow$ $-$	-	-+	-		+-	$- -\rangle$	<		57	60
-50	1			-			<del> </del>	-	- 🕂 –			<del> </del>	· <del> -</del> -	- + -				
	╛	FAT CLAY (CH), greenish-green, moist to slightly	gray to dark moist, with								0					1		
		thinly interbedded sand	dstone and			-					A					7		
		siltstone - greenish-gray to gray, w	ith laminated	1		L					_					+		
55		sandstone layers from !	52' to 59'	1		F					0							
	$\mid \mid$	<ul> <li>calcareous, dark brown greenish-gray mottling</li> </ul>	to gray with	1		F					_					$\dashv$		
	↓ Ì			1		L					•							
-60-		<ul> <li>reddish-brown, with fer from 59' to 75'</li> </ul>	rous staining	1	110	<u> </u>	,	lacksquare	4_	_	- 😝 -	$-\times$				$\dashv$	33	96
	<b>↓</b>	110111 59° to 75°		1		L					-					$\dashv$		
				1		F					•					7		
	$\mid \mid$					L												
COTU DOULED		160.0 ft	DEPTH TO WATE	R.	-	-					200	DJ. No			ACE1	2 1/	0-00	
DEPTH DRILLED DATE DRILLED:	•	6/22/2010	DATE MEASURE		-						PKC	JJ. INC	,		ASET	5-14	0-00	



DRILLING METHOD:

Rotosonic

LOCATION: N 10002360.71: F 1588549.18

METH	IOD:	Rotos	onic				L	OCA				02360.				18			╛
		<sub>⊩</sub>				۱ ـ						ENGTH							
F,	<u>ي</u> ا	SAMPLES ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5	1.0			.0 2.5				4.0	PLASTICITY INDEX	8	
ОЕРТН, FT	SYMBOL	SAMPLES EVATION, I	DESCRIPTION O	F MATERIAL	SWS			P	LASTI	<u>ic</u>		WATER		L	IQUID		ASTI	% -200	
^	"	° =		40.6	BIC	28			LIMIT —X 20			CONTENT			LIMIT -×- 70		=		
	///	XK	SURFACE ELEVATION: 539			-		10	20	30	) 4	0 50	60	) 7	70	80	-	-	┨
		3	FAT CLAY (CH), greenish- green, moist to slightly	moist, with													1		
		}	green, moist to slightly thinly interbedded san	dstoné and			-										-		
F			siltstone (continued)				-										+		
<del>-70-</del>																-	1		
-							F										4		
-		3					-										1		
_ <sub>75</sub> _	<b>///</b>	1881					Ę.					•				.	]		
		1887	- greenish-gray, with very interbedded, fine-grain	/ thinly			F										-		_
			from 75' to 85'	ieu saiiustone													1		9
							-					•					4		HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
-80-		1881					-					•				-	-		15
_		H															]		15
		<b>∤</b> X≬				139	-	•	*	+		-0-			$+\times$		_ 55	86	l M
- -85-							L									.	_		#
- 65			- brown from 85' to 87'				_										-		
		H	- greenish-gray from 87'	ta 80'			-					0					-		18
		}	L		1		<u> </u>	1_				<b>₩</b>			<u> </u>		1		>
<del>-90-</del>			FAT CLAY (CH), calcareou	s, blocky, hard,			L									.	-		
-		<b> 8</b> 8	reddish-brown to dark greenish-gray mottling	gray with . slightly moist			-										-		AR/
			g. comon g. ay motem.g.	, ongree, motor			Ē.										]		1 6
		HH.					-										-		٦
<del>-95-</del>												•				-	1		IS
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F *** -		88					-										-		5
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[ ]							F										]		=
<b>-</b>							F					•					-		1 🖺
110-			- dark green to green wit	h clay-shale												'	1		NOTE: TE
			- dark green to green wit fragments from 110' to	113'			-										4		
-	///	1881					-					•					-		
115-																.	1		
		H					-										-		
<u> </u>			- greenish-gray to green,	moist, with	1	1	Ė										1		
F -		}	scattered sandstone fra	agments from			Ē					•					-		
120-	1//	H	117' to 126' - free water observed fro	um 120' to 126'	1	1	$\vdash$									-	-		
		<b> 8</b>	- Tree water observed If o	111 120 (0 120			Ė					•					1		
-	///	H					F										4		
135		<b>  </b>			1	1	F										1		
125	///						F										1		
<u> </u>	///		- sandstone fragments 12	26' to 128'	1	1	F					•					+		
<u> </u>			- ferrous staining from 12	28' to 130'			Ė										1		
<u></u>	///			1	<u> </u>		L_												-
1	DRILL		160.0 ft	DEPTH TO WATE		-						PRO.	I. No.:		A:	SF13-	140-00		
DATE	DRILLE	ט:	6/22/2010	DATE MEASURE	J:	-													



DRILLING METHOD:

Rotosonic

**LOCATION:** N 10002360.71; E 1588549.18

METHOD:	Rotos	onic				LC	CATIC			02360.7			9.18		_	4
	l I <sub>⊢</sub>			  -						NGTH, -⊗						
DEPTH, FT	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	C		.0 1.	5 2.	O 2.5 WATER ONTENT			4.0	PLASTICITY	% -200	
		SURFACE ELEVATION: 539	) 19 ft	BIC	_ >		10 2			0 50	60	− −×− 70	80	•		
	188	JONIACE ELEVATION: 333	,.15 It				10 2	0 3	0 40	₩	- 60	70	-80	_		1
135	<u>                                   </u>	FAT CLAY (CH), calcareou greenish-gray to green	s, hard, , moist	-		- - - -			- — —	•	-			. <u>-</u>		
140	**************************************	- sandstone layers from 2	137' to 139'			- - - -				8				- - - -		
145	<del>                                    </del>	- laminated sandstone la to 142'	yers from 140'			- - - -				0				- - - -		TREPORT
150						- - - -				<b>e</b>				- - - -		HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
						- - - -				0 0 0				- - - -		:I V FROM T
155						<del></del> - - -				<b>8 8 8</b>						CEDARATE
160		Boring Terminated				 - - -										OT BE LISE
 -165 - 						- - - -								_		N C II CHO
 -170- 						- - - -								_ _ _		נחבכבוסככ
 -175 - 						-  -								- - - -		IT -3TOM
-180- -1						- - - -								- - - -		
  -185 - 						- - - - -								- - - -		
						- - - - -										
DEPTH DRILL DATE DRILLE		160.0 ft 6/22/2010	DEPTH TO WATE		<u>-</u>					PROJ	. No.:		ASF13	-140-0	0	



METH	OD:	Rote	osc	onic					LOC	ATIC							9169.	.55				╛
						l <sub>E</sub>	١								, TON							
Ę	۵ ا	SAMPLES	ŽΙ			BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5								 3.5	4.0		PLASTICITY INDEX	8	
ОЕРТН, FT	SYMBOL	AMP	إ}	DESCRIPTION OF	MATERIAL	WS P	FE			PLAS	TIC		w	'ATER		<u> </u>	LIQUID	_	$\neg$	ASTI	% -200	
=	°	S				BLO	5¥			LIM —×			CO	NTENT			LIMIT —×—			7	•	
			4	SURFACE ELEVATION: 541	.39 ft			_	10	) 2	0	30	40	5(	) 6	0	<u>70`</u>	80	_			1
-			-	STRATUM II (541.39 ft): FAT CLAY (CH), stiff to fire	m brown to			-	0										-			
		4	ı	light brown, moist, with	n organic _																	
		<b>18</b> 81	-	matter, and traces of ca	aliche pockets			F	•	•									4			
<del>-</del> 5 −		<b>H</b>	-	STRATUM III (538.39 ft):				$\vdash$											$\dashv$			
_			-	LEAN CLAY (CL), hard, light reddish-brown, slightly	nt brown to moist			¥		,									1			
		<b>1</b> }{	-					-											-			
- -10-			-					L											╛			
- 10-		<b>18</b> 1	-																4	4.5	00	
		1 <b>8</b> 1	-					F		•	×-	T -	$\rightarrow$	•					-	15	99	
		<b>13</b>	-	- blocky from 13' to 15'				Ĺ						•					1			1 2
-15-		<b>18</b> H	-					$\vdash$											$\dashv$			1 4
-		1 <b>8</b> 1	-	<ul> <li>greenish-gray to green s from 15' to 22'</li> </ul>	andstone layers			F						•					4			1 =
			-	110111 15 10 22				Ė											1			ESE LOGS SHOLLID NOT BE LISED SEPARATELY FROM THE PROJECT REPORT
		<b>1</b>	-					F											4			4
-20-		1 <b>8</b> 1	-					H						•					$\dashv$			=
	144	488	ŀ					<u></u>	_										_]			
		$\mathcal{H}$	-	STRATUM IV (519.39 ft): FAT CLAY (CH), blocky, ha	rd dark brown			ŀ											$\dashv$			1 5
- 25-		181	-	to reddish-brown, mois	t, with very			L						0					Ⅎ			1 🗄
- 23 -		1911	-	thinly interbedded sand	dstone and														4			[
		<b>18</b> 1	-	siltstone				F						0					-			₫
			-					Ė														5
<del>-30</del>		<b>18</b> 41	-	- brown to reddish-brown	n from 29' to 41'									•					4			
-			-					-											-			=
_		1111	-					Ė											1			1 5
			-					F						0					4			=
-35-		<b>18</b> 1	-	- caliche pockets below 3	5'			-											-			=
			-	•				Ĺ						•					1			₹
-			-	- red-gray mottling from	37' to 41'			F														2
⊢ - ⊢40−		<b>1</b> 881	-					F											1			ع ا
			-											0					$\exists$			1 =
		18	-					F											$\dashv$			
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<del>-</del> 45-		<b>18</b> H	-					$\vdash$											4			NOTE: TE
			-					-						<b>↔</b>					+			2
_			-					Ĺ						_					1			
		<b>1</b> 81	-					F						•					4			
-50-			-					$\vdash$											$\dashv$			
			-					F						0					1			
				- reddish-brown with dar	k gray to gray		1	F						0					-			
 55				mottling, with scattered sandstone from 52' to 5	54'			L											Ⅎ			
-35-				- greenish-gray from 54' t	o 71'			F						•					_			
├ -							1	F											4			1
<u> </u>							1	Ė														
-60-							1	$\vdash$						•					$\exists$			1
								F						•					$\dashv$			
<u> </u>			-	- scattered dark gray sear	ns from 62' to			Ė						-					1			
-				71'			1	F						•					4			
DEPTH	<b>///</b>   DRII	TED∙ Tær⊤		120.0 ft	DEPTH TO WATE	L R:	6.58	ft			1				J. No.	. <u>.</u>	Δ	SF13	L 3-1⊿	0-00		1
DATE				7/15/2010	DATE MEASURED		7/15/		.0							•		.J. 1.	, <u>+</u>	5 00		1
DATE	UNILLI	٠٠.		// 13/ 2010	PAIL INICASUREL	<i>,</i> .	//13/	201	·U													



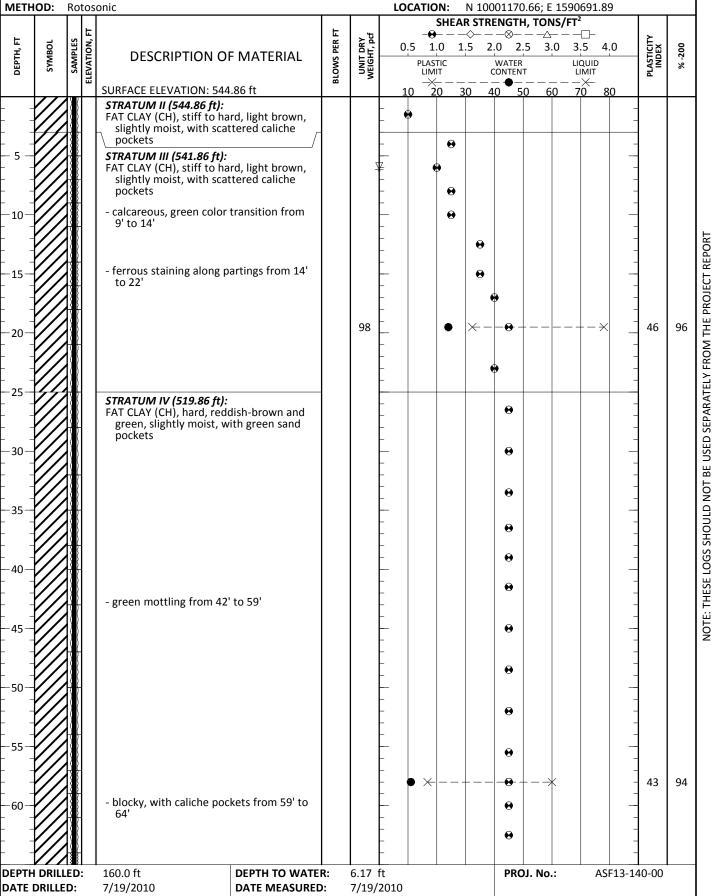
METHOD	:	Roto	so	nic				LC	CAT			10001				.55	_		
			-			ь	٠,		_	SHI ———	EAR S	TREN	STH, T ∂— — -	ONS/	FT⁴ - —□-				
DEPTH, FT		SAMPLES	2	DESCRIPTION O	ENANTEDIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5	1.0		2.0				4.0		PLASTICITY INDEX	% -200
DEPT SYN		SAM		DESCRIPTION OF	IVIATENIAL	OWS	VEIG		PL/ LI	ASTIC MIT		WA CON	TER TENT		LIQUID			ZASI INC	%
		=	4	SURFACE FLEVATION: 541	.39 ft	B	>				30		<b>)</b> — — -			80		٦	
		SAMPLES		SURFACE ELEVATION: 541  STRATUM IV (519.39 ft): FAT CLAY (CH), blocky, ha to reddish-brown, mois thinly interbedded sand siltstone (continued)  LEAN CLAY (CL), calcareou to reddish-brown with red-gray mottling, sligh caliche pockets - increase in caliche pock 120'  - free water observed fro  FAT CLAY (CH), hard, brow reddish-brown with gray mottling, moist, w interbedded dark brow scattered caliche pocket - sandstone fragments from the caliche pockets from the calich	m 84' to 87'  which were to another the series of the seri	BLOW	116		LI	20		CON 40	TENT 50 50 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	60	TIMIT 70	80	- - - - - -	21	93
-105  				to 109'				 - -		• ×	<u>-</u> -		•		×		_	43	100
110													•						
-115 - - -								 - - -					•						
-120-    - 125-  				Boring Terminated													- <del> </del>		
DEPTH DR DATE DRII				120.0 ft 7/15/2010	DEPTH TO WATE		6.58 7/15/			·		ı	PROJ. I	No.:	P	ASF13-	140	)-00	

# **LOG OF BORING NO. B-21**

Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC TBPE Firm Registration No. F-3257



Webb County, Texas - MSW Permit No. 2374 **DRILLING** 





DRILLING METHOD: Rotosonic

**LOCATION:** N 10001170.66; E 1590691.89

METH	HOD:	Rotos	ionic			_	, L	OCATIO			0001170				39		_	4
					=			-6			RENGTI		NS/F	T⁴ —□-		1.		
ОЕРТН, FT	ŏ	SAMPLES ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf		-			2.0 2				4.0	PLASTICITY INDEX	-200	
<u>F</u>	SYMBOL	ATION A	DESCRIPTION O	F MATERIAL	WSF	<u>F</u> E		PLAS LIN	TIC		WATER		-	LIQUID		AST	% -2(	1
=	٧ ا	S   S			BLO	<sup>⋽</sup> 署		LIN	IIT ∕— — –		CONTEN	IT - — — -		LIMIT		٦.	••	ı
	<u> </u>		SURFACE ELEVATION: 544	I.86 ft				$\frac{10}{2}$	<u>20 3</u>	30	40 5	0 6	0	−× 70	80			╛
	<i>\//</i>		- green from 64' to 67'				-				•					-		ı
-	<b>\//</b> /	₩	STRATUM IV (519.86 ft): FAT CLAY (CH), hard, red	dish-brown and			-									-		ı
-	<b>V//</b>	181	green, slightly moist, w	ith green sand			F				•					1		ı
_ <sub>70</sub> _		14	pockets (continued)	0											-	]		ı
ļ	<i>\//</i>		- brown from 67' to 77'				L									-		ı
-	<b>///</b>	<b>∤</b> ₩					-				•					1		
		1921														1		
l ⊢75−	<i>\//</i>						L								-			
		1881					-				•					-		Ι.
-	1//	131					-									-		5
											•					]		] }
-80-	1///						L								-	-		l F
-	<b>///</b>	1981	- ferrous staining from 80	D' to 87'			-				•					-		TACABA TOSI CAM THE MOST SERVED ATELY EDUCATION OF HIGHER
							Ė									]		
ļ		<b> 88</b>					L				●					4		[
-85-	<b>\//</b> /	<del>198</del> 1					⊢								-	+		7
<u> </u>	1//						<b>-</b>				•					1		1 2
	1//		FAT CLAY (CH), blocky, ha	ard,	1			T						T		]		2
-	<i>\//</i>	<b>1</b>	reddish-brown with gre	een mottling,			L				•					-		}
-90-	1///	<del>NH</del>	slightly moist, with cali	che pockets			-								-	-		Į
<u> </u>	<b>V//</b>	1∰														1		5
		1981														]		1 5
├ .	<b>\//</b>						-									-		] [
<b>−</b> 95−	<b>V//</b>	<b>19</b> 81					$\vdash$								-			5
		13 (														]		
ļ	<i>\//</i>						-									-		
	<b>V//</b>	181					F				•					-		}
_100-		<b>13</b>	- fractured, brown to dar	k brown with											-			=
[ .	<b>Y//</b>	13(1	some greenish-gray mo	ottling from 100'			Ę.				€					]		5
ļ		<del>                                      </del>	to 105'				-									-		5
٠ ·		1881	- greenish-gray mottling 103' to 105'	increasing from			-				•					1		١٤
_105_	1//		- dark green to green, wi												-	]		1:
ļ			interbedded dark greei	n sandstone			L				•					_		[
├ .	<b>\//</b> /	1381	from 105' to 124'				F				•					-		-1 ⊦
٠ - ۱	1//	186					-									-		Į.
110-		<b>13</b>													-	]		2
┞ .	<b>V//</b>	1381					-									4		
<u> </u>	<b>///</b>	<b>1</b>					F									-		
- 115-																1		
_ 115		1)((																
├ .	1//						F				•					-		
├ '	<b>\//</b>	∤ <b>≬</b> ∤					<b> </b>									1		
- -120-	<b>V//</b>	<b>13</b>													_	]		
<b>├</b>	<b>\//</b>	1414					F									4		
┝	<b>///</b>	<b> </b>					F									-		
t '	///						Ė									1		
- -125-	1//		- brown to reddish-brow				Ĺ	_			_	l ,			-			
<u> </u>	<b>Y//</b>		greenish-gray and gray	mottling from			F	•	×-		-	$\rightarrow$				_ 31	100	
<u> </u>	///	₩	124' to 140'	h-gray mottling			F									1		
[ ]	///	<b>1</b> 8/	- gray seam with greenish from 127' to 130'	1 Bray mottiling			Ĺ				•					1		
	///	1 🕦		1	<u> </u>	<u> </u>	<u></u>											1
I	H DRILL		160.0 ft	DEPTH TO WATE		6.17					PRO	DJ. No	:	A:	SF13-1	L40-00		I
DATE	DRILLE	D:	7/19/2010	DATE MEASURE	): 	7/19/	2010	)										⅃
																		_



DRILLING METHOD: Rotosonic

**LOCATION:** N 10001170.66; E 1590691.89

IVIETE	T .	II	Sonic				_	.UCATI			rength				99		
ե		SI			H H	Pg.			<del>)</del> –	_<	⊗_ 2.0 2.5	- <del>-</del>			4.0	Ę	
ОЕРТН, FT	SYMBOL	SAMPLES FI EVATION ET	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf			STIC VIT	1.5	WATER CONTENT			LIQUID	+.0	PLASTICITY INDEX	% -200
ă	S	S		6	BLO	⋾⋾					•			LIMIT		] =	0,
	///	188	SURFACE ELEVATION: 544				<u> </u>	10	← – 20 	30	40 50	) 60	0	70 ·	80		
			FAT CLAY (CH), blocky, h reddish-brown with gr	een mottling							•						
			slightly moist, with cal (continued)	iche pockets			_				•						
- 135-			- brown to reddish-brow	n with											-		
			greenish-gray mottling 140'	from 130' to			-				0				.	-	
			140												:		
							F				•					1	
_140_ _	///		FAT CLAY (CH), hard, gre					+	-	- † –	+			<del>+</del>	<u> </u>		
			slightly moist				F				•					1	
		<b>13</b> 81															
-145-							-								-	-	
 																1	
		100					F				0				.	-	
- 150-							L								-	1	
							F								.	-	
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155- -							-								-	1	
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-160-	<b>F</b>		Boring Terminated		<b>├</b>	╂−−		-+	-	-+-				+		<del>-</del>	
	1		Borning reminiated				Ė										
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- 165-	1						L								-		
	1						F								.	1	
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170- -	1														-	1	
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	1																
<del>-</del> 175-	┨						$\vdash$								-	1	
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- 180-	1														_		
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185 -	1						F								-	1	
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-190-	1						$\vdash$								-	1	
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	-						-								.	1	
	1			1												1	
	I DRILL		160.0 ft	DEPTH TO WATE		6.17		0			PRO.	l. No.	:	AS	SF13-1	40-00	
DATE	DRILLE	D:	7/19/2010	DATE MEASURED	):	7/19/	201	U									

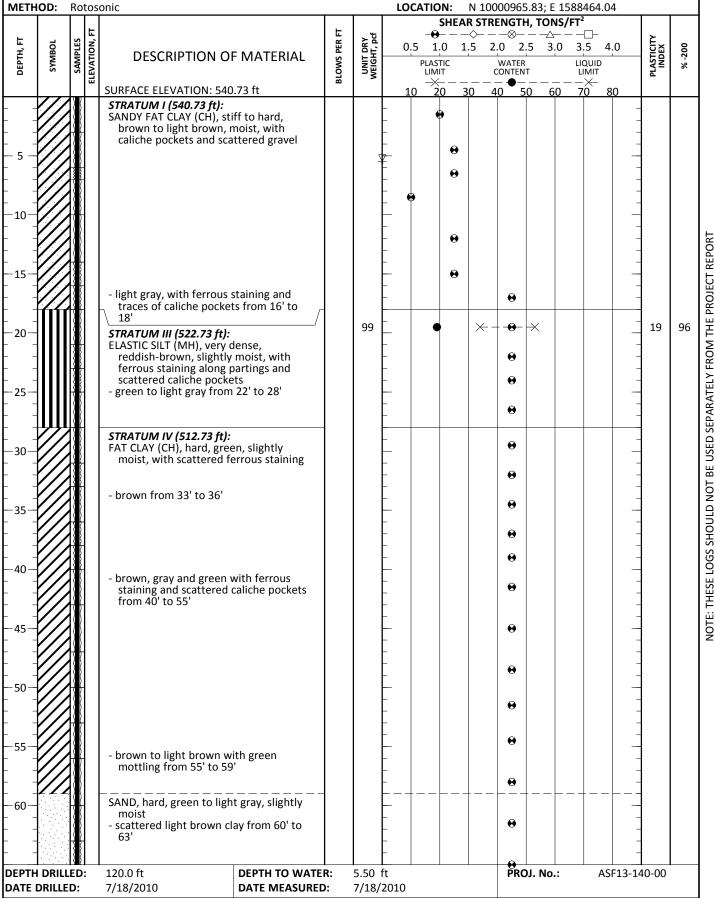
# LOG OF BORING NO. B-22

Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC TBPE Firm Registration No. F-3257 Webb County, Texas - MSW Permit No. 2374



**DRILLING** 

LOCATION:





DRILLING METHOD:

Rotosonic

METHOD:	Rotos	onic				LC	CATI			1000096				4	-1		1
				E			_6			TRENGT							
DEPTH, FT	SAMPLES ELEVATION, FT	DECCRIPTION		BLOWS PER FT	UNIT DRY WEIGHT, pcf					2.0 2			3.5 4	.0	PLASTICITY INDEX	00:	
SYMI	VATI	DESCRIPTION O	FMATERIAL	SWC	FISH		PLA	STIC MIT		WATE	R	<u> </u>	IQUID		AST	% -200	ı
	°		. =o. 6:	B10	≥د ا			viii ← – 20		•			LIMIT -≻ 70 8		Б		ı
	- <b> </b>	SURFACE ELEVATION: 540 SAND, hard, green to ligh		-			10	20	30	40 😝	50	60	<u>70`8</u>	0			┨
		moist (continued)	it gray, slightly			_											ı
<del> </del> //		L		-				-	- + -		+		+				ı
70-		FAT CLAY (CH), blocky, ha with orange to green m	nottling, slightly			_				•							ı
^° <b> //</b>	<b>1</b>	with orange to green moist, with ferrous sta	ining and			_								-			ı
t <i>1///</i>		scattered caliche pocke	ets			L											ı
/ / /						_				•				-			ı
<sup>-75</sup>																	ı
	<b>18</b> 1	- light green from 76' to 3	79'			_											[
├ <i>-{//</i>						-				•				-			١
-80- <b>TT</b>		ELASTIC SILT (MH), dense	e,	1		_	T		-   -		T		T				
		reddish-brown, slightly scattered caliche pocke	moist, with			-								-			[
	<b>           </b>	- green from 82' to 92'	213			_				•							٤
	₩					_								-			[
—85— -	18					_				•							F
						-				•				-			<u> </u>
-90-					100	_	•		>	←+-•-		+×		_	30	98	
																	2
			001. 1001			_				•				-			15
 95		- light gray to brown fron	n 93' to 100'			_								-			١
						_				•				_			=
	Н					-								-			[
						F				•							2
-100-						_								-			=
		- ferrous staining from 10	01' to 104'			F											FACATA FOLICAA THE MOAT VITEA AAATS ATSIL TA FON A IIIOH3 300 I 1311
						_								-			۲
105		FAT CLAY (CH), hard, gree	en to brown,				T		777		T		T				}
- <i>-</i> ///		slightly moist				-								-			5
						_								]			
110						-				•				-			F
110						_											2
						-				•				-			ı
						_								]			ı
115						-								-			ı
						_											ı
						-								-			ı
120				L	ļ		↓		- 4 -		↓	.L_	<del></del>				
		Boring Terminated				-								-			ı
						Ė											
<u> </u>						ŀ								-			
125 						F											
						ŀ								-			
‡ ‡						Ļ											
DEDTH DO		120 0 ft	DEDTU TO WATE	[	<u> </u>	L				DD	01.51	<u></u>	4.0	[] [12	0.00		-
DEPTH DRIL DATE DRILL		120.0 ft 7/18/2010	DEPTH TO WATE		5.50 7/18/		ı			PR	OJ. No	).:	AS	F13-14	₩-00		
PAIL DRILL	٠٠.	,, 10, 2010	PAIL INITAGOIVE	٠.	1/10/	2010											1



METHOD:	Rotos	onic				LC	CATI						36887.7	'3		
	╽╽ <sub>╘</sub>			=			-6				TH, TO 				١.	
DEPTH, FT	SAMPLES ELEVATION, FT	DESCRIPTION O		BLOWS PER FT	UNIT DRY WEIGHT, pcf						2.5			.0	PLASTICITY INDEX	% -200
DEPT SYM	SAM	DESCRIPTION O	FIVIATERIAL	ows			PLA	STIC MIT		WATI	ER NT		LIQUID LIMIT		[ SZ	%
-	=	SURFACE ELEVATION: 536	5 98 ft	8	- >	1		 ← – - 20	20		 50 (		$-\times$	30	"	
	181	STRATUM I (536.98 ft):				_		20	30	40	30 (		70 6	_		
		FAT CLAY (CH), stiff to ve to light brown, moist, v matter and ferrous sta	vith organic			- - -	0	•						-	-	
10-		FAT CLAY (CH), hard, ligh brown, slightly moist, w ferrous staining along p scattered caliche pocket	vith traces of partings and		-	¥ - -		•		•				-		
		- grayish-brown to light t to 14'	prown from 11'			_ _ _				•				-		
-15-		- reddish-brown from 14 - light gray with green m to 18'				- - - -				•				-   -	- - -	
20		- red-gray from 18' to 23'				- - - -								-   -   -		
-25		- reddish-brown with gre gray mottling from 23'	enish-gray and to 28'			- - - -				•				- - -	-	
30		STRATUM IV (508.98 ft): FAT CLAY (CH), hard, slig scattered very thinly in sandstone	ntly moist, with			 - - -				•				- - -	-	
-35		- gray and greenish-gray calcareous from 33' to	mottling, 45'		104	-  -  -  -		•						- - -	37	100
40						- - - - -				•				- - -		
- <i>-///</i>	<b> </b>					-				•				-	-	
-45 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		SILT (ML), dense, gray wi mottling, slightly moist pockets and sandstone	, with caliche		99	- - - - -		•	<del>-</del> -					-	19	100
-50-		L		1			4	-	4_		4		4	<u> </u>	1	
-55		FAT CLAY (CH), hard, green brown with green motion moist, with scattered control of the blocky, gray from 53' to	tling, slightly aliche pockets			- - -				0				-   -   -	-	
60		- brown with greenish-gr mottling from 57' to 63	ay and gray			- - - - -				0				- - - -		
		- reddish-brown, with ca	iche pockets			- -				•				-		
DEPTH DRILL DATE DRILLE		120.0 ft 7/15/2010	DEPTH TO WATE		6.83 7/15/					PF	ROJ. No	o.:	AS	F13-14	40-00	•



DRILLING METHOD:

Rotosonic

LOCATION: N 10000185.75: F 1586887.73

METHOD:	Rotos	onic				L	OCATI			.0000185							1
	⊩			H-			4			TRENGTI — —⊗—							
DEPTH, FT	SAMPLES ELEVATION, FT	DESCRIPTION O	MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5 :			2.0 2 WATER CONTEN	.5 3.0	0 3 LI	.5 4. QUID IMIT	0	PLASTICITY INDEX	% -200	
	=	SURFACE ELEVATION: 536	98 ft	В	>			← – 20	30	- <del>-</del>	. — — —		× 70 80	,	_		
///	<del>181</del>	from 63' to 72'	.5010				10	20	30	₩		, ,	0 80	,			1
-70 -70 -75 -75 -80 -80 -85 -85		FAT CLAY (CH), hard, gree brown with green mott moist, with scattered continued)  FAT CLAY (CH), hard, darl brown, slightly moist, very thinly interbedded and red-gray lamination  - blocky, greenish-gray to from 87' to 95' - gray mottling from 89' to	ling, slightly aliche pockets  brown to light vith scattered l gray sandstone as														Tabasa to a position of the page of the pa
-90 -  95 -  100 - 		- light gray and dark brov thinly interbedded sand to 104'				- - - - - - - - -				0 0 0							JESE I OGS SHOLLID NOT BE LISED SEBABATELY EPOM THE BPOLECT BEDOET
-110- -110- -115- -15-		LEAN CLAY (CL), hard, gre light green, slightly mo sandstone fragments - moist from 107' to 110'	enish-gray to ist, with green			- - - - - - - - - - - -	•	×		• • • • • • • • • • • • • • • • • • •	<del></del>				24	100	NOTE: THESE I OG
-120- 	LED:	Boring Terminated  120.0 ft	DEPTH TO WATER	 R:	6.83	- - - - - - - - - -					DJ. No.:		ASF				-
DATE DRILLE		7/15/2010	DATE MEASURED		7/15/		)										



METH	OD:	Rotos	onic				LC	OCAT							8733.7	73				1
		l I⊾			 	_ ا		_					ΓΗ, ΤC		FT² - —□-					
F,	301	SAMPLES ELEVATION, FT	DECODIDEION O	E & & & TEDIA !	BLOWS PER FT	UNIT DRY WEIGHT, pcf	(		1.0						3.5	4.0		PLASTICITY INDEX	8	
<b>DEPTH, FT</b>	SYMBOL	VATI	DESCRIPTION O	FMATERIAL	SWC	FE		PL	ASTI IMIT	С		WATE	R		LIQUID			IND	% -200	
"				106	BLC	~>						— <b>⊕</b>			70			_		
	///	SHZ -	SURFACE ELEVATION: 538 STRATUM I (538.10 ft):	3.10 II				10	20	3	0	40	50	60	/0	80	$\dashv$			┨
F -		}	SANDY FAT CLAY (CH), fir	m to stiff, light			<b>⊗</b>										1			ı
-		H	brown, moist, with org small gravel, and scatte	anic matter, ered caliche			-										Ⅎ			ı
- 5 -		<b>19</b> R1	pockets	area canone			Ľ.	•									4			ı
-		186					- `										4			
		8																		
-			STRATUM III (530.10 ft): FAT CLAY (CH), stiff to ha	and minkish and		-	¥	0									+			
_10_			with some greenish-gra	ay and gray			¥										コ			
		1861	mottling, slightly moist	, with scattered			F	0									4			
<u> </u>		$\langle \rangle$	caliche pockets				L										1			FPO
-15-							-	•									$\dashv$			<u>۳</u>
<u> </u>		188	- reddish-brown from 16	' to 22'													1			
-							F					•					7			189
F							-										$\exists$			#
<u>-20</u>		<b>19</b> 01										•					7			
-		H					-										-			C
		<b>19</b> 01															1			=
-25-		1861					-										+			#
							Ė										1			AR.
		1861					-					•					+			6
- -30-							L										Ⅎ			
- 30 -		8															4			<u>"</u>
-		1881					-					•					+			ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
-			STRATUM IV (505.10 ft):				_										4			5
<del>-35-</del>			LEAN CLAY (CL), hard, light reddish-brown with gre	nt eenish-gray and					•>	$\times$ –	$ -\times$	•					$\neg$	13	96	=
[ -			gray mottling, slightly r	noist, with very			F										7			] <u>-</u>
-			thinly interbedded sand scattered caliche pocket	astone and ets			-										+			0
40-		<b>(X</b> )										•					4			6
-		₩	FAT CLAY (CH), hard, red	 dish-hrown with				+-					+	-	- +	-	- 1			<u>پ</u>
		<b>19</b> 81	greenish-gray and gray	mottling,			F										1			
F		<b>  XX</b>	slightly moist, with ver- interbedded sandstone	y thinly			-										4			NOTE: TE
<del></del>			- green to light green sea	ims from 42' to													コ			5
-		<del>                                      </del>	45'				-										$\exists$			
		<b>19</b> 01															1			
-50-							H										$\dashv$			
																	1			
-		<b> </b>				1	F					•					$\exists$			
- 55 -							L										1			
			- greenish-gray to light g	reen from 55' to			-					•					+			
<u> </u>			69'				E										1			
F -		<b> 8</b>					Ē					•					7			
-60-							<u> </u>										$\dashv$			
F -		<b>[XX</b> ]				1	F										1			
-							F					•					$\exists$			
		<b>(1</b> )		T																-
DEPTH			160.0 ft	DEPTH TO WATE		11.04						PR	OJ. N	0.:	F	ASF13	-14	0-00		
DATE	DRILLE	ט:	7/23/2010	DATE MEASURED	): 	1/10/	2012													╛



DRILLIN METHO		Rotos	onic	•			L	.OCA							38733.	73			
		=			=	<b></b>						RENG — — $\otimes$			′FT⁴ 				
ОЕРТН, FT	ö	SAMPLES ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5	1.0			2.0			3.5	4.0		PLASTICITY INDEX	l g
ᇤ	SYMBOL	M M	DESCRIPTION O	F MATERIAL	NS F	<u>F</u> E			PLAST	IC		WAT	ER		LIQUII			ASTI	% -200
ا ۃ	Ś	\$  <u>\$</u>			3.0	≥≅			LIMIT	Γ		CONTI	ENT		LIMIT			7	l °`
			SURFACE ELEVATION: 538	.10 ft				10	-X- 20	) 3	0	40	50	60	- −× 70	80			
1		1861	FAT CLAY (CH), hard, red				-										-		
+		{ <b>₩</b> }	greenish-gray and gray slightly moist, with ver	mottling,			F		•	$\times$ -	<del> </del>	- -0	+×				-	28	98
1	///	<b>1</b> ∰	interbedded sandstone	(continued)			-										-		
70-	///	1787	- reddish-brown with gre	enish-grav															
~ <u> </u>		1381	mottling from 69' to 73	'			L										-		
		ł₩I					-										-		
J	"	1307	FAT CLAY (CH), hard, gree	en to light green.	İ		L -	- † -					1-	- -	- † -		-1		
75 <b>-</b>	///	1981	moist	, ,			_										_		
		<b>∤</b> }  }					-										-		
		₩					-										-		
- 1	///	19RI																	
80-		1)  (					_										-		
		$\mathbb{R}$	- dark brown to brown, w	ith calicho			F										-		
1	///	1881	pockets and greenish-g	rav sandv seams			Ė					•							
			from 81' to 84'				L										4		
85—		1861	- calcareous, brown to re	ddish-brown			_										$\dashv$		
1	///	1 <b>(</b> 1)	with greenish-gray and from 84' to 88'	gray mottling			-					•					-		
1							F										]		
		<b>∤∭</b> (	- greenish-gray and gray, interbedded sandstone	with very thinly			-										-		
90-	///	1881	interbedded sandstone	from 88° to 94°			-					•					-		
		<b>∤</b> ∦∤					-					•					-		
<u>,  </u> †			Core harrel broke at 94'				<del>-</del> -	- + -	-				+-		-+-		-+		
95		\	Core barrel broke at 94', from 94' to 106'	iost samples															
4		N					-										4		
- 1		$\mathbb{N}$					-										-		
100-		$\mathbb{I}\setminus\mathbb{I}$																	
1		$  \cdot  $					-										4		
- 1		$ \cdot $					-										-		
		$  \cdot  $					L												
105		l V															4		
+	///						L										-		
t	///	1881	FAT CLAY (CH), hard, light to green, slightly moist	t greenish-gray			-										-		
1	[[[		L					. 4 _			ļ		4_	_L.	_		_]		
110-			LEAN CLAY (CL), hard, bro	own to light			_				L	_					-	24	94
1	///	1881	brown, slightly moist - greenish-gray mottling	from 111' to			-		ľ								-	24	34
1			114'	10111 10															
+		$\mathbb{R}$					-										-		
115-		1 <b>3</b> 81	<ul> <li>dark gray with greenish interbedded sandstone</li> </ul>	gray very thinly			H										-		
1			117'	110111114 10															
1		1861	- reddish-brown to light I	orown, with dark			-										-		
{		1881	gray and greenish-gray interbedded sandstone	very thinly			F					•					-		
120	///	1301	120'	, OIII <b>117 (U</b>	1			- † -			†		1-		-+-				
- }	///	1 <b>%</b> (	FAT CLAY (CH), hard, gree	en to light green.			L										]		
-		<b>∤</b> }  (	slightly moist	·- 0 · 6· · · ·			H										-		
ار ا	///	┧					L										-		
125	///	<b>1</b> ( <b>1</b> )					F										٦		
		<b>∤</b> }					F										-		
	///	<b> </b>	- scattered light brown, g	reenish-grav			F										-		
	///	188					$\square$					. •	_						
	DRILL		160.0 ft	DEPTH TO WATE		11.04						PF	ROJ. N	No.:		ASF1	.3-14	10-00	
ATE D	RILLE	D:	7/23/2010	DATE MEASURED	): 	1/10/	201	2											



DRILLING METHOD: Rotosonic

**LOCATION:** N 9999504.32; E 1588733.73

IVIETE		I	Sonic				Γ.	UCATI			rrength						
ㅌ	<sub> </sub>	SAMPLES ELEVATION ET			BLOWS PER FT	, pcf			9- 1.0	>-	⊗_ 2.0 2.	-				ΣİΧ	0
ОЕРТН, FT	SYMBOL	SAMPLES	DESCRIPTION O	F MATERIAL	WS P	UNIT DRY WEIGHT, pcf			STIC MIT	1.5	WATER CONTEN		1	LIQUID		PLASTICITY INDEX	% -200
۵	\	S	CUREAGE ELEVATION. FO	0.40.5	BLO	] ¤			иіт <del>&lt;</del> <b>20</b>					LIMIT -×- 70 80		PL	-
	///		SURFACE ELEVATION: 538 very thinly interbedd					10	20	30	40 5	0 60	0	70 80			
			from 128' to 131'	ieu sanustone			-								4		
		<b> }</b>  }					E				•				=		
-135-							H								-		
-															=		
_		<b>}</b> }					-								-		
140			FAT CLAY (CH), hard, gre slightly moist (continu	en to light green,			F								4		
			- brown to reddish-brow	n with some							•						
-		₩	greenish-gray and gray 143'	_			F								-		
- 145			- green from 143' to 150	'			_				•				4		
		<b> </b>					F		<del>-</del> -		_	$-\times$			-	38	95
- 150							L.					,			4		
-			- reddish-brown to brow greenish-gray and gray	n with mottling from			E				•				=		
-			greenish-gray and gray 150' to 156'	0			-								-		
- 155											•				_		
			- greenish-gray and gray	from 156' to			-								-		
			158'				F										
- 160			- greenish-gray to green 160'	170III 158 to	L	<b> </b>	<u>L</u> _	4	_	_				1			
	-		Boring Terminated				-								-		
							F								7		
- 165																	
	-						F								-		
							Ē								4		
- 170-							L										
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	1						F								1		
 175							L										
	-						F								-		
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 180							L								-		
_ 160															_		
105							F								-		
185 -							_								7		
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100	1						-								-		
190- -	]						_								7		
							_										
<u> </u>	1						ŀ								-		
	DRILL		160.0 ft	DEPTH TO WATE		11.04			-1	-	PRC	J. No.	:	ASF1	3-14	10-00	1
DATE	DRILLE	D:	7/23/2010	DATE MEASURED	):	1/10/	201	2									



METHOD:	Rotos	onic				LO	CATIC				42; E 1					
	ь			E	. 45						H, TON				_	
DEPTH, FT	SAMPLES ELEVATION, FT	DESCRIPTION O	E MATERIAI	BLOWS PER FT	UNIT DRY WEIGHT, pcf	0					.5 3.			)	PLASTICITY INDEX	% -200
DEPT	SAM EVAT	DESCRIPTION O	I WATENIAL	ows.	CEIG		PLAS LIM	TIC	(	WATER	t IT	LI L	QUID IMIT		PLAS'	%
	=		2.65 ft	=		1	$\stackrel{\sim}{0}$	<u> </u>	 30 4	.0 🗕 –	0 6	 0	× 0 80	,	_	
-10-		SURFACE ELEVATION: 532  STRATUM I (532.65 ft):  FAT CLAY (CH), hard, brown with some green mottling, moist, with of ferrous staining and scapockets  STRATUM III (525.65 ft):  FAT CLAY (CH), hard, ligh moist, with ferrous stain partings and scattered  - dark gray to gray mottling 25'  - reddish-brown with grangreenish-gray mottling caliche pockets from 2	wn to light nish-gray rganic matter, attered caliche  t greenish-gray, ining along caliche pockets  ng from 18' to  y and from 21' to 25'			- 1	0 2	€0 3		0 5 0 6 0 0	60 6	0 7	Ó 80			
-30-	83 33 33 33 33 33 33 33 33 33 33 34 34 34	- dark gray to gray mottli greenish-gray mottling	ng, with some		105	- - - - - -	•	×-		8	×				30	99
-35-		STRATUM IV (499.65 ft): LEAN CLAY (CL), blocky, f greenish-gray with gree mottling, moist to sligh some brown to reddish coloration	ractured, hard, en and dark gray itly moist, with	-		- - - - - -	•>			<ul><li>8</li><li>8</li><li>8</li></ul>					20	93
-45-		FAT CLAY (CH), hard, darl with green and dark gr. moist to slightly moist, very thinly interbedded	ay mottling, with scattered	_		 - - - - -				• •						
-50-		- dark gray to green from	50' to 60'			- - - - -	•	×-		₩	×				26	100
-60		- green sandstone layers	from 60' to 64'			- - - - - -				0				- - - -		
DEPTH DRILLE		120.0 ft	DEPTH TO WATE		-					PRO	J. No.	:	ASF	13-14	10-00	
DATE DRILLED	J:	7/20/2010	DATE MEASURED	J:												



DRILLING METHOD:

Rotosonic

LOCATION: N 9998677.42: F 1587153.12

METHOD: R	otos	onic				L	CATIO			98677.4			3.12				1
	-			<sub> -</sub>			_6			RENGTH, ⊗			7_				
, H	SAMPLES ELEVATION, FT	D. F. A. T. T. T. T. T. T. T. T. T. T. T. T. T.		BLOWS PER FT	UNIT DRY WEIGHT, pcf					∞ 2.0 <b>2</b> .5					PLASTICITY INDEX	0	1
DEPTH, FT SYMBOL	VATI	DESCRIPTION O	FMATERIAL	SWS	FE		PLAS LIM	TIC		WATER		LIQ	UID		AST	% -200	
	[EE			BLO	⊃≩			$\leftarrow$ $ -$		CONTENT — — —		$\rangle$	ΛΙΤ ←		۲		
		SURFACE ELEVATION: 532					10 7	20 3	30 4	40 50 <b>⊕</b>	60	70	80	$\dashv$			┨
	{	FAT CLAY (CH), hard, darl with green and dark gra	ay mottling,			-											
	$\{ \mid \mid \mid$	moist to slightly moist,	with scattered			F				•				4			
	2	very thinly interbedded (continued)	i sandstone			-								+			
70-	$\langle  $	(33 3 33)				F								7			
<b> </b>	<b> </b>					-				•				4			
	<u>}</u>					_								1			
<b>-75</b>	(					H								-			
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	Н					F								4			8
-80-	}					-				•				+			HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
0 1	}					_											
<b> </b>	<b> </b>					-								+			⊋
						_				•				1			F
85	$\langle$	EAT CLAY (CH) fractured	hard brown to	1		<u></u>	+		<del> </del>		-	+		$\dashv$			1 =
	}	FAT CLAY (CH), fractured reddish-brown with gre	eenish-gray and							•				1			≥
-   <i> </i>	}	grav mottling, slightly r	noist to moist.			ŀ								4			1 2
F +///	}	with scattered caliche p thinly interbedded sand	ockets and very dstone			F	•	×-	+			$\rightarrow$		4	43	99	12
90	}	ammy meer bedaed barre				_								_			₹
F - 1//X	}					F				•				4			PP
	₹					_											
<b>-95</b> -	$\{ \mid \mid \mid \mid \mid \mid \mid \mid \mid \mid \mid \mid \mid \mid \mid \mid \mid \mid \mid$					-								4			I E
	{					F				●				-			1 2
	}	- greenish-gray to green	with dark gray			F								4			15
++///	}	mottling, with scattere fragments from 97' to 2	d sandstone			F				•				-			۱ž
100-	Ì	<ul> <li>dark gray mottling incre</li> </ul>	asing from 100'			_											IΞ
F	(	to 102'				ŀ				•				4			모
		- green increasing from 1	02 (0 104														1 %
-105-	{					ļ.								4			
<b> </b>	}					-				•				-			! <u>;</u>
	}					Ē								1			上
F	}					-				•				-			NOTE: TE
110	}					_											9
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t +///	<b> </b>					F								-			ı
	<u>}</u>													1			ı
F+//18	}					F				•				4			
120		Boring Terminated		T	† <del></del> -		<b>†</b>		†			+					
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						Ė											
125						L								4			1
F -						F								$\dashv$			
[ ]						Ė								1			
F -						F								-			
DEPTH DRILLE	 D:	120.0 ft	DEPTH TO WATE	R:	-	<b></b>		1	1	PROJ	. No.:		ASF1	3-14	0-00		1
DATE DRILLED		7/20/2010	DATE MEASURE		-								_		-		1
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METH		Rotos	onic				L	OCAT							951.50			
		╽╽			=	ļ <sub>4.</sub>		_					I, TON — -△					
н, FI	SYMBOL	SAMPLES ELEVATION, FT	DECEDIDITION OF		BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5	1.0	1,5			5 3			.0	PLASTICITY INDEX	-200
ОЕРТН, FT	SYM	SAM	DESCRIPTION O	IVIATERIAL	ows			PL L	ASTIC IMIT		C	WATER	т	L	IQUID LIMIT	•	TSA IN	%
_		=	SURFACE ELEVATION: 537	85 ft	🖷	*	1	10	× -	30		_ <b>⊕</b> _ 0 5			-×-	30	"	
	///		STRATUM II (537.85 ft):						20	30	-	0 5	0 0		70 6	_		
		1881	FAT CLAY (CH), firm to ha moist, with organic ma	rd, light brown,			❷									-		
		190	scattered caliche pocke	ets /	1		_											
— 5 —		1861	STRATUM III (534.85 ft):				<b>⊢</b> •	•								_		
			LEAN CLAY (CL), hard, bro reddish-brown, moist, v	with scattered			F									_		
_		1881	caliche pockets			,				•								
-10-						,	Ţ.									_		
		1881				-	Ē					•				_		
			brown to light brown so	nd with formus			-									-		
 15			<ul> <li>brown to light brown sa staining along partings</li> </ul>	from 13' to 34'			_					0						
							-					•				-		
							-					Ü				_		
		<b> 8</b>	- green from 18' to 28'				-	•	*	-+		-₩				-	25	81
20 							_					•				_		
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_							_					0				_		
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-30-							_					•				_		
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							-					0				-	ł	
35 <i></i> _			STRATUM IV (503.85 ft):				_									_	]	
		<b> </b> }	FAT CLAY (CH), hard, light to green with greenish-	t greenish-gray gray mottling,			_					•				_		
		$\mathbb{H}$	slightly moist to moist	<b>o</b> ,			-									-		
 40												•				_		
		<del>                                      </del>					-					-				-		
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							-					•				-		
45 			- brown to reddish-brown				-					•				_		
			greenish-gray mottling, caliche pockets and ver	with scattered v thinly														
			interbedded sandstone	from 45' to 56'			-					0				-		
-50- -							_					_				_		
							-					•				-	1	
 			- caliche pockets from 53	' to 87'			Ė									-		
55							-					•				-	1	
			- greenish-gray from 56' t	:o 67'			F									-		
		<b>1</b>					L					•						
-60-							-									-		
							L					•				_		
							F					•				-		
						_	<u> </u>											
DEPTH DATE I			160.0 ft 7/22/2010	DEPTH TO WATE DATE MEASURES		10.65 1/10/		,				PRC	J. No	:	AS	F13-14	40-00	
DAIL	OKILLE	υ.	1/22/2010	DATE INICASURE	<i>)</i> .	1/10/	2012											



DRILLING METHOD:

Rotosonic

LOCATION: N 9998471.29: F 1589951.50

METHOD:	Rot	osc	onic				L	.OC	ATIC			99847				1.50				1
		ĻŢ			_	1						TRENG					T			
=   =	SAMPLES	ŠΪ			BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5				⊗ 2.0			 3.5		,	PLASTICITY INDEX	0	
DEPTH, FT	MP	빍	DESCRIPTION OF	MATERIAL	IS PI	E¥			PLAS		1.5	WAT		3.0		UID		STIC	-200	ı
	S				8	5 8			LIM	IIT		CONT	ENT		LIN	ΛIT		P. P.	%	ı
		۳	SURFACE ELEVATION: 537	.85 ft	-			10	<i>→</i> ×	<u></u>	30	<b>●</b>	50	60	> 70	← ) 80	,			ı
		╅	STRATUM IV (503.85 ft):										<u> </u>			, 00				1
		-	FAT CLAY (CH), hard, light	greenish-gray			Ę.													ı
<b>├ - //</b> /			to green with greenish- slightly moist to moist (	gray mottling,			-					8					-			ı
├ <u>-</u> 。 <del>-</del> ///			- brown to reddish-brown	continuea) with			F					"					-			ı
<del>-70-</del>			greenish-gray and gray 67' to 87'	mottling from																ı
<b>├ - /</b> //			67' to 87'	•			L					- 8					_			ı
F -{//							-										-			ı
├ <i>-</i> //							-										-			ı
L 75												8								ı
							L										_			
<b>├</b> - <b>{//</b>			- dark gray to gray mottli	ng from 77' to			F					A	.				-			2
├ <del>-</del> {//			83'				F					"					-			H #
80																				[
												•	'				_			1 5
├ <i>-</i> <b>//</b> /			amagnish and Coli	- 07!			F										-			HESE LOGS SHOLLIN NOT BE LISEN SEPARATELY EROM THE PROJECT REPORT
├ <sub>-</sub> - <del> </del> //			- greenish-gray from 83' t	0 87			F	•	)	×-	-	- + -8	$\vdash \times$				-	30	85	1 4
85												8								-
1		-					L -	. 4 .			4-		4_	_ _	_+					5
├ <i>- {//</i>			FAT CLAY (CH), hard, brow	vn to			F					8					-			1 5
├ <b> </b>			reddish-brown with gre gray mottling, slightly n	enisn-gray and			-										-			16
<del>-90</del>			scattered caliche pocke	ts and verv								8								5
			thinly interbedded sand	dstone																5
<b>├ - //</b> /			- green to light green gra	y from 89' to 95'			F				Ш.					$\times$	-	55	99	5
├ <u></u> - <b>/</b> //							-					"				^	-	"	99	
-95			- brown to reddish-brown	n from 95' to 97'								8	.							=
<i> </i> //							L					"					_			H H
├ <i>-{//</i>			- reddish-brown and gray	with dark gray			F					- 8					-			15
t 1//			and some green sandst from 97' to 124'	one tragments			-					"					-			=
100			110111 57 (0 124																	ΙΞ
<b>├</b> - <b>{//</b>							L										-			5
├ <i>-{//</i>							F										-			12
105			- calcareous, brown to re-	ddish-hrown			<b> </b>										-			٤
L102_			with greenish-gray and	gray mottling								8								-
<b>├</b> - <b>//</b> /			from 104' to 114'				F										-			ដុ
<b>├ -{//</b>							F										-			NOTE: TE
110																				
							_										_			5
<b>├</b> - <b>//</b>							F					8					-			
├ <i> / / /</i>							-										-			
115							L													
L 113 - 1//							L					8	'				_			
├ <i> / / .</i>			deals bassing to bosses. C	1171+- 1101			F										-			
t <b>//</b> /			- dark brown to brown fro	om 117 to 119			F					8	'				-			
120							L					8					J			
<u> </u>							F										4			
├ <i>\ \</i>							F					-   0	.				4			
t 1//							L					_  8				_	+			
125		Ī	FAT CLAY (CH), fractured,	hard, dark	1			7			7-				$-\dagger$					
"			green to green, moist, v	with scattered			F					8	'				4			
├ <i></i>			caliche pockets				F										-			l
t 1//							r					. 8					-			
		_					$\Box$													1
DEPTH DR			160.0 ft	DEPTH TO WATE		10.65						P	ROJ. N	lo.:		ASF	13-14	0-00		
DATE DRIL	LED:		7/22/2010	DATE MEASURED	<b>)</b> :	1/10/	201	2												



DRILLING METHOD: Rotosonic

**LOCATION:** N 9998471.29; E 1589951.50

IVIEIF	100.	NOTO	Soffic					OCATIO			rength,						
F	0.10	SAMPLES FLEVATION: FT			BLOWS PER FT	)RY , pcf		-€ 0.5 1	<b>)</b> — —		⊗ 2.0 2.5				,	Σİ	0
БЕРТН, FT	SYMBOL	SAMPLES	DESCRIPTION O	F MATERIAL	WS P	UNIT DRY WEIGHT, pcf		PLAS LIM			WATER CONTENT			QUID IMIT		PLASTICITY INDEX	% -200
	"	S   H	SURFACE ELEVATION: 537	7 85 ft	916	آ ک		$\rightarrow$		30	<del>•</del> 40 50			×		Z.	
	///		FAT CLAY (CH), fractured	. hard. dark				10 2	20	30		60	) /	0 80	_		
			green to green, moist, caliche pockets (contin	with scattered			ŀ				•				-		
			cureire poekets (contin	acay			Ē				•						
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DEPT	   DRILL	FD:	160.0 ft	DEPTH TO WATE	 R:	10.65	L ft				PROJ	. No ·		ΔSF	13-1/	10-00	
	DRILLE		7/22/2010	DATE MEASURED		1/10/		2			1103	•0		A31.	14	.5 00	
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# **LOG OF BORING NO. B-27**

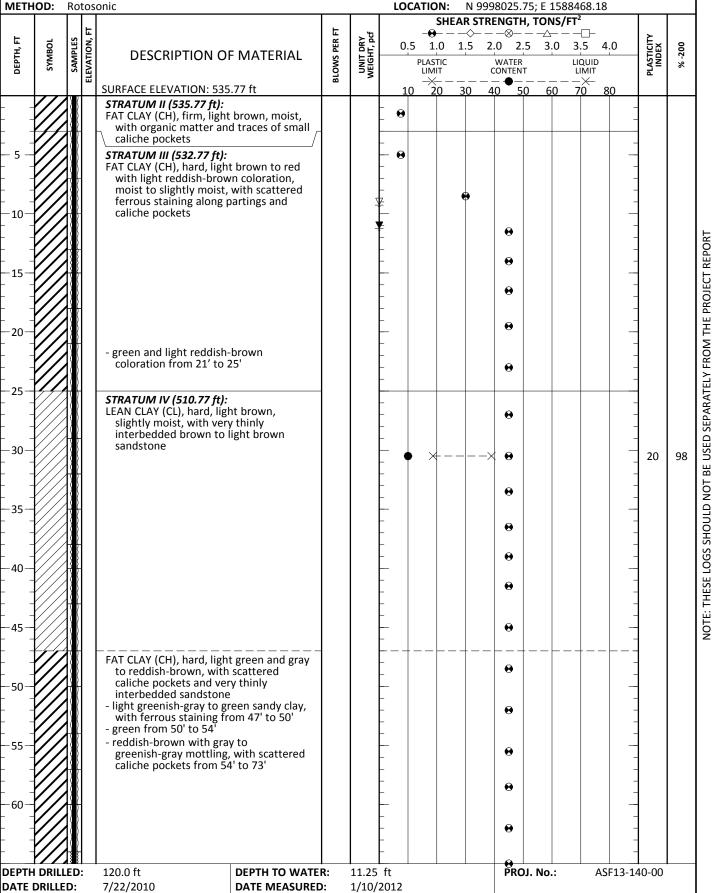
Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC TBPE Firm Registration No. F-3257 Webb County, Texas - MSW Permit No. 2374



**DRILLING** 

Rotosonic

**LOCATION:** N 9998025.75; E 1588468.18





DRILLING METHOD:

Rotosonic

LOCATION: N 9998025.75: F 1588468.18

METHOD:	Rotos	onic					OCA	TION		999802				8			1
	  -			l <del></del>						TRENG							
, F , J G	SAMPLES ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5	1.0		⊗ 2.0			3.5	4.0	PLASTICITY INDEX	8	
DEPTH, FT	AMP ATIC	DESCRIPTION O	F MATERIAL	WS F	1 F E			PLASTI		WAT			LIQUID		ASTI	% -200	
30   50	S/ ELEV			BLO	5₹			LIMIT		CONT	ENT		LIMIT		P.	•	
	<b>X</b>	SURFACE ELEVATION: 535					10	<u>×</u> 20	30	40	50	60	−× 70	80			┨
├ <i></i>	<b>3</b>	FAT CLAY (CH), hard, light	t green and gray			-								-			
	1881	to reddish-brown, with caliche pockets and ver	v thinly											-			
		interbedded sandstone	(continued)											_			
<del>-70-</del>						H				_				-			
	(M)					Ė					1						
	\$(					L								-			
<del> </del>	1881					F								-			
75										0	'			-			
	$\frac{1}{2}$	L		-		<u> </u>	- 4 -	-	+ -			-					Į
├ <i>-</i> <b>///</b> /	<b>                                      </b>	FAT CLAY (CH), fractured	, hard,			F								-			2
80-	3 (	greenish-gray to green, with scattered thinly in	terbedded														1
⊦ " <i>{///</i>		green sandstone ´				F								-			
├ <i></i>	8					-				"				-			
	<b>X</b>																TO COTO TOTAL COOL TAIL F. M.C. COT. V. 1774 A. M.C. 2017 A. T. C. M. C. 11. C. 1. 2. 2. 2. 2. 1. 1. 1. 1. 1. 2. 2. 2. 1. 1. 1. 1. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2.
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	<b>(8</b> )					F					'			-			1
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├ <i>-{///</i>	*					F								-			5
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-100-	<b>(8)</b>					L								_			2
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	38	L					_					_L_					2
-   <i> </i>  //	X	FAT CLAY (CH), hard, bro	wn to			-								-			1
105		reddish-brown with gre dark gray to gray mottl	enish-gray and			H				•				-			15
	1	moist	ilig, slightly														
-   <i>  </i>	8					L								-			
· ///	1881					F				•	'			-			H
110-	<b>3</b> 8													-			
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	}									0							
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		Boring Terminated				F								-			
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DEPTH DRILL	ED:	120.0 ft	DEPTH TO WATE	R:	11.25	ft				PI	ROJ. N	0.:	Α	SF13-14	10-00		1
DATE DRILLE	D:	7/22/2010	DATE MEASURE	<b>)</b> :	1/10/	201	2										
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Pescadito Environmental Resource Center - Type I MSW
Management Facility - Rancho Viejo Waste Management, LLC
Webb County, Texas - MSW Permit No. 2374

& GPI Modified Pitcher Parcel



METH		Wet	t R	otary, Core & GPI Modified	Pitcher Barrel			. 1	LOCA	TION							88801	L.54				
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ОЕРТН, FT	SYMBOL	PLES	Š,	DESCRIPTION OF		PER	DRY T, po		0,5								3.5			ĒΫ	% -200	
l DEPT	SYM	SAMPLES	EVAL	DESCRIPTION OF	- IVIA I ERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf			PLASTI LIMIT	С		CO	ATER	т		LIQUII	)		PLASTICITY INDEX	%	
			ᆈ	SURFACE ELEVATION: 552	.49 ft	8	^		10	-× 20		30	40	<b>●</b> -5		 60	-×- 70			_		
-	///	î,î	1	STRATUM I (552.49 ft):				-	Ť				T		<u> </u>		70		_			1
├ -		<b>{</b> ^}	-	FAT CLAY (CH), firm, tan a moist	and brown,			F											-			
		<b>1</b> ^1	-					F											]			
<del>-</del> 5 -		{^}	ŀ	STRATUM III (547.49 ft):		1													_			
[ ]		<b>^</b> ^}	-	FAT CLAY (CH), hard, tan i	to			₹											1			
<u> </u>		<b>{</b> ^}	-	greenish-gray, slightly n ferrous staining along p	noist, with Partings			Ē														
-10-	///	$^{\wedge}$	-	<ul> <li>scattered fine-grained to 15'</li> </ul>	sand from 10'			L											4			
t :		<u></u>	-	10 15				L											_			∟ا
ļ .		<b>}</b> ^}	-					F											4			P P
15-		<b>[</b> ^]	-					L														ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
ļ <sup>13</sup> -		<b>{</b> ^}	-	- greenish-tan from 15' to	20'			F											-			딜
<u> </u>		<b>\$</b> ^{	-																			ا گ
<u>-</u>		{∴}	-					F											4			빌
20-		1,7	-	- tan from 20' to 25'																		۱F
-		<u>}</u> ^1	-					F											-			[ 문
[ ]		<b>l</b> ŝt	-																1			=
-25-		H	-	- saturated, with fine-grai	ined sand at 25'			$\vdash$											-			ATE
ļ :			-	- saturateu, with fille-grai	illeu saliu at 25									0					1			AR
-		191	-					F						0					-			SE
30-			Ī	NO RECOVERY					- † -			† — ·					7-					SED
-		╢╟	-	- interbedded dark gray c	laystone from			F						Ω					-			<u>ښ</u> [
[ ]			-	30' to 33'				F						•					]			١Ę
		<b>.</b>	ŀ	- interbedded gray to bro from 33' to 34'	wn claystone	-		-	- + -			+				-	- + -					١ž
35-		\$^{	-	STRATUM IV (518.49 ft):				F											7			]
<u> </u>		{∴}	-	FAT CLAY (CH), hard, dark to brown, slightly moist	grayish-brown			L											-			[왕
		1,71	-	very thinly interbedded	gray and brown			F											7			gS
<del>-40-</del>		tî.	-	siltstone/claystone				L											Ⅎ			밀
ļ .		<b>}</b> ^{	-					F											-			
t :		<b>∱</b> ^}	-																			NOTE: TH
-45-		<b>}</b> ^}	-					L											-			
<u> </u>		<b>^</b>	-					Ė														~
-		<b>{</b> ^}	-					F											-			
- -50-		1,1	-																			
"		<b>1</b> ^1	-					F											-			
:		<b>1</b> ^1	-					Ė														
<u> </u>		<u></u>						-											=			
-55-				- reddish-brown, with call	iche pockets,														_			
-				ferrous staining and rec claystone from 55' to 60	ldish-brown			-						•					4			
[ ]		∤ <b>∦</b> │		daystone nom 33 to or	•			Ė														
-60-		$\mathbf{H}$	+	SANDSTONE, very fine-gra		1			- + -			+	- -			-	- + -					
F :	<b>]</b>			gray, slightly moist, wit	h fine			F						0					1			
<u> </u>	<b>†</b>	H		laminations - reddish-brown clay sear	n and brown			-											-			
	<u> </u>	Щ		siltstone from 62.5' to 6	53'	<u> </u>	<u> </u>	Ĺ					$\perp$						لـــ			
1	1 DRILL DRILLE			151.0 ft	DATE MEASURE		7.57		2					PRO	J. No	o.:		ASF1	L3-14	0-00		
DATE	DKILLE	ט:		7/6/2011	DATE MEASUREI	J:	1/10,	201														J

Pescadito Environmental Resource Center - Type I MSW
Management Facility - Rancho Viejo Waste Management, LLC
Webb County, Texas - MSW Permit No. 2374

& GPI Modified Pitcher Barrel



METH	IOD:	We	et R	otary, Core & GPI Modified	l Pitcher Barrel				LOC	ATIO							8801.	54			
						<sub>F</sub>	۱ ـ							NGTH -⊗-							
F.	BOL	SAMPLES	ELEVATION, FT	DECEDIDATION	E NA ATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5								3.5	4.0		PLASTICITY INDEX	00
ОЕРТН, FT	SYMBOL	SAMI	VATI	DESCRIPTION O	FMATERIAL	SWC	I FIE			PLAST LIMI	ΓIC		, V	VATER ONTENT			LIQUID LIMIT			LAST IND	% -200
-			=	SURFACE ELEVATION: 552	19 ft	BL	- >		10	$\rightarrow\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!$		30		<b>●</b>			$-\times$	80		٦	
	:::::::		Н	SURFACE ELEVATION. 552	.4511	1			10	<u> </u>	<u> </u>	30	40	₩ 50	, 6	<u> </u>	70	80	$\exists$		
F -								F											4		
	///	1		FAT CLAY (CH), hard, gray	. — — — — — — — - vish-brown,	1		<u> </u>	- †			†-		+			+	-	-		
-70-	///	<b>1</b> ^}	H	slightly moist, with very interbedded claystone/	y thinly			-											$\dashv$		
		<b>∱</b> ∧}	$\  \ $	- dark green siltstone and from 70' to 72'	d a trace of sand			L											1		
-		<b>1</b> ∴1		from 70' to 72'				-											$\dashv$		
- -75-		<b>1</b> ^1						L											1		
- · ·		<b>1</b> ^/		<ul> <li>dark green siltstone and from 75' to 85'</li> </ul>	d a trace of sand			-											+		
		<b>1</b> ^1		110111 73 10 03				Ė											1		
F		<b>1</b> ^1						-											$\dashv$		
<del></del> 80-		<b>1</b> ^/						F											7		
-		<b>1</b> ^}						F											+		
F :		<b>{</b> ^{				1		F											7		
<del>-85-</del>		⇈		- grayish-green, with fine	-grained			F											$\exists$		
		111		- grayish-green, with fine sandstone from 85' to 8	39.5'			-						•					-		
<u> </u>		<b>11</b> 1						L						•					1		
-90-		4						_											$\dashv$		
<u> </u>		1L						L_				1_	L	•			1	_L.	_ 🖠		
	-	$\mathbb{N}$		NO RECOVERY				F											4		
- -95-	L							L											ゴ		
		\$∴}		FAT CLAY (CH), hard, brow	wn to			F											4		
		<b>1</b> ∴1		grayish-brown, slightly thinly interbedded clay	stone/siltstone			Ė											1		
<b>-</b>		<b>1</b> 20						F											+		
100		<b>1</b> ^1		- interbedded gray siltsto	ne from 100' to														コ		
-		<b>1</b> ^/		115'				F											4		
-		<b>1</b> ^1						Ė											1		
-105-		<b>1</b> ^}						$\vdash$											$\exists$		
		<b>1</b> ^}						F											1		
-		<b>∱</b> ^{						-											-		
110-		<b>7</b> ∴1						F											4		
<u> </u>		<b>1</b> ^1						L													
-		1.1						-											4		
├ - 115		1						L.				1_					1	_L.	ᅼ		
L 113	-			NO RECOVERY				-											-		
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<u> </u>	1//							F											$\dashv$		
120 -		1		- interbedded brown silts	tone from 120'			F											コ		
-	<b>///</b>	<b>{</b> ^}		to 141'		1		F											$\dashv$		
[ ]		<b>1</b> ^}				1		Ė											7		
125	<b>///</b>	<b>{</b> ^}						$\vdash$											$\dashv$		
F -	///	<b>1</b> ^{				1		F											1		
-		<b>1</b> ∴1				1		ŀ											$\dashv$		
	///	1	Ш	454.0.0			<u> </u>	Ľ						<b>n</b>				65.			
1	H DRILI Drille		:	151.0 ft 7/6/2011	DEPTH TO WATE DATE MEASURED		7.57 1/10/		2					PRO.	l. No.	:	Δ	SF13	3-140	)-00	
DATE	DKILLE	ט:		//0/2011	DATE WEASURE	<i>J</i> .	1/10/	ZUI													

Pescadito Environmental Resource Center - Type I MSW
Management Facility - Rancho Viejo Waste Management, LLC
Webb County, Texas - MSW Permit No. 2374

& GPI Modified Pitcher Parcel



METHOD: Wet Rotary, Core & GPI Modified Pitcher Barrel **LOCATION:** N 10007392.30; E 1588801.54

METH	10D:	vve	et K	otary, Core & GPI Modified	i Pitcher Barrel		1	_	_OCA				00739				01.5	4	_		4
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ОЕРТН, FT	SYMBOL	SAMPLES	NOI	DESCRIPTION O	F MATERIAI	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5	1.0		.5	2.0		3.0			.0	PLASTICITY INDEX	% -200	
E .	l syn	SAIN	EVA:	DESCIMI HOW O	1417 (121(1) (2	l ok	NEIGH		F	LASTI LIMIT	C		WATE CONTE	R NT		LIQ LIN	UID VIT		PLAS	%	
			<b>=</b>	SURFACE ELEVATION: 552	.49 ft	<u> </u>	_		10	<del>×</del> 20		 0	 40	 50	60	> 70	← ) 8	0			
-		1.1	П					-											-		1
<u> </u>		<b>1</b> ^1						-											_		
		<b>1</b> ^1						F											]		
-135-	<b>///</b>	<b>{</b> ^}						-										-	-		
F :		<b>1</b> ^{						F											]		
-		<b>∤</b> ∴∤						-											1		
140		1:1						Ē.										_	7		
-		<b>1</b> ∴1		- interbedded gravish-gre	en			-											1		-
[ ]		<b>1</b> ?1		<ul> <li>interbedded grayish-gre siltstone/claystone from</li> </ul>	n 141' to 146'			F											-		
- 145-		<b>1</b> ^1						-											1		
- 145	///	1						F-	- 4 -	-	+			<u> </u>	_	_+		<u>-</u>	7		[
t :				SANDSTONE, fine-grained slightly moist	d, greenish-gray,														_		HESE I OGS SHOILI ON OT BE I ISED SEDABATEI Y EROM THE DROIECT REDORT
F -				87				F											-		=
150						L_	<u> </u>						_L_					L	่่		=
	-			Boring Terminated				-											-		
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	H DRILI			151.0 ft	DATE MEASURE		7.57		2				PR	OJ. N	lo.:		AS	F13-1	L40-00		
DATE	DRILLE	ט:		7/6/2011	DATE MEASURED	<i>)</i> :	1/10/	2U1	۷												⅃

Pescadito Environmental Resource Center - Type I MSW
Management Facility - Rancho Viejo Waste Management, LLC
Webb County, Texas - MSW Permit No. 2374

& GPI Modified Pitcher Barrel



	Rotary, Core & GPI Modified	d Pitcher Barrel			L			EAR S	TRE	NGTH	i, TOI	NS/F		87	<u> </u>	
4, FT 30L 1LES ON, FI			PER FI	DRY T, pcf	(	0.5	<del>-</del>	<>- 1.5			<i></i> △ .5 3			4.0	E C	-200
SYMBOL SAMPLES ELEVATION, FT	DESCRIPTION O	FMATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		L	LASTIC LIMIT		CC	WATER ONTEN	Т		LIQUID LIMIT		PLASTICITY	%
	SURFACE ELEVATION: 556	5.27 ft	8			10	× -	30	40	5	0 6	0	−× 70	80		
^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^	STRATUM I (556.27 ft):  FAT CLAY (CH), dark brow slightly moist - organic material to 2' - scattered gravel from 2				- - - <u>7</u>										- - - -	
	STRATUM III (551.27 ft): FAT CLAY (CH), stiff to ha brown, slightly moist, v staining along partings caliche pockets	vith ferrous		\ \ \ \	- - <u>7</u> -										- - - -	
-15					 - - - -										- - - - - -	
20	NO RECOVERY - Driller's note: silty, find on core barrel - caliche pockets from 21				 - - - -		•	_					-	_	-	
25	- black laminations at pa to 35'	rtings from 23'								•					-	
35	STRATUM IV (521.27 ft): FAT CLAY (CH), light gray	to grav slightly			- - - - -										- - - - -	
40 -	moist, with very thinly sandstone	interbedded			- - - - -										- - - - -	
45 -					- - - - -										- - - - - -	
	SILTSTONE, light gray, sli mechanical breaks				- - - - —					•					- - - -	
55	SANDSTONE, light gray, o	dry - — — — — — —			 - - 		_ -	_		•						
-60 P	FAT CLAY (CH), hard, bro moist, with very thinly light gray siltstone - gray, with lignite seams 62.5'	interbedded			-  - - - -			_		- <del></del>	- — —				- - - - - -	
DEPTH DRILLED: DATE DRILLED:	160.0 ft 7/9/2011	DEPTH TO WATER		8.63 f 1/10/2		!	1			PRO	J. No	:	Δ	SF13	140-00	)

Pescadito Environmental Resource Center - Type I MSW
Management Facility - Rancho Viejo Waste Management, LLC
Webb County, Texas - MSW Permit No. 2374

& GPI Modified Pitcher Parcel



METHOD:	: Wet I	Rotary, Core & GPI Modified	l Pitcher Barrel			L	OCA	ATIO							0573	.87				]
	F			_									<del>1, ТО</del>							
F. 10	S ES P			BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5	1.					<i>∠</i> .5 3			4.0		PLASTICITY INDEX	0	
DEPTH, FT	SAMPLES ELEVATION, F	DESCRIPTION O	F MATERIAL	l SM(	I FISH		_	PLAST	ГІС		$\overline{}$	WATER ONTEN		_	LIOUID			ASTI	% -200	
	,  s =	CUREAGE ELEVATION EEG	27.6	BIC	] ] ]			LIMI <sup>*</sup> -× 20							LIMIT			ਕ		
		SURFACE ELEVATION: 556 LEAN CLAY (CL), hard, dar					10	20	0	30	40	9 5	0 (	50	70`	80	+			ł
1//		greenish-gray, slightly r	noist, with very			_						0					1			
F +//		thinly interbedded sand siltstone (continued)	dstone and			_						Ω					1			
L <sub>70</sub> -1//		- interbedded gray-green	siltstone from			_						•					4			
<b> </b>	<b>/</b> ^}}	65' to 68' - strongly cemented, fine	-grained.			_											-			
I 1//		grayish-green sandston	e from 69.5' to			_											1			
<u> </u>	<b>/</b> ///	70' - interbedded very fine-g	rained gray			-											-			
75-		sandstone or siltstone	from 70 <sup>1</sup> to 86'			_											7			١.
t 1//						-											+			띪
F 1//						F											4			FP.
<del>-80-</del>																	1			5
<b> </b>						_											4			١ä
t 1//																	1			E PR
<del>-85-</del> //	//I					_											-			Ӗ
t 1//		- interbedded weakly-ind	urated gray			_											1			Įδ
} \{\begin{array}{c} \end{array}\rightarrow{\partial}{\partial} \rightarrow{\partial}{\partial} \rightarrow{\partial}{\partial} \rightarrow{\partial}{\partial} \rightarrow{\partial} \rightarrow{\partial}{\partial} \rightarrow{\partial} \right		siltstone from 86' to 88	<u>'</u> '				+-			+-	·  -				+	-	-+			X
90		FAT CLAY (CH), hard, dark and reddish-brown, slig	gray to brown														4			冒
F *//		very thinly interbedded	l			-						0					-			₽ K
		claystone/mudstone - interbedded greenish-g	ray claystone			_						0					1			SP/
<b>├ - //</b>		from 90' to 92.5	., ,			-											+			E (
95		- interbedded gray clayst	one from 95' to			_						•					7			ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
<b>├ - ₹/</b> /		96' - very thinly interbedded	grav			-											+			] H
[ <b>]</b> //		siltstone/claystone from	n 96' to 105'			F											1			9
100																	_			₽
F *//						F											4			[호
						_											1			3S S
105							+-			+-			<del> </del>		+	-				Ιĕ
1		FAT CLAY (CH), hard, redo brown, slightly moist, v	vith very thinly			_											1			ESE
<b>├ /</b> /		interbedded claystone - thinly interbedded clays	and siltstone			_											+			Ĕ
110		to 122'	stone from 105			_											4			NOTE: TH
F - //						-											+			Ž
1/						Ē						•					4			
<b> </b>		- grayish-brown to reddis	h-brown from			-											-			
115		113.8' to 120'															7			
																	1			
F *//						F											7			
120												•					$\exists$			
<b>├ *</b> //		hanna mitte takanta 11	۵.			F						•					7			
t 1//		<ul> <li>brown, with interbedde claystone/siltstone from</li> </ul>	u n 122' to 138'			L											1			
125						-											$\dashv$			
<u> </u>						Ė											1			
<b> </b>	<b>/</b> ^}					-											+			
																				1
DEPTH DR		160.0 ft	DEPTH TO WATE		8.63							PRC	)J. No	<b>.</b> .:	A	ASF13	3-140	00-0		
DATE DRIL	LLED:	7/9/2011	DATE MEASURED	): 	1/10/	2012														]

Pescadito Environmental Resource Center - Type I MSW
Management Facility - Rancho Viejo Waste Management, LLC
Webb County, Texas - MSW Permit No. 2374

& GPI Modified Pitcher Parcel



DRILLING METHOD:

Wet Rotary, Core & GPI Modified Pitcher Barrel **LOCATION:** N 10007574.88; E 1590573.87

IVIEIT	<u> </u>			otary, core & GPI Modified	ritcher barrer			Γ.	UCAI			TRENG				,.07			
Ħ,	0.0	LES	ELEVATION, FT			BLOWS PER FT	JRY 「, pcf				>	- <i>-</i> −⊗ 2.0		△— –		4.0		È×.	9
ОЕРТН, FT	SYMBOL	SAMPLES	VATIC	DESCRIPTION OF	MATERIAL	J SWC	UNIT DRY WEIGHT, pcf			ASTIC IMIT		WAT		<u> </u>	LIQUIE			PLASTICITY INDEX	% -200
_				SURFACE ELEVATION: 556.2	77 ft	BLC	- 3			× -	30	- <del>-</del> 40		60	X- 70			۱ -	
   -135 -		>>>>>>>>>		FAT CLAY (CH), hard, reddi brown, slightly moist, wi interbedded claystone a (continued)	th very thinly			- - - - -											
  -140 				- grayish-green, with interl siltstone from 138' to 14				- - - 									- - -		
 	-	Р		SANDSTONE, fine-grained, grayish-green, slightly m	dense, oist			- - -									-		
145   				FAT CLAY (CH), hard, grayis slightly moist - very thinly interbedded 145' to 150'				 - - -		_  -	_				- + -				
150 		< < < < <		- very thinly interbedded of 150' to 160'	laystone from			- - - -									-		
155   		<b>(</b>						- - - -									-		
160  				Boring Terminated				- - -	+		-+-		+	-	-+-		-		
 - 165 	-							- - - -									-		
 - 170- 	- - - - - -							- - - -									-		
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 -180-  	- - - -							- - - -											
 -185 -  	-							-  -  -  -											
 -190 -   								- - - -											
	   DRILL DRILLE		Ш :		DEPTH TO WATE DATE MEASUREI		8.63 1/10/		2			PI	ROJ. N	o.:		ASF13	3-14	0-00	



METHOD: Roto	sonic				LC	CATIC						8236.7	8		
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SYMBOL SAMPLES ELEVATION. FT	DESCRIPTION O	F MATERIAI	BLOWS PER FT	UNIT DRY WEIGHT, pcf	C	,5 1	.0 1		2.0	2,5 3	3.0	3,5 4	.0	PLASTICITY INDEX	% -200
SYN SYN	DESCIMI HOIV O		LOW	UNI. WEIG		PLAS LIM	IT		WATE CONTE	R NT		IQUID LIMIT		PLAS IN	%
	SURFACE ELEVATION: 553	3.76 ft	8			LO 2	0 3	 30	 40	50 6	— — - 60	−≻ 70 8	30		
	STRATUM I (553.76 ft): SANDY LEAN CLAY (CL), s soft to firm, dark brow	n and light			-	0							-	-	
- 5 -	brown to light green at with organic matter			-		 	-0	<u> </u>	-X				_	25	64
-10	STRATUM III (547.76 ft): LEAN CLAY (CL), blocky, h reddish-brown with gro moist	nard, dark		<u> </u>		•							-		
	- gypsum crystals along v partings from 11.5' to 2	veathered 16'			-				•				-	_	
-15-					-				•				-	-	
-20					- -				•				- -	-	
					-				0				-		
-25					= =- =								_		
-30	STRATUM IV (525.26 ft): LEAN CLAY (CL), blocky, h	nard, brown and			- -				•				-	-	
	reddish-brown and ligh greenish mottling, moi moist	nt gray with st to slightly			- - -				•				-	-	
-35	- light gray to light gree thinly interbedded fine sandstone and siltston 34'	e-grained			- - - -				0				-	-	
-40					- - -				•				-   -	-	
					_			•					-		
-45	- light gray to light green fine-grained sandstone	, with very thinly				×							-	27	91
-50	from 46' to 51.5'	and sitistone			-				•				-		
					-				•				-		
-55-	CANDSTONE fine analysis				_ _ 			<u> </u>							
-60-	SANDSTONE, fine-graine tan, slightly moist - softer with clay seam:				- - -				•				-		
	58'	5 11 5010 10			- - -				8				-		
DEPTH DRILLED: DATE DRILLED:	120.0 ft 4/6/2011	DEPTH TO WATER DATE MEASURED		7.00 ±		1	<u> </u>	-I		OJ. No	).:	AS	F13-1	40-00	<u> </u>



METH		T	П	onic				L	OCA <sup>®</sup>	TION					.86; E		8236 <b>T</b> <sup>2</sup>	.78				┨
		Si	ELEVATION, FT			F F	bd ≾			-0-		- <b>&gt;</b> -		-⊗		<u>.                                    </u>		4.0		<u>}</u>	_	
ОЕРТН, FT	SYMBOL	MPLE	ATIO	DESCRIPTION OF	MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5 P	1.0 LASTIC		5		Z.: ATER	5 3		3.5	4.0		PLASTICITY INDEX	% -200	
DE	S	\s	ELEV,			BLO	58			LIMIT			co – –	NTENT			LIMIT			7	8	
	///		Н	SURFACE ELEVATION: 553			-		10	<u>×</u> 20	3	30	40	5(	) 6	0	−× 70	80				4
  			-	LEAN CLAY (CL), hard, bro reddish-brown with gre moist to slightly moist	een mottling,			- - -						•					-			
70  				- light gray interbeds from	n 71' to 80'			- - -						•								
 75 								-  -  -  -						<b>9 9 9</b>					-			RT
80 80			-	- slightly moist, with a tra	ice of sand from			- - - -						• •					-			DJECT REPC
  85 			-	81' to 82' - gray sandstone fragmen 92' - very thinly interbedded clay-shale from 85' to 9	its from 82' to			- - - -						0					-			M THE PRO
  - 90 <i>-</i> -			-	ciay-snale from 85° to 9	U			- - -						•					-			ATELY FRO
			_					- - -		>	<del>-</del>		- + -	•			_	-+>	< - - - -	62	92	ED SEPAR
95  			-	FAT CLAV (CII) bord brook				_ - 				ļ_	_	•			+-	_	_ 			OT BE US
- 100- - 00-  			-	FAT CLAY (CH), hard, brown reddish-brown with gree mottling, moist to sligh very thinly interbedded - light gray mottling from	enish-gray tly moist, with I sandstone			- - - - -						<b>9</b>								ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
105  			-	- light brown with gray sa interbeds from 105' to	indstone 110'			 - - -						0					-			NOTE: THESE LO
110  				- brown to light brown wi greenish-gray mottling 120' - glauconitic from 112' to	from 110' to			-  -  -						0					-			TON
 115  			]   - -	6.0000.mic 110111111 10				- - - -						9					1			
 -120-  			_	Boring Terminated		<u> </u>	 	 - - -	+-				-				-		- - - - -			
 -125 -  								-  -  -  -  -											-			
DEPTH DATE I			<u>                                     </u>	120.0 ft 4/6/2011	DEPTH TO WATE		7.00 4/6/2							PRO	J. No	<u>.</u> :		ASF1	<u> </u>	0-00		



METH		Roto	sonic					OCAT							8936	1.97			
		L			=			_			R STR -◇				'FT² □-	_			
ОЕРТН, FT	SYMBOL	SAMPLES ELEVATION, FT	DECCRIPTION O	E NAATEDIAI	BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0						3.5		)	PLASTICITY INDEX	-200
DEPT	SYM	SAM	DESCRIPTION O	FIVIATERIAL	ows				ASTIC MIT	2		WATI	ER NT	'	LIQU	ID T		LAST	%
_			SURFACE ELEVATION: 552	2 11 ft	B	- >			× 20			_ 40		60	× 70			<u>.</u>	
	///	88	STRATUM II (552.11 ft):					10			1	+0	30		70	- 80			
-		8	FAT CLAY (CH), very firm moist, with organic ma	, dark brown,	-					0									
- -			STRATUM III (550.11 ft):						8										
- 5 -		<b>3</b> }	FAT CLAY (CH), very firm	to hard, light			-										-		
-			brown, moist, with call ferrous staining along				ŧ			•									
-		8	gypsum crystals	partings, and			-										-		
10-		8					L			,	× -	+ 🕶		- † -	>			38	98
-							-										-		
-		<b>3</b>					-										-		
_												•							
15-																	-		
_		88	- hard, gray and light bro	own, slightly								•					-		
-		}	moist from 16' to 21'				-										-		
20-							F										4		
-	111		STRATUM IV (531.11 ft):	,	-							8							
_		188	FAT CLAY (CH), hard, gre	enish-gray,			-										-		
- 25		1881	slightly moist, with ver interbedded clay-shale	y thinly e and sandstone			-					•					-		
- 25	///	38	- thinly interbedded cla	aystone from 21'			F										-		
-			to 25' - dark gray clay seams fro	om 27' to 30'			-										=		
_			aum gray oray scame m	J			F					•					-		
30-		8	- ferrous staining and ve	rv thinly															
-		8	interbedded claystone	from 30' to 36'			-					•					-		
-							L										_		
35 —		<b>₹</b>					_										_		
-		1881	- caliche pockets from 36	5' to 37'			L					•					_		
_		1	- dark greenish-gray, wit	h			_										-		
40-		8	weakly-indurated clays	stone from 37' to								•					_		
40		}	- ferrous staining from 4	0' to 50'			_										-		
-		<b>  }</b>	- glauconite at partings	s from 40' to 54'			L												
-		1881					_					•					-		
45 -		1881															-		
-		8					-					•					-		
-							Ė		>	$\leftarrow$ $-$		<u> </u>	$\times$					27	92
50-		$\mathbb{R}$					L										-		
-							Ė					•							
-		1381					L										-		
- -55		8	- sandstone fragments fr	om 54' to 55'	.]		L_	1				\varTheta		_L.	_		-		
-			FAT CLAY (CH), blocky, h	ard, brown,			-										-		
-	///		slightly moist, with ver interbedded sandstone	y thinly			Ė										_		
-	///		- caliche pockets from 55	5' to 56'			F					•					-		
-60-			- weakly-indurated clay-	shale from 60' to			F										٦		
-	///		70'				F					•					-		
-							L												
יבחדי	<u>///</u>		120 0 ft	DEDTH TO WATE	 :D·	6 50	L					DE		do :		۸۵۲	12 14	10.00	
												"	J. ľ	vo.:		ASF.	13-14	+U-UU	
	DRILLE		120.0 ft 4/7/2011	DEPTH TO WATE		6.50 4/7/2						PF	OJ. I	No.:		ASF1	L3-14	10-00	



METHOD:	Roto	sonic				LC	CATIO						9361.97	7			1
				ᇤ	. 45		-6			RENGT					_		
DEPTH, FT	SAMPLES ELEVATION, FT	DESCRIPTION O	E NANTEDINI	BLOWS PER FT	UNIT DRY WEIGHT, pcf	(	),5 1	.0		2,0 2				0	PLASTICITY INDEX	% -200	
DEPT	SAM	DESCRIPTION OF	IVIATENIAL	ows	VEIGH		PLAS LIM	STIC IIT		WATE CONTE	R NT	l	LIQUID LIMIT		LAS	%	
	=	SURFACE ELEVATION: 552	.11 ft	H	>			<u> </u>	 30	40			−≻ 70 8	n	_		
		FAT CLAY (CH), blocky, has slightly moist, with verinterbedded sandstone (continued)  - clay-shale from 75' to 7	ard, brown, y thinly and clay-shale			- - - - - - - -				8 8 8							PORT
-85-		- green with gray-green s fragments from 86' to 8 SILTSTONE, light grayish-				- - - - - - - - - - -	×			• • • • • • • • • • • • • • • • • • •					16	53	ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
95		FAT CLAY (CH), hard, gray slightly moist	ish-green,			- - - - - -				• •							ULD NOT BE USED SE
		- caliche pockets from 10	2' to 103'			- - -				•				-			OHS SEC
105		- weakly-indurated siltsto 108'	one from 106' to			- - - -				•							NOTE: THESE IC
-115		SANDSTONE, very fine-gr greenish-gray, slightly r - clay seams from 115' to	noist			- - - - - -				0				-  - - -			
- 120		Boring Terminated				-  - 				<b>.</b>				- - - -			
125 						- - - - -											
DEPTH DRIL DATE DRILLI		120.0 ft 4/7/2011	DEPTH TO WATE		6.50 4/7/2					PR	OJ. No	).: 	ASF		0-00		

## LOG OF BORING NO. B-105

Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC TBPE Firm Registration No. F-3257 Webb County, Texas - MSW Permit No. 2374



**DRILLING** 

LOCATION: N 10006473.33; E 1591410.75 METHOD: Rotosonic SHEAR STRENGTH, TONS/FT<sup>2</sup>  $- - \diamond - - - \diamond - - - \diamond -$ UNIT DRY WEIGHT, pcf SAMPLES PLASTICITY INDEX ELEVATION, **BLOWS PER** 2.0 2.5 3.0 SYMBOL 0.5 1.0 1.5 3.5 **DESCRIPTION OF MATERIAL** WATER CONTENT LIQUID LIMIT PLASTIC LIMIT SURFACE ELEVATION: 557.66 ft 7Ó STRATUM II (557.66 ft): FAT CLAY (CH), stiff, dark brown to brown, moist, with organic matter and caliche pockets STRATUM III (554.66 ft): FAT CLAY (CH), hard, light brown to • green, slightly moist - ferrous staining along partings and gypsum crystals from 8' to 16' 10 31 92 NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT - trace of caliche from 13' to 16' • 15 weakly-indurated claystone fragments from 15' to 16' and from 17' to 18' reddish-brown from 16' to 17' 20 - interbedded brown clay from 24' to 26' 25 STRATUM IV (531.66 ft): FAT CLAY (CH), hard, greenish-gray to gray with dark green mottling, slightly 0 moist to moist, with ferrous staining 30 and very thinly interbedded siltstone 0 and sandstone - siltstone fragments from 26' to 44' 35 A 40 - dark green mottling from 41' to 44' 45 LEAN CLAY (CL), greenish-gray with brown mottling, slightly moist to moist . 50 - gray and dark gray from 50' to 55'  $\times$ 52 65 55 - siltstone from 55' to 56' very thinly interbedded sandstone from 56<sup>'</sup> to 57 very thinly interbedded sandstone from 58' to 63.5 60 - gray from 60' to 90' **DEPTH DRILLED:** 160.0 ft **DEPTH TO WATER:** 8.10 ft PROJ. No.: ASF13-140-00 **DATE DRILLED:** 4/6/2011 **DATE MEASURED:** 4/6/2011



METHOD:	:	Roto	osc	onic				L	.00	ATIC				0647				10.75				1
			-			ᇤ					<u> </u>	<b>-</b> ◇		ENGTI —⊗—	<u> </u>	△— -		]-		<b> </b>		
DEPTH, FT		SAMPLES	ELEVAIION, FI	DESCRIPTION O	ΕΜΔΤΕΡΙΔΙ	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.!	5 1	.0	1,5	2	.0 2	.5	3.0	3.5	4.0	)	PLASTICITY INDEX	% -200	
DEP1	;	SAM	EVA	DESCRIPTION OF	WATENIAL	ows.	CENT			PLAS LIM	IT		(	WATER	t IT		LIQU LIM	JID IIT		PLAS:	%	
		1	-	SURFACE ELEVATION: 557	.66 ft	8			10	$\rightarrow$	<u> </u>	30	 	_ <b>•</b> _		60	- −× 70	← 80	)	-		
				LEAN CLAY (CL), greenish brown mottling, slightly (continued) - gray and dark gray from	y moist to moist 66' to 71'			-						•					- - -			
-70- 				<ul> <li>very thinly interbedded 69' to 70'</li> <li>very thinly interbedded 71' to 72.5'</li> </ul>	sandstone from			_						0					 - -			
75				71 (0 72.5										•					_			
80								- - -						8					-			- REPORT
								- - -						•					- -			PROJECT
85				FAT CLAY (CH), hard, gray slightly moist	to dark gray,	_		- - - -	-			-		- <del>0</del> -		-	_		<u>-</u>			ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
90								- -						•					-			AR ATELY
95								_			×-			<del>0</del>		×			- -	38	54	ISED SEP
				- very thinly interbedded 96' to 98'	sandstone from			_ _ _						0					-			NOT RF
100-				- very thinly interbedded 100' to 106'				_ _ _						0					-			SHOLLIN
105				- glauconite at partings fr	om 103' to 116'			- - - -						•					- - -			
110				- greenish-light gray from	110' to 116'			- - -						<b>8</b>					-			NOTE: T
115				NO RECOVERY		-			-					0	-				-			
120				FAT CLAY (CH), hard, redo gray-brown with gray m moist				-  -  -  -  -						8 8					- - - - -			
125								- - - -						8					- - - -			
DEPTH DR DATE DRIL			_	160.0 ft 4/6/2011	DEPTH TO WATE DATE MEASURED		8.10 4/6/2								DJ. N	o.:		ASF	13-14	10-00		



DRILLING METHOD: Rotosonic

**LOCATION:** N 10006473.33; E 1591410.75

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		<sub> </sub>	-			=	<b> </b>		-6	SHE <i>A</i> 	AR ST <>	RENGTH — —⊗—	I, TON:	S/FT	- <u>-</u>		1		
ОЕРТН, FT	SYMBOL	SAMPLES	<u>ş</u>	D. E.O. O. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. C. F. F. C. F. F. C. F. F. C. F. F. C. F. F. C. F. F. C. F. F. C. F. C. F. F. C. F. F. F. F. F. F. F. F. F. F. F. F. F.		BLOWS PER FT	UNIT DRY WEIGHT, pcf					2.0 2				.0	PLASTICITY INDEX	8	
🛓	X W	퉣	[₹	DESCRIPTION OF	FMATERIAL	WS	투			STIC AIT		WATER CONTEN			IQUID LIMIT		AST	% -200	
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			1	SURFACE ELEVATION: 557					10	←	30	40 5	0 60	) -	-≻ 70 8	0			╛
			Τ	FAT CLAY (CH), hard, redo	dish-brown to			-											
-	<b>///</b>	181	1	gray-brown with gray n moist (continued)	nottling, slightly			F		×-	-	+ 😠					22	87	
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	1 DRILL			160.0 ft	DEPTH TO WATE		8.10					PKC	J. No.:		AS	r13-1	40-00		
DATE	DRILLE	ט:		4/6/2011	DATE MEASURED	J:	4/6/2	OII											⅃

Pescadito Environmental Resource Center - Type I MSW
Management Facility - Rancho Viejo Waste Management, LLC
Webb County, Texas - MSW Permit No. 2374

& GPI Modified Pitcher Barrel



METHOD: Wet	Rotary, Core & GPI Modified	d Pitcher Barrel		1	L	OCA.	TION:					588373	.08			┨
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SYMBOL SAMPLES SVATION,	DESCRIPTION O	F MATERIAI	S PER	T E		0.5	1.0	1,5		2.5	3.0		4.0		-200	
SYN SAN LEVA:	32331 11311 G		LOW	WEIG			LIMIT		CON	TER TENT		LIMIT		PLAS	%	l
	SURFACE ELEVATION: 548	3.99 ft	8			10	<u>20</u>	30	40	50	60	70 70	80			1
La Haraga   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Name   Na	SURFACE ELEVATION: 548.  STRATUM II (548.99 ft): FAT CLAY (CH), firm, brown with organic matter an pockets  STRATUM III (545.99 ft): FAT CLAY (CH), stiff to have brown to reddish-brown with ferrous staining all and caliche pockets  STRATUM IV (524.99): FAT CLAY (CH), hard, dark slightly moist, with verinterbedded greenish-gand sandstone  SANDSTONE, very thinly fine-grained, gray  - some clay from 33' to 3  - interbedded brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'  FAT CLAY (CH), hard, brown clay to 40'	gray sandstone 21'  k greenish-gray, y thinly gray siltstone interbedded,  5'  ystone from 38'  wn to moist, with very widely scattered disiltstone and	BLOWS PER FT	UNIT DRY WEIGHT, pd			LASTIC LIMIT ———————————————————————————————————	30	CON 40 40 40 40 40 40 40 40 40 40 40 40 40	<b>)</b> — — -	60	LIQUID LIMIT - X- 70		PLASTICITY INDEX	7-%	
-50 -	- greenish-gray to brown interbedded siltstone f	rom 46' to 70'			- - - - - - - - -								-	- - - - - - - - - - - - - - - - - - -		
DEPTH DRILLED: DATE DRILLED:	120.0 ft 7/10/2011	DEPTH TO WATER		7.50 1/10/		2			- 1	PROJ. I	No.:		\SF13-:	140-00		

Pescadito Environmental Resource Center - Type I MSW
Management Facility - Rancho Viejo Waste Management, LLC
Webb County, Texas - MSW Permit No. 2374

& GPI Modified Pitcher Barrel



	Т	otary, Core & GPI Modified	Pitcher Barrel				LOCA	TION:	EAR						8373. <b>T</b> ²	.08				
도	ž.			ER FI	, pcf		0.5	-0-		<del>&gt;</del>	— —					4.0		Σ×	0	
SYMBOL SAMPLES	§	DESCRIPTION OF	MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf			PLASTIC			WA	TER	J.,		LIQUID	7.0		PLASTICITY INDEX	% -200	ĺ
		SURFACE ELEVATION: 548	00 ft	BLO	⊃≋		10	LIMIT ———————————————————————————————————	30			TENT 	 60		LIMIT -X- 70	80		4		l
-70 - P		FAT CLAY (CH), hard, brown reddish-brown, slightly fine-grained sand and wery thinly interbedded claystone (continued)  - brown with some green interbedded claystone sandy from 71.8' to 72'  SANDSTONE, very fine-green	wn to moist, with very videly scattered siltstone and , with from 70' to 71.8'			- - - - - - - - -							=				-			
80 -		FAT CLAY (CH), hard, gray with greenish-gray mot moist	rand brown tling, slightly			- - - - - - -														ESE I OGS SHOLLI D NOT BE LISED SEBABATELY EDOM THE BBOLECT BEBOBT
90		- brown, with caliche poc 90'	kets from 88' to			- - - - -						•								I ICEN CEDADATEI V
		<ul> <li>blocky, reddish-brown w mottling at 96'</li> <li>grayish-brown to brown thinly interbedded clay to 105'</li> </ul>	, with very			- - - - - -						•								H ()
105		- greenish-gray to grayish interbedded claystone/ 113' to 114'	-green, with siltstone from			- - - - -														- 1011 H
-115-P		NO RECOVERY  FAT CLAY (CH), hard, gray slightly moist				 			_ + .			•					 - - -			
-120 -120 125 		- interbedded fine-graine sandstone from 117.5' † 1 - interbedded siltstone fr Boring Terminated	to 118'			- - - - - - - -											-			
DEPTH DRILLED: DATE DRILLED:		120.0 ft 7/10/2011	DEPTH TO WATE DATE MEASURED		7.50 1/10/		2		'		F	ROJ	No.:	:	Δ	SF13	3-14	0-00		

# **LOG OF BORING NO. B-107**

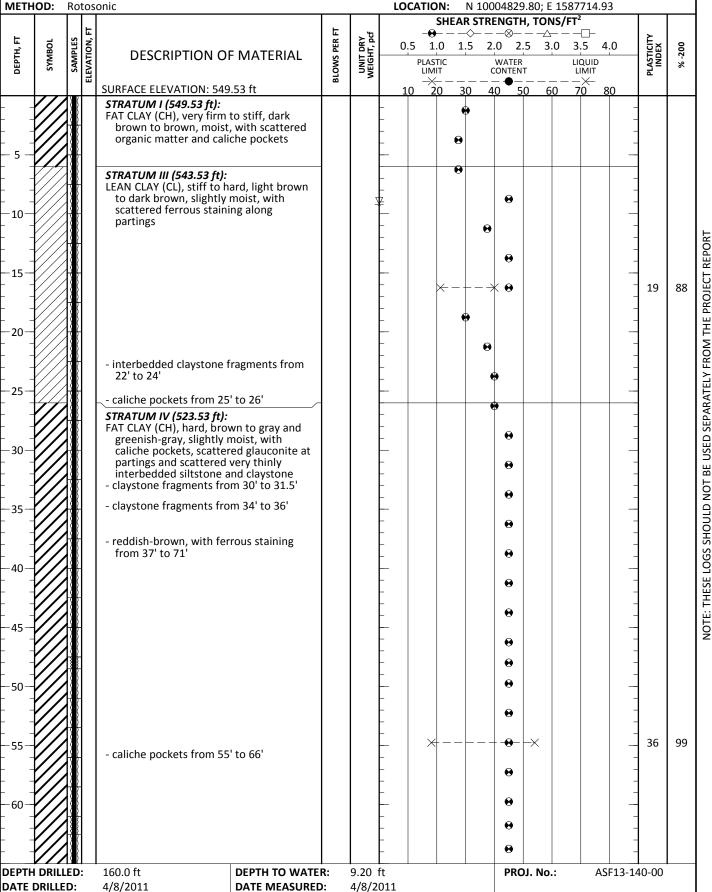
Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC TBPE Firm Registration No. F-3257 Webb County, Texas - MSW Permit No. 2374



**DRILLING** 

Rotosonic

LOCATION: N 10004829.80; E 1587714.93





METH	OD:	Rotos	onic				LC	CATI						7714.9	3		
		=			ᇤ	. 45		-6				TH, TO				_	
ОЕРТН, FT	SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION O	E MATERIAI	BLOWS PER FT	UNIT DRY WEIGHT, pcf	(	),5 1	1.0 1			2,5			.0	PLASTICITY INDEX	% -200
DEP	SYIV	SAIN	DESCRIPTION O	INATEMAL	SW0	VEIG		PLA: LIN	STIC ⁄IIT		WAT CONT	ER ENT	1	LIQUID LIMIT		PLAS:	%
		=	SURFACE ELEVATION: 549	0.53 ft	18	^		10 →	←	 30	- - <del>-</del> •	 50	 60	−× 70 8	80		
-							-								-		
<u> </u>			- thinly interbedded brow from 66' to 71'	vn claystone			_								-		
<u> </u>							-								-		
<del>- 70 -</del>		1881						<u> </u>	<u> </u>	<del> </del>		4		4	L		
-	111111		SILTSTONE, dark greenish greenish-gray	n-gray to light			F								-		
F -			8. cos 8. a,				F								_		
<del>-</del> 75−															_		
-	{  '  '						-								-		
F -								<b>↓</b>		<u> </u>	_ _0	+		+	L	1	
<del>-80-</del>		<b>18</b> 81	FAT CLAY (CH), hard, bro reddish-brown, slightly	moist			_								-		
-			- very thinly interbedde siltstone from 79' to 96	ed greenish-gray			-				•				-		
F =		<b>1</b> 81	3.1.5.6.1.6.11.7.7.10.90	•			F				•				-	1	
<del></del> 85															-		
-							-				•				-		
-							-				•				_		
<del>-</del> 90-							-								-		
							F		×			-×			-	25	98
<u> </u>							_								_		
<b>-95</b> -							L								-		
-		1881	- caliche pockets and glau to 100'	uconite from 96'			-				•				-		
			to 100'												-		
-100-							_								-		
-							-				0				_	1	
<u> </u>											•				_		
105-				:			L				•				-		
-			- caliche pockets and glau 105' to 106'	aconite from			_				•				-		
-		1881	- caliche nockets and gla	iconite from			-				•				-		
110-			- caliche pockets and glad 108' to 116'	acomic ironi			_								-		
							-								-		
-		1881					_				•				-	=	
115							Ē.								_	1	
-		<del>                                      </del>	- siltstone fragments fror	n 116' to 117'			_								-		
-		<b> </b>					ŀ				•				-		
120-			- very thinly interbedded	light			L								_	1	
_			greenish-gray siltstone 122'	rrom 119' to			<u> </u>	<u> </u>	L	1		1		1	L		
		<b>18</b>	FAT CLAY (CH), hard, darl	k green to			ŀ				•				-	-	
125			yellowish-green, slightl	y moist			Ė.								-	1	
							L								-	1	_
-							ŀ			×			$ -\rangle$	`	-	34	95
				I			L_				0				_		
DEPTH			160.0 ft	DEPTH TO WATE		9.20					PI	ROJ. N	o.:	AS	F13-14	40-00	
DATE	UKILLE	υ.	4/8/2011	DATE MEASURED	<i>)</i> :	4/8/2	OTT										



DRILLING METHOD:

Rotosonic

LOCATION: N 10004829.80: F 1587714.93

METH	IOD:	Rotos	onic				L	OCATI		N 1	1000482	9.80; E	158	37714.9	3			1
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Ε	6	ES N.			ĒRF	, pd.			9	 1.5	⊗_ 2.0 2	.5 3	.0	3.5 4	1.0	Ĕ×	0	
ОЕРТН, FT	SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf			STIC		WATER			LIQUID	-	PLASTICITY INDEX	% -200	
=	ν .	EE.S			BLO	5₹		LII	MIT ×— —		CONTEN	IT - — — -		LIMIT		5_	•	
		388	SURFACE ELEVATION: 549					10 ^	— − 20	30	40 5	0 6	0	−× 70 8	30			1
			FAT CLAY (CH), hard, dar	k green to			-				•				-			
			yellowish-green, slight (continued)	ly Illoist														
-	<i>\//</i>	1881	,				-				•				-			
-135-		<b> }</b>					-				•							
		13(1																
		<b> 8</b>	aroonish arov mottling	from 120! to			-				•				-			
- 140-		181	- greenish-gray mottling 144'	110111 138 10														
140 		1881					_				•				_			١.
-		131					-								-			1 \
_											•							EPC
145-	<b>///</b>	181	large callaba	om 1451+- 4461			$\vdash$								-			H
t :		1831	- large caliche pockets fr	om 145' to 146'							•							18
-		<b> }</b>  }	- very thinly interbedded siltstone from 147' to 1	light gray			Ē								]			HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
- ا			siltstone from 147' to 1	148'			F								-			1 -
150- _											•							=
		$\mathbb{R}$	- very thinly interbedded claystone from 151' to	grayish-brown			-								-			5
-			claystone from 151 to	160			_				•							
155		<del>                                      </del>																目
							-				•				-			₩
											•							A
			- light brown from 158' t	o 160'			F				•				-			] ::
_160_	ľ	<u> </u>	Boring Terminated		<del> </del>	<del> </del>	Ė-	+	-	-+-			<u> </u>	+	$\vdash \exists$			SI
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	DRILL		160.0 ft	DEPTH TO WATE		9.20					PRO	DJ. No.	.: _	AS	F13-14	0-00		
DATE	DRILLE	D:	4/8/2011	DATE MEASURED	): 	4/8/2	011											1



DRILLII METH(		Rot	tos	onic	-,,				OCAT		: N						1.32			
			ᇤ			ᇤ	. 45		-		IEAR S								_	
ОЕРТН, FT	SYMBOL	SAMPLES	ELEVATION, FT	DESCRIPTION O	ENANTEDIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5	1.0	1,5			5 3.		3.5	4.0		PLASTICITY INDEX	% -200
DEPT	SYM	SAM	EVAT	DESCRIPTION OF	F IVIA I ENIAL	ows	L L		PL	ASTIC		CC	VATER ONTENT			LIQUIC	)		LASI	%
_				SURFACE ELEVATION: 546	05 ft	B.	- >			× 20	 30		•— ) 5(			-×- 70			•	
	///	18	H	STRATUM I (546.95 ft):	1.93 10				10	20	30	40	) 50	J 6	<u> </u>	70	-80	$\exists$		
7	///	18)	Ш	FAT CLAY (CH), firm, brow	vn to			F			•							4		
ť		$\{ X \}$	Ш	grayish-tan, moist, with ferrous staining and cal	organic matter, liche pockets			-										-		
5 🚽	///	134	Ш	remous stamming and our	none promets													4		
` -{		1881	Ш				7	7			•							-		
1	///	1994	Ш	- scattered large gravel fr	om 6.5' to 7'			_										1		
Ł		<b> </b>	Ш					-					0					-		
10	///	187																		
ł				STRATUM III (535.95 ft):	* h * -			F				•						-		
Ţ		1881		FAT CLAY (CH), hard, light reddish-brown with gre	t brown to eenish-gray			Ŀ					•					_		
15-	///	184	Ш	mottling, slightly moist	, with ferrous			L										4		
- 1		1881		staining along partings				-					•					-		
}	///	13#	Ш	- caliche pockets at 17'				F										7		
+		1881	Ш					F		*		-+	$-\times$					-	30	100
20-																		7		
-		134	Ш					-										-		
1	///	1881	Ш															1		
25—		$\mathbb{H}$						-										$\dashv$		
1	11)	181		STRATUM IV (520.95 ft):		1						Ť	Ω.							
ł				FAT CLAY (CH), hard, gree brown with greenish-gr	enish-gray and			F					•							
30-	///	1881		slightly moist, with ver-	y thinly								•					₫		
" <u>∤</u>		144		interbedded siltstone a	ind claystone			L										-		
<b>J</b>	///	1831						Ė					•							
ł		100	Ш					F										4		
35	///	13(1						L										$\exists$		
}		138	Ш															4		
-	///	134						-										-		
40-		<b>18</b> 81						Ē.					•					4		
-	///	134	Ш					-										- 1		
1		1881						Ē					0					4		
	///	1881	Ш					F										-		
45		134											•					コ		
- T	///	181						ŀ					•					$\dashv$		
1		$\mathcal{H}$	Ш															1		
50-	///	181						l-					•					$\dashv$		
1		$\mathbb{R}^{\mathbb{N}}$	Ш																	
-		18		- caliche pockets with gla	uconite at			F					•					-		
55—		1881		partings from 52' to 62 - dark brown to light br	own with								•							
) 		181		greenish-gray mottling	from 52' to 65'			l-										-	2.4	400
1								Ė		*	-	-+		$\times$				-	34	100
7		<b>/</b>						Ē					0					7		
60								$\vdash$					9					$\dashv$		
7	///	18						<u> </u>					•					1		
1		$\mathcal{H}$						ŀ										+		
	///	18	Ш		I								•							
	DRILL		:	120.0 ft	DEPTH TO WATE		6.00						PRO	J. No.	:		ASF1	3-14	0-00	
ATE D	RILLE	D:		4/9/2011	DATE MEASURE	<b>)</b> :	4/9/2	011												



METH	OD:	Rote	oso	onic				L	OCA <sup>®</sup>								794.3	2				
						l ⊨	ļ "							GTH, ⊗— –					Ι.			
ОЕРТН, FT	SYMBOL	SAMPLES	ELEVATION, FT	DESCRIPTION O	E NAATEDIAI	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5	1.0	0 1			2,5				1.0		PLASTICITY	% -200	
DEPT	SYIM	SAM	EVAL	DESCRIPTION OF	IVIATENIAL	OWS	L NIT		Р	LAST LIMI	TC T		WA CON	ATER ITENT		LIC L	QUID IMIT		1 5	₹ 🛮	%	
				SURFACE ELEVATION: 546	.95 ft	H	>			-× 20		30	1	●— 50	60		$\times$	30		_		
  70 -				STRATUM IV (520.95 ft): FAT CLAY (CH), hard, gree brown with greenish-gr slightly moist, with very interbedded siltstone a (continued)	ay mottling, thinly			-  -  -  -  -					•	9					- - - - -			
  - 75 - 								- - - - -					•	9 9 9					- - - - -			ORT
80 80				- light greenish-gray, wit interbedded very fine-g sandstone from 79' to 8	grained 32'			- - - -						9					- - - - - -			PROJECT REPO
 85  				- light greenish-gray, wit interbedded very fine-g sandstone from 83' to 8	34'			-  -  -  -						9								FROM THE F
- 90			1	- caliche pockets from 88	' to 90'			-						9					+			<u>}</u>
   - 95 -				FAT CLAY (CH), hard, brov greenish-gray mottling,	wn, with light slightly moist			- - - -			×-		•	9 9 9						35	100	ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
- - - -100- - -				- green mottling from 98'	to 99'			- - - - -					•	9					- - - - - -			HOLLI D NOT BE
 - 105 -  								- - - - -					,	9 9 9					- - - - -			
- 110   				- very thinly interbedded 109' to 120'	siltstone from			- - - -						9					- - - - -			NOTE
115    120								- - - - -						9 9 9								
   - 125 -				Boring Terminated				- - - -														
DEPTH	ייים			120.0 ft	DEPTH TO WATE	D.	6.00	-  -  -						PROJ.	No		4.6	SF13-	140	00		
DATE [				4/9/2011	DATE MEASURE		4/9/2							NOJ.	140.:		AS	" TO-	T40.	00		

# **LOG OF BORING NO. B-109**

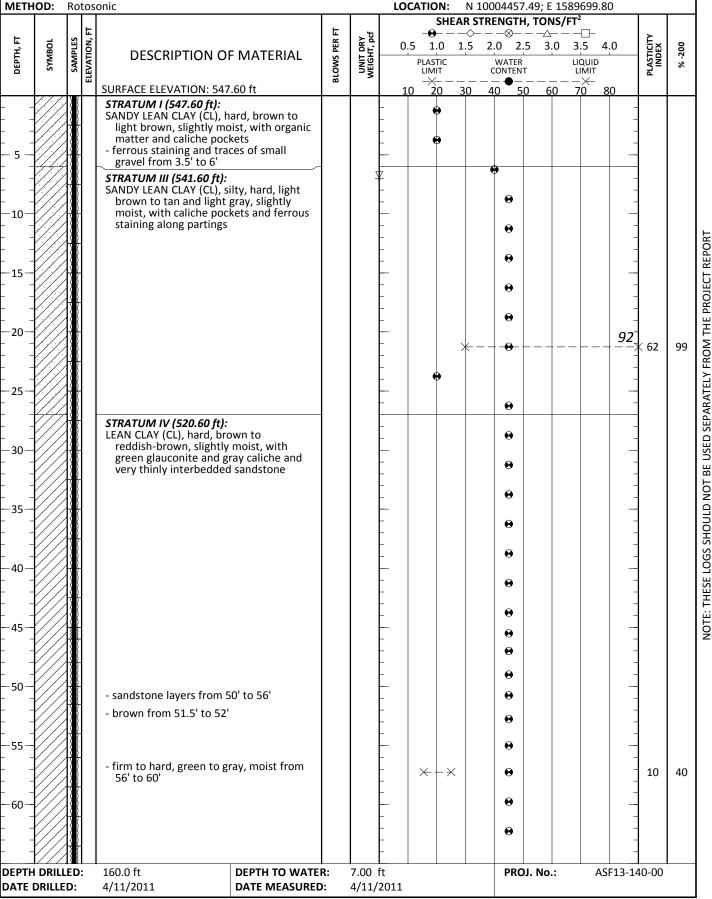
Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC TBPE Firm Registration No. F-3257 Webb County, Texas - MSW Permit No. 2374



**DRILLING** 

Rotosonic

**LOCATION:** N 10004457.49; E 1589699.80





DRILLING METHOD:

Rotosonic

LOCATION: N 10004457.49: F 1589699.80

METHOD:	Rotos	sonic				_	LOC	ATIC			10004					0			╛
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DEPTH, FT SYMBOL	SAMPLES ELEVATION, FT	DECORIE	E	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.				2.0				.5 4	.0	PLASTICITY INDEX	8	
SYMBOL	AMP	DESCRIPTION O	F MATERIAL	l SW	FE		_	PLAS	TIC		WA	TER		LIC	QUID	-	AST	% -200	
<u> </u>	S			BIG	] > \$			$\overset{LIM}{\to} 2$	  -  -			TENT D— —			іміт — 0 8				
	J X K	SURFACE ELEVATION: 547				$\vdash$	10	) 2	0	30	40	50	60	7	0 8	0			4
		STRATUM IV (520.60 ft): LEAN CLAY (CL), hard, bro	own to			L										_			
- 4///	1881	LEAN CLAY (CL), hard, bro reddish-brown, slightly	moist, with			-						•				-			
\///	181	green glauconite and g very thinly interbedded	ray calicne and I sandstone			-					'	•				-	1		
_70 <u>-</u> ///	1881	(continued)										•				_			
{///		- brown to light brown fr - brown to red at 70'	om 67' to 70'			F					'	•				-			
_ <b></b> ///	1881	- blowil to led at 70				L						•				_			
-75 <b>-</b>		- brown from 74' to 77'				_										_			
- {///	1881					-						•				-			۱,
_ 1///	1 <del>8</del> 84	green to brown from 77	7' to 88'			Ė										_			6
{///	1381					-					(	•				-			[
-80-																_			Įţ
1///	1881					-					'	•				_			
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						L_	_			_	L.	_				L			Tacana ton can be twoany lets as and an incha 200 in 1911
1///		LEAN CLAY (CL), hard, red	ddish-brown to			-					•	•				_			}
-90 <b>-</b> [///	1381	brown, slightly moist, v light green glauconite	vith green to													_	1		Į
_ 1///	1881	g.re g. co g.uucoec				F					•	•				_			1 5
- \///						H						•				-			[
- -95-											`					_			1 5
- " - 1///						-						•				-			1
	181					L										_			E
1///	1 <b>8</b> 1					F		>	<b>←</b> –		-+•	•-	- +>	×		_	44	100	
-100-						H										_	1		=
- 1///	<b> 8</b>	- gray to light brown, wit	h very thinly			F					•	•				_			<u> </u>
- {///		interbedded sandstone 116'	from 101' to			-						•				_	-		[
- -105	134	110				L					'					_			{
	1881					-						•				_	-		[
	<del>                                      </del>					L										_			
- \///	181					F					(	•				_			H
-110-	1 <del>38</del> 1					$\vdash$										_	1		E .
- V///	1881					F					_   •	•				_			
1///	<b>138</b> 1	- brown from 112' to 113				F						•				_			
- 115-						L					`					_			
- 113 4/4/	<b>1881</b>			1			- +			-		• -	- –  -						
{///		LEAN CLAY (CL), hard, blo reddish-brown, slightly	moist, with			L					(	•				_			
1///	1 <b>%</b> (	green glauconite and fe	errous staining			F						•				_			
-120-																	1		
1///						F						•				[ -	]		
- {///	<del>                                      </del>					-										-	1		
- -125	1881					L					•	•				_	1		
	<b>18</b> 1					F										-	1		
						L					•	•				_			
- \\//						F					(	•				_			
/ <i>///</i> DEPTH DRILL	19⊒≀I .ED:	160.0 ft	DEPTH TO WATE	R:	7.00	ft.			1			ROJ.	No.		Δς	 F13-14	! 40-በበ	l	1
DATE DRILLE		4/11/2011	DATE MEASURE		4/11/		.1				'				, .5		.00		
		• •	1		, ,														



DRILLING METHOD: Rotosonic

**LOCATION:** N 10004457.49; E 1589699.80

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ᇤ	_ ا	S F	,		RFI	bd,		-€		- <del></del>	>					<u> </u>	
ОЕРТН, FT	SYMBOL	SAMPLES FI EVATION: FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf			1		2.0 2.5 WATER	3.0	1 3.5			PLASTICITY INDEX	% -200
DE	<u>ه</u> ا	S S			BLOV	ME'S		PLAS LIM			WATER CONTENT		LIN	ΛIT		P.	%
	1777	388	SURFACE ELEVATION: 54		<u> </u>			10 2	0 3	30 4	40 50	60	> >	80	_		
			LEAN CLAY (CL), hard, bl reddish-brown, slightly	ocky, brown to v moist, with			-								-		
		1381	green glauconite and f	errous staining			F								7		
 135		1881	(continued)				L				•						
			brown to groon from 1	26' +0 142'			-								4	27	00
			- brown to green from 1	36 10 143			Ė		×-		<b>→</b> ×				_	27	98
-     -	<b>V</b> ///						F				•				-		
140 -		1981													_		
							H				•				-		
			SANDY LEAN CLAY (CL), s gray to green and redo	silty, hard, light			_			<b> </b>	•						
<del></del> 145			gray to green and redo	dish-brown with ghtly moist, with			$\vdash$								$\dashv$		
		1881	dark gray mottling, slig very thinly interbedde	d siltstone			F				€				4		
 L -		1881					L								_		
<b>-150</b> -							-				•				$\dashv$		
		1881					Ė				•				_		
			- glauconite from 152' to	160'			F								-		
 155							L				•						
			- gray with brown mottli 160'	ng from 155' to			F								-		
			100				F								1		
- 160	N.		L		<u>L</u>	1	L_			1	₩	L		L	_		
			Boring Terminated				-								-		
							-								4		
-165 -																	
							-								4		
							-								7		
<del>-</del> 170-															-		
-							F								-		
175							$\vdash$								$\dashv$		
							L										
							F								-		
- -180							L								4		
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- -185 -							Ł								Ⅎ		
100	-						F								-		
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190 -	1						F								ᆿ		
	-						F								+		
	]						F								4		
DEPTH	I I DRILL	LLL .ED:	160.0 ft	DEPTH TO WATE	⊥ :R:	7.00	L ft				PROJ.	No.:		ASF1	I .3-14	0-00	
	DRILLE		4/11/2011	DATE MEASURE		4/11/		1							'	•	
				1													



METH	OD:	Roto	osc	onic					.OCA								9695	.17				1
		H	-			<sub>E</sub>	_ ا							NGTH -⊗-								
<b>DEPTH, FT</b>	301	SAMPLES	ELEVATION, FI	DECODIDEION		BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5		0 :	1.5	2.0	ິ 2	5 3	.0	3.5	4.0		PLASTICITY INDEX	8	
EPTI	SYMBOL	AME	₹	DESCRIPTION OF	- MATERIAL	SWC				PLAST LIMI	ΓIC		V	VATER ONTENT			LIQUID	)		IND	% -200	
٥		"		CUREAGE ELEVATION FAC	F2 ()	BIC	≥د ا				_ _ 0			•			-X- 70			-		
	777	1(1)	+	SURFACE ELEVATION: 546	.53 ft	$\vdash$	1	┢	10	20	0	<u>30</u>	40	5(	) 6	0	70	80	$\dashv$	-		┨
			-	SANDY LEAN CLAY (CL), fi	rm, brown to			L											1			ı
		1)((	-	light brown, moist, with	n caliche pockets			-	•										-			
		1)((	-	and organic matter				F											-			ı
5 	1///		ŀ				'	₹														ı
		11/1	-	STRATUM III (540.53 ft): LEAN CLAY (CL), sandy, st	iff light brown			¥											-			ı
			-	with some green mottli	ing, slightly			Ė											1			
-10-		1	-	moist, with ferrous stai	ning along			_											4			ı
		141	-	partings - green with scattered r	ed sandv			r						•					-			ŀ
			-	green with scattered r pockets from 6' to 10'	,			F											4			2
			-					-											-			ESE I OGS SHOLLING NOT BE LISED SEBABATELY EROM THE DROLECT BERORT
—15 <i>—</i>			-																٦			[
		11/1	-					-											4			5
	///							L														2
-20-			-					_						•					4			=
			-	- green at 20'				-											-			2
		101	-					F											]			1 2
			-					-											-			2
25 -		╢	-					F											Ⅎ			Į
	44		ŀ			-																
		1111	-	STRATUM IV (519.53 ft): LEAN CLAY (CL), hard, red	ldish-brown			-											-			
30 <i></i>		111	-	with green glauconite,	caliche pockets														4			1
			-					H											4			= 
			-					Ė											1			
			-	- very thinly interbedded	siltstana fram			F											-			
35 -			-	34' to 40'	sitistorie from																	
			-					F											-			]
			-					L														١
<b>-40</b> -			-					F											4			2
			-	<ul> <li>very thinly interbedded 40' to 56'</li> </ul>	sandstone from			F											-			U
			-	40 10 30				F											1			
		l VI	-					-											-			I - I - I
45 -			-											•								2
			-					-											4			
		1111	-					L														
-50-			-					-											$\dashv$			
			-	- sandy from 50' to 66'				F											-			
			-					F											]			
		111	-					F											-			ı
55 	///					1													コ			
						1		-											4			
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60-		1)([				1		$\vdash$											$\dashv$			
_								L											-			
						1		F											1			
-		11						F											$\dashv$			
DEPTH	DRILL	ED:		85.0 ft	DEPTH TO WATE	R:	6.01	ft					$\top$	PRO	J. No	.:		ASF1	3-14	0-00		1
DATE I	DRILLE	D:		6/25/2011	DATE MEASUREI	D:	1/10/	201	2													
													_									_



DRILLING METHOD:

Rotosonic

LOCATION: N 10004471.97: F 1589695.17

METH	OD:	Roto	sonic					OCA	OIT			00447				.17			
		l I⊢							S	HEAF	RSTR	RENGT	H, TO	NS/I	FT²				
ᇤ	٦ ا	SAMPLES ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5		1	<> 5 1	⊗- 2.0 2	/	3 U ∑— —	2.5	4.0		PLASTICITY INDEX	0
БЕРТН, FT	SYMBOL	MPL STIO	DESCRIPTION O	F MATERIAL	l S	탈									LIQUID			STIC VDE)	% -200
DE	&	S   S			٥	59			PLASTI	-		WATER	ÌΤ		LIMIT			돌=	%
		"	SURFACE ELEVATION: 546	6.53 ft	"			10	→ 20	3	0 -	_ ◆_ 40 5	50	 60	-×- 70	80			
	////		STRATIIM IV (519 53 ft)	•								•			70				
┞ -			LEAN CLAY (CL), hard, rewith green glauconite, (continued) - brown from 66' to 76'	ddish-brown,			F										4		
-		1411	with green glauconite,	caliche pockets			F										-		
- 70		111	- brown from 66' to 76'																
- 70 -			- reddish-brown claystor	ne from 68' to 70'															
-		W					F										-		
		1/1					-										1		
	V///	₩					L										1		
		144	11:1.	761 . 001			F										-		
-		1WI	- green and light gray fro	om 76° to 80°			F										-		
		1401															1		
80							L										-		
-			- ferrous staining and veinterbedded brown clato 85'	ry thinly systems from 80'			F					_					-		
			to 85'	lystolle from 80													1		
┞ -		1111					F										4		
—85 —			Boring Terminated		<del> </del>	<del> </del>		- + -		+			+	-	- +			+	
			Borning reminiated														1		
							F										4		
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90																	1		
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- 95-							L										J		
L 33 -							L										4		
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-110-							$\vdash$												
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DEPTH	ייים		85.0 ft	DEPTH TO WATE	D.	6.01	L f+					DD/	 		<u> </u>	\CE11	<u> </u> 3-140	1 00	
DATE			85.0 π 6/25/2011	DATE MEASURED		1/10/		2				PK	OJ. No	J.:	1	13LT	o-14(	J-UU	
PAIL	UNILLE	<i>ن</i> .	0/23/2011	DATE WEASUREL	<i>.</i>	1/10/	<b>ZU1</b>	۷_											



DRILLING METHOD:

LOCATION: N 10005234.85: F 1591110.00 Rotosonic

METH	OD:	Ro	tos	onic				LC	CATI						591110	.00			_
			ا برا			  -			4			TRENG 							
F, H	301	LES	ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf					- – –⊗ 2.0				4.0	PLASTICITY	<u>.</u>   2	,
БЕРТН, FT	SYMBOL	SAMPLES	VATIC	DESCRIPTION OF N	VIATERIAL	MS I	INI EIGH		PLA	STIC		WAT	ER ER		LIQUIE	, '	ASTI	INDEX	; 
	0,	S	ELE	0.15-1-05-51-51-1-0-1-1-0-1-1-0-1-1-0-1-1-0-1-1-0-1-1-0-1-1-0-1-1-0-1-1-0-1-1-0-1-1-0-1-1-0-1-1-0-1-1-0-1-1-0-1	- 6	BLO	⊃ <u>≅</u>			ΛΙΤ ← —	30	CONT			LIMIT × 70		=		
	///	<b>.</b>	Н	SURFACE ELEVATION: 553.75 STRATUM II (553.75 ft):	5 ft			-		20	30	40	50	60	70	80	-	-	$\dashv$
				LEAN CLAY (CL), firm, brown brown, moist, with ferrou	n to light			-	•								1		
-				brown, moist, with ferrou caliche pockets and floccu	s staining,			F									-		
- - 5 -				STRATUM III (549.75 ft):															
				SANDY LEAN CLAY (CL), stiff gray to light brown with o	to hard, light		<u> </u>	Z		•							-		
[ ]		<del>                                      </del>		yellow mottling, moist to	slightly moist,			F									1		
10				with ferrous staining alon	g partings			-				8					-		
<del>-</del> 10−		138						F				8					7		١.
								L									1		5
[ ]								F				8					7		ا مُ
-15-																	_		[
-								F				8					4		جِ ا
				- light brown to reddish-bro	wn with			-				8					1		2
-20-		1		greenish-gray mottling, w pockets, and a trace of sa	ith caliche			F									$\dashv$		=
<u> </u>		18		pockets, and a trace of sai	iiu ii0iii 18. (0							8					1		2
-				CTDATIINA IV/C20 7F &1.		-						8		×	,			2 5	д
 25				STRATUM IV (530.75 ft): SANDY LEAN CLAY (CL), hard	d, light			L	•	· _	_ † -	-	T -	->	`		_ 44	2   5	9   [
				grayish-brown and reddisl slightly moist, with ferrou	h-brown,			F				8					-		
		<b>1</b>		very thinly interbedded sa	andstone and			_									1		از ا
-				siltstone				F				8					-		٦
-30-		<b>***</b>						_									_		=
-								-				8					-		
								_				8					1		5
-35-		<del>                                      </del>						<u> </u>									_		2
								_				8					1		<u> </u>
-								F									-		2
- -40-								_				8							5
- " -				- claystone fragments from	40' to 47.5'			-				. 8					-		ļ.
		<del>                                      </del>						_									1		
								-				8					-		T OT C
45 <i>-</i> -								_				8							ءِ ا
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		18		- sandy clay from 47.5' to 67	7'			_				8					1		
-50-		<del>}}</del>						⊢									-		
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-								-				A					+		
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- 60								E				8					$\exists$		
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DEPTH	DRILI	ED:	Ш :	120.0 ft <b>D</b>	EPTH TO WATE	R:	6.80	L ft				PI	ROJ.	No.:		ASF13	 -140-0	 0	$\dashv$
DATE			-		ATE MEASURED		5/11/					'			•		2.00	-	



DRILLING METHOD: Rotosonic

METH	OD:	Rotos	onic			L	OCAT			10005				0.00				1
		-		-				SI	HEAR	STREN	GTH, ` ∾₋	TONS,	/FT²	_				1
Ę	۵ ا	SAMPLES ELEVATION, FT		BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0	— —⇔ 1.5	2.0	⊗— — 2.5	3.0	 3.5			PLASTICITY INDEX	0	l
ОЕРТН, FT	SYMBOL	ATIC	DESCRIPTION OF MATERIAL	NS P	1 5 5			ASTIC IMIT			TER	3.0	LIQUI	ID		ASTIC	% -200	l
8	Ś	S   B		BLO	7 2 8		L	IMIT		CON	TENT		LIMI	Т		7	•	l
			SURFACE ELEVATION: 553.75 ft				10	× 20	30	40	50	60	−× 70	80	_			1
-			STRATUM IV (530.75 ft): SANDY LEAN CLAY (CL), hard, light			-					9				-			
		$\mathbb{R}$	grayish-brown and reddish-brown,			L												
		<b> 88 </b>	slightly moist with ferrous staining and	t		-				(	9				-			
-70-		$\mathbb{H}$	very thinly interbedded sandstone and siltstone (continued)			H									$\dashv$			
			sitistorie (continueu)			Ė				•	9				1			
		1381				-									4			
├ <u></u> -		1881				-				'	9				-			
<del>-</del> 75−		1881																
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-						-									4			2
80-										'					4			2
- " -		{ <b>8</b> }				F					9				4			[일
			- siltstone fragments from 82' to 85'			L												8
		1881				F				(	9				7			HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
<del>-85-</del>		₩	FAT CLAY (CH), hard, reddish-brown with				+-		-	-	- + -		- + -					<u>F</u>
		1381	greenish-gray mottling, slightly moist.			L				(	₿				1			I≧
		HH	greenish-gray mottling, slightly moist, with caliche pockets, with scattered			-					_				4			l Æ
			very thinly interbedded siltstone			-				_   °	9				-			∴
90 															٦			₹
L -		1881				F				'	9				4			₽₩
-		<b>138</b> 7				-					<b>9</b>				+			SE
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		}				-					₽				-			Ĭ
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		<b>138</b> 1				F					8				4			18
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		1381				L		,	$\times$		<b>9</b>	-*				34	100	3
						_									_			E
		1881	- greenish-gray mottling from 103' to 106'			-				(	9				-			l SS
_105_		ĦĦ	100															1 🖫
		1881				-				'	9				4			ES.
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120-	ľ		Boring Terminated	+-	†	F-	+-	$ \mid$ $\mid$	+-		- † -		_ † -					1
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DEPTH	יייפט ו	ED:	120.0 ft DEPTH TO WA	 TED:	6.80	L f+				<del>-   .</del>	DPO!	No:		ASF13	2 1 1	0.00		1
DATE			5/11/2011 DATE MEASUR		5/11/		1			'	PROJ.	INO.:		A)LI:	o-14	0-00		1
ביני	EEE	<u> </u>	O, II, ZOII DAIL WLASOF		J/ 11/	201.	-											J



	П	onic				LC	CATIO					.33; E <b>, TON</b>		37951 <b>T</b> <sup>2</sup>	.25	$\overline{}$		
F   12   23	R,			R FI	RΥ pcf	_		<b>)</b> – –			-⊗				4.0		È	
SYMBOL SAMPLES	ELEVATION, FT	DESCRIPTION OF	FMATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		PLAS LIM	1	1.5	\ W	/ATER			LIQUID	)	$\dashv$	PLASTICITY INDEX	% -200
	ELE	SUDEACE ELEVATION: E44	06 ft	BLO	N N			<u>(</u>			NTENT			LIMIT -X- 70			۲	
	Н	SURFACE ELEVATION: 544  STRATUM I (544.06 ft)	.06 11	+			10 2	20	30	40	50	) 6		70	80	士	$\dashv$	
-///		SANDY LEAN CLAY (CL), fi moist, with caliche pocl	rm, light brown,			_ '	•									-		
		staining	kets and remous			-	•									1		
- 5 -	$\  \ $					_										-		
		STRATUM III (538.06 ft)		1	Z	7	•									7		
		FAT CLAY (CH), firm to ha to dark brown and redd	rd, light brown dish-brown with			_					•							
-10-	1	greenish-gray mottling, with caliche pockets, sc	slightly moist,			_										-		
		staining along partings,	and scattered			_				•						1		
		silt and fine-grained sar	nd			_										-		
-15-	<b>↓</b>					_										4		
						_					•					1		
	11					-										+		
-20-	$  \  $					_					•					4		
						_					•							
	1					_										-		
-25-											•					1		
	11					-					•					-		100
							•	×-	-	-+	$\bullet$					1	27	
-30						_					•							
30						_					•					-		
	$\  \cdot \ $					-										1		
-35						_					0					-		
" -///		STRATUM IV (509.06 ft) FAT CLAY (CH), hard, redo	dish brown with			-					•					-		
	$\left\{ \ \right\}$	greenish-gray mottling	to greenish-gray													1		
40		to red with gray mottlir moist, with very thinly i	ng, slightly interbedded			-					•					-		
-40		sandstone and siltstone caliche pockets	and scattered								•					7		
	$\  \ $	<ul> <li>widely scattered claysto</li> </ul>	ne interbeds			-												
///		from 35' to 52.5'				_					•					+		
-45-	11					_										7		
	$\mid \mid$															_		
		<ul> <li>ferrous staining and gyp from 48' to 52.5'</li> </ul>	sum crystals			_					•					-		
-50-	11	110111 46 10 32.3				_										7		
	<b>↓</b>					_					•					+		
						Ĺ					•					7		
-55-	1					_										_		
	↓	- ferrous staining from 57	7' to 64'			_					•					+		
		Terrous stailing Holli 57	10 04			_		×-	-	-+	•	$- \rightarrow$	<u> </u>				36	
-60-	1					_										$\exists$		
						L					•					-		
						-	•	×	_  -	-	<del>-0</del> -		×			=	36	99
	Ш	120 O ft				L				_				$\bot$		丄		
DEPTH DRILLED	):	120.0 ft	DEPTH TO WATE	R:	7.00	ft					PRO.	J. No.	.:	F	ASF13	3-140	)-00	



METHOD:	Roto	sonic				LC	CATIC						87951.2	25		
				  -	<sub>45</sub>					RENG 						
DEPTH, FT	SAMPLES ELEVATION, FT	DESCRIPTION OF		BLOWS PER FT	UNIT DRY WEIGHT, pcf	(		.0	1,Š	2.0	2.5	3.0	3.5	4.0	PLASTICITY INDEX	% -200
SYM	SAM	DESCRIPTION O	IVIATERIAL	ows			PLAS LIM	TIC		WATI	R		LIQUID LIMIT		LAST	%
		SLIREACE ELEVATION: 544	06 ft	B[	-			<u>(</u> – -	20	•			$-\times$	90	_	
-70 - -70 - -75 - -80 - -85 - -85 - -85 -		SURFACE ELEVATION: 544  STRATUM IV (509.06 ft)  FAT CLAY (CH), hard, rede greenish-gray mottling to red with gray mottlin moist, with very thinly sandstone and siltstone caliche pockets (continuation)	dish-brown with to greenish-gray ng, slightly interbedded e and scattered				10 2	20	30	40	50	60	<u>70`</u>	80             		
-90 -95 -100		FAT CLAY (CH), hard, redo green to greenish-gray, sand - very thinly interbedde claystone from 97' to 1				- - - - - - - - - -				* * * * * * * * * * * * * * * * * * *					23	84
-105 - - - -110		formula statistical controls	ad caliaba			- - - -				8				- - - -		
115		- ferrous staining, scatter pockets, and some silt 120'	eu Caliclie from 110' to			- - - - - - -				0 0 0				- - - - - -		
-120 - - - - - - - - - - - - - - - - - - -	<b>σ</b> }	Boring Terminated				· · · · · · · · · · · · · · · · · ·								- - - - - - -		
DEPTH DRIL DATE DRILLI		120.0 ft 5/10/2011	DEPTH TO WATE		7.00 5/10/		1	1		PF	OJ. No	o.:	A	SF13-1	40-00	<u> </u>



METH	IOD:	Roto	sonic				LO	CATIO						86988	.13				1
		⊩			  -				SHEA					ÍFT² □-					
F.	ğ	LES SN. F			ER F	J. pd	0								4.0		CITY	8	
ОЕРТН, FT	SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		PLAS	TIC	-	WA7	ER		LIQUID	, '		PLASTICITY INDEX	% -200	
□	°	ELE S			BLO	⊃≝		LIM —>			CONT	)— — -		LIMIT ×			Ы		l
			SURFACE ELEVATION: 543	3.09 ft			1	LO 2	←	30	40	50	60	<u>70`</u>	80	_			1
-			STRATUM I (543.09 ft): SANDY FAT CLAY (CH), st	iff, dark brown			-		•							-			
[ ]	T		to tan, with organic ma	atter			F	T		T -						_]			l
├ <sub>-</sub> -	1	$ \cdot $	NO RECOVERY				-									-			l
<u> </u>	1															٦			
-			- sand with scattered gra	vel from 6' to 7'		7	<u> </u>					,							
-		18	STRATUM III (536.09 ft):	A la manage and all all all a			-									-			
- - 10		181	FAT CLAY (CH), hard, ligh moist, with caliche poo	t brown, slightly kets							. 8	)				4			
-			- brown to reddish-brow	n with			-									-			.
			greenish-gray and orar mottling from 9' to 27'	ige-brown							•	•				1			6
		<b>78</b> 71	motting from 5 to 27				_									-			
-15-	///	181					_				•	<b>'</b>				$\exists$			Į
[												,				4			
	<b>///</b>		- gray mottling from 18'	to 26'			-				"					-			1
- 20-	///		- gray motting nom 18	10 20			L					,				ゴ			ESE I OGS SHOLLIN NOT BE LISEN SEBABATELY EROM THE BROLECT BERORT
<b>-</b>		<del>                                      </del>				1	F									4			[
-		181					-				. 8	•				-			6
		$\mathbb{H}$														4			2
-25-	<b>///</b>	1881	- ferrous staining along p to 26'	partings from 24'			-				9	)				$\dashv$			Į
<u> </u>			10 20									,							
-	<b>///</b>	1	- silty, light greenish-gray	y with light			-					,				-			1 5
- 30-	///		brown mottling from 2	7 to 31			-									-			
- 30 - 	1//										- 8								<u>=</u>
-			STRATUM IV (512.09 ft): FAT CLAY (CH), hard, red	dish-hrown to			-				8					-			
	///		brown with greenish-g	ray mottling,												1			
-35-	<i>\//</i>		slightly moist - caliche pockets and gla	ucanita from 22!			_				8					-			2
t :		<b>18</b> 1	to 34'				L												=
-	<i>\//</i>		- caliche pockets and sca	ttered ferrous			L				8					4			] -
- <sub>۱۸</sub>	<b>///</b>		staining from 35' to 40 - gray with greenish-gr	ray and brown			-				8					-			١٤
<del>-</del> 40−			mottling, with scattere	d fine-grained							8								]
			sand and very thinly in very fine-grained sands	terbedded gray stone to			-				-   €	<b>'</b>				-			
<u> </u>			siltstone from 35' to 50	)'							. 8	)							ŀ
45			- dark grayish-brown froi	m 41' to 43'			_									4			F. J.F.C.
-		181					-				•	<b>'</b>				-			2
												,				4			
l							-									-			ı
<del>-</del> 50−	1///		- silty, light greenish-gray	y from 50' to 52'		1	_				*					コ			
		<b> </b>					F					,				4			
<u> </u>	1//	<b>18</b> 1	- dark gray with grayish-g from 52' to 54'	green mottling		1	Ĺ									_			
55 <i>_</i> _	<b>\//</b>	<b> </b>	- caliche pockets and so	cattered		1	$\vdash$				. 8	•				$\exists$			
├ -	1//	<b>13</b> 41	weakly-indurated redd claystone from 52' to 6	isn-brown 61'												$\exists$			
[ ]		<b> </b>	- reddish-brown with gra	yish-green		1	Į.				. 8	•				1			
<u> </u>	1//	181	mottling from 54' to 61	ī.		1	F									4		100	
<del>-</del> 60-											•	'				$\exists$		100	
┞ -	1//		- silty, dark green to light	grayish-green,		1	F					,				7			
-	1//		with scattered fine-gra weakly-indurated siltst	ined sand and		1	ŀ				"					$\dashv$			
<u> </u>			from 61' to 66'								6								1
ı	1 DRILI		160.0 ft	DEPTH TO WATE		7.20					P	ROJ. N	No.:	,	ASF13	3-14	0-00		
DATE	DRILLE	D:	5/5/2011	DATE MEASURED	): 	5/5/2	U11												⅃



DRILLING METHOD:

Rotosonic

LOCATION: N 10002670.72: F 1586988.13

METHO	D:	Rotos	onic					.OC/	ATIO			000267				13			4
		-			l <sub>E</sub>	١						RENGT							
ОЕРТН, FT	SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5		.0 1		2.0 2	2,5 3 R			4.0	PLASTICITY	% -200	
				no ft	BEC	- 3		10								00			
		3 8		3.09 IT				10	2	0 :	30	40	50	<u>60</u>	/0	80	+	+	-
			SURFACE ELEVATION: 543  STRATUM IV (512.09 ft): FAT CLAY (CH), hard, red brown with greenish-g slightly moist (continue) - blocky, reddish-brown with greenish-gray mottling caliche pockets and verinterbedded gray-brown from 66' to 68' - reddish-brown from 68 - light greenish-gray, with fine-grained sand from caliche pockets and glat to 75' - thinly interbedded very sandstone or siltstone - orange-brown mottling, slightl - very thinly interbedded fine-grained sandstone from 83' to 85' - gray with greenish-gray mottling from 85' to 88 - scattered weakly-induinterbeds from 85' to 91 - dark brownish-gray from light greenish-gray mottling rom self to 91 - dark brownish-gray from 1 light greenish-gray mottling interbedded gray and claystone or siltstone form 101' to 103' - widely scattered fine-gray sandstone from 101' to 103'	dish-brown to ray mottling, ed) with with large ry thinly rn claystone  I to 73' n a trace of 73' to 74' uconite from 74' fine-grained from 79' to 83' from 81.5' to	18			10			30	40		60	$-\times$	80		99	HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
110			- interbedded weakly-ind gray-brown claystone f	lurated rom 108' to 122'			- - -					<b>9 9 9</b>							NOTE: TI
-115							-  -  -  -					8					- - - -		
-120-							  -  -  -  -  -  -					8 8 8					-		
DEPTH D	RILLI	D:	160.0 ft	DEPTH TO WATE	r:	7.20	ft				1	PR	OJ. No	).:	Α	SF13-	140-0	)	1
DATE DR			5/5/2011	DATE MEASURED		5/5/2													



DRILLING METHOD: **LOCATION:** N 10002670.72; E 1586988.13 Rotosonic

METH	//ETHOD: Roto			onic				<u>,                                    </u>	LOC	ATION				.72; E			L3			1
			ا با			l <del></del>	_ ا			S	HEAR ^	STRE	NGTH —≪—	I, TON — -△	S/FT	-z 				
F,	301	SAMPLES	ELEVATION, FT	DECODIDETE: 2 - 2 -	B 4 A T = 5 · · ·	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5					5 3.0			1.0	PLASTICITY INDEX	8	
ОЕРТН, FT	SYMBOL	AMP	VATI	DESCRIPTION OF	MATERIAL	SWS	불			PLASTI LIMIT	c '		WATER ONTEN	-	LI	IQUID IMIT		AST	% -200	
^	"	ľ	ELE	CUREAGE ELEVATION FAS	20.5	BIC	⊃≱			20						-X-		4		
	///	188	Н	SURFACE ELEVATION: 543.0 FAT CLAY (CH), hard, grayi:			1	╁	10	20	<u>30</u>	<u>40</u>	5	0 60 	) 7	70	80	33	92	┨
		<b>1</b>		brown mottling, slightly	moist			Ė												
-				(continued)				F					•					-		
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-								F					0					-		
<u> </u>		18						Ė					•							
		$\mathbb{R}$						F					-					-		
140		18						E					•				-			
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-		1						F					•					-		8
145								L					•				_	]		=
-		1						F					•					-		
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l				<ul> <li>weakly-indurated reddish claystone fragments, wid fine-grained sand with v interbedded sandstone</li> </ul>	n-brown			ŀ					•					-		里
150				fine-grained sand with v	ery thinly								•				_			
-		18		interbedded sandstone f 154'	rom 148' to			F					•					-		5
		₩	$\  \ $	134				Ė												
155-		18						$\vdash$					•				-	-		12
<u> </u>			1										•					1		A <sub>R</sub>
		18						F										-		is
- -160-		8				L	<b> </b>	<u> </u>	_				₩ _			<u> </u>		1	<b> </b>	SE [
-	-			Boring Terminated				F										-		HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
	1							Ė										1		18
	1							F										-		
165	1																-	1		13
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	1							Ė												35.5
_170-	1							$\vdash$									-	-		۱ĕ
<u> </u>	1							Ė												ISE
-	-							F										4		∓
- 175	_							L										_		NOTE: T
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-	-							F										-		
180-	1																-			
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185	-							$\vdash$									-	-		
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F -								F												
L <sub>100</sub>	1							L												
190- -								F									-	]		
-	1							F												
[ ]	1							F										1		
DEPTH	l I DRII I	ED.	ப :	160.0 ft	DEPTH TO WATE	R:	7.20	L ft					PR∩	J. No.:		Δ	 SF1 3-1	40-00	<u> </u>	1
DATE			•		DATE MEASUREI		5/5/2							J. 14U	•	Λ.	,, ±J-1	. +0 00		
Ь				• •																L



DRILLING METHOD:

Rotosonic

LOCATION: N 10003352.93: F 1589588.22

METHOD:	Rotos	onic					OCAT						.589588	3.22			4
	-			<del> -</del>				SH	HEAR	STRE	NGTH,	TONS	/FT² — —□-				
DEPTH, FT	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5	1.0 ASTIC	1,5	2.0	O 2.5	3.0	3.5 LIQUII	4.0	PLASTICITY	% -200	
	=	SURFACE ELEVATION: 545	.03 ft	B	- >		10	× 20			50		$-\times$		"		
	X	STRATUM I (545.03 ft):	.03 11			<u> </u>	10	20	30	<u> 40</u>	50	60		80	+		┨
		SANDY LEAN CLAY (CL), s to dark brown, moist, v matter and caliche nod	vith organic ules			-  -  -   <del>-</del>	•								-		
		- scattered gypsum crysta	als from 5' to 10'			  -  -  -				•	•				- - - -		
-10		STRATUM III (535.03 ft): LEAN CLAY (CL), hard, bro to yellowish, slightly m glauconite, ferrous stai partings, and a trace of	oist, with green ning along sand			- - -	•				•				- - -		REPORT
		- friable, with caliche poo 15' - gray to reddish-brown f	kets from 12' to			- - -					8				- - - -		HE PROJECT
-20-						- - -					<b>8</b>				- - - -		ELY FROM T
-25-	381					_					•				7		RAT
-30		STRATUM IV (518.03 ft): SANDY LEAN CLAY (CL), h gray and brown, slightly very thinly interbedded brown with green glaud caliche pockets at 30'	y moist, with I sandstone			- - - - - -	•	× -		*	0					95	NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
-35-						- - - - -					•						TOGS SHOULD
-45						- - -					8				- - - -		OTE: THESE
		- sandstone fragments at	46'			- - -					<b>8</b>				- - - -		Ž
-50- 						- - -					8						
-55-		- silty, green to light gray	from 55' to 57'								<b>8 8 8</b>				- - - - -		
						-  -  -					8				-		
DEPTH DRILLE		160.0 ft	DEPTH TO WATER		5.20		1				PROJ	. No.:		ASF13	-140-0	)	
DATE DRILLE	J:	4/13/2011	DATE MEASURED	:	4/13/	201	T										┙



DRILLING METHOD: Rotosonic

**LOCATION:** N 10003352.93; E 1589588.22

METH	IOD:	KO	tos	onic		1			CATIO						39588.2 <sup>2</sup>		, ,	
			Ӹ			l.	_		_6			RENGT — —⊗-			:T² —□-			
F, FI	_ ŭ	LES	ELEVATION, FT		<del></del>	BLOWS PER FT	UNIT DRY WEIGHT, pcf	(	-			∞_ 2.0 2				1.0	PLASTICITY INDEX	-200
ОЕРТН, FT	SYMBOL	SAMPLES	ATIC	DESCRIPTION OF	MATERIAL	WS F	FE		PLAS LIN	1		WATE			LIQUID		ASTI	% -20
ō	<u>~</u>	Š	ELEV			BLO	<sup>⋽</sup> ૅૅૅ		LIN	1IT ← — -		CONTE	NT 		LIMIT		٦_	"
	. , , ,			SURFACE ELEVATION: 545	.03 ft				10 2	←	30	40	50	60	− <u>≻</u> 70 8	80		
		X		STRATUM IV (518.03 ft):				-								-	-	
		ĮΣ		SANDY LEAN CLAY (CL), he gray and brown, slightly	ard, gray to light			-								-	1	
		1881		very thinly interbedded	sandstone				$\rightarrow$		+-						27	90
<del></del> 70		<b>!</b> }}		(continued)				<u> </u>								_		
		188		- green glauconite from 6	7' to 69'			-								-		
		18						_								-		
		1881										•						
<b>−75 −</b>		18				1		<u> </u>	<del> </del>	<u> </u>	<del> </del>	-	+				1	
		1881		FAT CLAY (CH), hard, brow reddish-brown with gre	VN to enish-grav			-				•				-	1	
		$\mathbb{R}$		mottling, slightly moist	chish gruy													
		1881						_				•				-	-	
80		188						-								-	1	
_		182										•						
								_				•				-	-	
		188						_								-		
—85 —		183										•						
		188						_										
		łΣ						-								-	-	
- 90		138						_								-	1	
90 <i>-</i>		Įξ														-		
		1381						_								-	-	
-		$\mathbb{R}$		- very thinly interbedded	hrown siltstone			-								-	1	
_ 95 <i>-</i> -		1881		from 93' to 97'	biowii siitstone							•				-		
		18}						-								-	-	
-		1881		- very thinly interhedded	light grav			-				•				-	1	
		₩		<ul> <li>very thinly interbedded siltstone from 97' to 98</li> </ul>	1			F										
-100-		138		- very thinly interbedded	brown siltstone			_				•				-	-	
-		Вŧ		from 99' to 104'				-								-	1	
		₩										•						
	14	192				-			<b>↓</b>		<del>-</del>		<del> </del>	-		· <del> </del>	4	
-105-		13 &		LEAN CLAY (CL), hard, gra reddish-brown, slightly	yish-green to			-				•				-	1	
		1881		thinly interbedded silts	tone				•	$\times$		\varTheta -	$+-\times$				33	69
				•				_				•				-	-	
		138						_				•				-		
_110-				- silty from 110' to 115'							0					-	1	
		1316		,				_								-	-	
-		13 (						-								-	1	
- 115		1881																
		13						-								-	-	
-		138		- caliche pockets from 11 - green mottling from 117	6' to 117'			-								-	1	
		3 (		- green motting nom 117	10 120													
-120-	<b>V</b> ///							<u> </u>				•				-	-	
ļ <sup>-</sup> -	\///							-				•				-	1	
<u> </u>	[///							Ė								-	]	
	<b>V</b> ///	18						Į.				•						
-125-	\ <i>///</i>			- caliche pockets and scat	tered ferrous			-								-	-	
-	<b>V</b> ///			staining from 124' to 12	. <del>9</del>			F				•				-	1	
[	<i>\///</i>							Ē										
	<i>[///</i>	X						F				•				-		
DEPTH	V///	FD:	Ш :	160.0 ft	DEPTH TO WATE	R:	5.20	L ft	1	1		DP	OJ. No	).:	Δς	 SF13-1	⊥  4∩-∩∩	
DATE				4/13/2011	DATE MEASURE		4/13/					' ' '	JJ. 140		Α.	,, 1J 1	.0 00	
JAIL	J.VIELE	٠.		., 13, 2011	ZATE WILASONEL		+/ ±3/	-011										



DRILLING METHOD: Rotosonic

**LOCATION:** N 10003352.93; E 1589588.22

IVIETH			isonic			l	т'	OCATIO			rength,						
ᇤ	_				표	bct		- <b>6</b>	<b>)</b> – –	$-\diamondsuit-$	$\otimes$					È.,	_
БЕРТН, FT	SYMBOL	SAMPLES	DESCRIPTION	I OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf			1	1,5	2.0 2.5 WATER	3.0		.5 4.0 QUID	J	PLASTICITY INDEX	% -200
DE	<u>ه</u> ا	8			BLOV	NE SE		PLAS LIN			WATER CONTENT		L	.IMIT		7	%
	1777		SURFACE ELEVATION:					10 2	20	30	40 50	60	) 7	× 70 80	)		
		1881	LEAN CLAY (CL), hard reddish-brown, slig	htly moist, with very			-				•				-		
		1981	thinly interbedded	siltstone			F								4		
125			(continued)				-				•				-		
135 -															_		
-							-								-		
_	<i>\///</i>						F				0				-		
<del></del> 140		<b>18</b>					-								=		
- -		1881					F				•				-		
_		<b>TX</b>					L								-		
-145							_								_		
- -	177		LEAN CLAY (CL), hard	 , light gray to dark	1		<u> </u>	-	-	+-				†			
_	<b>V</b> ///		gray, slightly moist, interbedded siltsto	with very thinly			F								-		
- 150							L				•						
			- dark gray from 149.	5 (0 150			F				•				-		
		<del>                                      </del>	- gray from 152' to 15	57'													
-							-				•				-		
155 -							F										
-			- greenish-gray to ligh	at brown and gray			F								-		
		1	- greenish-gray to ligh with weakly-indura	ted gray siltstone			Ė				0				1		
<del>-1</del> 60-			from 157' to 160'		<u> </u>	<del> </del>		-+		+-							
			Boring Terminated				Ė										
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165							Ē.								4		
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 170															_		
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175 -																	
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<u> </u>	1						L								-		
_	-						F								7		
DEPTH	ı I DRILL	ED:	160.0 ft	DEPTH TO WATE	R:	5.20	ft		1		PROJ	. No.:		ASF	 13-14	 	
DATE			4/13/2011	DATE MEASURE		4/13/		1									
				ı													

## **LOG OF BORING NO. B-114**

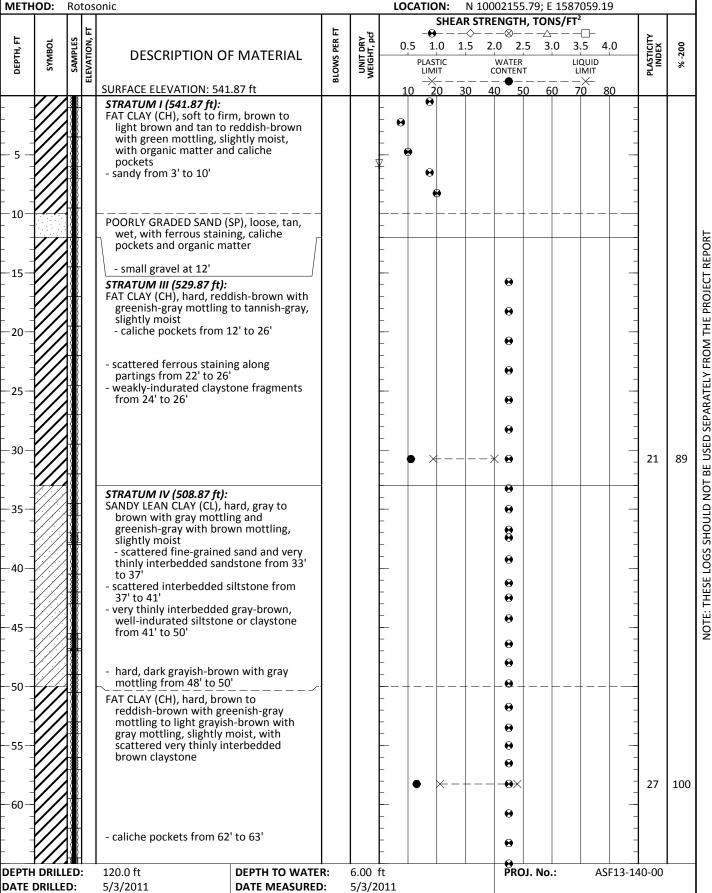
Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC TBPE Firm Registration No. F-3257 Webb County, Texas - MSW Permit No. 2374



**DRILLING** 

Rotosonic

**LOCATION:** N 10002155.79; E 1587059.19





METHOD:	Roto	osc	onic				L	OCAT				2155.7			9.19				1
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DEPTH, FT	SAMPLES	ELEVATION, FT	DESCRIPTION O	= NAATEDIAI	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5	1.0	1,5	2.0	2.5					PLASTICITY INDEX	% -200	
DEPT	SAM	EA	DESCRIPTION OF	IVIATENIAL	ows.	VEIGH		PL/ LI	ASTIC MIT		W CO	/ATER NTENT		LIQU LIMI	ID T		PLAS	%	
		티	SURFACE ELEVATION: 541	.87 ft	8			10	× 20	30		◆ 50	60	−-× 70	80		_		
-70- -75-			FAT CLAY (CH), hard, brown reddish-brown with grey mottling to light grayisl gray mottling, slightly rescattered very thinly in brown claystone (continuous) caliche pockets from 67  - yellow mottling, with we ferrous staining along page 175'	eenish-gray n-brown with noist, with terbedded nued) ' to 68'			- - - - - - - -					<ul><li>8</li><li>9</li><li>9</li><li>9</li><li>9</li><li>9</li></ul>							
-80-			- weakly-indurated browi interbedded claystone	n very thinly from 80' to 89'			- - - - -					• •							E PROJECT REPOR
-85 - - - - -90			- scattered fine-grained s fine-grained sandstone 89' to 93'	and and fragments from			- - - - -					<b>9 9 9 9</b>							ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
95-			85 (0 93				- - - -	• >	<del>-</del>			<b>⊕</b>					28	88	NOT BE LISED SEP/
-100 - - - -105 -							- - - - -					<b>9 9 9 9</b>							CELOGS SHOLLD
-110-			- glauconite from 110' to	111'			- - - - -					e e							HT : HON
-115 - - - -120			 Boring Terminated									•							
  - 125-   							- - - - - -												
DEPTH DRILL			120.0 ft 5/3/2011	DEPTH TO WATE		6.00 5/3/2			- 1			PROJ.	No.:		ASF1	3-14	0-00		



DRILLING METHOD:

Rotosonic

LOCATION: N 10002164.95: F 1587025.17

METH	OD:	Roto	sonic				L	OCATIO		N :	1000216	64.95;	E 15	87025.	17		
		l I⊢							SHE	EAR S	TRENG	гн, то	NS/I	FT <sup>2</sup>			
ᄩ	7	SAMPLES ELEVATION. FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf			• – 1.0	<>-	⊗- 2.0	25	3 U ▽─ —	3.5	۸ ۱	PLASTICITY INDEX	0
БЕРТН, FT	SYMBOL	ME	DESCRIPTION O	F MATERIAL	IS PI	무를				1,5			3.0	LIQUID	4.0	STIC	% -200
	Σ	S   S			8			LIN	STIC /IIT		WATE	NT		LIMIT		₹=	%
		"	SURFACE ELEVATION: 540	).14 ft	m			10	← – 20	30	• 40	 50	60	-×- 70	80		
	7.7.7	101	STRATUM I (540.14 ft):							<u> </u>	10			70			
[ ]	///	101	STRATUM I (540.14 ft): SANDY LEAN CLAY (CL), s brown, moist, with org caliche pockets and fer	oft to firm, dark			F										
⊦      ∤			brown, moist, with org	anic matter,			F	₩							-		
┞╶┤	///	1)([	calicne pockets and fer	rous staining			-								-		
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-		1(1)				-	Ť								_		
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	///	1/1				'	Ĺ				•						
	<i>7.</i> 7.7.	1WI			-												
┝╶┤		141	STRATUM III (528.14 ft):	مرين مريا المائما			-								-		
┟╻╴┤		1)((	LEAN CLAY (CL), hard, red slightly moist, with ferr glauconite, and a trace	rous staining			r								-		
-15-		177	glauconite, and a trace	of sand													
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⊦ ∤		<b>1</b>					F				•				-		
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├ <u>,</u>					1	1	F								-		
<del>-60-</del>					1	1	F										
					1	1	F										
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DEPTH	DRILL	ED:	20.0 ft	DEPTH TO WATE	R:	10.09	ft		•	•	PR	OJ. N	o.:	Α	SF13-14	10-00	
DATE [			5/25/2011	DATE MEASURE		1/10/		2									
			· · · · · ·	1		. ,											



DRILLING

IOCATION: N 10001696 77: F 1588845.84

METH	IOD:	Rote	osc	onic				L	.00	ATIO							38845	.84				╛
		Ш,	-			  -	l				SHEA											
Ē	g	SAMPLES	ž			BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5						 .5 3		-□- 3.5	4.0		PLASTICITY INDEX	8	
ОЕРТН, FT	SYMBOL	AMP		DESCRIPTION OF	MATERIAL	WS I	Fig			PLAS	TIC		W	ATER			LIQUID	, '		ASTI	% -200	
	"	s   :				BIO	⊃≋			LIM				MTEN			LIMIT -X- 70			۲		
-	777		+	SURFACE ELEVATION: 541	.46 ft				10	2	0 :	30	40	5	0	50	70	80	_			┨
:				SANDY LEAN CLAY (CL), si	Ity, firm to					•	•											
-			-	hard, brown, moist, wit pockets and ferrous sta	h caliche			-											-			
- - 5 -			-	pockets and remous sta	IIIIIg			L			•											
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			-				-	¥														
-	1//		╁	CTD ATURA III (522 AC &).		1		_	+			+	+	0					_			
10-			-	STRATUM III (532.46 ft): FAT CLAY (CH), hard, light	brown and									Ω								
-	<b>///</b>		-	brown to reddish-brow	n and grav with			-						0					-			ᅜ
				greenish-gray mottling, - ferrous staining along	partings from 9'									•								EPC
-15-	1//	$\mathbb{H}$	-	to 14'	ne fragments			F											-			15
			-	- scattered brown claysto from 14' to 36'	ine maginemes									0								18
-								-						Ω					-			P <sub>R</sub>
-20-								L						•								[분
<u>-</u> ~ -		1881	-					-						•					-			ĮΞ
		1981						Ė														FE
F		1881	-					-						0					-			∴
-25-														Ω								₹
-				- ferrous staining from 27	" +o 21"			-						0					-			PA
ļ :				- Terrous staining from 27	10 31			Ė						•								l SE
-30-		$\mathbb{H}$																	_			ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
<u> </u>														0								l H
-								-						Ω					-			1
- -35-														0								Z
33 -	1		+	CTDATUMAN/FOR AC &).		-			+	•	<del>X</del> -		+	0-	$\rightarrow$					30	99	Ιź
			-	STRATUM IV (505.46 ft): FAT CLAY (CH), hard, light	grayish-green																	l S
-	<b>///</b>			to reddish-brown with mottling, slightly moist	light brown			-						0					-			965
<del>-40-</del>				<ul> <li>scattered caliche pocket</li> </ul>	ts from 36' to									Ω								17
-			-	41' - very thinly interbedded	fine-grained			-						0					-			HES.
<u> </u>				sandstone from 41' to 5	55'									0								NOTE: THI
-45-								$\vdash$											-			ļģ
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F -		1387	-					_						0					-			
-50-														•					_			
F .								F						0					=			
		$\mathbb{H}$						Ė														
-  -				- ferrous staining at 53'				-						€					-			
-55-				- green claystone fragme	nts at 55'									•					_			
F -								L											-			
F -		<b>∤</b> ∦∤						F						0								
-60-	1//	1						$\vdash$						_					$\dashv$			
F :	///	<b> </b>		- very thinly interbedded claystone from 61' to 6	gray-green			F						€								
-	1//			claystone from 61' to 6	8'			F						0					-			
				100.0 %		<u> </u>	<u> </u>	<u>[</u>					$\perp$						لِـ	2.55		-
	H DRILL Drille			120.0 ft 5/9/2011	DEPTH TO WATE DATE MEASURED		7.13 1/10/		2					PRC	J. No	).:	,	ASF1	3-14	0-00		
DATE	DUILLE	٠.		3/3/2011	DATE WEASUREL	<i>,</i> .	1/10/	201	_													J



METH	OD:	Rotos	onic		,		L	CATI				1696.7						
		๒			<sub>E</sub>	J		-(				NGTH, -⊗— –						
ОЕРТН, FT	BOL	SAMPLES ELEVATION, FT	DECORPTION		BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0			2,5				0	PLASTICITY INDEX	% -200
)EPT	SYMBOL	SAM	DESCRIPTION O	FIVIATERIAL	Swo			PLA	STIC	· ·	W	VATER ONTENT		LIQ	UID MIT		LAST	%
_			SURFACE ELEVATION: 54:	1 46 ft	BL(	- >		10	<u>х —</u>	30		<b>●</b> — – 50	 60		 ≻ ) 80	,	4	
	///		STRATUM IV (505.46 ft):		<del>                                     </del>			10	20	30	40		- 60		اه ر			
- 7			FAT CLAY (CH), hard, light to reddish-brown with mottling, slightly moist	t grayish-green			F					•				_		
			mottling, slightly moist	light brown t, (continued)			Ŀ											
	///		, , , , , ,	,, (,			Ē.									_		
· -		<b> </b> 88					F					•				-		
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· ┤		<b> </b>					-					•				-		
-75-	///		- sandy from 75' to 78'					4		4_		-•-	_				< <b>61</b>	100
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1			L				<u> </u>	<b>⊥</b>	L.		L	•	L					
-95			NO RECOVERY													_		
		$  \setminus  $	- Driller's Note: Cracke	d core barrel			_											
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115			FAT CLAY (CH), hard, ligh	t gray to	]		F	T				•						
1			reddish-brown with sc greenish-gray mottling	attered : with scattered			-									-		
7		1881	caliche pockets	, men souccerea			Ē					•				7		
120	<i>.</i>	<b>X</b>	Boring Terminated		<del> </del> -	<del> </del>	<u> </u>	+		- + -		+-	-	-+				
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DEPTH			120.0 ft	DEPTH TO WATE		7.13					$\top$	PROJ.	No.:		ASF	13-14	10-00	
DATE [	DRILLE	D:	5/9/2011	DATE MEASURE	D:	1/10/	2012											



METH	IOD:	Roto	so	nic					LOC	CATIC							89755	.70				1
			.			=								ENGTI			FT² - —□-					
F.	<u>8</u>	SAMPLES FI EVATION FT	5	DECEDIDATION OF		BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.								3.5	4.0		PLASTICITY INDEX	00	
ОЕРТН, FT	SYMBOL	SAMI	[	DESCRIPTION O	- IVIATERIAL	ows				PLAS	TIC			WATER	R IT		LIQUIE	)		LAST	% -200	
-			Ĭ,	SURFACE ELEVATION: 545	60 ft	BI	-		10		— — 20			0 5			-×- 70			ъ.		
	///	181	Т	STRATUM II (545.60 ft):					1	<u>)                                    </u>			4	0 3	0 1	00	70	80				1
-				FAT CLAY (CH), hard, light with organic matter and	t brown, moist,			-				0							-			
			┢	pockets		1					0											
<del>-</del> 5 -		<del>                                     </del>		STRATUM III (542.60 ft):				-											$\dashv$			
		181		FAT CLAY (CH), hard, browneddish-brown, slightly	moist			Ė				•							4			
-				- caliche pockets from 7	'' to 12'		:	*						•					-			
-10-		<b>18</b> 1						F						•					4			
t :		/						L						•								=
-				- greenish-gray mottling f	rom 12' to 29'			F						•					-			2
- -15-								L						•								18
-								F											-			
								F						•								18
- -20-								E						•					$\exists$			ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
- 20-				- caliche pockets from 20	' to 21'			F											-			ΙŽ
								L						•								18
L								-											-			┨ä
-25-		181												•								\₹
-				- caliche pockets from 27	' to 28'			F						•					-			A
	1//		$\perp$		10 20	-		_											_			
-30-				STRATUM IV (516.60 ft): FAT CLAY (CH), hard, gray	ish-brown and			F						•					_			SS
-								-						•					-			18.
				brown mottling, slightly ferrous staining from 29 very thinly interbedded 31' to 35'	)' to 31'																	5
-35-				- very thinly interbedded	siltstone from			-		>	<del> </del>	- -		- €×					-	28	93	=
				31 (0 33				Ė						•					4			₫
-				- very thinly interhedded	siltstone from			-											-			ls Si
40-				- very thinly interbedded 38' to 41'	sitistorie from									•					4			
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DEDT	///		L	160 0 ft	DEDTH TO WATE	 :D:	0.20	<u></u>						חחי	) . A!	<u> </u>		A C E 4 :	2 1 4	10.00		-
1	H DRILI Drille			160.0 ft 4/15/2011	DEPTH TO WATE		8.20 4/15/		1					PKC	OJ. No	).:		ASF1	<b>3-1</b> 4	10-00		
	LLL			., _5, _5, _	ZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ		., ±3/	-01	-													L



SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TONS/FT2   SHEAR STRENGTH, TON	PLASTICITY INDEX	% -200
SURFACE ELEVATION: 545.60 ft 10 20 30 40 50 60 70 80 - weakly-indurated siltstone from 64' to 66'	PLASTICITY INDEX	% -200
SURFACE ELEVATION: 545.60 ft 10 20 30 40 50 60 70 80 - weakly-indurated siltstone from 64' to 66'	PLAST	\ \frac{1}{9}
SURFACE ELEVATION: 545.60 ft 10 20 30 40 50 60 70 80 - weakly-indurated siltstone from 64' to 66'	-	· `
- weakly-indurated siltstone from 64' to		
L		
I V//I♥I FAT CLAY (CH), hard, gravish-brown and I I I I I I I I I I I I I I I I I I I		
gray and reddish-brown with scattered brown mottling, slightly moist	24	99
(continued)		
to 71'		
-75-  <b> </b>		
-90 -		
- very thinly interbedded gray and brown siltstone from 90' to 100'		
-95		
to 100'		
-105-  <b> </b>		
- very thinly interbedded gray and brown	30	98
- very thinly interbedded gray and brown siltstone from 108' to 112'	30	
FAT CLAY (CH), hard, greenish-gray with		
L _// brown mottling and reddish-brown   L		
with gray mottling, slightly moist - caliche pockets at 116.5'		
DEPTH DRILLED: 160.0 ft DEPTH TO WATER: 8.20 ft PROJ. No.: ASF13-14	10-00	ı
<b>DATE DRILLED:</b> 4/15/2011 <b>DATE MEASURED:</b> 4/15/2011		



DRILLING METHOD: Rotosonic

**LOCATION:** N 10001947.36; E 1589755.70

IVIETE	100.	ROLO	John			l		UCATI			FRENGT				U		
l E	بِ ا	S F			R FI	bd			<del>9</del>	$- \diamondsuit -$	————	- <i></i> _	<del>/</del>			≱.	
ОЕРТН, FT	SYMBOL	SAMPLES ELEVATION. FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	$\vdash$			1.5	2.0		3.0		1.0	PLASTICITY INDEX	% -200
l iii	SY.	SAL			LOW.	MEI G			STIC		CONTE	NT		LIQUID		P.F.	%
	<u> </u>	"	SURFACE ELEVATION: 545					<u>_</u>	— — 20 —	30	40	50	60	- <u>≻</u> 70	80		
   135-  			FAT CLAY (CH), hard, gre brown mottling and re with gray mottling, slig (continued) - blocky from 130' to 135	ddish-brown htly moist			- - - - -				0 0				-		
-140   			- caliche pockets at 141'				 - - -				0 0						
145  			- caliche pockets from 14	15' to 148'			- - -		×	_		- <del>-</del> ×			-	31	100
- 150 - 150  							- - - -				•						
155 -   			- caliche pockets from 15	55' to 157'			- - - -				•						
160 -			Boring Terminated	- — — — — — —	<u> </u>	<del> </del>		-				<del> </del>	-	-	ļ .	†	
	1						-									1	
	<u> </u>						F										
165 -	1						_								_	1	
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170- -	1														-	1	
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175 -	1						_								-	1	
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185	1						-								-	1	
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-190-	-						$\vdash$								-	1	
 							  -  -  -										
	DRILL		160.0 ft 4/15/2011	DEPTH TO WATE		8.20 4/15/		1			PR	OJ. No	<b>).</b> :	AS	SF13-1	40-00	
		-	, -, -==			,/											



<b>DRILLING METHOD:</b> Roto	sonic					CATIO						586787	7.90			
			ᇤ	4-		_6					TONS	/FT² 				
SYMBOL SAMPLES ELEVATION. FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf	0						3.0		4.0	}	INDEX	-200
SYMBOL SAMPLES EVATION.	DESCRIPTION O	F MATERIAL	WS I	IN IN IN IN IN IN IN IN IN IN IN IN IN I		PLAS	TIC		WA	TER		LIQUII	> '	[5	2 2 2 3	%-5
			BLO	۵№		LIN				TENT		LIMIT ———		ة	۱ ۲	
7777	SURFACE ELEVATION: 543	3.68 ft			1	.0 >	<u>20</u>	30	40	50	60	−-× 70	80		_	
	STRATUM I (543.68 ft):  SANDY LEAN CLAY (CL), f brown, moist, with cali organic matter	irm to stiff, che pockets and			- - -										NP	33
- 5 -					- - -		•									
-10				Ž	<u>Z</u>		0									
1///						0								_		
-15	STRATUM III (531.68 ft): SANDY LEAN CLAY (CL), s brown with reddish mo slightly moist, with ferr along partings and gyp:	tiff, tan to ottling, moist to rous staining			- - - -					9				- - - -		
					-				•	•				=		
-20					- - -				•	9						
-25	- green with brown mott	ling from 24' to			_				•	9						
	25' - light greenish-gray with - from 26' to 28'	brown mottling			-				•	•				-		
	STRATUM IV (515.68 ft):								•	•						
-30	FAT CLAY (CH), hard, bloo reddish-brown with sca mottling, slightly moist interbedded grayish-br	cky, attered gray , with very thinly			- - -					9				- - -		
35	and claystone - dark grayish-brown fror - weakly-indurated fror - glauconite and caliche p to 35'	n 31' to 39'			- -					3						
40	- brown with greenish-gr 37' to 42'	ay mottling from			_				•	•						
					_	•	×	· <del> </del>		<b>→</b> + →	$\times$			= 3	30	99
	- grayish-green with scat mottling, with scattere	tered dark green d silt from 42' to			_					•				-		
45	46'				<del>-</del> -				•	•				-		
50					- - -					9						
					_ _ _					9				=		
55	- light greenish-gray with from 55' to 56' - silt increasing, dark gray	with gray			<del>-</del> - -					9				-		
-60	siltstone from 57' to 58	3'			_					•				-		
					 - -			<b>†</b> -		9 -		_   _		_		
					L					•				+		
DEPTH DRILLED:	120.0 ft 5/2/2011	DEPTH TO WATER		8.90 <sup>-</sup> 5/2/2			1	-	F	PROJ.	No.:		ASF13	3-140-	-00	



METHOD:	Rotos	onic		_	_	L	OCA								36787	7.90			
	ŀ			l .	_							NGTH			T² —□–				
H, FT BOL	SAMPLES ELEVATION, FT	DECODIDATION	- N 4 A TEDIA I	BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0							3.5			PLASTICITY INDEX	00
DEPTH, FT	SAME	DESCRIPTION O	FMATERIAL	SWC	LINIT		Р	LASTI LIMIT	<u>i</u> C		V	ATER	-		LIQUIE	-		LAST	% -200
<u> </u>		SURFACE ELEVATION: 543	68 ft	BI(	3			× 20				•— 5(			-X- 70			Δ.	
	88	FAT CLAY (CH), hard, dark					10		,	30	40		) (	50	70	80	<u>'</u>		
		grayish-green mottling	slightly moist,			F						•					-		
		with very thinly interbe weakly-indurated dark	edded grav clavstone			-						0					-		
_70_		and sandstone (continu	ied)			_											4		
	<b> 88 </b>	- brown with gray mottlin 69'	ng from 66° to			-						•					-		
	***	- grayish-green with brov with a trace of sand fro	vn mottling,			Ē											]		
		- scattered fine-grained s	m 69' to 72' andstone from			F						•					-		
-75- <b>-</b>		72' to 82'										0							
	3					F						•					-		
	<b> 8</b>											•					1		
-80-	$\mathbb{R}$					-											99		
	88							/	× -		-+	-€-		<del>  -</del>	-	-†	$-\frac{3}{4}$	76	97
						-						0					-		
-85-	3											•					4		
-///	88					-						•					-		
	***					Ē											]		
- 00 -	88					F						0					-		
-90-	381					F						•					7		
						F						•					-		
	}	- blocky, fractured, with of interbeds from 93' to 9	dark gray			F						•					-		
-95-	381	- scattered fine-grained s	4' andstone from														-		
		94' to 102'				F						0					-		
						L						•							
-100-						_											_		
												•							
· - <b>///</b>	1881					_						Ω					-		
105												•							
		light brown and gray fro	om 106' to 109'			F						•					_		
	<del>                                      </del>	- light brown and gray fro	JIII 100 to 108			Ė													
· +///						_						€					-		
-110-	381											0							
-///	34					-						•					-		
	88											•					1		
-115-		- gray with greenish-gray 114' to 116'	claystone from			-											-		
	88	- greenish-gray with brov	vn mottling and									•					]		
		greenish-gray siltstone fine-grained sandstone	and very from 116' to			ŀ						0					-		
120		L 120'			<del> </del>	<u> </u>	4-			4-	_			<u> </u>	+-		- 🗐		
		- caliche pockets from 11 Boring Terminated	8 to 119			L											-		
. ]		Borning reminimated				Ē											-		
 -125-						E											_		
- 125						F											=		
						E													
						ŀ											=		
DEPTH DRILL	ED:	120.0 ft	DEPTH TO WATE	R:	8.90						$\dagger$	PRO	J. No	).:		ASF:	13-14	0-00	
DATE DRILLE	D:	5/2/2011	DATE MEASURE	D:	5/2/2	011													
											_								



DRILLIN METHO		Rot	tos	onic					CATI	ON:	N :	100006	519.03	3; E 1!	586893	3.89			
			Τ.			_						TRENC							
Ę	Ъ	LES	ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf	l c				 2.0			□- 3.5	4.0		PLASTICITY INDEX	0
БЕРТН, FT	SYMBOL	SAMPLES	ATIC	DESCRIPTION O	F MATERIAL	WS P	FE		PLA	STIC		WA	' ΓER		LIQUI	D		ASTI	% -200
ا ۃ	Ś	/S	ELEV			BLO	2 ×		LI	MIT		CONT	ENT		LIMIT			7_	•
	, ,			SURFACE ELEVATION: 538	.87 ft	<u> </u>			ĻO ´	— − 20	30	40	50	60	−-× 70	80			
· /				STRATUM I (538.87 ft):				-		•							-		
·				FAT CLAY (CH), stiff to ve to light brown, moist, v	ry firm, brown vith organic			-									-		
1	///	18		matter and caliche poc	kets			[ ⊕	<b> </b>	$\leftarrow$		- 4 -	$\rightarrow$				]	31	63
- 5 -		$\mathbb{R}$						-									$\dashv$		
	///	1881		small gravel from 6' to 7	71		- 7	<b>‡</b>		•							-		
7		B₽		STRATUM III (531.87 ft):				_											
+		1316		FAT CLAY (CH), hard, gree	enish-tan and			-				•	•				-		
-10-		挧		brown with orange mo	ttling, slightly			-									$\exists$		
1	///	1881		moist, with scattered fe along partings and calid	errous staining the pockets		1 3	¥				•	•				]		
		188		arong partings and same	me poemets			-									-		
15-	///	1831						-				-   €	'				-		
		WW S										•	•						
		1881						_					•				-		
	///	18}		- tan with orange-brown	mottling, with a														
-20-		1881		trace of fine-grained sa	nd from 18' to			_				•	•				-		
		₩		20' - silty from 18' to 22'				_									-		
		138		- greenish-gray with tan a	and green							-   €	•				1		
[		188		mottling from 20' to 24	.'			-									_		
-25-	///	18		- sandy from 22' to 25' \rangle - dark gray with some ora	ange-brown							-	•			_			
1	///	183		mottling from 24' to 25	'												1		
+		182		STRATUM IV (513.87 ft):				-				•	<b>'</b>						
	///	₿₿		FAT CLAY (CH), hard, redo gray mottling, slightly n	dish-brown with			-									-		
-30-	///	13 (		- weakly-indurated browi	n claystone from			_				'							
		188		25' to 36'	,			-				-   •	•				-		
1	///	183						-									-		
-35-		1881						_					•				_		
		138		- grayish-green, with scat	torod			-									-		
1		138		fine-grained sand from	36' to 37.5'							•	•				1		
		188		- brown to reddish-brown				-									-		
-40-	///	181		greenish-gray mottling, caliche pockets and gla	with scattered uconite seams			-				•	•				-		
		188		from 37.5' to 47'										,			]	30	98
		8						-			- † -		<b>)</b>	`			-	30	90
-45-L	///	1}(						_									-		
<sup>-45</sup> -7		13 2						_				`							
-	///	1881		- brownish-dark gray, wit	h vom thinly			-					•				-		
		$ \mathbf{a} $		interbedded sandstone	from 47' to 48'			Ė											
-50-		1881		- greenish-gray with brow				_				•	•						
-	///	BR		48' to 63'				-									-		
1		łЖ										•	•						
-	///	188						-									_		
-55-		1881						_				-   €	•						
1	///							F									]		
1	///					1		ŀ				•					4		
-60-	///	<b> </b>						L									_		
-00-	///							F				'					コ		
1								L					•				-		
	///			- dark brownish-gray with	n brown			L									+		
	///	18			I	<u> </u>	L	Ĺ											
DEPTH			•	160.0 ft	DEPTH TO WATE		11.86					P	ROJ.	No.:		ASF1	L3-14	0-00	
DATE D	RILLE	D:		4/29/2011	DATE MEASURE	D:	1/10/	2012											



METH	OD:	Rotos	onic				L	.00	ATIC							86893.	89	_			╛
		╽╽ᇣ			=	ļ "								<b>н, то</b> — —∕							
ОЕРТН, FT	SYMBOL	SAMPLES ELEVATION, FT	DECCRIPTION O		BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.!						.5 3			4.0		PLASTICITY INDEX	% -200	
DEPT	SYM	SAMI	DESCRIPTION O	FIVIATERIAL	Swo				PLAS	TIC		١ (	WATER ONTEN	l IT		LIQUID			LAST	%-5	
		"   🖁		9 97 ft	3	_ >		10		<u>_</u> _			- •			$-\times$	00		۵.		
$\vdash$	///		SURFACE ELEVATION: 538 mottling, with glauco					10	) 2	20	30	40	) 5	0 (	50	70	80	$\dashv$			┨
F }	///		scattered caliche poc	kets from 63' to			F						0					7			
├ <b>ै</b>			67'				F						Ŭ					-			
F <sub>70</sub> -	///	<b>18</b> 81					L						•					4			
├ <b>`</b> -{		<del>\$</del> }					F											4			
[ ]	///												€					1			
⊦ t		1881					-						Ω					-			
<del>-75</del>													0					コ			
├ <b>-</b> {			STRATUM IV (513.87 ft): FAT CLAY (CH), hard, red	dish-hrown with			-						0					4			۽ ا
t 1			gray mottling, slightly r	noist									_					Ⅎ			2
F <sub>80</sub> -		<b> </b> }}	(continued) - sandy from 68' to 79'				Ē.						•					4			Ē
⊦ ₹		<del>                                      </del>	- very thinly interbedded	siltstone from			-											┪			
[ ]		88	79' to 84'				F	•	)	×-	- -	-+	-⊕-	$\times$				7	30	90	1 8
├ <u>.</u> - {	///	38	EAT CLAY (CH) hard gray	ish brown	1			- 🕂			+-			<del> </del>	-	+	-	- 1			TACATA TOTIONA THE MOAT VIETA AVAIT ATTILLED TO A HIGH 300 HIGH
85			FAT CLAY (CH), hard, gray brown and reddish-bro	wn with light									•					コ			F
⊦ ∤			greenish-gray mottling - glauconite at partings	, slightly moist			-						•					$\dashv$			3
[ ]		$\mathbb{R}$	- glaucoffice at partifigs	110111 64 10 96																	;
<u> </u>		}					L						•					$\dashv$			Į
+ $+$	///	3					-						_					Ⅎ			}
[ }	///	1881					F						0					4			£
┞ <sub>╶</sub> ╴┤		38					-						0					$\dashv$			[
95	///	ĮΣ											•					コ			=
├╶╏		88					-						•					-			[
<u> </u>	///	$\mathbb{R}$	- caliche pockets from 98	s' to 99'																	[
100-		<b> }</b>	<ul> <li>blocky, reddish-brown</li> </ul>	n, with thinly			_						•					$\dashv$			[
┞╶┤	///		interbedded, weakly-in reddish-brown claystor	idurated ne fragments			-						_					Ⅎ			7
F -{		<b> 8</b>	from 98' to 103'	o .			_						•					4			[
├ <sub>10</sub> - ┤	///						-						•					Ⅎ			\ \ \ \ \ \
105							F						0					$\exists$			-
ŀ ⋠		1881					-						•					$\dashv$			
		$\mathbb{R}$																1			
110-							H						•					$\dashv$			F. F.
t ‡	777	1881	LEAN CLAY (CL), hard, gra	ay, slightly moist,	1			+			+-			<del> </del>	-	<b>†</b>	-	-1			'
┞╶╏			with very thinly interbe	edded			-						•					4			
├	///	}	fine-grained sand and weakly-indurated gray	siltstone			L						0					Ⅎ			
[ 113 ]			, , ,				-						_					4			
┞╶┤		88					-						$\Theta$					$\dashv$			
[ ]							F											1			
120-	///	H					H						•					$\dashv$			
<u> </u>							•		>	<del> </del>	+-		- 🚱 -	1	-	+	- <del> </del> ×	1	61	83	
ŀ ∤	///	1881					F						Ω					+			
-125-							L						•								
L 123-7	///						ŀ.						•					7			
├ <u> </u>	///						F						J					+			
F I	///	8	L		-		F-	. 4		L_	4_		- <b>0</b> -	ļ	<u> </u>	4	-	- [			
DEPTH	/ <i>//</i>	Ľ¶X∐ ED:	160.0 ft	DEPTH TO WATE	R.	11.86	L f+					-	DD/	J. No		^	SE12	1/	0-00		+
DATE D			4/29/2011	DATE MEASURE		1/10/		2					rnt	INC	•••	A	J: 13	, 14	0.00		
			,,		-	_, _0/		-													┛



DRILLING METHOD:

Rotosonic

**LOCATION:** N 10000619.03; E 1586893.89

METH	HOD:	Rot	osc	onic				L	OCA								393.89	)			1
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Ē	۵	SAMPLES	ELEVATION, FT	D FOOD ID TION O	- • • •	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5								 5 4.	0	PLASTICITY INDEX	00	
ОЕРТН, FT	SYMBOL	AMP	Ĭ	DESCRIPTION O	FMATERIAL	SWS	FE		F	PLAST	ΓIC		WA7	ER		LIO	UID		ASTI IND	% -200	
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	///		$\dashv$	SURFACE ELEVATION: 538 FAT CLAY (CH), hard, brown		-	<u> </u>		10	20	0 3	30	40		60	7(	) <u>8</u>	)			┨
:			-	reddish-brown with gra	ny mottling,			_					8	١							
-			-	slightly moist (continue	ed)			-										_			
135			-	- interbedded gray-brown 133' to 140'	i siitstone iroin								\ \ <b>\^</b>	<u> </u>							
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			-	groonish grov with brow	un mottling and			-					8	)				_			
140			-	- greenish-gray with brow gray siltstone from 139	to 141'																
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150			-																		[품
-			-	- green mottling with cal	iche nockets			F					"					_			Į≥
:		1881	-	- green mottling, with cal from 151' to 153'	iche pockets			_					. 8	,							\
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DEDT	 H DRILI			160.0 ft	DEPTH TO WATE	D.	11.86	L f+					Р	ROJ. I	No ·		۸۲۲	13-14	10-00		1
	DRILLE			4/29/2011	DATE MEASURE		1/10/		2					NOJ. I	10		ASI	13-14	+0-00		
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## **LOG OF BORING NO. B-119**

Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC TBPE Firm Registration No. F-3257 Webb County, Texas - MSW Permit No. 2374



**DRILLING** 

**LOCATION:** N 10000635.98; E 1588818.57 METHOD: Rotosonic SHEAR STRENGTH, TONS/FT<sup>2</sup>  $- - \diamond - - - \diamond - - - \diamond -$ UNIT DRY WEIGHT, pcf SAMPLES PLASTICITY INDEX ELEVATION, **BLOWS PER** 2.0 2.5 3.0 3.5 SYMBOL 0.5 1.0 1.5 **DESCRIPTION OF MATERIAL** PLASTIC LIMIT WATER CONTENT LIQUID LIMIT SURFACE ELEVATION: 541.99 ft 40 7Ó STRATUM II (541.99 ft): A FAT CLAY (CH), stiff, brown to tan, moist, with organic matter and caliche pockets 0 STRATUM III (538.99 ft): FAT CLAY (CH), stiff, light brown to tan 62  $\times$ 30 with orange mottling, moist - caliche pockets and ferrous staining along partings from 7' to 9' 10 NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT 15 ferrous staining seam and gypsum crystals from 14.5' to 14.75' interbedded gray-brown claystone from 16' to 26' 20 . 25 STRATUM IV (515.99 ft): LEAN CLAY (CL), hard, greenish-gray and brown to reddish-brown with yellow mottling, slightly moist, with very thinly 30 interbedded claystone and sandstone 35 - light gray from 36' to 42' 40 - glauconite at partings from 40' to 42' 62  $-\times$ 37 - grayish-green from 42' to 52' 45 . 50 - brown mottling from 51' to 52' - caliche pockets from 52' to 53' 55 - caliche pockets from 56' to 61' 60 **DEPTH DRILLED:** 160.0 ft **DEPTH TO WATER:** 7.80 ft PROJ. No.: ASF13-140-00 **DATE DRILLED:** 4/19/2011 **DATE MEASURED:** 4/19/2011



METHOD: Rotos					LO	CATIC				35.98 TH, TO		88818.5 F <b>T</b> ²	57	<u> </u>	
SYMBOL SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	0	.5 1	.0	_<- 1,5		2.5			1.0	PLASTICITY INDEX	% -200
SS SS ELEV.	SURFACE ELEVATION: 542	1.99 ft	ВГО	WEI	1	PLAS LIM —× .0 2		 30	CONT •	ENT — — –	 60	LIMIT —×	80	P. P.	*
-70-	SANDY SILT (ML), slightly greenish-dark gray, ver trace of clay - Driller's note: easy di penetration	ry moist, with a			- - - - - - -					,			- - - - - - -		
-80	FAT CLAY (CH), hard, red light greenish-gray, slig - very thinly interbedde reddish-brown claystor 78'	ghtly moist ed			 - - - - -	,	<b>-</b> -			•×			- - - - - -	. 28	86
-85	- caliche pockets from 82 - reddish-brown claystor from 83' to 87'	2.5' to 83' ne interbeds			- - - -				•				- - -		
-90	LEAN CLAY (CL), hard, lig to gray and brown to r with green and yellow moist, with very thinly weakly to moderately- siltstone and claystone	eddish-brown mottling, slightly interbedded indurated gray			 - -  -					•			- - - - -		
-95					-  - -				6				- - -		
100					- - - -				6				-		
105					-  - -				6	,			- - -		
110	- glauconite and caliche 111.5' to 112.5'	pockets from			- - - - -				•				-		
115	- caliche pockets from 11	17' to 118'			 - - -	>	<del>(</del> –				-*		-	40	100
125	- caliche pockets from 12	25' to 126'							6	•			- - - - - - -		
DEPTH DRILLED: DATE DRILLED:	160.0 ft 4/19/2011	DEPTH TO WATER		7.80 f 4/19/2		ı	I		P	ROJ. N	lo.:	AS	SF13-1	40-00	



DRILLING METHOD: Rotosonic

**LOCATION:** N 10000635.98; E 1588818.57

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БЕРТН, FT	SYMBOL	SAMPLES	ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5	1.0		2.0 2		0.0	3.5 4.	U	PLASTICITY INDEX	% -200
DEI	≿	S	EF.			3LOW	NE			ASTIC		CONTEN	ìт - — -		LIMIT		PLA	%
				SURFACE ELEVATION: 541					10	× 20	30	40	0 6	50	− <u>≻</u> 70 8	)		
  - 135 -  				LEAN CLAY (CL), hard, light of gray and brown to rewith green and yellow moist, with very thinly weakly to moderately-isiltstone and claystone interbedded gray siltsto 142'	eddish-brown mottling, slightly interhedded			- - - - - -				0 0				-		
140 				- interbedded gray clayst 153	one from 142' to			- - - - -				8						
 - 150-  				- dark gray, with interbed claystone from 153' to	lded dark gray			- - - - -				9 9				- - - - -		
155   				claystone from 153' to  NO RECOVERY  Driller's note: cracked safe to extrude		-		- - -		_  -	_					  _ _ _		
-160  				Boring Terminated			<del></del>	- - -	- + -	_						- - -		- — —
 -165 -  								- - - -								- - -		
 170  								- - - -								- - - -		
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- 185 - - 185 -  																-		
190   																- - - -		
DEPTH DATE				160.0 ft 4/19/2011	DEPTH TO WATE DATE MEASUREI		7.80 4/19/		11			PRO	DJ. No	.:	ASF	13-14	10-00	



METH		Rotos	onic		1		L	OCAT							8611.0	68		
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ОЕРТН, FT	SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION OF	MATERIAI	BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0	1,5			.5 3			4.0	PLASTICITY INDEX	-200
DEP.	SXI	SAIV	DESCINI HON OF	IVII (I EI III (E	Š	VEIG		PL/ LI	ASTIC MIT		C	WATER	₹ IT		LIQUID LIMIT		PLAS	· %
		=	SURFACE ELEVATION: 539	.92 ft	<b>=</b>	_		10	<u>—</u> – 20	30	 4	_ <b>•</b> -	 50 - 6	 50	−×− 70	80		
	///	38	STRATUM I (539.92 ft):				_	Ī										
		3	FAT CLAY (CH), stiff to ha light brown, moist, with	rd, brown to			-				9						-	
. [		} {	- organic matter to 2'	realience pockets					6	•							1	
- 5 <del>-</del>		<u> </u>					-									-	-	
											0						1	
		38		01. 401		_	₹										-	
- -10-			- sandy, moist to wet fror	n 8' to 12'			Ŀ											
- 10 -							-										-	87
			- clayey sand lens from 13	1.5' to 12'			-				6						1	°′
_ ]			- gravel from 12' to 13.5		1		F					•					7	
-15-		38	STRATUM III (526.42 ft): LEAN CLAY (CL), hard, gra	vish-brown with			-		* -	_ _						-	32	
_ }		<b>X</b>	green mottling, slightly	moist									<u></u>				]	
		<b> 8</b> 8	- ferrous staining along parts to 25'	artings from 16			-					•					-	
- -20-		$\Re$														_	1	
-	///,						H					•					-	
		<b>3</b>	- wet, poorly graded, fine from 21.5' to 23'	-grained sand			Ė										1	
{		3	110111 21:5 (0 25				-					•					-	
-25-	///		STRATUM IV (514.92 ft):		1							•					1	
·		$\{\}\}$	FAT CLAY (CH), hard, light	t brown and			F										4	
	///		green to reddish-browr mottling, slightly moist	i with green								•					_	
-30-		1881	- ferrous staining from 29				L									-	_	
		88					-					•					-	
7		38					F					•					]	
T	///						F										-	
-35 <i>-</i>		<b> 88 </b>										•					7	
		3 2	- scattered caliche pocket 40'	ts from 36' to			-										-	
		88	10				F					•					]	
-40-		38	- very thinly interbedded	brown			H									-	-	
		<u> </u>	claystone from 40' to 6														1	
		88					-					•					-	
-45-		$\mathbb{R}$														_	1	
· " -			- indurated siltstone inter to 51'	rbeds from 45'			H					•					-	
		18 8	- light greenish-gray to reddish-brown from 45	brown and			L										1,-	72
· -[		8	reddish-brown from 45	' to 58'			-	×	T -			₩ 😝					25	73
-50-																-	_	
· -[		$\mathbb{R}$					F					_					-	
1							-					•					1	
-55-	///	<del>                                      </del>	- very thinly interbedded	light			_									-	4	
+		8	grayish-brown and brow from 54' to 56'	wn claystone			F					•					1	
		<b>X</b>					F										]	
+			<ul> <li>brown to reddish-brown greenish-gray mottling</li> </ul>				F					•					1	
-60	///	88	Biccinsii-gray iiiottiiiig	110111 30 10 02			F					•				-	1	
- ∤		$\mathbb{R}$	yory thinly interhedeled	claystone from			F										4	
	///		- very thinly interbedded 62' to 63.5'	ciaystone from			L					•					1	
DE D.T.:	///		120.0 ft	DEDTH TO WATE	 	0.50	<u></u>					P.D.	<u> </u>	<u></u>		[ []	1	
DEPTH DATE D			120.0 ft 4/18/2011	DEPTH TO WATE		8.50 4/18/		1				PRO	OJ. No	.:	A	SF13-1	L40-00	
DATEL	/NILLE	υ.	4/ 10/ 2011	DATE WIEASUKEL	<i>)</i> .	4/18/	ZU1	L										



DRILLING METHOD:

Rotosonic

LOCATION: N 10000105.04: F 1588611.68

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_ F. , ^ ^	SAMPLES ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5				2.0				4.0	PLASTICITY	: ای	8	l
DEPTH, FT	AMP	DESCRIPTION O	F MATERIAL	WS F	1 F E			PLAS'			WATE			LIQUID		⊢ įš		% -200	
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		SURFACE ELEVATION: 539	).92 ft				10	× 2	0	30	40	50	60	70 70	80	_			
├ <i>- {//</i>		STRATUM IV (514.92 ft):	t brown and			-					•					+			l
		FAT CLAY (CH), hard, ligh green to reddish-browi	r with green																l
[ <i>]//</i>		mottling, slightly moist	(continued)			F					•					1			l
<del>-70-</del>						-										$\dashv$			l
		FAT CLAY (CH), hard, ligh	t gravish-brown	1		<u> </u>	+ -			†-		†	-	- †	-	- 1			l
- <i>-{//</i>		I to gray, slightly moist				L										4			l
///		- interbedded claystone	e from 71' to 73'			-					•					-			l
75-																1			l
- <i>-</i> ///		- brown to reddish-brow mottling and caliche po to 83'	n with gray			L										4			L L
		mottling and caliche po	ockets from 76'			F					•					-			2
-80-		10 65				L										╛			2
<b>-</b> °						F					•					4			[
		- blocky from 82' to 112'				-										+			Š
		- DIOCKY HOIH 62 to 112				Ė					•					1			
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- <i>-</i> ///		- brown with dark gray m	ottling, with			F										4			l
		very thinly interbedded from 112' to 120'	d gray claystone			-										+			
115		1101111112 10 120																	l
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DEPTH DRII	LED.	120.0 ft	DEPTH TO WATE	R.	8.50	L ft					DD	OJ. No	<u>.</u>		SE12	 -140-0	L_		l
DATE DRILL		4/18/2011	DATE MEASURE		4/18/		1				"	J. 140	٠	А	.J. 13.	±→0-(	,,,		l
JAIL DINILL		., 10, 2011	DATE WILASONLE		+, ±0/	2U1.	_												1



METHOD:	Rot	os	onic				<u> </u>	OC.	ATIO							991.9	5			╛
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, H	SAMPLES	S,	D F00F1771011 2 -		BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5	1.	.0	1.5	2.0	2.5	3.0	3	.5 4	.0	PLASTICITY INDEX	00	
DEPTH, FT SYMBOL	AMP	ξ	DESCRIPTION OF	MATERIAL	I SM(	INT FIGH			PLAS	TIC		W	ATER NTENT		Ļ	QUID		ASTI	% -200	
<u> </u>	^			6	BLO	⊃≅			LIM				<b>6</b>			IMIT ———		곱		
777		$\dashv$	SURFACE ELEVATION: 544.	09 ft				10	2	.0	30	40	50	60	) 7	<u>70`8</u>	0			┨
	<b>18</b> 1		STRATUM II (544.09 ft): SANDY LEAN CLAY (CL), st	iff to hard, light			L				•						_			
. <i>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i>	<b>18</b> 8		brown to brown and red	ddish-brown, _	1					_								-		
- 5 - 1///	1 <b>8</b> 1		moist, with organic mat pockets, and ferrous sta	ter, calicne			-			•							-	1		
- 5 - 1///			STRATUM III (541.09 ft):							•							_			
· +///	<u> </u>		LEAN CLAY (CL), hard, red	dish-brown		,	₽										-	1		
	7 <b>8</b> 1		with greenish-gray moti greenish-gray, with calid	tling to the pockets			Ī										_	1		
-10-///	<b>18</b> H		greeman gray, with can	one poekers			-										-	1		ı
1///	1 <b>8</b> 1						<b> </b>		$\times$		-	-+-	•				-	31	96	١,
- 1///	<del>                                      </del>						F										-	1		
·{///	1 <b>8</b> 1		- scattered sand from 13.5	5' to 24'			-						•				-	1		;
-15-	<b>78</b> 1																_			[
							-						•				-	1		
· ///	<b>1</b>		- ferrous staining along pa	artings from 18'			-										-	1		[
-20-1///	184		to 20'				Ę.										_			
· · · · · · ///	181						ŀ						0				-	1		;
1///	$\mathcal{H}$																-	1		1
	1 <b>%</b>		1 ( 24) 20				-				•	•					-	-		?
-25-///	焩		- sandy from 24' to 28'				-										-	1		
1///	<b>1</b>												0				-			;
		ŀ	STRATUM IV (516.09 ft):		-			+			+		•				<del></del>	1		TO COTA TOTA CAR THE \$400TY VITE ARATO CTOLL TO TOLE CHILD TO COLUMN
- -30-	<del>18</del> H		SANDY LEAN CLAY (CL), si	lty, hard,			L						•					1		1 5
- " - 1///	1 <b>8</b> 1		greenish-gray with light	brown			-						€				-	-		}
· <i>\///</i>	181		mottling, slightly moist, ferrous staining	with scattered			-										-	1		[
1///	181		<ul> <li>grayish-green sandstone</li> </ul>	fragments at			F						0				-	1		
-35	<del>18</del> H		28' - very thinly interbedded	hrown			-										-	1		1
	1 <b>%</b> [		claystone from 30' to 34	1'			Ė						•				-			
1///	擱						F										-	-		5
10 1///	181						ŀ						•				-	1		
-40-///	<b>18</b> 1																-			
							-						•				-	1		
			- brown to reddish-brown	with			L										-	1		ŀ
-45	181		greenish-gray mottling,	with very thinly			_										-	4		H
	1 <b>8</b> 1		interbedded brown clay fine-grained sand from	stone, silt and 43' to 72'			-						€				-	1		2
- 1///	/州		e gramea sana nom				F										-			
- 4///	<b>18</b> [						-						0				-	1		
-50-	<b>78</b> 1													.			-	3,0		
- 1///	181						-			×			lacktriangledown	.			-	26	88	
	<b>1</b>		- blocky from 52' to 66'														-	1		
-55-							F						_				_	-		
	7 <b>8</b> H						F						0				-	1		
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DEPTH DRIL		_	120.0 ft	DEPTH TO WATE	R:	7.90							PROJ	. No.:		AS	F13-1	40-00		
DATE DRILLE	D:		5/8/2011	DATE MEASURED	D:	5/8/2	011													
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DRILLING METHOD:

Rotosonic

METHOD:	Rotos	onic					OCA1			1000047				96			1
	-					1				TRENGT					١.		
F , 10	SAMPLES ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf	1	0.5	1.0		2.0				4.0	PLASTICITY INDEX	00	
DEPTH, FT	AMP	DESCRIPTION O	F MATERIAL	WS	FE		-	ASTIC IMIT		WATE	R	-	LIQUID		ASTI	% -200	
	S EE			BLO	5₩		l	.IMIT ×— -		CONTE	NT 		LIMIT		4		1
		SURFACE ELEVATION: 544					10	× 20	30	40	50	60	− <u>≻</u> 70	80			4
		STRATUM IV (516.09 ft):	iltu bard			F				•				-			1
	<b>X</b>	SANDY LEAN CLAY (CL), s greenish-gray with ligh	iity, nard, t brown			F								-	i		ı
	<b>X</b> (	mottling, slightly moist	, with scattered			Ē								-			ı
-70 <b>-</b> ///	<b>X</b>	ferrous staining (contin	nued)			H								-	-		ı
	**					F				0				-	i		ı
	8	- very thinly interbedded 72' to 88'	sandstone from											-			ı
	8	72' to 88'	conich gray			F				•				-			ı
-75- <del>-</del>	**	<ul> <li>grayish-brown with gr mottling, with some fir</li> </ul>	eemsn-gray ne-grained sand			F								-	i		ı
- 1///	8	from 72 to 91.5	· ·							•				-			
- <i>-</i> {///	8					F								-			2
-80-	8									•				_			HESE I DGS SHOILI D'NOT BE LISED SEBABATELY EBOM THE BROLECT BEDOET
	**													-			[
- <i>- \///</i> }	<b>X</b>					F								-			5
- 1///	<b>X</b>					F								-			
_ _85///						Ę.								_			15
- 4///	8					F				•				-	-		
	<b>8</b>					Ė								_			18
- <i>- 1///</i> /	8	- blocky, with very thinly	interbedded			Ę.		$\star$	-+-		+	-	- 🛊	-	50	93	2
-90 <b>-</b> ///	₩.	claystone from 88' to 9	1.5'			H								-	-		
				-		<u> </u>	- + -		-+-		+	-					0
	***	FAT CLAY (CH), blocky, fra reddish-brown to dark	actured, nard, gravish-brown			L								-			1 5
/ / /		with gray and greenish slightly moist, with a tr	gray mottling,			H				●				-			16
-95 <b>-///</b>	8	slightly moist, with a tr scattered ferrous stain	ace of sand and			Ė								-	İ		=
	8	scattered rerrous stain	ırıg			L				•				-			
///	8					F								-			5
-100	88					L								_	İ		
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-105	<b>3</b>					L								-			2
- <b> </b>	8					F				•				-			Į į
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	<b>X</b> (									•				-			_
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///	8					F				•				-			1
-115-	8													-	1		ı
<b> </b> ///	8					F				•				-			1
	**					F								-	1		1
_120	<b>X</b> (		- – – – – – – -	L	<b>1</b>	Ĺ.,					<u> </u>	. L _			L		
		Boring Terminated				F								-	1		
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-125-						L								-			
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						F								-			
DEPTH DRILLI	L	120.0 ft	DEPTH TO WATE	D.	7.90	L ft				DD	OJ. No		Λ.	_  SF13-14	10.00		+
DATE DRILLEI		120.0 π 5/8/2011	DATE MEASURE		7.90 5/8/2					PR	OJ. NO	,	A	DLT2-14	+U-UU		
DATE DRILLE	<i>J</i> .	3/0/2011	DATE WEASURE	<i>J</i> .	2/0/2	UII											┚

# **LOG OF BORING NO. B-122**

Pescadito Environmental Resource Center - Type I MSW Management Facility - Rancho Viejo Waste Management, LLC TBPE Firm Registration No. F-3257

KISTNER

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

Webb County, Texas - MSW Permit No. 2374 **DRILLING LOCATION:** N 9999604.26; E 1590034.77 METHOD: Rotosonic SHEAR STRENGTH, TONS/FT<sup>2</sup> ELEVATION, FT **BLOWS PER FT**  $- - \diamond - - \diamond - - \diamond - - \diamond -$ UNIT DRY WEIGHT, pcf SAMPLES PLASTICITY INDEX 2.0 2.5 3.0 3.5 SYMBOL 0.5 1.0 1.5 **DESCRIPTION OF MATERIAL** PLASTIC LIMIT WATER CONTENT LIQUID LIMIT SURFACE ELEVATION: 543.02 ft 40 7Ó STRATUM II (543.02 ft): 0 FAT CLAY (CH), very firm to stiff, brown to tan, moist, with organic matter and caliche pockets STRATUM III (540.02 ft): FAT CLAY (CH), hard, light brown, slightly moist, with caliche pockets and scattered gypsum crystals - ferrous staining along partings from 13' 95 X 24 to 13.5' 15 STRATUM IV (527.02 ft): 0 FAT CLAY (CH), hard, gray to brown, slightly moist, with very thinly interbedded grayish-brown siltstone 20 25 30 35 reddish-brown with greenish-gray mottling from 37' to 76' 40 26 98 **DEPTH DRILLED:** 160.0 ft **DEPTH TO WATER:** 9.80 ft PROJ. No.: ASF13-140-00

**DATE DRILLED:** 

4/16/2011

**DATE MEASURED:** 

4/16/2011



METHOD:	Rot	toso	onic				LC	CATI							034.7	7			1
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DEPTH, FT	SAMPLES	ELEVATION, FT	DESCRIPTION O	E NAATEDIAI	BLOWS PER FT	UNIT DRY WEIGHT, pcf	C								3.5	4.0	PLASTICITY INDEX	% -200	
DEPT	SAM	EVAT	DESCRIPTION OF	IVIATENIAL	ows.	VEIGH		PLA LIN	STIC MIT		C	NATER ONTEN	Т	ı	LIQUID LIMIT		PLAST	%	
			SURFACE ELEVATION: 543	.02 ft	H	^		.o ⇒	— — 20	30	40	•— 5	0 6	 50	−≻ 70	80			
70 70 75			STRATUM IV (527.02 ft): FAT CLAY (CH), hard, gray slightly moist, with very interbedded grayish-bri (continued) - brown-gray mottling froglauconite at partings at from 69' to 75'  - grayish-green with calicy from 75' to 76'	y thinly own siltstone om 65' to 69' nd gray siltstone			- - - - - - - - -					<ul><li>9</li><li>9</li><li>9</li><li>9</li><li>-8</li></ul>				-	-		X
-80			FAT CLAY (CH), hard, brov greenish-gray mottling, - caliche pockets from 76	vn with slightly moist ' to 77'			- - - -					<b>e</b>				-	- - - - -		ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
85			- caliche pockets from 83	' to 84'			_ 					0				_			OM THE P
90			- very thinly interbedded from 87' to 94'	gray siltstone			- - - -		×	-		<b>0 0 0 0 0 0 0 0 0 0</b>	<b>*</b>			-	31	66	CED AR ATELY ER
-95 			- very thinly interbedded claystone from 94' to 9	brown 8'			- - - - -					<b>8 8 8</b>				-	- - - - -		CEST DE LICED
105			- very thinly interbedded siltstone from 104' to 1	greenish-gray 11'			- - - - - -					0 0				-	- - - - - - - -		NOTE: THESE LOGS SHOLL
110			- very thinly interbedded brown claystone from 1	gray to light 111' to 116'			- - - - -					<b>8 8 9</b>				-			ON THE
120			- yellow mottling from 11 - caliche pockets from 11	8' to 119' 8.5' to 120'			- - - - -					<b>8 8 9</b>				-	] - - - - -		
125			<ul><li>caliche pockets at 124'</li><li>very thinly interbedded claystone from 126' to</li></ul>	brown 131'			- - -		× -	_		<b>⊕</b> - <del>⊕</del> >				-	28	95	
DEPTH DRII DATE DRILL		:	160.0 ft 4/16/2011	DEPTH TO WATE DATE MEASURED		9.80 4/16/			•				J. No	.:	A	SF13-:	140-00		



DRILLING METHOD:

Rotosonic

LOCATION: N 9999604.26: F 1590034.77

METH	OD:	Rotos	onic				L	OCAT			9999604				7			╛
		⊩			  -	l			SH	IEAR S	TRENGT	H, TOI	NS/F	T <sup>z</sup>				
Ŧ,	] B0	SAMPLES ELEVATION, FT	DECCRIPTION	5	BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0	1.5	2.0 2	2.5 3	0.8		4.0	PLASTICITY INDEX	00	
ОЕРТН, FT	SYMBOL	VATI	DESCRIPTION O	FMATERIAL	SWC	FER		PL	ASTIC MIT		WATE	R		LIQUID LIMIT		IND	% -200	
"			CUDEACE ELEVATION. EAC	0.02 (4	BLC	3		-	× - 20					$-\times$		-		
	///		SURFACE ELEVATION: 543 FAT CLAY (CH), hard, bro					10	20	30	40	50 E	50	/0	80			┨
-			greenish-gray mottling	, slightly moist			Ė									1		
-			(continued) - caliche pockets from 13	11' to 137'			F								-			
135-		1881	cultile pockets from 15	,1 (013)							•				-	1		
		<del>                                      </del>					F								-	1		
			FAT CLAY (CH), hard, ligh and dark brown to bro	t grayish-brown				1		_   _		<del> </del>		<b>†</b>	-			
			and dark brown to bro mottling, slightly moist	wn with gray			-								-	-		
140			interbedded gray siltst	one							•				_			
							-									-		
t :							Ŀ											1 5
145-							L				€				_	-		۱
t :			- sandy from 146' to 148'	ı			Ŀ											=
-			- dark grayish-green wi	th brown			F				•					-		HESE LOGS SHOLLID NOT BE LISED SEPARATELY EROM THE PROJECT REPORT
150			mottling and intermitted	ent yellow staining from			F								-			#
150 			mottling, with ferrous 146' to 152'				F								-	-		
-		1881	- caliche pockets from 15	52' to 156'			-				•				-	1		2
[ -		H	cultile pockets from 15	,2 (0 130			Ē								-	1		>
-155-							H				•				-	1		4   4   4
-							Ė											V
-							-									-		#
160-					L	<u> </u>		1				<u> </u>	L_	1		L		16
			Boring Terminated				-									-		=
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185	]						<u> </u>								-	]		
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190-	1						F								-	1		
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DERT	 		160.0 ft	DEDTU TO WATE	L	9.80	<u></u>				D.C.		<u></u>		CE12.4	40.00		+
DEPTH DATE			160.0 π 4/16/2011	DEPTH TO WATE		9.80 4/16/		1			PR	OJ. No		А	SF13-1	40-00		
	LLL	<u> </u>	1, 10, 2011	DATE WILASONLE		+, ±0/	2U1.	-										┙



METH	OĎ:	Ro	tos	onic				L	00	ATIC							18.08				╛
			ا با			<sub>F</sub>									ONS.						
F,	ĭŏ	SAMPLES	ON,	B F445.5		BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5	- <del>-</del> 5 1	.0 1	L.5	2.0	2.5	3.0	3.	□− 5 4.	0	PLASTICITY INDEX	00	
ОЕРТН, FT	SYMBOL	₩	/ATI(	DESCRIPTION O	F MATERIAL	WS	F		_	PLAS	TIC		WA	TER TER		LIQ	QUID		ASTI	% -200	
-	<u>~</u>	S	ELE			B10	⊃≝			LIM —×			CONT				MIT —		Ы		
	777		Н	SURFACE ELEVATION: 535	.13 ft			_	10	) 2	0 :	30	40	50	60	<u> 7(</u>	<u>0`8</u>	<u>)                                    </u>			4
-  -		18		STRATUM I (535.13 ft): SANDY LEAN CLAY (CL), fi	rm to stiff light			-										-	1		
[		##	H	brown to brown, moist	, with organic													_			
		<b>1</b>		matter and caliche poc	kets			-			•							-	-		
<del> </del>		$\mathcal{H}$					] -	¥-			_							_	1		
_ =		18						F			8	)						=			
		<b>18</b>		- scattered gravel from 8'	to 10 <sup>1</sup>			-				0						-	1		
⊢ ⊢10−		1		- scattered graver from 8	10 10			_				ľ									
- 10		1		STRATUM III (525.13 ft):				F										-			Ι.
-		18		FAT CLAY (CH), hard, light reddish-brown with gra	t brown to Iv and scattered			F					•	<b>'</b>				-	1		13
_		1		orange mottling, slightl	y moist						×-	<u> </u>	_   6	$\times$				_	23	83	}
-15-		$\mathcal{A}$		- scattered ferrous stair partings from 10' to 17	ning along			-			, ,							_			أا
r -		1		- caliche pockets from 12	' to 17'			r										-	1		lì
[		18		- fine-grained sand from				F					•	•				_			
		<b>78</b>						F										-	-		[
<u></u>		18											•	'				_			!
								F										-			
		1		<ul> <li>green mottling, with cal from 22' to 26'</li> </ul>	iche pockets			F					`					-	1		
- 25				110111 22 10 20				L						,				_			۱į
		$\mathcal{A}$						-										-	-		;
-		181		- light greenish-gray moti	ling from 26' to			-					•	•				-			
		$\mathcal{H}$		32				Ė										_			
<del>-30</del> -								L					•	•				_	1		
-  -		1₩						F										-	1		
_	///		ll	STRATUM IV (503.13 ft):		1							•	•							إا
		<b>78</b>	1	FAT CLAY (CH), hard, brow reddish-brown and dar	wn to			F										-	1		}
<del>-35</del> -		18		to gray with brown and	grayish-brown greenish-grav								•	'				_			;
[		11		mottling, slightly moist				F										_			5
				- scattered fine-grained s 40'	and from 36' to			F					•					-	1		[
- 40-		1		40				L					- 6	,				_			;
- " -		$\mathcal{A}$		- caliche pockets and glau	iconite from 40'			F										-			1;
-		18		to 46'				-						•				-	1		
		1#						Ĺ										_			1;
<del>-</del> 45-								-					•	•				_	-		İ
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- 55								L						,				_			
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	///			<ul> <li>brown with gray mottlir interbedded moderate</li> </ul>	ng, with thinly v-indurated			F					•					-	1		
[		₩		brown to reddish-brow	n claystone			F										_			
-60-		11		from 56' to 80.5'				$\vdash$					•	•				_	-		
t -								t										_	]		
ļ -		18						F					•	•				_			
├ -	///	<b>1</b>		<ul> <li>scattered fine-grained s</li> </ul>	and, with			F					_					-			
DEPTH	I DRIL	LED	.— :	160.0 ft	DEPTH TO WATE	R:	5.30	ft			1		P	ROJ.	No.:		ASF	13-1	40-00		1
DATE				4/29/2011	DATE MEASURE		4/29/		1					•					-		
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DRILLING METHOD:

Rotosonic

LOCATION: N 9999818.23: F 1587718.08

METHOD	D:	Rotos	onic				L	CATIC			9818.23			08			1
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ОЕРТН, ЕТ	SYMBOL	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf			.0 1	.5 2.	0 2.5 WATER			4.0	PLASTICITY INDEX	% -200	
-		=	SURFACE ELEVATION: 535	: 12 ft	BL	- >		$\rightarrow$					− <del>−</del> <del>×</del> − 70		"		
	//	3 1	weakly-indurated san					10 2	0 3	0 4	0 50	60	/0	80			1
70			to 64'				- - - -				•			- - -	- - - -		
75			STRATUM IV (503.13 ft): FAT CLAY (CH), hard, brogen reddish-brown and dar to gray with brown and mottling, slightly moist	wn to k grayish-brown I greenish-gray			- - - - -				<b>8 8 9 9</b>			- - -	- - - -		ORT
80			- caliche pockets from 78	' to 80.5'			- - - -				•			- - -	- - - - - -		PROJECT REPO
85			FAT CLAY (CH), hard, gray reddish-brown with gray mottling, slightly moist - scattered fine-grained s interbedded fine-graine sandstone/siltstone fro	eenish-gray and, very thinly				     	×		•			- - - -	14	54	HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
90-			- scattered fine-grained s 98'	and from 92' to			- - -				•			-	-		ED SEPARAT
95-			- very thinly fine-grained sandstone/siltstone fro - interbedded brown clay to 105'								•			-	-		NOT BF US
-100- 				16			- - - -				•			- - -	-		I DGS SHOUL
110			- scattered fine-grained s to 115'	and from 105			- - - -				•			- - -	-		NOTE: THESE
115			- very thinly interbedded sandstone/siltstone fro	fine-grained om 112' to 115'			- - -				•			-	-		
			- interbedded brown clay to 125'	stone from 115'			-				•			-			
120			- scattered fine-grained s to 135'	and from 120'							<b>9</b>			-	-		
							- - -	   			€			-	24	49	
DEPTH D		<b>∭</b>  _	160.0 ft	DEPTH TO WATE	D.	5.30	L				PROJ.	No :		 ASF13-1	ļ	43	-
DATE DR			4/29/2011	DATE MEASURED		5.30 4/29/					PAUJ	. 140	,	13-T	<del>-</del> U-UU		



DRILLING METHOD: Rotosonic

**LOCATION:** N 9999818.23; E 1587718.08

METH	100:	Rote	OSC	onic		_			OCATIO			9999818.				08				4
		H	-			l E	J 4.		-6			TRENGTI			-T- - —□-					
ОЕРТН, FT	SYMBOL	SAMPLES	<u>ş</u>	DECORIDEION		BLOWS PER FT	UNIT DRY WEIGHT, pcf				1.5	2.0 2			3.5	4.0		PLASTICITY INDEX	-200	
EPT	, K	AMP	₹	DESCRIPTION O	MATERIAL	SW.	탈		PLA:	STIC //IT		WATER		-	LIQUID	)		AST	% -2	
^	"	s   i			_	BLO	⊃≩											۲		
			+	SURFACE ELEVATION: 535				_	10	← – 20	30	40 5	0 6	0	−× 70	80	4			1
-	///		-	FAT CLAY (CH), hard, gray	and brown to			-				•					+			
	///			reddish-brown with gre mottling, slightly moist	(continued)												1			
ļ	<i>\//</i>							-									4			
-135-	<b>///</b>							$\vdash$									$\exists$			
		181										•					1			
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		1881		- very thinly interbedded	, very			_				•					1			≥
-	<b>V//</b>			fine-grained gray sands from 151' to 154'	tone/siltstone			F									-			1 2
├ <sub>╻┎</sub> ╶	<b>///</b>			- interhedded gravish-hro	wn claystone			-				•					-			12
155- -		₩		<ul> <li>interbedded grayish-bro from 154' to 160'</li> </ul>	Wir ciaystoric												7			₹
ļ .	<b>///</b>	<b>1</b>						F				•					4			A
-		<del>                                      </del>						-									1			SE
160		8	ŀ			L	<b> </b>	<u> </u>	4		4_		<u> </u>	L _	- 4	_ -	_]	4		HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
	-			Boring Terminated				-									4			
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DEDT	l I Drili	ED.		160.0 ft	DEPTH TO WATE	R.	5.30	L ft				DRC	J. No			ASF13	3-1/1	 		1
	DRILLE			4/29/2011	DATE MEASURED		3.30 4/29/		1			FAC	,, INU	••	,	-J-13	141−ر	0-00		
2415	JIVILLE	<u> </u>		., 23, 2011	DATE INLASORED		7/23/	201	-											L



METHOD:	Ro	tos	onic				LC	CATIC						239.28	3		
		ᆸ			┕	ļ "					RENGT					١.	
DEPTH, FT SYMBOL	SAMPLES	ELEVATION, FT	DECCRIPTION OF		BLOWS PER FT	UNIT DRY WEIGHT, pcf			.0 1	L.Š :	2,0 2	2,5	3.0	3.5	4.0	PLASTICITY INDEX	% -200
SYM	SAM	VAT	DESCRIPTION O	FIVIATERIAL	swc			PLAS	TIC		WATE	R	•	LIQUID LIMIT	•	LAST L	%
- I	"	EE	CLIDEACE ELEVATION: E36	90 ft	BEC	- >			<u>20                                    </u>					$-\times$	00		
	+	Н	SURFACE ELEVATION: 536 NO RECOVERY	.0911				10 2	<u>20 .</u>	30	40	50 (	60	70	80		
- 5							- - - -								-		
-10			STRATUM I (531.89 ft): FAT CLAY (CH), soft to fin slightly moist, with organiche pockets and fer fine-grained sand from	anic matter, rous staining		- - -		0			•				-	-	
-15-			STRATUM III (524.89 ft): FAT CLAY (CH), hard, red dark brown with green brown mottling, slightly caliche pockets	ish-gray and			- - - - -				0 0				-	- - - - -	
20-			- ferrous staining and we partings from 21' to 26	athering along			- - - -	×		-  ×	9 9				- - -	18	93
-30			STRATUM IV (510.89 ft): SANDY LEAN CLAY (CL), h grayish-green to reddis greenish-gray mottling, to moist - brown with greenish-gra with interbedded brow siltstone from 29' to 35	h-brown with slightly moist ay mottling, n claystone and			- - - - -				0 0 0				-	- - - - - -	
35-			- green with brown mottl 39'				 - - -				•				-	- - - - -	
-40-			- reddish-brown, with ver	ry thinly			- - - -				•				-		
-45			interbedded claystone	from 42° to 47°			- - - -				0 0				-		
-50-			- brown, very thinly inter claystone from 50' to 5	bedded 7'			- - - -				•				-	- - - - -	
-55-			- gray with green mottlin	g from 57' to 62'			- - - - - - -			×	• • • • • • • • • • • • • • • • • • •				× -	50	99
DEPTH DRIL	LED	:	160.0 ft	DEPTH TO WATE	R:	7.89	ft	1	1	1	PR	OJ. No	).:	A	SF13-1	40-00	
DATE DRILLE	ED:		5/6/2011	DATE MEASURED	<b>)</b> :	1/10/	2012										



DRILLING METHOD:

Rotosonic

LOCATION: N 9999371.12: F 1588239.28

METH	IOD:	Rotos	onic				L	OCA	ATIO			99371.				8		_	_
		<sub> -</sub>			  -			_				RENGTH							
F	9	SAMPLES ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5				_				4.0	PLASTICITY	-200	
ОЕРТН, FT	SYMBOL	ATIC	DESCRIPTION O	F MATERIAL	WS P	FE		_	PLAST	ГІС	_	WATER		L	LIQUID		- STI	% -20	
=	S	EE S			BLO	5 ₹			LIMI			CONTEN	Г — — -		LIMIT		3	"	
	.,,,		SURFACE ELEVATION: 536					10	<u>^2</u>	0 3	0	40 5	0 6	0	-X- 70	80			4
-		181	STRATUM IV (510.89 ft): SANDY LEAN CLAY (CL), h	ard			-					•					-		
			grayish-green to reddis	h-brown with													1		
		<b>18</b> 1	greenish-gray mottling	, slightly moist			-										-		
<del>-70-</del>		181	to moist (continued) - brown with scattered li	ght			$\vdash$					•				-	-		
			greenish-gray mottling	, with very thinly													1		
-			interbedded brown cla to 71'	ystone from 67'			-										-		
├ 75 <del>-</del>			1071									•							
<b>⊢</b> ′ ′ -							-										_		١.
-							-										-		1 2
[ ]		1881										€					]		I A
<del>-80-</del>		<del>                                      </del>					-									-	-		
_		1881										•					1		
			- interbeds and induratio	n decreasing			-										-		PRG
- 85			from 82' to 93'				L					•				١.	_		#
- 03							_										-		
-		1381					-										-		S
-		]88[															]		=
-90-							-									-	-		
t :		181	   - gray with light brown m	ottling from 91'			Ė					•					_		AR.
-			to 92'				F-	+-							<u> </u>		7		1 6
		1881	FAT CLAY (CH), hard, darl	k grayish-green			-					•					+		HESE I OGS SHOLLID NOT BE LISED SEPARATELY EROM THE PROJECT REPORT
—95 —		1381	with dark gray mottling to moist	g, slightly moist						×-						109	)] -¥ 86	99	.   <u>~</u>
-			- gray from 94' to 100'				-			^		•					100	93	<u> </u>
		1881															1		5
100-			- greenish-gray siltstone	from 99.5' to			_									-	-		=
<u> </u>			99.75'									0							=
<u> </u>		<b>131</b> 1	- gray to greenish-gray to with thinly interbedded	d grav sandstone			-										_		7
105		181	and claystone from 100	)' to 113'			-					•					-		6
105																	]		<u> </u>
							-					•					-		1 1
Ė :																	1		IJĒ.
110-			- caliche pockets from 10	9' to 110'			L									-	-		NOTE:
-		181					-					•					1		2
[		H					F										]		
		1881					-					•					-		
115-																-	1		
	///		roddish braws with	onich aro:		1	F										-		
<u> </u>			<ul> <li>reddish-brown with gre mottling, with weakly-i</li> </ul>	ndurated			Ė					-					1		
120-		181	reddish-brown claystor	ne from 117' to		1	L					•				.	-		
-			123'				-										-		
[ -	///					1	F										1		
-	///		- grayish-brown to grayis	h-green with			F					•					+		
125		捌	claystone inclusions fro	)III 123 TO 126		1										'	1		
ļ -		181					F					₩					1		
<b>-</b>			- reddish-brown with gre mottling with weakly-in	enish-gray ndurated		1	F										+		
		138		T													1		_
DEPTH			160.0 ft	DEPTH TO WATE		7.89						PRO	J. No.	:	Α	SF13-	140-0	)	
DATE	DRILLE	D:	5/6/2011	DATE MEASURED	): 	1/10/	2012												



DRILLING METHOD: Rotosonic

**LOCATION:** N 9999371.12; E 1588239.28

METH	יטט:	Rot	osc	onic					.OCAT			999371.						
			Ŀ١			ь			_			TRENGT			z -□-			
ОЕРТН, FT	SYMBOL	SAMPLES	EVATION,	DESCRIPTION O	MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5	1.0 ASTIC MIT	1.5	2.0 2 WATER	.5 3.	0 3	.5 4	.0	PLASTICITY INDEX	% -200
-			ᆲ	SURFACE ELEVATION: 536	89 ft	H	>			<del>×-</del> -	 30	- <del>-</del> 40 €			× 70 8	_	-	
				claystone from 127' t FAT CLAY (CH), hard, dark with dark gray mottling to moist (continued) - caliche pockets from 13 - gray, with very thinly in siltstone from 134.5' to	o 134.5' k grayish-green k, slightly moist 1' to 134.5' terbedded 135'			- - - - - - - -			<	9 9		<i></i> ×			43	96
- 145- - - - -				well-indurated sandsto from 141' to 150'	ne/siltstone			- - - -				<b>.</b>				- - - -		
150 				<ul> <li>reddish-brown with ver interbedded gray siltstoweakly-indurated clays to 154'</li> <li>trace of fine-grained sai</li> </ul>	y thinly one and tone from 150'			- - - -				<b>9 9 9</b>						
155- - - - - - 160-				160'				-  -  -  -				•				- - - -		. — —
 	-			Boring Terminated				- - -								- - -		
165 -  								-  -  -								- - -		
170- 								- - - -								-		
 175- 	-							-  -  -								- - -		
 180- 								- - - -								- - - -		
- 185- - 185-   190-																		
 	H DRILL	ED:		160.0 ft	DEPTH TO WATE	R:	7.89	-  -  -  -				PRO	DJ. No.	:	AS	- - - - F13-14	10-00	
DATE	DRILLE	D:		5/6/2011	DATE MEASURED	):	1/10/	201	2									



METHOD:	 Ro	tos	onic				L	OCA	ATIO							9399.	08			
		ᇤ			ь								NGTH -⊗-			:T' □-			>	
DEPTH, FT	SAMPLES	ELEVATION, FT	DESCRIPTION O	Ε ΜΑΤΕΡΙΔΙ	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5	1.	.0 1		2,0	2.		3.0	3.5	4.0		PLASTICITY INDEX	% -200
DEPT	SAIV	LEVAI	DESCRIPTION OF	WATERIAL	LOWS	WEIG		1	PLAS <sup>*</sup> LIMI	IT		CC	VATER ONTEN	г		LIQUIE LIMIT			PLAS	%
		13	SURFACE ELEVATION: 542	.22 ft	8			10	~× 2	0 3	30	40	• — )	 0	 50	-×- 70	80			
	<del>keekee</del>		STRATUM I (542.22 ft): SANDY LEAN CLAY (CL), v brown to brown, moist matter and caliche poc rounded gravel	, with organic			-			8	)							1 1 1 1		
			- ferrous stained sand an 6.5' to 9.5'	d caliche from		- 7	-  -  -  -						•							
-10- - - - - -15-			STRATUM III (532.72 ft): LEAN CLAY (CL), hard, light tannish-green and oran slightly moist, with gyp ferrous staining along p	ige mottling, sum crystals and			- - - -						<b>8 8 9</b>							
<b>├</b> <i>-{//</i>							-		×		L.	- ¥	9					-	21	96
-20			FAT CLAY (CH), hard, gray to reddish-brown with mottling, slightly moist interbedded claystone	greenish-gray , with very thinly			- - - - -						•							30
25	<del>perdex</del>		- blocky, reddish-brown v greenish-gray mottling	vith light from 26' to 40'			- - - -						•					1 1 1 1		
-30-			- caliche pockets and wea	akly-indurated e from 32' to 35'			- - -						•							
-35-			8.0, 00 0.000				- - -						<b>9</b>							
40-			- glauconite at partings fi	rom 39' to 40'			-  -						•					-		
-45							- - -						<b>.</b>					1 1 1		
50							- - - - -						<b>9 9 9</b>					1 1 1 1 1		
-55-			- sandy from 54' to 56'				L						•					-		
			SANDY SILT (ML), very fir greenish-gray, moist, w	m to stiff, light ith some clay			 - -	-	_ ×	<u></u>	8	*	<b>. .</b> _			-			22	87
-60			LEAN CLAY (CL), stiff, ligh slightly moist	t grayish-green,	-		  -  -  -	†-		— — - — — -	-		 - <del>0</del> -			-				
‡ <i>¥//</i>			- large caliche pockets fro	om 63' to 65'			-						•					-		
DEPTH DR DATE DRIL		Ш :	121.0 ft 4/17/2011	DEPTH TO WATE		9.00 4/17/		1				+		J. No	) <b>.:</b>		ASF1	.3-14	10-00	<u> </u>



DRILLING METHOD:

Rotosonic

LOCATION: N 9999853.96: F 1589399.08

METHOD:	Rotos	onic				L	OCA			9999853							1
	⊢			_						TRENGT							
F, 10	SAMPLES ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0		⊗- 2.0 2			–⊔– 3.5 4.	o	PLASTICITY INDEX	00	
DEPTH, FT	SAMPLES EVATION, I	DESCRIPTION O	F MATERIAL	WS	FE		PI	ASTIC		WATE	₹	L	IQUID		ASTI	% -200	
	S  EE		_	8	⊃≋			IMIT		CONTEN			LIMIT -X-		4		
		SURFACE ELEVATION: 542			-		10	<u>×</u> 20	30	40 !	50 6	0	-≻ 70 80	)			4
	<b> </b>	FAT CLAY (CH), blocky, ha reddish-brown to brow	n with light			_				•							
		greenish-gray mottling with very thinly interbe	, slightly moist,			F								_			
70-	<b> </b> }}	claystone/shale and sil	eaaea brown tstone			-				•				-			
		(continued)				F								$\neg$			
<b>├</b> <i>₹///</i>	1881					F				•				-			
						Ē								7			
75-		- large caliche pockets fro	om 74' to 76'			H								-			
						_				•							⊨
<b>├ -///</b>	1881					F				•				-			
80-	$\mathbb{H}$																HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
F " - 1///	<b> </b>					F				•				-			
		- weakly-indurated siltsto	one from 82' to														18
<b>///</b>	<b> </b>	83'				F								-			4
85														$\exists$			Ė
<i>///</i>	<b> </b> }}	- reddish-brown with ligh	nt gray mottling			-				•				-			6
· ///		from 86' to 92'				-								-			=
-90-	<b> 8</b>					Ē.				•				_			旧
· ·///						F								-			₩
<b>1</b> ///						_								1			SEP,
	1881	- reddish-brown with ligh	nt gray mottling			-		*						-	28	98	
95		from 94' to 97'	it gray motting														S
├ <i>\///</i>	H	- light greenish-gray silts	tono from 97' to			-				9				-			18
		98.5'	tone from 37 to	1		F-	+-		-+-		+		+	=			2
-100-		FAT CLAY (CH), hard, red	dish-brown,			-								_			₽
	88	slightly moist, with inte gray-brown claystone	erbedded			Ē				•				1			₫
· ·///		- gray mottling from 101' - yellow mottling from 10	to 107'			F				•				-			SS
105		- yellow mottling from 10	03' to 104'							€							8
F	H	- caliche pockets at 106'				-				•				-			SEL
	}	- calicile pockets at 100								•							岩
<b> </b>						-								-			NOTE: TE
110-										•							9
F		- caliche pockets from 11	.1' to 113'			F								-			
	$\{\}\}$																
115						L				•				_			
		- caliche at partings from	116' to 118'											=			
						F				•				=			
120		- caliche at partings from	119' to 120'			Ł								_			
1207		L		<b>↓</b> – -	<del> </del>	F-	+-	$ \vdash$	_   -				<del> </del>	7			
<u> </u>		Boring Terminated				E								$\dashv$			
F 1						F								]			
-125-						$\vdash$								-			
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<b> </b>						F								$\dashv$			
	$\Box \bot$		T														1
DEPTH DRILL		121.0 ft	DEPTH TO WATE		9.00		4			PR	OJ. No.	:	ASF	13-14	0-00		
DATE DRILLE	ט:	4/17/2011	DATE MEASURE	J:	4/17/	201	1										



DRILLING METHOD:

Rotosonic

**LOCATION:** N 9999107.12; E 1589421.42

METHOD:	Rotos	onic				LC	CATIO						9421.4	.2			4
	<sub>E</sub>			E			_6			RENG 							
рертн, FT SYMBOL	SAMPLES ELEVATION, FT	DECORPTION OF		BLOWS PER FT	UNIT DRY WEIGHT, pcf								3.5	4.0	PLASTICITY	EX DEX	3
SYM	SAMI	DESCRIPTION O	F MATERIAL	SWC	FE		PLAS LIN	STIC		WAT	ER		LIQUID		A	됩   2	?
		CLIDEACE ELEVATION, FOO	02.6	BLC	~>		$\rightarrow$						<del>×</del>		-		
	ж	SURFACE ELEVATION: 538 STRATUM I (538.03 ft):	5.03 Tt				<u>10 7</u>		30	40	50	60	/0	80	+	-	$\dashv$
		FAT CLAY (CH), stiff, brov	vn to light					0							1		
⊦ <i>-</i> {//	8	brown, moist, with orga	anic matter and			-									-		
_ 5 _		caliche pockets - sandy from 2' to 9'				-		•							1		
	3	,						•							7		
	<b>X</b> (					-									-		
					-	₹				•							
-10-///		STRATUM III (529.03 ft):				_									_		
├ <i>-{///</i>	X	LEAN CLAY (CL), very firm reddish-brown with ora	to stiff, tan to			-									-		
		slightly moist, with ferr	ous staining												1		
- <i>-{///</i> }		along partings and scat pockets	tered caliche			-									-		
<b>├</b> 15 <b>-</b>	3	pockets				-									-		
[ <i>1///</i> ]						Ē.				•					1		
F -{///	<b>8</b>					-									-		
	8					L				•					j		
	38							<del> </del> <del> </del> <del> </del> -		- + 😣	$\downarrow$				$\frac{1}{2}$	7   9	ا ي
	X	STRATUM IV (517.03 ft): FAT CLAY (CH), hard, redo	dish-brown to			-									-   -	´   ´	۱
		gray, slightly moist, wit	h thinly												1		
-25-	<b>3</b>	interbedded well-indur	ated claystone,			_									_		
	8	siltstone and fine-grain - interbedded siltstone fr	ed sandstone rom 21' to 26'			-				•					-		
		microcaded smotorie m	0.11.21.10.20												1		
						-				•					-		8
-30-	8	- sandy from 29' to 37'				_				•					-		
	\$ }														]		
	3					-				•					-		
-35-										●					_		
	**					_											
- <i>- [///</i>						-				•					-		
	8														1		
-40-	8					_				•					_		
├ <i>-{///</i>	<b>X</b>					-									-		
	X	- grayish-brown to reddis	h-brown from												1		
		42' to 44'				-									4		
-45-		<ul> <li>claystone fragments d</li> <li>42' to 52'</li> </ul>	lecreasing from			_									$\dashv$		
	8	<ul> <li>greenish-gray with brov</li> </ul>	vn mottling from							•					]		
	3	44' to 47' - blocky, brown from 47'	to 49'			-									-		
-50-	<b>X</b> (	- reddish-brown with gre								•							
<sup>30</sup>		mottling from 49' to 60	' ,			-									-		
├ <i> / / /</i>		- large claystone fragmer	ats from 52' to			-				•					+		
		55'	163 11 0111 32 10		1										1		
-55-					1	-				•					$\dashv$		
t *///					1	F									+		
						Ī.				"					]		
├ <i>\//</i> /		opliche postesta fuse. 50	1+0 601			F		$\times$	4		4	$\Rightarrow$			3	5   10	00
-60-		<ul> <li>caliche pockets from 59</li> <li>brown with greenish-gr</li> </ul>	ເບ ຫປ av mottling		1										亅 ˜		
	<b> </b>	<ul> <li>brown with greenish-gr with glauconite pocket</li> </ul>	s from 60' to 63'		1	Ē									]		
						F									+		
		- caliche pockets from 63	10 70			<u> </u>									╧		
DEPTH DRILL		160.0 ft 5/7/2011	DEPTH TO WATER		8.36 1/10/		_		_	PF	ROJ. N	0.:	A	SF13-	140-0	00	
DATE DRILLEI			DATE MEASURED														



METHOD	D:	Rot	os	onic				L	.oc	ATIC					12; E			.42				1
			<u>.</u>			l.									<b>I, TO</b> ∠			_				
E   5	BOL	SAMPLES	ELEVATION, FT	DECCRIPTION OF		BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5	1	.0	1.5	2.0	0 <u>~</u>	.5 3	3.0	3.5	4.0	)	PLASTICITY INDEX	% -200	
ОЕРТН, FT	SYMBOL	SAME	YAT	DESCRIPTION OF	FMATERIAL	SWC	FIE			PLAS LIM	TIC			WATER ONTEN	т		LIQUI	D T		LAST	% -2	
			쁴	SURFACE ELEVATION: 538	02 ft	BLC	23		4.0	—×				) <u> </u>			$-\times$	-		Ъ		
		3 3 3 7		- reddish-brown to gray fine-grained sand, thinl	v, with some v interbedded			-	10		.0	30	40	<del>9</del> 5	0 6	50	70	80	_			1
		<u> </u>		gray sandstone from 63 STRATUM IV (517.03 ft): FAT CLAY (CH), hard, redo	3' to 71'			-						•					-			
70-1				gray, slightly moist, wit interbedded well-indur siltstone and fine-grain (continued)	h thinly ated claystone,			- - -						0					-			
75		8		- greenish-gray from 71' t				_						•					_			
				- brown with greenish-gra 76' to 81'	ay mottling from			- - -						•					-			Tacasa
-80- -		\{\{\}}		- gray, with very thinly in	terbedded									0					-			[ 5
85		<u> </u>		sandstone from 81' to 8 - brown with gray mottlir interbedded brown clay to 84'	ng, with			- - 						<b>⊗</b> _ <b>⊕</b>					-			TACATA TOTIONA THE MOST VITE SANDERS ATTENDED TO THE HOUSE SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIONS SOLUTIO
				FAT CLAY (CH), hard, light to gray and reddish-bro moist	t greenish-gray own, slightly			-  -  -						•					-			7007
-90- -		<b>}</b>		- brown and gray from 91	.' to 94.5'									•					-			1
		\ <u>\</u>		- thinly interbedded redd claystone from 92' to 9	ish-brown 3'			- -						•					-			1
95-				- reddish and chocolate b greenish-gray mottling 97'	from 94.5' to			- -				× -		<b>0</b> - <b>0</b> -				· ×	-	50	100	- - - - - -
100				<ul> <li>dark greenish-gray, with fine-grained sand from</li> </ul>	97' to 102'			_						0					-			
105				- reddish-brown with gre- mottling, with caliche p 102' to 115'	enish-gray oockets from			- - -						<b>8</b>					-			
		<u> </u>						- - -						•					_			
110								-  -						8					-			F. TEC
								-  -  -						<b>8</b>					-			
115								-  -  -	_				_	• •			-		-			
120-				FAT CLAY (CH), hard, gree brown mottling, slightly	en with light y moist			- - -						•					-			
								-  -  -						0					-			
125								-  -  -  -						<b>8</b>								
DEPTH DI	RILL	ED:		160.0 ft	DEPTH TO WATE	R:	8.36	- ft					1	<del>⊕</del> PRC	)J. No	 :		ASF:	13-14	10-00		
DATE DR				5/7/2011	DATE MEASURE		1/10/		2													



DRILLING METHOD:

Rotosonic

**LOCATION:** N 9999107.12; E 1589421.42

METH	OD:	Rotos	sonic				L	OCATIO		N 9999						
		l I⊾							SHEA	R STREI	NGTH, 1	ONS/F	T²_			
F,	30	SAMPLES ELEVATION, FT			BLOWS PER FT	UNIT DRY WEIGHT, pcf				-<			 3.5 4.0	o	PLASTICITY INDEX	00
БЕРТН, FT	SYMBOL	SAMPLES EVATION, I	DESCRIPTION O	FMATERIAL	SWS	FISH		PLAS LIM	TIC	, v	VATER ONTENT		LIQUID LIMIT		IND	% -200
			CLIDEACE ELEVATIONI, E20	02 ft	BIC	>>		$\rightarrow$			<b>•</b>		$-\times$		_	
	///		SURFACE ELEVATION: 538 FAT CLAY (CH), hard, gree					10 2	20 3	30 40	50	60	70 80	<del>)</del>		
[ ]			brown mottling, slightly	y moist			F		$\times$			$-+\times$		7	38	97
┞╶╏			(continued) - weakly-indurated gray of 131' to 134'	clavstone from			-							-	30	,
135	///	1881	131' to 134'	21 += 1221			F				•			4		
			- caliche pockets from 13 - brown with gray mottlir	ng from 134' to										_		
<u> </u>			l 136'				-				•			-		
140			- thinly interbedded gray trace of fine-grained sa	nd from 136' to			L				•					
F 140			141'				-							-		
											•					
├ <sub></sub> -							F							-		
145 -			- gray with brown mottlir	ng from 145' to			F				•					
┟╶╏	///		148'				F				•			-		
[ <u>]</u>							F							4		
150											•			-		
			- gray from 151' to 152'	ا العادد .			-				•			-		
<u> </u>			- brown to reddish-brown greenish-gray mottling,	, with indurated												
-155-			reddish-brown claystor	ne from 152' to			_				•			-		
			100													
							-							-		
160		<b>3</b>	L	- – – – – – – –	<u> </u>	<u> </u>	<u> </u>	4		<del> </del>	<b>.</b>		4	1		
			Boring Terminated				-							Ⅎ		
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- 165-																
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- 1							_							1		
- 170							-							-		
170 							F									
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_175_ _														$\exists$		
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-180-							$\vdash$							-		
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- 190-							L							ュ		
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DEPTH			160.0 ft	DEPTH TO WATE		8.36					PROJ.	No.:	ASF	13-14	0-00	
DATE D	DRILLE	D:	5/7/2011	DATE MEASURED	): 	1/10/	2012	2								



DRILLING METHOD:

Rotosonic

LOCATION: N 10006365.24: F 1588627.29

METH	HOD:	Roto	sonic				LC	CATIO			L000636				29			1
		l I₌			_						TRENGT							
ᄩ	۱ ۲	SAMPLES FI EVATION ET			BLOWS PER FT	UNIT DRY WEIGHT, pcf	، ا				2.0 2			3.5	<i>1</i> 0	PLASTICITY INDEX		
ОЕРТН, FT	SYMBOL	MPL	DESCRIPTION O	F MATERIAL	IS PI	탈	<u> </u>	PLAS		1,5	WATE		_	LIQUID	4.0	STIC	% -200	
🗏	≿	&   <u>§</u>			٥	S =		LIN	1IT		CONTE	NT		LIMIT		₹=	%	
		"	SURFACE ELEVATION: 550	0.60 ft	<b>—</b>		,	LO →	← – 20	30	40	 50 - 6	 50	-×- 70	80			
	///	100	STRATUM I (550.60 ft):				_			T				1				1
ļ	<i>\//</i>	1(1)	FAT CLAY (CH), firm, tan	to brown, moist,			-									4		
F .			with caliche pockets, o	rganic matter,			-0									-		
<u> </u>	1///	1)II(	ferrous staining and sc				-									1		
<u> </u>	///		STRATUM III (547.60 ft): CLAY, stiff to hard, light §	groonich brown											-			
ļ	<i>\//</i>		to reddish-brown, sligh	ntly moist, with			L									4		
F .	<i>\//</i>	ł III I	ferrous staining along	partings and			-									-		
F 40	<b>V//</b>	<b>∤(</b> 0)	scattered caliche pock	ets			-									1		
10-																		
L .	<i>\//</i>						L									-		₩
<u> </u>		ł III I	graphish tan from 12! t	0.16			F									-		8
<sub>1</sub>			- greenish-tan from 13' t	0 16			┝									1		H
15-	///						F								-	1		
F .		∤₩/I	- grayish-brown with gre	en mottling from			F									-		5
F .	1//	1411	16' to 18' - reddish-brown with gre	en and some			F									1		1 %
-20-	1//	]][[	orange mottling from 2	18' to 27.5'											_	1		12
20	1///	∤∰Ì I					L									4		HESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
F .	1//	1411					ŀ									1		Š
F .	///	1111					<b>-</b>									1		"
-25-															_			1 🖽
23	1///	<b>∤</b> (₽)					F									-		¥
ļ .		1(1)									•							ĕ
<b>†</b>	1//	1(1)	STRATUM IV (523.10 ft):				-											1 2
_30-		₩	FAT CLAY (CH), hard, gre light brown mottling, s	enish-gray with											_			l is
"	1///	1001	- sandy from 30.5' to 34.	5'			F									-		
F .	1//	1)((					-									1		E
		ł\VI																18
<del>-35</del> -	1//	101	- brown with green mott	ling with			_								-	-		
F .	<b>Y//</b>	Ж	scattered brown clayst	one fragments			-									1		13
Ė:		ł W I	from 34.5' to 36'				Ė											T S
L .	<b>V//</b>	1(8)	- brown, with widely scar fine-grained sand and	tterea scattered ferrous			L									4		GS
<del>-40-</del>	<b>///</b>	1)((	staining from 36' to 49	'			┝								-	-		١Š
F .	<b>Y//</b> /						F									1		SE
[ ]	<b>V//</b>	1/1/1					Ę.									1		1 ⊏
ļ .	1//	1111					F									1		<u>نن</u> [
-45-	<b>///</b>	H					<u> </u>								-	1		NOTE: -
	1///	<b>∤</b> ₩/					Ľ									1		-
ļ	1//	141					L									-		
F	<b>///</b>	∤₩/I	groop siltstone from 40	' +o EO'			ŀ									1		
-50-	<b>V//</b>	1/1	- green siltstone from 49 - thinly interbedded brow	าเบเวบ wn.clavstone			$\vdash$				•				-	1		
[ ]	///	1111	from 50' to 51'	•			Ę.											
F .	<b>///</b>	∤∦∖I	- thinly interbedded gree	enish-gray			F									-		
<b> </b>	<b>V//</b>	╢╢	fine-grained sandstone	e irom 51 to 55			F									1		
<u>-55</u> -	1//		- brown, with interbedde	ed gray-brown											-	1		
ļ	<b>Y//</b>	<b>∤(</b>   )	siltstone/claystone fro	m 55' to 57'			F									4		
F .	<b>///</b>	∤∦∖I					F									1		
F 60	1//	1111	- gray siltstone/claystone	e from 58.5' to			L											
-60-	///	<b> </b>	61'				F								-			
ļ .	<b>\//</b>	∤¥/I		OL: C45'			F									-		
F .	1//	1(1)	- green claystone from 6	z to 64.5			F									1		
	V.L.		<u> </u>				<u> </u>	<del> </del>	<u> </u>	+-		+	<u> </u>	+	<u>-                                    </u>	1		
1	H DRILL		502.0 ft	DEPTH TO WATE		-					PR	OJ. No	).:	Α	SF13-1	40-00		
DATE	DRILLE	D:	6/7/2011	DATE MEASURED	): 													



METH	OD:	Roto	sonic				LC	CATI			1000636			27.29				1
		l I⊧			<sub>F</sub>	_		_6	SHI	EAR S	TRENGTI	H, TON	S/FT <sup>2</sup>	L				
F,	30.	SAMPLES ELEVATION, FT	DECODIDETION O	E & 4 & TED! & !	BLOWS PER FT	UNIT DRY WEIGHT, pcf	(		1.0		2.0 2					PLASTICITY INDEX	8	
БЕРТН, FT	SYMBOL	AMI	DESCRIPTION O	FIMATERIAL	Sws.	FIGH		PLA	STIC VIT		WATER		LIQU	JID		LAST	% -200	
		*  =		) 60 ft	98	23			√— — <b>20</b>				·×			_		
	;;;;;;;;		SURFACE ELEVATION: 550  SANDSTONE, very fine-gi					10	20	30	40 5	0 60	) /0	80				┨
		101	grayish-green, slightly	moist, with	1		-	T		_   _								
-		<b>∤</b> (0)	greenish-gray clay (con				-								-			l
- -70-		101	FAT CLAY (CH), hard, gray brown and reddish-brown	yish-green to own. slightly			L				•				4			
-		<b> </b>	moist				-								-			
-		1111	<ul> <li>very thinly interbedd fine-grained sandstone</li> </ul>	ed grayish-green from 66' to 72'			-								1			ı
- 		ł₩I	- brown with gray mottlingray-brown siltstone fr	ng and			-								-			
─75 <i>─</i> 		1111	- reddish-brown with gre	enish-gray											_			
-		╢╢	mottling from 72' to 84	1'			-								-			5
_		1M)					Ĺ				•				_			]
<del>-80-</del>		ł₩I	- very thinly interbedded claystone from 79' to 8	brown			-								-			-
_		1 <b>4</b> 01	ciaystone from 75 to 6	, <u> </u>											1			}
		<b>     </b>					-								-			ESE I OCS SHOLLIP NOT BE LISED SEBABATELY EBOM THE BROLECT BEDORT
- 85	<b></b>		\rangle - caliche pockets from 83	3.5' to 84'	1		E-	<del> </del>	-	_ † _			+-	-				}
	///	槶	NO RECOVERY				-								-			
_		1 <b>%</b> [	<ul> <li>very thinly interbedded fine-grained sandstone</li> </ul>	gray from 86' to 90'											4			2
l		1 <b>8</b> 61					-								-			2
90 			- scattered gray siltstone	from 90' to 101'														5
-		<b>             </b>					-								-			
_		1WI													1			
<del>-</del> 95-		╢╢					_				•				-			2
_		1 <b>V</b> I																
		<b>∤</b> (0)					-								-			5
- -100-																		
- Too -		<b>1</b> ]		. la			-								-			=
-		1WI	- greenish-gray with light mottling, with scattere	d fine-grained														]
		1 <b>)</b> KI	sandstone from 101' to	103'			-								-			١
105	111		- caliche pockets from 10 FAT CLAY (CH), hard, bro		1			†	- -	- † -		t — —  -	+ -					
		101	mottling to reddish-bro	own with light			-								-			
_		<b> </b>	gray mottling, slightly i - scattered brown claysto	moist														Ī
-110-		<b>1</b> WI	106'				_								_			F. ITC
<u> </u>		1411	- glauconite pockets from - orange-brown mottlin	n 106' to 107'							•							2
		1)KI	110'				-								-			
- 115		101	- scattered brown claysto 119'	one from 110' to														
				C 4451											-			
-		<b>1</b> WI	- orange-brown mottling 125'	from 116' to			L								_			
-		<b>     </b>					ŀ								4			
_120_			- grayish-brown siltstone	from 120' to											_			
		╢	122'	, <u></u> <b>J</b>			F								7			
լ -		111					L								=			
125		<b>∤</b> ∦					Ē								4			
<u> </u>			- scattered weakly-indura grayish-green clayston	ated e from 125' to			E								4			
F -		<b>∤</b> ∦	126'				F								]			
-		1	<ul> <li>reddish-brown with ligh with thinly interbedded</li> </ul>	nt gray mottling, d brown			L											
DEPTH			502.0 ft	DEPTH TO WATE	R:	-						J. No.:	'	ASF1	L3-14	0-00		1
DATE I	DRILLE	D:	6/7/2011	DATE MEASURE	<b>D</b> :	-												1



DRILLING METHOD:

Rotosonic

**LOCATION:** N 10006365.24; E 1588627.29

METH	OD:	Roto	sonic					.OC/	OITA					4; E 1		27.29				1
					⊢									TONS,		1				
Ε	۵ ا				BLOWS PER FT	UNIT DRY WEIGHT, pdf		0.5	_				-	3.0				PLASTICITY INDEX	0	
ОЕРТН, FT	SYMBOL	SAMPLES	DESCRIPTION O	F MATERIAL	WS P	15			PLAST				ATER		LIQU			NDE	% -200	
=	8	\$ 8			ŏ	58			LIMI	T		CON	TENT		LIM	IT		7	•	
			SURFACE ELEVATION: 550	).60 ft				10	-× 20		30	40	50	60	− –× 70	80				1
<u> </u>		1861	claystone from 126' t				F										-			l
-		1881	- greenish-gray with light mottling, with very fine				ŀ										-			l
		1787	greenish-gray sandstor				Ė													
135		1381	pockets, and gypsum c				L					(	9							
<u> </u>		H	to 131' FAT CLAY (CH), hard, bro	wn with green			F										-			
F -		111	mottling to reddish-bro				-										-			
-		1/1/1	gray mottling, slightly r				F													
140-		łWI	(continued) - thinly interbedded brow	vn			-										-			
<b>-</b>		141	siltstone/claystone from				-					1	9				-			∟ا
		111	- dark gray with greenish	-gray mottling													]			8
-		ł∰∖	and some orange mott scattered gray clayston	ling, With on from 136' to			-										_			ᇤ
145		1)((	139'	ic 110111 150 to			⊢										-			ΙĒ
	<b>///</b>		- brown with dark gray a				Ĺ													SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
-		<b>       </b>	mottling, with scattere	d silt and			F										-			8
<u> </u>		1 ) <b>(</b> (	interbedded brown wit siltstone from 146' to 1	n green 149'			F						9				-			#
150-		1 <b>1</b> /1	- light greenish-gray from	n 149' to 151'									-							-
<u> </u>		<b>∤</b> (∎)	- fine-grained, thinly in	terbedded			F										-			[5
-		Ж	grayish-brown and gree sandstone from 149' to	enish-gray 5 151'			ŀ										-			#
155-		1881	- sandstone fragments fr	om 151' to			L					(	8				_			[
133 -	1,1,1	130	151.5'		ļ		L-	- 4 -			4_	_ L	_ 4 -		_					[2
-		₩	- brown with light gray greenish-gray mottling	from 151' to			F										-			d
-		ł M.I.	152'	110111 131 10			-										-			5
160-		1WI	- gray with light green i	mottling from			L													
		141	151' to 153' - brown with greenish-gr	av mottling from			-					-   (	₽				-			] =
<b>-</b>		₩	153' to 156'				F										-			E
		1/1/1	FAT CLAY (CH), hard, gray	yish-brown to			Ē										1			
165		W	reddish-brown, slightly	moist			_										_			2
<b>-</b>		М	- very fine-grained gray s 156' to 164'	andstone from			-										-			l =
		1 <b>V</b> I	- grayish-light brown silts	stone from 164'																] }
<u> </u>		{ <b>/</b> }}	to 166'				ŀ										-			Į ć
170-		1111	- sandy, with thinly interl fine-grained gray sands				-						_				-			HESE LOGS
t :		1411	to 168'				Ė					_   '	8							1 2
ļ -		1 <b>1</b> 11 (	- reddish-brown to brown				L										_			1 ⊢
-		1(1)	greenish-gray and oran mottling with scattered	ige-brown 1 fine-grained			F										-			lė
175-	///		sand from 168' to 171'	-													$\exists$			NO TE
} -		<b>∤</b> {∭]	- scattered brown clays to 173'	tone from 168'			F													٦
-		1 <b>.</b>	- greenish-gray with light	brown mottling			F										-			1
180-			from 171' to 173'	_			L										_			l
-190		<b>       </b>	- greenish-gray and reddifine-grained sand from	ISN-brown with			F						9				٦			l
<u> </u>		111	- dark grayish-green wi	th brown			F										-			l
<u> </u>			mottling with siltstone	from 173' to			Ė										-			1
185-		╢╢	176' - greenish-gray and light	hrown and grav			Ĺ													1
	///	<b>HH</b>	fine-grained sandstone	from 176' to			F										-			1
t -		∤ <b>∦</b> ∤	183'				t										┪			
F -	///	1(1)	- dark brown with dark gr from 183' to 186'	reen mottling			F													
190-	///		- siltstone interbeds from				$\vdash$										_			
<b>-</b>		{	- moderately-indurated of				F					-   •	❷				-			
	///	181	186' to 191.5' - gray with very fine-grain	ned sandstone			ļ.													
	<b>///</b>	1\\l	from 191.5' to 192'	ca sariastoric			F										_			
DEPTH	V / /	FD:	502.0 ft	DEPTH TO WATE	R.		Ь					+.	PROJ.	No ·		ΔSF1	3-1/	.0-00		1
DATE			6/7/2011	DATE MEASURE		_						'				A3F1	LJ-14	5 00		
באוני	EEE	<u> </u>	0///2011	JAIL WILASONEL																]



DRILLING METHOD:

Rotosonic

LOCATION: N 10006365.24: F 1588627.29

METHOD:	Rotos	onic				L	OCAT			1000636			.29		
				  -	l					TRENGT					
DEPTH, FT	SAMPLES ELEVATION, FT	DESCRIPTION O	F MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0,5	1.0 ASTIC		2.0 2 WATER	.5 3.0		4.0	PLASTICITY INDEX	% -200
-	=	SURFACE ELEVATION: 550	) 60 ft	l g	- \$		10	× - 20	30	- <del>-</del> 40 • 5		$\times$	80	-	
-200-		FAT CLAY (CH), hard, grareddish-brown, slightly (continued) - siltstone from 196' to 1 - brown claystone from 1 - brown to reddish-brow mottling from 200' to 2	yish-brown to v moist 99' 199' to 199.5' n with light gray			- - - - - -				₩		70			
205		- green, with fine-grained fine-grained sandstone 207' - thinly interbedded brow from 207' to 222'	from 205' to			- - - - -							- - - - -		
215		- glauconite and caliche p 211' to 212' - reddish-brown to brow greenish-gray mottling 222'	n, with light			- - - - -				•			- - - - - -		
-220 -220 - 225		- brown claystone from 2 - thinly interbedded brov from 222.5' to 228'	222' to 222.5' wn claystone			- - - - -				•			-		
-230 -230 -235		- grayish-green with brov grayish-green very fine sandstone interbeds fr	-grained			- - - -				•			-		
		- reddish-brown with ligh and brown claystone fi	2221 2421			- - -							- - -		
-240 		FAT CLAY (CH), hard, red gray-green, slightly mo interbedded dark grayi claystone and siltstone gypsum crystals and o from 240' to 242' and f	ist, with thinly sh-green	-		- - - - - -	+			0					
250		- blocky, brown to reddis light gray mottling, wit claystone from 249' to NO RECOVERY	h brown	_		- - - - -			_				- - - - - - -		
-255-    DEPTH DRIL	IED:	502.0 ft	DEPTH TO WATE	R.		- - - -				DD/	DJ. No.:		ASF13-14	0-00	
DATE DRILL		6/7/2011	DATE MEASURED		-					FAC	NU		13-14	-00	



DRILLING METHOD:

Rotosonic

LOCATION: N 10006365.24: F 1588627.29

METH	OD:	Rotos	onic				LC	DCAT			1000636				29			1
		=			 	_		_			TRENGT							
Ŧ,	BOL	SAMPLES ELEVATION, FT	DECCRIPTION O		BLOWS PER FT	UNIT DRY WEIGHT, pcf			1.0		2.0				4.0	PLASTICITY INDEX	% -200	
ОЕРТН, FT	SYMBOL	SAMI	DESCRIPTION O	FIVIATERIAL	Swo	Fig		PL	ASTIC IMIT		WATE	R		LIQUID LIMIT		LAST	%	
			SURFACE ELEVATION: 550	) 60 ft	BEC	->		10	× -	30	- <del>-</del> 40		 60	$-\times$	80	•		
	///		JONIACE ELEVATION: 330	7.00 It				10	20	30	40	50	00	70	<u>8U</u>			1
-		W					-								-			
-			- grayish-brown clayston	e from 263' to			_								-			
265		<b> </b> { <b> </b>	266'				-								-			
-							Ē								-			
-		im)					-				•				-			
270-																		
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-		<b> {  </b>					-								-			
- 275																		"
- T			NO RECOVERY					+	- -	- + -		+	-	+				ا ا
-	  -/ <i>T///</i>		L				-								-			NOTE: THESE LOGS SHOLLD NOT BE LISED SEPARATELY EROM THE PROJECT REPORT
- 280			CLAYSTONE or SILTSTON and gray	E, hard, brown			L								-			#
- 200							_								-			ĮΣ
_	////	MI					-								-			E
-	7.4.4		SANDSTONE very fine-gr	ained gray with				+	- -	-+-		+	-	+				}
285 			SANDSTONE, very fine-gr interbedded clays cont thinly interbedded san	aining very			_								-			A
<u> </u>			thinly interbedded san	dstone							•				-			FPA
-			- clay from 288' to 296'				_								-			١٢
290			- caliche pockets from 29	00' to 295'											-			=
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-		W					Ė								_			] 'S
295															-			=
-															-			] <u>5</u>
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300-							H								-	-		Ĭ
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-							_								-			Ì≓ ∴
-305			- interbedded gray sandy 306'	clay 304' to			Ē.								-			<u>E</u>
-			306				_				•				-			~
							F								-			
- -310-			- greenish-gray siltstone	from 309' to											_			
-			312'				F								-			
-							F											
- 315			- interbedded hard gray s	sandy clay from			L								-			
- T			314' to 316'	. ,			ŀ								-			
ļ -	<b>.</b>						Ė								-	1		
- 320	<b>.</b>						L								-	]		
							F								-	-		
<u> </u>	<b>.</b>						L								-			
							L								-	-		
DEPTH	DRILL	ED:	502.0 ft	DEPTH TO WATE	R:	-					PR	OJ. No	o.:	A	SF13-1	40-00		1
DATE	DRILLE	D:	6/7/2011	DATE MEASURED	):	-												



METHOD: Roto	sc	onic		1		_	LOC	ATIC							8862	7.29			
_	-			ᇤ	\ _\bar{\bar{\bar{\bar{\bar{\bar{\bar{								H, TC		FI⁻ - —□-	_		>	
SYMBOL SAMPLES FIEVATION FT	2	DESCRIPTION OF	MATFRIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5		.0	1,5				3.0	3.5		)	PLASTICITY INDEX	-200
SYI SAN	ן נא			NO	MEIG			PLAS	ΙT		c	WATER	R IT		LIQUI	Т		PLAS	%
	_	SURFACE ELEVATION: 550	.60 ft	8			10	<u> </u>	0	30	4	) • [	0	60	× 70	80			
		SANDSTONE, very fine-grinterbedded clays conta thinly interbedded sand (continued)	aining very			- - - -						•							
- - - - - - - - - - -		- interbedded gray and da clay and thinly interbed sandstone from 332' to	lded grav														- - - - -		
- - -340-		- dark gray from 338' to 3 - with pyrite and oyster s to 340'	40' hells from 339'														-		
						- - - -						•							
-350- - -		FAT CLAY (CH), hard, gray	 to dark			- - - -	-							_	_		 		
355		brownish-gray and redo slightly moist - thinly interbedded gray 355' to 356'				- - -	-			-				-	_		-  -		
-360- 		NO RECOVERY - Driller's note: sample	washed out			- - - -											-		
365		- dark green siltstone from	 n 366' to 368'			- - -											-		
-370-						- - - -											- - - - -		
375		<ul> <li>very fine-grained green sandstone from 376' to</li> <li>brown claystone from 3</li> </ul>	377			- - -						•							
-380 		- very fine-grained brown sandstone from 380' to FAT CLAY (CH), hard, brown mottling, slightly moist, fine-grained sand				- - - -	-						<u> </u>	_	_				
		\ - green from 382' to 386' NO RECOVERY				-									_		  -  -  -		
DEPTH DRILLED: DATE DRILLED:		502.0 ft 6/7/2011	DEPTH TO WATE		- -	-			I			PRO	DJ. N	o.:		ASF1	I 13-14	10-00	

Pescadito Environmental Resource Center - Type I MSW
Management Facility - Rancho Viejo Waste Management, LLC
Webb County, Texas - MSW Permit No. 2374



DRILLING

SANDSTONE, very fine-grained, brown to light green   SANDSTONE, very fine-grained, brown to light green   SANDSTONE, very fine-grained, brown to light green   SANDSTONE, very fine-grained, brown to light green   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CASTONE   CA	METHOD:	Rotos	sonic				LC	CATI			1000636				)			
SURFACE ELEVATION: 550.60 ft  - very fine-grained greenish-gray sandstone from 389' to 391' (continued) - light to dark gray claystone from 391' to 395' - green claystone from 395' to 397'  - dark greenish-gray siltstone/claystone from 400' to 404'  - very fine-grained dark greenish-gray sandstone from 404' to 406'  NO RECOVERY - Driller's note: Soft zone/caving  - 425  - SANDSTONE, very fine-grained, brown to light green  - 430  - 440  FAT CLAY (CH), hard, green to brown and reddish-brown, slightly moist, with thinly interhedded sandstone and claystone - caliche pockets and thinly interhedded fine-grained greenish-gray sandstone from 445' to 446'  - 445  - 445  - Caliche pockets and thinly interhedded fine-grained greenish-gray sandstone from 445' to 446'					<del> -</del>	l _		_										
SURFACE LEUVATION: 550.60 ft 10 20 30 40 50 60 70 80  - very fine-grained greenish-gray sandstone from 389' to 391' (continued) - light to dark gray claystone from 391' to 395' - green claystone from 395' to 397'  - dark greenish-gray siltstone/claystone from 400' to 404' - very fine-grained dark greenish-gray sandstone from 404' to 406'  - very fine-grained dark greenish-gray sandstone from 404' to 406'  - Very fine-grained, brown to light green  - SANDSTONE, very fine-grained, brown to light green  - 425  - SANDSTONE, very fine-grained, brown to light green  - 435  - 435  - 440  - FAT CLAY (CH), hard, green to brown and reddish-brown, slightly moist, with this days more bedded fine-grained greenish-gray sandstone from 445' to 446'  - 445  - 445  - 446  - 447  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 449  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 445  - 446  - 446  - 447  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448	, F, F, B	on, I	DECEDIDITION OF		PER I	DRY II, pc	(			1.5	2.0 2	2.5 3	.0 3	3.5 4.	0	FI	00	
SURFACE LELEVATION: 550.60 ft  - very fine-grained greenish-gray sandstone from 389' to 391' (continued) - light to dark gray claystone from 391' to 395' - green claystone from 395' to 397'  - dark greenish-gray siltstone/claystone from 400' to 404' - very fine-grained dark greenish-gray sandstone from 404' to 406'  - very fine-grained dark greenish-gray sandstone from 404' to 406'  - very fine-grained, brown to light green  - SANDSTONE, very fine-grained, brown to light green  - 425  - SANDSTONE, very fine-grained, brown to light green  - 435  - 446  - 440  - FAT CLAY (CH), hard, green to brown and reddish-brown, slightly moist, with this in methoded sandstone and claystone - 445  - 445  - 446  - 447  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 449  - 445  - 445  - 445  - 446  - 447  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 448  - 44	SYM	SAMI	DESCRIPTION OF	- IVIATERIAL	ows	EG E		PLA	ASTIC		WATER	R JT	L	IQUID		LAST	% -200	
- very fine-grained greenish-gray sandstone from 391 to 391 (continued) - light to dark gray claystone from 391 to 395 - green claystone from 395 to 397  - dark greenish-gray sitstone/claystone from 400 to 404  - very fine-grained dark greenish-gray sandstone from 400 to 404  - very fine-grained dark greenish-gray sandstone from 404 to 406  - very fine-grained dark greenish-gray sandstone from 404 to 406  - very fine-grained dark greenish-gray sandstone from 405 to 406  - very fine-grained dark greenish-gray sandstone from 405 to 406  - very fine-grained dark greenish-gray sandstone from 405 to 406  - very fine-grained greenish-gray sandstone from 405 to 446  - very fine-grained greenish-gray sandstone from 405 to 446  - very fine-grained greenish-gray sandstone from 405 to 446  - very fine-grained greenish-gray sandstone from 445 to 446			SURFACE FLEVATION: 550	60 ft	BL	-				20					,	٦		
- green claystone from 395' to 397'  - dork greenish-gray siltstone/claystone from 400' to 404'  - very fine-grained dark greenish-gray sandstone from 404' to 406'  - very fine-grained dark greenish-gray sandstone from 404' to 406'  - very fine-grained dark greenish-gray sandstone from 404' to 406'  - NO RECOVERY - Driller's note: Soft zone/caving  - 425  - SANDSTONE, very fine-grained, brown to light green  - light green  - FAT CLAY (Ch), hard, green to brown and reddish-brown, slightly moiston, slightly moiston, slightly moiston, and claystone  - caliche pockets and thinly interbedded fine-grained greenish-gray sandstone from 445' to 446'	205		- very fine-grained greeni sandstone from 389' to (continued) - light to dark gray claysto	sh-gray 391'			- - -								- - - -			
-405 -405 -406 -407 -408 -408 -410 -410 -410 -415 -415 -420 -425 -53 -53 -54 -54 -54 -54 -54 -54 -54 -54 -64 -64 -64 -64 -64 -64 -64 -64 -64 -6				95' to 397'			- - - -								-			
-415 -425 -435 -440 -5 SANDSTONE, very fine-grained, brown to light green  -436 -440 -447 -445 -445 -445 -445 -445 -445 -445							- - -								- - -			REPORT
-425  SANDSTONE, very fine-grained, brown to light green  430  FAT CLAY (CH), hard, green to brown and reddish-brown, slightly moist, with thinly interbedded sandstone and claystone  - caliche pockets and thinly interbedded fine-grained greenish-gray sandstone from 445' to 446'			sandstone from 404' to	406'			- - - - -				•				- - - - -			ESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT
SANDSTONE, very fine-grained, brown to light green  435  FAT CLAY (CH), hard, green to brown and reddish-brown, slightly moist, with thinly interbedded sandstone and claystone  - caliche pockets and thinly interbedded fine-grained greenish-gray sandstone from 445' to 446'	-415 		NO RECOVERY - Driller's note: Soft zor	———————— ne/caving			- - - - - - -		_						 - - - - -			SEPARATELY FRO
FAT CLAY (CH), hard, green to brown and reddish-brown, slightly moist, with thinly interbedded sandstone and claystone  - Caliche pockets and thinly interbedded fine-grained greenish-gray sandstone from 445' to 446'	  						- - - - -								- - - -			D NOT BE USED
FAT CLAY (CH), hard, green to brown and reddish-brown, slightly moist, with thinly interbedded sandstone and claystone  - caliche pockets and thinly interbedded fine-grained greenish-gray sandstone from 445' to 446'	-430 430		SANDSTONE, very fine-gr light green	ained, brown to			- - - - - -								- - - - -			THESE LOGS SHOLL
FAT CLAY (CH), hard, green to brown and reddish-brown, slightly moist, with thinly interbedded sandstone and claystone  - 445 - caliche pockets and thinly interbedded fine-grained greenish-gray sandstone from 445' to 446'							- - - - -								-			NOTE: TH
- caliche pockets and thinly interbedded fine-grained greenish-gray sandstone from 445' to 446'			reddish-brown, slightly thinly interbedded sand claystone	moist, with dstone and			- - - - -	+			•							
			fine-grained greenish-g	lly interbedded ray sandstone			- - - - - -								- - - - - - -			
DEPTH DRILLED: 502.0 ft DEPTH TO WATER: - PROJ. No.: ASF13-140-00 DATE DRILLED: 6/7/2011 DATE MEASURED: -	1					 - -	<u> </u>				PRO	OJ. No	<u>.</u> :	ASF	- 13-14	0-00		

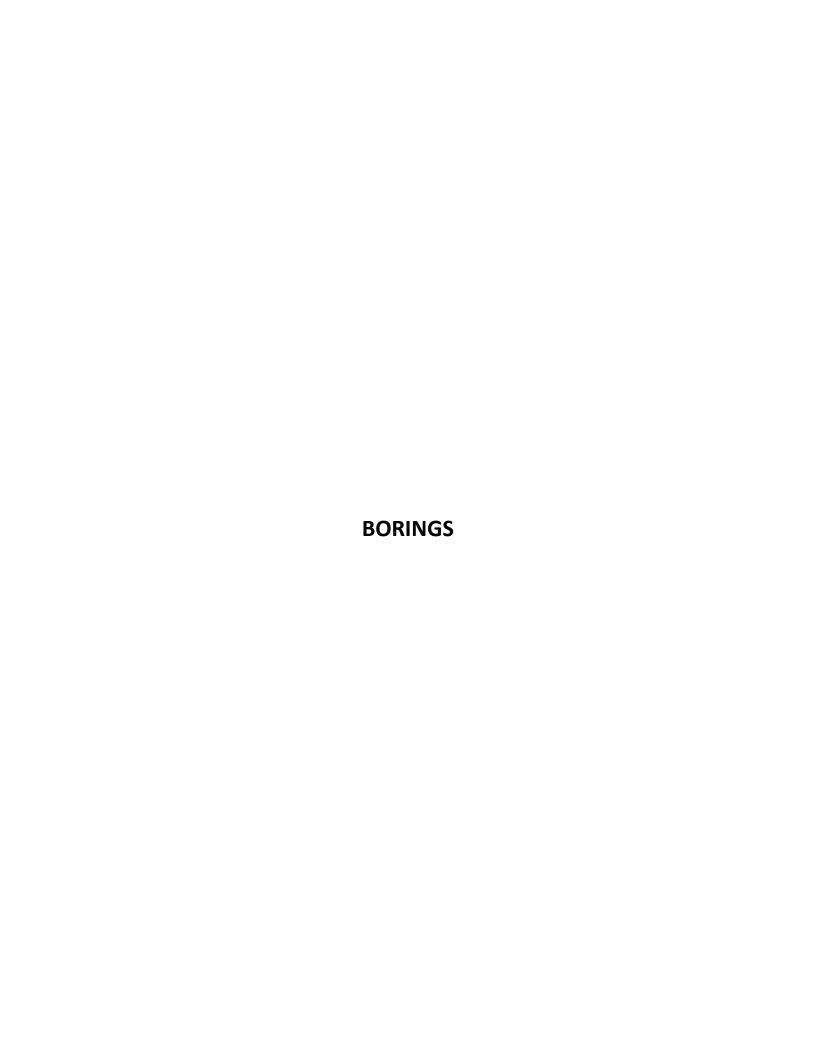
Pescadito Environmental Resource Center - Type I MSW
Management Facility - Rancho Viejo Waste Management, LLC
Webb County, Texas - MSW Permit No. 2374

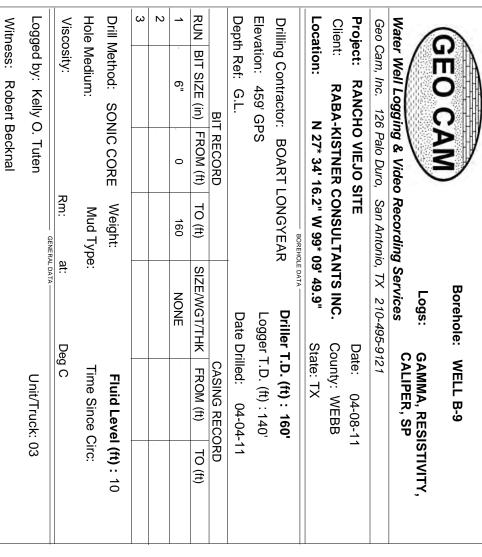


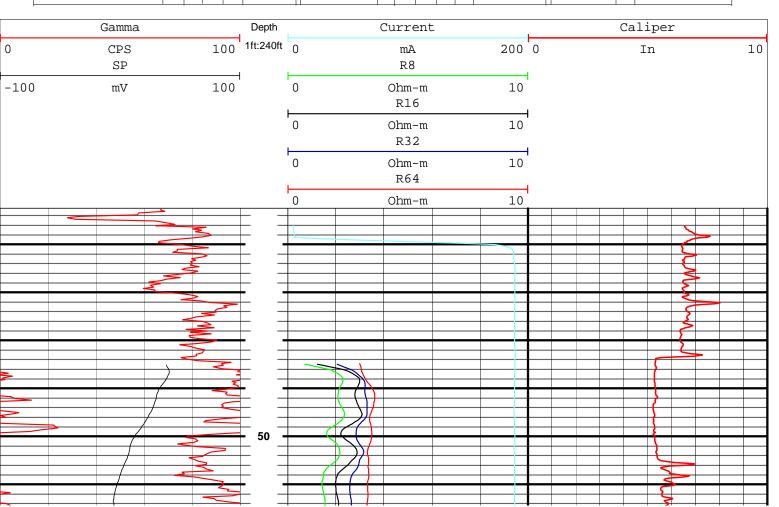
DRILLING

METHOD	:	Roto	oso	nic				<u> </u>	.00	ATIO				6365.2				29				1
		ŀ	-				ļ "			<b>-</b> ₩	SHE	AR S' —⇔	TREN	NGTH, -⊗— –	TONS	S/FT	<b>∠</b> -□-					
F,   8		SAMPLES	ELEVATION, FI	DECEDIDITION OF		BLOWS PER FT	UNIT DRY WEIGHT, pcf		0.5		.0			2.5				4.0		PLASTICITY INDEX	0	
DEPTH, FT		SAMI	<u> </u>	DESCRIPTION O	FMATERIAL	Swc	L FIE			PLAS'	TIC		W	/ATER NTENT		LI	QUID IMIT			LAST	% -200	
			=	SURFACE ELEVATION: 550	60 ft	3	_ >		10	×		 30		<b>●</b> — – 50			$\times$	00		٦		l
-460 -465 -470				FAT CLAY (CH), hard, gree reddish-brown, slightly thinly interbedded sand claystone (continued) - caliche pockets and interfine-grained green and from 455' to 456' - dark gray siltstone from	en to brown and moist, with dstone and erbedded gray sandstone			-	10	<u>) 2</u>	0	30	40	€	60	, ,		80				TOUR
-475 -475 -480				NO RECOVERY		_		- - - - - - -						•								ESE I OCS SHOLLID NOT BE LISED SEBABATELY EBOM THE BBOLECT BEDORT
						_		- - - - -														A 072 072 1 70 +0
-490 -495				- caliche pockets from 49	0' to 494'			- - - - - - -						•								4 4 1 1 0 1 0 0 0 1 1 0 1 1 0 1
- 500 - 500							 	-  -  -  -  -	- +			-							- - - - - -			HOZ
 - 505 -  				Boring Terminated				<u> </u>  -  -  -											- - - - -			
								- - - - - -														
DEPTH DR				502.0 ft 6/7/2011	DEPTH TO WATE		- -	<u> </u>						PROJ	No.:		AS	SF13	-140	0-00		

#### APPENDIX C BOREHOLE GEOPHYSICAL LOGS







LOG TYPE

RUN NO

SPEED (ft/min)

FROM (ft)

TO (ft)

FT./IN.

20

GAMMA

Comments:

CALIPER

RESISTIVITY, SP

Ν

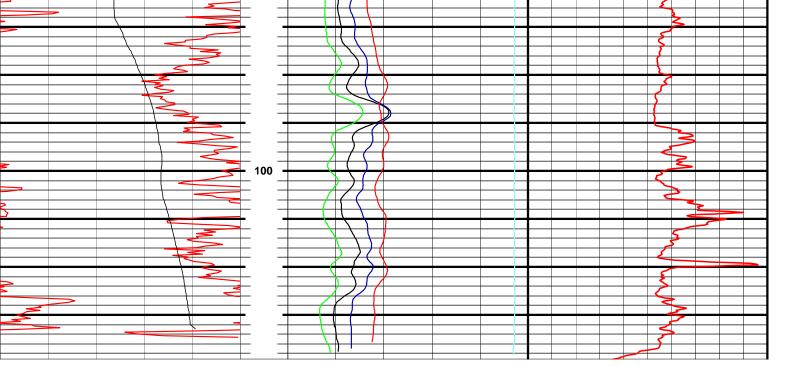
136 139

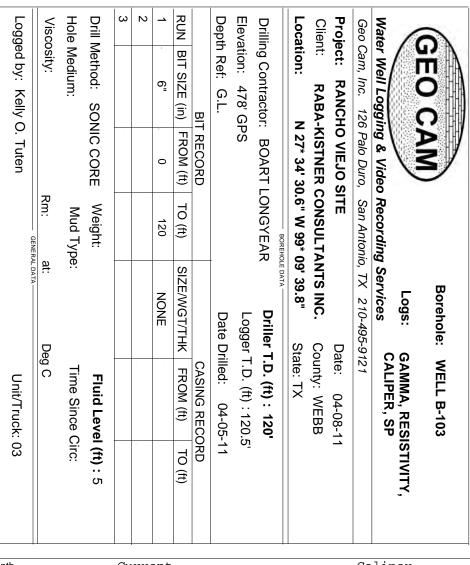
6 35

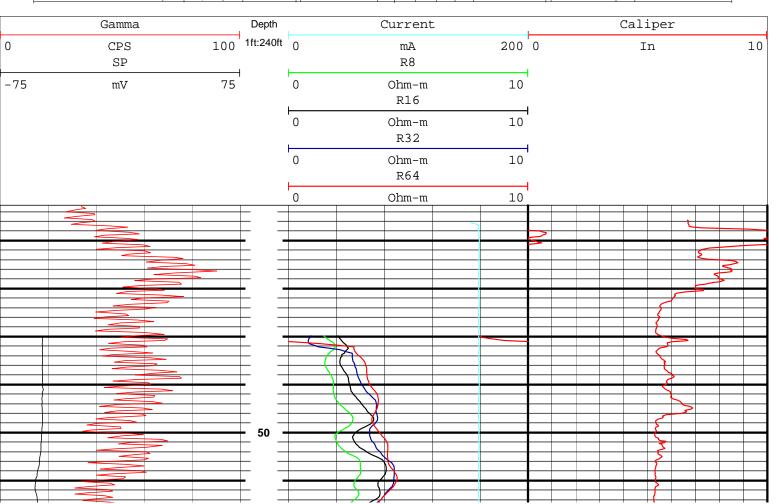
20

134

20







LOG TYPE

RUN NO

SPEED (ft/min)

FROM (ft)

TO (ft)

FT./IN.

20

GAMMA

Comments:

CALIPER

RESISTIVITY, SP

Ν

118 119

30

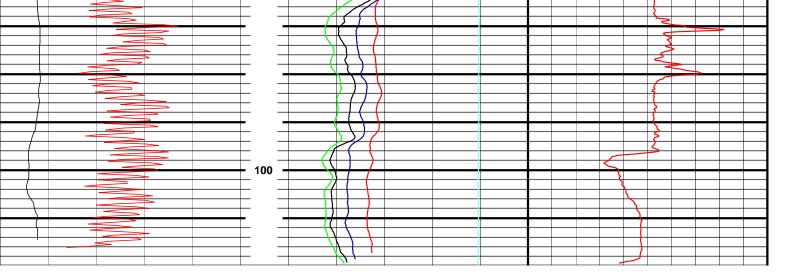
0

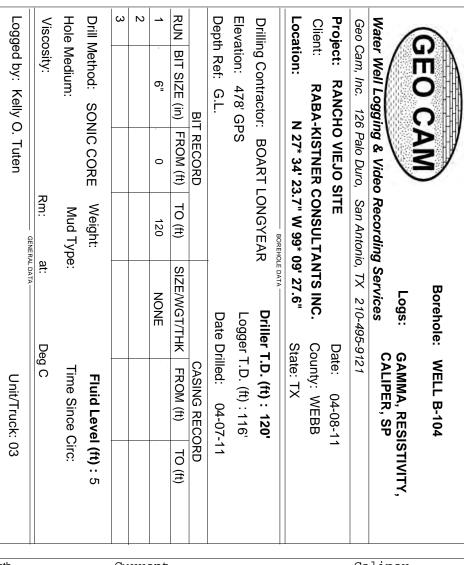
20

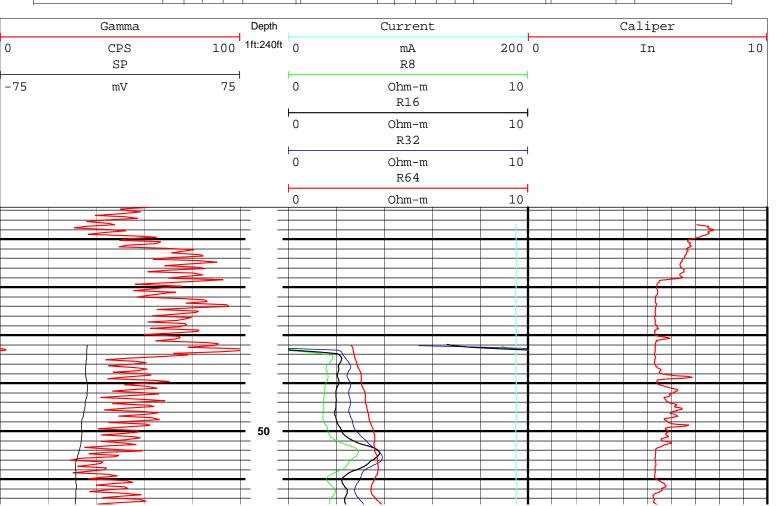
116

20

Witness: Robert Becknal







LOG TYPE

RUN NO

SPEED (ft/min)

FROM (ft)

TO (ft)

FT./IN.

20

GAMMA

Comments:

CALIPER

RESISTIVITY, SP

Ν

114 115

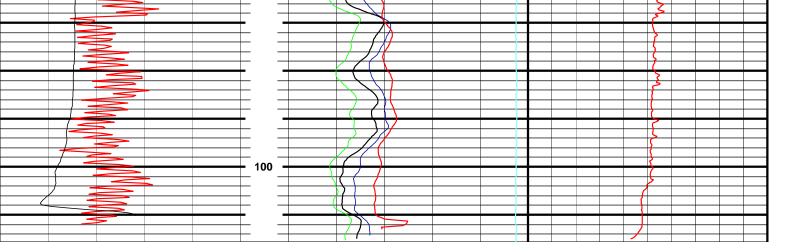
32 ω

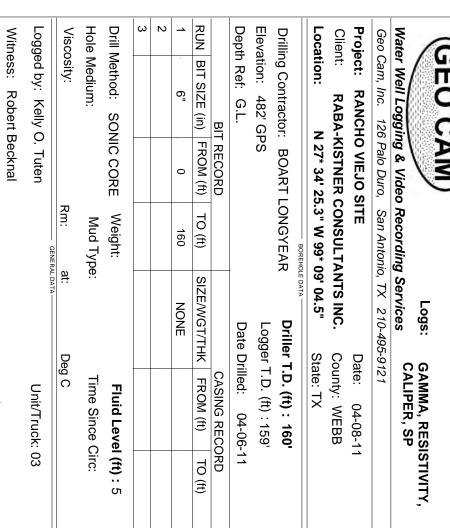
7

20

20

Witness: Robert Becknal





LOG TYPE

RUN NO

SPEED (ft/min)

FROM (ft)

TO (ft)

GAMMA

Comments:

CALIPER

RESISTIVITY, SP

Ν

157 155

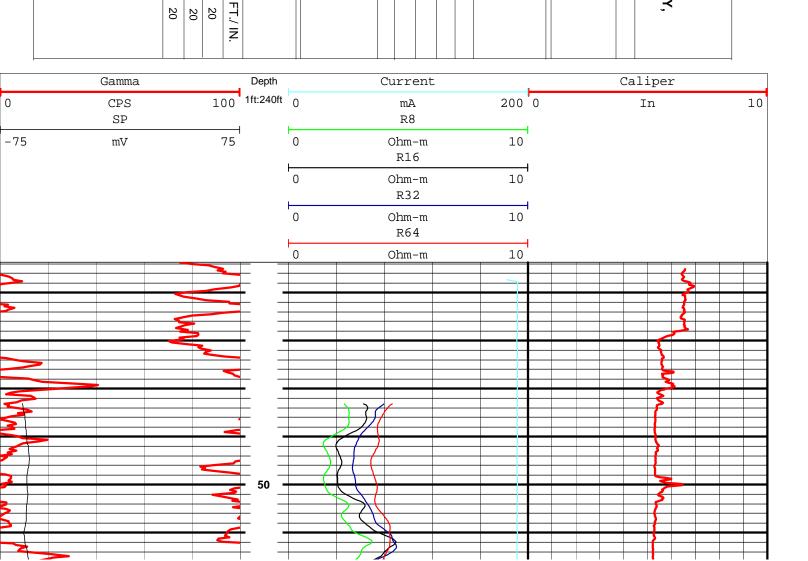
 $\mathfrak{Z}$ Ŋ

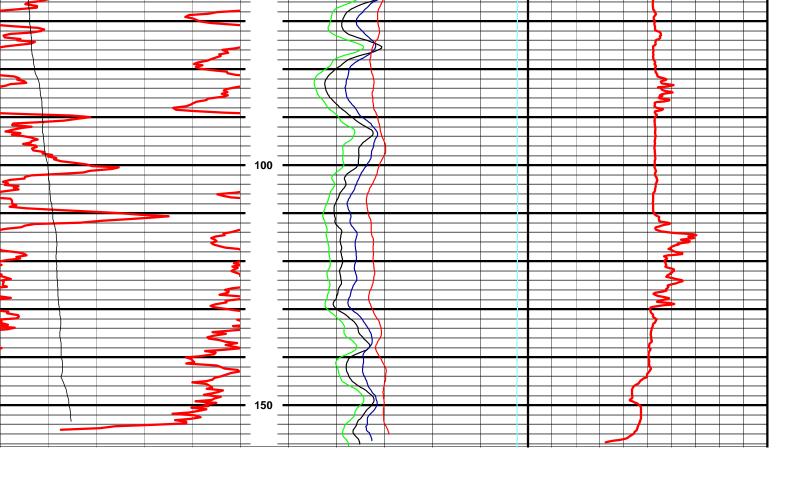
> 20 20

20 20 20

158

20







Logs: GAMMA, RESISTIVITY, CALIPER

# Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Client: **Project: RANCH VIEJO SITE** 

RABA KISTNER N 27\* 34' 08.8" W 99\* 09' 45.9" County: WEBB Date: 04-21-11

State: TX

Location:

Driller T.D. (ft): 160'

Drilling Contractor: BOART LONGYEAR Logger T.D. (ft): 137' Date Drilled: 04-07-11

Elevation: 533' GPS

Depth Ref: G.L.

BIT RECORD

CASING RECORD

RUN BIT SIZE (in) FROM (ft) 0 TO (#) 160 SIZE/WGT/THK | FROM (ft) NONE TO (ft)

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ω N

Drill Method: SONIC CORE

Weight:

Fluid Level (ft): 7

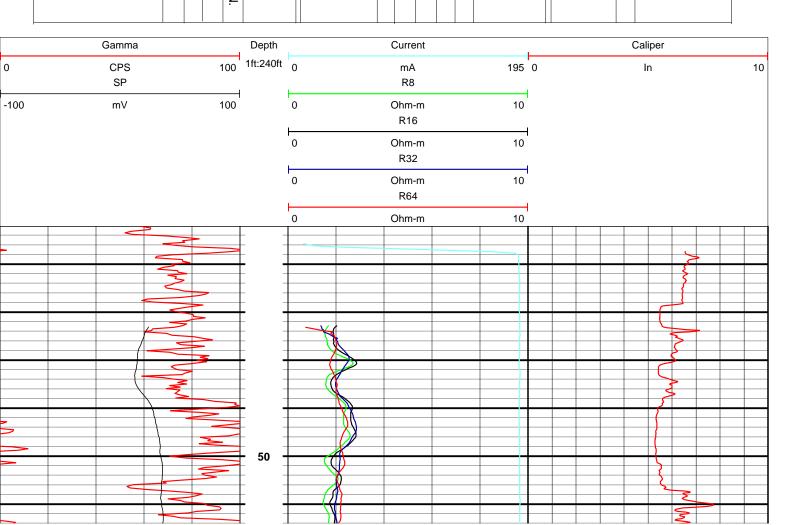
Mud Type: Time Since Circ:

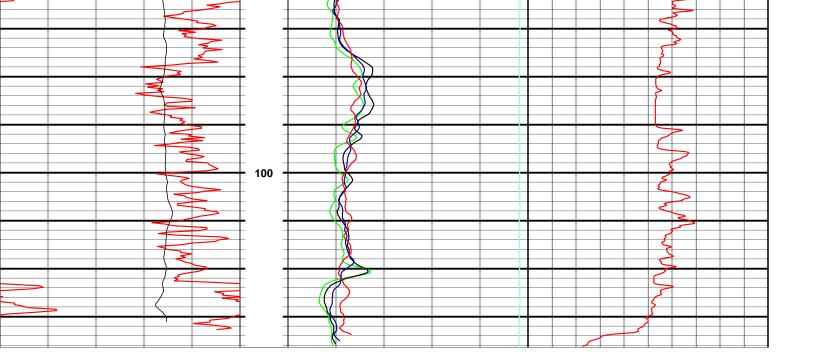
Hole Medium: Viscosity: <u>a</u>:: Deg C

Logged by: Kelly Tuten

Witness: Unit/Truck: 05

LOG TYPE	RUN NO	RUN NO SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	3	20	133	2	20
RESISTIVITY, SP	2	16	135	23	20
CALIPER	1	20	136	7	20
		_			-







Logs: GAMMA, RESISTIVITY, CALIPER

# Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Client: RABA KISTNER

**Project: RANCH VIEJO SITE** 

Location: N 27\* 34' 09.1" W 99\* 09' 33.8"

County: WEBB Date: 04-21-11

State: TX

Drilling Contractor: BOART LONGYEAR Driller T.D. (ft): 120'

Logger T.D. (ft): 95'

Elevation: 525' GPS

Depth Ref: G.L.

BIT RECORD

Date Drilled: 04-09-11

CASING RECORD

З	2	1	RUN
		6"	BIT SIZE (in)
		. 0	FROM (ft)
		120	TO (ft)
		NONE	SIZE/WGT/THK
			FROM (ft)
			TO (ft)

Fluid Level (ft): 5'

Time Since Circ:

<u>a</u>:: Deg C

Hole Medium:

Viscosity:

Drill Method: SONIC CORE

Weight: Mud Type:

Logged by: Kelly Tuten

Unit/Truck: 05

Witness:					
LOG TYPE	RUN NO	SPEED (ft/min)	FROM (ft)	TO (ft)	FT./
GAMMA	ω	20	91	2	20

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CALIPER

RESISTIVITY, SP

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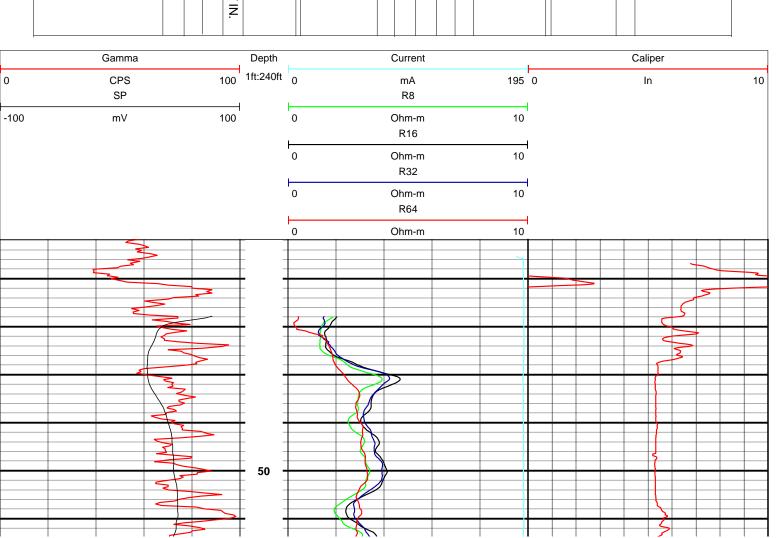
93 94

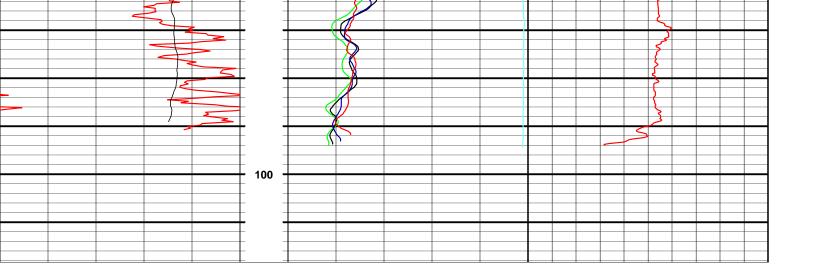
8

20 20

7

20 16







Logs: GAMMA, RESISTIVITY, CALIPER

Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Client: **Project: RANCH VIEJO SITE** 

RABA KISTNER N 27\* 34' 05.0" W 99\* 09' 23.7" State: TX County: WEBB Date: 04-21-11

Location:

Driller T.D. (ft): 160'

Drilling Contractor: BOART LONGYEAR Logger T.D. (ft): 139'

Elevation: 532' GPS

Depth Ref: G.L.

Date Drilled: 04-11-11 CASING RECORD

3	2	1
		6"
		. 0
		160
		NONE

RUN BIT SIZE (in) FROM (ft)

TO (ft)

SIZE/WGT/THK | FROM (ft)

TO (ft)

BIT RECORD

Fluid Level (ft): 4'

Time Since Circ:

<u>a</u>:: Deg C

2

Hole Medium:

Viscosity:

Drill Method: SONIC CORE

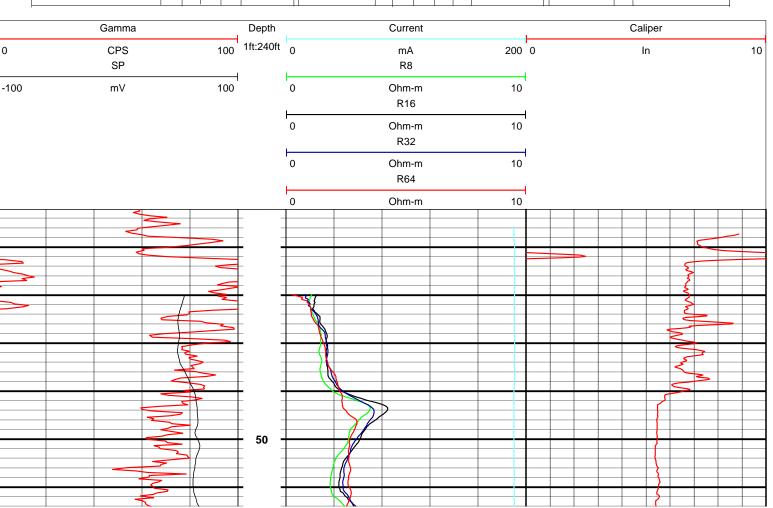
Weight:

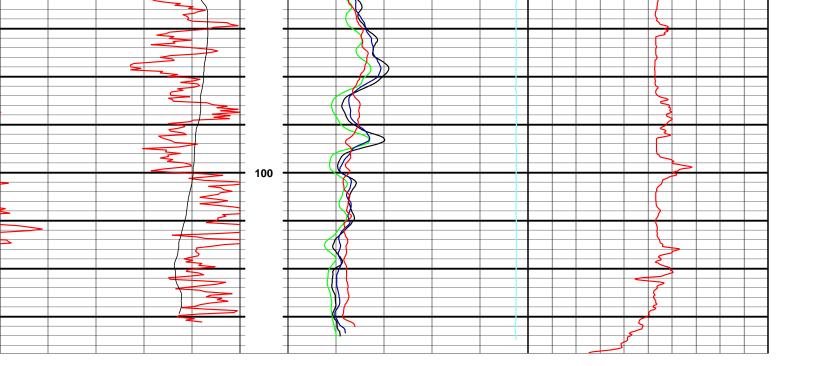
Mud Type:

Unit/Truck: 05

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	a	D
	Ξ	3
	Τ	

CALIPER	RESISTIVITY, SP	GAMMA	LOG TYPE	Witness:
	2	3	RUN NO	
20	16	20	SPEED (ft/min)	
138	133	131	FROM (ft)	
7	20	2	TO (ft)	
20	20	20	FT./ IN.	







Logs:

GAMMA, RESISTIVITY, CALIPER

Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Client: Project: RANCH VIEJO SITE RABA KISTNER

Location: N 27\* 33' 47.3" W 99\* 09' 53.8"

Drilling Contractor: BOART LONGYEAR

Date: 05-12-11

State: TX County: WEBB

BOREHOLE DATA -Driller T.D. (ft): 160'

Logger T.D. (ft):82.6'

Date Drilled: 5/4-5/2011 CASING RECORD

		6"
		. 0
•	•	150
		NONE

ω N

Drill Method: SONIC CORE

Weight:

RUN BIT SIZE (in) FROM (ft)

TO (ft)

SIZE/WGT/THK | FROM (ft)

TO (ft)

BIT RECORD

Depth Ref: G.L. Elevation: 534'

Fluid Level (ft): 5

Time Since Circ:

<u>a</u> Deg C

Mud Type:

Logged by: Kelly Tuten

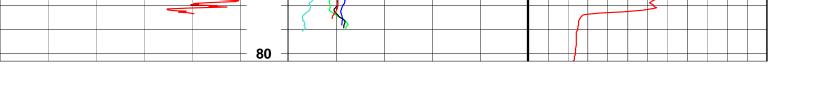
Viscosity: Hole Medium:

GENERAL DATA-Unit/Truck: 05

Witness:	C	•	•			(	- 3
		71					

	CALIPER	RESISTIVITY, SP	GAMMA	LOG TYPE	
	_	2	3	RUN NO	
	20	16	20	SPEED (ft/min)	
	81.6	74	71.7	FROM (ft)	
	7	9	7	TO (ft)	
-	20	20	20	FT./ IN.	

	Gamma		Depth		rrent			Caliper	
0	CPS	100	1ft:240ft	0	mA R8	25	0	ln	12
				0 Oh	nm-m R16	10			
					nm-m R32	10			
					nm-m R64	10			
				0 Ol	nm-m	10			
_									\$
>			- <b>20</b>						
			- 40 - - 4						
_			 - 60 -						





Logs: GAMMA, RESISTIVITY, CALIPER

## Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Client: RABA KISTNER

**Project: RANCH VIEJO SITE** 

Location: N 27\* 33' 54.1" W 99\* 09' 25.0"

State: TX County: WEBB 04-21-11

Date:

Drilling Contractor: BOART LONGYEAR

Driller T.D. (ft): 160' Logger T.D. (ft): 136'

Date Drilled: 04-12-11

Depth Ref: G.L. Elevation: 528' GPS

ω	2	1	RUN	
		6"	RUN BIT SIZE (in) FROM (ft)	ВІТ
		. 0	FROM (ft)	BIT RECORD
		160	TO (ft)	
		NONE	SIZE/WGT/THK FROM (ft)	
			FROM (ft)	CASING RECORD
•			TO (ft)	)RD

Fluid Level (ft): 4

Drill Method: SONIC CORE Weight:

Mud Type:

Hole Medium:

Viscosity:

Deg C

Time Since Circ:

Logged by: Kelly Tuten

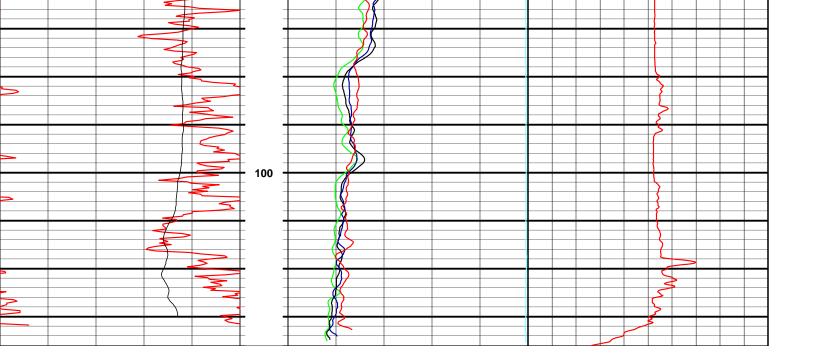
<u>a</u>::

Unit/Truck: 05

LOG TYPE	Witness:
RUN NO	
SPEED (ft/min)	
FROM (ft	

vvia 1000.					
LOG TYPE	RUN NO	RUN NO SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	3	20	132	2	20
RESISTIVITY, SP	2	16	134	18	20
CALIPER		20	136	7	20
		-			-

L												
	Gamma			Depth		Current				Calipe	r	
)	CPS SP		100	1ft:240ft	0	mA R8	196	0		In		10
·100	mV		100	i	0	Ohm-m R16	10	1				
				ļ	0	Ohm-m R32	10	1				
					0	Ohm-m R64	10	1				
					0	Ohm-m	10					
		$\searrow$										
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		2		- 50 -								
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		7										





Logs: GAMMA, RESISTIVITY, CALIPER

## Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

**Project: RANCH VIEJO SITE** 

Client: RABA KISTNER

Location: N 27\* 33' 16.9" W 99\* 09' 23.1"

State: TX County: WEBB

Date:

04-21-11

Elevation: 531' GPS

Depth Ref: G.L.

Drilling Contractor: BOART LONGYEAR Driller T.D. (ft): 160'

Logger T.D. (ft): 153'

Date Drilled: 04-13-11

ယ	2	1	RUN	
	-	6"	BIT SIZE (in) FROM (ft)	ВІТ
		. 0	FROM (ft)	BIT RECORD
		160	TO (ft)	
		NONE	SIZE/WGT/THK FROM (ft)	
			FROM (ft)	CASING RECORD
			TO (ft)	)RD

Fluid Level (ft): 10

Time Since Circ:

Viscosity: <u>a</u>:: Deg C

Hole Medium:

Drill Method: SONIC CORE

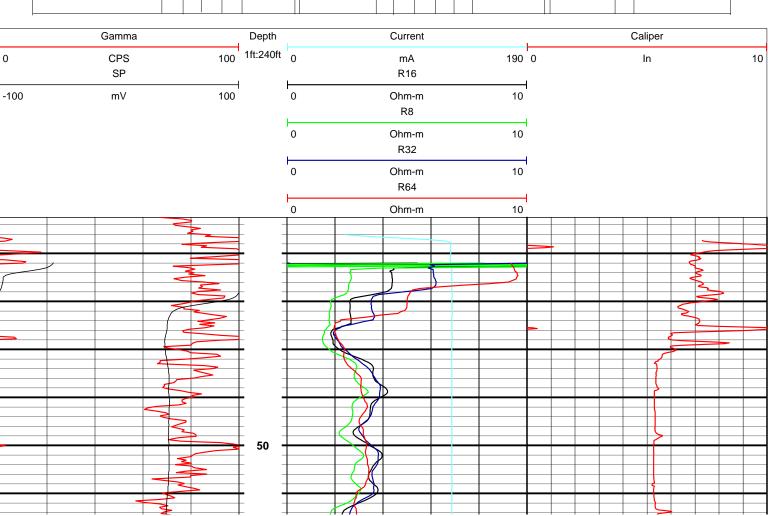
Weight: Mud Type:

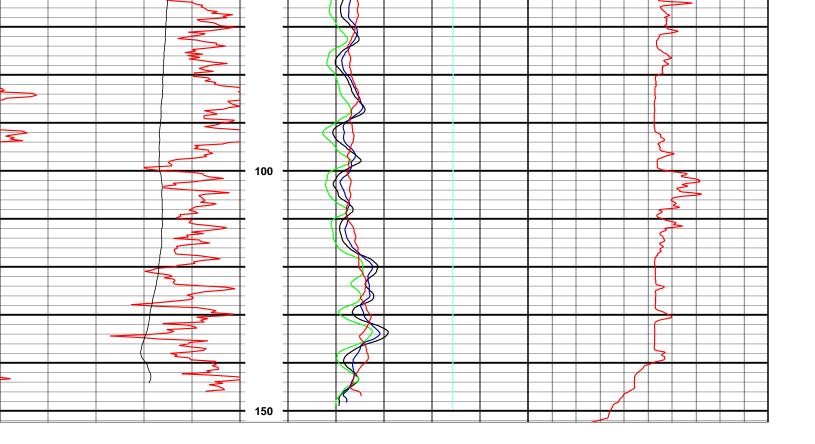
Logged by: Kelly Tuten

Unit/Truck: 05

Witness.	
	9

	RUN NO	SPEED (ft/min) 20 16	FROM (ft) 146 148	TO (ft) 3 12	FT./IN. 20
RESISTIVITY, SP	2	16	148	12	20
CALIPER		20	152	7	20







Logs: GAMMA, RESISTIVITY, CALIPER

Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

**Project: RANCH VIEJO SITE** Client: RABA KISTNER

County: WEBB Date: 05-12-11

N 27\* 33' 32.9" W 99\* 09' 56.0" State: TX

BOREHOLE DATA -

Location:

Drilling Contractor: BOART LONGYEAR

Depth Ref: G.L. Elevation: 543'

> Driller T.D. (ft): 120' Logger T.D. (ft):107'

Date Drilled: 04/30-05/02-2011

RUN BIT SIZE (in) FROM (ft) BIT RECORD 0 TO (ft) 150 SIZE/WGT/THK | FROM (ft) NONE CASING RECORD TO (ft)

Drill Method: SONIC CORE Weight:

Hole Medium:

Viscosity:

ω N

Fluid Level (ft): 6

Mud Type: Deg C Time Since Circ:

Logged by: Kelly Tuten

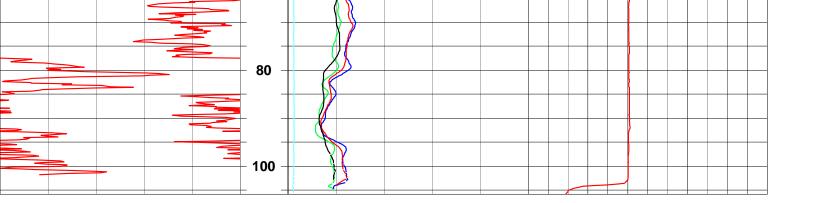
Unit/Truck: 05

GENERAL DATA-

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Witness:	-		_		
LOG TYPE	RUN NO	RUN NO SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	3	20	101.7	3.5	20
RESISTIVITY, SP	2	16	105.9	8.4	20
CALIPER		20	104	5.8	20
		_			

	Gamma		Depth		Current			Caliper	
)	CPS	100	1ft:240ft	0	mA R8	200	0	In	12
				0	Ohm-m R16	10			
				0	Ohm-m R32	10			
				0	Ohm-m R64	10			
				0	Ohm-m	10			
_				773	1	~		_	
			- 20 -					3	
_			 - 40 -						
	-								
	-								
			- <b>60</b> -						





Logs: GAMMA, RESISTIVITY, CALIPER

# Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Client: **Project: RANCH VIEJO SITE** RABA KISTNER

N 27\* 33' 27.1" W 99\* 09' 33.4"

Location:

Date: 04-20-11

State: TX County: WEBB

Elevation: 538' GPS Drilling Contractor: BOART LONGYEAR Driller T.D. (ft): 160' Logger T.D. (ft): 130'

SIZE/WGT/THK | FROM (ft) NONE Date Drilled: 04-18-11 CASING RECORD TO (ft)

RUN BIT SIZE (in) FROM (ft)

TO (#)

BIT RECORD

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0

150

Depth Ref: G.L.

Fluid Level (ft): 6

ω N

Mud Type: Time Since Circ:

Viscosity: <u>a</u>:: Deg C

Hole Medium:

Drill Method: SONIC CORE

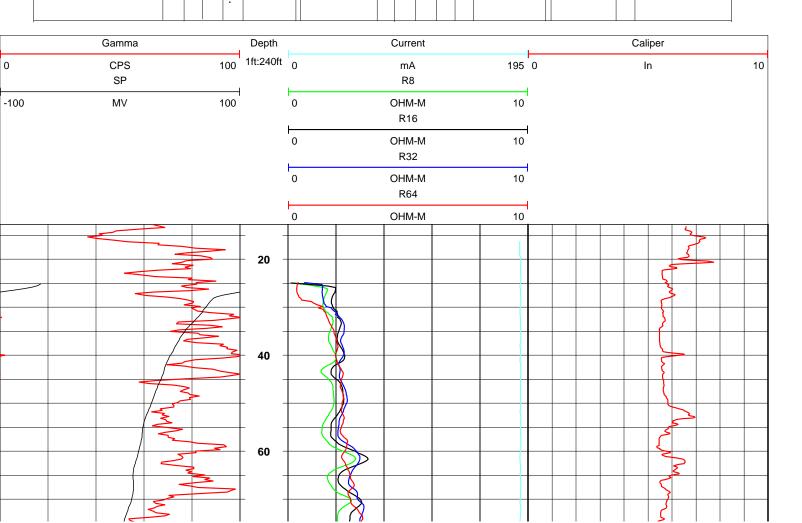
Weight:

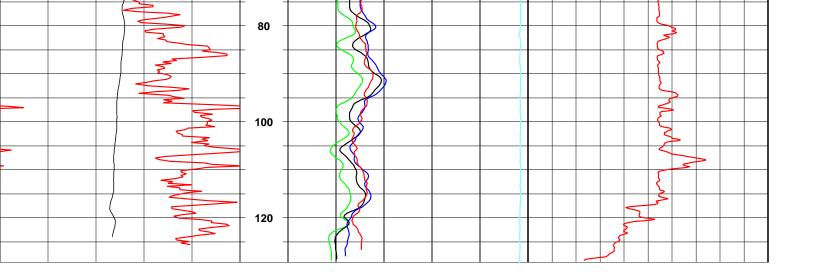
Logged by: Kelly Tuten

Unit/Truck: 05

LOG TYPE RUN NO SPEED (ft/min)	EED (ft/min)	FROM (ft)	
GAMMA 3	20	125	
RESISTIVITY, SP 2	16	128	
CALIPER 1	20	129	

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Logs: GAMMA, RESISTIVITY, CALIPER

Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Project: RANCH VIEJO SITE Client: RABA KISTNER

Location: N 27\* 33' 25.6" W 99\* 09' 20.4"

State: TX County: WEBB Date: 05-12-11

BOREHOLE DATA

Drilling Contractor: BOART LONGYEAR

Elevation: 544'

Depth Ref: G.L.

Driller T.D. (ft): 120' Logger T.D. (ft):115'

Date Drilled: 05-08-2011

ω	2	_	RUN	
		6"	RUN BIT SIZE (in) FROM (ft)	BIT
		. 0	FROM (ft)	BIT RECORD
	-	150	TO (ft)	
		NONE	SIZE/WGT/THK FROM (ft)	
			FROM (ft)	CASING RECORD
			TO (ft)	ORD

Weight: Fluid Level (ft): 3

Time Since Circ:

<u>a</u> Deg C

Mud Type:

Hole Medium:

Viscosity:

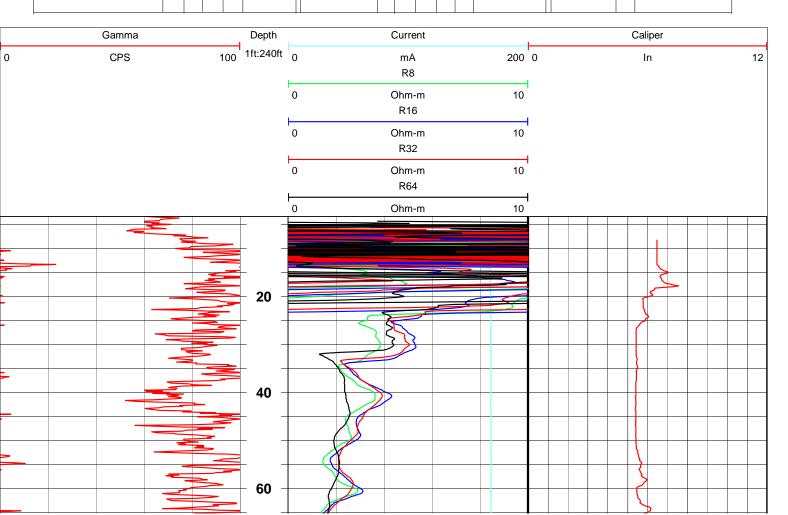
Drill Method: SONIC CORE

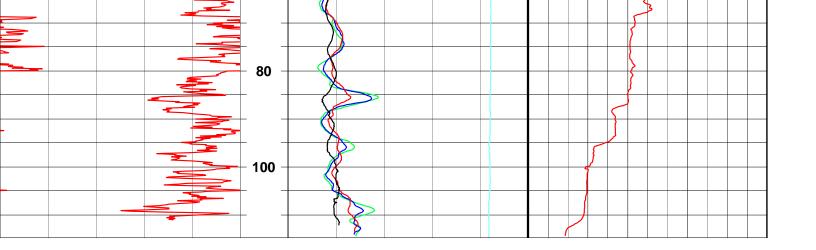
Logged by: Kelly Tuten

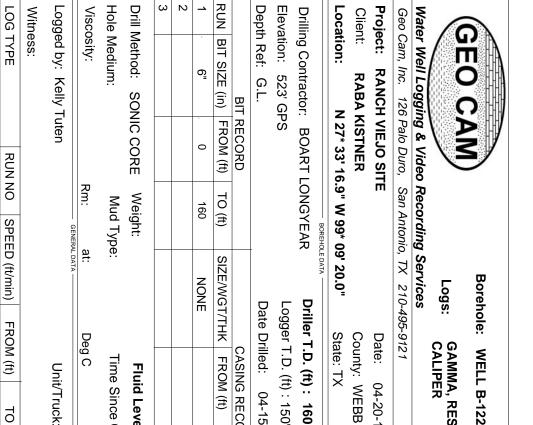
Unit/Truck: 05

Witness:

win Coo.	_				
LOG TYPE	RUN NO	RUN NO SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	3	20	111.1	3.3	20
RESISTIVITY, SP	2	16	114.2	8.3	20
CALIPER	1	20	113.4	5.6	20
					-







Driller T.D. (ft): 160' Logger T.D. (ft): 150' Date Drilled: 04-15-11

CASING RECORD

TO (ft)

State: TX

County: WEBB

Date: 04-20-11

Logs:

GAMMA, RESISTIVITY, CALIPER

Comments:

CALIPER

20 16 20

150

20 20 20

RESISTIVITY, SP

**GAMMA** 

ω N

> FROM (ft) 146

> > TO (ft)

FT./IN.

Deg C

Unit/Truck: 05

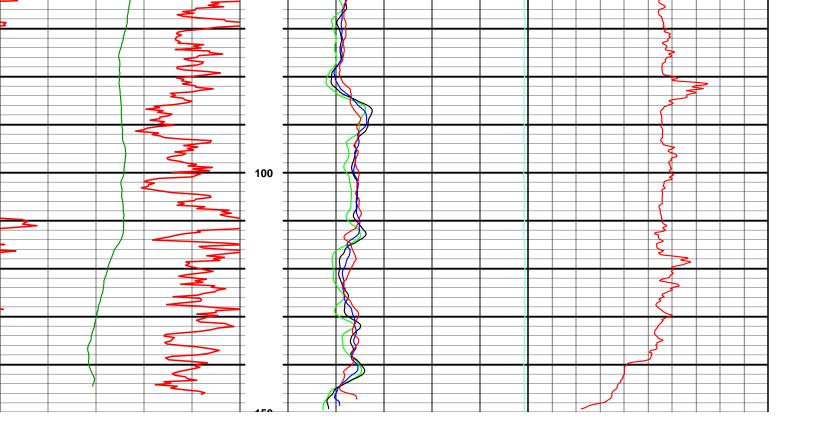
Time Since Circ:

Fluid Level (ft): 8

149

20 ω

	Gamma		Depth			Current	 		Calipe	er	
0	CPS SP	100	1ft:240ft	0		mA R8	195 (	)	In		10
-100	mV	100		0		Ohm-m R16	10				
				0		Ohm-m R32	10				
				0		Ohm-m R64	10				
				0		Ohm-m	10		 		
			  							3	
			  		2						
	-		  								
			<b>- 50 -</b>								
_			<b>-</b> -								





Logs: GAMMA, RESISTIVITY, CALIPER

Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Project: RANCH VIEJO SITE

Date: 05-12-11

State: TX County: WEBB

Drilling Contractor: BOART LONGYEAR BOREHOLE DATA

N 27\* 33' 19.1" W 99\* 09' 45.7"

Location:

Client:

RABA KISTNER

Driller T.D. (ft): 160'

Logger T.D. (ft) : 145'

Date Drilled: 04/28-29/2011

Depth Ref: G.L. Elevation: 535'

!	RUN	_	2	ω
	RUN BIT SIZE (in) FROM (ft)	ი <u>_</u>		
TROM (#)	FROM (ft)	0		
1)	TO (ft)	150		
	SIZE/WGT/THK FROM (ft)	NONE		
CASING RECORD	FROM (ft)			
15 E	TO (ft)			,

Weight: Fluid Level (ft): 3

Mud Type: Time Since Circ:

Viscosity: Deg C

Hole Medium:

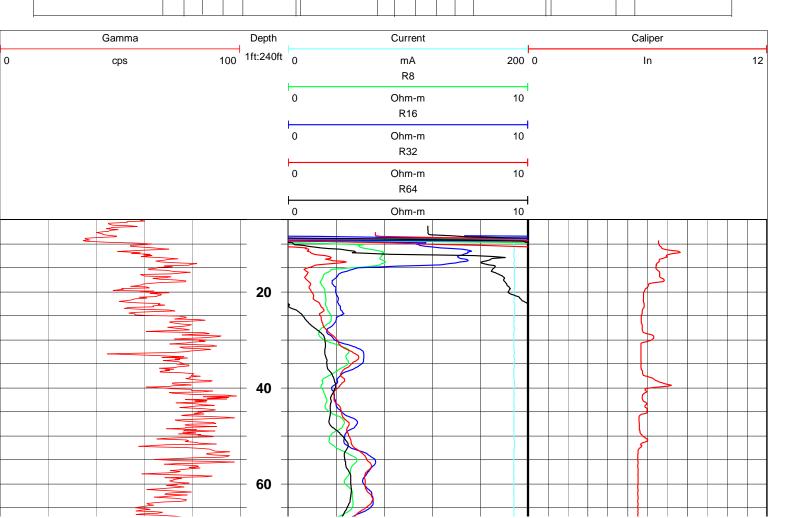
Drill Method: SONIC CORE

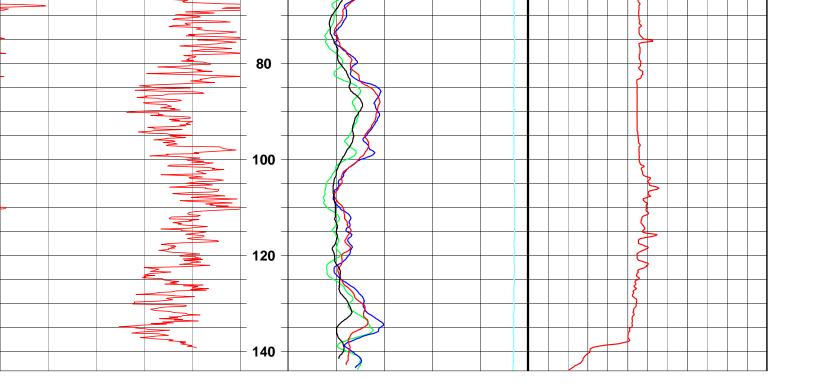
Logged by: Kelly Tuten

Unit/Truck: 05

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Witness:				
LOG TYPE RUN	RUN NO SPEED (ft/min)	EED (ft/min)	FR	FROM (ft)
GAMMA 3	ω ,	20	<del></del>	139.2
RESISTIVITY, SP	2	16	ج ا	142.7
CALIPER 1		20		143.8







Logs: GAMMA, RESISTIVITY, CALIPER

#### Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Location: **Project: RANCH VIEJO SITE** RABA KISTNER County: WEBB Date: 04-21-11

Client:

N 27\* 33' 19.3" W 99\* 09' 27.2" State: TX

Drilling Contractor: BOART LONGYEAR Driller T.D. (ft): 120'

Logger T.D. (ft): 119' Date Drilled: 04-16-11

SIZE/WGT/THK | FROM (ft) NONE CASING RECORD TO (ft)

RUN BIT SIZE (in) FROM (ft)

TO (ft)

BIT RECORD

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0

120

Depth Ref: G.L. Elevation: 525' GPS

Fluid Level (ft): 10

ω N

Time Since Circ:

<u>a</u>:: Deg C

Hole Medium:

Viscosity:

Drill Method: SONIC CORE

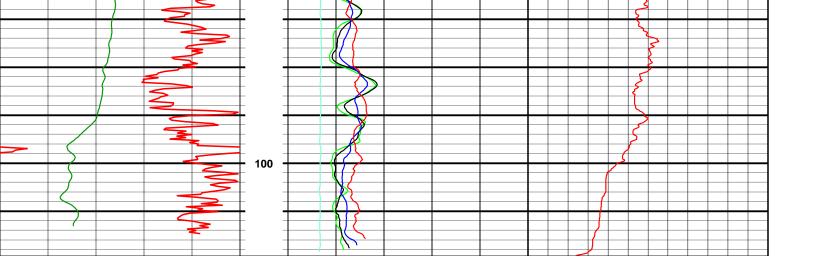
Weight: Mud Type:

Unit/Truck: 05

Logged by: Kelly Tuten

	CALIPER	RESISTIVITY, SP	GAMMA	LOG TYPE RU	Witness:
	_	2	3	N NO	
_	20	16	20	RUN NO SPEED (ft/min)	
	118	117	115	FROM (ft)	
_	10	20	4	TO (ft)	
_	20	20	20	FT./ IN.	

									Ш					
	Gamma		Depth			Current	=				Calip	er		
0	CPS SP	100	1ft:240ft	0		mA R8		150	)		ln			12
-100	) mV	100		0		Ohm-m R16		10						
				0		Ohm-m R32		10						
				0		Ohm-m R64		10						
				0	_	Ohm-m		10		 			 	
			  									) }		
			  								{			
_			  								}			
		•	<b>- 50 -</b>									_		
			<b>-</b> -	(							\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	>		







Logs: GAMMA, CONDUCTIVITY, SPR

# Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

**Project: RANCH VIEJO SITE** Date: 02-03-11

Location: RABA KISTNER N 3050093, E 484764 State: TX County: WEBB

Client:

Driller T.D. (ft): 98'

Logger T.D. (ft): 47.93'

Date Drilled: 11-09-2009

Elevation: 555.61FT MSL

Drilling Contractor: VORTEX

Depth Ref: T.C.

ω N RUN BIT SIZE (in) FROM (ft) တ္ ထ္ BIT RECORD 30 Q TO (#) 30 98.5 SIZE/WGT/THK 2" PVC CASING RECORD FROM (ft) TO (#) 45

Fluid Level (ft): 7.4

Time Since Circ:

<u>a</u>:: Deg C

Logged by: Kelly Tuten

Hole Medium:

Viscosity:

Drill Method: NA

Weight:

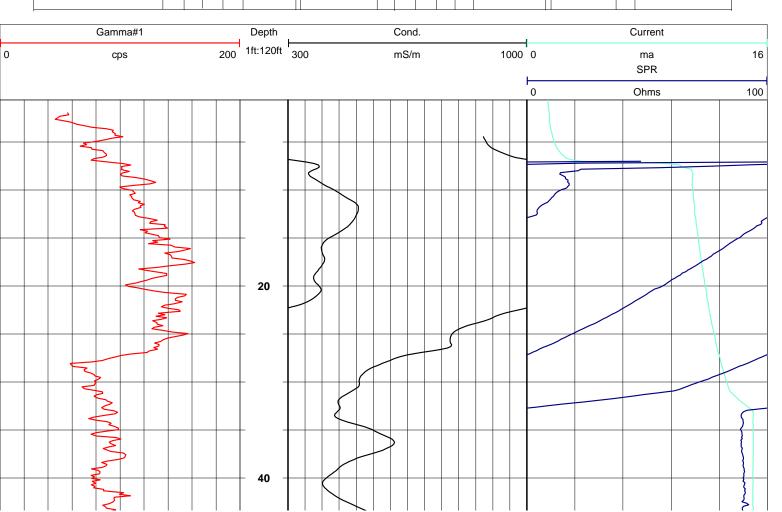
Mud Type:

Unit/Truck: 05

Witness:
Rick Klar

LOG TYPE	RUN NO	RUN NO SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	1	20	47.3	2	20
CONDUCTIVITY	2	16	45.5	4.5	20
SPR		20	7	45.9	20

SCREENED 30-45FT. BGS.







Logs: GAMMA, CONDUCTIVITY, SPR

# Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Client: **Project: RANCH VIEJO SITE** RABA KISTNER County: WEBB Date:

02-03-11

Location: 3048815 N, 484764 E

Driller T.D. (ft): 75'

State: TX

Logger T.D. (ft): 74.5'

Date Drilled: 11/12/2009

Elevation: 547.59' MSL

Drilling Contractor: VORTEX

Depth Ref: T.C.

RUN BIT SIZE (in) FROM (ft) BIT RECORD Q TO (#) 78.5 SIZE/WGT/THK 2" PVC CASING RECORD FROM (ft) +2.3 TO (#) 75

Drill Method: NA Weight: Fluid Level (ft): 8.5

ω N

Hole Medium:

Viscosity:

<u>a</u>:: Deg C

Mud Type:

Time Since Circ:

Unit/Truck: 05

Logged by: Kelly Tuten

LOG TYPE Witness: Rick Klar GAMMA **RUN NO** SPEED (ft/min) 20 FROM (ft) 73.8 TO (#) N FT./IN. 20

SCREENED FROM 61-75FT. BGS

Comments:

CONDUCTIVITY

N

6

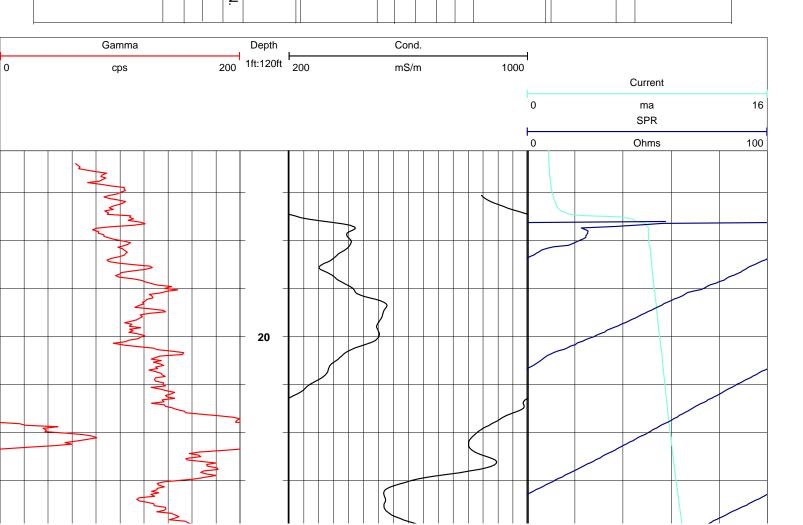
72

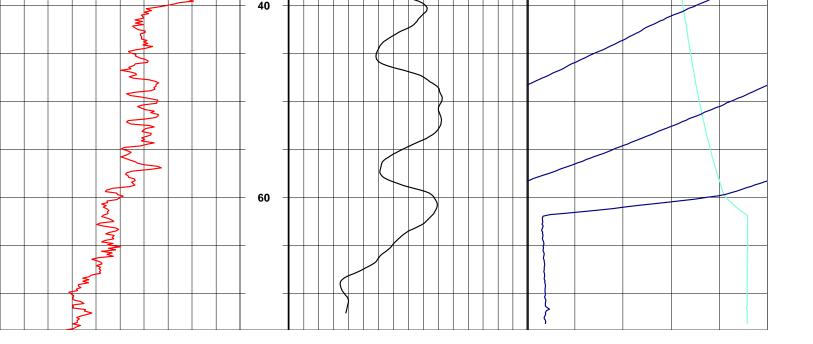
ω

73.1 5.3

20

20







Logs: GAMMA, COND., SPR

# Water Well Logging & Video Recording Services

**Project: RANCH VIEJO SITE** Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Client: RABA KISTNER

Location:

3049715 N, 484758 E

State: TX County: WEBB Date: 02-03-11

Elevation: 550.86' MSL Drilling Contractor: BOART LONGYEAR Driller T.D. (ft): 120FT.

Logger T.D. (ft): 56.2'

Date Drilled: 07-14-2009

Depth Ref: T.C.

ω	2	1	RUN	
		6"	RUN BIT SIZE (in) FROM (ft)	BIT
		. 0'	FROM (ft)	BIT RECORD
		120'	TO (ft)	
		2" PVC	SIZE/WGT/THK FROM (ft)	
		+ 3.3'	FROM (ft)	CASING RECORD
		60'	TO (ft)	RD

Fluid Level (ft): 8.5

Time Since Circ: NA

Viscosity: <u>a</u>::

Deg C

Unit/Truck: 05

Logged by: Kelly Tuten

Hole Medium:

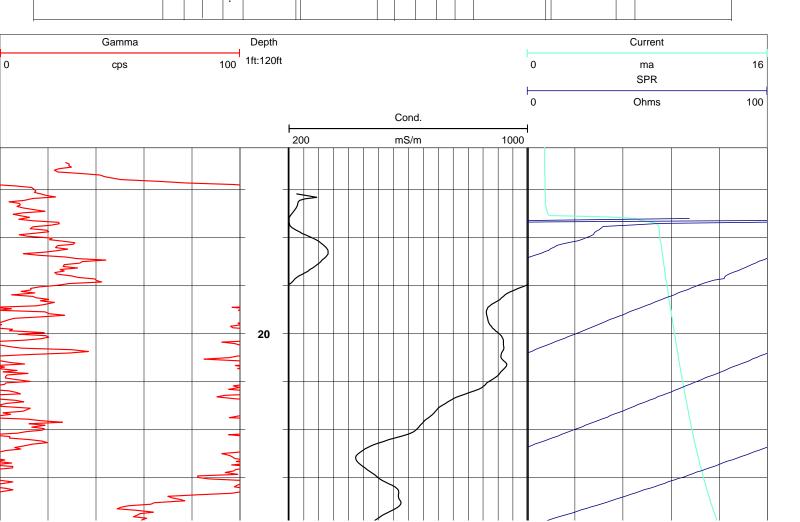
Drill Method: NA

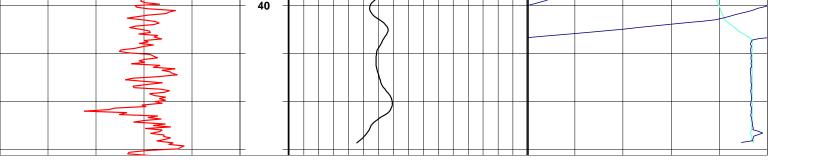
Weight: Mud Type:

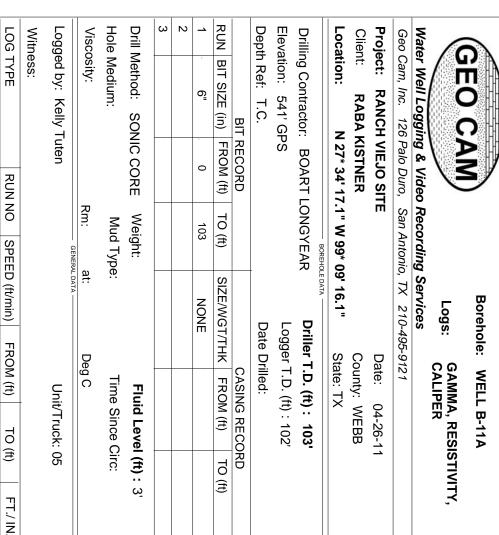
Witness: Rick Klar

LOG TYPE	RUN NO	RUN NO SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	1	20	55.5	2	20
CONDUCTIVITY	2	16	54.3	5.4	20
SPR		20	8	54.3	20
			1 )))		

SCREENED FROM 40 TO 60FT. BGS







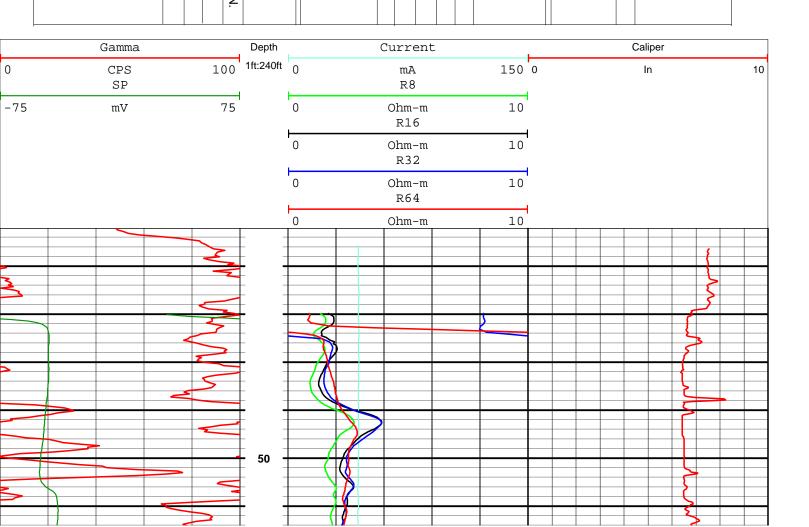
Comments:

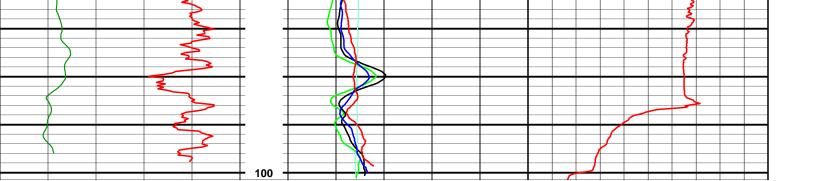
CALIPER

RESISTIVITY, SP

GAMMA

Νω







Logs: GAMMA, CONDUCTIVITY, SPR

## Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

**Project: RANCH VIEJO SITE** 

Client:

RABA KISTNER

Location: 3048592 N, 483642 E

State: TX County: WEBB

Date:

02-03-11

Drilling Contractor: BOART LONGYEAR

Elevation: 545.85FT. MSL

Driller T.D. (ft): 160FT. Logger T.D. (ft): 63.28'

Date Drilled: 07-15-2010

RUN BIT SIZE (in) FROM (ft) Depth Ref: T.C. တ္ခ BIT RECORD Ō TO (#) 160 SIZE/WGT/THK 2" PVC CASING RECORD FROM (ft) + 3.6 TO (#) 60

Hole Medium: Drill Method: NA Weight: Mud Type:

ω N

<u>a</u>::

Viscosity:

Logged by: Kelly Tuten

Unit/Truck: 05

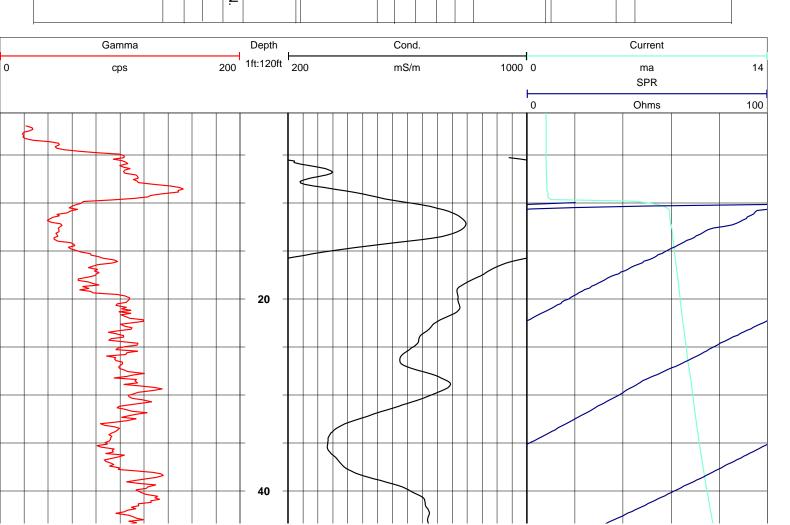
Deg C

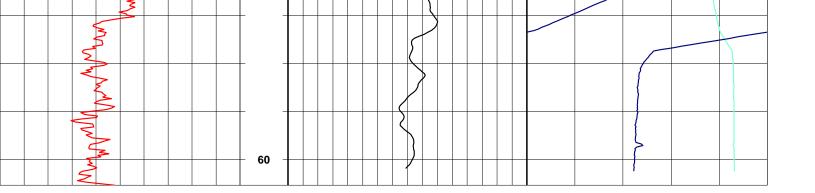
Time Since Circ: NA

Fluid Level (ft): 10.8'

ı		
10	20	SPR
60.9	2 16	CONDUCTIVITY
62.7	1 20	GAMMA
FROM (ft)	RUN NO SPEED (ft/min)	LOG TYPE RU
		Witness: Rick Klar

SCREENED FROM 45 TO 60FT. BGS







Logs: **GAMMA, CONDUCTIVITY** 

Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Client: **Project: RANCH VIEJO SITE** RABA KISTNER

Location: 3047858 N, 48247 E

County: WEBB

State: TX

Date:

02-03-11

Drilling Contractor: BOART LONGYEAR

Elevation: 541.03FT. MSL

Depth Ref: T.C.

BIT RECORD

Logger T.D. (ft): 62.79'

Driller T.D. (ft): 160FT.

Date Drilled: 07-23-2010

CASING RECORD

RUN BIT SIZE (in) FROM (ft) Q TO (ft) 160 SIZE/WGT/THK 4" PVC FROM (ft) + 3.3 TO (#) 60

ω N

Fluid Level (ft): 9.3'

Time Since Circ: NA

Unit/Truck: 05

<u>a</u>:: Deg C Hole Medium:

Viscosity:

Drill Method: NA

Weight:

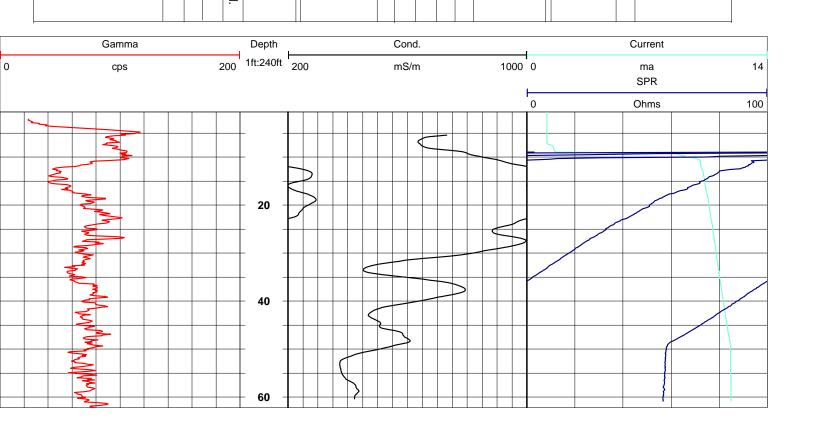
Mud Type:

Logged by: Kelly Tuten

LOG TYPE Witness: Rick Klar CONDUCTIVITY GAMMA **RUN NO** N SPEED (ft/min) 20 6 FROM (ft) 62.2 60.4 TO (#) 5.4 N FT./IN. 20 20 20

60.8

SCREENED FROM 45 TO 60FT. BGS





Logs: GAMMA, CONDUCTIVITY, SPR

# Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

**Project: RANCH VIEJO SITE** RABA KISTNER County: WEBB Date: 02-03-11

Client:

Location:

3047407 N, 484247 E

Drilling Contractor: BOART LONGYEAR Driller T.D. (ft): 120'

State: TX

Logger T.D. (ft): 47.71

Date Drilled: 07-22-2010

Depth Ref: T.C.

Elevation: 538.66' MSL

3	2	1	RUN	
		6"	BIT SIZE (in) FROM (ft)	ВІТ
		. 0'	FROM (ft)	BIT RECORD
		120FT.	TO (ft)	
		4" PVC	SIZE/WGT/THK	
		+3.1	FROM (ft)	CASING RECORD
		45'	TO (ft)	)RD

Weight: Fluid Level (ft): 10.5'

Time Since Circ: NA

Mud Type:

Viscosity: <u>a</u>:: Deg C

Hole Medium:

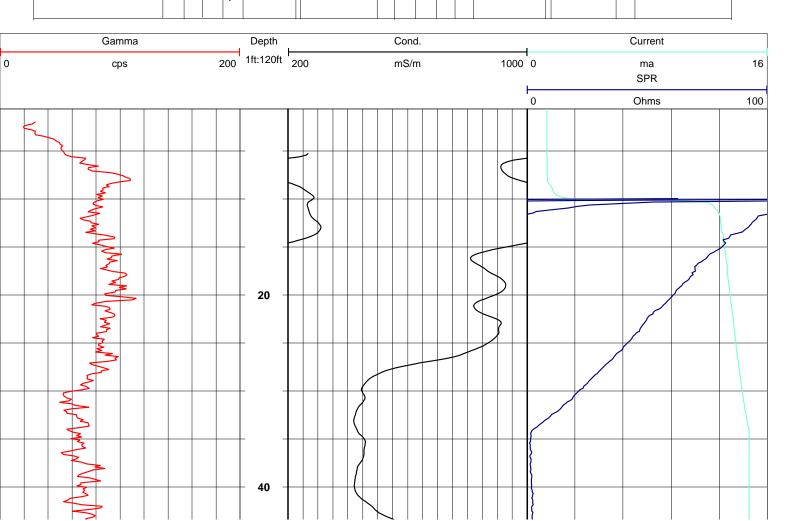
Drill Method: NA

Logged by: Kelly Tuten

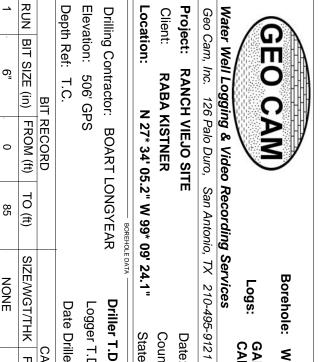
Unit/Truck: 05

	SPR	CONDUCTIVITY	GAMMA	LOG TYPE	Witness: Rick Klar
, , , , , , , , , , , , , , , , , , , ,		2	1	RUN NO	
	20	16	20	RUN NO SPEED (ft/min)	
)	10	45.5	47.1	FROM (ft)	
	45.8	5.3	2	TO (ft)	
-	20	20	20	FT./IN	

SCREENED FROM 30 TO 45FT. BGS.







Borehole: WELL B-109A

Logs:

GAMMA, RESISTIVITY, CALIPER

Water Well Logging & Video Recording Services

N 27\* 34' 05.2" W 99\* 09' 24.1"

State: TX Date: County: WEBB 06-26-11

Driller T.D. (ft): 85'

Logger T.D. (ft): 85'

Date Drilled:

SIZE/WGT/THK | FROM (ft) NONE CASING RECORD

TO (ft)

85

Fluid Level (ft): 4'

ω N

Hole Medium:

Viscosity:

Drill Method: SONIC CORE

Weight: Mud Type:

Deg C

Unit/Truck: 05

Time Since Circ:

<u>a</u>::

Logged by: Kelly Tuten

20	16	20	ED (ft/min)	
129	83	81	FROM (ft)	
13	26	6	TO (ft)	
20	20	20	FT./ IN.	

LOG TYPE

RUN NO ω N

SPEED

GAMMA

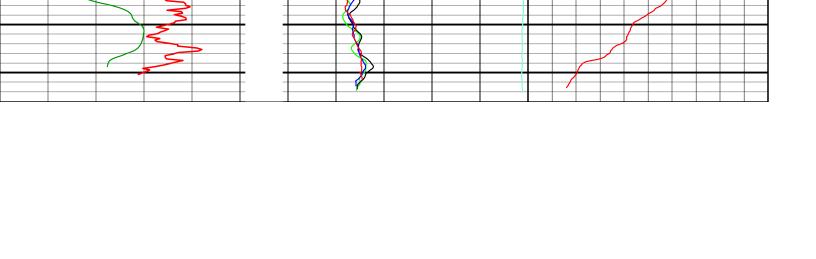
Comments:

CALIPER

RESISTIVITY, SP

Witness:

	Gamma		Depth		Current	=				Ca	liper		
0	CPS SP	100	1ft:240ft	0	mA R8		200	0		I	n		10
-75	mV	75		0	Ohm-m R16		10	ı.					
				0	Ohm-m R32		10						
				0	Ohm-m R64		10	ı					
				0	Ohm-m		10						
		-	 				7						
	<b>*</b>		- - -									<i>\\</i>	
		<u> </u>	 										
			 									3	
			 									5	-
		\$	  										
		3	<b>-</b> 50 <b>-</b>	/									
	3	?	<u> </u>									}	





Logs: GAMMA, RESISTIVITY, CALIPER

Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Project: RANCH VIEJO SITE

Client:

Location: RABA KISTNER N 27\* 33' 26.9" W 99\* 09' 54.9"

Date: 05-12-11

State: TX County: WEBB

Drilling Contractor: BOART LONGYEAR

Driller T.D. (ft): 160'

Date Drilled: 04-29-2011

Logger T.D. (ft):80'

Depth Ref: G.L. Elevation: 540'

u	2	1	RUN	
		6"	RUN BIT SIZE (in) FROM (ft) TO (ft)	BIT
		. 0	FROM (ft)	BIT RECORD
		150	TO (ft)	
		NONE	SIZE/WGT/THK FROM (ft)	
			FROM (ft)	CASING RECORD
		•	TO (ft)	ORD

ω N

Fluid Level (ft): 4

Time Since Circ:

<u>a</u> Deg C

Logged by: Kelly Tuten

Hole Medium:

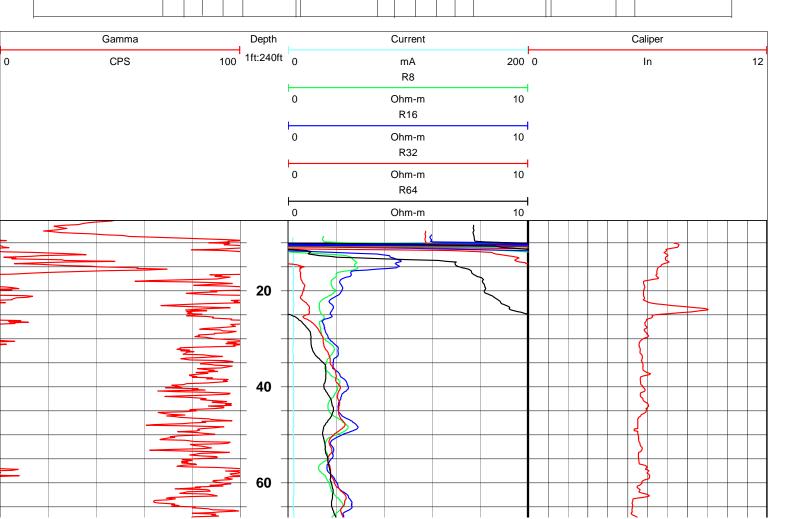
Viscosity:

Drill Method: SONIC CORE

Weight: Mud Type:

Unit/Truck: 05

Witness:	-				
LOG TYPE	RUN NO	RUN NO SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	3	20	75.2	5.3	20
RESISTIVITY, SP	2	16	77.5	7.6	20
CALIPER		20	79	10.1	20
		_		_	







Logs: GAMMA, RESISTIVITY, CALIPER

Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Date: 05-12-11

County: WEBB

Client:

RABA KISTNER

Project: RANCH VIEJO SITE

Location:

N 27\* 33' 14.5" N 99\* 09' 39.9" State: TX

BOREHOLE DATA -

Drilling Contractor: BOART LONGYEAR

Driller T.D. (ft): 160' Logger T.D. (ft) : 141'

Date Drilled: 05/05-06/2011

6	BIT SIZE (in) FROM (ft)	BIT
0	FROM (ft)	BIT RECORD
150	TO (ft)	
NONE	SIZE/WGT/THK	
	FROM (ft)	CASING RECORD
,	TO (ft)	)RD

RUN

Depth Ref: G.L. Elevation: 536.9'

ω N

Drill Method: SONIC CORE

Weight: Mud Type:

Fluid Level (ft): 3'

Time Since Circ:

Deg C

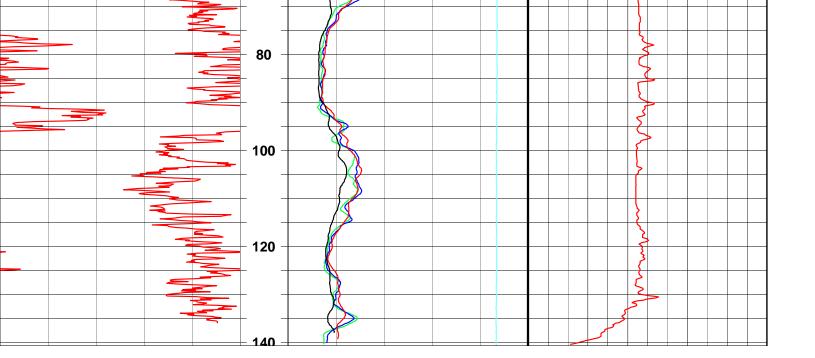
Logged by: Kelly Tuten

Viscosity: Hole Medium:

GENERAL DATA-Unit/Truck: 05

Witness:			-		
LOG TYPE	RUN NO	RUN NO SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	3	20	135.8	6.7	20
RESISTIVITY, SP	2	16	139.2	9.8	20
CALIPER		20	140.3	11.2	20
		_		_	

	Gamma			Depth		Current			Caliper	· 
	cps		100	1ft:240ft	0	mA R8	200	0	In	
					0	Ohm-m R16	10			
					0	Ohm-m R32	10			
					0	Ohm-m R64	10			
					0	Ohm-m	10			
				- 20 - - 2 -						
				- 40 - - 40 -						
_			-			3)				





Logs: GAMMA, RESISTIVITY, CALIPER

Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Project: RANCH VIEJO SITE Client: RABA KISTNER

Location:

N 27\* 33' 12.0" W 99\* 09' 26.7" State: TX County: WEBB Date: 05-12-11

Drilling Contractor: BOART LONGYEAR Driller T.D. (ft): 160'

Logger T.D. (ft): 130'

Elevation: 540.5'

Depth Ref: T.C.

Date Drilled: 05/06-07/2011

	6"	BIT SIZE (in) FROM (ft)	BI
	. 0	FROM (ft)	BIT RECORD
	150	TO (ft)	
	NONE	SIZE/WGT/THK FROM (ft)	
		FROM (ft)	CASING RECORD
		TO (ft)	)RD

RUN

ω N

Drill Method: SONIC CORE Weight: Fluid Level (ft): 3

Mud Type: Time Since Circ:

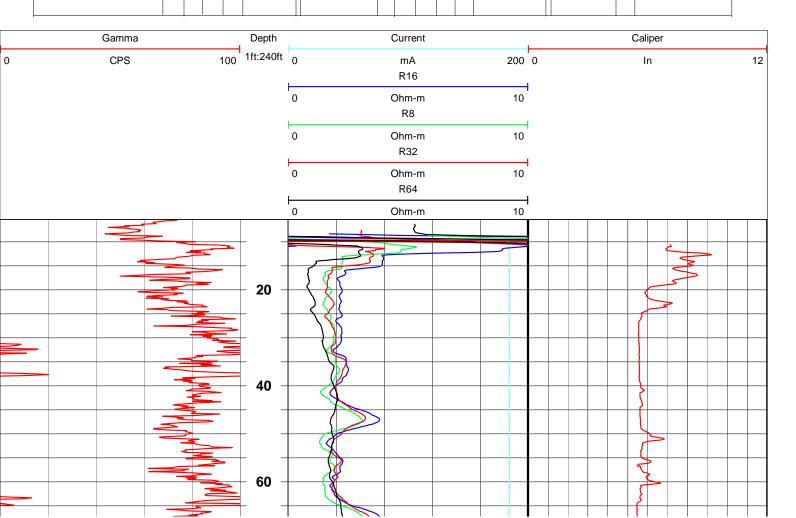
Viscosity: Deg C

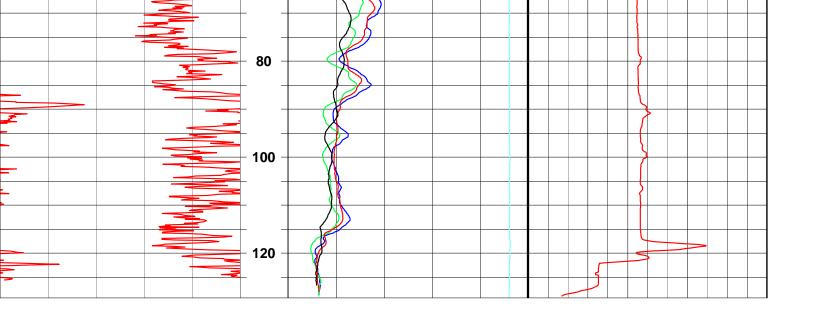
Hole Medium:

Logged by: Kelly Tuten

Unit/Truck: 05

Witness:					
LOG TYPE	RUN NO	RUN NO SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	3	20	125.6	5.3	20
RESISTIVITY, SP	2	16	127.9	7.6	20
CALIPER		20	128.8	10.6	20
		_		_	









**Borehole: ON SITE WELL** 

Logs: **GAMMA, CALIPER, SPR** 

Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Client: **Project: RANCHO VIEJO** RABA KISTNER

Location:

Drilling Contractor: NA

N 27\* 33' 16.8" W 99\* 10' 16.9"

Date: 07-17-11

State: TX County: WEBB

Driller T.D. (ft): NA Logger T.D. (ft): 1166'

Date Drilled: NA

Depth Ref: T.C. Elevation: 534' GPS

ω	2	1	RUN	
		NA	RUN BIT SIZE (in) FROM (ft)	ВІТ
		•	FROM (ft)	BIT RECORD
-			TO (ft)	
		4.25" STEEL	SIZE/WGT/THK FROM (ft)	
		+ 1.1	FROM (ft)	<b>CASING RECORD</b>
		TD	TO (ft)	)RD

Weight: Fluid Level (ft): 222'

Time Since Circ:

<u>a</u>:: Deg C

Mud Type:

Hole Medium:

Viscosity:

Drill Method: NA

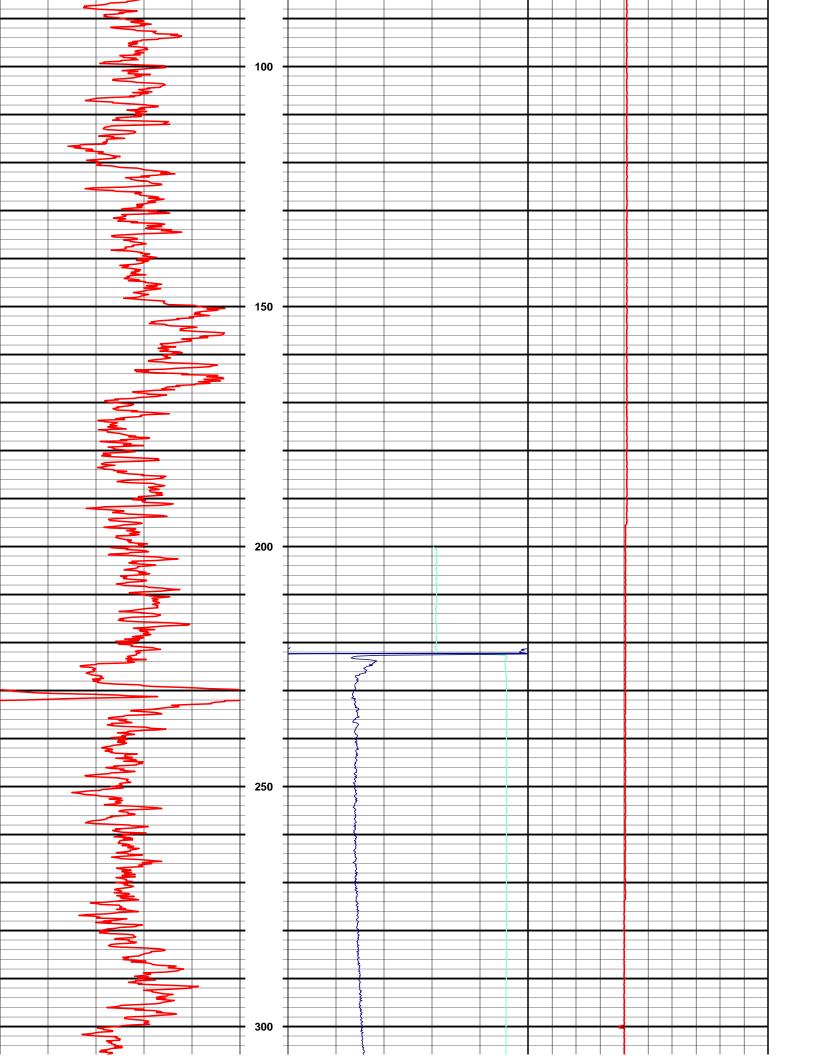
GENERAL DATA -

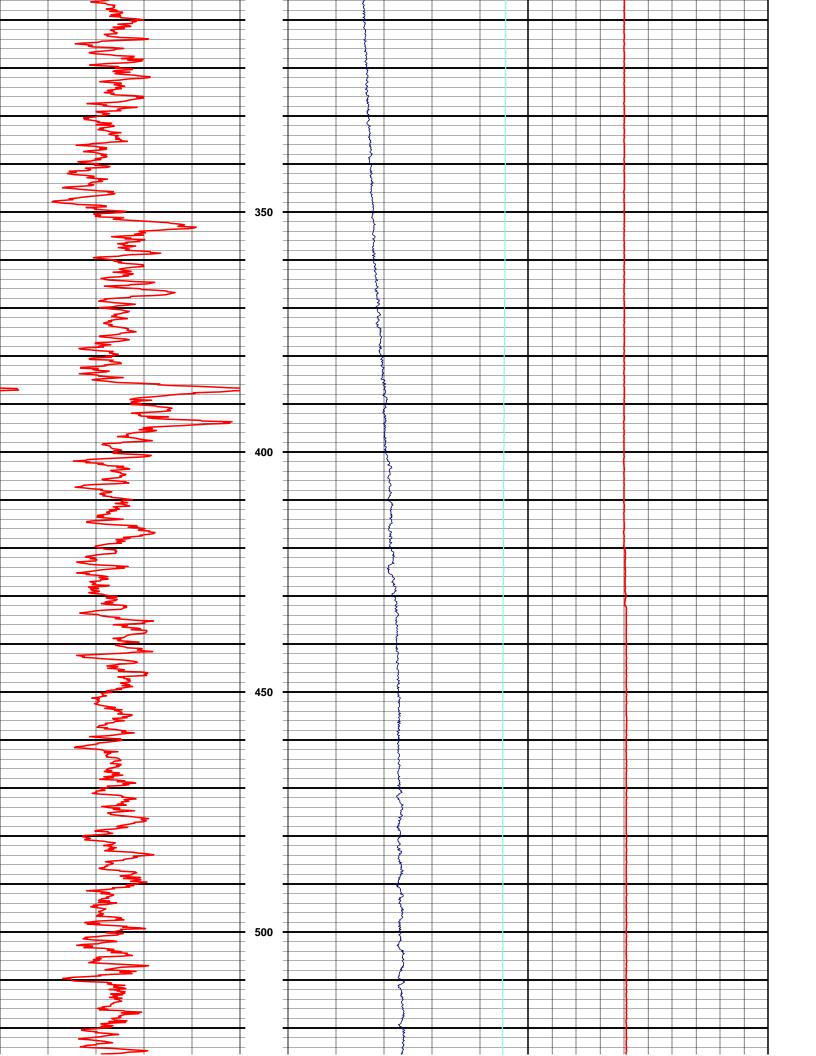
Unit/Truck: 05

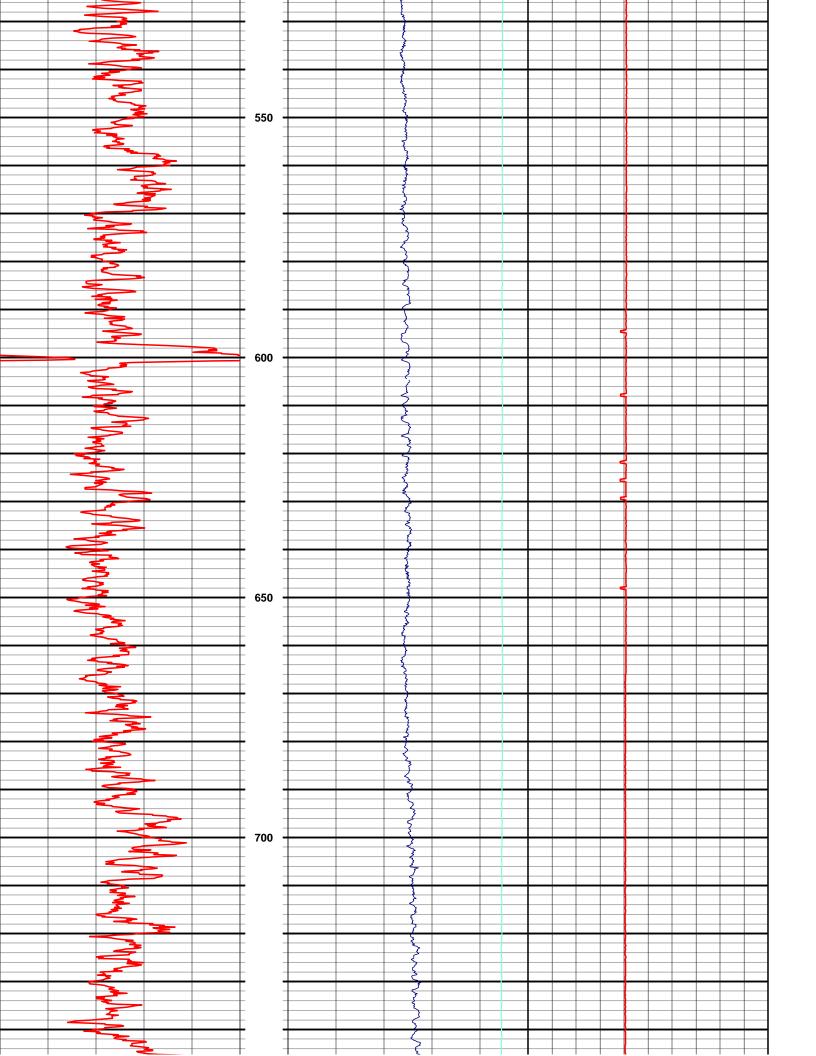
Logged by: Kelly Tuten

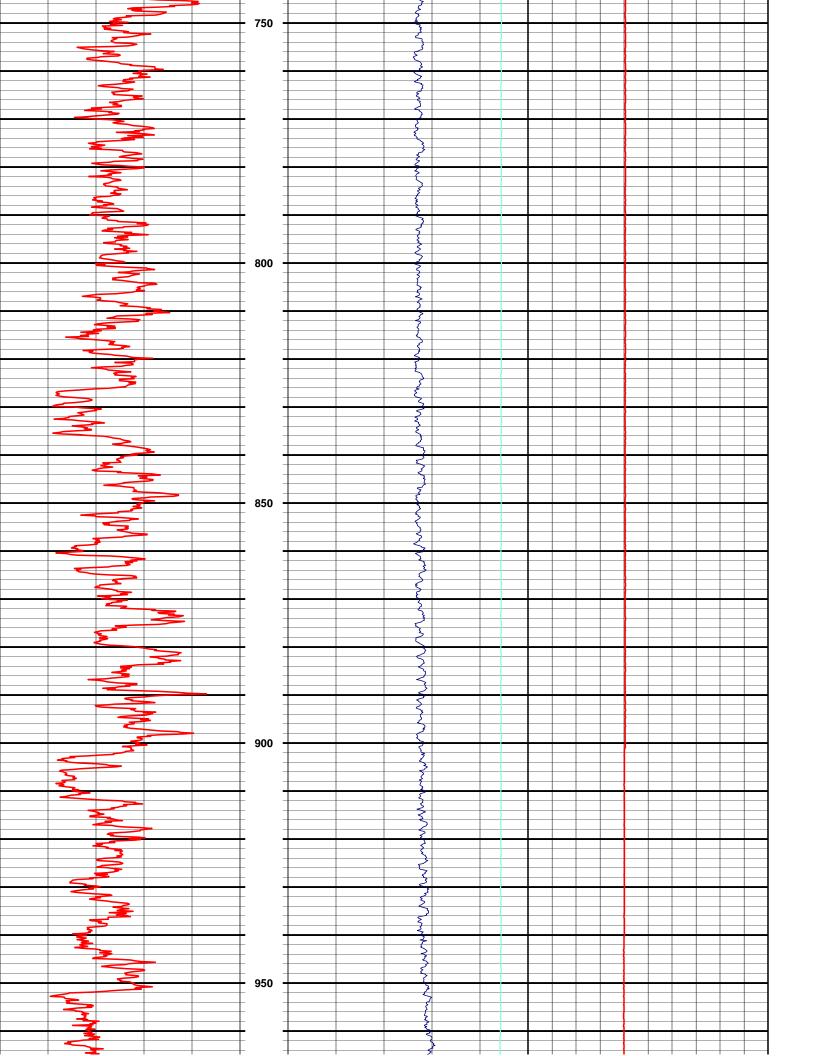
LOG TYPE Witness: CALIPER GAMMA RUN NO SPEED (ft/min) 30 55 30 FROM (ft) 1165 1159 1160 TO (ft) 222 Ŋ FT./IN. 20 20 20

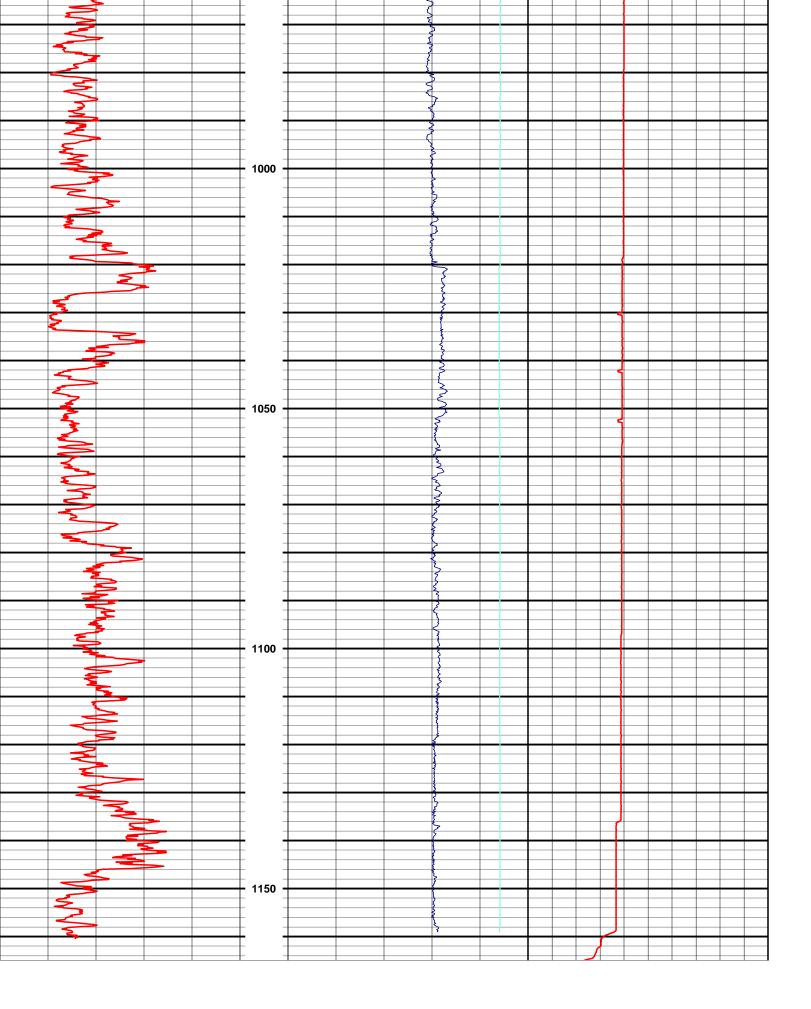
Gamma		Depth		(	Current	-						Cal	iper			
cps	100	1ft:240ft	0		mA SPR		14	0				lı	n			
			100		Ohms		200									
3																-
		_										1				
		_														
		-										1		-		-
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### **APPENDIX D**

### PIEZOMETER CONSTRUCTION DIAGRAMS

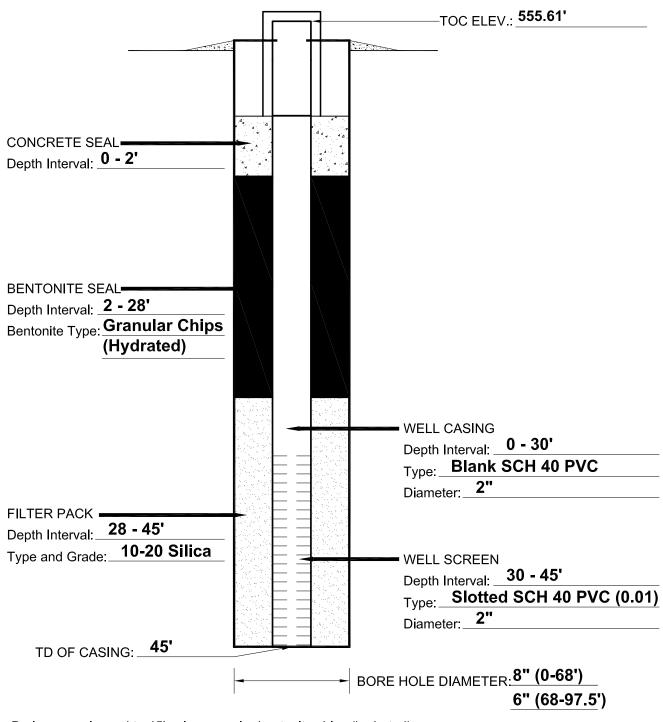
(B-1, B-2, B-6, B-11A, B-13, B-18, B-24, B-26, B-27, B-101, B-102, B-106, B-109A, B-114A, B-115, B-118, B-124 AND

**B-126)** 

2/25/15

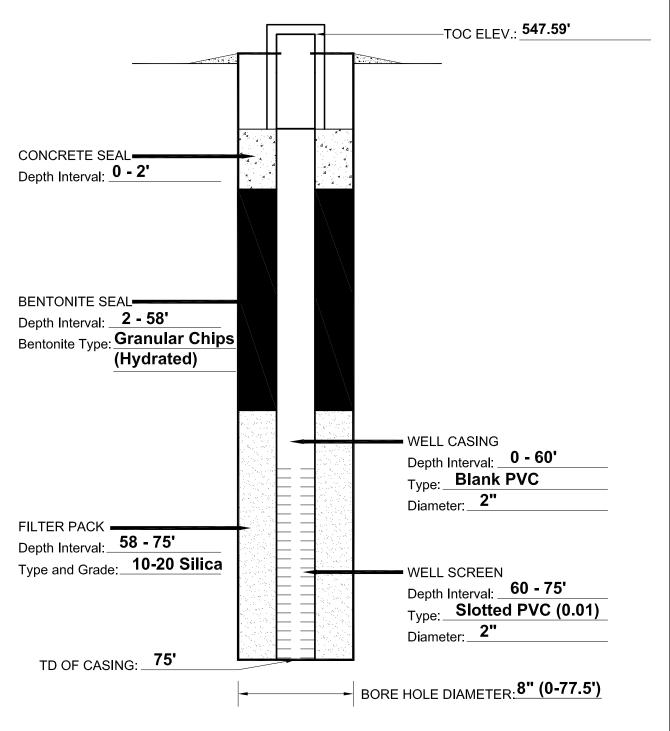
GEOLOGY

TEMPORARY PIEZOMETER I.D. No. **B-1** 



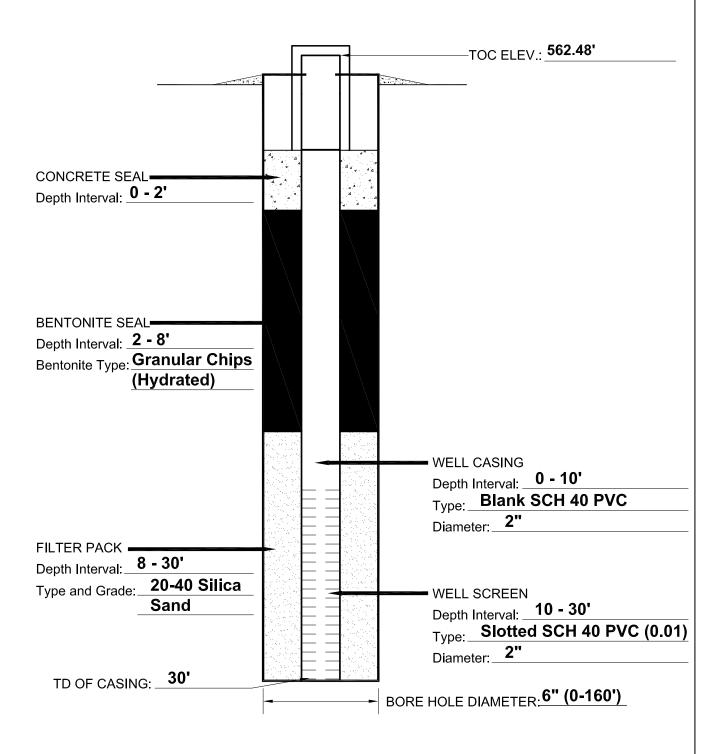
NOTE: Boring was plugged to 45' using granular bentonite chips (hydrated).

TEMPORARY PIEZOMETER I.D. No. **B-2** 



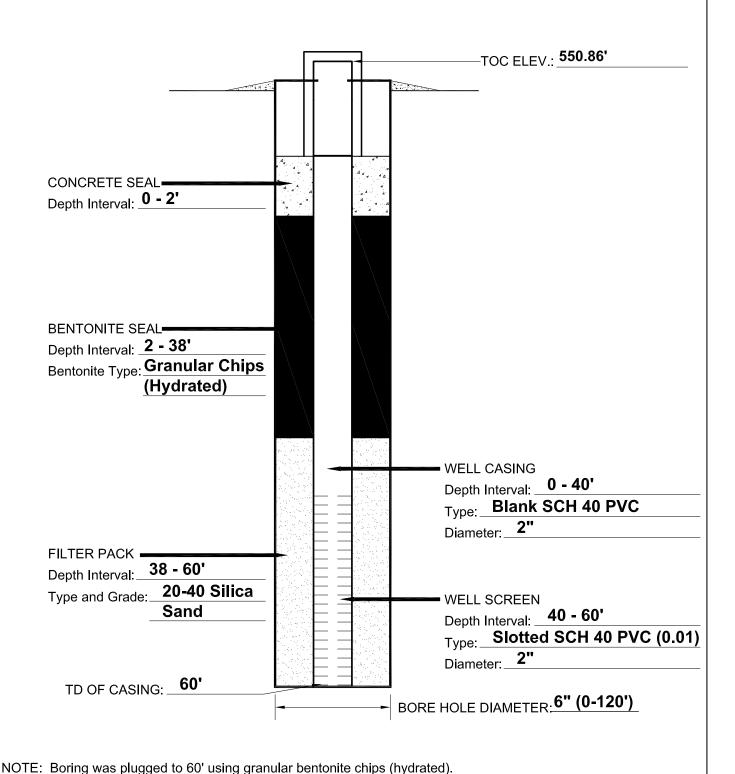
NOTE: Boring was plugged to 75' using granular bentonite chips (hydrated).

TEMPORARY PIEZOMETER I.D. No. **B-6** 

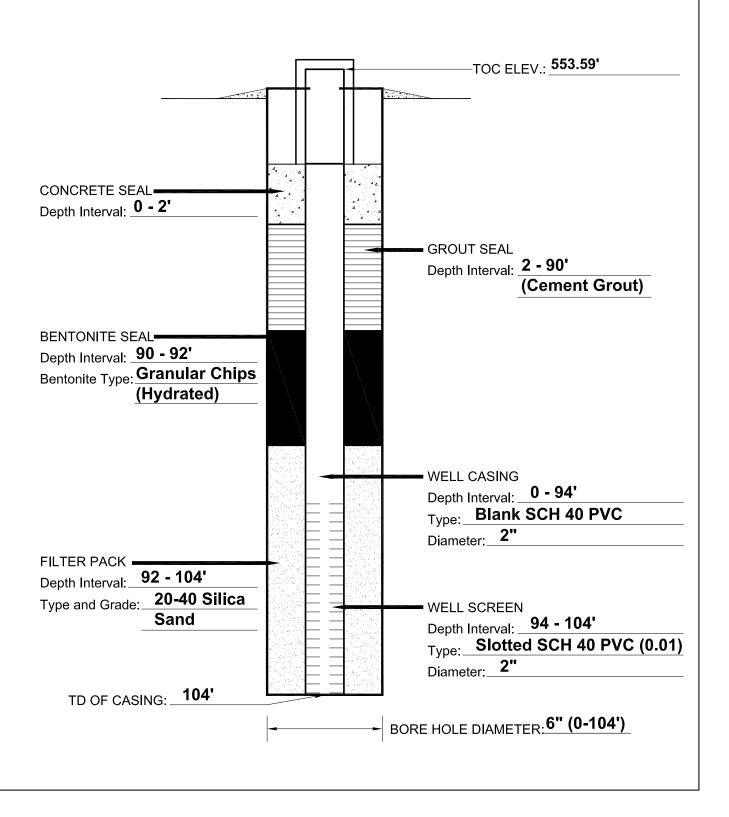


NOTE: Boring was plugged to 30' using granular bentonite chips (hydrated).

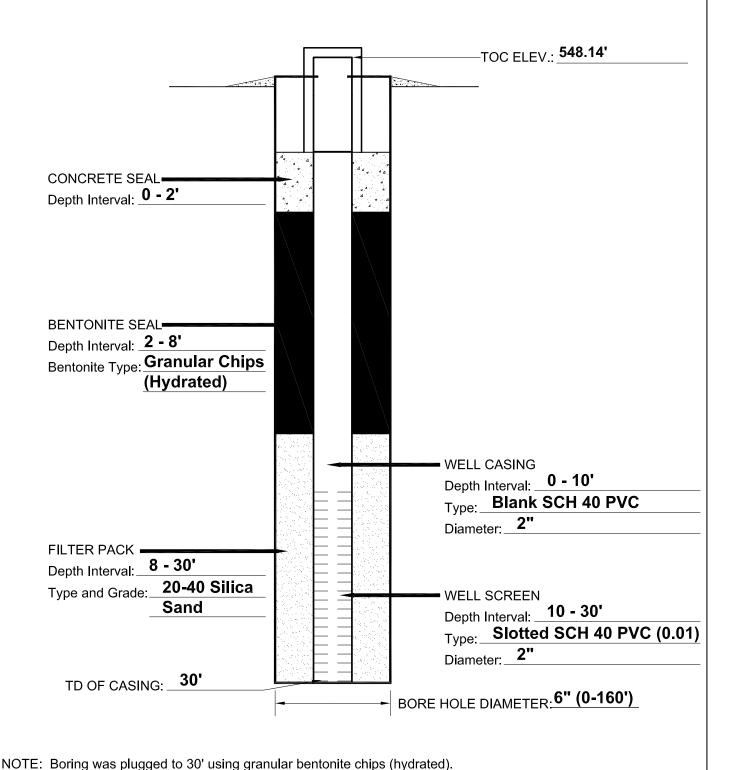
TEMPORARY PIEZOMETER I.D. No. **B-10** 

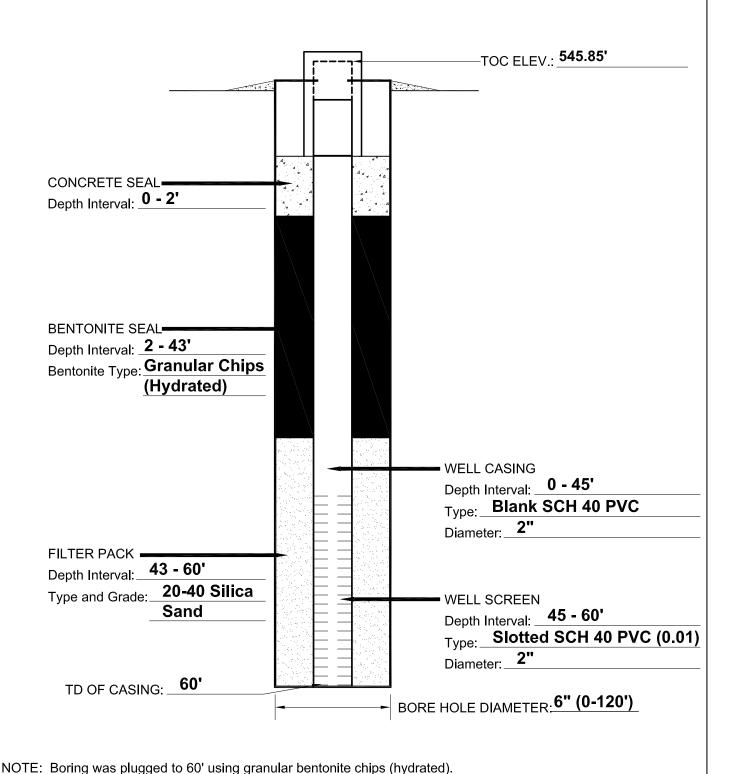


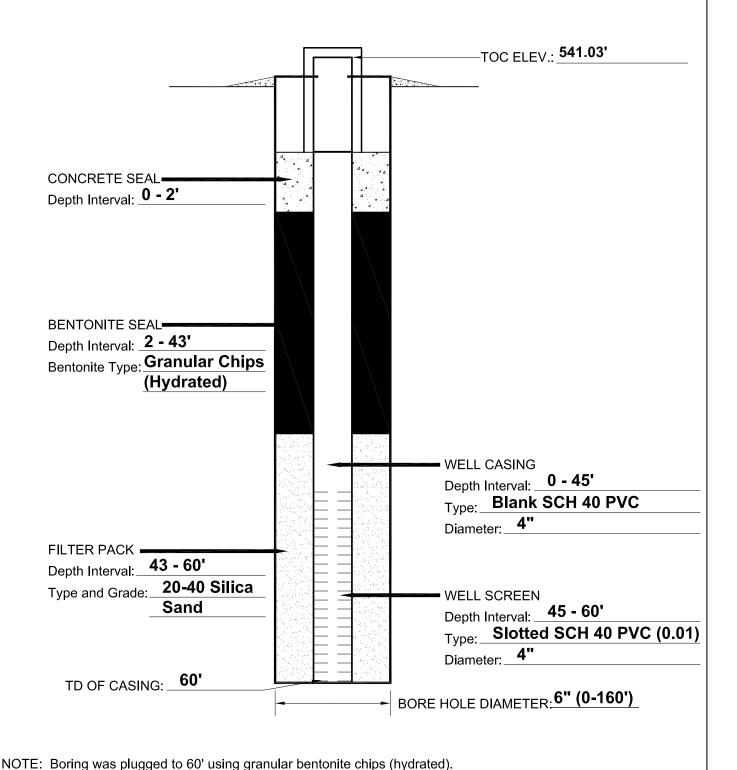
TEMPORARY PIEZOMETER I.D. No. **B-11A** 



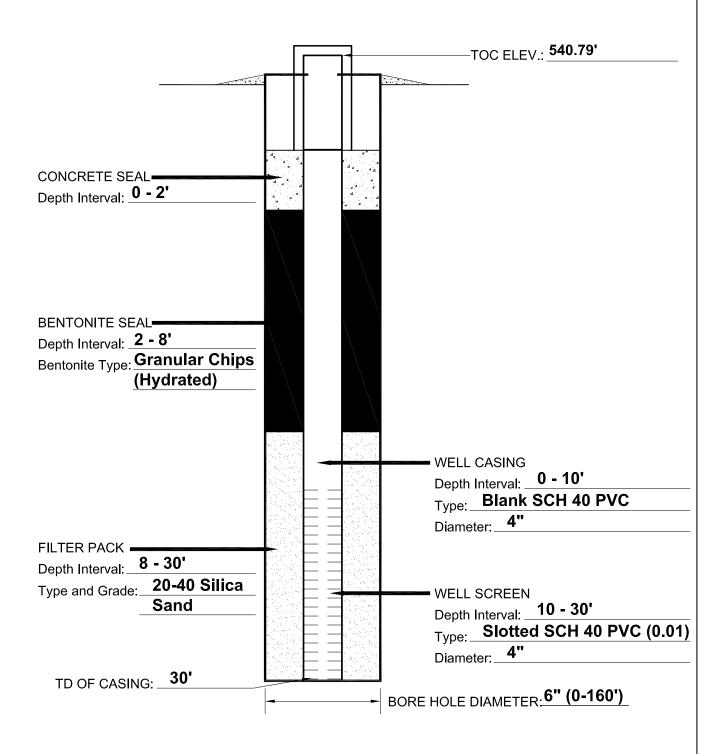
TEMPORARY PIEZOMETER I.D. No. **B-13** 





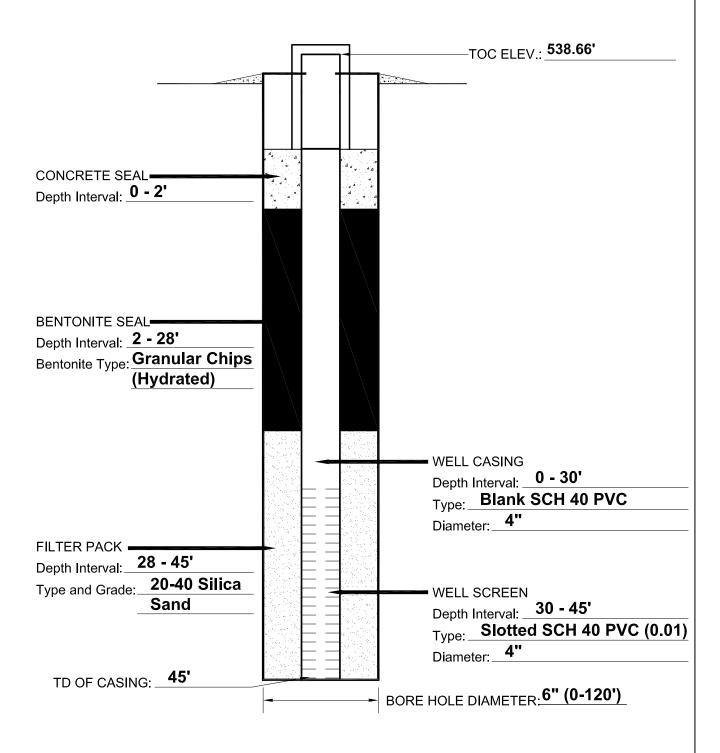


TEMPORARY PIEZOMETER I.D. No. **B-26** 

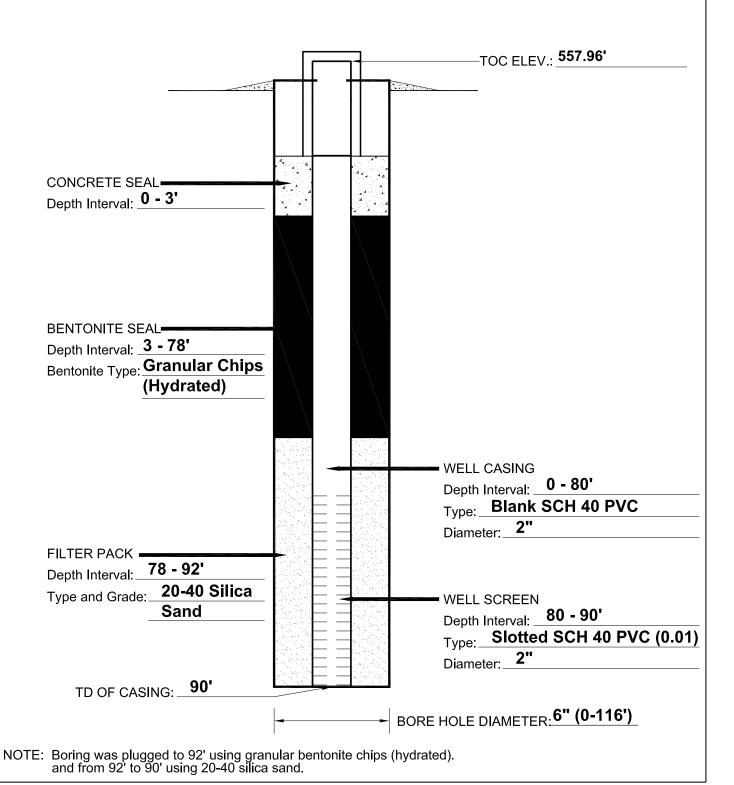


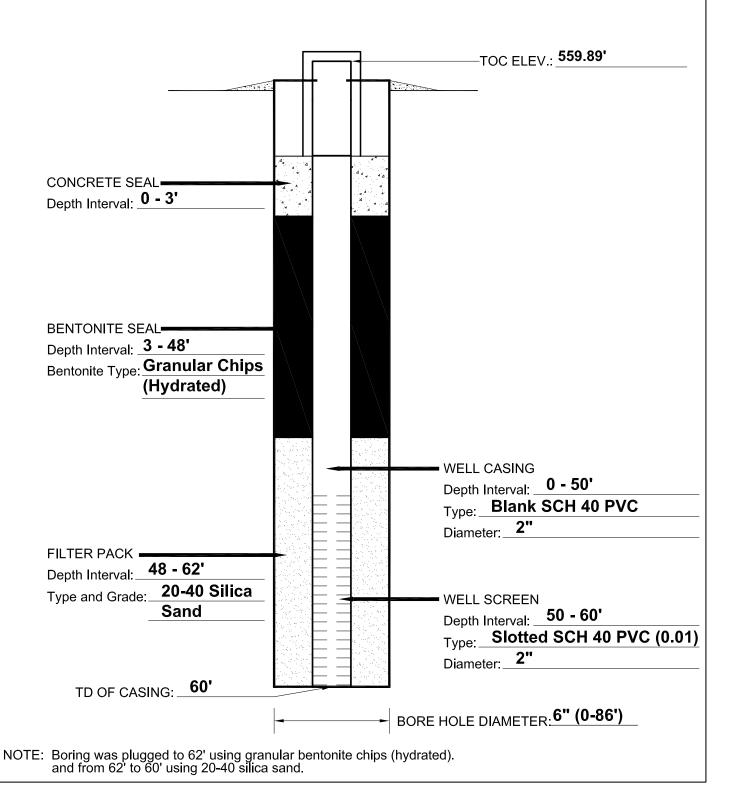
NOTE: Boring was plugged to 30' using granular bentonite chips (hydrated).

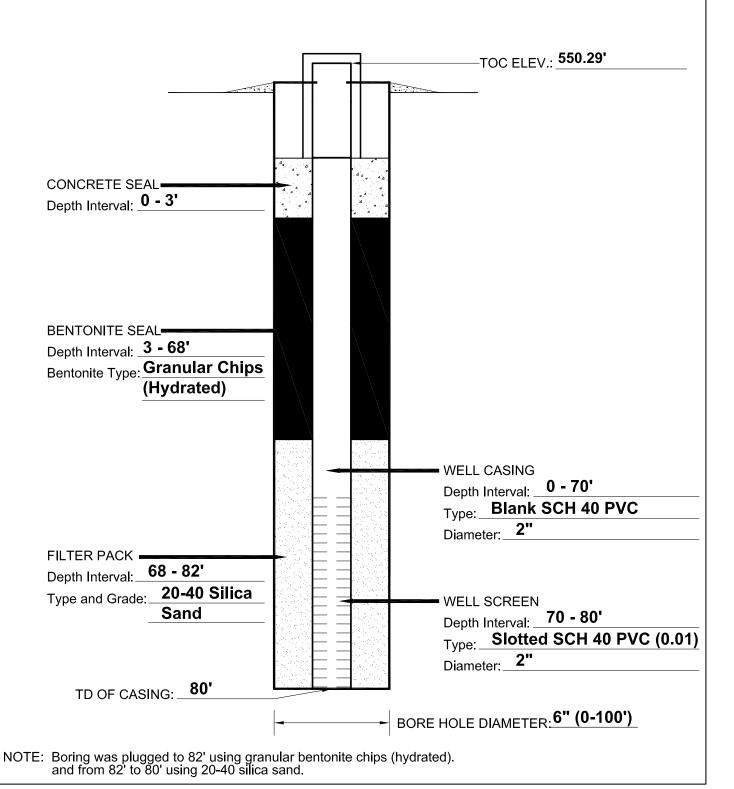
TEMPORARY PIEZOMETER I.D. No. **B-27** 

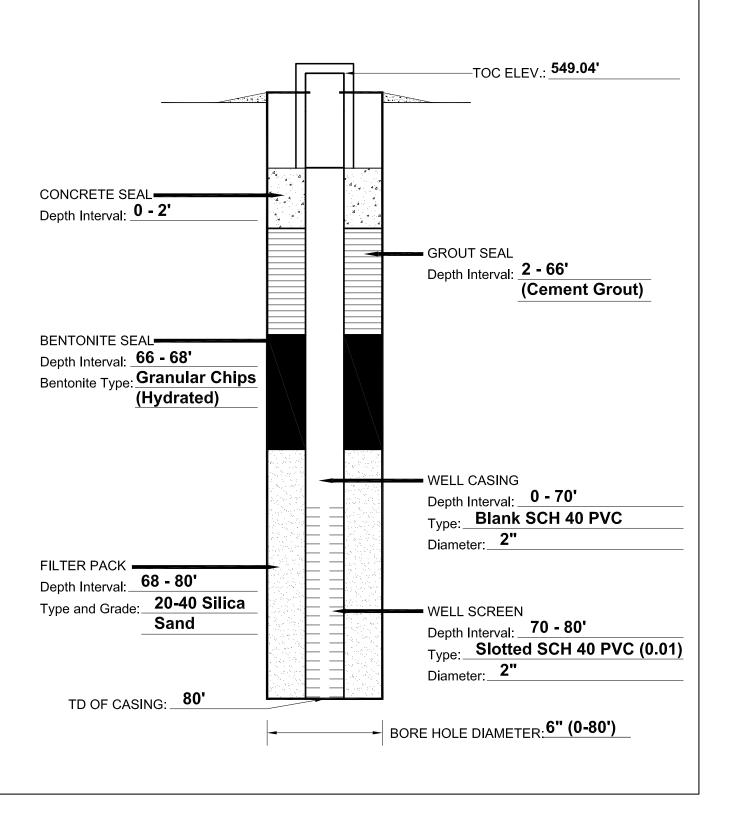


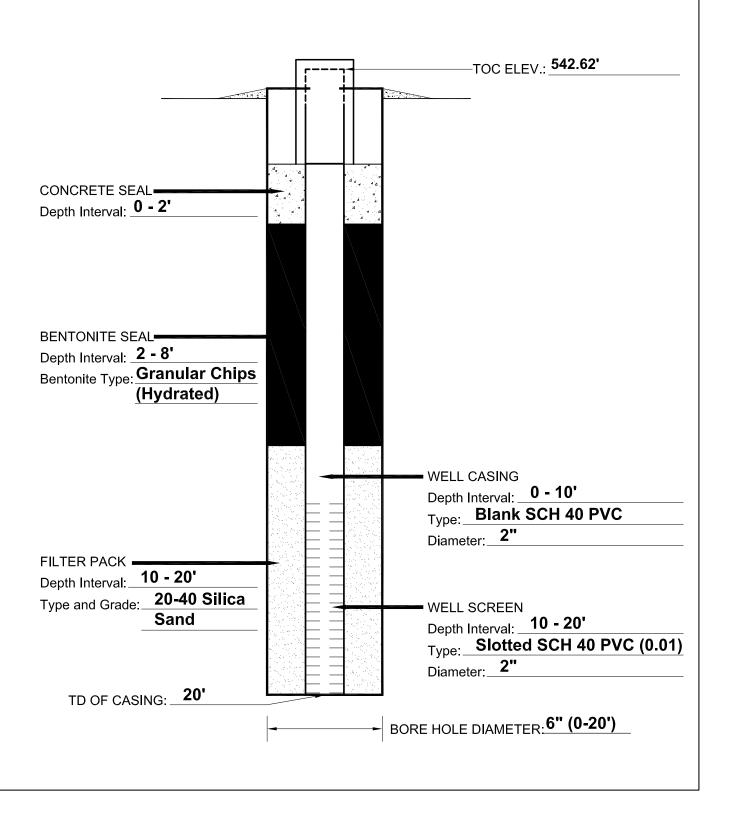
NOTE: Boring was plugged to 45' using granular bentonite chips (hydrated).



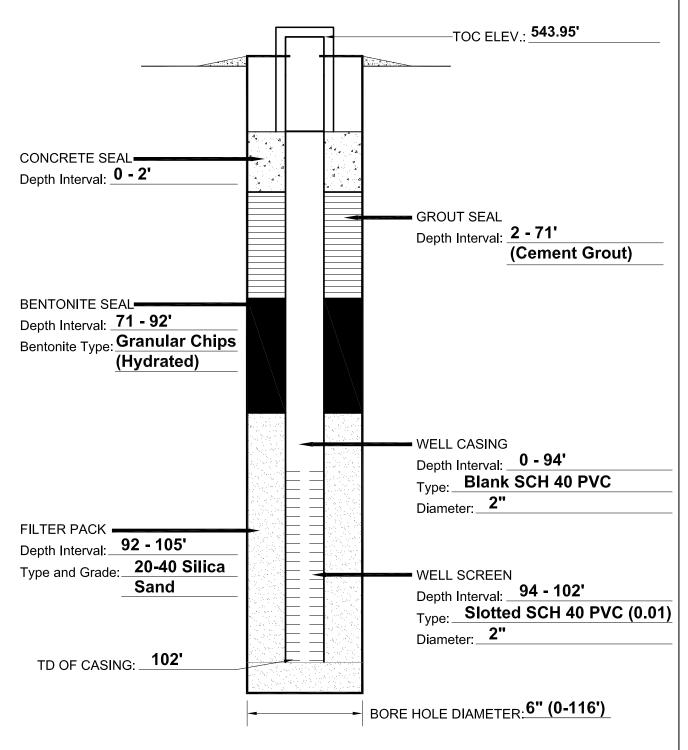






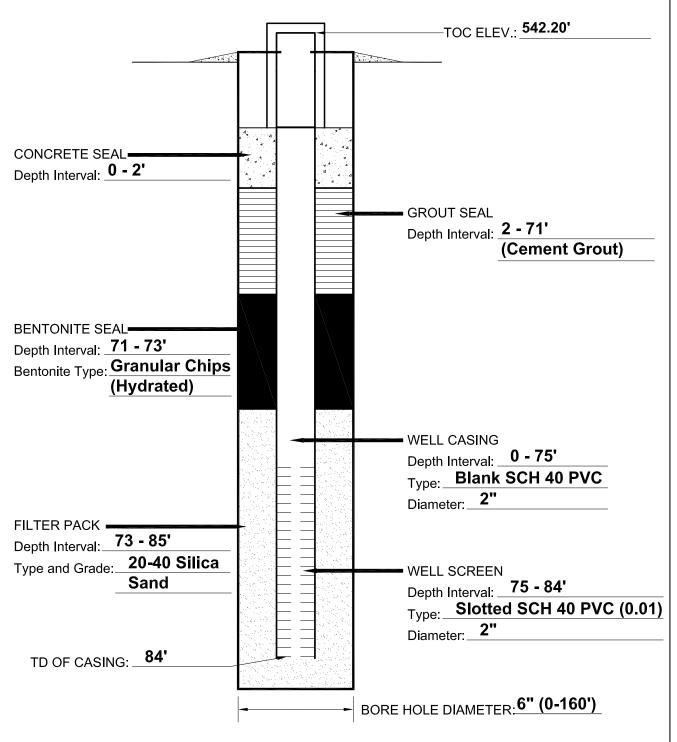


TEMPORARY PIEZOMETER I.D. No. **B-115** 



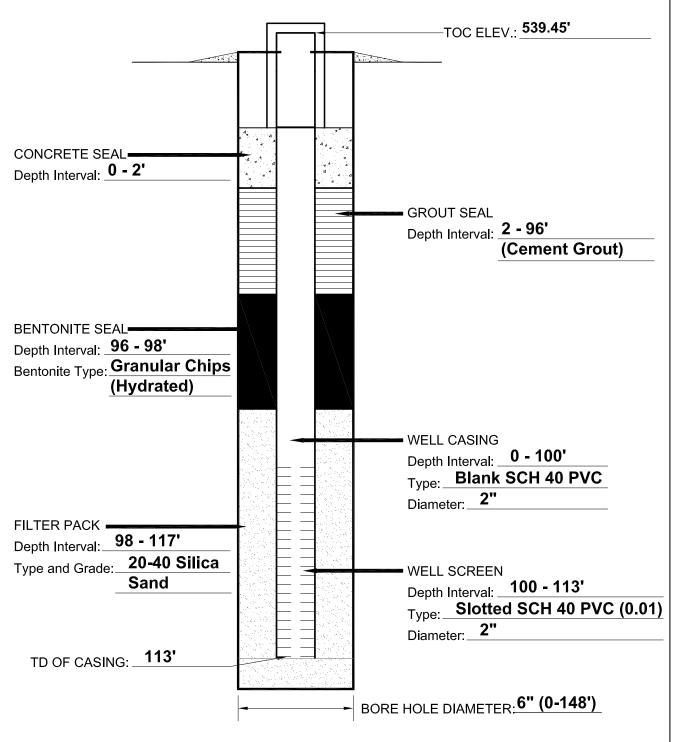
NOTE: Boring was plugged to 105' using granular bentonite chips (hydrated). and from 105' to 102' using 20-40 silica sand.

TEMPORARY PIEZOMETER I.D. No. **B-118** 



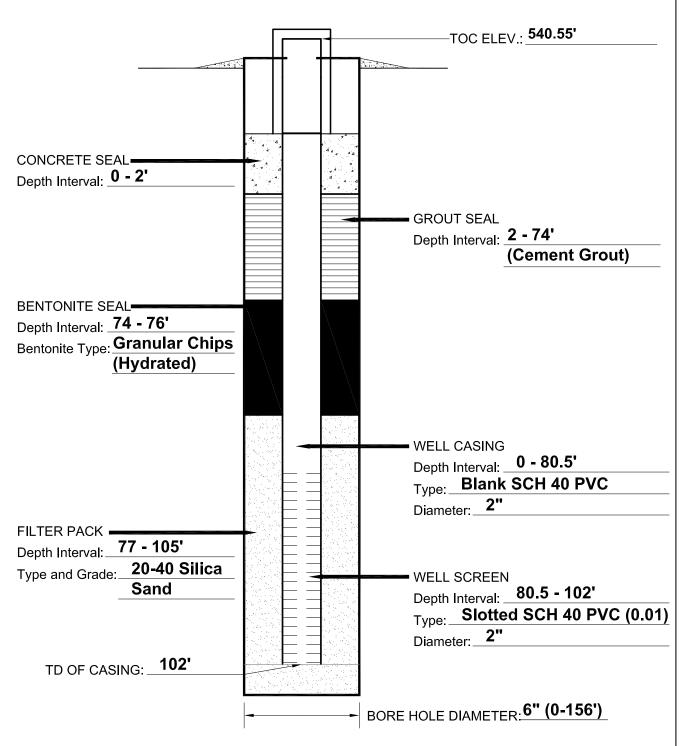
NOTE: Boring was plugged to 85' using granular bentonite chips (hydrated). and from 85' to 84' using 20-40 silica sand.

TEMPORARY PIEZOMETER I.D. No. **B-124** 



NOTE: Boring was plugged to 117' using granular bentonite chips (hydrated). and from 117' to 113' using 20-40 silica sand.

TEMPORARY PIEZOMETER I.D. No. **B-126** 



NOTE: Boring was plugged to 105' using granular bentonite chips (hydrated). and from 105' to 102' using 20-40 silica sand.

# APPENDIX E STATE OF TEXAS WELL REPORTS

Owner: TRC Environmental Corporation Owner Well #: B-1

Address: 505 East Huntland Dr., Ste. 250 Grid #: 85-31-6

Austin , TX 78752

Well Location: 20 Miles East of Laredo Latitude: 27° 33' 54" N

Laredo, TX 78043

Well County: Webb Longitude: 099° 09' 36" W

Elevation: No Data GPS Brand Used: Google Earth

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 11/10/2009

Completed: 11/10/2009

Diameter of Hole: Diameter: 8 in From Surface To 68 ft

Diameter: 6 in From 68 ft To 97.5 ft

Drilling Method: Air Rotary Hollow Stem Auger

Borehole Gravel Packed From: 45 ft to 28 ft

Completion: Gravel Pack Size: 10/20

Annular Seal Data: 1st Interval: From 0 ft to 2 ft with 1 Cement (#sacks and material)

2nd Interval: From 2 ft to 28 ft with 13 Bentonite (#sacks and material)

3rd Interval: No Data Method Used: Hand Mixed Cemented By: Vortex Drilling, Inc.

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data**Method of Verification: **No Data**Approved by Variance: **No Data** 

Surface Completion:

**Surface Sleeve Installed** 

Water Level: Static level: 70 ft. below land surface on 11/10/2009

Artesian flow: No Data

Packers: N/A

Plugging Info: Casing left in well: Cement/Bentonite left in well:

From (ft) To (ft) From (ft) To (ft) Cem/Bent Sacks Used

N/A

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: Non-Potable

Depth of Strata: **70 ft.** Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Vortex Drilling, Inc.

Information: 4412 Bluemel Road

San Antonio , TX 78240

Driller License

3256

Number:

Licensed Well

Gary T. May

Driller Signature:

Registered Driller Apprentice No Data

Apprentice Signature:

Apprentice Registration Number: No Data

Comments:

No Data

#### IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #199949) on your written request.

Texas Department of Licensing & Regulation P.O. Box 12157 Austin, TX 78711 (512) 463-7880

## DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description

0 - 3 Clay,sandy,soft,plastic.,tan/brw.,moist

3 - 5 Lt.brw. below 3'

5 - 7.5 Scattered sm.caliche pockets,widely scattered pebbles,decreasing sand below 5' 7.5 - 20 Clay,silty,blocky,bentonitic,v.firm,tan/lt. brw.,moist,trace carbonaceous material,@7.5'-8.2' increasing plastic. w/scattered green/gray sandy inclusions,soft from 8.2'-10', below 10' widely scattered gypsum crystals,@10.6',13.3',and 16.4' slightly sandy w/sandy partings,below 12.5' iron staining

20 - 30 Clay,midly calcar.,brw.,moist,laminated below 25'

30 - 38.6 Siltstone,massive It.gray,fractures @30.4',32.4', and 32.7',v.hard,cross-bedded w/ white sandstone inclusions and widely scattered organic matter below 35',@38.6' gray to green 38.6 - 40 Clay shale,silty,soft,gray/green,groundwater @38.9'

40 - 53 Sandstone, fine grained, gray w/alternating beds of v.fine grained sandstone/mudstone, increasing clay below 43.8', decreasing grain size w/depth

53 - 60 Clay,sandy,blocky,tan/lt.green,w/thin sandstone lenses,less indurated w/sm.pink sandstone,inclusions @54'

60 - 70 Sandstone, clayey, partially indurated,

Dia. New/Used Type Setting From/To 2 New Schedule 40 PVC .010 45 - 30 Screen

2 New Schedule 40 PVC 30 - 0 Riser

2 New Top Cap 2 New Bottom Cap

groundwater @70'
70 - 97.5 Clay,silty,gray,saturated w/interbedded indurated siltstone,below 75' increasing indurated siltstone layers,below 80' pebble inclusions,widely scattered chert fragments,below 85' moist,w/ glauconitic inclusions,decreasing chert,groundwater @95',plastic,blocky,chocolate brw./reddish brw. w/thin gray mottling below 95'

Owner: TRC Environmental Corporation Owner Well #: B-2

Address: 505 East Huntland Dr., Ste. 250 Grid #: 85-31-6

Austin , TX 78752

Well Location: 20 Miles East of Laredo Latitude: 27° 33' 54" N

Laredo, TX 78043

Well County: Webb Longitude: 099° 09' 36" W

Elevation: No Data GPS Brand Used: Google Earth

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 11/9/2009

Completed: 11/9/2009

Diameter of Hole: Diameter: 8 in From Surface To 75 ft

Drilling Method: Hollow Stem Auger

Borehole Gravel Packed From: **75 ft to 58 ft** 

Completion: Gravel Pack Size: 10/20

Annular Seal Data: 1st Interval: From 0 ft to 2 ft with 1 Cement (#sacks and material)

2nd Interval: From 2 ft to 58 ft with 28 Bentonite (#sacks and material)

3rd Interval: No Data Method Used: Hand Mixed Cemented By: Vortex Drilling, Inc.

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data** Method of Verification: **No Data** Approved by Variance: **No Data** 

Surface Completion:

Surface Sleeve Installed

Water Level: Static level: 38.5 ft. below land surface on 11/9/2009

Artesian flow: No Data

Packers: N/A

Plugging Info: Casing left in well: Cement/Bentonite left in well:

From (ft) To (ft) From (ft) To (ft) Cem/Bent Sacks Used

N/A

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: Non-Potable

Depth of Strata: **38.5 ft.** Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Vortex Drilling, Inc. Information: 4412 Bluemel Road

San Antonio, TX 78240

**Driller License** Number:

3256

Licensed Well

Gary T. May

Driller Signature:

Registered Driller Apprentice

No Data

Signature: Apprentice

Registration Number:

No Data

Comments:

No Data

#### IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #199953) on your written request.

**Texas Department of Licensing & Regulation** P.O. Box 12157 Austin, TX 78711 (512) 463-7880

## DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0 - 3 Clay, dk. gray/brw. 3 - 5 Tan/lt.brw. below 3' 5 - 35 Fat, firm, moist below 5', slightly sandy plastic.,tan w/gypsum crystals below 12.5', increasing sand below 22.5',gray/green w/idurated layers interbedded w/clay below 25'

35 - 38.5 Clay, silty, gray/green, moist/wet, groundwater @ 38.5'

38.5 - 45 Clay,sandy,silty,gray/green,moist, decreasing moisture below 41.5', reddish tan w/ interbedded moe indurated clay layers below 42.5'

45 - 60 Siltstone, sandy, reddish gray, gray inclusions

below 50', gray, more indurated below 55'

60 - 70 Clay,gray,moist to wet,groundwater @70'

70 - 75 Siltstone,gray/green,slightly moist

Dia. New/Used Setting From/To Type 2 New Schedule 40 PVC .010 75 - 60 Screen 2 New Schedule 40 PVC 60 - 0 Riser

2 New Top Cap 2 New Bottom Cap

Latitude:

27° 34' 27" N

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-6

Address: 1116 Calle del Norte Grid #: 85-31-6

Laredo , TX 78041

Well Location: US 59

Laredo, TX 78043

Well County: Webb Longitude: 099° 09' 48" W

Elevation: 559 ft. GPS Brand Used: No Data

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 6/13/2011

Completed: 6/13/2011

Diameter of Hole: Diameter: 6 in From Surface To 30 ft

Drilling Method: Other: Sonic

Borehole Gravel Packed From: 30 ft to 8 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 8 ft to 2 ft with 2 bgs bentonite (#sacks and material)

2nd Interval: From 2 ft to 0 ft with 12 bgs concrete (#sacks and material)

3rd Interval: **No Data** Method Used: **No Data** Cemented By: **No Data** 

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data** Method of Verification: **No Data** Approved by Variance: **No Data** 

Surface Completion:

**Surface Sleeve Installed** 

Water Level: Static level: No Data

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **No Data** 

Depth of Strata: **No Data** Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Boart Longyear Company Information: 7773 West Seldon Lane

58094

Licensed Well

Fred Hafner

Driller Signature:

Registered Driller

No Data

Apprentice Signature:

Apprentice Registration Number:

No Data

Comments: 4' X 4' surface pad installed

Amended 12/28/11 Ref.# 9918

## IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #260540) on your written request.

**Texas Department of Licensing & Regulation** P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description

0'-30' Moist, brown to gray, stiff Clay, some sand

Dia. New/Used Type Setting From/To

2" New, PVC Sch 40 Casing 10'-0'

2" New, PVC Sch 40 .010 slot Screen 30-10'

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-10

Address: 1116 Calle del Norte Grid #: 85-31-6

Laredo , TX 78041

Well Location: US 59 Latitude: 27° 34' 16" N

Laredo , TX 78043

Well County: Webb Longitude: 099° 09' 32" W

Elevation: 547 ft. GPS Brand Used: No Data

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 7/14/2011

Completed: 7/14/2011

Diameter of Hole: Diameter: 6 in From Surface To 60 ft

Drilling Method: Other: Sonic

Borehole Gravel Packed From: 60 ft to 38 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 38 ft to 2 ft with 8 bgs bent chps (#sacks and material)

2nd Interval: From 2 ft to 0 ft with 12 bgs concrete (#sacks and material)

3rd Interval: **No Data** Method Used: **No Data** Cemented By: **No Data** 

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data** Method of Verification: **No Data** Approved by Variance: **No Data** 

Surface Completion:

Surface Sleeve Installed

Water Level: Static level: No Data

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **No Data** 

Depth of Strata: **No Data** Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Boart Longyear Company Information: 7773 West Seldon Lane

58094

Licensed Well

Fred Hafner

Driller Signature:

Registered Driller

No Data

Apprentice Signature:

Apprentice Registration Number:

No Data

Comments:

4' X 4' surface pad installed Amended 11/1/11 Ref.# 9598 Amended 12/28/11 Ref.# 9917

## IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #260538) on your written request.

**Texas Department of Licensing & Regulation** P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description

0'-60' Moist, brown to gray, stiff Clay, some sand

Dia. New/Used Type Setting From/To

2" New, PVC Sch 40 Casing 40'-0'

2" New, PVC Sch 40 .010 slot Screen 60-40'

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-11A

Address: 1116 Calle del Norte Grid #: 85-31-6

Well Location: US 59

Laredo, TX 78043

Laredo, TX 78041

59 Latitude: 27° 34' 17" N

Well County: Webb Longitude: 099° 09' 15" W

Elevation: 553 ft. GPS Brand Used: No Data

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 6/25/2011

Completed: 6/25/2011

Diameter of Hole: Diameter: 6 in From Surface To 104 ft

Drilling Method: Other: Sonic

Borehole Gravel Packed From: 104 ft to 92 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 92 ft to 90 ft with 2 bgs bent chip (#sacks and material)

2nd Interval: From 90 ft to 2 ft with 18 bgs cement (#sacks and material)
3rd Interval: From 2 ft to 0 ft with 12 bgs concrete (#sacks and material)

Method Used: Grout-Tremmy Pipe

Cemented By: Self

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data**Method of Verification: **No Data**Approved by Variance: **No Data** 

Surface Completion:

Surface Sleeve Installed

Water Level: Static level: No Data

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **No Data** 

Depth of Strata: **No Data** Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Boart Longyear Company 17773 West Seldon Lane

58094

Licensed Well

sed Well Fred Hafner

Driller Signature:

Registered Driller Apprentice Signature: No Data

Apprentice Registration Number: No Data

Comments:

4'X4' pad installed

Amended 11/1/11 Ref.#9597 Amended 12/28/11 Ref.# 9916

## IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #260531) on your written request.

Texas Department of Licensing & Regulation P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0'-45' Moist, brown to gray, stiff Clay. 45'-50' Gray claystone 50'-85' Brown stiff clay 85'-104' Sandstone Dia. New/Used Type Setting From/To 2" New, PVC Sch 40 Casing 94'-0'
2" New, PVC Sch 40 .010 slot Screen 104-94'

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-13

Address: 1116 Calle del Norte Grid #: 85-25-6

Laredo, TX 78041

Well Location: US 59 Latitude: 27° 34' 44" N

Laredo , TX 78043

Well County: Webb Longitude: 099° 53' 46" W

Elevation: 544 ft. GPS Brand Used: No Data

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 6/11/2011

Completed: 6/12/2011

Diameter of Hole: Diameter: 6 in From Surface To 30 ft

Drilling Method: Other: Sonic

Borehole Gravel Packed From: 30 ft to 8 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 8 ft to 2 ft with 3 bg bent chp (#sacks and material)

2nd Interval: From 2 ft to 0 ft with 12 bgs concrete (#sacks and material)

3rd Interval: No Data Method Used: from surface

Cemented By: self

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data**Method of Verification: **No Data**Approved by Variance: **No Data** 

Surface Completion:

**Surface Sleeve Installed** 

Water Level: Static level: 12 ft. below land surface on (No Data)

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **No Data** 

Depth of Strata: **No Data** Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Boart Longyear Company Information: 7773 West Seldon Lane

58094

Licensed Well

Fred Hafner

Driller Signature:

Registered Driller Apprentice

No Data

Apprentice Registration

Signature:

No Data

Number: Comments:

4'X4' pad installed

Amended 11/1/11 Ref.# 9596

### IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #259897) on your written request.

**Texas Department of Licensing & Regulation** P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0'-5'-Moist, soft dark brown clay 5'-30' Moist, silt clay brown to gray Dia. New/Used Setting From/To Type 2" New Sch 40 PVC Casing 10'-0' 2" New Sch 40 .010 Slot PVC screen 30'-10'

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-18

Address: 1116 Calle del Norte Grid #: 85-25-5

Laredo , TX 78041

Well Location: US 59 Latitude: 27° 33' 52" N

Laredo , TX 78043

Well County: Webb Longitude: 099° 56' 31" W

Elevation: 542 ft. GPS Brand Used: No Data

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 7/15/2011

Completed: 7/17/2011

Diameter of Hole: Diameter: 6 in From Surface To 60 ft

Drilling Method: Other: Sonic

Borehole Gravel Packed From: 60 ft to 43 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 43 ft to 2 ft with 12 bgs bent chp (#sacks and material)

2nd Interval: From 2 ft to 0 ft with 12 bgs concrete (#sacks and material)

3rd Interval: **No Data** Method Used: **No Data** Cemented By: **No Data** 

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data** Method of Verification: **No Data** Approved by Variance: **No Data** 

Surface Completion:

**Surface Sleeve Installed** 

Water Level: Static level: 9 ft. below land surface on (No Data)

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **No Data** 

Depth of Strata: **No Data**Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Boart Longyear Company 17773 West Seldon Lane

58094

Licensed Well

**Fred Hafner** 

Driller Signature:

Registered Driller Apprentice Signature: No Data

Apprentice Registration Number: No Data

Comments:

4x4 pad around surface sleeve.

Amended Ref# 9599 11/3/11 Ameneded 12/28/11 Ref.# 9915

## IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking number (Tracking #259898) on your written request.

Texas Department of Licensing & Regulation P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0'-5'-Moist, soft dark brown clay 5'-14' Wet brown sand 14'-60' Hard brown to gray clay Dia. New/Used Type Setting From/To 2" New Sch 40 PVC Casing 45'-0 2" New Sch 40 .010 Slot PVC screen 60'-45'

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-24

Address: 1116 Calle del Norte Grid #: 85-31-6

Laredo , TX 78041

Well Location: US 59

Laredo, TX 78043

Well County: Webb Longitude: 099° 09' 34" W

Latitude:

27° 33' 16" N

Elevation: 538 ft. GPS Brand Used: No Data

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 7/23/2011

Completed: 7/23/2011

Diameter of Hole: Diameter: 6 in From Surface To 60 ft

Drilling Method: Other: Sonic

Borehole Gravel Packed From: 60 ft to 43 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 43 ft to 2 ft with 8 bags bent (#sacks and material)

2nd Interval: From 2 ft to 0 ft with 12 bgs concrete (#sacks and material)

3rd Interval: **No Data** Method Used: **No Data** Cemented By: **No Data** 

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data**Method of Verification: **No Data**Approved by Variance: **No Data** 

Surface Completion:

**Surface Sleeve Installed** 

Water Level: Static level: No Data

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **No Data** 

Depth of Strata: **No Data** Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Boart Longyear Company Information: 7773 West Seldon Lane

58094

Licensed Well

ensed Well Fi

Driller Signature:

**Fred Hafner** 

Registered Driller Apprentice No Data

Apprentice Registration Number:

Signature:

No Data

Comments:

4x4 pad poured anound surface sleeve.

Amended Ref3 9602 11/3/11 Amended 12/28/11 Ref.# 9914

## IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking number (Tracking #260537) on your written request.

Texas Department of Licensing & Regulation P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description

0'-60' Moist, brown to gray, stiff Clay.

Dia. New/Used Type Setting From/To

4" New, PVC Sch 40 Casing 45'-0'

4" New, PVC Sch 40 .010 slot Screen 60-45'

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-26

Address: 1116 Calle del Norte Grid #: 85-31-6 Laredo, TX 78041

Well Location: **US 59** 

Well County:

Laredo, TX 78043

Longitude: 099° 09' 25" W

Latitude:

27° 33' 05" N

Elevation: 538 ft. **GPS Brand Used:** No Data

Type of Work: **New Well** Proposed Use: Monitor

**Drilling Date:** Started: 7/22/2011

Webb

Completed: 7/22/2011

Diameter of Hole: Diameter: 6 in From Surface To 30 ft

**Drilling Method:** Other: Sonic

Borehole Gravel Packed From: 30 ft to 8 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 8 ft to 2 ft with 3 bg bent chip (#sacks and material)

2nd Interval: From 2 ft to 0 ft with 12 bgs concrete (#sacks and material)

3rd Interval: No Data Method Used: No Data Cemented By: No Data

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: No Data Method of Verification: No Data Approved by Variance: No Data

Surface Completion: Surface Sleeve Installed

Water Level: Static level: No Data

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data Well Tests: No Data

Water Quality: Type of Water: No Data

Depth of Strata: No Data Chemical Analysis Made: No

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

The driller certified that the driller drilled this well (or the well was drilled under the driller's direct Certification Data:

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

**Boart Longyear Company** Company Information: 7773 West Seldon Lane

58094

Licensed Well

Fred Hafner

Driller Signature:

Registered Driller Apprentice

No Data

Apprentice Registration

Signature:

No Data

Number:
Comments:

4x4 pad poured around surface sleeve.

Amended Ref# 9603 11/3/11 Amended 12/28/11 Ref.# 9913

## IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #260535) on your written request.

Texas Department of Licensing & Regulation P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description

Dia. New/Used Type Setting From/To 2" New, PVC Sch 40 Casing 10'-0'

0'-30' Moist, brown to gray, stiff Clay.

2" New, PVC Sch 40 .010 slot Screen 30-10'

Latitude:

27° 33' 01" N

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-27

Address: 1116 Calle del Norte Grid #: 85-31-6

Laredo , TX 78041

Well Location: US 59

Laredo, TX 78043

Well County: Webb Longitude: 099° 09' 37" W

Elevation: 535 ft. GPS Brand Used: No Data

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 7/21/2011

Completed: 7/22/2011

Diameter of Hole: Diameter: 6 in From Surface To 45 ft

Drilling Method: Other: Sonic

Borehole Gravel Packed From: 45 ft to 28 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 28 ft to 2 ft with 12 bg bent chip (#sacks and material)

2nd Interval: From 2 ft to 0 ft with 12 bgs concrete (#sacks and material)

3rd Interval: **No Data** Method Used: **No Data** Cemented By: **No Data** 

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data** Method of Verification: **No Data** Approved by Variance: **No Data** 

Surface Completion:

Surface Sleeve Installed

Water Level: Static level: No Data

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **No Data** 

Depth of Strata: **No Data**Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Boart Longyear Company 17773 West Seldon Lane

58094

Licensed Well

Fred Hafner

Driller Signature:

Registered Driller

No Data

Apprentice Signature:

Apprentice Registration Number:

No Data

Amended 12/28/11 Ref.# 9912 Comments:

## IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking number (Tracking #260532) on your written request.

**Texas Department of Licensing & Regulation** P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0'-45' Moist, brown to gray, stiff Clay. Dia. New/Used Setting From/To Type 4" New, PVC Sch 40 Casing 30'-0' 4" New, PVC Sch 40 .010 slot Screen 45-30'

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-101

Address: 1116 Calle del Norte Grid #: 85-31-6

Laredo , TX 78043

Well Location: 12625 US HWY 59, Units A & B Latitude: 27° 34' 37" N

Laredo , TX 78041

Well County: Webb Longitude: 099° 09' 34" W

Elevation: 560 ft. GPS Brand Used: Garmin

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: **7/5/2011** 

Completed: 7/7/2011

Diameter of Hole: Diameter: 6 in From Surface To 150 ft

Drilling Method: Mud Rotary

Borehole Gravel Packed From: 78 ft to 92 ft

Completion: Gravel Pack Size: 20/40

Annular Seal Data: 1st Interval: From 0 ft to 3 ft with 2-cement (#sacks and material)

2nd Interval: From 3 ft to 78 ft with 22.5-bentonite (#sacks and material)
3rd Interval: From 92 ft to 116 ft with 8-bentonite (#sacks and material)

Method Used: Tremie

Cemented By: Evan Schaefer TDLR # 58772

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data**Method of Verification: **No Data**Approved by Variance: **No Data** 

Surface Completion:

**Surface Slab Installed** 

Water Level: Static level: 6.8 ft. below land surface on 7/19/2011

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: Fresh

Depth of Strata: See screen interval ft.

Chemical Analysis Made: No

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Geoprojects International, Inc.

Information: 8834 Circle Drive

Austin, TX 78736

2525

Licensed Well

Lee Gebbert

Driller Signature:

Registered Driller

No Data

Apprentice Signature:

Apprentice Registration Number:

No Data

Comments:

Borehole collapsed from 150-116 prior to back plugging and well installation.

Amended 11/28/11 Ref.# 9717

### IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #261847) on your written request.

**Texas Department of Licensing & Regulation** P.O. Box 12157 Austin, TX 78711 (512) 463-7880

# DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0 to 60 Clay, hard, slightly moist, brown and greenish grey, intermittent caliche pockets, siltstone and claystone interbeds 60 to 68 Sandstone, gray 68 to 85 Clay, hard, slightly moist, grayish brown to grayish green, claystone and siltstone interbeds 85 to 90 Sandstone, gray 90 to 146 Clay, hard, slightly moist, brown, siltstone and sandstone interbeds 146 to 150 Sandstone, greenish gray

Dia. New/Used Setting From/To Type 2 new SCH 40 PVC Casing set from +2.5 to 80 2 new SCH 40 PVC Mill slotted Screen set from 80 to 90 with 0.010-inch slot

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-102

Address: 1116 Calle del Norte Grid #: 85-31-6

Laredo , TX 78043

Well Location: 12625 US HWY 59, Units A & B Latitude: 27° 34' 36" N

Laredo, TX 78041

Well County: Webb Longitude: 099° 09' 14" W

Elevation: 557 ft. GPS Brand Used: Garmin

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: **7/7/2011** 

Completed: **7/9/2011** 

Diameter of Hole: Diameter: 6 in From Surface To 160 ft

Drilling Method: Mud Rotary

Borehole Gravel Packed From: 48 ft to 62 ft

Completion: Gravel Pack Size: 20/40

Annular Seal Data: 1st Interval: From 0 ft to 3 ft with 2-cement (#sacks and material)

2nd Interval: From 3 ft to 48 ft with 24-bentonite (#sacks and material) 3rd Interval: From 62 ft to 86 ft with 8-bentonite (#sacks and material)

Method Used: Tremie

Cemented By: Evan Schaefer TDLR # 58772

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data**Method of Verification: **No Data**Approved by Variance: **No Data** 

Surface Completion:

**Surface Slab Installed** 

Water Level: Static level: 4.1 ft. below land surface on 7/19/2011

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: Fresh

Depth of Strata: See screen interval ft.

Chemical Analysis Made: No

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Geoprojects International, Inc.

Information: 8834 Circle Drive

Austin, TX 78736

2525

Licensed Well

Driller Signature:

Lee Gebbert

Registered Driller Apprentice

No Data

Apprentice Registration Number:

Signature:

No Data

Comments:

Borehole collapsed from 160 to 86 prior to back plugging and well installation

Amended 11/28/11 Ref.# 9718

### IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #261849) on your written request.

**Texas Department of Licensing & Regulation** P.O. Box 12157 Austin, TX 78711 (512) 463-7880

### DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0 to 50 Clay, hard, slightly moist, brown and gray, intermittent caliche pockets 50 to 60 Siltstone and sandstone, light gray 60 to 141 Clay, hard, slightly moist, grayish green and brown, claystone and siltstone interbeds 141 to 145 Sand, dense, slightly moist, grayish green 145 to 160 Clay, hard, slightly moist, grayish brown, claystone and siltstone interbeds

Dia. New/Used Setting From/To Type 2 new SCH 40 PVC Casing set from +2.5 to 50 2 new SCH 40 PVC Mill slotted Screen set from 50 to 60 with 0.010-inch slot

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-106

Address: 1116 Calle del Norte Grid #: 85-31-6

Laredo, TX 78043

Well Location: 12625 US HWY 59, Units A & B Latitude: 27° 34' 19" N

Laredo, TX 78041

Well County: Webb Longitude: 099° 09' 39" W

Elevation: 550 ft. GPS Brand Used: Garmin

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: **7/9/2011** 

Completed: 7/10/2011

Diameter of Hole: Diameter: 6 in From Surface To 120 ft

Drilling Method: Mud Rotary

Borehole Gravel Packed From: 68 ft to 82 ft

Completion: Gravel Pack Size: 20/40

Annular Seal Data: 1st Interval: From 0 ft to 3 ft with 2-cement (#sacks and material)

2nd Interval: From 3 ft to 68 ft with 44-bentonite (#sacks and material) 3rd Interval: From 82 ft to 100 ft with 6-bentonite (#sacks and material)

Method Used: Tremie

Cemented By: Evan Schaefer TDLR # 58772

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data**Method of Verification: **No Data**Approved by Variance: **No Data** 

Surface Completion:

**Surface Slab Installed** 

Water Level: Static level: 3.2 ft. below land surface on 7/19/2011

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **Fresh** 

Depth of Strata: See screen interval ft.

Chemical Analysis Made: No

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Geoprojects International, Inc.

Information: 8834 Circle Drive

Austin, TX 78736

2525

Licensed Well

Lee Gebbert

Driller Signature:

Registered Driller Apprentice Signature:

No Data

Apprentice Registration Number:

No Data

Comments:

Borehole collapsed from 120 to 100 prior to back plugging and well installation

Ameneded 11/28/11 Ref.# 9719

### IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #261858) on your written request.

**Texas Department of Licensing & Regulation** P.O. Box 12157 Austin, TX 78711 (512) 463-7880

# DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0 to 25 Clay, hard, slightly moist, brown and gray, intermittent caliche pockets 25 to 40 Sandstone, light gray 40 to 72 Clay, hard, slightly moist, grayish green and reddish brown, claystone and siltstone interbeds 72 to 75 Sandstone, gray 75 to 120 Clay, hard, slightly moist, grayish brown, claystone and siltstone interbeds

Dia. New/Used Setting From/To Type 2 new SCH 40 PVC Casing set from +2.5 to 70 2 new SCH 40 PVC Mill slotted Screen set from 70 to 80 with 0.010-inch slot

Latitude:

27° 34' 05" N

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-109A

Address: 1116 Calle del Norte Grid #: 85-31-6

Laredo , TX 78041

**US 59** 

Well Location:

Laredo, TX 78043

Well County: Webb Longitude: 099° 09' 23" W

Elevation: 547 ft. GPS Brand Used: No Data

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 6/24/2011

Completed: 6/25/2011

Diameter of Hole: Diameter: 7 in From Surface To 80 ft

Drilling Method: Other: Sonic

Borehole Gravel Packed From: 80 ft to 68 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 68 ft to 66 ft with 4 bgs bentonite (#sacks and material)

2nd Interval: From 66 ft to 2 ft with 15 bgs cement (#sacks and material)
3rd Interval: From 2 ft to 0 ft with 12 bgs concrete (#sacks and material)

Method Used: Grout-Tremmy Pipe

Cemented By: Self

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data**Method of Verification: **No Data**Approved by Variance: **No Data** 

Surface Completion:

Surface Sleeve Installed

Water Level: Static level: No Data

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **No Data** 

Depth of Strata: **No Data** Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Boart Longyear Company Information: 7773 West Seldon Lane

58094

Licensed Well

**Fred Hafner** 

Driller Signature:

No Data

Registered Driller Apprentice Signature:

Apprentice Registration Number:

No Data

Comments:

4x4 pad installed around surface sleeve.

Amended Ref# 9600 11/3/11 Amended 12/28/11 Ref.# 9911

# IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #260530) on your written request.

**Texas Department of Licensing & Regulation** P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0'-35' Moist, brown to gray, stiff Clay. 35'-40' Brown sandy siltstone 40'-80' Sandstone

Dia. New/Used Setting From/To Type 2" New, PVC Sch 40 Casing 70'-0' 2" New, PVC Sch 40 .010 slot Screen 80-70'

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-114A

Address: 1116 Calle del Norte Grid #: 85-31-6

Laredo , TX 78041

Well County:

Well Location: US 59 Laredo , TX 78043

Webb Longitude: 099° 09' 52" W

Latitude:

27° 33' 42" N

Elevation: 541 ft. GPS Brand Used: No Data

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 6/25/2011

Completed: 6/25/2011

Diameter of Hole: Diameter: 7 in From Surface To 20 ft

Drilling Method: Other: Sonic

Borehole Gravel Packed From: 20 ft to 8 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 8 ft to 2 ft with 4 bgs bentonite (#sacks and material)

2nd Interval: From 2 ft to 0 ft with 12 bgs concrete (#sacks and material)

3rd Interval: **No Data** Method Used: **No Data** Cemented By: **No Data** 

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data** Method of Verification: **No Data** Approved by Variance: **No Data** 

Surface Completion:

**Surface Sleeve Installed** 

Water Level: Static level: No Data

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **No Data** 

Depth of Strata: **No Data** Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Boart Longyear Company Information: 7773 West Seldon Lane

58094

Licensed Well

Fred Hafner

Driller Signature:

No Data

Registered Driller Apprentice Signature:

Apprentice Registration Number:

No Data

Comments:

4x4 slab poured around surface sleeve.

Amended Ref# 9601 11/3/11 Amended 12/28/11 Ref.# 9910

# IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #260529) on your written request.

**Texas Department of Licensing & Regulation** P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0'-20' Moist, brown clay.

Dia. New/Used Type Setting From/To 2" New, PVC Sch 40 Casing 10'-0' 2" New, PVC Sch 40 .010 slot Screen 20-10'

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-115

Address: 1116 Calle del Norte Grid #: 85-31-6

Laredo , TX 78041

Well Location: US 59 Latitude: 27° 33' 37" N

Laredo , TX 78043

Well County: Webb Longitude: 099° 09' 33" W

Elevation: 542 ft. GPS Brand Used: No Data

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 5/7/2011

Completed: 5/9/2011

Diameter of Hole: Diameter: 7 in From Surface To 102 ft

Drilling Method: Other: Sonic

Borehole Gravel Packed From: 102 ft to 90 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 92 ft to 90 ft with 2 bgs bent chps (#sacks and material)

2nd Interval: From 90 ft to 2 ft with 20 bgs cement (#sacks and material) 3rd Interval: From 2 ft to 0 ft with 12 bgs concrete (#sacks and material)

Method Used: Grout-Tremmy pipe

Cemented By: Self

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data**Method of Verification: **No Data**Approved by Variance: **No Data** 

Surface Completion:

**Surface Slab Installed** 

Water Level: Static level: No Data

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **No Data** 

Depth of Strata: **No Data** Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Boart Longyear Company Information: 7773 West Seldon Lane

58094

Licensed Well

Fred Hafner

Driller Signature:

No Data

Registered Driller Apprentice Signature:

Apprentice Registration Number:

No Data

Comments:

4'X4' pad installed

Amended 10/20/11 Ref.# 9569 Amended 12/28/11 Ref.# 9909

# IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking number (Tracking #260527) on your written request.

**Texas Department of Licensing & Regulation** P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0'-102' Moist, brown to gray, stiff Clay. Intermediate caliche pockets

Dia. New/Used Type Setting From/To 2" New, PVC Sch 40 Casing 94'-0' 2" New, PVC Sch 40 .010 slot Screen 102'-94'

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-118

Address: 1116 Calle del Norte Grid #: 85-31-6

Laredo , TX 78041

Well Location: US 59 Latitude: 27° 33' 26" N

Laredo , TX 78043

Well County: Webb Longitude: 099° 09' 33" W

Elevation: 540 ft. GPS Brand Used: No Data

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 4/27/2011

Completed: 4/29/2011

Diameter of Hole: Diameter: 7 in From Surface To 84 ft

Drilling Method: Other: Sonic

Borehole Gravel Packed From: 84 ft to 73 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 73 ft to 71 ft with 2 bgs bent chps (#sacks and material)

2nd Interval: From 71 ft to 2 ft with 15 bgs cement (#sacks and material) 3rd Interval: From 2 ft to 0 ft with 12 bgs concrete (#sacks and material)

Method Used: Grout-Tremmy pipe

Cemented By: Self

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data**Method of Verification: **No Data**Approved by Variance: **No Data** 

Surface Completion:

**Surface Slab Installed** 

Water Level: Static level: No Data

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **No Data** 

Depth of Strata: **No Data** Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Boart Longyear Company 17773 West Seldon Lane

58094

Licensed Well

Driller Signature:

Fred Hafner

Registered Driller Apprentice

No Data

Apprentice Registration Number:

Signature:

No Data

Comments:

4'X4' pad installed Amended 10/20/11 Ref.# 9570 Amended 12/28/11 Ref.# 9908

# IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #260526) on your written request.

**Texas Department of Licensing & Regulation** P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0'-84' Moist, brown to gray, stiff Clay. Intermediate caliche pockets

Dia. New/Used Type Setting From/To 2" New, PVC Sch 40 Casing 75'-0' 2" New, PVC Sch 40 .010 slot Screen 84'-75'

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-124

Address: 1116 Calle del Norte Grid #: 85-31-6

Laredo, TX 78041

Well Location: US 59 Latitude: 27° 33' 14" N

Laredo , TX 78043

Well County: Webb Longitude: 099° 09' 40" W

Elevation: 537 ft. GPS Brand Used: No Data

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 5/5/2011

Completed: 5/6/2011

Diameter of Hole: Diameter: 7 in From Surface To 113 ft

Drilling Method: Other: Sonic

Borehole Gravel Packed From: 113 ft to 98 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 98 ft to 96 ft with 2 bgs bent chps (#sacks and material)

2nd Interval: From 96 ft to 2 ft with 20 bgs cement (#sacks and material)
3rd Interval: From 2 ft to 0 ft with 12 concrete (#sacks and material)

Method Used: Grout-Tremmy pipe

Cemented By: Self

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data**Method of Verification: **No Data**Approved by Variance: **No Data** 

Surface Completion:

**Surface Slab Installed** 

Water Level: Static level: No Data

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **No Data** 

Depth of Strata: **No Data** Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Boart Longyear Company Information: 7773 West Seldon Lane

58094

Licensed Well Driller Signature: Fred Hafner

Registered Driller

No Data

Apprentice Signature:

Apprentice Registration Number:

No Data

Comments:

Amended 10/10/11 Ref.# 9514 Amended 10/20/11 Ref.# 9568

4'X4' pad installed

Amended 12/28/11 Ref.# 9907

# IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #260522) on your written request.

**Texas Department of Licensing & Regulation** P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0'-113 Moist, brown to gray, stiff Clay. Intermediate caliche pockets

Dia. New/Used Setting From/To Type 2" New, PVC Sch 40 Casing 100'-0' 2" New, PVC Sch 40 .010 slot Screen 113'-100'

Latitude:

27° 33' 11" N

Owner: Rancho Viejo Waste Management, LLC Owner Well #: B-126

Address: 1116 Calle del Norte Grid #: 85-31-6

Laredo , TX 78041

Well Location: US 59

Laredo , TX 78043

Well County: Webb Longitude: 099° 09' 26" W

Elevation: 540 ft. GPS Brand Used: No Data

Type of Work: New Well Proposed Use: Monitor

Drilling Date: Started: 5/7/2011

Completed: 5/7/2011

Diameter of Hole: Diameter: 7 in From Surface To 102 ft

Drilling Method: Other: Sonic

Borehole Gravel Packed From: 102 ft to 77 ft

Completion: Gravel Pack Size: 20-40

Annular Seal Data: 1st Interval: From 77 ft to 74 ft with 2 bgs bent chps (#sacks and material)

2nd Interval: From 74 ft to 2 ft with 20 bgs cement (#sacks and material) 3rd Interval: From 2 ft to 0 ft with 12 bgs concrete (#sacks and material)

Method Used: Grout-Tremmy pipe

Cemented By: Self

Distance to Septic Field or other Concentrated Contamination: No Data

Distance to Property Line: **No Data**Method of Verification: **No Data**Approved by Variance: **No Data** 

Surface Completion:

**Surface Slab Installed** 

Water Level: Static level: No Data

Artesian flow: No Data

Packers: No Data

Plugging Info: Casing or Cement/Bentonite left in well: No Data

Type Of Pump: No Data
Well Tests: No Data

Water Quality: Type of Water: **No Data** 

Depth of Strata: **No Data**Chemical Analysis Made: **No** 

Did the driller knowingly penetrate any strata which contained undesirable constituents: No

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct

supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for

completion and resubmittal.

Company Boart Longyear Company Information: 7773 West Seldon Lane

58094

Licensed Well Driller Signature:

Fred Hafner

Registered Driller Apprentice

No Data

Signature:
Apprentice
Registration

No Data

Registration Number:

Comments:

4'X4' pad installed

Amended 10/10/11 Ref.# 9513 Amended 10/20/11 Ref. # 9567 Amended 11/1/11 Ref.#9595 Amended 12/28/11 Ref.# 9906

# IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #260519) on your written request.

Texas Department of Licensing & Regulation P.O. Box 12157 Austin, TX 78711 (512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

CASING, BLANK PIPE & WELL SCREEN DATA

From (ft) To (ft) Description 0'-102' Moist, brown to gray, stiff Clay. Intermediate caliche pockets

Dia. New/Used Type Setting From/To 2" New, PVC Sch 40 Casing 80.5'-0' 2" New, PVC Sch 40 .010 slot Screen 102'-80.5'