GENERAL SUBSURFACE SOILS EVALUATION REPORT

For

COUNTY OF EL PASO – DESERT ACCEPTANCE (SQUARE DANCE) WASTEWATER SYSTEM PROJECT EL PASO, EL PASO COUNTY, TEXAS

Prepared For

MORENO CARDENAS INC.
2505 EAST MISSOURI AVENUE
EL PASO, TEXAS 79903

Prepared By

CQC TESTING AND ENGINEERING, L.L.C.
TBPE Firm Registration No. F-10632
6802 Commerce, Unit "9A"
El Paso, Texas 79915
Ph.: (915) 771-7766
Fax: (915) 771-7786

PROJECT NO. AGCQC16-003

construction quality control
testing and engineering

6802 Commerce, Unit 9A
El Paso, Texas 79915
Ph. (915) 771-7766
Fax (915) 771-7786

Construction Materials Testing
Geotechnical Engineering
Environmental Site Assessments
Forensic Analysis / Testing

March 21, 2016 (Final Issued Report: April 28, 2016)

Moreno Cardenas Inc.
2505 E. Missouri Avenue
El Paso, Texas 79903

Attn.: Mr. Brian Klaes, P.E., LEED AP
Vice-President, Project Manager

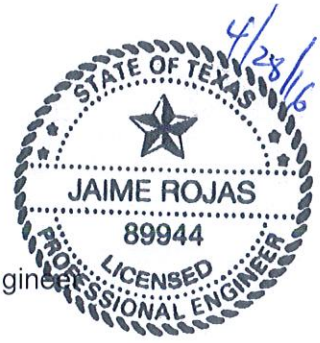
Re: General Subsurface Soils Evaluation Report
County of El Paso – Desert Acceptance (Square Dance)
Wastewater System Project
El Paso, El Paso County, Texas
CQC Project No. AGCQC16-003

Dear Mr. Klaes:

In accordance with our contract agreement and proposed scope of services under Proposal No. PGCQC14-055, dated June 27, 2014 (Revised July 1, 2014), CQC and Testing and Engineering, L.L.C. (CQC) is pleased to provide Moreno Cardenas Inc. (Client) with this General Subsurface Soils Evaluation Report for the above referenced County of El Paso project. This report presents the results of our soil exploration borings, laboratory engineering soil classification test results, guidance information with respect to suitability of observed subsurface soils, bearing resistance, potential construction use for pipe line backfilling and general trench safety guideline considerations.

Thank you for selecting our firm for geotechnical consulting services and we look forward to working with the design team on the construction phase of this project. Please feel free to contact us if you have any questions regarding the contents of this report, or if we may assist you with other services.

Respectfully Submitted,
CQC Testing and Engineering, L.L.C.
TBPE Firm Registration No. F-10632



Benjamin Lopez, E.I.T.
Project Engineer
blopez@cqceng.com

Jaime Rojas, P.E.
President / Principal Engineer
jrojas@cqceng.com

Copies: 1.) Above Addressee – 2 Bound report copies by hand delivery/ 1 copy by e-mail (bklaes@morenocardenas.com)
2.) File

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Section 1.0 – General Project Information

This general subsurface soils evaluation report has been prepared for Moreno Cardenas Inc. (Client) for the El Paso County – Desert Acceptance (Square Dance) Wastewater System Project. The new collection system will begin at the intersection of Montana Avenue and Rich Beem Boulevard and extend to the existing Square Dance Community along Square Dance Road, Round Dance Road, Allemande Road, Ayala Road, Tobacco Road, Stable Road, Boost Green Road, Soleen Road, Lopez Road and Frankie Lane in east El Paso, El Paso County, Texas. Trenchless bore crossings are planned along Square Dance Road.

Our specific scope of services for this project consisted of generally evaluating the subsurface soil conditions along the proposed new sewer main pipeline route by conducting subsurface exploration soil borings, collecting soil samples at the soil boring locations, and conducting laboratory engineering soil classification tests on selected soil samples to develop information with respect to the suitability of the on-site soils for use as backfill materials for the proposed pipeline installation.

The following sections of this report present our general subsurface soil exploration methods, site soil-related considerations, estimated allowable bearing capacity values, and guidance information with respect to site preparation, pipeline embedment, soil backfilling and general trench safety considerations. Please note that the entire report should be read for a thorough understanding of our evaluation, findings, and guideline recommendations. CQC should be contacted through a written statement if our stated understanding of the project is not correct and/or if the owner changes the proposed wastewater system pipeline routes for this project. Pipeline route changes shall result in our recommendations to be invalid without further review and evaluation by CQC.

1.1 - Site Geologic Considerations

The Geologic Atlas of Texas (Van Horn-El Paso Sheet, Revised 1983) published by the Bureau of Economic Geology at the University of Texas at Austin indicates that the project site is located in a region of Young Quaternary deposits which typically consist of alluvium. These deposits typically consist of clay, silt, and sand.

The encountered sandy clay soil formations shall be susceptible elastic settlement and consolidation if saturated with moisture. These soils shall be highly sensitive to changes in moisture, overburden stresses (i.e., axial and lateral) when excavated, vibratory impacts and new structure bearing stresses. The encountered silty sand, clayey sand and poorly graded sand formations in a loose condition shall also be susceptible sloughing and elastic settlement.

1.2 – Existing Site Topography and Vegetation

Based on general site observations, the topography of the pipeline installation trenching limits appear to be relatively flat with no major elevation changes primarily along unpaved roads with the exception of Square Dance Road. The site is relatively free of vegetation with scattered very short weeds and perennial grasses. The project site areas are primarily bounded by residential, commercial and vacant private land properties. CQC was not provided an overall topographic survey of the project pipeline route limits or grading and drainage plans for the wastewater pipeline system.

1.3 – Seismic Considerations

Based on our review of the current International Building Code and Site Classification for Seismic Design Definitions in conjunction with our review of the geologic conditions in the area, it is our professional opinion that a Site Class D may be used for this site. Please note that a geologic atlas of the area was used to supplement our analysis since some of our exploration soil borings were only performed to a maximum depth of 25 feet below the existing ground surface elevation and the building code considers the average soil properties in the top 100 feet of the subject site. In the event that the owner and/or design representative is interested in determining the building code Site Class with a higher degree of accuracy, additional tests beyond our original requested scope of work shall be required.

Based on a Soil Site Class D, seismic ground motion values may be determined based on a site latitude coordinate of 31.82118º and longitude coordinate of -106.22552º and generated utilizing the USGS Seismic Hazard Curves & Uniform Hazard Response Spectra website. The coordinates were estimated from the approximate center of the project subdivision land area. The values should be verified by the project engineer prior to use in project related structural analysis. CQC should be informed if the reported values vary significantly.

Table 1 – Seismic Ground Motion Values

Period (Seconds)	Spectral Accelerations (g)	Site Coefficient, F_a	Site Coefficient, F_v
0.2 (S_s)	0.312	1.55	-
1.0 (S_1)	0.096	-	2.40

It has been reported that no major ground movement caused by the existing faults has been recorded for the past 50 years in the area. Although the local seismic observatory that the University of

Texas at El Paso (UTEP) has indicated at the frequency of recordable ground movements has increased within the last few years.

Please note that our scope of work did not include the specific delineation of faults within the site and/or the development of specific foundation recommendations over fault zones. However, these services may be provided as an additional scope of work and service to our Client or owner.

Section 2.0 – General Subsurface Soils Evaluation

The subsurface soils within the approximate wastewater system pipeline routes were evaluated by completing a total of thirty-five (35) exploration soil borings drilled at the approximate locations shown in the General Exploration Boring Location Aerial Plan, Sheet A1-1 and A1-3, in Appendix A of this report. In general, our borings were performed to depths ranging from 10 feet to 25 feet, each below the existing ground surface elevations at the time of our subsurface exploration drilling activities. Soil boring No. 35 was drilled on April 25, 2016 as requested by our Client to verify soils conditions in the area represented by this boring. The borings were drilled with a CME-75 rotary drilling rig and hollow stem auger drilling techniques and were logged during our drilling operations by a member of our technical geotechnical staff. Our subsurface exploration soil boring logs are presented in Appendix A, Sheets A2 through A36.

During our drilling operations, Standard Penetration Tests (SPT) were performed in general conformance with ASTM D 1586. Soil samples were collected within a standard split-spoon sampler at discrete depth intervals and were containerized and transported to our laboratory for further engineering soil classification testing. Our soil classification tests (i.e., moisture contents, sieve analysis, and Atterberg Limit Tests) were performed in accordance with accepted ASTM test procedures D-2216, D-1140, D-2217, D-6913, and D-4318, respectively. The results of our tests and estimated “N-Values” are presented in our soil boring logs and Summary of Laboratory Engineering Soil Classification Test Results in Appendix A, Sheets A85 and A92. At the completion of our drilling activities, the borings were backfilled with auger cuttings and firmly compacted at the surface.

The following table summarizes the completion depth of our borings and number of samples collected at the time of our drilling operations.

Table 2. Summary of Field Evaluation – Boring Depths & Samples Collected

Borehole No.	Approximate Termination Depth (ft.)	No. Split-Spoon Samples	No. Auger Samples	Estimated Observed Groundwater Depth (ft.)
B-1, B-3, B-5, B-11, B-12, B-13, B-16, B-17, B-21, B-25, B-27	15	5	-	NE
B-2, B-14, B-15, B-18, B-19, B-22, B-26, B-28, B-32, B-33, B-34	10	4	-	NE
B-4, B-6, B-7, B-8, B-9, B-10, B-23, B-24, B-29, B-30, B-31, B-35	20	7	-	NE
B-20	25	8	-	NE

NE- Note encountered at the time of our field exploration

Contractors interested in bidding the project shall perform their own tests to verify the types of materials, ground water depths or review historical plans of the site to evaluate the excavation requirements prior to bidding the project. The owner shall not incur additional costs for additional excavations or removal of encountered variable unclassified soils, buried materials or utilities. It should be considered that the encountered Class IV sandy, clays (i.e., Stratum I soils described in Section 3.0 of this report) shall have to be replaced or blended with suitable native sands or imported Select Fill soils that meet the specified requirements of Select Fill and/or Class II and Class III backfill soil materials.

Please note that the collected soil samples from our geotechnical evaluation will be stored for a period of up to 90 days after the completion of our subsurface soil exploration soil borings, if a longer period of storage is required by our Client, CQC should be informed in writing.

2.1 - Observed Existing Pavement Material Thicknesses

Based on our observations at the time of our drilling activities, the encountered pavement section along Square Dance Road (*only paved road*) contains approximately 2½ to 3¼ inches of asphaltic-concrete pavement and approximately 2 to 3 inches of apparent caliche base course material. The results are summarized in the following Table.

Table 3. Summary of Asphaltic Concrete Pavement Coring

Asphalt Core No.	Average Measured Thickness
C-1	3 ¼ in.
C-2	2 ½ in.
C-3	2 ¾ in.

Please note that it should be considered that the reported encountered pavement material thickness shall vary. Representative samples from the apparent base course material were obtained for further laboratory testing. The results of these tests are presented in the Summary of Laboratory Engineering Soil Classification Test Results in Appendix A, Sheet A92. The approximate location of the asphalt concrete cores along Square Dance Road are included in Appendix A, Sheet A1-2. Photographs of the extracted cores are presented in Appendix C, Sheet C4.

2.2 - Laboratory Engineering Soil Classification Testing

In the laboratory, selected soil samples were evaluated and visually classified by our geotechnical engineering staff in general accordance with the Unified Soil Classification System (USCS). The geotechnical engineering classification of the selected samples were evaluated by the following tests.

Table 4. Summary of Performed Soil Laboratory Classification Tests

Type of Test	Total Number Conducted
Soil Moisture Contents	101
Atterberg Limit Tests	78
Particle Size Analysis Tests	101
pH Tests	6
Soil Resistivity Tests	6
Soil Moisture-Density Relationship Tests	5

Our selected sieve analysis test curves are reported in Appendix A, Sheets A37 through A84 in this report. A summary of laboratory engineering soil classification test results is reported in Appendix A, Sheets A84 through A91 for ease of reference.

As previously stated our soil classification tests were performed to evaluate the engineering classification of the subsurface soil for use as suitable backfill soil materials. The general contractor shall be responsible for conducting their own soil tests to further evaluate the characteristics of fine grained

soils and potential use as suitable backfill soils within the pipeline excavation trenches prior to bidding. The recommendations in Section 3.1 of this report should also be considered in earthwork estimates.

2.3 –pH Test Results

Corrosion is the disintegration of a material due to chemical reactions with its surroundings. Any contact between the soil material and any concrete structures, steel piles, or metal appurtenances could result in corrosive reactions. In order to evaluate the potential corrosivity of the subsurface soils, pH tests are typically performed on soil samples. Selected soil samples from our soil borings were tested in the laboratory for pH content in accordance with TEX-128 E. The results of these tests are presented in the table below.

Table 5 – Summary of Soil pH Test Results

Borehole No.	Sample Depth (ft)	pH
B-1	Surface	8.0
B-8	Surface	8.3
B-23	Surface	8.6
B-28	5	8.1
B-29	5	8.7
B-31	10	8.9

Soils with a pH ranging from 5 to 9 are generally not considered to affect corrosion rates. However, soils with a pH of 4 or less represent a serious corrosion risk to common construction materials. Based on our test results, the soils are below the serious corrosion risk values.

2.4 - Laboratory Soil Resistivity Test Results

The subsurface soils at selected depths from the exploration borings were also analyzed by performing laboratory soil resistivity tests using the soil box method per TxDOT Designation: Tex-129-E. This test is conducted by using a portable resistivity meter and a small acrylic box with inside dimensions of 8½ in. x 1½ in. x 1¼ in. The resistivity values obtained may represent the resistivity of the tested soil samples. The test consists of adding moisture to the soil in the box until the lowest resistance reading before an increase is noted. This reading is used to calculate the resistivity of the soil using the soil box factor. In general, tests were performed on samples collected at approximately 0 to 10 feet from borings

B-1, B-8, B-23, B-28, B-29 and B-31. The resistivity measurements ranged from 600 Ohm-cm to 140,000 Ohm-cm. Based on these results that aid in better defining the corrosion properties of subsurface soils, the tested subsurface soils may be considered highly corrosive at a very moist to saturated state at deeper strata particularly for steel casings (See Table 6). The results of the resistivity tests along with a graphical plot are presented in Appendix A, Sheets A98 through A103, for ease of reference.

Based on our soil resistivity tests, we recommend that in order to mitigate potential steel corrosion, Type II Portland cement should be utilized in concrete mix designs for this project, as required.

Table 6 – Corrosivity Ratings Based on Soil Resistivity

Soil Resistivity (ohm-cm)	Corrosivity Rating
> 20,000	Non-Corrosive
10,000 to 20,000	Mildly Corrosive
5,000 to 10,000	Moderately Corrosive
3,000 to 5,000	Corrosive
1,000 to 3,000	Highly Corrosive
< 1,000	Extremely Corrosive

2.5 – Soil Moisture-Density Relationship Test Results

At the time of our drilling activities, five (5) bulk subgrade soil samples were obtained from boring locations B-1, B-6, B-18, B-21 and B-30 for moisture density-relationship testing. The samples were collected from approximate depths ranging from 0 feet to 10 feet below the existing ground surface elevation. The results of our moisture density relationship test (i.e., proctor) conducted on the collected soil samples are presented in Appendix A, Sheets A93 through A97. The proctors were prepared in accordance with compaction test procedure ASTM D 1557, Method "B". The optimum dry density and moisture content values are presented in the table below.

Table 7 – Summary of Moisture-Density Relationship Test Results

Borehole No.	Sample Depth (ft)	Soil Classification	Opt. Dry Density (pcf)	Opt. Moisture (%)
B-1	5 - 10	SC	108.3	15.2
B-6	5 - 10	SC	109.5	15.5
B-18	2 – 10	SC	107.4	16.1
B-21	5 - 10	SC	111.4	15.3
B-30	0 - 5	SC	115.3	13.4

NOTE: These soils shall have to be blended with imported Select Fill soils to reduce their plastic properties.

Section 3.0 – Encountered Subsurface Soil Conditions

In general, the subsurface soils encountered at the site may be described by two (2) major soil stratums. The logged depths of the reported soil formation types are approximately delineated in our soil boring logs. Due to the geologic location of the site, it is possible for variations in the types and depths of the soil formations to occur over relatively short distances. The pipe embedment and backfill recommendations in Sections 7.0 and 9.0 of this report should be reviewed and considered in the design and development of specifications for this wastewater pipeline project.

Stratum I consisted of low plasticity to highly plastic, light brown to reddish-brown and whitish brown sandy clays with varying amounts of calcareous material. These soils were primarily encountered at a stiff to very stiff consistency. Measured moisture contents ranged from 12 to 18 percent. Our Atterberg Limit tests indicated that the clay soils exhibited liquid limits ranging from 37 to 54 and plasticity indices ranging from 21 to 31. Our sieve analysis tests indicated that these soils contained fines ranging from 50 to 72 percent. The encountered soils may be classified as CH and CL in general accordance with the USCS and Class IV materials in accordance with ASTM. These soils are not considered suitable for use as Select Fill and backfill soil materials for the project pipeline excavations. It should be anticipated that these soils shall have to be replaced or blended with suitable native sand soils or imported Select Fill and/or Class II or Class III backfill soils as defined in Section 9.0 of this report.

Stratum II consisted of relatively non-plastic and plastic, fine grained, reddish-brown and whitish brown to multicolored, silty or clayey sands and/or poorly graded sands with varying amounts of silt, calcareous material and gravel. These soils were encountered at a loose to very dense relative density. Measured moisture contents ranged from 1 to 20 percent. Our sieve analysis tests indicated that these soils contained fines ranging from 2 to 45 percent. The encountered soils may be classified as SM, SC, SC-SM, SP, and SP-SM in general accordance with the USCS. The tested clayey and silty sand formations may be consider primarily Class III backfill soils. The tested poorly graded sands may be classified as Class II and III backfill soils. Once these soils are excavated, processed and blended these soils shall be further tested to evaluate the final classification of these soils. It should be anticipated that these soils shall have to be blended with imported Select Fill soils as defined in Section 9.0 of this report to reduce the plasticity properties. In general

these soils shall be susceptible to sloughing and erosion during excavation trenching for the pipeline installation.

A two dimensional surface diagram of the soil borings is presented in Appendix A, Sheets A104 through A109 for general review. Please note that the collection of ground elevations and coordinates for each soil boring was not authorized within our Client's scope of work for this project. The represented approximate ground elevations and locations were estimated from "Google Earth" and shall not be considered as actual reference information for design, construction, and/or field construction staking. The boring surface diagrams were developed for the primary purpose of generally evaluating the potential subgrade conditions that may be encountered.

3.1 - Groundwater Depth Considerations

At the time of our drilling activities, ground water or water seepage was not immediately observed in our soil exploration borings. We anticipate that the ground water depth within the project site shall be well below an anticipated maximum excavation depth of 20 feet below the existing ground elevations.

It is possible to encounter perched water zones where relatively high permeability soils overlay low permeability soils. In the event that perched water is encountered at shallower depths during construction at this site, the water seepage should be appropriately removed. If an "artesian" condition is encountered it may be bridged with suitable Controlled Low Strength Materials (CLSM) or approved gravel rock. The proposed CLSM or gravel rock should be approved by the engineer of record through a submittal process. Workers shall be prohibited from working in excavations where water has accumulated or is accumulating.

Our scope of work did not include the development of a dewatering plan or review of prepared submittals by the general contractor. CQC and our Client shall not be liable for observed structural distress of adjacent structures within private properties along or within the project limits. It is the general contractor's responsibility to consider these potential conditions in the preparation of a dewatering plan and the establishment of a contingency to address noted structural distress and/or issued claims.

3.2 - Subsurface Soil Considerations and Preparation

The following section presents specific conditions that we have observed during our evaluation that should be considered by the owner, owner's design team and contractors interested in bidding the project with respect to earthwork estimates and operations.

Special Considerations

- Site work and backfilling should be performed in accordance with the following sections of this report or as required by the project specifications and plans, whichever is more stringent.
- When placing backfill within utility line trenches, bore pits, or during the installation of the new pipelines, backfill materials should be appropriately placed and compacted to mitigate potential settlements caused by uncontrolled backfill during construction. Once removal or installation activities have been completed, the contractor should adequately overexcavate areas and backfill trenches with Select Fill soils, or as required by the project plans and specifications.
- Contractors interested in bidding the project shall be responsible for conducting their own additional tests to verify the depth of the soil types, groundwater depth and excavation conditions within the project limits to prepare earthwork estimates and applicable dewatering plans. The owner shall not incur additional costs for variations in the soil formations or ground water depth within the project limits and/or additional excavation or work requirements by the contractor. The boring logs in this report are intended for engineering design purposes. Bidding contractors may consider the information presented in this report at their own risk. If deemed necessary, bidding contractors shall perform borings and/or pothole test pits for use and/or interpretation for earthwork estimates that comply with the project specifications prior to bidding.
- The pipelines should be inspected and pressure tested to ensure that water leaks are controlled to mitigate potential soil erosion and pipe loss of support at the pipe joints.
- Based on our soil boring logs and soil classification tests, the soils encountered within the proposed water line alignment should be considered Type "C" soils under current Occupational Safety and Health Administration (OSHA) regulations (Standard – 29 CFR-Part 1926.650, Subpart P-Excavations) pertaining to excavations. In excavations penetrating these soils, the non-permanent sloping and benching schemes specified for Type "C" soils under the OSHA regulations require that the excavation sidewalls be sloped no steeper than 1½:1 (horizontal: vertical) for Type "C" soils. Trenches or excavations 4 feet and deeper shall require the development of a trench safety plan to protect employees and the general public. Please note that it is the contractor's responsibility to assign a "competent" person to perform daily inspections and required documentation in accordance with OSHA regulations. In addition, OSHA limits excavations to 20 feet when excavations utilize soil benching and sloping methods and braced/shored trench box (i.e., rated) shielded systems designed by a licensed professional engineer. Trench excavations utilizing sheet piling systems or un-braced temporary shielded systems per OSHA regulations shall be designed by a licensed professional engineer for any excavation depth in consideration to protect the health and safety of all workers and the public.

- Based on our observations of the proposed sewer line route locations and access considerations, we anticipate that the contractor may be required to use rated braced trench box systems or braced sheet pile systems to install the pipe line. As a result, the contractor shall be responsible for preparing a trench safety plan prior to construction with applicable manufacturer's trench box system specifications for the engineers review. In the event that braced sheet piling is utilized, the sheet piling design and specified depths shall be determined by a licensed professional engineer and submitted to the engineer for review and documentation. This report provides general trench safety considerations for the project.

Site Preparation

- The existing soils at this site that will support compacted Select Backfill materials and the sewer lines should be cleared of all vegetation, organic matter, topsoil, construction debris and/or any foreign matter. The cleared subgrade should be thoroughly compacted in order to densify any weak and compressible zones. The finished subgrade should be compacted to a minimum of 90 percent of maximum dry density per ASTM D-1557 at ±3 percent of optimum moisture and/or as required by the project specifications, whichever is more stringent. Weak or compressible soil zones identified during fill operations should be reprocessed or over excavated, removed and replaced with specified compacted "Select Fill" to a minimum depth of 8 inches or as required to appropriately bridge over these soils, whichever is deeper. Subgrade preparation operations should be observed by a representative of CQC.
- Suitable fill or backfill materials should be appropriately tested at standard frequencies as recommended in this report and/or as required by the project specifications, whichever is more stringent.

3.3 - Drainage Considerations

Drainage is an important key to the successful performance of any excavation and soil supported structure. Positive surface drainage should be established prior to and be maintained during and after construction to prevent water from ponding within or adjacent to the pipe line trenches and/or bore pits.

Section 4.0 – Soil Bearing Capacity and Design Considerations

4.1 – Pipeline Design Considerations

The encountered subsurface soils at the anticipated sewer line invert elevations shall provide moderate allowable bearing capacities. Based on our SPT data, the encountered subsurface soils shall provide allowable bearing capacities ranging from 1,300 to 2,500 pounds per square foot (psf). As indicated above the encountered Stratum I sandy clays shall be susceptible to settlement and should be removed or blended with suitable native sand soils prior to pipe backfilling. Blended soils shall be tested and approved by the engineer prior to use as suitable backfill soils. The recommendations in the following sections of this

report should be considered in the design of the pipeline associated structures, pipeline embedment and backfilling.

4.2 - Earth and Vehicle Loads

The pipe analysis and design should consider the earth loads, applicable traffic loads, pipe laying methods, internal pressure, bending stresses, and estimated pipe deflections. The following soil related design parameters may be considered in the pipe design analysis. The design criteria equations in the current specifications of the American Water Work Association (AWWA) should be considered for design analysis. CQC should be contacted if additional soil related information is required to supplement pipeline design and analysis.

- **Soil Related Design Parameters**

  -$\gamma_s \geq$ 130 pcf (Estimated Soil Total unit weight)

  -Category 1 - Sandy Soil Profile

  - E' = 500 psi (Presumptive Allowable Modulus of Soil Reaction for Sandy Gravels and Clean Sand Backfill Bedding Soils)

4.3 – Thrust Blocks

We anticipate that thrust blocks shall be specified at curves and turns of the proposed pipeline, a passive earth resistance of 150 to 250 pounds per cubic foot may be used for design purposes. Thrust blocks should bear solidly against undisturbed trench walls in all directions.

Section 5.0 – Below Grade Lateral Earth Pressures

The proposed below grade structures and pipelines will be subjected to vertical and lateral earth pressures depending upon the type of backfill soil. The table below presents at-rest (K_o) pressure coefficients for select backfill soils. The K_o pressures are recommended for cases where the structures will experience little yield and for relatively long term buried structures. Select backfill soils should meet the requirements of Select Backfill or as required by the project specifications, whichever is more stringent.

Table 8. Earth Pressure Coefficients

Earth Pressure Coefficients			
Soil Type	**Estimated Total Unit Weight (pcf)**	**Lateral Earth Pressure Coefficients**	**Equivalent Fluid Weight (pcf)**
		At-Rest (K_o)	**At-Rest**
Crushed Stone Base Course	148	0.33	49
Select Fill Soils (PI<12)	135	0.45	61
Silty, Clayey or Poorly Graded Sands	128	0.52	66

The lateral pressure with depth may be estimated with the following equation;

$$P_s = K_o\gamma_s (H-H_w) + K_o(\gamma_s - \gamma_w)H_w + \gamma_w H_w + q\,K_o$$

Where; P = lateral earth pressure at calculated depth, psf
K_o = At-rest lateral earth pressure coefficient (typically used for long-term cases)
γ_s = Total wet unit weight of soil, pcf
H = Depth of structure from ground surface to calculated depth, ft
H_w = Positive vertical downward depth of water from reported highest depth.

Note when calculation depth is above reported water depth, then H_w term in equation is considered zero
γ_w = Unit weight of water, pcf
q = Surcharge pressure, psf (typically only considered to 20 feet)
light loads (i.e., pedestrians and soil stockpiles) – 50 psf,
moderate (i.e., light equipment) – 150 psf,
heavy (i.e., heavy duty equipment) – 250 psf or more

Section 6.0 – General Trench Safety Considerations

The following report sections present general trench safety and trenchless crossing design considerations.

6.1 – Trench Safety Considerations

Trench excavations of more than 4 feet in depth and extending to a maximum depth of 20 feet may be supported with shielded systems in accordance with OSHA regulations. Shielded systems, such as trench boxes, should not be subjected to loads exceeding those which the system was designed to

withstand. Shields may be stacked, provided that they are installed in a manner to resist lateral displacements or other hazardous movements of the shield in the event of sudden changes in lateral loads, such as sidewall collapse, or impact from excavation equipment or any other potential force. Braced Trench Box Systems may also be utilized for excavations extending from 20 to 25 feet, provided that they are designed and rated for the specific excavation depths and soil materials.

Employees shall not be allowed in shielded trenches when shields are being installed, removed, or moved vertically or horizontally. Employees should not be permitted in trenches that show possible loss of soil from behind or below the bottom of the shield. Hard hats and warning vests or other highly visible Personal Protection Equipment (PPE) should be worn by all employees.

Surface encumbrances, such as boulders and vegetation, located so as to create a hazard to employees involved in excavation work or in the vicinity thereof at any time during operations, shall be removed, properly supported or made safe before excavation begins. Existing underground utility lines shall be located prior to performing excavations and protected during excavation construction. Excavations should not undermine existing structures and should be at least 10 feet from the toe of any structure.

The contractor's trench safety plan shall consider additional required surcharge loads on sloped and shielded excavation sidewalls, especially where construction equipment, structures and foundations shall be less than 10 feet from the crest or edge of the excavation trench.

When mobile equipment is operated adjacent to an excavation, a warning system should be utilized such as barricades, hand or mechanical signals, or stop logs.

Properly designed means of access and egress from excavations should be provided for employees. Structural members used as ramps and/or runways over excavations 6 feet or more in depth should be equipped with guardrails and should be uniform in thickness and supported properly to prevent displacements. Stairways, ladders, ramps, or other safe means of egress shall be located in trench excavations that are 4 feet in depth or more in depth so as to require no more than 25 feet of lateral travel for employees.

A "competent person" shall inspect and document the excavation conditions trench systems and equipment daily and notify the contractor's superintendent of any conditions which may adversely affect the reliability and safety of the excavation. The excavations shall also be inspected after each rainstorm or when any changes in conditions occur that can increase the possibility of a cave-in or slide. If evidence of possible cave-ins or slides is apparent, all work in the excavation shall cease until the necessary precautions for sloping or bracing have been taken to safeguard the employees and trench. Any loose

soil shall be scaled from the slope and removed from the excavation to protect workers against falling soil.

The atmosphere within a trench deeper than 4 feet shall be tested when there is a possibility of oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or build-up of hazardous gases. Ventilation should be provided to prevent flammable gas build-up to 20 percent of lower explosive limit of the gas. In addition, testing should be conducted as often as necessary to ensure that the atmosphere remains safe. Emergency rescue procedures and equipment should be readily available at all times, especially where hazardous atmospheric conditions could exist or develop during work in an excavation. Employees entering deep confined excavations should wear a safety harness with a lifeline securely attached to the harness.

A health and safety plan and emergency rescue plan should be established and maintained by the general contractor at all times during the project. In the event of an injury or emergency situation, it is imperative to follow all guidelines as detailed in the most recent OSHA Standards for the Construction Industry Manual, including completion of all necessary forms, accident procedures, and report documentation. After rescue operations are implemented the accident area should be closed off and made safe until an OSHA inspector visits the site and documents conditions after immediate notification. This emergency contact information should be posted on the site at all times during excavation activities.

Excavations of earth material to a level not greater than 2 feet below the bottom of a shield may be permitted, provided that the soil sidewalls are stable. Shields should extend to a minimum of 18 inches above the top of the vertical side or crest of the excavation.

The trench box system should be used in accordance with the Manufacturer's recommendations in accordance with the requirements of a trench safety plan and current OSHA regulations. Excavation safety systems for trenches shall be designed by a licensed professional engineer for all anticipated depths for this project.

It shall be the contractor's responsibility to document and record all daily excavation activities in accordance with OSHA regulations. CQC and our Client shall have no liability for the selected means and methods utilized by the contractor to perform excavations.

6.2 - Trenchless Pipeline Crossing Considerations

Based on our soil classification tests and field data results, it is recommended that specified trenchless crossings for this project along Square Dance Road consist of limited personnel non-entry required methods such as Horizontal Boring, Pipe Jacking and Microtunneling trenchless excavation

methods with casing. Pipe casing shall be maintained at least three (3) pipe diameters beyond the entry and exit pits or as required to maintain excavations stable and protect the new utility line.

If horizontal boring is selected, all underground utilities shall be located within 10-feet of the proposed drill path. Entry and exit elevation difference in excess of 50 feet shall be avoided. It is recommended to use drilling mud (fluid bentonite) in order to reduce drilling torque due to the encountered soil conditions, as required. Drilling mud shall also aid to maintain and support the borehole earthen walls.

Pipe Jacking method should consider the use of guided casing to allow the installation of the new utility line. In jacking applications, the pipe stiffness should be considered according to the jacking compressive load and installation conditions including the jacking head proposed to be used. The jacking contractor should take precaution in applying no more than the allowable safe jacking load for the pipe.

The SPT data presented within this report may be reviewed as a guide and with caution by the pipe manufacturer in order to determine the relative stiffness of the subsurface soil formations. It shall be the pipe manufacturer's responsibility to collect additional subsurface soils information in order to specify the appropriate pipe to be utilized for jack boring methods for this project including but limited to material type, wall thickness, and welding details.

Where pipe casing will be left in place, the annular space between the pipe and casing should be filled to mitigate the potential settlement of the trench as required by the engineer or manufacturer. It is recommended that the selected contractor provide a jacking plan and profile drawing details and should include the planned method to monitor ground surface movements before, during and after construction. This may be accomplished by installing settlement monitoring points and/or devices in combination with pre-construction and post construction video recording methods. Surface movements shall be maintained below a ¼ inch. The contractor should provide, along with the specified submittal requirements, a detailed description of similar projects with references on which the proposed tunneling system had been successfully used by the contractor. The potential of a "blow-out" condition and impact to bore pits should also be considered for bores crossing below active channels, drainage canals, waterways and pit flooding events after significant rainfall events. In addition, the contractor should provide pipe calculations prior to ordering pipe casing and a summary of the backfilling method to be used to the engineer of record through a submittal process.

The following is a general list of items that shall be submitted by the general contractor and tunneling subcontractor, as applicable for the proposed trenchless excavation method.

- Manufacturer's data sheet and specifications describing in detail the trenchless method to be used.

- Detailed description of similar projects with references on which the proposed system had been successfully used by contractor/subcontractor or operator.
- Description of method to remove and dispose of spoil.
- Maximum anticipated jacking loads and supporting calculations, as applicable.
- Description of methods to control and dispose of ground water or water seepage spoil, temporary shoring, and other materials encountered in the maintenance and construction of pits and shafts.
- Shaft dimensions, locations, surface construction, profile, depth, method of excavation, shoring, bracing, and thrust block design, as required.
- Pipe design data and specifications.
- A description of the grade and alignment control system.
- Intermediate jacking station locations and design, as applicable.
- Description of lubrication and/or grouting system.
- Layout plans and description of operational sequence.
- A detailed plan for monitoring ground surface movement (settlement or heave) due to trenchless operations. The plan shall address the method and frequency of survey measurement. At minimum, the plans shall measure the ground movement of all structures, residential parkways, roadways, and any other areas of concern. A description of how settlements will be monitored and excessive settlements will be avoided and contingency plan should also be required to establish how the contractor will mitigate any excessive settlements. A pre-construction survey shall be required and conducted by the contractor, accompanied by the engineer and owner representative(s), to document pre-construction conditions.
- Contingency plans for approval for the following potential conditions: damage to pipeline structural integrity and repair, loss and return to line and grade, and loss of ground.
- Procedures to meet all applicable OSHA requirements. These procedures shall be submitted for a record purpose only and will not be subject to approval by the engineer. At a minimum, the contractor shall provide the following:
  1) Protection against soil instability and groundwater/water seepage inflow.
  2) Safety for shaft access and exit, including ladders, stairs, walkways, and hoists.

3) Protection against hydraulic and mechanical equipment operations, and for lifting and hoisting equipment and material.
4) Ventilation and lighting.
5) Monitoring for hazardous gases.
6) Protection against flooding and means for emergency evacuation.
7) Protection of shaft, including traffic barriers, accidental or unauthorized entry, and falling objects.
8) Emergency protection equipment.
9) Safety supervising responsibilities.
10) Annular space grouting plans, if required by contract documents.

It should be anticipated by bidding contractors that poorly graded sands along the specified pipeline route may also require tunneling provisions to maintain horizontal borehole earthen walls stable at all times.

Section 7.0 – Pipe Embedment and Backfill Considerations

As indicated above the following recommendations should be considered in the design of the pipeline embedment and backfilling specifications.

7.1 – Pipeline Soil Support below Embedment Zone

Based on our observations and soil classification tests the proposed new pipeline embedment zone shall be supported by prepared and compacted suitable approved native (i.e., Stratum II – silty and/or clayey sands) or imported Class II or III soil materials and/or as required by the project plans and specifications, whichever is more stringent. The supporting subgrade soils at the cut excavation that shall support embedment backfill material and the pipe should be stripped of all vegetation, organic matter, construction debris and/or any foreign matter. The exposed subgrade should be scarified just prior to embedment material placement to a minimum depth of 8 inches and recompacted to a minimum of 90 percent of maximum dry density as determined by ASTM D-1557. The moisture content of the subgrade should be maintained within ±2 percent of the optimum moisture content until permanently covered.

In general, embedment soil materials and pipes should not be directly supported by soils classified as CH, CL, MH, ML, OH, OL and PT under the USCS in all cases.

7.2 – Pipeline Embedment Zone Backfill

The pipe embedment zone or pipe zone materials that shall be in contact with the new pipe should meet the requirements of a Class II soil material or as recommended by the pipe manufacturer. The backfilled soil materials should be placed in loose lifts not to exceed 8 inches and compacted as required by the pipe manufacturer. We recommend that backfill not be compacted to less than 95% percent of maximum dry density as determined by ASTM D-698. The moisture content of the backfill should be maintained at ±2 percent of the optimum moisture content until permanently covered.

Please note that the pipe zone is typically defined as the area extending from the bottom of the trench to 12 inches above the top of the pipe and extending to the undisturbed trench walls on both sides of the pipe.

7.3 - Trench Backfill Materials (Above the Pipe Zone)

The backfill soil materials above the embedment zone or pipe zone should be placed in maximum 8-inch uniform thickness loose lifts and should meet the requirements of a Class III soil material in accordance with Section 9.0 of this report and/or the project plans and specifications, whichever is more stringent. The backfill materials should be moisture conditioned to ±2 percent of optimum moisture content and compacted to a minimum of 90 percent of maximum density as determined by ASTM D-1557 laboratory compaction procedures. The trench backfill materials should be placed to 18 inches below the finished subgrade elevation. The suitable fill materials below 18 inches of the finished grade elevations should achieve a minimum compaction of 95 percent as per ASTM D-1557 or as required by the project specifications.

7.4 – Pavement Replacement Considerations

We anticipate that the existing AC pavement section shall have to be replaced along pipeline open cut trench areas where specified. We recommend that the new Asphaltic-Concrete (AC) material conform to a TXDOT - Item 340, Type C material with a minimum of 1,500 pounds of Marshall Stability (75 blows, ASTM D 1559), a flow between 0.08 inches and 0.16 inches, air voids between 3 to 5 percent, and should be placed at a target of 98 percent of laboratory Marshall value. The asphalt content for the mix should be determined based on the Marshall Mix Design method. The bitumen material should be a performance grade material such as a PG64-22. We recommend that the specified replacement pavement section consist of at least 2-1/2 inches of Type C - AC material underlie by a minimum of 12 inches of approved CLSM (soil cement backfill). The CLSM may consist of a soil-cement stabilized backfill material. The

CLSM should exhibit a minimum compressive strength of 150 psi at 7 days. The CLSM should be allowed to cure appropriately and equipment should not be allowed on the CLSM if the material exhibits a permanent deformation greater than ¼ inch. The proposed CLSM should be submitted to the engineer of record for review and approval through a submittal process. The proposed CLSM submittal should also contain compressive strength data for review and consideration by the engineer of record.

In general, the subgrade soils that shall support the replacement pavement section should be moisture conditioned to ±3 percent of optimum moisture content and compacted to a minimum of 95 percent of maximum density as determined by ASTM D-1557 laboratory compaction procedures.

If considered, the flexible base course shall meet the requirements of a TXDOT, Item 247, Type A, Grade 3 flexible base course material and shall be moisture conditioned to ±2 percent of optimum moisture content and compacted to a minimum of 100 percent of maximum density as determined by ASTM D-1557 laboratory compaction procedure.

In general, the subgrade soils that shall support the replacement pavement section should be moisture conditioned to ±3 percent of optimum moisture content and compacted to a minimum of 95 percent of maximum density as determined by ASTM D-1557 laboratory compaction procedures.

Section 8.0 – Additional Design and Construction Considerations

In excavations adjacent to existing structures, precautions should be taken not to undermine or damage existing structures, footings, and/or utility lines. Precautions should be taken to prevent distresses to nearby existing structures.

As typically expected with construction activities and pipeline excavation projects, a degree of vibratory impacts should be expected. Our scope of work did not include an assessment of the condition of private structures or facilities adjacent to the pipeline project limits nor opinions or statements of potential impacts. In accordance with the typical provisions of construction contracts the general contractor shall be responsible for monitoring of existing structures. As required the general contractor shall develop a vibration and ground settlement monitoring plan before, during the course of construction and after all construction activities have been completed at the project site. The plan may include the set up of an array of monitoring points near the pipeline and at radial distances from construction activities to monitor potential ground movements. It is recommended that the general contractor retain the services of a licensed professional engineer or geologist to develop a monitoring plan and provide site monitoring services as needed. It may be necessary for the contractor to establish a contingency plan for observed

movements of adjacent structures. The development of a settlement monitoring program was beyond our scope of work; however we may meet with our Client and owner to further discuss this issue, as required. The US Bureau of Mines, FHWA – "Geotechnical Instrumentation for Monitoring Field Performance" manual and ASCE publications may be referenced to establish a monitoring plan and set maximum vibration peak particle velocity (i.e., typically less than 0.2 inches per second) and frequency thresholds to ensure that vibrations are maintained below these limits during construction.

Section 9.0 – Project Specification Information

9.1 - Fill Materials

Select Fill soils shall consist of granular clayey, silty sands or sandy clayey, silty gravel mixtures, free of clay lumps, deleterious materials, organic material, vegetation, cobbles or boulders over 3 inches in nominal size. The Select Fill shall have a liquid limit less than 35 and a plasticity index of 12 or less. The Select Fill shall also exhibit an optimum dry density of at least 115 pcf determined per ASTM D 1557. Select Fill soils shall also meet the gradation requirements below.

Table 9. Select Fill Gradation Requirements

Sieve Size (square opening)	% Passing by Weight
3-inch	100
3/4-inch	85 – 100
No. 4	35 – 100
No. 200	5 – 35

Select Fill soils should classify as SP-SM, SM, SC, SC-SM, GM, GC, GC-GM, GP-GM, and GP-GC in accordance with the USCS. It is not recommended that Select Fill consist of recycled concrete base material or slag unless approved by the engineer of record.

Native Fill Soil shall consist of granular clayey, silty sands or sandy gravel mixtures, free of clay lumps, deleterious materials, vegetation, organic material, cobbles or boulders over 3 inches in nominal size. The Native Fill soils shall have a liquid limit less than 35 and a plasticity index less than 12 or less. Native Fill soils shall meet the gradation requirements below.

Table 10. Native Fill Soil Gradation Requirements

Sieve Size (square opening)	% Passing by Weight
3-inch	100
3/4-inch	70 – 100
No. 4	45 – 100
No. 200	3 – 45

Native Fill soils classified in the following list according to the USCS may be considered satisfactory for use: SM, SW, SC, SP-SM, SP-SC, SC-SM, GW, GP, GM, GC, GP-GM and GP-GC, provided that these soils also meet the requirements above.

It is recommended that on-site soils classified as SP be blended with low-plasticity clayey sands or as appropriate to mitigate potential soil sloughing during excavations in these types of soils and to create a relatively stable blended soil material that exhibits adequate bearing capacity, as applicable. The blended soils should meet the requirements of Native Fill above.

Soils classified as CH, CL, MH, ML, OH, OL and PT or a combinations of these under the USCS classification and soils that exhibit a plasticity index greater than 12 are not considered suitable for use as Native Fill and Select Fill soil materials, unless approved by the engineer.

The following soil backfill classifications are typically designated for pipeline backfill. It is not recommended that slag be utilized for the backfill material unless approved by the engineer of record. **Class I, Class II, Class III, and Class IV materials may be defined as follows:**

- **CLASS I** material may be manufactured angular, well-graded, crushed stone per ASTM D-2321 with a maximum particle size of 1½ inches. The following materials shall be acceptable under this class designation: ASTM D-448 – Stone Sizes 4, 46, 5, 56, 57, and 6. Pea Gravel and other uniformly graded material are not acceptable under this class. A gradation of Class I material shall be submitted by the Contractor to the Engineer for approval prior to use.

- **CLASS II** material may be coarse sands and gravels per ASTM D-2487 with maximum particle size of 1½ inches, including variously graded sands and gravels, containing less than 12 percent fines (material passing the #200 sieve) generally granular and non-cohesive, either wet or dry. Soil types GW, GP, SW and SP are included in this class. (i.e., typically required within pipe zone).

Proposed Class II material shall be submitted by the Contractor to the Engineer for evaluation and approval prior to use.

- **CLASS III** material may be fine sands, clayey sand mixtures, clayey gravel and sand mixtures, suitable clean native sands and gravels. Class III materials shall also be free of clay lumps, deleterious materials, cobbles or boulders over 3-inches in nominal size. Class III materials should have a liquid limit less than 35 and a plasticity index less than or equal to 12 and exhibit an optimum dry density of at least 115 pcf. Soils classified in the following list according to the USCS and ASTM may be considered satisfactory for use as Class III backfill soil materials above the pipe zone as approved by the project engineer of record: SM, SW, SC, SP-SM, SP-SC, SC-SM, GW, GP, GM, GC, GP-GM and GP-GC. Proposed Class III material shall be submitted by the Contractor to the Engineer for evaluation and approval prior to use.

- **CLASS IV and V** material may be classified as CH, CL, MH, ML, OH, OL and PT under the USCS. These soils shall not be used as backfill materials, unless approved by the engineer of record. As indicated in this report the encountered Stratum I clays are consider Class IV soil materials.

9.2 - Construction Materials Testing

We recommend that construction materials observation and testing of site work, fill placement, excavations, concrete placement, and all other applicable materials and structures be performed by CQC. The contractor shall perform testing in accordance with the guidelines presented above and/or as required by the project specifications, which ever is more stringent. The specification testing program should include the following testing frequencies as a minimum:

1. At least one (1) Laboratory Compaction Characteristics of Soil using Modified Effort or standard (Proctor) for each type of material encountered or imported material to be used, according to ASTM D-1557 or as required by the project specifications.
2. At least one (1) Soil Classification (Sieve Analysis and Atterberg Limits Test) for each type of material encountered or import material used, according to ASTM D 6913 and D-4318.
3. A minimum of one (1) density test per 8-inch lift at 150 lineal feet spacings for pipe bedding and soil backfilling operations, according to ASTM D 6938 or D-1556.
4. Sampling and testing for quality assurance of placed **concrete** materials should be performed for the project. Concrete field testing shall include testing for temperature, slump and air content (if required). The design strength of the concrete mix shall be evaluated by collecting cylindrical concrete compression test specimens for lab curing and testing in accordance with applicable

ASTM procedures. At least one set of four (4) 6-inch x 12-inch or 4-inch x 8-inch concrete cylinders should be collected for every 50 cubic yards or less of placed concrete or as directed by the project engineer. The concrete specimens should be tested at 7 days (1 cylinder) and 28 days (3 cylinders) for verification of the specified design compressive strength or as directed by the project specifications. The ACI guidelines for hot weather and cold weather concreting should be followed to mitigate the potential poor performance of the concrete materials during significant periods of high (above 95˚ F) and low (below 35° F) temperatures.

Section 10.0 – Soils Evaluation Considerations and Limitations

The analysis and recommendations in this report are based on the data obtained from a total of thirty-five (35) soil borings performed at the approximate locations indicated on the attached General Exploration Boring Location Aerial Plans, Sheet A1-1 and Sheet A1-2. This report may not reflect all the subsurface soil variations that may occur near and/or between the borings. The nature and extent of the variations may not become evident until during the course of construction. This is specifically true of the encountered very loose and/or soft subsurface soils in our soil borings.

If variations appear during construction, CQC should be contacted immediately, it may be necessary to re-evaluate our information and/or recommendations provided within this report to be made after performing on-site observations during the construction period and noting the characteristics of any variations. No other information relevant to the project site history or known conditions of concern were discussed or disclosed to CQC by our Client or Owner.

The scope of our soil evaluation did not include surveying services, ground water study, preparation of engineering plans, specifications, cost estimates, an environmental assessment of the property's air, soil, water, site fault delineation and evaluation, preparation of a dewatering plan, trench safety and/or shoring plan, delineation of subsurface flowing water or rock conditions either on or adjacent to the pipeline limits, therefore no opinions and/or conclusions are presented in this report. Our geotechnical scope of work for this site did not include an environmental assessment or chemical testing and analysis of the subsurface soils.

Section 11.0 – General List of Technical References

1.) Dietrich, J. W., Owen, D. E., Shelby, C. A., & Barnes, V.E. (1983). *Geologic Atlas of Texas, Van Horn-El Paso Sheet.* Austin, TX: The University of Texas at Austin Bureau of Economic Geology

2.) Coduto, Donald P. (1994). *Foundation Design: Principles and Practices.* Englewood, NJ: Prentice-Hall, Inc.

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4.) Holtz, Robert D., Kovacs, William D. (1981). *An Introduction to Geotechnical Engineering.* Englewood Cliffs, NJ: Prentice-Hall, Inc.

5.) Bowles, Joseph E. (1996). *Foundation Analysis and Design.* 5th edition. New York: The McGraw-Hill Companies, Inc.

6.) International Code Council, Inc. *International Building Code.* Country Club, IL: International Code Council, Inc.

7.) U.S. Department of Labor-Occupational Safety and Health Administration (OSHA). *Part 1926 – Safety and Health Regulations for Construction.* Washington, DC.

8.) American Concrete Institute. *ACI Manual of Concrete Practice Part 2: Construction Practices and Inspection Pavements.* Farmington Hills, MI: American Concrete Institute

9.) American Society for Testing and Materials Standard D 6151. *Standard Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling.* Volume 04.09. West Conshohocken, PA: ASTM International

10.) American Society for Testing and Materials Standard D 2113. *Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigation.* Volume 04.08. West Conshohocken, PA: ASTM International

11.) American Society for Testing and Materials Standard D 6914. *Standard Practice for Sonic Drilling for Site Characterization and the Installation of Subsurface Monitoring Devices.* Volume 04.09. West Conshohocken, PA: ASTM International

12.) American Society for Testing and Materials Standard D 5434. *Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock.* Volume 04.08. West Conshohocken, PA: ASTM International

13.) American Society for Testing and Materials Standard D 1586. *Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils.* Volume 04.08. West Conshohocken, PA: ASTM International

14.) American Society for Testing and Materials Standard D 422. *Standard Test Method for Particle-Size Analysis of Soil.* Volume 04.08. West Conshohocken, PA: ASTM International

15.) American Society for Testing and Materials Standard D 698. *Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)*. Volume 04.08. West Conshohocken, PA: ASTM International

16.) American Society for Testing and Materials Standard D 1140. *Standard Test Method for Amount of Material in Soils Finer than No. 200 (75µm) Sieve.* Volume 04.08. West Conshohocken, PA: ASTM International

17.) American Society for Testing and Materials Standard D 1556. *Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone.* Volume 04.08. West Conshohocken, PA: ASTM International

18.) American Society for Testing and Materials Standard D 1557. *Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3).* Volume 04.08. West Conshohocken, PA: ASTM International

19.) American Society for Testing and Materials Standard D 2216. *Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.* Volume 04.08. West Conshohocken, PA: ASTM International

20.) American Society for Testing and Materials Standard D 4318. *Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.* Volume 04.08. West Conshohocken, PA: ASTM International

21.) American Society for Testing and Materials Standard D 6913. *Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.* Volume 04.08. West Conshohocken, PA: ASTM International

22.) American Society for Testing and Materials Standard D 6938. *Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).* Volume 04.08. West Conshohocken, PA: ASTM International

23.) American Society for Testing and Materials Standard C136. *Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.* Volume 04.02. West Conshohocken, PA: ASTM International

24.) American Society for Testing and Materials Standard C131. *Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.* Volume 04.02. West Conshohocken, PA: ASTM International

25.) American Society for Testing and Materials Standard C117. *Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing.* Volume 04.02. West Conshohocken, PA: ASTM International

26.) American Society for Testing and Materials Standard D2950. *Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.* Volume 04.03. West Conshohocken, PA: ASTM International

27.) American Society for Testing and Materials Standard D6307. *Standard Test Method for Asphalt Content of Hot-Mix Asphalt by Ignition Method.* Volume 04.03. West Conshohocken, PA: ASTM International

28.) American Society for Testing and Materials Standard D5444. *Standard Test Method for Mechanical Size Analysis of Extracted Aggregate.* Volume 04.03. West Conshohocken, PA: ASTM International

29.) American Society for Testing and Materials Standard D2041. *Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures.* Volume 04.03. West Conshohocken, PA: ASTM International

30.) American Society for Testing and Materials Standard D2726. *Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures.* Volume 04.03. West Conshohocken, PA: ASTM International

31.) American Society for Testing and Materials Standard D6927. *Standard Test Method for Marshall Stability and Flow of Bituminous Mixtures.* Volume 04.03. West Conshohocken, PA: ASTM International

32.) American Society for Testing and Materials Standard D6307. *Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures.* Volume 04.03. West Conshohocken, PA: ASTM International

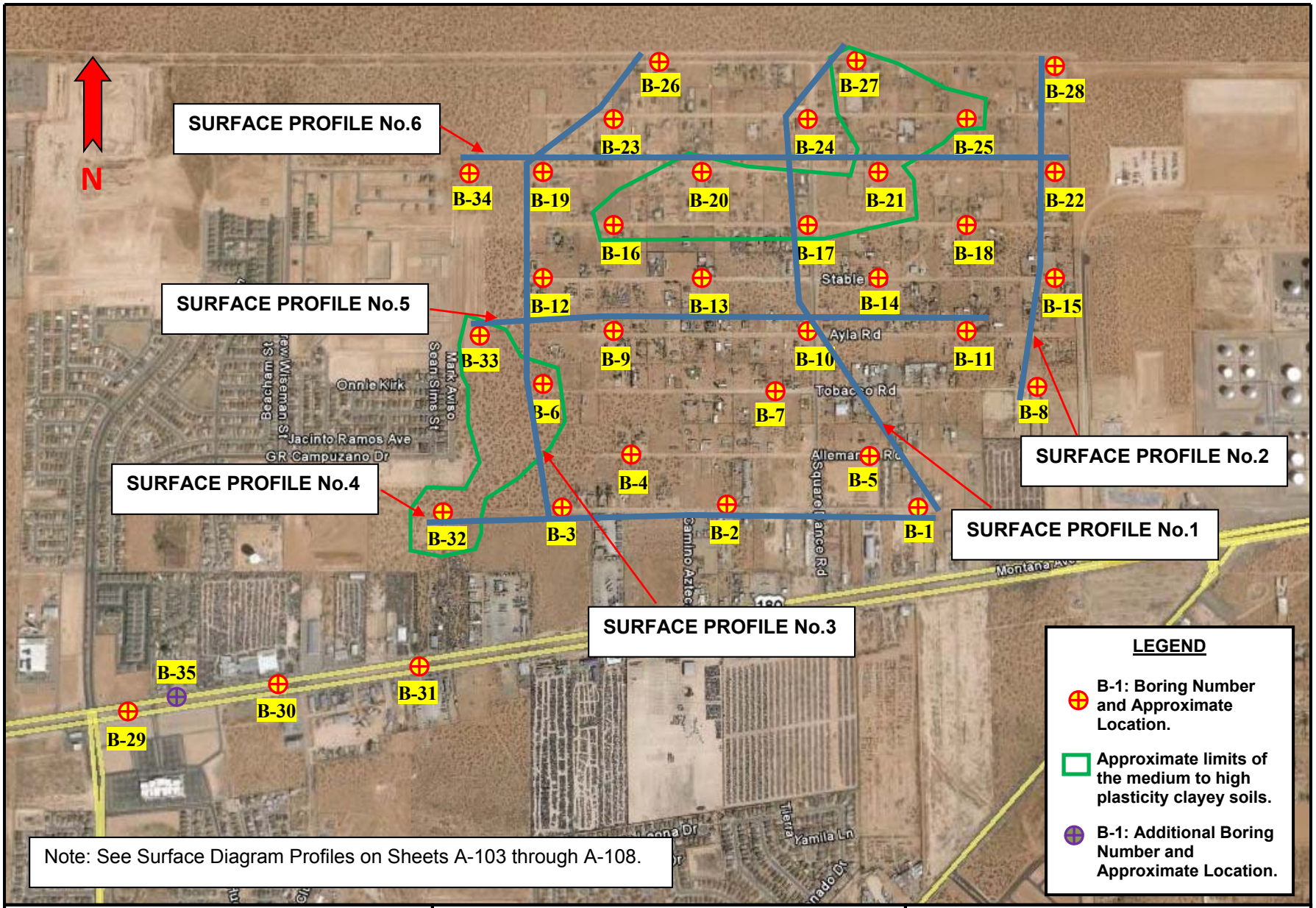
33.) American Association of State Highway and Transportation Officials. (1993). *AASHTO Guide for Design of Pavement Structures 1993.* Washington, DC: American Association of State Highway and Transportation Officials

34.) American Association of State Highway and Transportation Officials. *Standard Specifications for Transportation Materials and Methods of Sampling and Testing, Part 2B: Tests.* 30th Edition. Washington, DC: American Association of State Highway and Transportation Officials

35.) Texas Department of Transportation. (November 2014). *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges.* Austin, TX: Texas Department of Transportation

36.) Texas Department of Transportation. Test Procedures: 100-E Series through 1100-T Series. Retrieved June 2006 from http://www.txdot.gov/business/contractors_consultants/test_procedures.htm

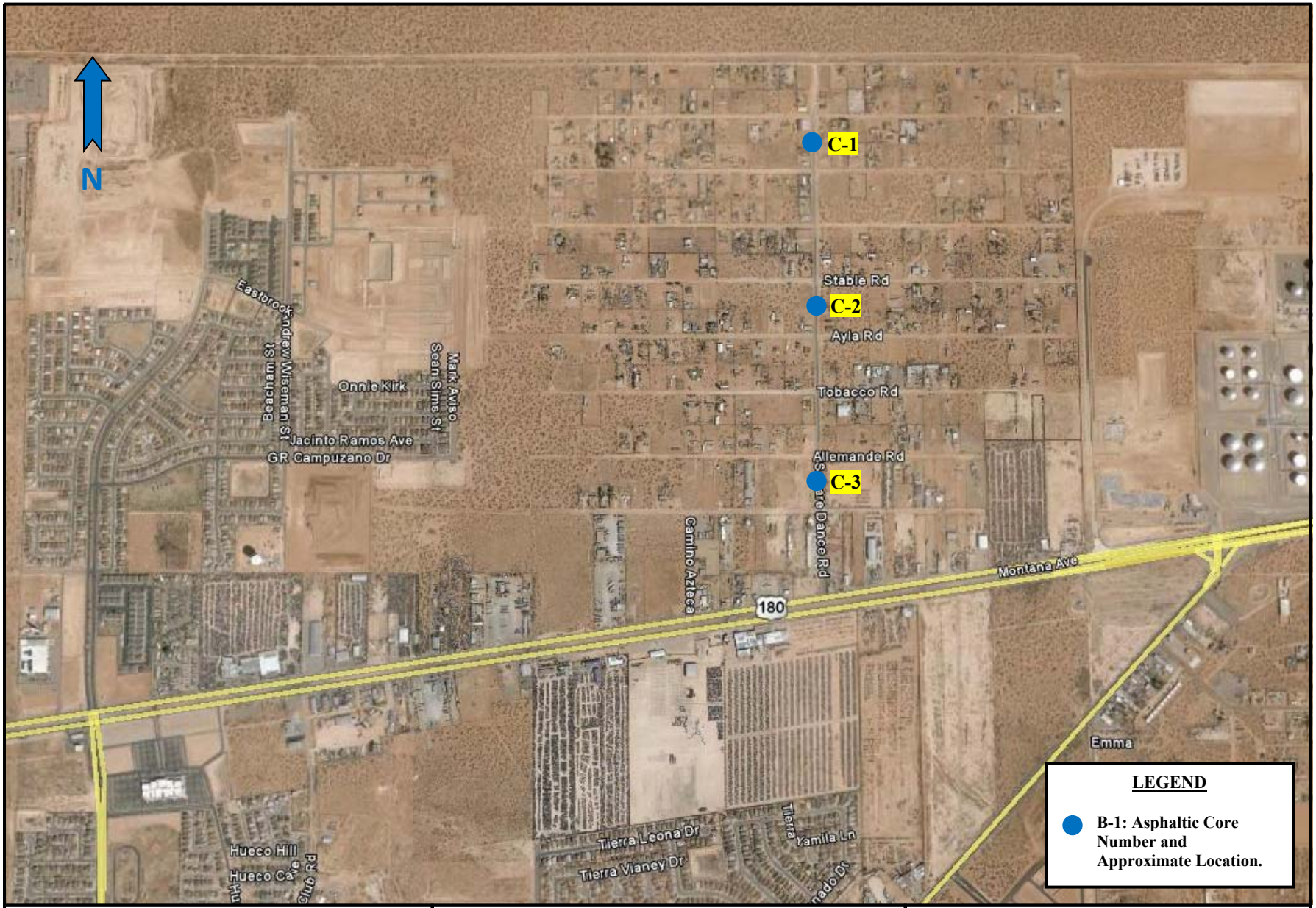
APPENDIX A



construction quality control
testing and engineering

General Exploration Boring Location
Aerial Plan
General Soils Evaluation
COEP - Desert Acceptance (Square Dance)
Wastewater System Project
El Paso, El Paso County, Texas

Client: Moreno Cardenas Inc.	
CQC Project No. AGCQC16-003	
Scale: NTS	Check by: JR
Date: 4/27/16	Sheet A1-1



construction quality control
testing and engineering

General Asphalt Pavement Core Location Aerial Plan

General Subsurface Soils Evaluation
COEP - Desert Acceptance (Square Dance) Wastewater System
El Paso, El Paso County, Texas

Client: MCi	
CQC Project No. AGCQC16-003	
Scale: NTS	Check by: JR
Date: 3/18/16	Sheet A1-2

construction quality control
testing and engineering

General Exploration Boring B-35 Location Aerial Plan

General Subsurface Soils Evaluation
COEP - Desert Acceptance (Square Dance) Wastewater System
El Paso, El Paso County, Texas

Client: MCi	
CQC Project No. AGCQC16-003	
Scale: NTS	Check by: JR
Date: 4/27/16	Sheet A1-3

CQC Testing and Engineering LLC-TBPE Firm No. F-10632
6802 Commerce, Unit "9A"
El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-1

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 1/26/16 **COMPLETED** 1/26/16 **GROUND ELEVATION** 4032 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encountered

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Silty, Light Brown, Medium Dense to Very Dense, Moist with some calcareous material.	7-16-50 (66)	86	21	8	NP	SM
2.5	SS 2			10-11-7 (18)					
5.0	SS 3			5-11-13 (24)					
7.5	SS 4		CLAY, Sandy, Light Brown, Plastic, Very Stiff, Slightly Moist with some calcareous material.	12-17-15 (32)	100	54	14	28	CL
10.0	SS 5			12-30-30 (60)					
12.5	SS 6		SAND, Fine Grained, Poorly Graded, Light Brown, Multicolored, Medium Dense, Dry with silt.	4-9-16 (25)	100	9	2	NP	SP-SM
15.0			NOTE: SS - Split Spoon Sample						
			Bottom of hole at 15.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80

THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

CQC STANDARD LOG 16-003-LOGS.GPJ CQC2014.GDT

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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-10

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 1/26/16 **COMPLETED** 1/26/16 **GROUND ELEVATION** 4026 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0	SS 1	SAND, Fine Grained, Non-Plastic, Silty, Brown to Reddish Brown, Loose to Medium Dense, Moist with some clay lumps.	1-2-2 (4)	100	14	4	NP	SM
	SS 2		3-8-12 (20)					
5	SS 3	SAND, Fine Grained, Brown to Light Brown, Medium Dense to Dense, Slightly Moist with some calcareous material.	4-7-6 (13)					
	SS 4		7-13-15 (28)	99	45	12	25	SC
10	SS 5		6-13-18 (31)					
15	SS 6	SAND, Fine Grained, Non-Plastic, Poorly Graded, Light Brown to Multicolored, Medium Dense to Dense, Dry to Moist.	7-7-14 (21)					
	SS 7		8-16-16 (32)	96	4	1	NP	SP
20		NOTE: SS - Split Spoon Sample						
		Bottom of hole at 20.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80

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BORING NUMBER B-11

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/4/16 **COMPLETED** 2/4/16 **GROUND ELEVATION** 4024 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

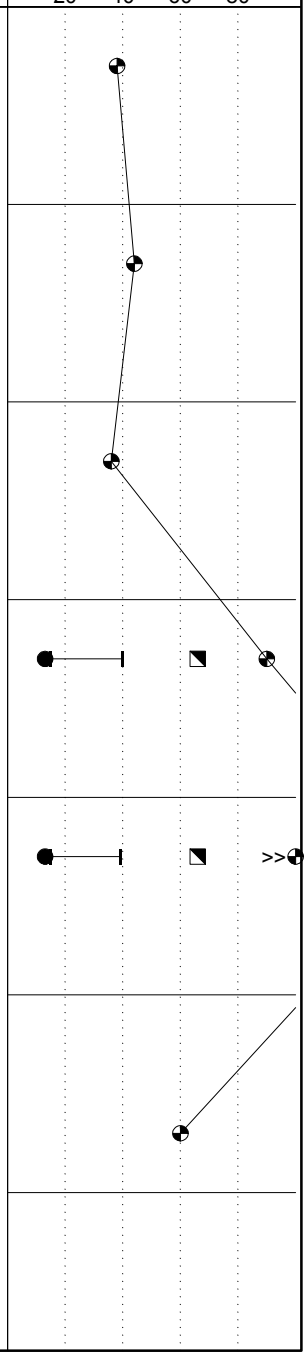
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Silty, Brown to Reddish Brown, Medium Dense, Dry to Moist.	1-4-15 (19)					
2.5	SS 2		SAND, Fine Grained, Clayey, Light Brown, Medium Dense, Slightly Moist with calcareous material.	3-10-12 (22)					
5.0	SS 3			8-2-16 (18)					
7.5	SS 4		CLAY, Sandy, Brown, Plastic, Very Stiff, Slightly Moist with calcareous material.	16-21-24 (45)	100	66	13	25	CL
10.0	SS 5			7-29-45 (74)	100	66	13	24	CL
12.5	SS 6		SAND, Fine Grained, Poorly Graded, Light Brown, Dense, Dry to Moist.	5-12-18 (30)					
15.0			NOTE: SS - Split Spoon Sample Bottom of hole at 15.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-12

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 1/26/16 **COMPLETED** 1/26/16 **GROUND ELEVATION** 4024 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

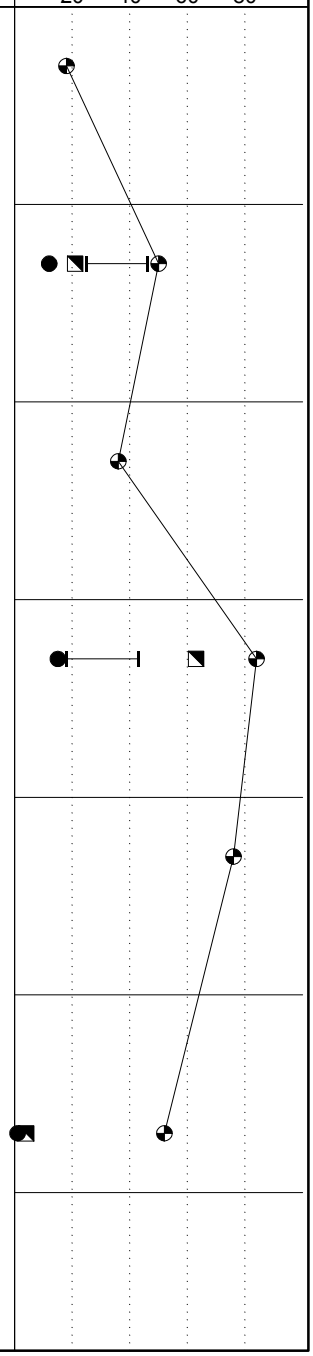
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0									
	SS 1		SAND, Fine Grained, Silty, Brown to Reddish Brown, Loose, Moist.	2-3-6 (9)					
2.5									
	SS 2		SAND, Fine Grained, Clayey, Light Brown, Medium Dense, Slightly Moist with calcareous material.	8-15-10 (25)	77	21	12	21	SC
5.0									
	SS 3			5-8-10 (18)					
7.5									
	SS 4		CLAY, Sandy, Brown to Light Brown, Plastic, Very Stiff, Moist with calcareous material.	10-16-26 (42)	100	63	15	25	CL
10.0									
	SS 5			4-17-21 (38)					
12.5									
	SS 6		SAND, Fine Grained, Poorly Graded, Brown to Multicolored, Medium Dense, Dry to Moist.	5-15-11 (26)	97	4	1	NP	SP
15.0			NOTE: SS - Split Spoon Sample						
			Bottom of hole at 15.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-13

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/4/16 **COMPLETED** 2/4/16 **GROUND ELEVATION** 4025 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

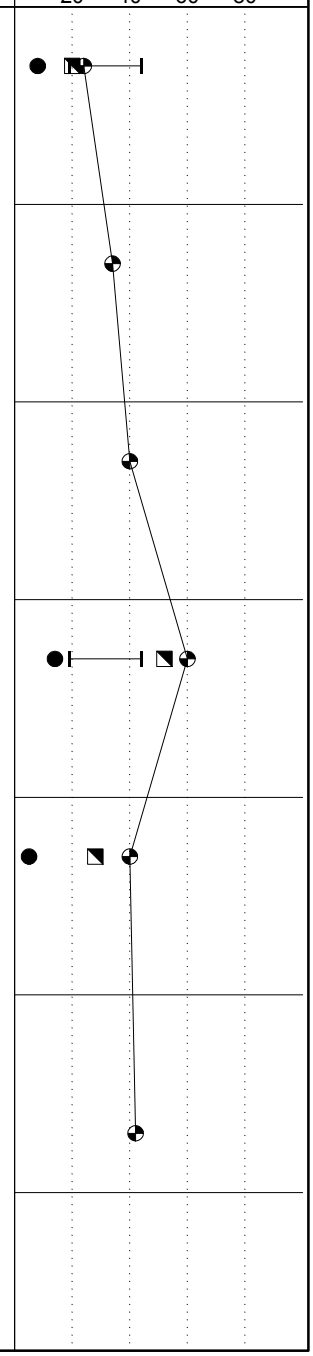
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0									
	SS 1		SAND, Fine Grained, Non-Plastic, Silty, Brown to Reddish Brown, Medium Dense, Dry to Moist.	5-5-7 (12)	93	20	8	NP	SM
2.5									
	SS 2		SAND, Fine Grained, Clayey, Light Brown, Medium Dense, Dry to Moist.	8-8-9 (17)					
5.0									
	SS 3			3-8-12 (20)					
7.5									
	SS 4		CLAY, Sandy, Brown, Plastic, Very Stiff, Dry to Slightly Moist.	7-15-15 (30)	99	52	14	25	CL
10.0									
	SS 5		SAND, Fine Grained, Silty, Light Brown, Medium Dense, Dry.	4-9-11 (20)	98	28	5		SM
12.5									
	SS 6			4-9-12 (21)					
15.0			NOTE: SS - Split Spoon Sample						
			Bottom of hole at 15.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



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Fax: (915) 771-7786

BORING NUMBER B-14

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/4/16 **COMPLETED** 2/4/16 **GROUND ELEVATION** 4029 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

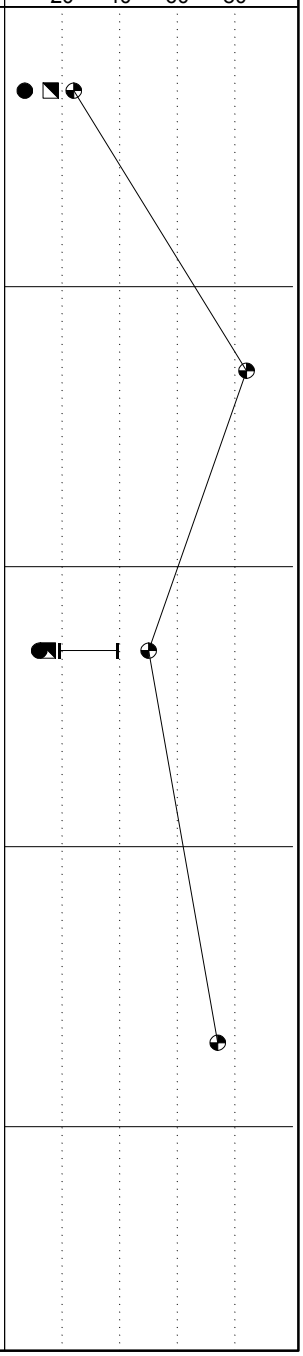
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Silty, Brown to Reddish Brown, Medium Dense, Moist.	1-3-9 (12)	94	16	7	NP	SM
2.5	SS 2		SAND, Fine Grained, Clayey, Light Brown, Medium Dense to Dense, Dry to Slightly Moist with calcareous material.	5-19-23 (42)					
5.0	SS 3			4-12-13 (25)	89	15	12	20	SC
7.5	SS 4			8-16-21 (37)					
10.0			NOTE: SS - Split Spoon Sample Bottom of hole at 10.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-15

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/4/16 **COMPLETED** 2/4/16 **GROUND ELEVATION** 4026 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Clayey, Light Brown to Brown, Medium Dense, Dry to Slightly Moist with some calcareous material.	4-8-7 (15)	88	25	11	13	SC
2.5	SS 2			2-8-6 (14)	86	25	11	13	SC
5.0	SS 3		SAND, Fine Grained, Poorly Graded, Brown, Loose, Dry to Moist with silt.	4-2-2 (4)					
7.5	SS 4			7-3-4 (7)					
10.0			NOTE: SS - Split Spoon Sample Bottom of hole at 10.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80

THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

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El Paso, Texas 79915
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BORING NUMBER B-16

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/4/16 **COMPLETED** 2/4/16 **GROUND ELEVATION** 4022 ft **HOLE SIZE** 6 inches

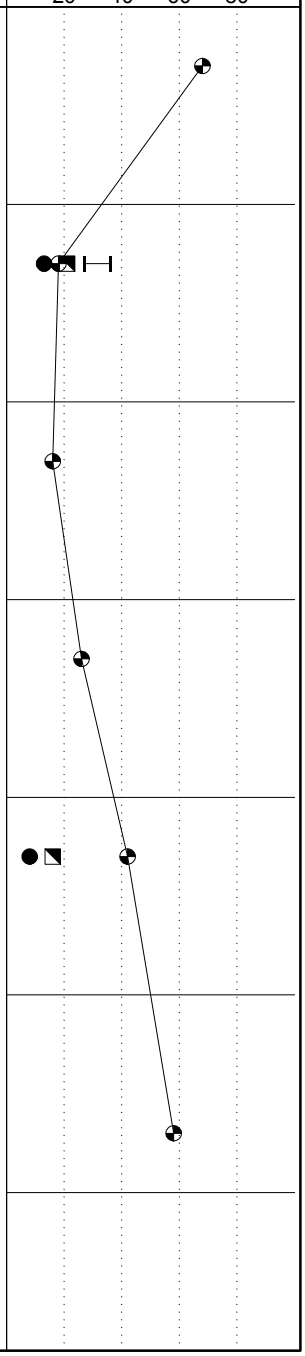
DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Clayey, Brown to Light Brown, Loose to Dense, Moist with some calcareous material.	8-8-26 (34)					
2.5	SS 2			6-6-3 (9)	91	21	13	9	SC
5.0	SS 3			2-4-4 (8)					
7.5	SS 4			3-6-7 (13)					
10.0	SS 5		SAND, Fine Grained, Non-Plastic, Silty, Brown to Reddish Brown, Medium Dense, Dry to Moist.	8-10-11 (21)	95	16	8	NP	SM
12.5	SS 6			9-14-15 (29)					
15.0			NOTE: SS - Split Spoon Sample Bottom of hole at 15.0 feet.						



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

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6802 Commerce, Unit "9A"
El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-17

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/4/16 **COMPLETED** 2/4/16 **GROUND ELEVATION** 4028 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

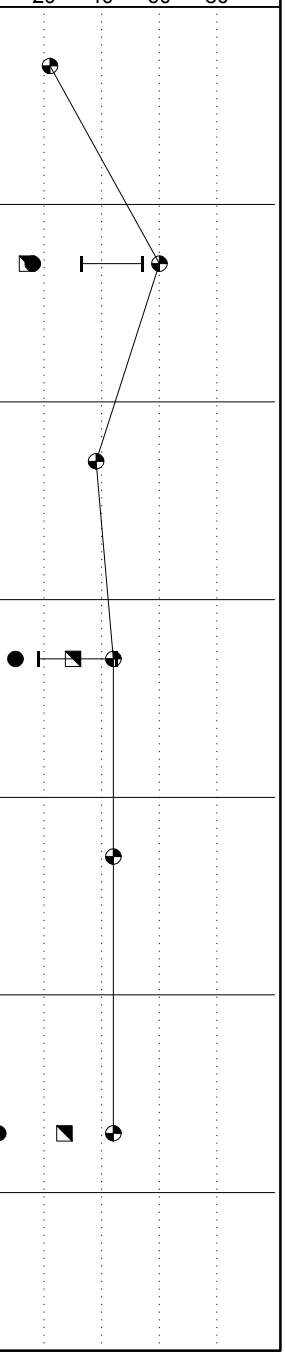
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Clayey, Light Brown, Medium Dense, Dry with some calcareous material.	8-5-6 (11)					
2.5	SS 2			11-18-12 (30)	66	14	16	21	SC
5.0	SS 3			4-10-9 (19)					
7.5	SS 4			5-10-12 (22)	98	30	10	27	SC
10.0	SS 5			7-11-11 (22)					
12.5	SS 6		SAND, Fine Grained, Non-Plastic, Silty, Brown, Medium Dense, Dry to Moist.	5-10-12 (22)	100	27	4	NP	SM
15.0			NOTE: SS - Split Spoon Sample Bottom of hole at 15.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



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BORING NUMBER B-18

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/4/16 **COMPLETED** 2/4/16 **GROUND ELEVATION** 4026 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

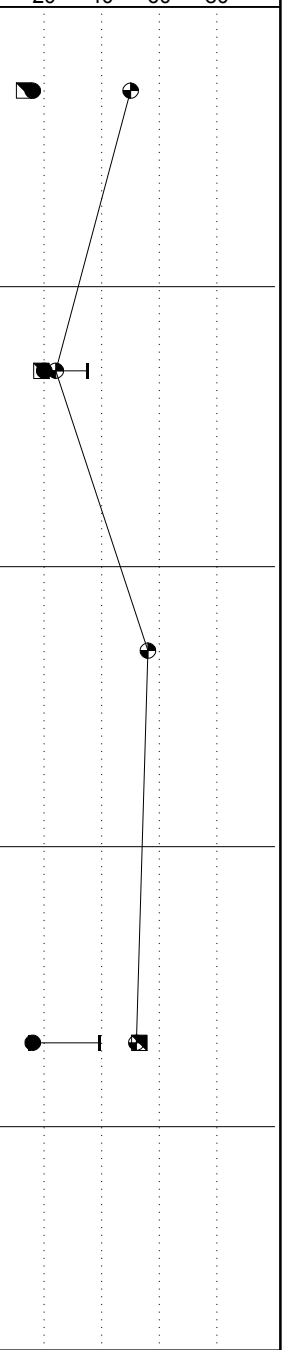
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Silty, Light Brown to Brown, Medium Dense, Moist with calcareous material.	8-10-15 (25)	64	13	16	NP	SM
2.5	SS 2		SAND, Fine Grained, Clayey, Light Brown, Medium Dense, Slightly Moist with calcareous material.	3-5-7 (12)	86	19	20	14	SC
5.0	SS 3		CLAY, Sandy, Brown, Plastic, Very Stiff, Slightly Moist.	4-12-16 (28)					
7.5	SS 4			5-11-15 (26)	99	53	16	24	CL
10.0			NOTE: SS - Split Spoon Sample Bottom of hole at 10.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

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El Paso, Texas 79915
Telephone: (915) 771-7766
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BORING NUMBER B-19

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/4/16 **COMPLETED** 2/4/16 **GROUND ELEVATION** 4021 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

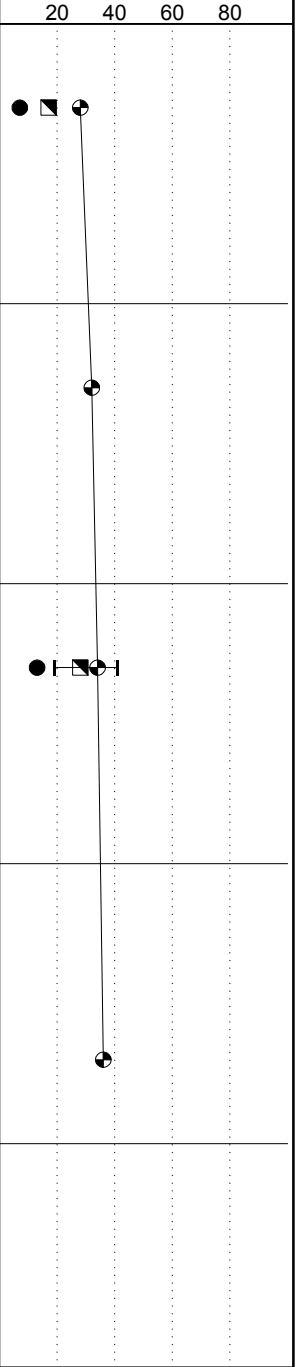
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Silty, Brown to Reddish Brown, Medium Dense, Moist.	5-6-8 (14)	90	17	7	NP	SM
2.5	SS 2		SAND, Fine Grained, Clayey, Light Brown, Medium Dense, Dry to Slightly Moist with calcareous material.	5-9-7 (16)					
5.0	SS 3			4-9-8 (17)	96	28	13	22	SC
7.5	SS 4			9-9-9 (18)					
10.0			NOTE: SS - Split Spoon Sample Bottom of hole at 10.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

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BORING NUMBER B-2

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 1/26/16 **COMPLETED** 1/26/16 **GROUND ELEVATION** 4027 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encountered

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Clayey, Brown to Light Brown, Medium Dense, Moist with some calcareous material.	4-4-8 (12)	95	30	12	10	SC
2.5	SS 2			13-7-7 (14)					
5.0	SS 3		CLAY, Sandy, Light Brown, Plastic, Very Stiff,Slightly Moist with some calcareous material.	7-10-11 (21)					
7.5	SS 4			4-10-13 (23)	99	50	17	31	CL
10.0			NOTE: SS - Split Spoon Sample Bottom of hole at 10.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80

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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-20

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/4/16 **COMPLETED** 2/4/16 **GROUND ELEVATION** 4025 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

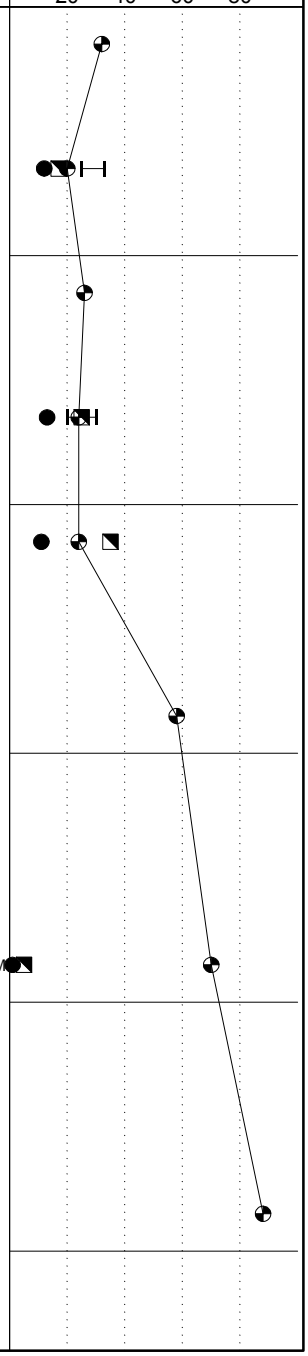
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0	SS 1		SAND, Fine Grained, Clayey, Light Brown to Brown, Loose to Medium Dense, Dry to Moist with some calcareous material.	6-6-10 (16)					
	SS 2			2-4-6 (10)	78	17	12	8	SC
5	SS 3			5-7-6 (13)					
	SS 4			4-5-7 (12)	64	25	13	10	SC
10	SS 5			5-6-6 (12)	98	35	11		
	SS 6		SAND, Fine Grained, Poorly Graded, Light Brown, Medium Dense to Dense, Dry with silt.	2-11-18 (29)					
15									
	SS 7			9-15-20 (35)	84	5	1	NP	SP-SM
20									
	SS 8			9-18-26 (44)					
25			NOTE: SS - Split Spoon Sample Bottom of hole at 25.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

CQC STANDARD LOG 16-003-LOGS.GPJ CQC2014.GDT

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6802 Commerce, Unit "9A"
El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-21

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/4/16 **COMPLETED** 2/4/16 **GROUND ELEVATION** 4030 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Clayey, Light Brown, Medium Dense, Dry to Slightly Moist with some calcareous material.	6-14-16 (30)					
2.5	SS 2			6-7-6 (13)	88	21	14	16	SC
5.0	SS 3			3-6-8 (14)					
7.5	SS 4		CLAY, Sandy, Brown, Plastic, Very Stiff, Dry with calcareous material.	9-15-20 (35)					
10.0	SS 5			10-27-37 (64)	100	68	11	28	CL
12.5	SS 6		SAND, Fine Grained, Poorly Graded, Light Brown, Medium Dense, Dry with silt.	5-11-17 (28)					
15.0			NOTE: SS - Split Spoon Sample Bottom of hole at 15.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80

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El Paso, Texas 79915
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BORING NUMBER B-22

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/4/16 **COMPLETED** 2/4/16 **GROUND ELEVATION** 4028 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

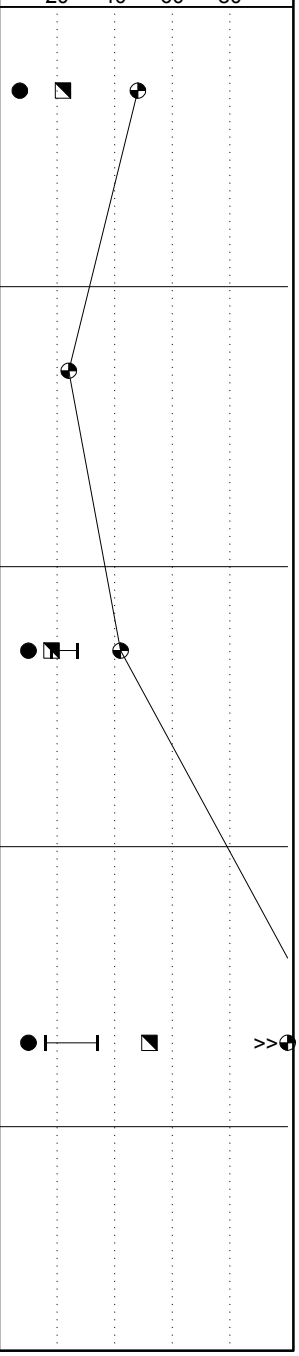
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Silty, Brown to Reddish Brown, Medium Dense, Dry to Moist.	2-4-20 (24)	99	22	7	NP	SM
2.5	SS 2		SAND, Fine Grained, Clayey, Light Brown, Medium Dense, Dry to Slightly Moist with calcareous material.	2-5-7 (12)					
5.0	SS 3			5-9-12 (21)	89	18	10	9	SC
7.5	SS 4		CLAY, Sandy, Clayey, Brown to Light Brown, Moderately Plastic, Very Hard, Dry with calcareous material. NOTE: SS - Split Spoon Sample	18-25-33 (58)	100	52	10	18	CL
10.0			Bottom of hole at 10.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-23

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/10/16 **COMPLETED** 2/10/16 **GROUND ELEVATION** 4027 ft **HOLE SIZE** 6 inches

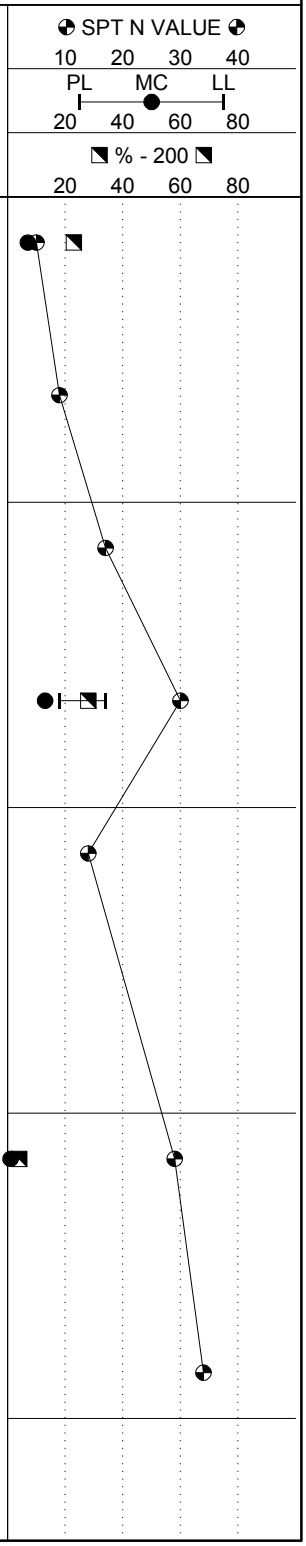
DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0	SS 1		SAND, Fine Grained, Silty, Brown to Reddish Brown, Loose, Moist.	3-2-3 (5)	100	23	7		
	SS 2			3-4-5 (9)					
5	SS 3		SAND, Fine Grained, Clayey, Brown to Light Brown, Medium Dense, Slightly Moist with calcareous material.	3-9-8 (17)					
	SS 4			5-15-15 (30)	98	28	13	16	SC
10	SS 5			6-7-7 (14)					
15	SS 6		SAND, Fine Grained, Poorly Graded, Light Brown, Medium Dense to Dense, Dry to Moist	6-13-16 (29)	95	4	1		SP
	SS 7			8-15-19 (34)					
20			NOTE: SS - Split Spoon Sample Bottom of hole at 20.0 feet.						



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CQC STANDARD LOG 16-003-LOGS.GPJ CQC2014.GDT

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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-24

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/10/16 **COMPLETED** 2/10/16 **GROUND ELEVATION** 4028 ft **HOLE SIZE** 6 inches

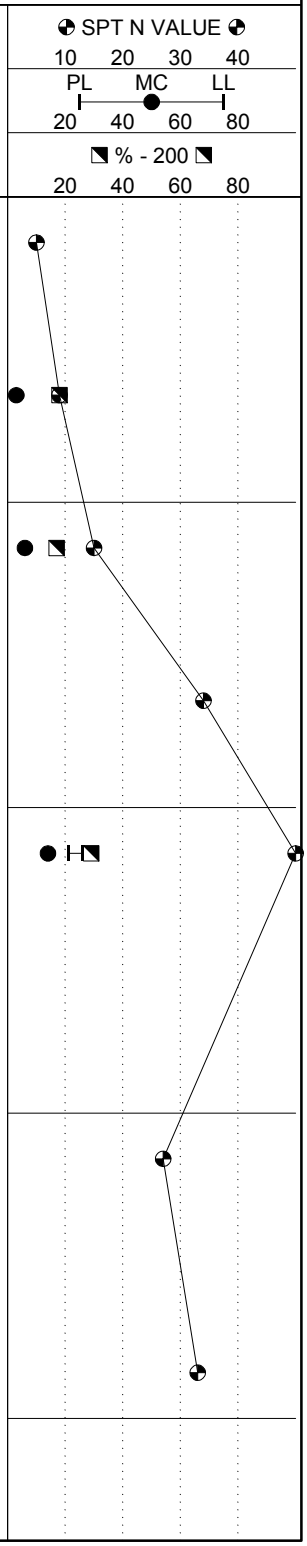
DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0	SS 1		SAND, Fine Grained, Silty, Brown to Reddish Brown, Loose to Medium Dense, Dry to Moist.	3-2-3 (5)					
	SS 2			4-4-5 (9)	100	18	3		
5	SS 3			2-7-8 (15)	82	17	6		
	SS 4		SAND, Fine Grained, Clayey, Light Brown to Brown, Dense, Dry to Slightly Moist with calcareous material.	4-16-18 (34)					
10	SS 5			16-28-22 (50)	91	29	14	5	SC
15	SS 6		SAND, Fine Grained, Poorly Graded, Reddish Brown, Medium Dense to Dense, Dry to Moist.	5-12-15 (27)					
	SS 7			5-18-15 (33)					
20			NOTE: SS - Split Spoon Sample Bottom of hole at 20.0 feet.						



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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-25

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/10/16 **COMPLETED** 2/10/16 **GROUND ELEVATION** 4026 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

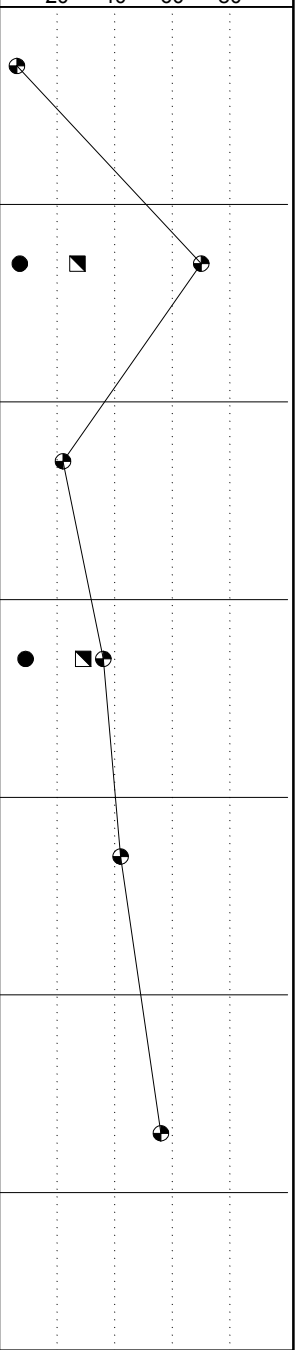
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0									
	SS 1		SAND, Fine Grained, Silty, Brown to Reddish Brown, Loose, Dry to Moist.	2-2-1 (3)					
2.5									
	SS 2		SAND, Fine Grained, Clayey, Light Brown to Brown, Medium Dense, Slightly Moist with calcareous material.	25-25-10 (35)	97	27	7	12	SC
5.0									
	SS 3			2-6-5 (11)					
7.5									
	SS 4			9-10-8 (18)	99	29	9	14	SC
10.0									
	SS 5			7-15-6 (21)					
12.5									
	SS 6		SAND, Fine Grained, Poorly Graded, Light Brown to Multicolored, Medium Dense, Dry with silt.	7-12-16 (28)					
15.0			NOTE: SS - Split Spoon Sample						
			Bottom of hole at 15.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



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El Paso, Texas 79915
Telephone: (915) 771-7766
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BORING NUMBER B-26

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/10/16 **COMPLETED** 2/10/16 **GROUND ELEVATION** 4025 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

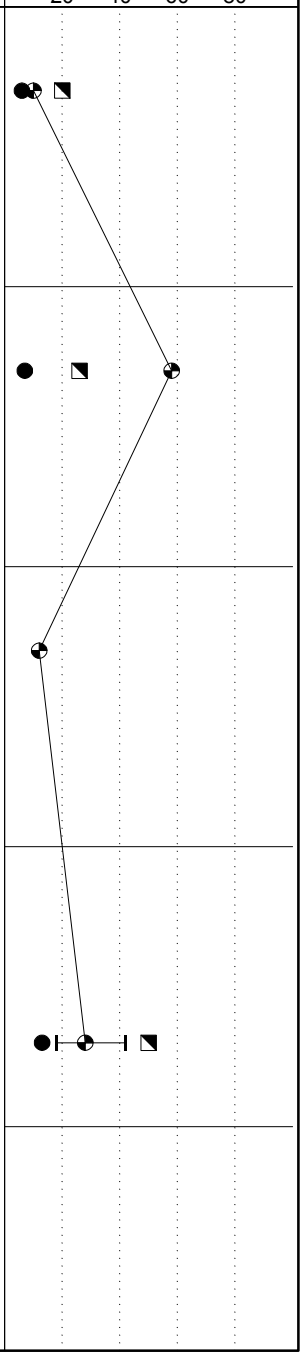
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Silty, Brown to Reddish Brown, Loose, Dry to Moist.	2-2-3 (5)	99	20	6		
2.5	SS 2		SAND, Fine Grained, Clayey, Light Brown, Loose to Medium Dense, Dry to Moist with calcareous material.	7-15-14 (29)	91	26	7	12	SC
5.0	SS 3			2-2-4 (6)					
7.5	SS 4		CLAY, Sandy, Brown, Stiff, Dry to Slighty Moist.	4-7-7 (14)	93	50	13	24	CL
10.0			NOTE: SS - Split Spoon Sample Bottom of hole at 10.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



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CQC STANDARD LOG 16-003-LOGS.GPJ CQC2014.GDT

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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-27

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/10/16 **COMPLETED** 2/10/16 **GROUND ELEVATION** 4026 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

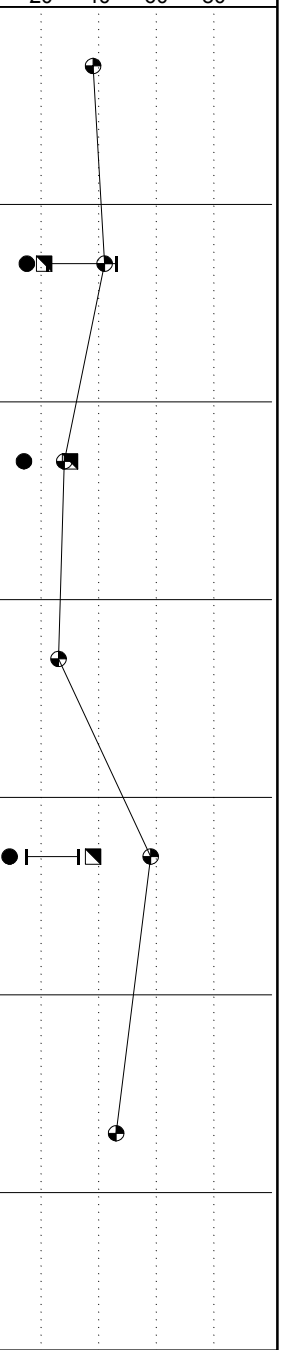
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Clayey, Light Brown to Brown, Medium Dense, Dry to Slightly Moist with some calcareous material.	9-10-9 (19)					
2.5	SS 2			8-13-8 (21)	83	21	15	14	SC
5.0	SS 3			3-6-8 (14)	92	30	14		
7.5	SS 4			2-6-7 (13)					
10.0	SS 5			8-12-17 (29)	99	38	9	18	SC
12.5	SS 6		SAND, Fine Grained, Poorly Graded, Light Brown, Medium Dense, Dry to Moist with silt.	6-8-15 (23)					
15.0			NOTE: SS - Split Spoon Sample Bottom of hole at 15.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-28

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/10/16 **COMPLETED** 2/10/16 **GROUND ELEVATION** 4029 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

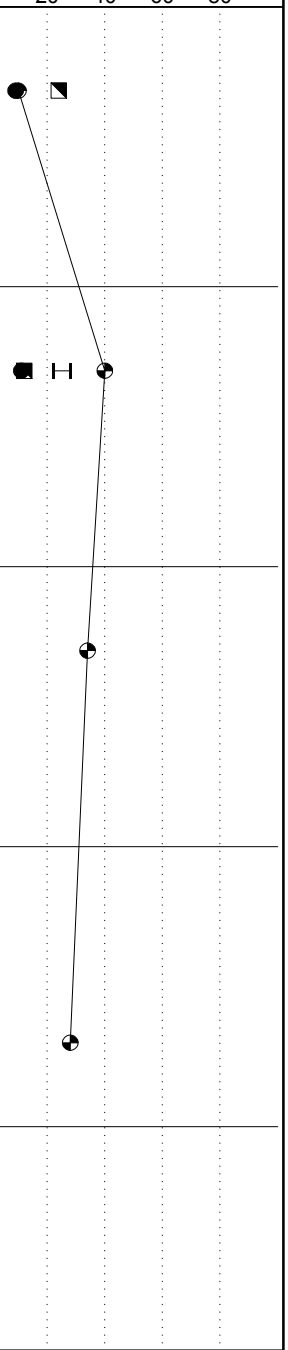
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Silty, Brown to Reddish Brown, Loose, Moist.	2-2-3 (5)	99	24	9		
2.5	SS 2		SAND, Fine Grained, Silty, Clayey, Light Brown, Medium Dense, Dry to Moist with calcareous material.	8-10-10 (20)	65	12	11	6	SC-SM
5.0	SS 3			3-9-8 (17)					
7.5	SS 4			4-8-6 (14)					
10.0			NOTE: SS - Split Spoon Sample Bottom of hole at 10.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



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BORING NUMBER B-29

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 3/2/16 **COMPLETED** 3/2/16 **GROUND ELEVATION** 4021 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

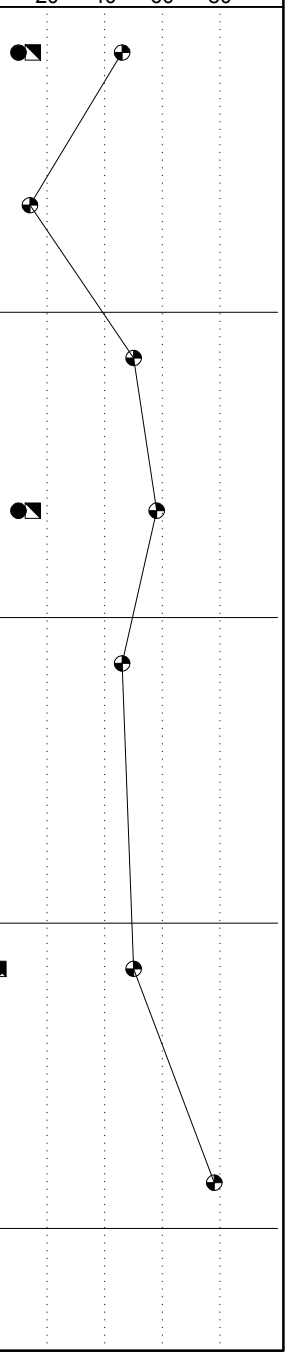
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0	SS 1		SAND, Fine to Coarse Grained, Non-Plastic, Silty, Brown to Dark Brown, Medium Dense, Dry to Moist with gravel.	10-11-12 (23)	70	15	10	NP	SM
	SS 2		- Loose from 2-1/2 to 5 feet	6-4-3 (7)					
5	SS 3		- Whitish brown with calcareous material below 5 feet	5-10-15 (25)					
	SS 4			6-12-17 (29)	85	15	10	NP	SM
10	SS 5			10-7-16 (23)					
15	SS 6		SAND, Fine to Coarse Grained, Non-Plastic, Poorly Graded, Light Brown to Multicolored, Medium Dense, Dry to Moist	4-10-15 (25)	96	3	2	NP	SP
	SS 7		- Dense below 18-1/2 feet	8-18-21 (39)					
20			NOTE: SS - Split Spoon Sample Bottom of hole at 20.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



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El Paso, Texas 79915
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BORING NUMBER B-3

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 1/26/16 **COMPLETED** 1/26/16 **GROUND ELEVATION** 4026 ft **HOLE SIZE** 6 inches

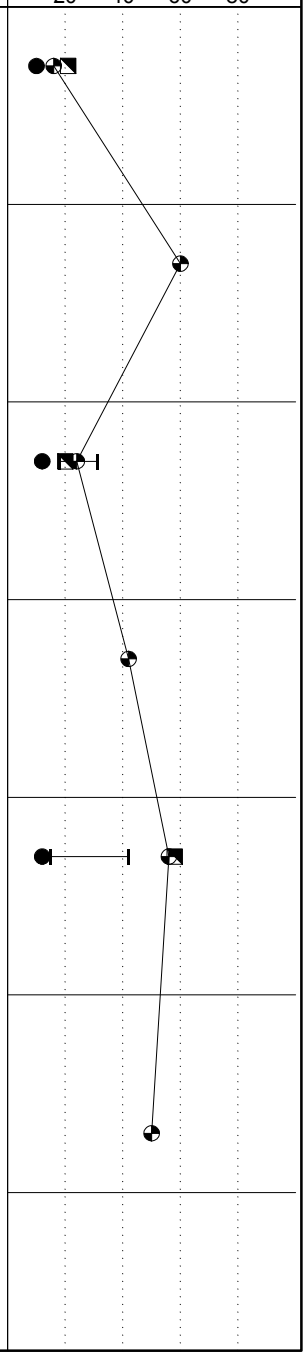
DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Clayey, Brown, Loose to Medium Dense, Moist with some calcareous material.	3-4-4 (8)	99	21	10	NP	SM
2.5	SS 2			6-13-17 (30)					
5.0	SS 3		SAND, Fine Grained, Clayey, Light Brown, Loose to Medium Dense, Moist with some calcareous material.	3-5-7 (12)	89	20	12	13	SC
7.5	SS 4			4-9-12 (21)					
10.0	SS 5		CLAY, Sandy, Brown, Plastic, Very Stiff, Moist.	6-14-14 (28)	100	58	12	27	CL
12.5									
15.0	SS 6		SAND, Fine Grained, Poorly Graded, Light Brown, Medium Dense, Dry with silt. NOTE: SS - Split Spoon Sample	8-11-14 (25)					
			Bottom of hole at 15.0 feet.						



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BORING NUMBER B-30

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 3/2/16 **COMPLETED** 3/2/16 **GROUND ELEVATION** 4022 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

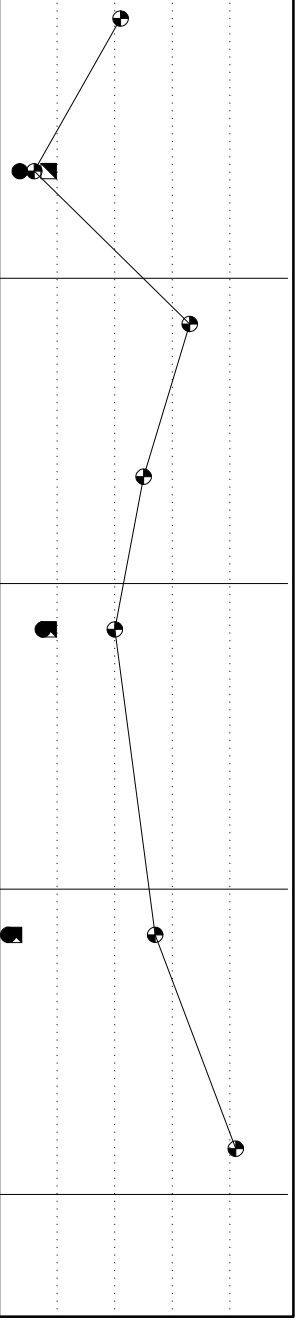
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0	SS 1		SAND, Fine to Coarse Grained, Non-Plastic, Silty, Light Brown to Brown, Medium Dense, Dry to Moist.	7-9-12 (21)					
	SS 2		- Loose from 2-1/2 to 5 feet	11-3-3 (6)	90	17	7	NP	SM
5	SS 3		- Dense with calcareous material below 5 feet	7-17-16 (33)					
	SS 4		- Medium dense with some gravel below 7-1/2 feet	5-13-12 (25)					
10	SS 5			4-9-11 (20)	92	17	15	NP	SM
15	SS 6		SAND, Fine to Coarse Grained, Non-Plastic, Poorly Graded, Light Brown, Medium Dense, Dry to Moist with some calcareous material.	7-10-17 (27)	99	5	3	NP	SP
	SS 7		- Dense below 18-1/2 feet	12-18-23 (41)					
20			NOTE: SS - Split Spoon Sample Bottom of hole at 20.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



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6802 Commerce, Unit "9A"
El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-31

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 3/2/16 **COMPLETED** 3/2/16 **GROUND ELEVATION** 4019 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0	SS 1		SAND, Fine to Coarse Grained, Non-Plastic, Silty, Brown to Reddish Brown, Medium Dense, Dry to Moist with some gravel.	8-6-7 (13)	87	16	5	NP	SM
	SS 2		- Loose below 2-1/2 feet	14-3-3 (6)					
5	SS 3			3-3-2 (5)					
	SS 4		SAND, Fine to Coarse Grained, Clayey, Light Brown to Whitish Brown, Dense, Dry to Moist with calcareous material.	11-16-14 (30)	92	26	9	9	SC
10	SS 5		- Very dense below 10 feet	13-50					
15	SS 6		SAND, Fine to Coarse Grained, Non-Plastic, Poorly Graded, Light Brown, Dense, Dry to Moist.	15-16-26 (42)					
	SS 7			9-15-21 (36)	99	4	1	NP	SP
20			NOTE: SS - Split Spoon Sample Bottom of hole at 20.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80

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6802 Commerce, Unit "9A"
El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-32

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/22/16 **COMPLETED** 2/22/16 **GROUND ELEVATION** 4023 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

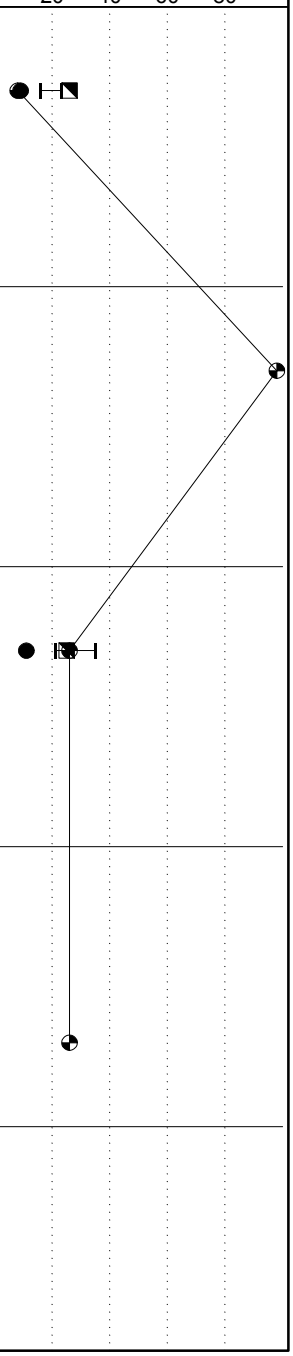
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine to Coarse Grained, Clayey, Brown to Reddish Brown, Loose, Dry to Moist.	2-1-3 (4)	99	26	9	7	SC
2.5	SS 2		- Light brown to whitish brown, dense with calcareous material below 2-1/2 feet	15-33-16 (49)					
5.0	SS 3		- Medium dense below 5 feet	5-6-7 (13)	96	25	11	14	SC
7.5	SS 4			4-6-7 (13)					
10.0			NOTE: SS - Split Spoon Sample Bottom of hole at 10.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

CQC STANDARD LOG 16-003-LOGS.GPJ CQC2014.GDT

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6802 Commerce, Unit "9A"
El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-33

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/22/16 **COMPLETED** 2/22/16 **GROUND ELEVATION** 4024 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

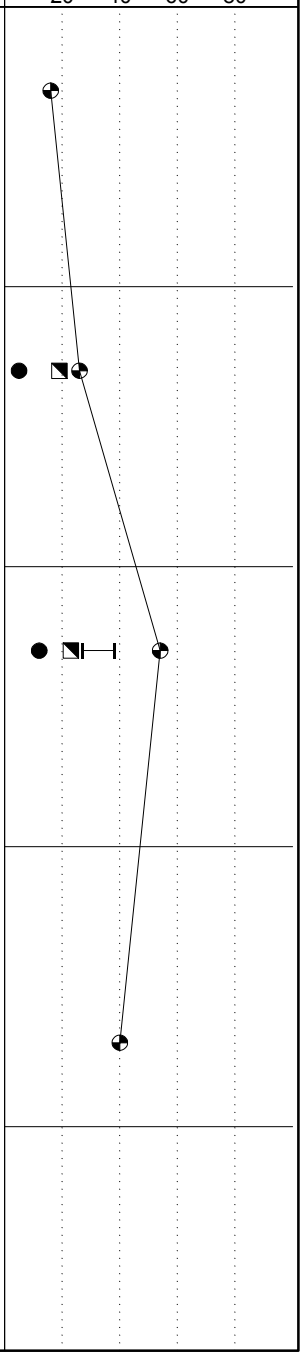
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine to Coarse Grained, Non-Plastic, Silty, Reddish Brown, Loose, Dry to Moist with some calcareous material.	2-3-5 (8)					
2.5	SS 2		- Medium dense below 2-1/2 feet	2-4-9 (13)	98	19	5	NP	SM
5.0	SS 3		SAND, Fine to Coarse Grained, Clayey, Light Brown to Whitish Brown, Medium Dense, Dry to Moist with calcareous material.	6-11-16 (27)	86	23	12	11	SC
7.5	SS 4			6-9-11 (20)					
10.0			NOTE: SS - Split Spoon Sample Bottom of hole at 10.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

CQC STANDARD LOG 16-003-LOGS.GPJ CQC2014.GDT

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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-34

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 2/22/16 **COMPLETED** 2/22/16 **GROUND ELEVATION** 4017 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine to Coarse Grained, Non-Plastic, Silty, Brown to Reddish Brown, Medium Dense, Dry to Moist.	3-4-6 (10)	100	22	5	NP	SM
2.5	SS 2			3-4-6 (10)					
5.0	SS 3			4-7-6 (13)					
7.5	SS 4		- Light Brown with some calcareous material below 8-1/2 feet	4-6-7 (13)	97	15	5	NP	SM
10.0			NOTE: SS - Split Spoon Sample Bottom of hole at 10.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80

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El Paso, Texas 79915
Telephone: (915) 771-7766
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BORING NUMBER B-35

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 4/25/16 **COMPLETED** 4/25/16 **GROUND ELEVATION** _____ **HOLE SIZE** 6 inches

DRILLING CONTRACTOR T.D. **GROUND WATER LEVELS:**

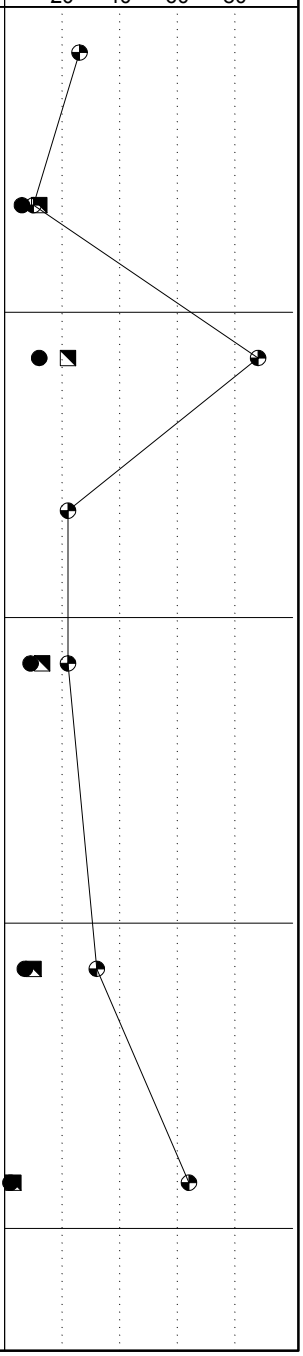
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0	SS 1		SAND, Fine to Coarse Grained, Non-Plastic, Silty, Light Brown to Brown, Medium Dense, Slightly Moist with caliche lumps.	6-6-7 (13)					
	SS 2		- Loose from 2-1/2 to 5 feet	1-2-3 (5)	94	12	6	NP	SM
5	SS 3		- Light brown to whitish brown, dense with calcareous material below 5 feet	17-30-14 (44)	91	22	12	NP	SM
	SS 4		- Medium dense below 7-1/2 feet	6-5-6 (11)					
10	SS 5			2-4-7 (11)	94	13	9		SM
15	SS 6		SAND, Fine to Coarse Grained, Non-Plastic, Poorly Graded, Light Brown to Multicolored, Medium Dense, Slightly Moist to Moist with silt.	5-5-11 (16)	100	10	7	NP	SP-SM
	SS 7		- Dense with traces of silt below 18-1/2 feet	9-13-19 (32)	100	3	2		
20			NOTE: SS - Split Spoon Sample Bottom of hole at 20.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

CQC STANDARD LOG 16-003-LOGS.GPJ CQC2014.GDT

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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-4

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 1/26/16 **COMPLETED** 1/26/16 **GROUND ELEVATION** 4025 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0	SS 1		SAND, Fine Grained, Silty, Light Brown to Brown, Loose to Dense, Moist with some calcareous material.	2-2-2 (4)	97	29	7	NP	SM
	SS 2			4-7-11 (18)					
5	SS 3			2-10-13 (23)	93	19	12	NP	SM
	SS 4			10-17-17 (34)					
10	SS 5			5-9-9 (18)					
15	SS 6			12-14-22 (36)	100	12	1	NP	SM
20	SS 7			7-18-19 (37)					
			NOTE: SS - Split Spoon Sample Bottom of hole at 20.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80

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6802 Commerce, Unit "9A"
El Paso, Texas 79915
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BORING NUMBER B-5

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 1/26/16 **COMPLETED** 1/26/16 **GROUND ELEVATION** 4031 ft **HOLE SIZE** 6 inches

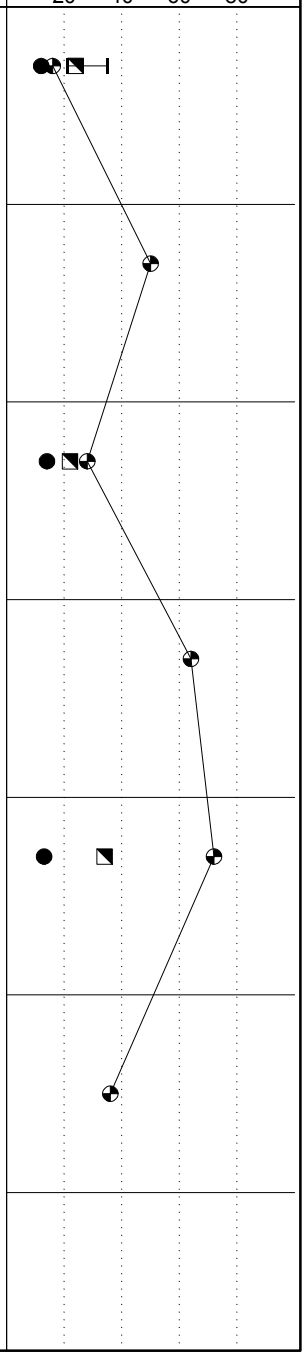
DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0.0	SS 1		SAND, Fine Grained, Clayey, Brown to Light Brown, Loose to Medium Dense, Moist with some calcareous material.	4-4-4 (8)	90	24	12	14	SC
2.5	SS 2			4-10-15 (25)					
5.0	SS 3		SAND, Fine Grained, Silty, Brown, Medium Dense to Dense, Dry to Moist.	4-7-7 (14)	93	22	14	NP	SM
7.5	SS 4			11-16-16 (32)					
10.0	SS 5			9-17-19 (36)	92	34	13	NP	SM
12.5	SS 6			5-8-10 (18)					
15.0			NOTE: SS - Split Spoon Sample Bottom of hole at 15.0 feet.						



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

CQC STANDARD LOG 16-003-LOGS.GPJ CQC2014.GDT

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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-6

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 1/26/16 **COMPLETED** 1/26/16 **GROUND ELEVATION** 4025 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0	SS 1		SAND, Fine Grained, Silty, Brown, Loose to Medium Dense, Moist with some calcareous material.	3-3-3 (6)	98	30	11	9	SM
	SS 2		- Non-plastic below 2-1/2 feet	10-10-7 (17)	69	16	9	NP	SM
5	SS 3			4-5-6 (11)					
	SS 4		CLAY, Sandy, Brown, Very Stiff, Plastic, Dry with calcareous material.	12-16-25 (41)	98	59	17	30	CH
10	SS 5		SAND, Fine Grained, Clayey, Light Brown, Very Dense, Dry with calcareous nodules.	12-32-50 (82)					
15	SS 6		SAND, Fine Grained, Poorly Graded, Brown to Multicolored, Dense, Dry with silt.	7-12-19 (31)	95	5	1	NP	SP
	SS 7			7-14-17 (31)					
20			NOTE: SS - Split Spoon Sample Bottom of hole at 20.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80

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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-7

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 1/26/16 **COMPLETED** 1/26/16 **GROUND ELEVATION** 4025 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

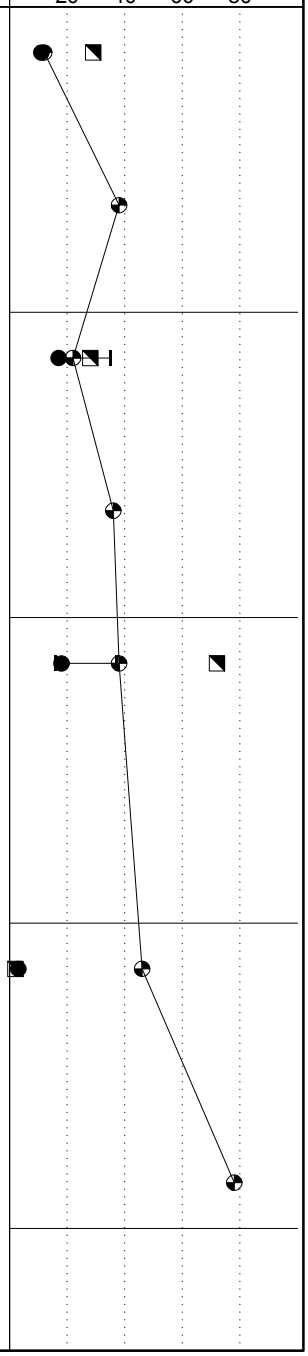
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0	SS 1		SAND, Fine Grained, Non-Plastic, Silty, Brown to Reddish Brown, Loose, Moist.	4-4-2 (6)	98	29	11	NP	SM
	SS 2		SAND, Fine Grained, Clayey, Brown to Light Brown, Medium Dense, Moist with calcareous material.	5-9-10 (19)					
5	SS 3			3-4-7 (11)	96	28	17	18	SC
	SS 4		CLAY, Sandy, Brown to Reddish Brown, Plastic, Very Stiff, Slightly Moist.	5-9-9 (18)					
10	SS 5			5-8-11 (19)	100	72	18	21	CL
15	SS 6		SAND, Fine Grained, Non-Plastic, Poorly Graded, Light Brown, Medium Dense, Dry to Moist.	4-10-13 (23)	99	2	3	NP	SP
	SS 7			9-18-21 (39)					
20			NOTE: SS - Split Spoon Sample Bottom of hole at 20.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

CQC STANDARD LOG 16-003-LOGS.GPJ CQC2014.GDT

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El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

BORING NUMBER B-8

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 1/26/16 **COMPLETED** 1/26/16 **GROUND ELEVATION** 4025 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

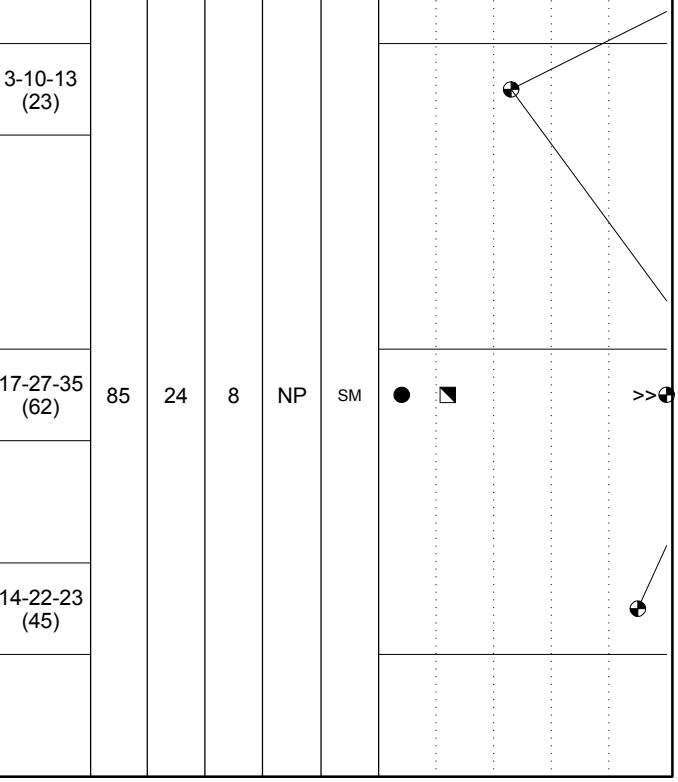
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0	SS 1		SAND, Fine Grained, Silty, Light Brown to Reddish Brown, Medium Dense to Very Dense, Moist.	4-8-10 (18)	93	18	8	NP	SM
	SS 2			3-6-16 (22)					
5	SS 3			3-6-7 (13)					
	SS 4			13-39-37 (76)	94	19	7	NP	SM
10	SS 5			3-10-13 (23)					
15	SS 6			17-27-35 (62)	85	24	8	NP	SM
	SS 7			14-22-23 (45)					
20			NOTE: SS - Split Spoon Sample Bottom of hole at 20.0 feet.						

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

CQC STANDARD LOG 16-003-LOGS.GPJ CQC2014.GDT

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El Paso, Texas 79915
Telephone: (915) 771-7766
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BORING NUMBER B-9

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

DATE STARTED 1/26/16 **COMPLETED** 1/26/16 **GROUND ELEVATION** 4025 ft **HOLE SIZE** 6 inches

DRILLING CONTRACTOR S.S. **GROUND WATER LEVELS:**

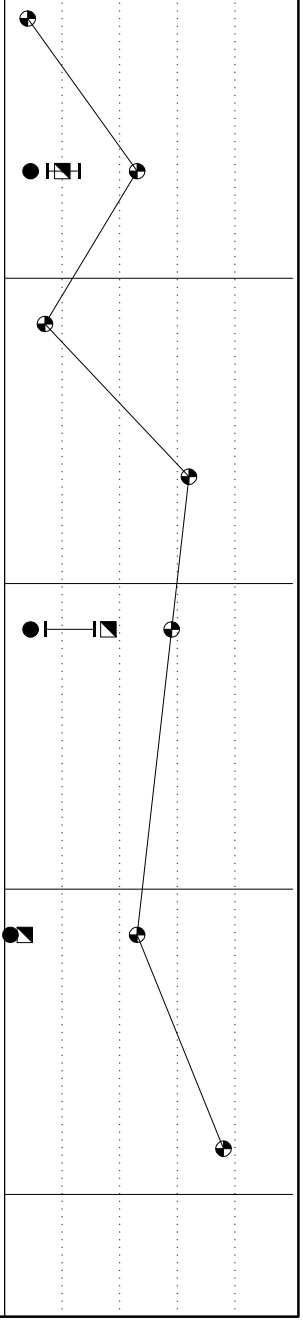
DRILLING METHOD CME-75 w/3-1/4" ID HSA **AT TIME OF DRILLING** None Encoun

LOGGED BY DN **CHECKED BY** BL **AT END OF DRILLING** ---

NOTES Boring Location: See Attached Boring Location Plan, Sheet A1 **AFTER DRILLING** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% -4	% -200	% Moisture Content	PI (LL-PL)	USCS
0	SS 1		SAND, Fine Grained, Clayey, Light Brown to Reddish Brown, Loose to Dense, Moist.	2-2-2 (4)					
	SS 2			3-12-11 (23)	74	20	9	11	SC
5	SS 3			3-3-4 (7)					
	SS 4			8-15-17 (32)					
10	SS 5			9-14-15 (29)	92	36	9	17	SC
15	SS 6		SAND, Fine Grained, Non-Plastic, Poorly Graded, Light Browb to Multicolored, Medium Dense to Dense, Dry with silt.	5-10-13 (23)	99	7	2	NP	SP-SM
20	SS 7		NOTE: SS - Split Spoon Sample Bottom of hole at 20.0 feet.	9-15-23 (38)					

SPT N VALUE
10 20 30 40
PL MC LL
20 40 60 80
% - 200
20 40 60 80



THE BORING LOGS PRESENTED SHOULD NOT BE SEPARATED FROM THE REPORT

CQC STANDARD LOG 16-003-LOGS.GPJ CQC2014.GDT

SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-1

BORING NO.: B-1 **SAMPLE DEPTH:** 0' - 1½'

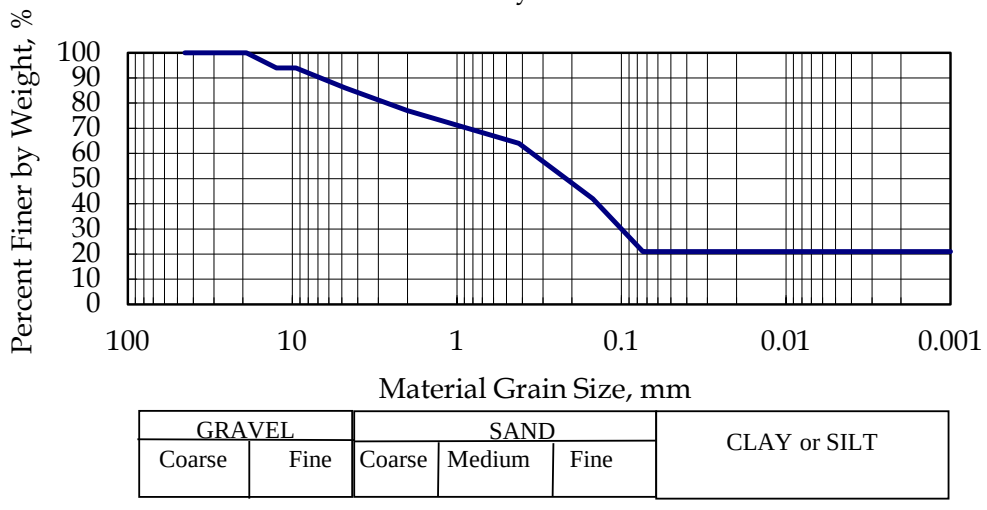
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Light Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	6	94
3/8 inch	6	94
No. 4	14	86
No. 10	23	77
No. 40	36	64
No. 100	58	42
No. 200	79	21
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-4

BORING NO.: B-1 **SAMPLE DEPTH:** 7½' - 9'

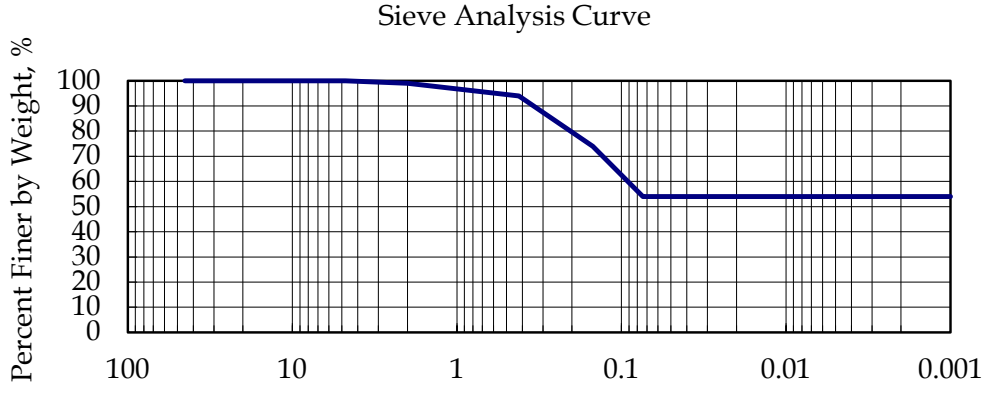
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / CLAY, sandy, light brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	0	100
No. 10	1	99
No. 40	6	94
No. 100	26	74
No. 200	46	54
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-1

BORING NO.: B-2 **SAMPLE DEPTH:** 0' - 1½'

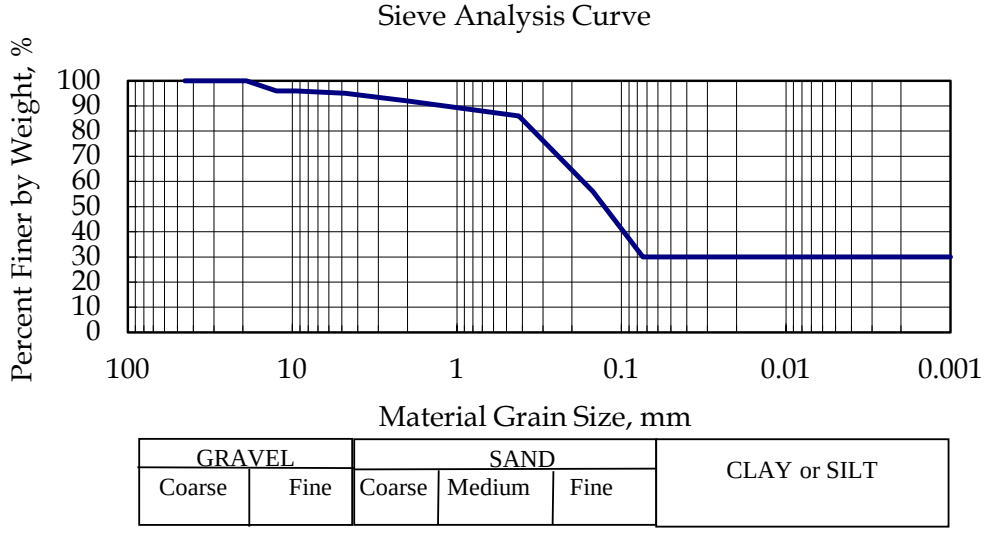
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Brown to light brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	4	96
3/8 inch	4	96
No. 4	5	95
No. 10	8	92
No. 40	14	86
No. 100	44	56
No. 200	70	30
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-1

BORING NO.: B-3 **SAMPLE DEPTH:** 0' - 1½'

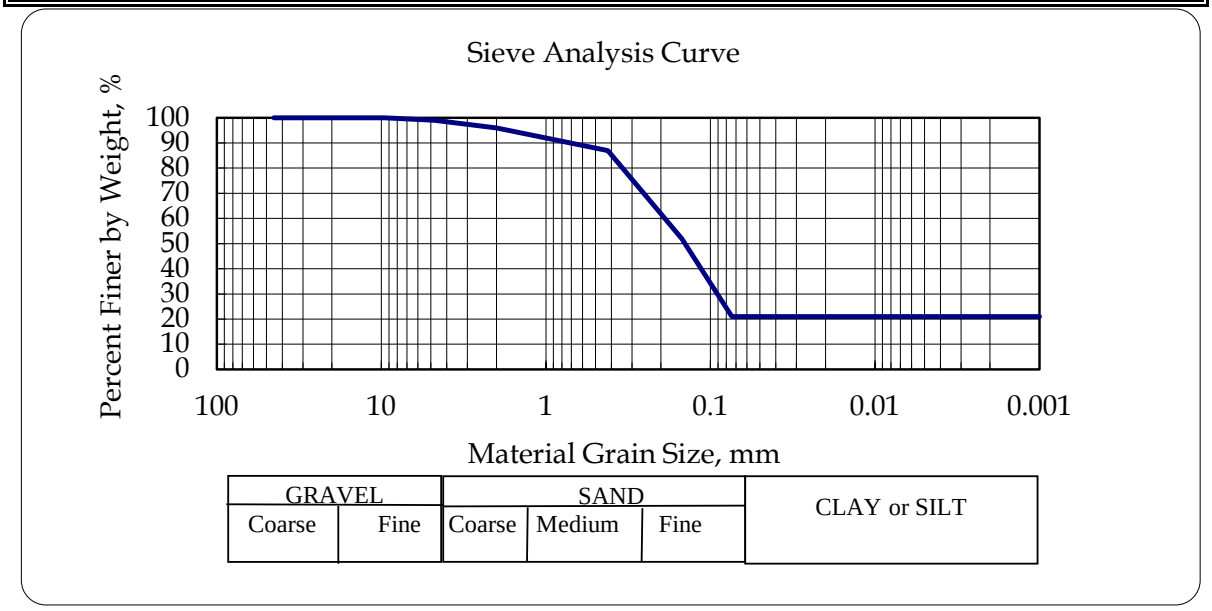
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	1	99
No. 10	4	96
No. 40	13	87
No. 100	48	52
No. 200	79	21
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-3

BORING NO.: B-3 **SAMPLE DEPTH:** 5' - 6½'

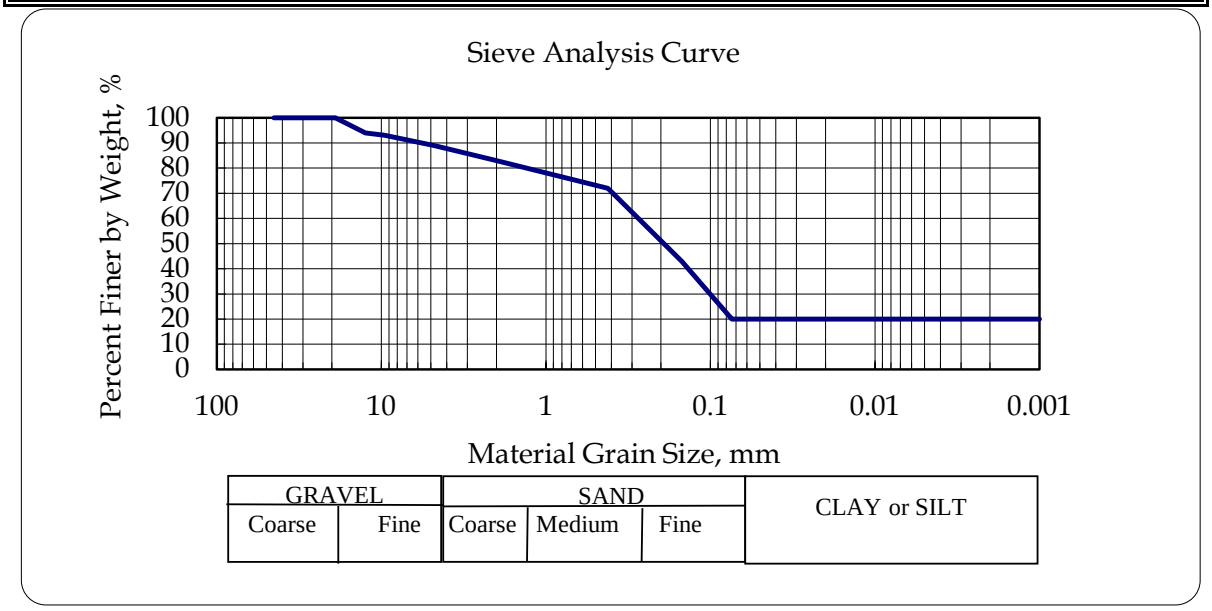
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	6	94
3/8 inch	7	93
No. 4	11	89
No. 10	17	83
No. 40	28	72
No. 100	57	43
No. 200	80	20
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-1

BORING NO.: B-4 **SAMPLE DEPTH:** 0' - 1½'

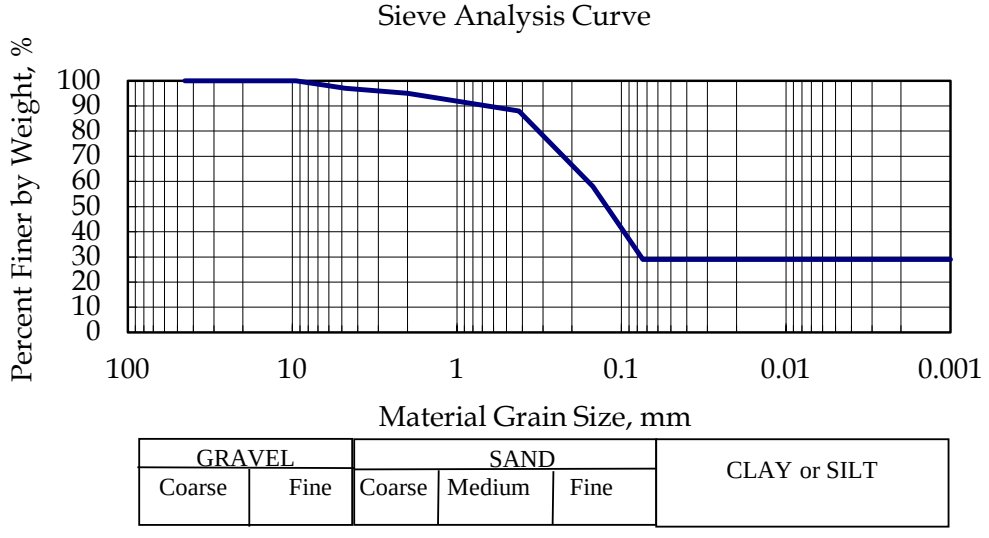
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Light Brown to Brown with calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	3	97
No. 10	5	95
No. 40	12	88
No. 100	42	58
No. 200	71	29
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-3

BORING NO.: B-4 **SAMPLE DEPTH:** 5' - 6½'

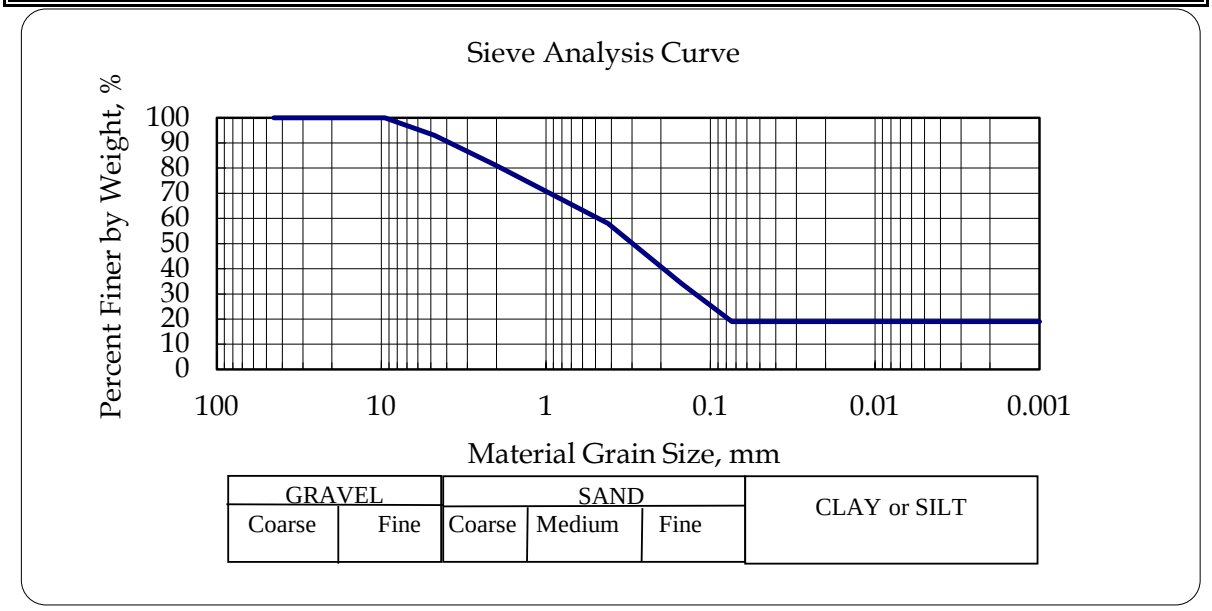
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Light Brown to Brown with calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	7	93
No. 10	19	81
No. 40	42	58
No. 100	66	34
No. 200	81	19
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-1

BORING NO.: B-5 **SAMPLE DEPTH:** 0' - 1½'

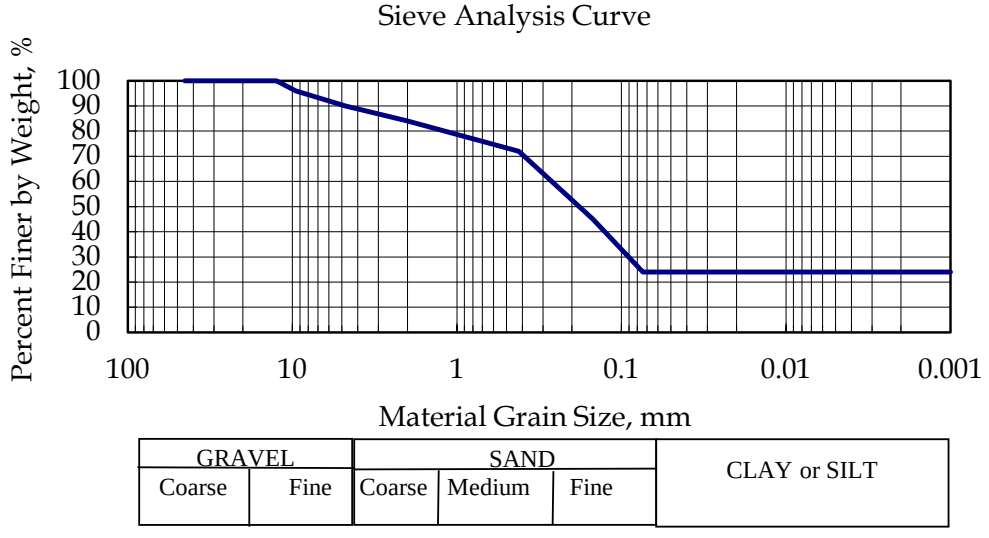
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Brown to Light Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	4	96
No. 4	10	90
No. 10	16	84
No. 40	28	72
No. 100	55	45
No. 200	76	24
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-3

BORING NO.: B-5 **SAMPLE DEPTH:** 5' - 6½'

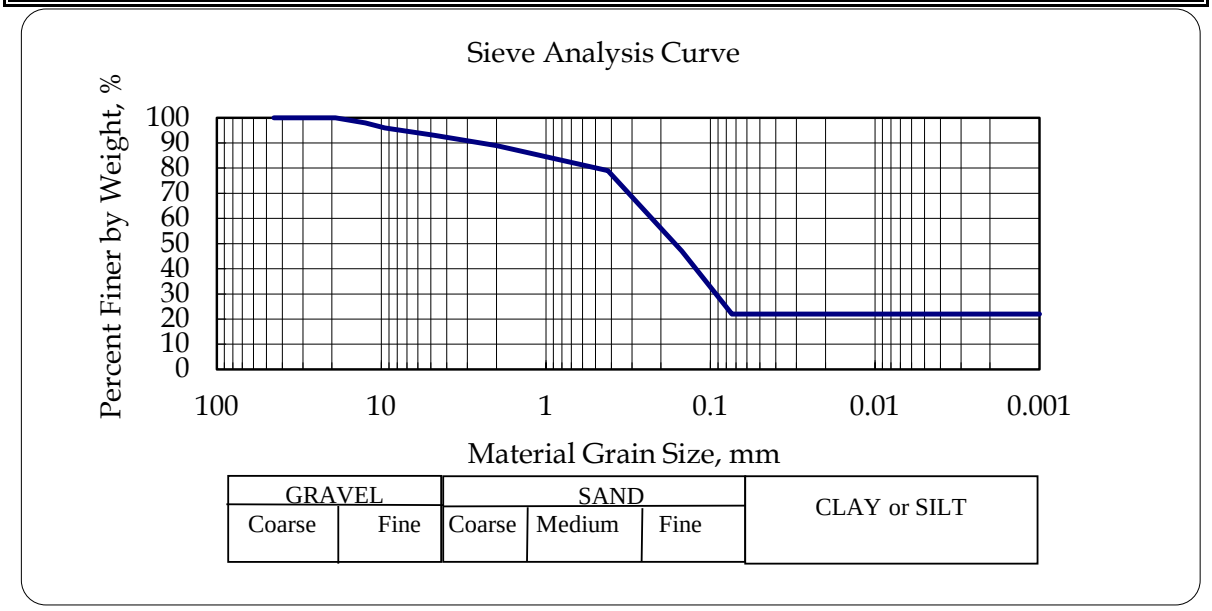
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	2	98
3/8 inch	4	96
No. 4	7	93
No. 10	11	89
No. 40	21	79
No. 100	53	47
No. 200	78	22
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-1

BORING NO.: B-6 **SAMPLE DEPTH:** 0' - 1½'

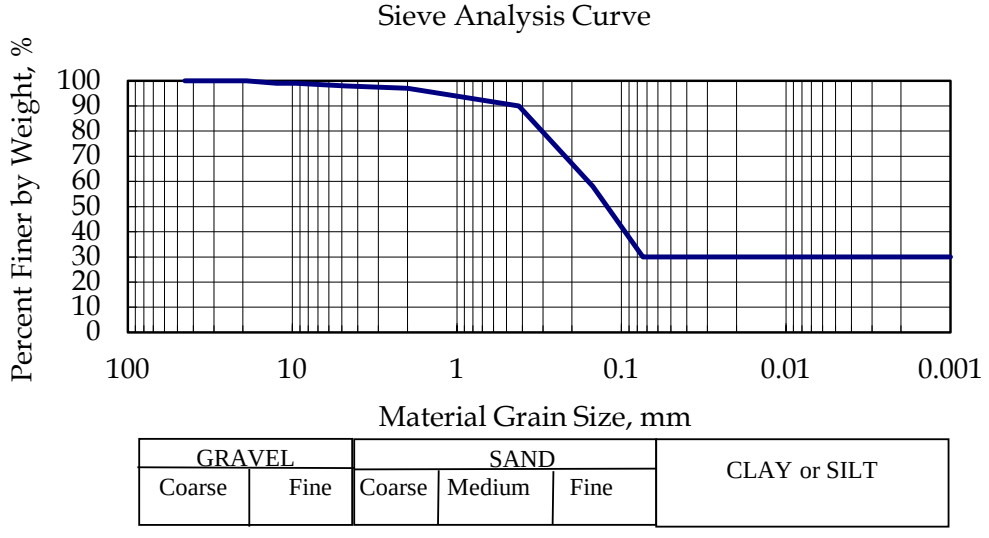
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	1	99
3/8 inch	1	99
No. 4	2	98
No. 10	3	97
No. 40	10	90
No. 100	42	58
No. 200	70	30
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-6

BORING NO.: B-6 **SAMPLE DEPTH:** 13½' - 15'

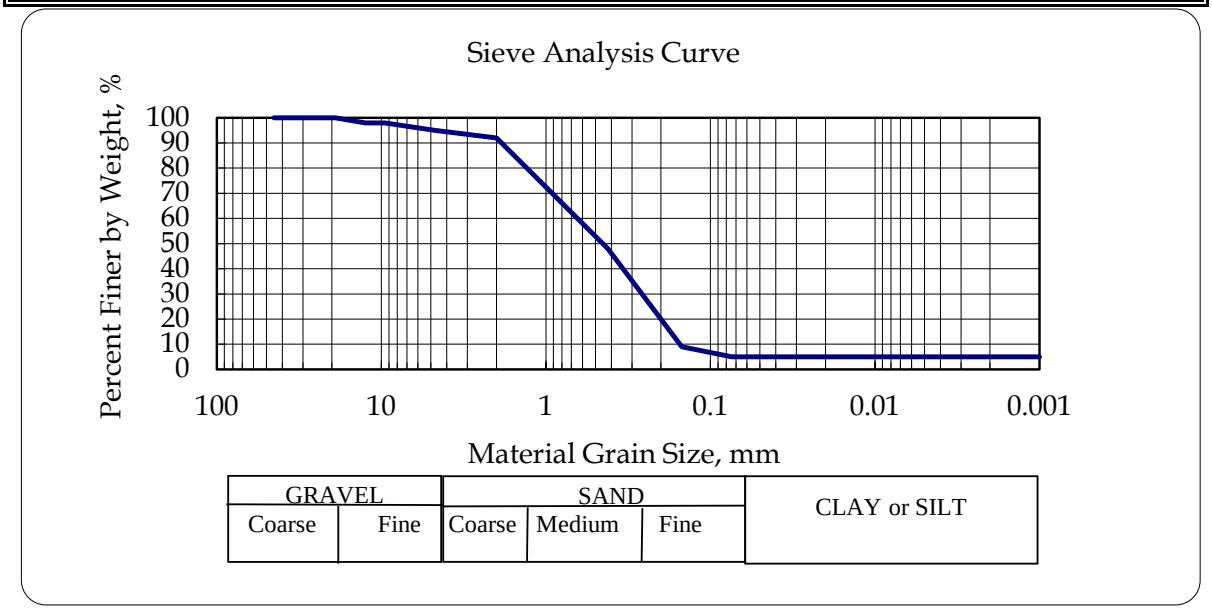
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Poorly Graded, Brown to Multicolored with silt

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	2	98
3/8 inch	2	98
No. 4	5	95
No. 10	8	92
No. 40	52	48
No. 100	91	9
No. 200	95	5
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-1

BORING NO.: B-7 **SAMPLE DEPTH:** 0' - 1½'

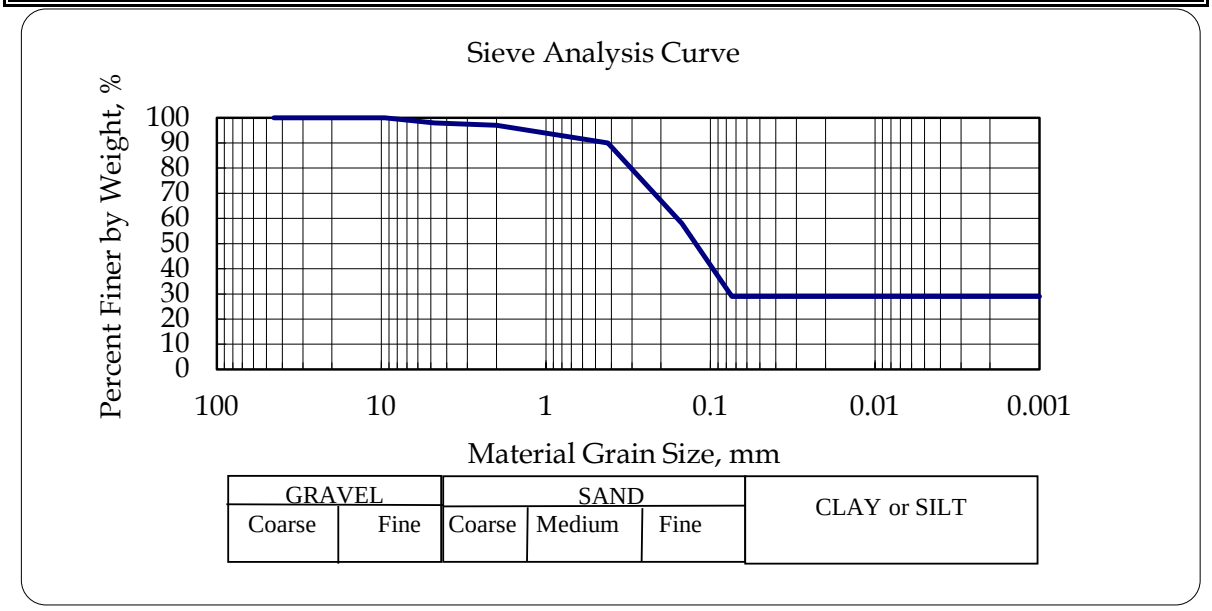
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Non-Plastic, Silty, Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	2	98
No. 10	3	97
No. 40	10	90
No. 100	42	58
No. 200	71	29
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-3

BORING NO.: B-7 **SAMPLE DEPTH:** 5' - 6½'

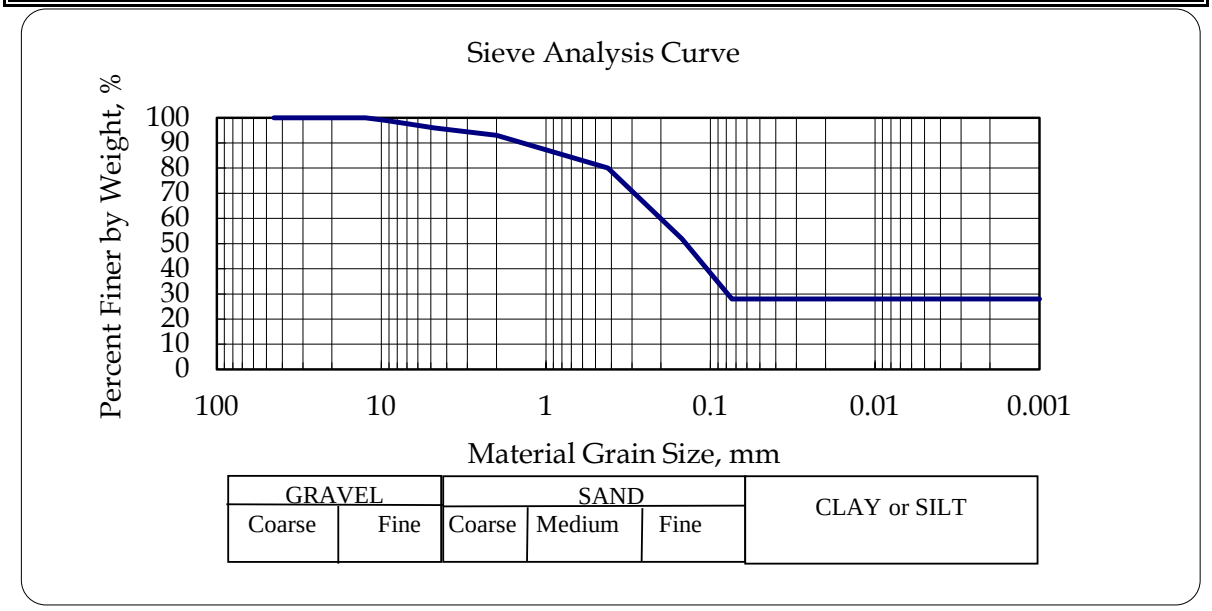
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Brown to Light Brown with calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	1	99
No. 4	4	96
No. 10	7	93
No. 40	20	80
No. 100	48	52
No. 200	72	28
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-4

BORING NO.: B-8 **SAMPLE DEPTH:** 7½' - 9'

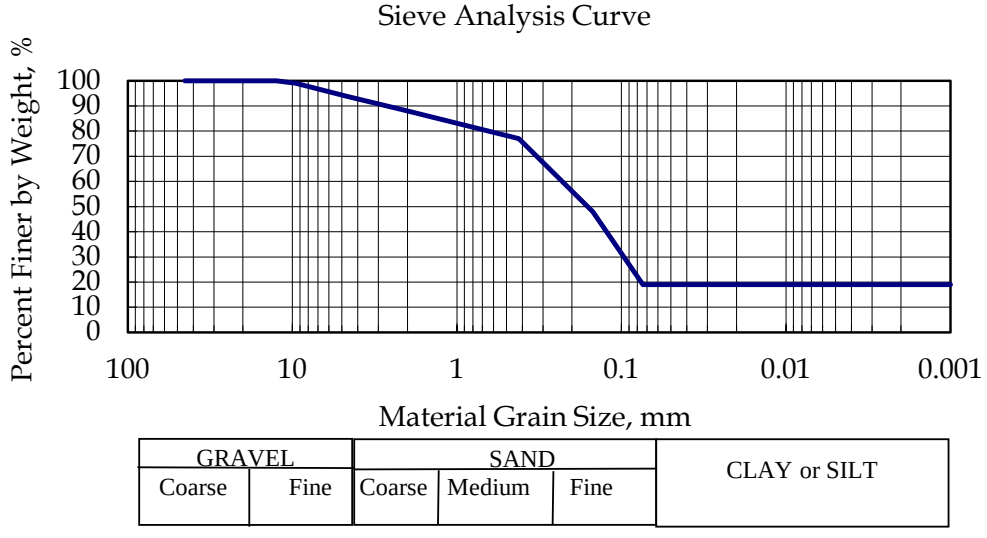
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Light Brown to Reddish Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	1	99
No. 4	6	94
No. 10	12	88
No. 40	23	77
No. 100	52	48
No. 200	81	19
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-6

BORING NO.: B-8 **SAMPLE DEPTH:** 13½' - 15'

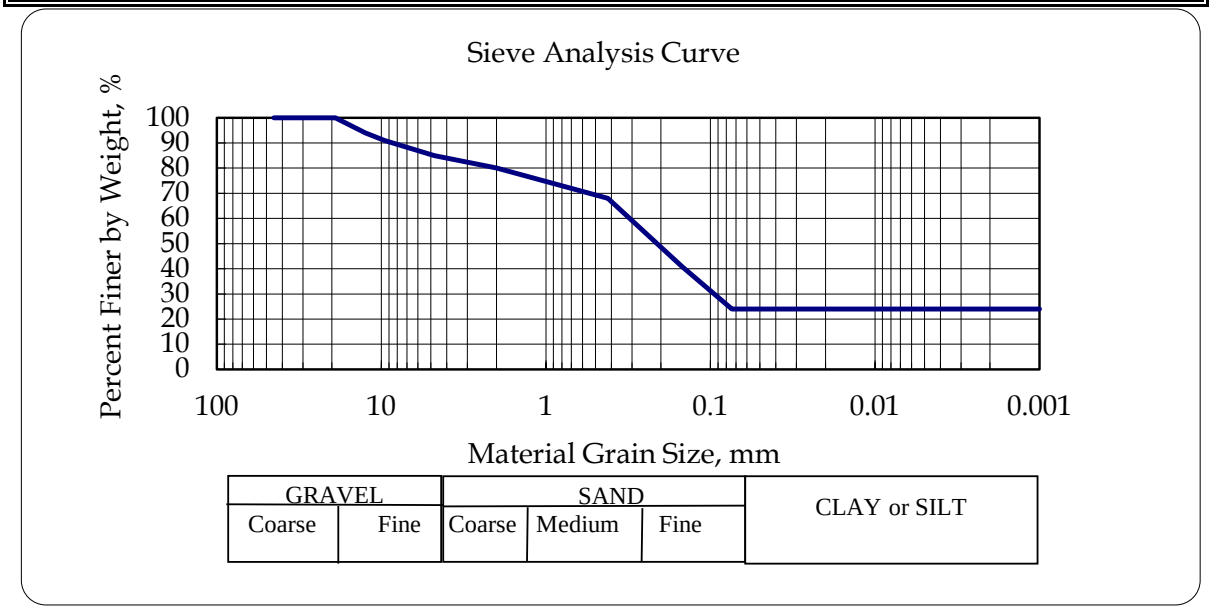
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Light Brown to Reddish Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	6	94
3/8 inch	9	91
No. 4	15	85
No. 10	20	80
No. 40	32	68
No. 100	59	41
No. 200	76	24
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-2

BORING NO.: B-9 **SAMPLE DEPTH:** 2½' - 4'

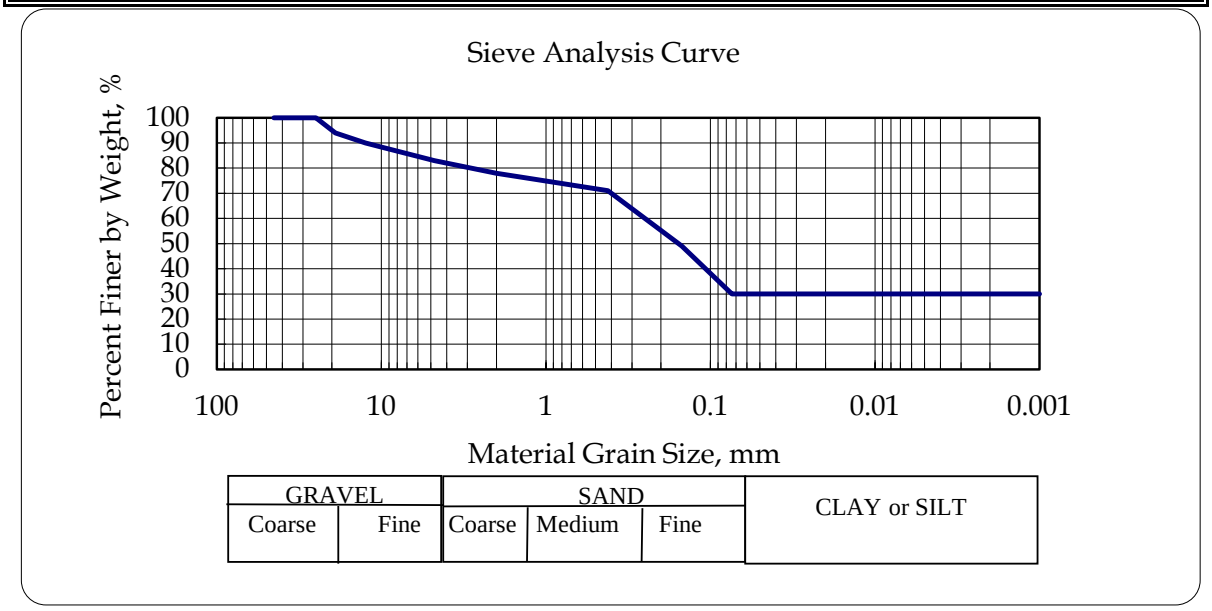
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown to Reddish Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	6	94
1/2 inch	10	90
3/8 inch	12	88
No. 4	17	83
No. 10	22	78
No. 40	29	71
No. 100	51	49
No. 200	70	30
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-1

BORING NO.: B-10 **SAMPLE DEPTH:** 0' - 1½'

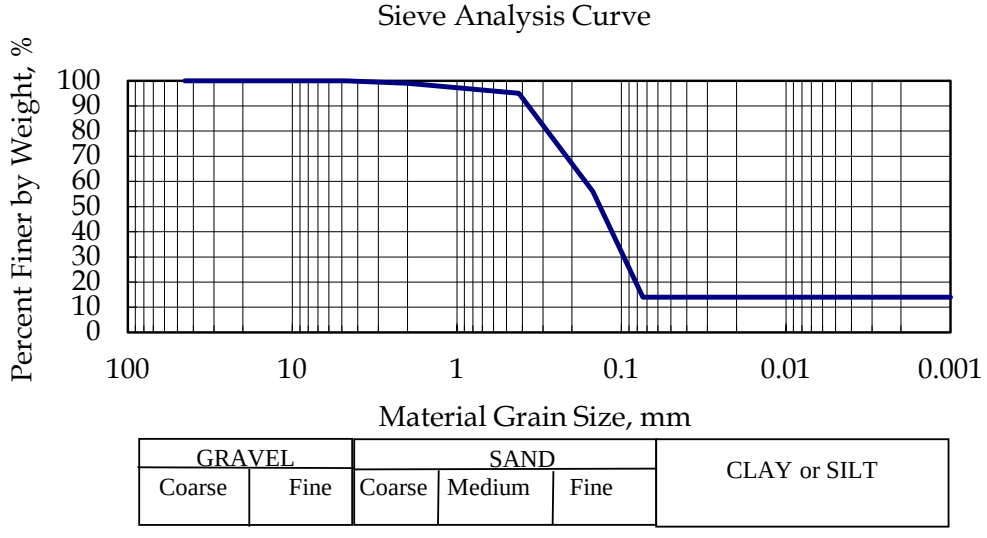
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Non-Plastic, Silty, Brown to Reddish Brown with some clay lumps

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	0	100
No. 10	1	99
No. 40	5	95
No. 100	44	56
No. 200	86	14
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/4/2016 **SAMPLE NO.:** S-1

BORING NO.: B-11 **SAMPLE DEPTH:** 0' - 1½'

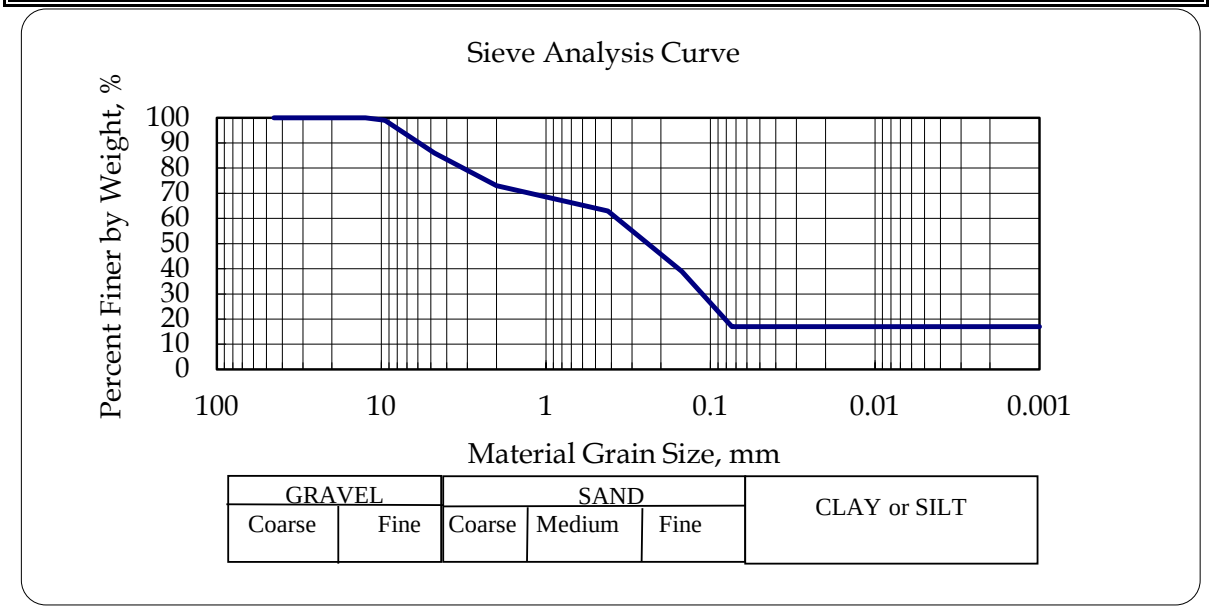
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Brown to Reddish Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	1	99
No. 4	14	86
No. 10	27	73
No. 40	37	63
No. 100	61	39
No. 200	83	17
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 1/26/2016 **SAMPLE NO.:** S-4

BORING NO.: B-12 **SAMPLE DEPTH:** 7½' - 9'

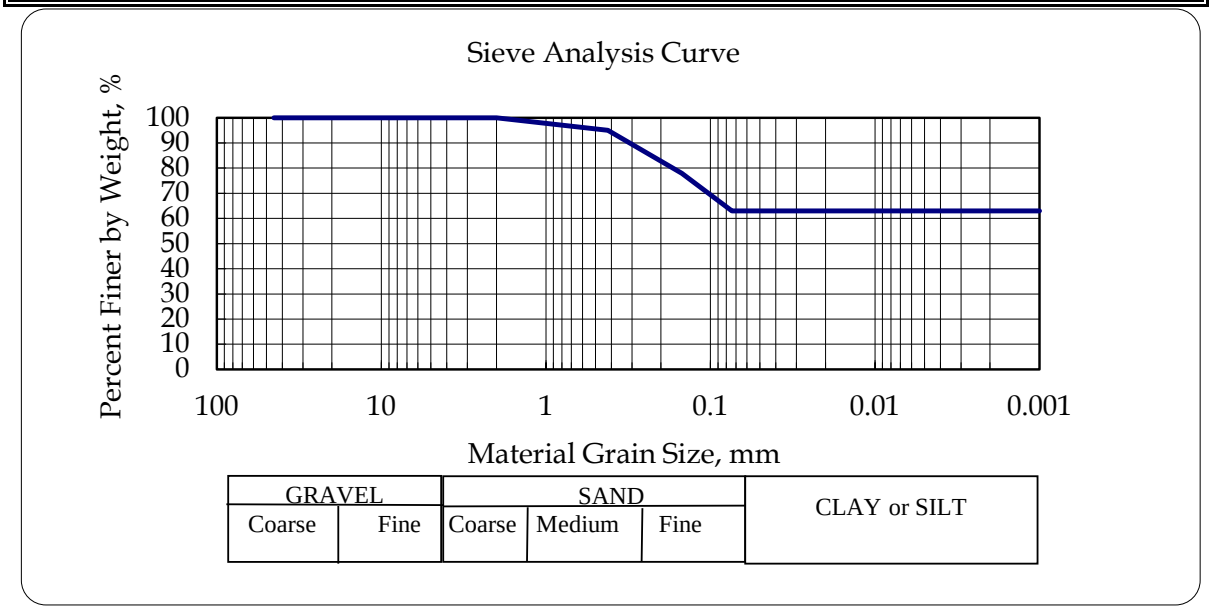
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / CLAY, Sandy, Brown to Light Brown with calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	0	100
No. 10	0	100
No. 40	5	95
No. 100	22	78
No. 200	37	63
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/4/2016 **SAMPLE NO.:** S-1

BORING NO.: B-13 **SAMPLE DEPTH:** 0' - 1½'

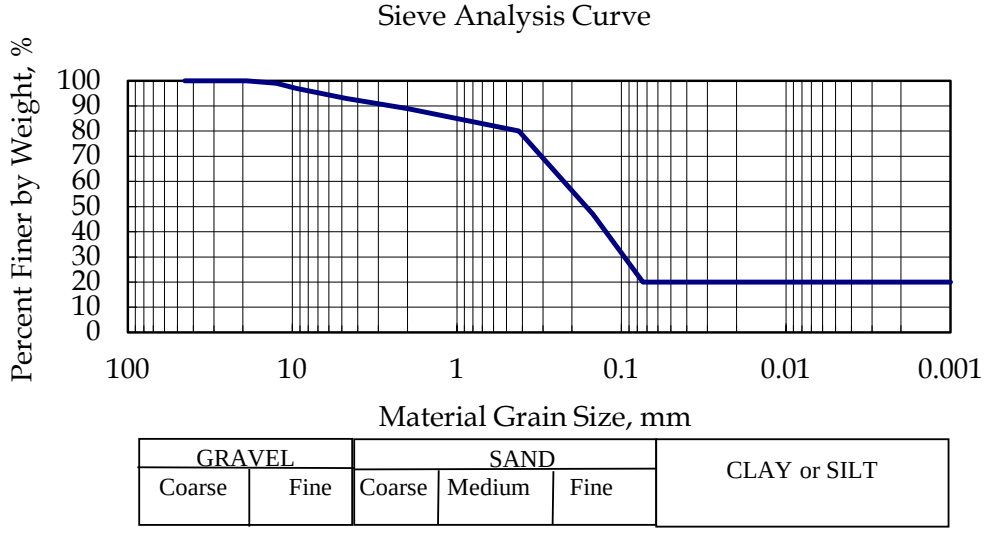
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Brown to Reddish Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	1	99
3/8 inch	3	97
No. 4	7	93
No. 10	11	89
No. 40	20	80
No. 100	53	47
No. 200	80	20
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/4/2016 **SAMPLE NO.:** S-3

BORING NO.: B-14 **SAMPLE DEPTH:** 5' - 6½'

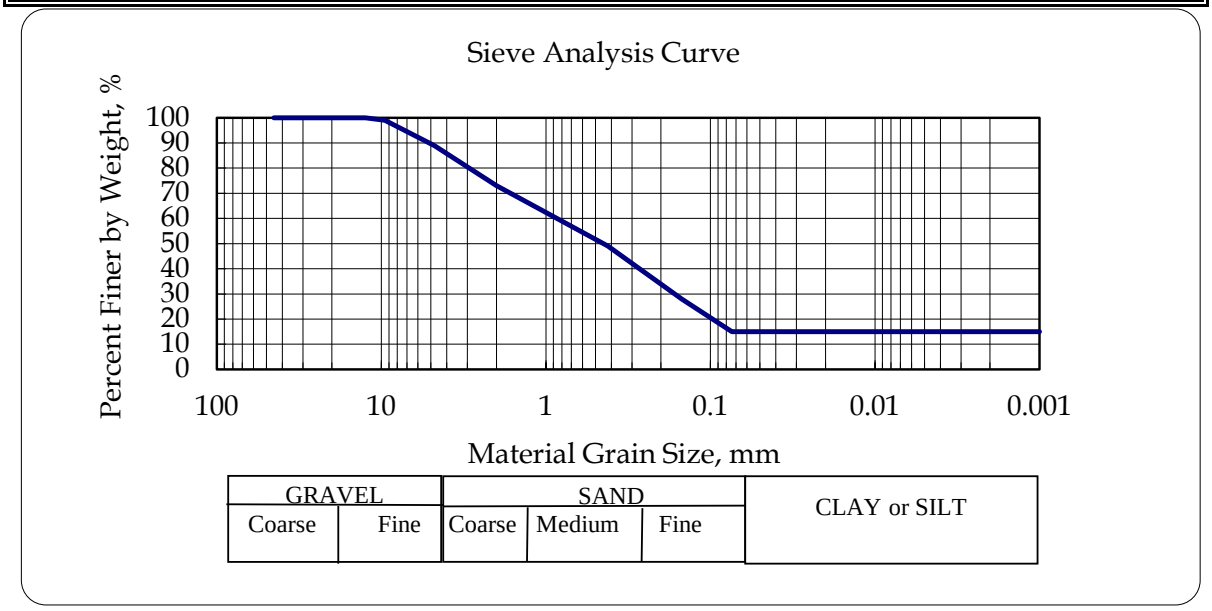
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown with calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	1	99
No. 4	11	89
No. 10	27	73
No. 40	51	49
No. 100	72	28
No. 200	85	15
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/4/2016 **SAMPLE NO.:** S-1

BORING NO.: B-15 **SAMPLE DEPTH:** 1' - 1½'

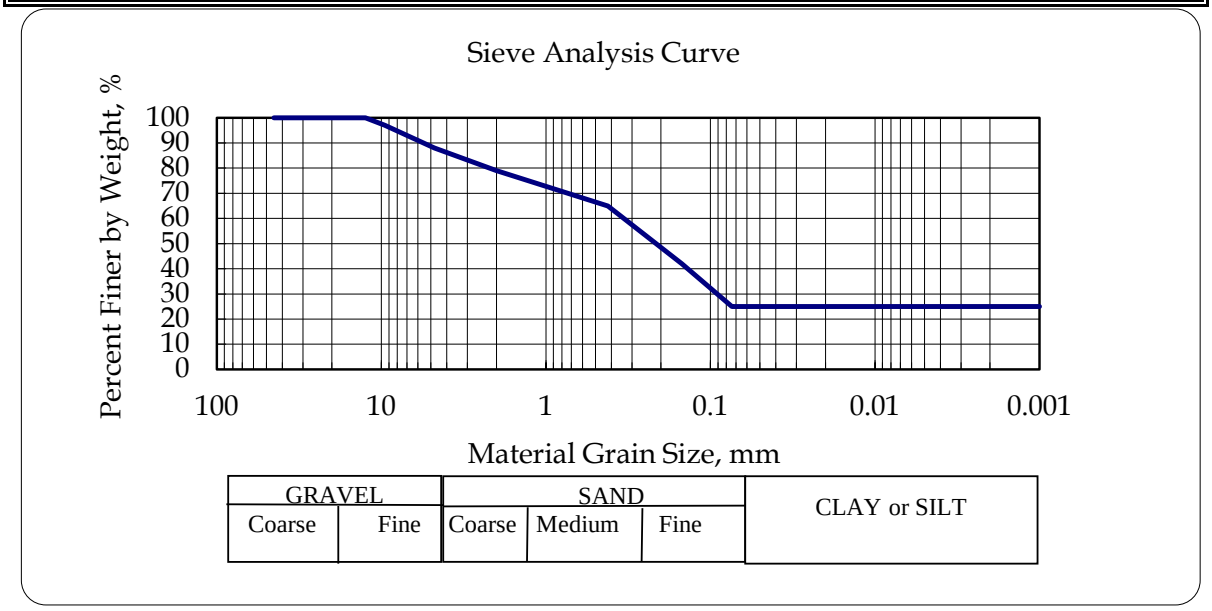
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown to Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	3	97
No. 4	12	88
No. 10	21	79
No. 40	35	65
No. 100	58	42
No. 200	75	25
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/4/2016 **SAMPLE NO.:** S-2

BORING NO.: B-15 **SAMPLE DEPTH:** 1½' - 4'

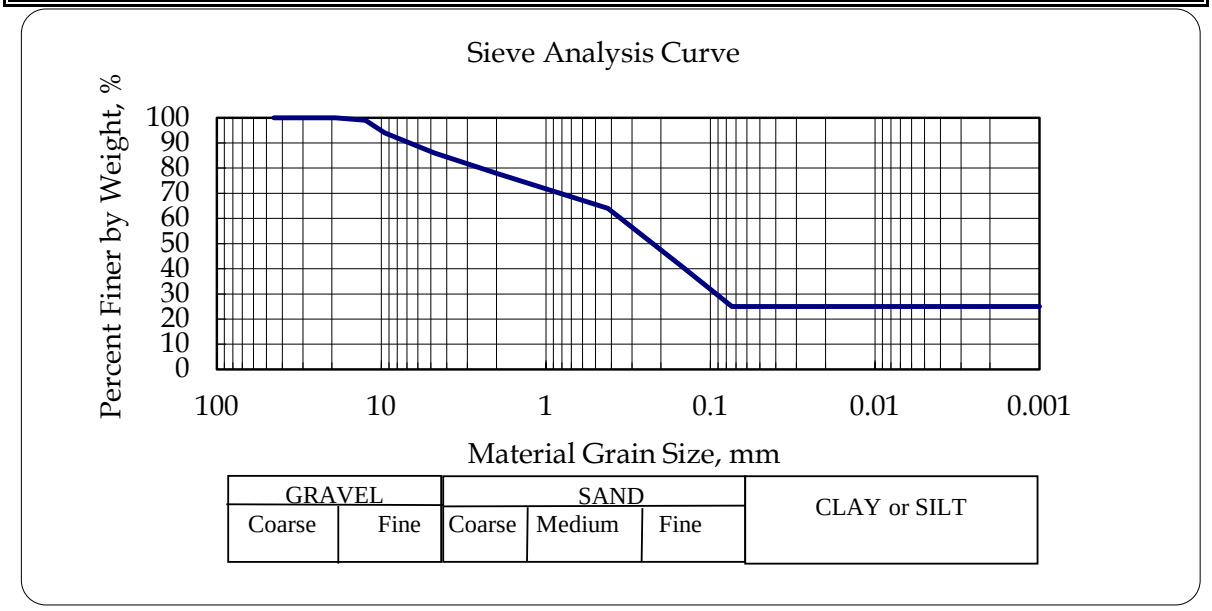
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown to Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	1	99
3/8 inch	6	94
No. 4	14	86
No. 10	22	78
No. 40	36	64
No. 100	59	41
No. 200	75	25
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/4/2016 **SAMPLE NO.:** S-2

BORING NO.: B-16 **SAMPLE DEPTH:** 2½' - 4'

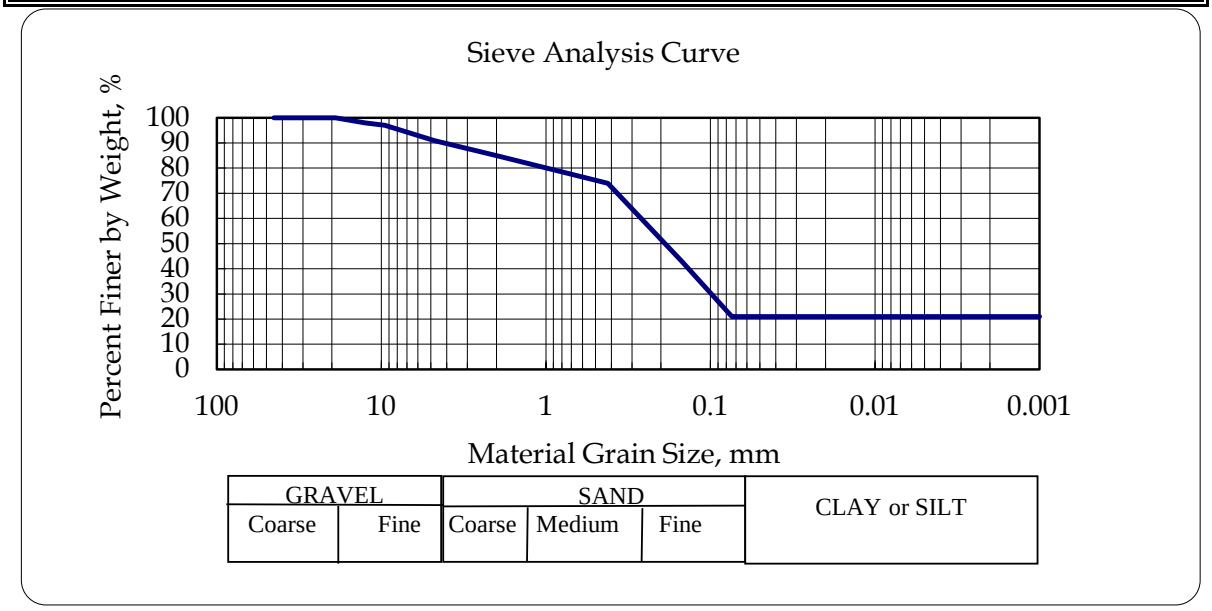
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Brown to Light Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	2	98
3/8 inch	3	97
No. 4	9	91
No. 10	15	85
No. 40	26	74
No. 100	57	43
No. 200	79	21
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/4/2016 **SAMPLE NO.:** S-4

BORING NO.: B-17 **SAMPLE DEPTH:** 7½' - 9'

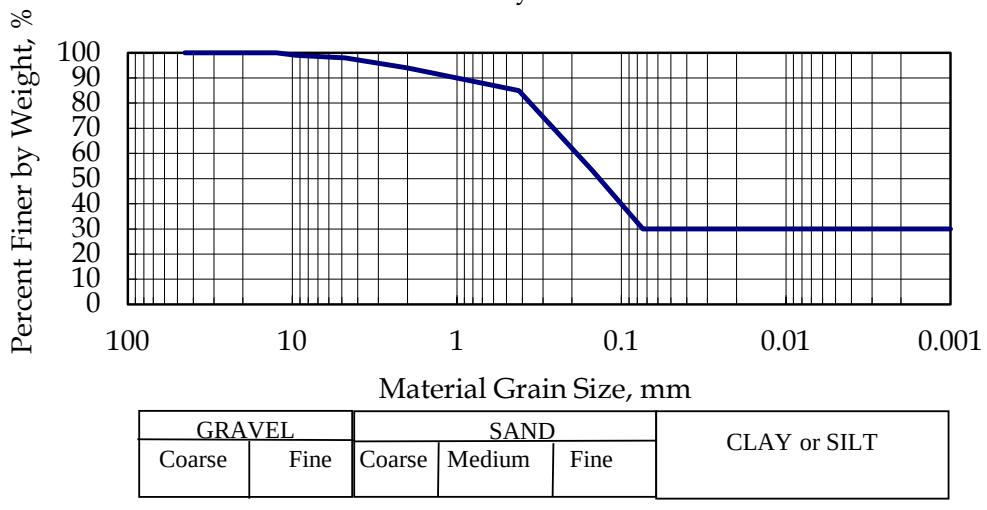
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	1	99
No. 4	2	98
No. 10	6	94
No. 40	15	85
No. 100	47	53
No. 200	70	30
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/4/2016 **SAMPLE NO.:** S-1

BORING NO.: B-18 **SAMPLE DEPTH:** 0' - 1½'

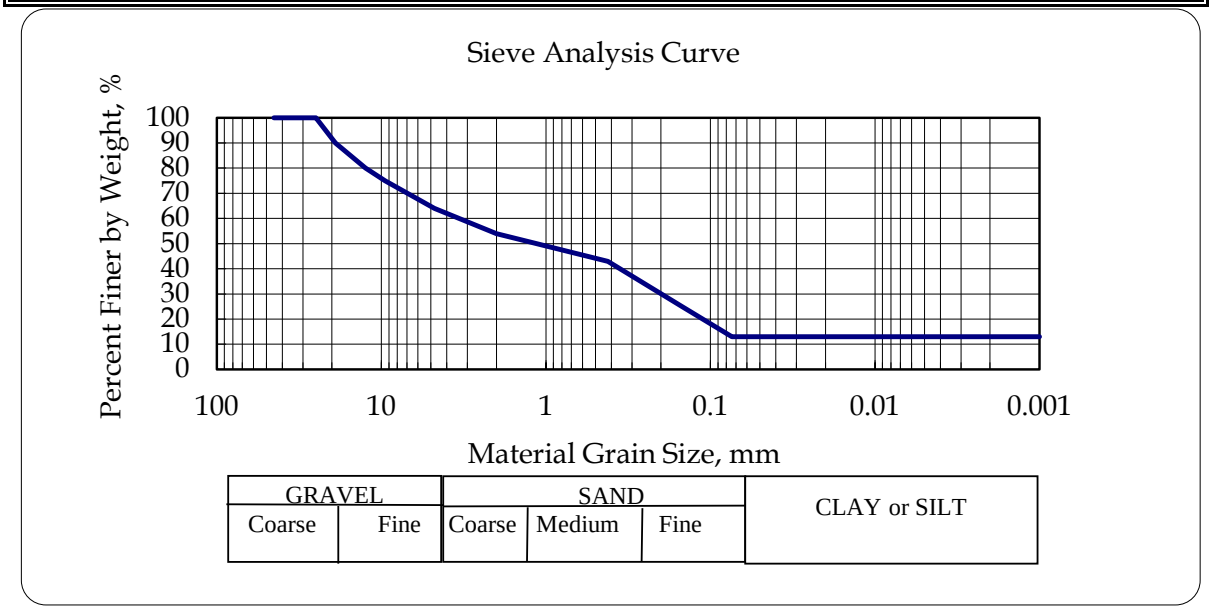
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Light Brown to Brown with calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	10	90
1/2 inch	20	80
3/8 inch	25	75
No. 4	36	64
No. 10	46	54
No. 40	57	43
No. 100	75	25
No. 200	87	13
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/4/2016 **SAMPLE NO.:** S-3

BORING NO.: B-19 **SAMPLE DEPTH:** 5' - 6½'

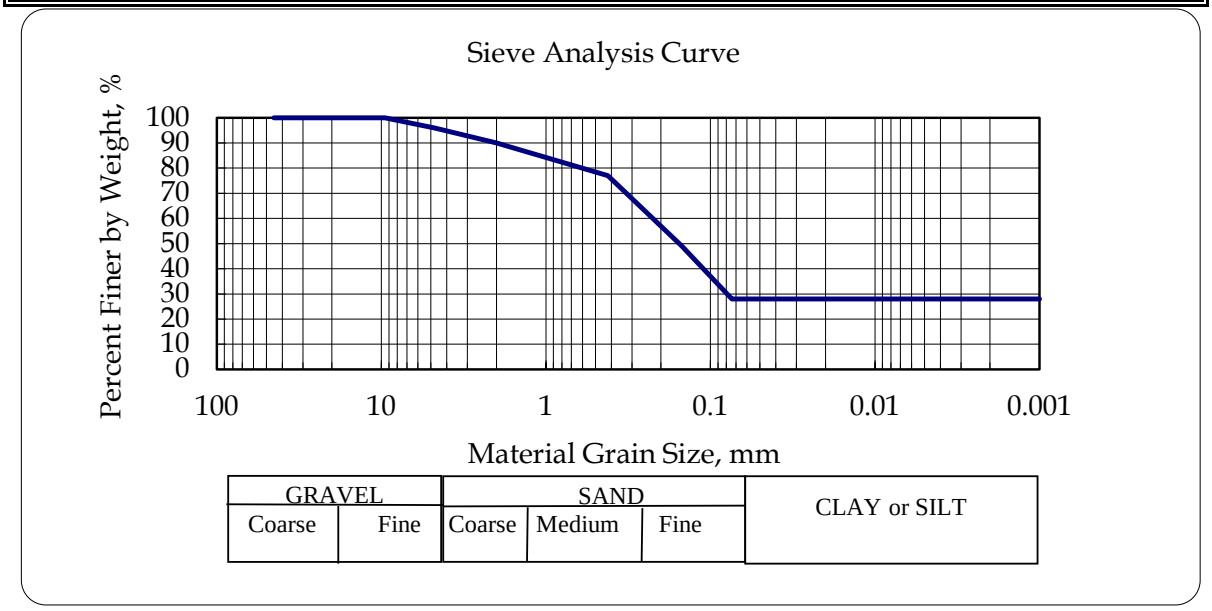
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown with calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	4	96
No. 10	10	90
No. 40	23	77
No. 100	51	49
No. 200	72	28
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/4/2016 **SAMPLE NO.:** S-4

BORING NO.: B-20 **SAMPLE DEPTH:** 7½' - 9'

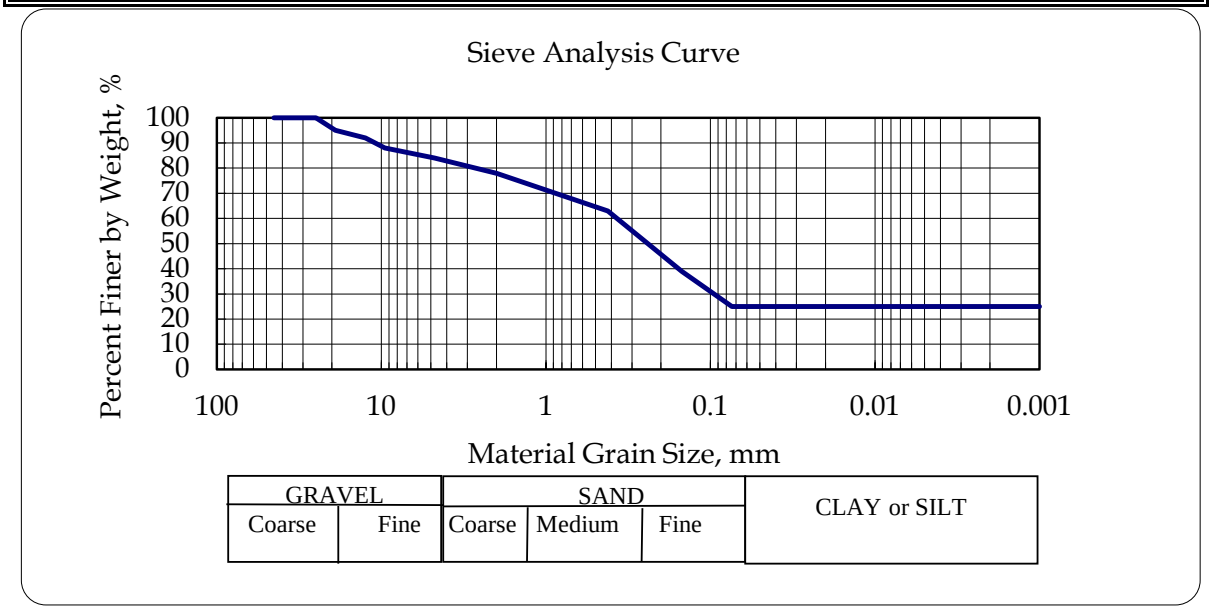
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown to Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	5	95
1/2 inch	8	92
3/8 inch	12	88
No. 4	16	84
No. 10	22	78
No. 40	37	63
No. 100	61	39
No. 200	75	25
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/4/2016 **SAMPLE NO.:** S-2

BORING NO.: B-21 **SAMPLE DEPTH:** 2½' - 4'

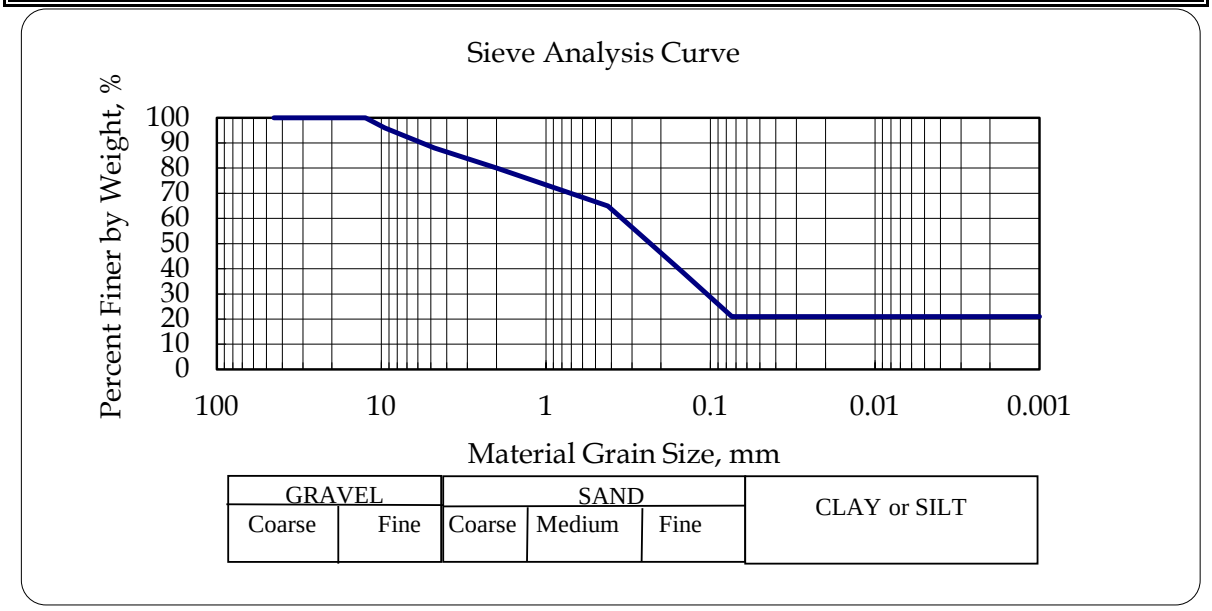
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	4	96
No. 4	12	88
No. 10	20	80
No. 40	35	65
No. 100	61	39
No. 200	79	21
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/4/2016 **SAMPLE NO.:** S-3

BORING NO.: B-22 **SAMPLE DEPTH:** 5' - 6½'

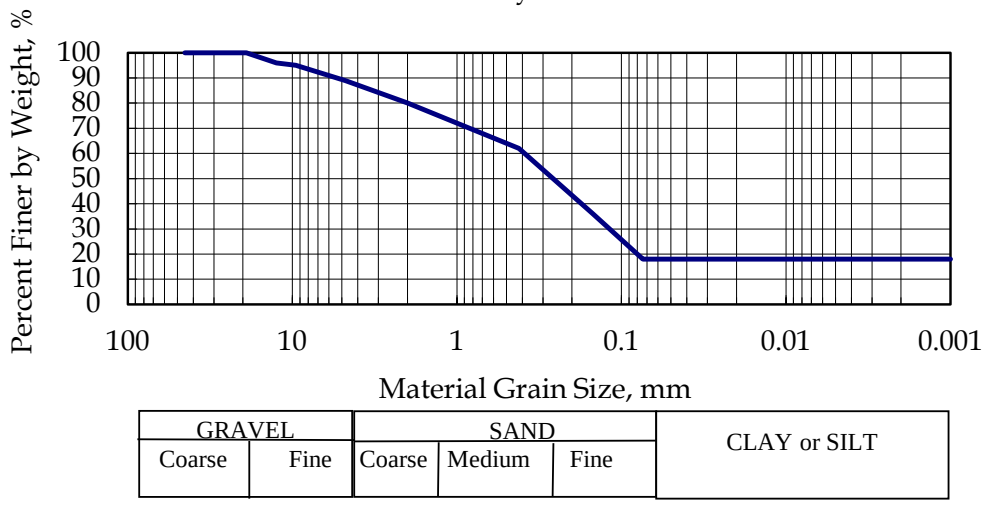
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	4	96
3/8 inch	5	95
No. 4	11	89
No. 10	20	80
No. 40	38	62
No. 100	64	36
No. 200	82	18
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/10/2016 **SAMPLE NO.:** S-1

BORING NO.: B-23 **SAMPLE DEPTH:** 0' - 1½'

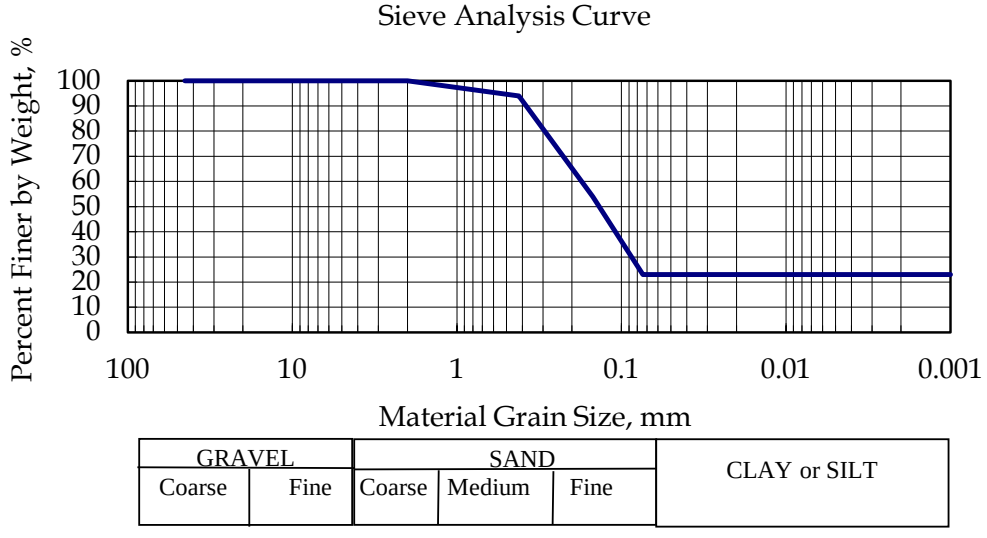
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Brown to Reddish Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	0	100
No. 10	0	100
No. 40	6	94
No. 100	46	54
No. 200	77	23
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/10/2016 **SAMPLE NO.:** S-2

BORING NO.: B-24 **SAMPLE DEPTH:** 2½' - 4'

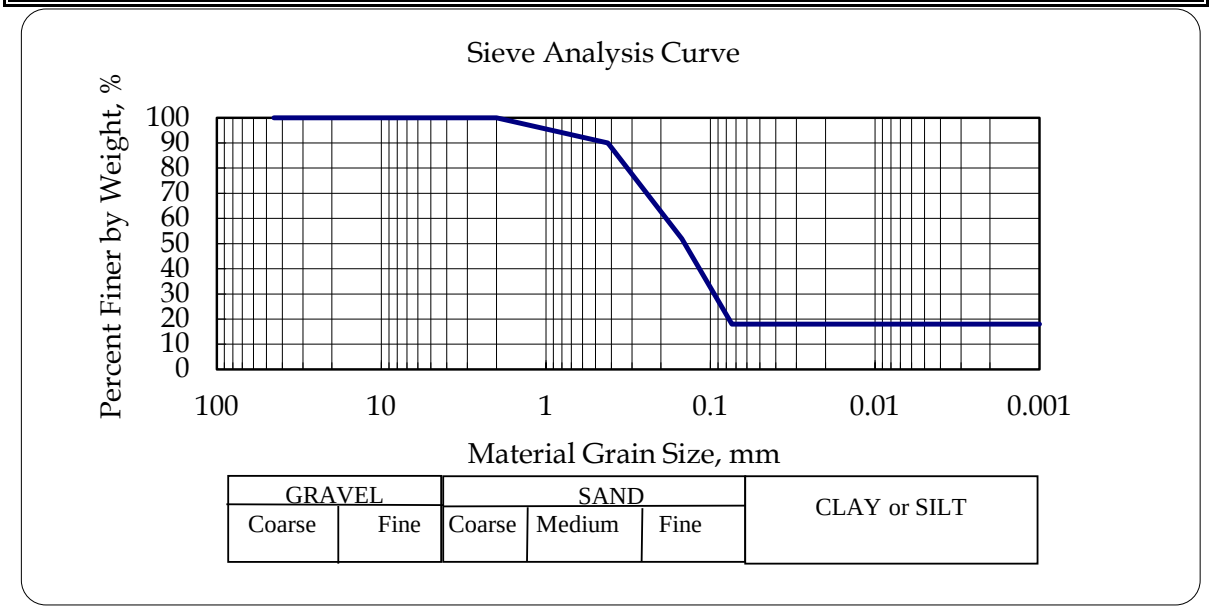
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Brown to Reddish Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	0	100
No. 10	0	100
No. 40	10	90
No. 100	48	52
No. 200	82	18
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/10/2016 **SAMPLE NO.:** S-4

BORING NO.: B-25 **SAMPLE DEPTH:** 4½' - 9'

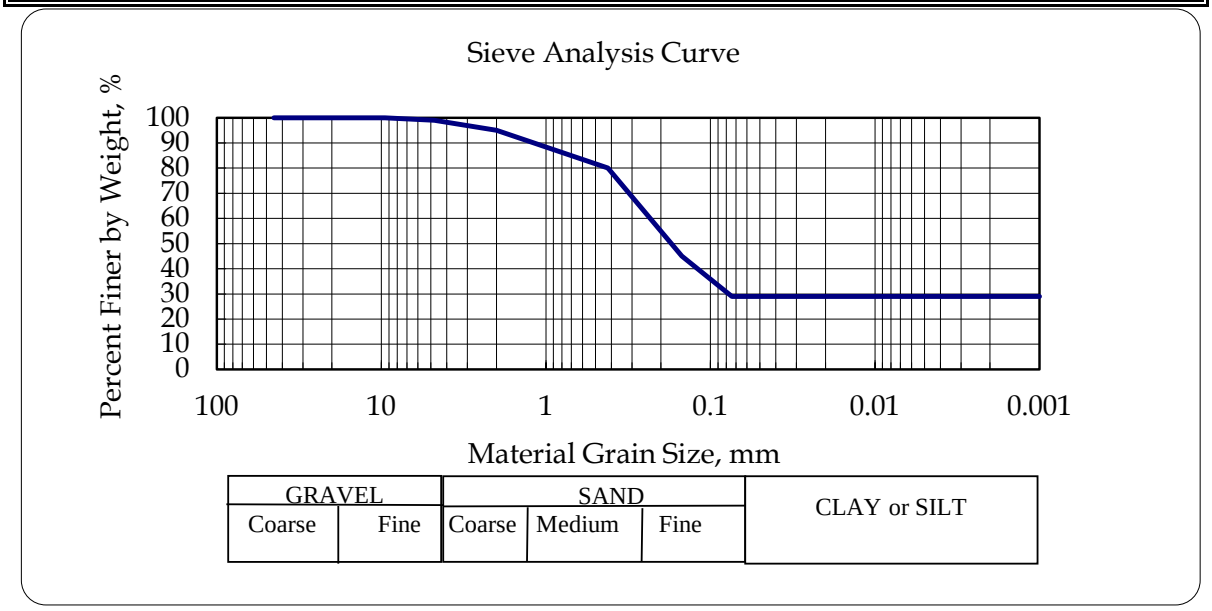
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown to Brown with calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	1	99
No. 10	5	95
No. 40	20	80
No. 100	55	45
No. 200	71	29
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/10/2016 **SAMPLE NO.:** S-2

BORING NO.: B-26 **SAMPLE DEPTH:** 2½' - 4'

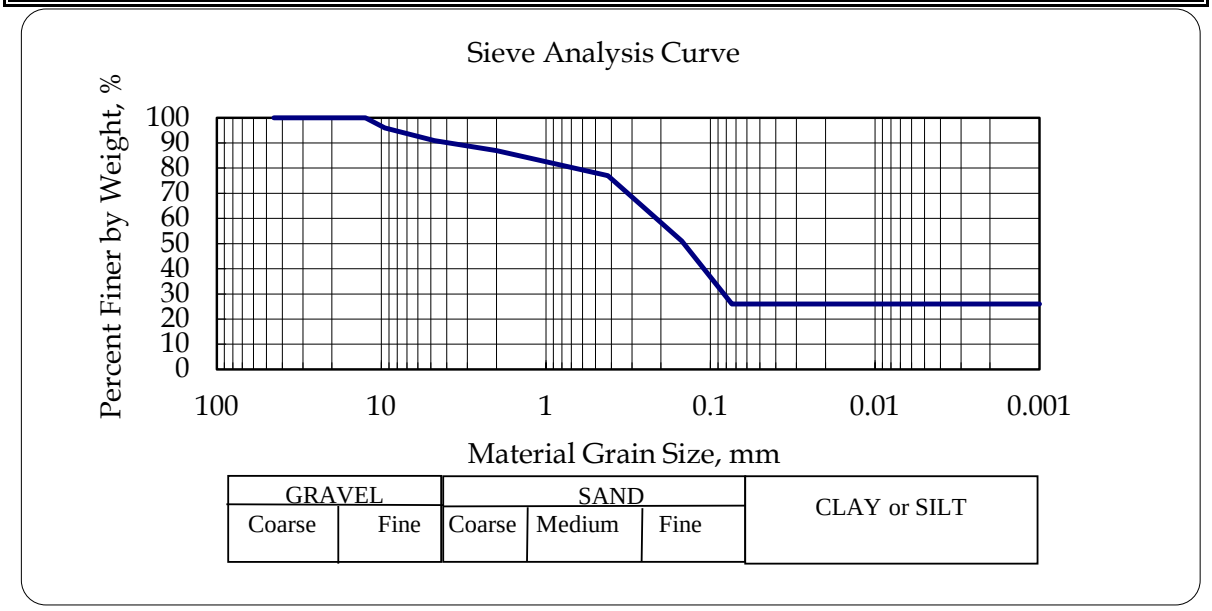
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown with calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	4	96
No. 4	9	91
No. 10	13	87
No. 40	23	77
No. 100	49	51
No. 200	74	26
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/10/2016 **SAMPLE NO.:** S-3

BORING NO.: B-27 **SAMPLE DEPTH:** 5' - 6½'

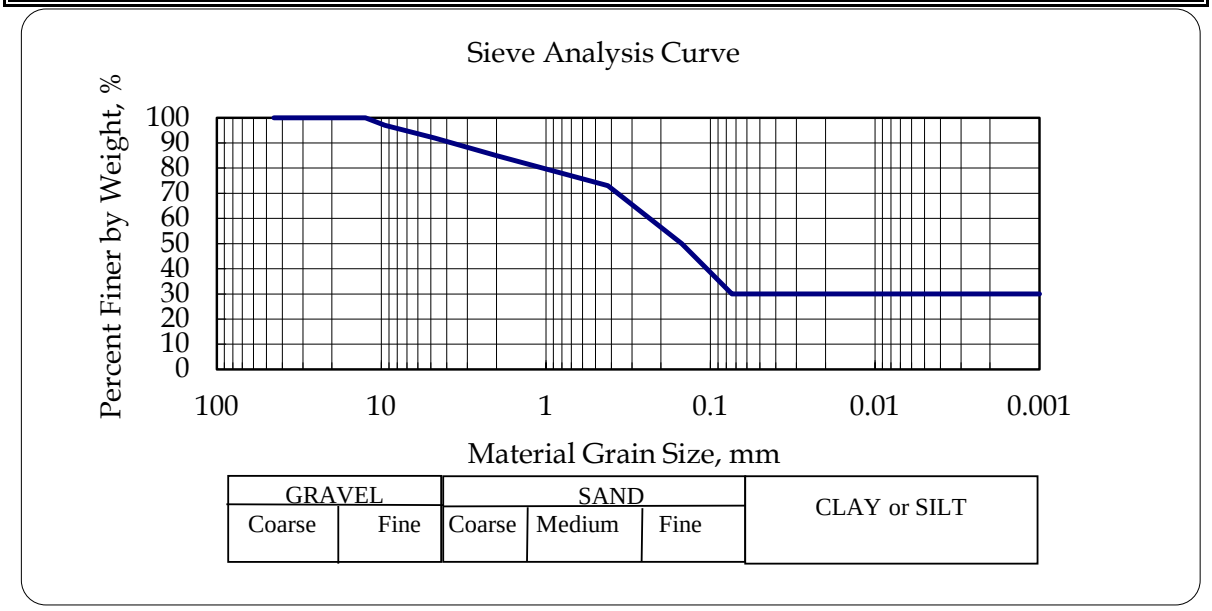
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown to Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	3	97
No. 4	8	92
No. 10	15	85
No. 40	27	73
No. 100	50	50
No. 200	70	30
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/10/2016 **SAMPLE NO.:** S-1

BORING NO.: B-28 **SAMPLE DEPTH:** 0' - 1½'

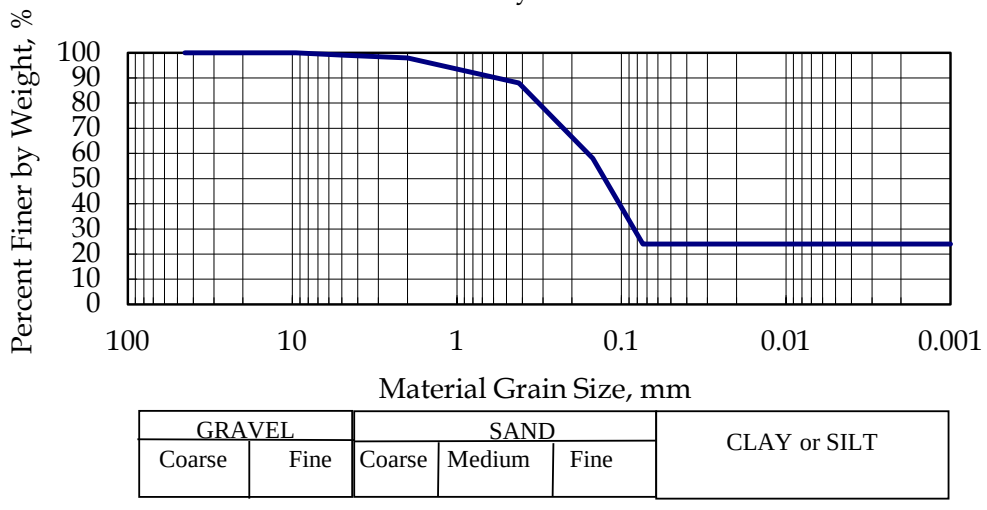
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Brown to Reddish Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	1	99
No. 10	2	98
No. 40	12	88
No. 100	42	58
No. 200	76	24
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/10/2016 **SAMPLE NO.:** S-1

BORING NO.: B-29 **SAMPLE DEPTH:** 0' - 1½'

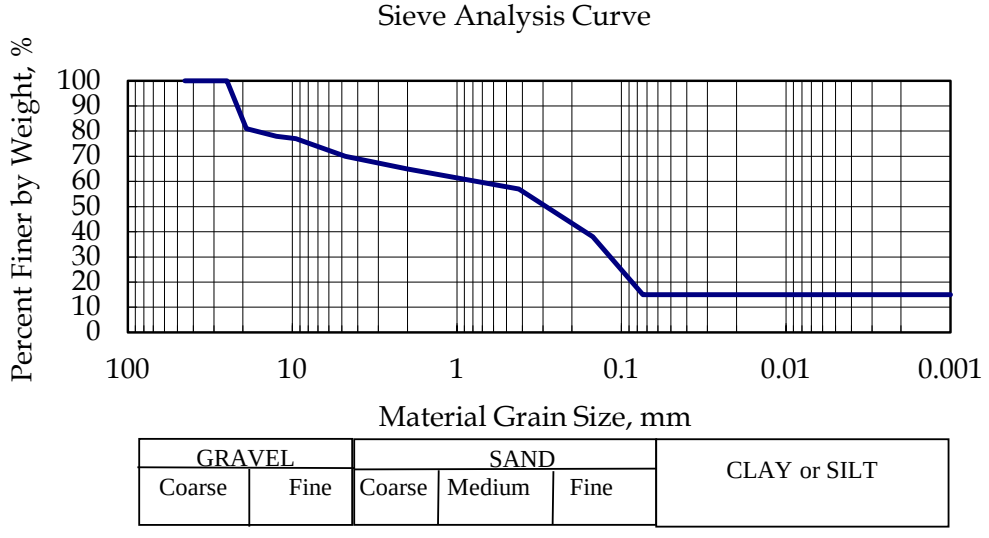
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine Grained, Silty, Brown to Reddish Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	19	81
1/2 inch	22	78
3/8 inch	23	77
No. 4	30	70
No. 10	35	65
No. 40	43	57
No. 100	62	38
No. 200	85	15
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 3/2/2016 **SAMPLE NO.:** S-4

BORING NO.: B-29 **SAMPLE DEPTH:** 7½' - 9'

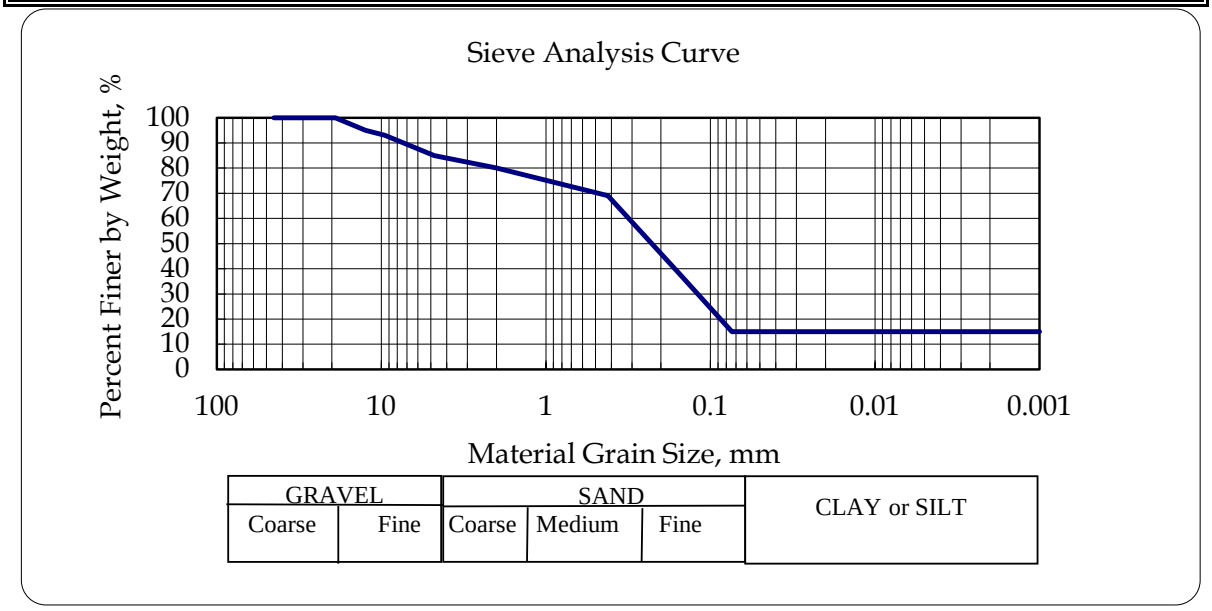
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine to Coarse Grained, Silty, Brown to Dark Brown with gravel

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	5	95
3/8 inch	7	93
No. 4	15	85
No. 10	20	80
No. 40	31	69
No. 100	63	37
No. 200	85	15
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 3/2/2016 **SAMPLE NO.:** S-6

BORING NO.: B-29 **SAMPLE DEPTH:** 15' - 16½'

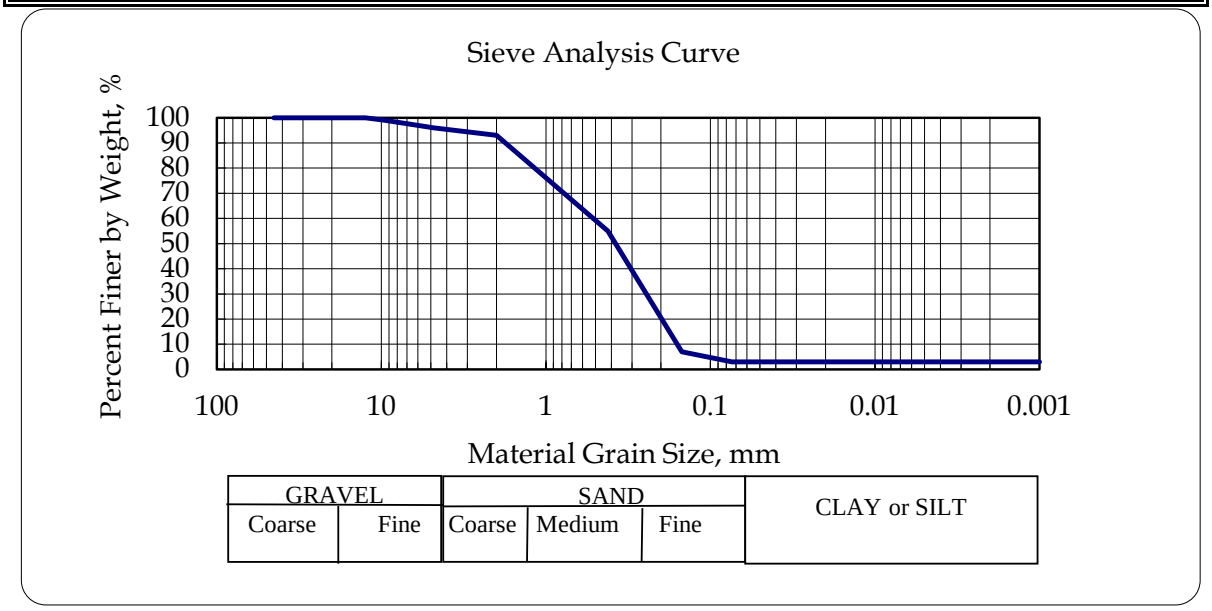
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine to Coarse Grained, Poorly Graded, Light Brown to Multicolored

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	1	99
No. 4	4	96
No. 10	7	93
No. 40	45	55
No. 100	93	7
No. 200	97	3
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 3/2/2016 **SAMPLE NO.:** S-2

BORING NO.: B-30 **SAMPLE DEPTH:** 2½' - 4'

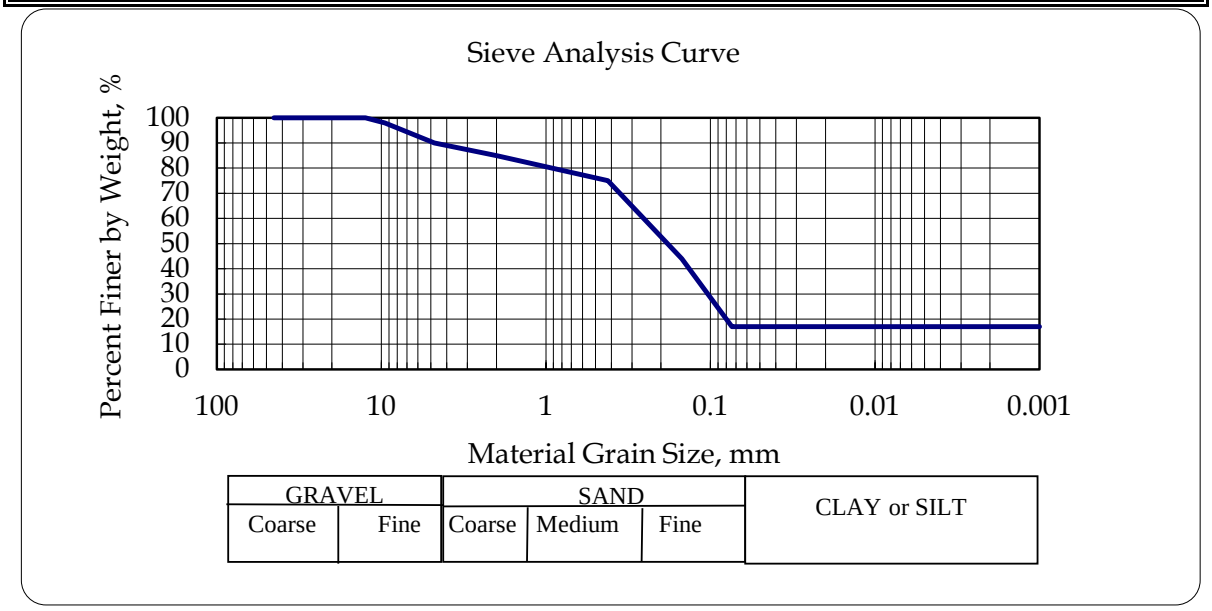
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine to Coarse Grained, Silty, Light Brown to Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	2	98
No. 4	10	90
No. 10	15	85
No. 40	25	75
No. 100	56	44
No. 200	83	17
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 3/2/2016 **SAMPLE NO.:** S-5

BORING NO.: B-30 **SAMPLE DEPTH:** 10' - 11½'

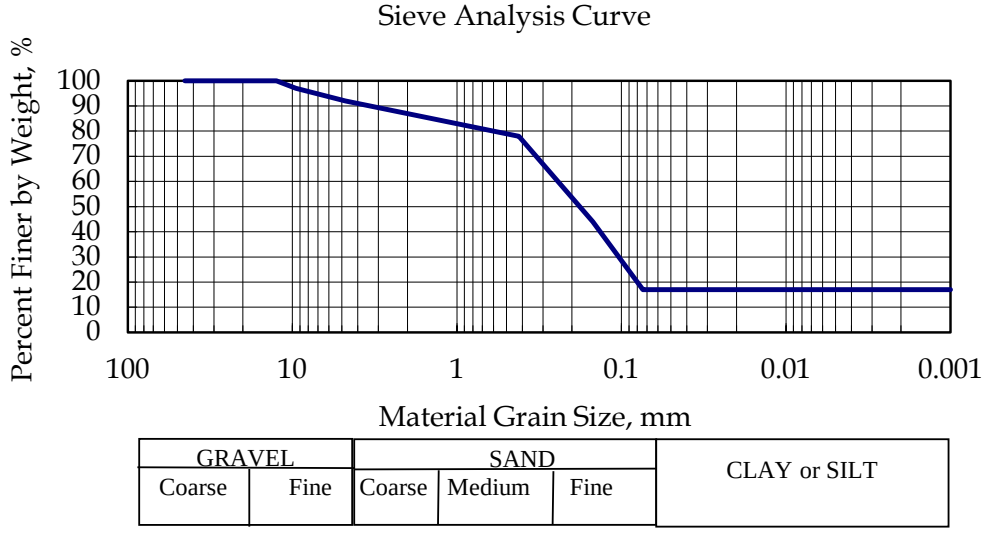
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine to Coarse Grained, Silty, Light Brown to Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	3	97
No. 4	8	92
No. 10	13	87
No. 40	22	78
No. 100	56	44
No. 200	83	17
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 3/2/2016 **SAMPLE NO.:** S-6

BORING NO.: B-30 **SAMPLE DEPTH:** 13½' - 15'

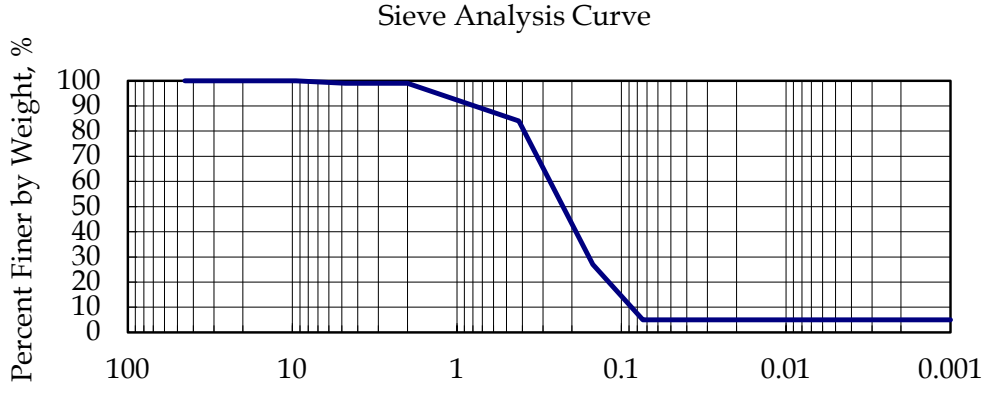
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine to Coarse Grained, Poorly Graded, Light Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	1	99
No. 10	1	99
No. 40	16	84
No. 100	73	27
No. 200	95	5
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 3/2/2016 **SAMPLE NO.:** S-1

BORING NO.: B-31 **SAMPLE DEPTH:** 0' - 1½'

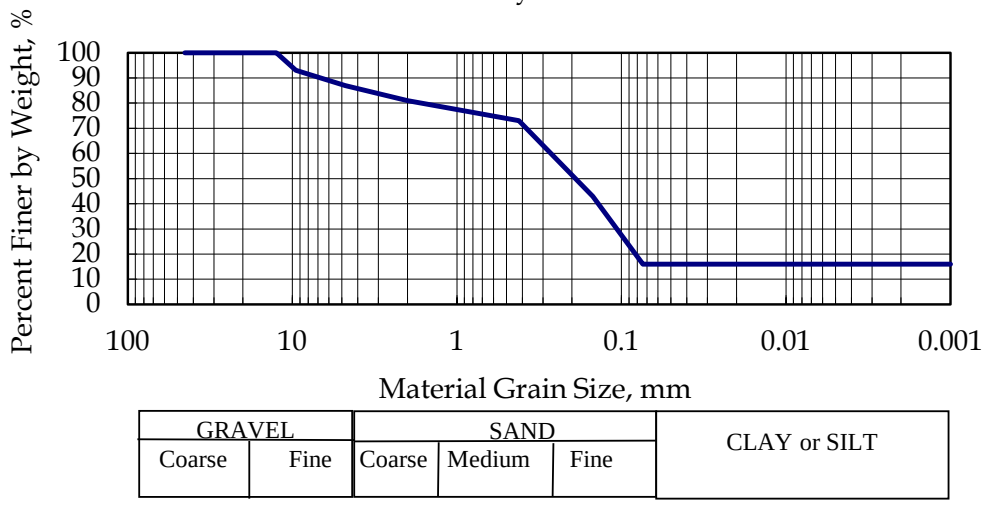
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine to Coarse Grained, Silty, Brown to Reddish Brown with some gravel

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	7	93
No. 4	13	87
No. 10	19	81
No. 40	27	73
No. 100	57	43
No. 200	84	16
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 3/2/2016 **SAMPLE NO.:** S-4

BORING NO.: B-31 **SAMPLE DEPTH:** 7½' - 9'

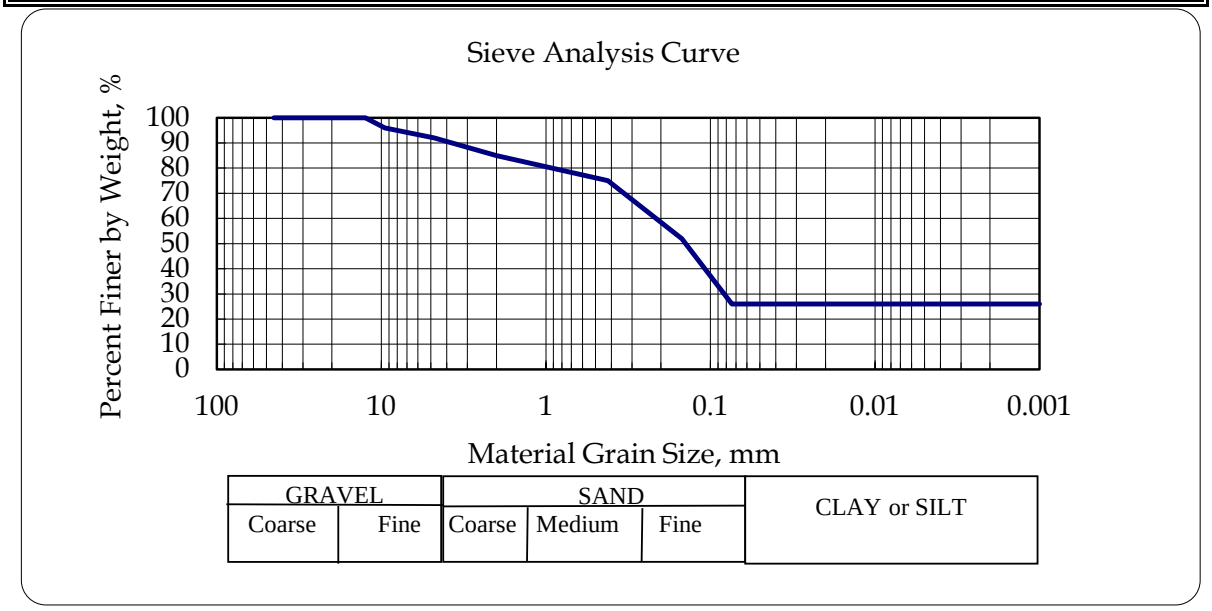
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine to Coarse Grained, Clayey, Light Brown to Whitish Brown with calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	4	96
No. 4	8	92
No. 10	15	85
No. 40	25	75
No. 100	48	52
No. 200	74	26
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 3/2/2016 **SAMPLE NO.:** S-7

BORING NO.: B-31 **SAMPLE DEPTH:** 20' - 21½'

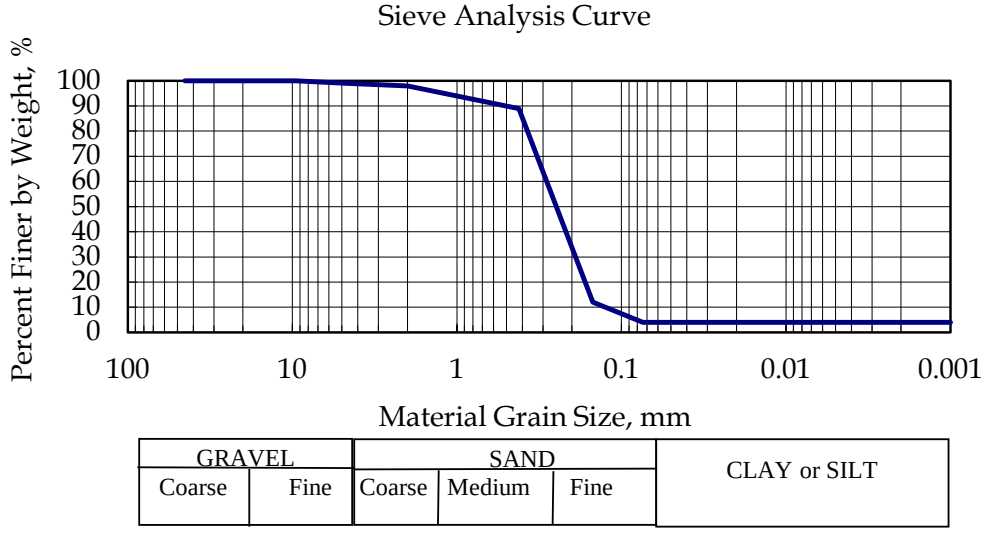
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine to Coarse Grained, Poorly Graded, Light Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	1	99
No. 10	2	98
No. 40	11	89
No. 100	88	12
No. 200	96	4
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/22/2016 **SAMPLE NO.:** S-1

BORING NO.: B-32 **SAMPLE DEPTH:** 0' - 1½'

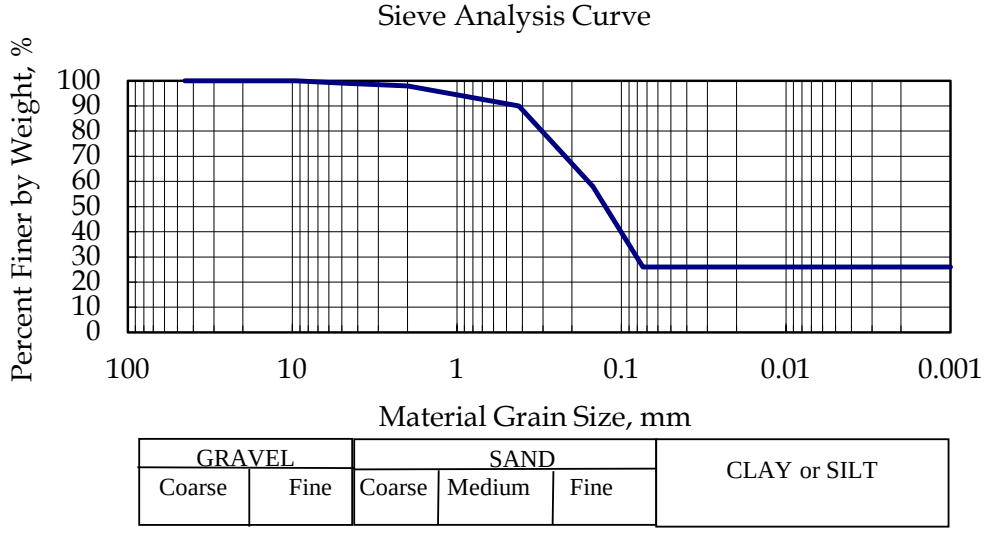
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine to Coarse Grained, Clayey, Brown to Reddish Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	1	99
No. 10	2	98
No. 40	10	90
No. 100	42	58
No. 200	74	26
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/22/2016 **SAMPLE NO.:** S-2

BORING NO.: B-33 **SAMPLE DEPTH:** 2½' - 4'

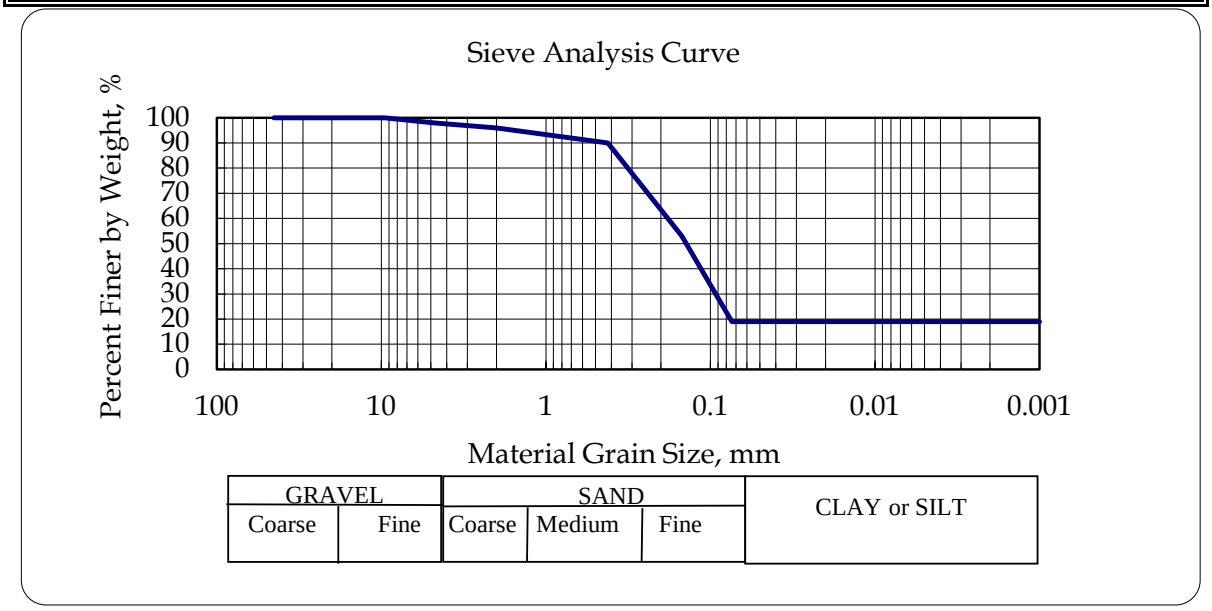
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine to Coarse Grained, Silty, Reddish Brown with some calcareous material

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	2	98
No. 10	4	96
No. 40	10	90
No. 100	47	53
No. 200	81	19
0.005 mm	-	-
0.001 mm	-	-



SOIL SAMPLE SIEVE ANALYSIS TEST REPORT

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater System
El Paso, El Paso County, Texas

SAMPLE INFORMATION

SAMPLE DATE: 2/22/2016 **SAMPLE NO.:** S-2

BORING NO.: B-34 **SAMPLE DEPTH:** 0' - 1½'

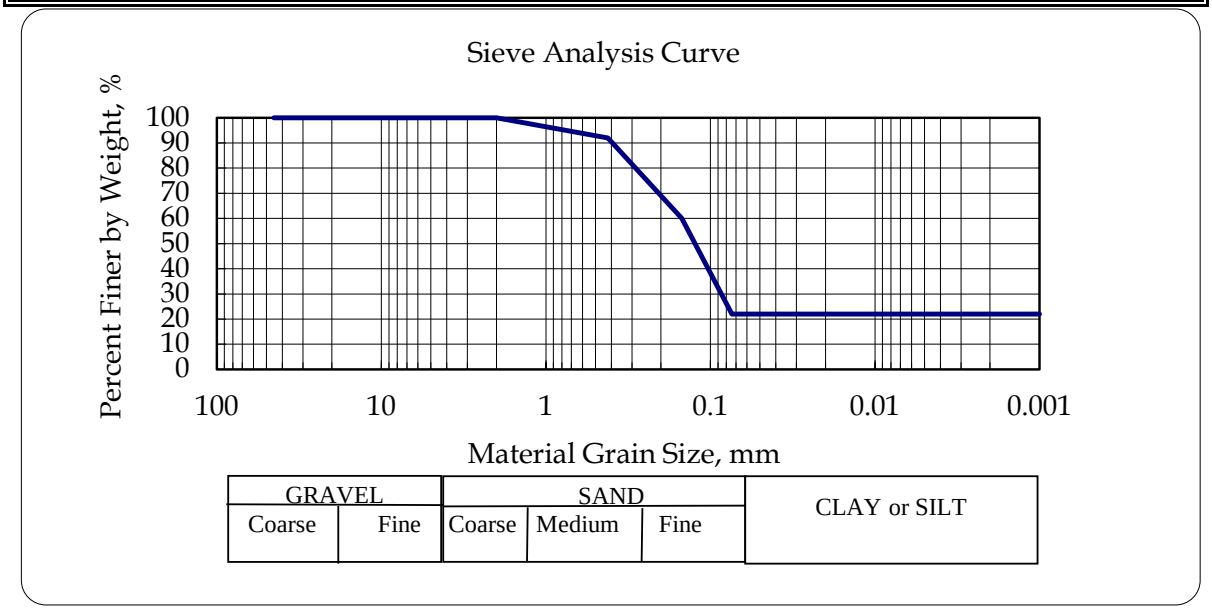
SOIL TYPE/DESCRIPTION: On-Site Subsurface Soils / SAND, Fine to Coarse Grained, Silty, Brown to Reddish Brown

ANALYSIS TEST RESULTS

Sieve Analysis Test:

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
1-3/4 inches	0	100
1-1/2 inches	0	100
1 inch	0	100
3/4 inch	0	100
1/2 inch	0	100
3/8 inch	0	100
No. 4	0	100
No. 10	0	100
No. 40	8	92
No. 100	40	60
No. 200	78	22
0.005 mm	-	-
0.001 mm	-	-



SUMMARY OF LABORATORY ENGINEERING SOIL CLASSIFICATION TEST RESULTS

PROJECT NAME: General Soils Evaluation
County of El Paso – Desert Acceptance (Square Dance)
Wastewater System Project
El Paso, El Paso County, Texas

DATE: 3/18/16

PROJECT NO.: AGCQC16-003

CLIENT: Moreno Cardenas Inc.

Boring No.	Sample No.	Sample Type	Approx. Sample Depth (ft.)	N-Value	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 4 Sieve	% Passing No. 200 Sieve	USCS
B-1	1	SS	0' - 1½'	66	8.2	-	-	NP	86	21	SM
	2	SS	2½' - 4'	18							
	3	SS	5' - 6½'	24							
	4	SS	7½ '- 9'	32	13.7	45	17	28	100	54	CL
	5	SS	10' - 11½'	60							
	6	SS	13½' – 15'	25	2.1	-	-	NP	100	9	SP-SM
B-2	1	SS	0' - 1½'	12	11.7	25	15	10	95	30	SC
	2	SS	2½' - 4'	14							
	3	SS	5' - 6½'	21							
	4	SS	8½' – 10'	23	16.7	45	14	31	99	50	CL
B-3	1	SS	0' – 1½'	8	9.5	-	-	NP	99	21	SM
	2	SS	2½' – 4'	30							
	3	SS	5' - 6½'	12	12.3	31	18	13	89	20	SC
	4	SS	7½' - 9'	21							
	5	SS	10' - 11½'	33	11.7	42	15	27	100	58	CL
	6	SS	13½' – 15'	25							
B-4	1	SS	0' - 1½'	4	6.5	-	-	NP	97	29	SM
	2	SS	2½' - 4'	18							
	3	SS	5' - 6½'	23	11.5	-	-	NP	93	19	SM
	4	SS	7½' - 9'	34							
	5	SS	10' - 11½'	18							
	6	SS	15' - 16½'	36	1.4	-	-	NP	100	12	SM
	7	SS	18½' - 20'	37							

Note: SS – Split-Spoon Sample, NP – Non-plastic by test

Boring No.	Sample No.	Sample Type	Approx. Sample Depth (ft.)	N-Value	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 4 Sieve	% Passing No. 200 Sieve	USCS
B-5	1	SS	0' – 1½'	11	12.4	35	21	14	90	24	SC
	2	SS	2½' – 4'	25							
	3	SS	5' – 6½'	14	13.8	-	-	NP	93	22	SM
	4	SS	7½' – 9'	32							
	5	SS	10' – 11½'	36	12.5	-	-	NP	92	34	SM
	6	SS	13½' – 15'	18							
B-6	1	SS	0' – 1½'	6	10.7	25	16	9	98	30	SM
	2	SS	2½' – 4'	17	9.3	-	-	NP	69	16	SM
	3	SS	5' – 6½'	11							
	4	SS	7½' – 9'	41	16.7	52	22	30	98	59	CH
	5	SS	10' – 11½'	82							
	6	SS	15' – 16½'	31	0.7	-	-	NP	95	5	SP
	7	SS	18½' – 20'	31							
B-7	1	SS	0' – 1½'	6	10.6	-	-	NP	98	29	SM
	2	SS	2½' – 4'	19							
	3	SS	5' – 6½'	11	16.7	35	17	18	96	28	SC
	4	SS	7½' – 9'	18							
	5	SS	10' – 11½'	19	18.0	37	16	21	100	72	CL
	6	SS	15' – 16½'	23	2.8	-	-	NP	99	2	SP
	7	SS	18½' – 20'	39							
B-8	1	SS	0' – 1½'	18	7.5	-	-	NP	93	18	SM
	2	SS	2½' – 4'	22							
	3	SS	5' – 6½'	13							
	4	SS	7½' – 9'	76	7.0	-	-	NP	94	19	SM
	5	SS	10' – 11½'	23							
	6	SS	15' – 16½'	62	7.8	-	-	NP	85	24	SM
	7	SS	18½' – 20'	45							

Note: SS – Split-Spoon Sample, NP – Non-plastic by test

Boring No.	Sample No.	Sample Type	Approx. Sample Depth (ft.)	N-Value	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 4 Sieve	% Passing No. 200 Sieve	USCS
B-9	1	SS	0' – 1½'	4							
	2	SS	2½' – 4'	23	9.2	26	15	11	74	20	SC
	3	SS	5' – 6½'	7							
	4	SS	7½' – 9'	32							
	5	SS	10' – 11½'	29	8.6	31	14	17	92	36	SC
	6	SS	15' – 16½'	23	1.9	-	-	NP	99	7	SP-SM
	7	SS	18½' – 20'	38							
B-10	1	SS	0' – 1½'	4	3.9	-	-	NP	100	14	SM
	2	SS	2½' – 4'	20							
	3	SS	5' – 6½'	13							
	4	SS	7½' – 9'	28	12.0	41	16	25	99	45	SC
	5	SS	10' – 11½'	31							
	6	SS	15' – 16½'	21							
	7	SS	18½' – 20'	32	1.1	-	-	NP	96	4	SP
B-11	1	SS	0' – 1½'	19		-	-	NP			
	2	SS	2½' – 4'	22							
	3	SS	5' – 6½'	18							
	4	SS	7½' – 9'	45	13.0	40	15	25	100	66	CL
	5	SS	10' – 11½'	74	13.3	39	15	24	100	66	CL
	6	SS	13½' - 15'	30							
B-12	1	SS	0' – 1½'	9							
	2	SS	2½' - 4'	25	12.3	46	25	21	77	21	SC
	3	SS	5' – 6½'	18							
	4	SS	7½' - 9'	42	14.7	43	18	25	100	63	CL
	5	SS	10' – 11½'	38							
	6	SS	13½' - 15'	26	1.1	-	-	NP	97	4	SP

Note: SS – Split-Spoon Sample, NP – Non-plastic by test, GB – Grab Sample

Boring No.	Sample No.	Sample Type	Approx. Sample Depth (ft.)	N-Value	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 4 Sieve	% Passing No. 200 Sieve	USCS
B-13	1	SS	0' – 1½'	12	8.2	-	-	NP	93	20	SM
	2	SS	2½' – 4'	17							
	3	SS	5' – 6½'	20							
	4	SS	7½' – 9'	30	14.1	44	19	25	99	52	CL
	5	SS	10' – 11½'	20	4.5	-	-	NP	98	28	SM
	6	SS	13½' - 15'	21							
B-14	1	SS	0' – 1½'	12	7.1	-	-	NP	94	16	SM
	2	SS	2½' – 4'	42							
	3	SS	5' – 6½'	25	11.8	39	19	20	89	15	SC
	4	SS	8½' - 10'	37							
B-15	1	SS	0' – 1½'	15	11.0	29	16	13	88	25	SC
	2	SS	2½' – 4'	14	10.6	29	16	13	86	25	SC
	3	SS	5' – 6½'	4							
	4	SS	8½' - 10'	7							
B-16	1	SS	0' – 1½'	34							
	2	SS	2½' – 4'	9	12.5	36	27	9	91	21	SC
	3	SS	5' – 6½'	8							
	4	SS	7½' – 9'	13							
	5	SS	10' – 11½'	21	8.4	-	-	NP	95	16	SM
	6	SS	13½' - 15'	29							
B-17	1	SS	0' – 1½'	11							
	2	SS	2½' – 4'	30	15.8	54	33	21	66	14	SC
	3	SS	5' – 6½'	19							
	4	SS	7½' – 9'	22	10.1	45	18	27	98	30	SC
	5	SS	10' – 11½'	22							
	6	SS	13½' - 15'	22	3.7	-	-	NP	100	27	SM
B-18	1	SS	0' – 1½'	25	15.7	-	-	NP	64	13	SM
	2	SS	2½' – 4'	12	19.5	35	21	14	86	19	SC
	3	SS	5' – 6½'	28							
	4	SS	8½' - 10'	26	15.5	39	15	24	99	53	CL

Note: SS – Split-Spoon Sample, NP – Non-plastic by test

Boring No.	Sample No.	Sample Type	Approx. Sample Depth (ft.)	N-Value	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 4 Sieve	% Passing No. 200 Sieve	USCS
B-19	1	SS	0' – 1½'	14	6.8	-	-	NP	90	17	SM
	2	SS	2½' – 4'	16							
	3	SS	5' – 6½'	17	12.8	41	19	22	96	28	SC
	4	SS	8½' - 10'	18							
B-20	1	SS	0' – 1½'	26							
	2	SS	2½' – 4'	10	12.1	33	25	8	78	17	SC
	3	SS	5' – 6½'	13							
	4	SS	7½' - 9'	12	12.9	30	20	10	64	25	SC
	5	SS	10' – 11½'	12	10.5				98	35	
	6	SS	15' – 16½'	29							
	7	SS	20' – 21½'	35	1.3	-	-	NP	84	5	SP-SM
	8	SS	23½' - 25'	44							
B-21	1	SS	0' – 1½'	30							
	2	SS	2½' - 4'	13	13.8	44	28	16	88	21	SC
	3	SS	5' – 6½'	14							
	4	SS	7½' - 9'	25							
	5	SS	10' – 11½'	64	11.4	43	15	28	100	68	CL
	6	SS	13½' – 15'	28							
B-22	1	SS	0' – 1½'	24	6.6	-	-	NP	99	22	SM
	2	SS	2½' - 4'	12							
	3	SS	5' – 6½'	21	10.4	27	18	9	89	18	SC
	4	SS	8½' - 10'	58	9.8	34	16	18	100	52	CL
B-23	1	SS	0' – 1½'	5	6.7				100	23	
	2	SS	2½' – 4'	9							
	3	SS	5' – 6½'	17							
	4	SS	7½' – 9'	30	12.9	34	18	16	98	28	SC
	5	SS	10' – 11½'	14							
	6	SS	15' - 16½'	29	1.2	-	-	NP	95	4	SP
	7	SS	18½' – 20'	34							

Note: SS – Split-Spoon Sample, NP – Non-plastic by test

Boring No.	Sample No.	Sample Type	Approx. Sample Depth (ft.)	N-Value	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 4 Sieve	% Passing No. 200 Sieve	USCS
B-24	1	SS	0' – 1½'	5							
	2	SS	2½' – 4'	9	3.2				100	18	
	3	SS	5' – 6½'	15	5.7	-	-	NP	82	17	SM
	4	SS	7½' – 9'	34							
	5	SS	10' – 11½'	50	13.9	26	21	5	91	29	SC-SM
	6	SS	15' - 16½'	27							
	7	SS	18½' – 20'	33							
B-25	1	SS	0' – 1½'	3							
	2	SS	2½' – 4'	35	7.4	31	19	12	97	27	SC
	3	SS	5' – 6½'	11							
	4	SS	7½' – 9'	18	9.0	30	16	14	99	29	SC
	5	SS	10' – 11½'	21							
	6	SS	13½' – 15'	28							
B-26	1	SS	0' – 1½'	5	5.8				99	20	
	2	SS	2½' – 4'	29	7.0	29	17	12	91	26	SC
	3	SS	5' – 6½'	6							
	4	SS	8½' – 10'	14	12.6	42	18	24	93	50	CL
B-27	1	SS	0' – 1½'	19							
	2	SS	2½' – 4'	21	14.5	46	32	14	83	21	SC
	3	SS	5' – 6½'	14	13.7	-	-	NP	92	30	SM
	4	SS	7½' – 9'	13							
	5	SS	10' – 11½'	29	9.1	33	15	18	99	38	SC
	6	SS	13½' – 15'	23							
B-28	1	SS	0' – 1½'	5	8.5	-	-	NP	99	24	SM
	2	SS	2½' – 4'	20	11.0	28	22	6	65	12	SC-SM
	3	SS	5' – 6½'	17							
	4	SS	8½' – 10'	14							

Note: SS – Split-Spoon Sample, NP – Non-plastic by test

Boring No.	Sample No.	Sample Type	Approx. Sample Depth (ft.)	N-Value	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 4 Sieve	% Passing No. 200 Sieve	USCS
B-29	1	SS	0' – 1½'	23	10.3	-	-	NP	70	15	SM
	2	SS	2½' – 4'	7							
	3	SS	5' – 6½'	25							
	4	SS	7½' – 9'	29	10.0	-	-	NP	85	15	SM
	5	SS	10' – 11½'	17							
	6	SS	15' - 16½'	25	1.8	-	-	NP	96	3	SP
	7	SS	18½' – 20'	39							
B-30	1	SS	0' – 1½'	21							
	2	SS	2½' – 4'	6	7.0	-	-	NP	90	17	SM
	3	SS	5' – 6½'	33							
	4	SS	7½' – 9'	25							
	5	SS	10' – 11½'	20	15.4	-	-	NP	92	17	SM
	6	SS	15' - 16 ½'	27	3.3	-	-	NP	99	5	SP
	7	SS	18½' – 20'	41							
B-31	1	SS	0' – 1½'	13	5.3	-	-	NP	87	16	SM
	2	SS	2½' – 4'	6							
	3	SS	5' – 6½'	5							
	4	SS	7½' – 9'	30	8.8	29	20	9	92	26	SC
	5	SS	10' – 11½'	50							
	6	SS	15' - 16½'	42							
	7	SS	18½' – 20'	36	1.1	-	-	NP	99	4	SP
B-32	1	SS	0' – 1½'	4	9.4	23	16	7	99	26	SC
	2	SS	2½' – 4'	49							
	3	SS	5' – 6½'	13	11.2	35	21	14	96	25	SC
	4	SS	8½' – 10'	13							
B-33	1	SS	0' – 1½'	8							
	2	SS	2½' – 4'	13	5.1	-	-	NP	98	19	SM
	3	SS	5' – 6½'	27	11.9	38	27	11	86	23	SC
	4	SS	8½' – 10'	20							

Note: SS – Split-Spoon Sample, NP – Non-plastic by test

Boring No.	Sample No.	Sample Type	Approx. Sample Depth (ft.)	N-Value	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 4 Sieve	% Passing No. 200 Sieve	USCS
B-34	1	SS	0' – 1½'	10	5.3	-	-	NP	100	22	SM
	2	SS	2½' – 4'	10							
	3	SS	5' – 6½'	13							
	4	SS	8½' – 10'	13	4.9	-	-	NP	97	15	SM
B-35	1	SS	0' – 1½'	13							
	2	SS	2½' – 4'	5	6.0	-	-	NP	94	12	SM
	3	SS	5' – 6½'	44	12.0	-	-	NP	91	22	SM
	4	SS	7½' – 9'	11							
	5	SS	10' – 11½'	11	9.0				94	13	SM
	6	SS	15' - 16 ½'	16	7.0	-	-	NP	100	10	SP-SM
	7	SS	18½' – 20'	32	2.0				100	3	
C-1*	1	GB	0.27' – 1.27'	-	14.9	30	20	10	81	23	SC
C-2*	1	GB	0.21' – 1.21'	-	11.8	29	17	12	82	23	SC
C-3*	1	GB	0.23' – 1.23'	-	16.4	27	18	9	89	25	SC

Note: SS – Split-Spoon Sample, NP – Non-plastic by test, GB – Grab Sample
Note *: Soil sample obtained immediately below the apparent asphaltic concrete material

Construction Materials Testing
Geotechnical Engineering
Environmental Site Assessments
Forensic Analysis/Testing

SOIL MOISTURE - DENSITY RELATIONSHIP TEST RESULTS

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater Systems
El Paso, El Paso County, Texas

SAMPLE INFORMATION

PROCTOR NO.: 1 **SAMPLED BY:** DN

SOIL SAMPLE LOCATION: B-1 **SAMPLE DATE:** 1/26/2016

SOIL SAMPLE APPROX. DEPTH: 5'-10'

SOIL TYPE/DESCRIPTION: On Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown with some calcareous material.

SAMPLE TEST RESULTS

Sieve Analysis Test
Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
3"	0	100
2-1/2"	0	100
1-1/2"	0	100
1"	0	100
3/4"	0	100
1/2"	2	98
3/8"	6	94
No. 4	19	81
No. 10	35	65
No. 40	51	49
No. 100	68	32
No. 200	84	16

NS- Not Specified

Atterberg Limits Test
Test Method: ASTM D 4318

Limit Test	Index Test Result
LL	36
PL	22
PI	14

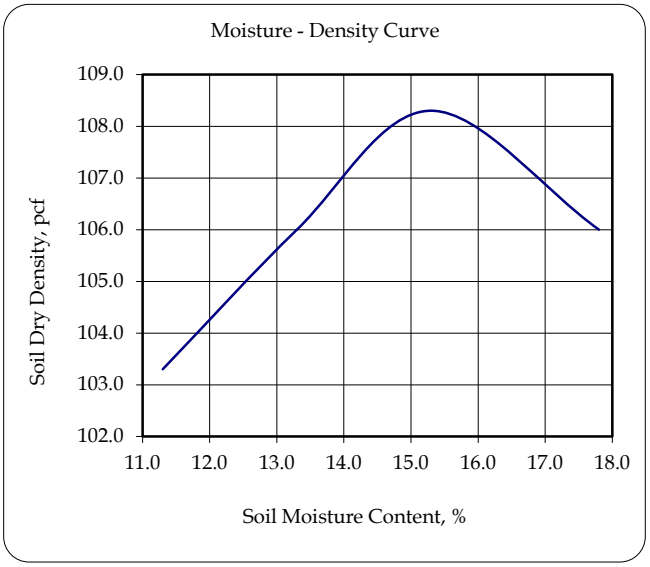
NP-Non Plastic
NS - Not Specified

Soil Classification: **SC**
Test Method: ASTM D 2487

Moisture-Density Relationship Test
Test Method: ASTM D 1557, Method "B"

Test Sample No.	Moisture Content (%)	Sample Dry Density (pcf)
1	11.3	103.3
2	13.3	106.0
3	15.3	108.3
4	17.8	106.0

Maximum Dry Density, pcf: **108.3**
Optimum Moisture Content, %: **15.2**



Construction Materials Testing
Geotechnical Engineering
Environmental Site Assessments
Forensic Analysis/Testing

SOIL MOISTURE - DENSITY RELATIONSHIP TEST RESULTS

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater Systems
El Paso, El Paso County, Texas

SAMPLE INFORMATION

PROCTOR NO.: 1 **SAMPLED BY:** DN

SOIL SAMPLE LOCATION: B-6 **SAMPLE DATE:** 1/26/2016

SOIL SAMPLE APPROX. DEPTH: 5'-10'

SOIL TYPE/DESCRIPTION: On Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown to Brown with some calcareous material.

SAMPLE TEST RESULTS

Sieve Analysis Test
Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
3"	0	100
2-1/2"	0	100
1-1/2"	0	100
1"	0	100
3/4"	2	98
1/2"	4	96
3/8"	8	92
No. 4	18	82
No. 10	31	69
No. 40	45	55
No. 100	65	35
No. 200	83	17

NS- Not Specified

Atterberg Limits Test
Test Method: ASTM D 4318

Limit Test	Index Test Result
LL	42
PL	22
PI	20

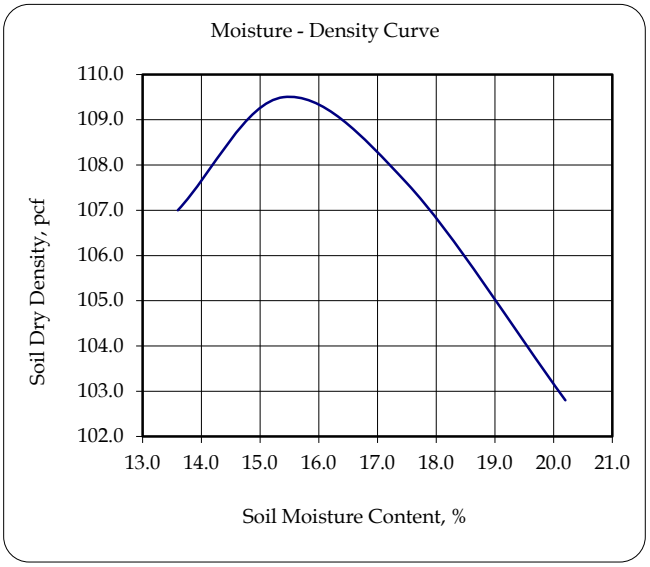
NP-Non Plastic
NS - Not Specified

Soil Classification: **SC**
Test Method: ASTM D 2487

Moisture-Density Relationship Test
Test Method: ASTM D 1557, Method "B"

Test Sample No.	Moisture Content (%)	Sample Dry Density (pcf)
1	13.6	107.0
2	15.4	109.5
3	17.5	107.6
4	20.2	102.8

Maximum Dry Density, pcf: **109.5**
Optimum Moisture Content, %: **15.5**



Construction Materials Testing
Geotechnical Engineering
Environmental Site Assessments
Forensic Analysis/Testing

SOIL MOISTURE - DENSITY RELATIONSHIP TEST RESULTS

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater Systems
El Paso, El Paso County, Texas

SAMPLE INFORMATION

PROCTOR NO.: 1 **SAMPLED BY:** DN

SOIL SAMPLE LOCATION: B-18 **SAMPLE DATE:** 2/4/2016

SOIL SAMPLE APPROX. DEPTH: 2'-10'

SOIL TYPE/DESCRIPTION: On Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown to Brown with calcareous material.

SAMPLE TEST RESULTS

Sieve Analysis Test
Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
3"	0	100
2-1/2"	0	100
1-1/2"	0	100
1"	0	100
3/4"	0	100
1/2"	1	99
3/8"	5	95
No. 4	18	82
No. 10	36	64
No. 40	56	44
No. 100	76	24
No. 200	88	12

NS- Not Specified

Atterberg Limits Test
Test Method: ASTM D 4318

Limit Test	Index Test Result
LL	35
PL	23
PI	12

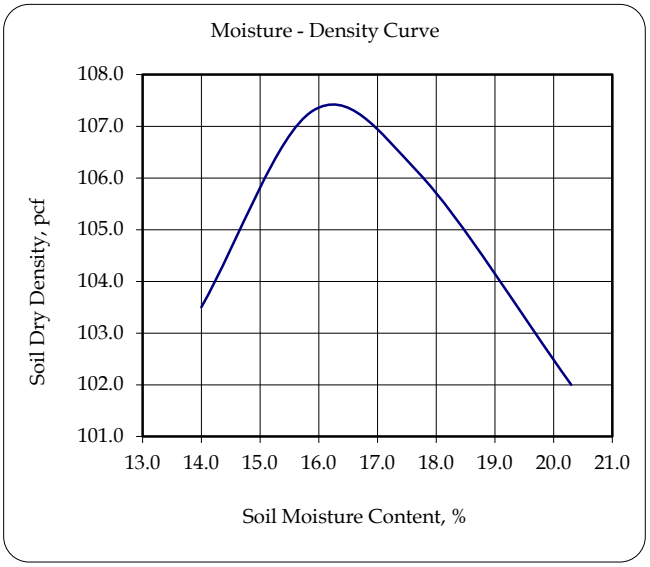
NP-Non Plastic
NS - Not Specified

Soil Classification: **SC**
Test Method: ASTM D 2487

Moisture-Density Relationship Test
Test Method: ASTM D 1557, Method "B"

Test Sample No.	Moisture Content (%)	Sample Dry Density (pcf)
1	14.0	103.5
2	15.9	107.3
3	17.7	106.1
4	20.3	102.0

Maximum Dry Density, pcf: **107.4**
Optimum Moisture Content, %: **16.1**



Construction Materials Testing
Geotechnical Engineering
Environmental Site Assessments
Forensic Analysis/Testing

SOIL MOISTURE - DENSITY RELATIONSHIP TEST RESULTS

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater Systems
El Paso, El Paso County, Texas

SAMPLE INFORMATION

PROCTOR NO.: 1 **SAMPLED BY:** DN

SOIL SAMPLE LOCATION: B-21 **SAMPLE DATE:** 2/4/2016

SOIL SAMPLE APPROX. DEPTH: 5'-10'

SOIL TYPE/DESCRIPTION: On Site Subsurface Soils / SAND, Fine Grained, Clayey, Light Brown to Brown with some calcareous material.

SAMPLE TEST RESULTS

Sieve Analysis Test
Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
3"	0	100
2-1/2"	0	100
1-1/2"	0	100
1"	0	100
3/4"	0	100
1/2"	1	99
3/8"	3	97
No. 4	9	91
No. 10	14	86
No. 40	25	75
No. 100	52	48
No. 200	69	31

NS- Not Specified

Atterberg Limits Test
Test Method: ASTM D 4318

Limit Test	Index Test Result
LL	49
PL	22
PI	27

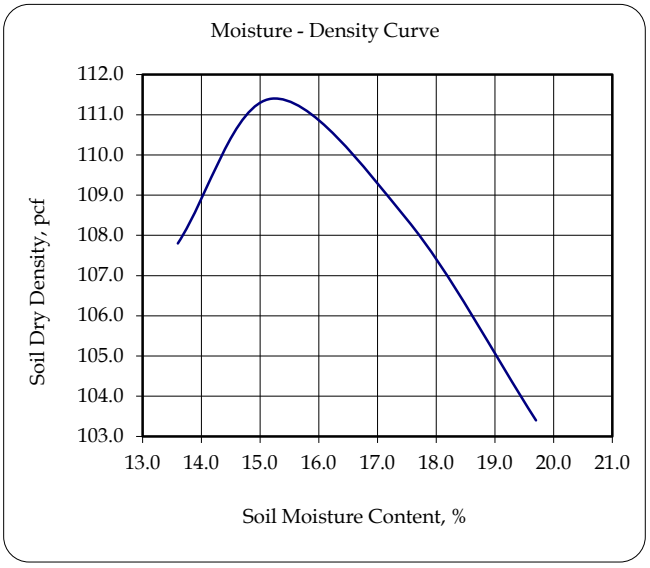
NP-Non Plastic
NS - Not Specified

Soil Classification: **SC**
Test Method: ASTM D 2487

Moisture-Density Relationship Test
Test Method: ASTM D 1557, Method "B"

Test Sample No.	Moisture Content (%)	Sample Dry Density (pcf)
1	13.6	107.8
2	15.2	111.4
3	17.5	108.4
4	19.7	103.4

Maximum Dry Density, pcf: **111.4**
Optimum Moisture Content, %: **15.3**



construction quality control
testing and engineering

Construction Materials Testing
Geotechnical Engineering
Environmental Site Assessments
Forensic Analysis/Testing

SOIL MOISTURE - DENSITY RELATIONSHIP TEST RESULTS

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Soils Evaluation
County of El Paso-Desert Acceptance (Square Dance)
Wastewater Systems
El Paso, El Paso County, Texas

SAMPLE INFORMATION

PROCTOR NO.: 1 **SAMPLED BY:** DN

SOIL SAMPLE LOCATION: B-30 **SAMPLE DATE:** 3/2/2016

SOIL SAMPLE APPROX. DEPTH: 0'-5'

SOIL TYPE/DESCRIPTION: On Site Subsurface Soils / SAND, Fine to Coarse Grained, Clayey, Light Brown to Brown with calcareous material and some clay particles.

SAMPLE TEST RESULTS

Sieve Analysis Test
Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
3"	0	100
2-1/2"	0	100
1-1/2"	0	100
1"	0	100
3/4"	1	99
1/2"	5	95
3/8"	9	91
No. 4	17	83
No. 10	23	77
No. 40	32	68
No. 100	59	41
No. 200	77	23

NS- Not Specified

Atterberg Limits Test
Test Method: ASTM D 4318

Limit Test	Index Test Result
LL	33
PL	20
PI	13

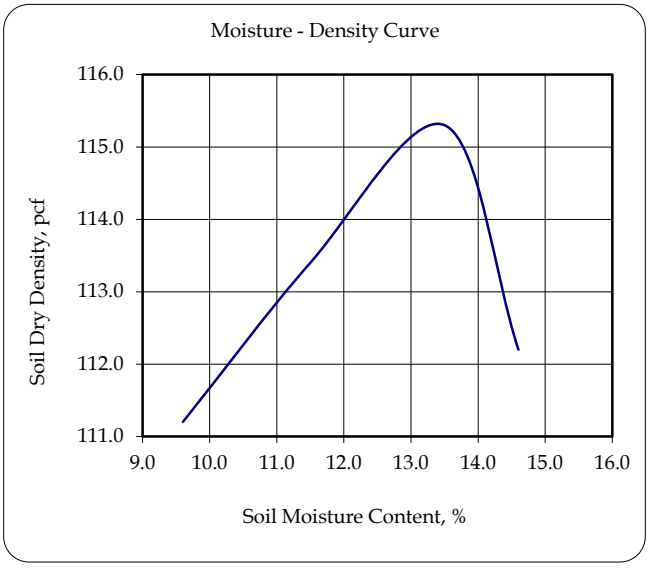
NP-Non Plastic
NS - Not Specified

Soil Classification: **SC**
Test Method: ASTM D 2487

Moisture-Density Relationship Test
Test Method: ASTM D 1557, Method "B"

Test Sample No.	Moisture Content (%)	Sample Dry Density (pcf)
1	9.6	111.2
2	11.5	113.4
3	13.5	115.3
4	14.6	112.2

Maximum Dry Density, pcf: **115.3**
Optimum Moisture Content, %: **13.4**



SOIL RESISTIVITY TEST RESULTS
MEASURING THE RESISTIVITY OF SOIL MATERIALS
TxDOT Designation: Tex-129-E

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Subsurface Soils Evaluation
County of El Paso - Desert Acceptance (Square Dance) Wastwater System
El Paso, El Paso County, Texas

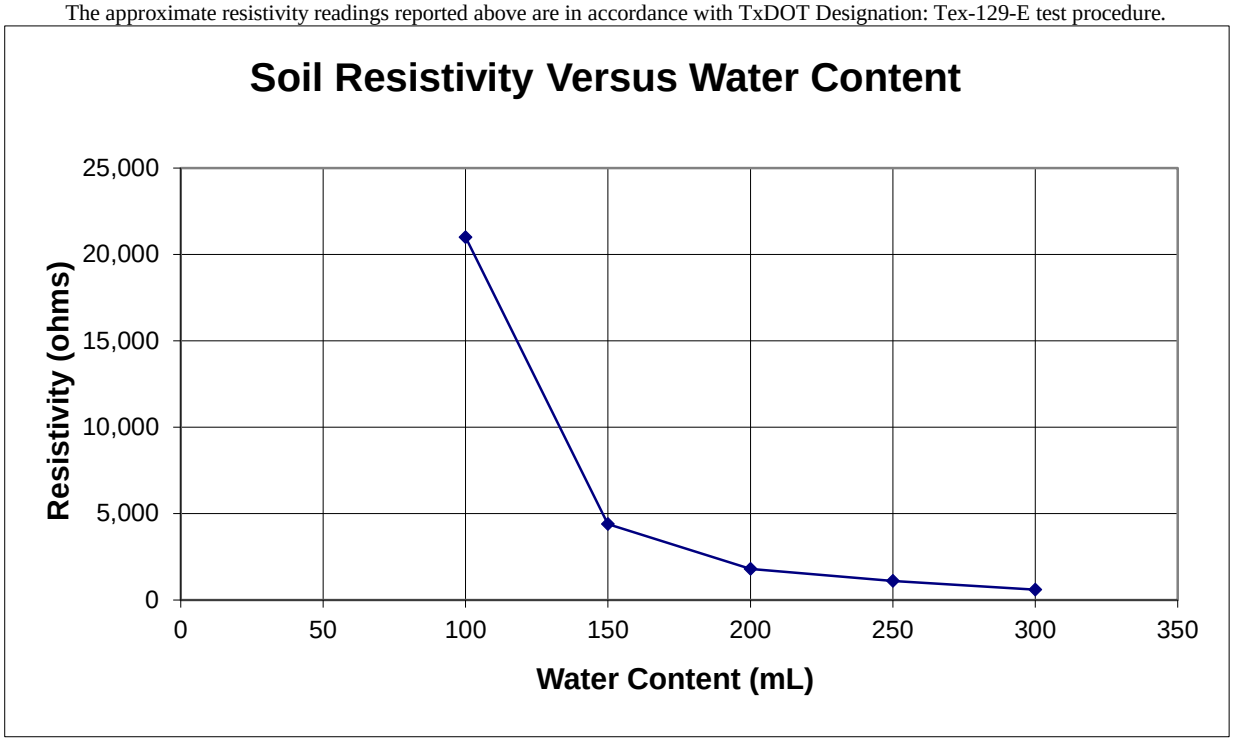
SAMPLE LOCATION: B-1

SAMPLE DEPTH: 0'-5'

SOIL TYPE/DESCRIPTION: SAND, Fine Grained, Silty, Light Brown with some calcareous material

Water Added (mL)	Dial Reading	Multiplier	Resistance (ohms)	Box Factor	Resistivity (ohms-cm)
100	2.1	10^4	21,000	1	21,000
150	4.4	10^3	4,400	1	4,400
200	1.8	10^3	1,800	1	1,800
250	1.1	10^3	1,100	1	1,100
300	0.6	10^3	600	1	600

The approximate resistivity readings reported above are in accordance with TxDOT Designation: Tex-129-E test procedure.



SOIL RESISTIVITY TEST RESULTS
MEASURING THE RESISTIVITY OF SOIL MATERIALS
TxDOT Designation: Tex-129-E

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Subsurface Soils Evaluation
County of El Paso - Desert Acceptance (Square Dance) Wastwater System
El Paso, El Paso County, Texas

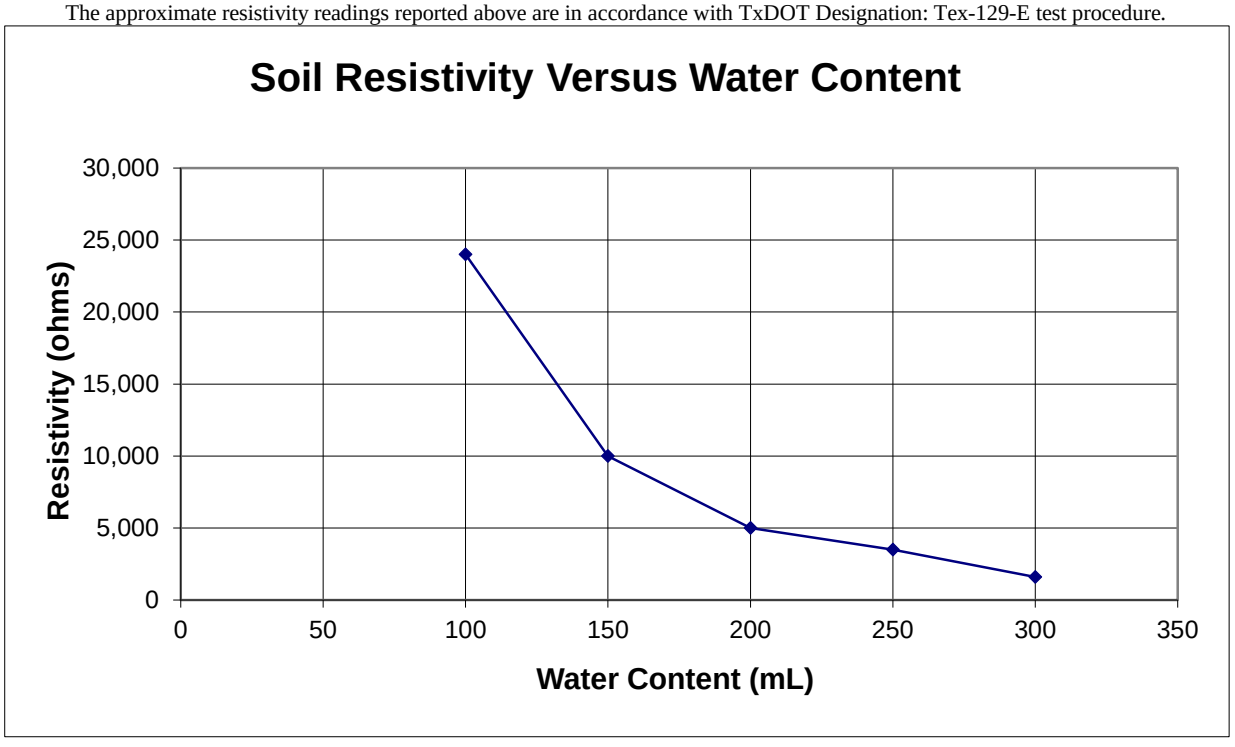
SAMPLE LOCATION: B-8

SAMPLE DEPTH: 0'-10'

SOIL TYPE/DESCRIPTION: SAND, Fine Grained, Silty, Light Brown to Reddish Brown

Water Added (mL)	Dial Reading	Multiplier	Resistance (ohms)	Box Factor	Resistivity (ohms-cm)
100	2.4	10^4	24,000	1	24,000
150	1.0	10^4	10,000	1	10,000
200	0.5	10^4	5,000	1	5,000
250	3.5	10^3	3,500	1	3,500
300	1.6	10^3	1,600	1	1,600

The approximate resistivity readings reported above are in accordance with TxDOT Designation: Tex-129-E test procedure.



SOIL RESISTIVITY TEST RESULTS

MEASURING THE RESISTIVITY OF SOIL MATERIALS

TxDOT Designation: Tex-129-E

PROJECT NO.: AGCQC16-003

PROJECT NAME: General Subsurface Soils Evaluation
County of El Paso - Desert Acceptance (Square Dance) Wastwater System
El Paso, El Paso County, Texas

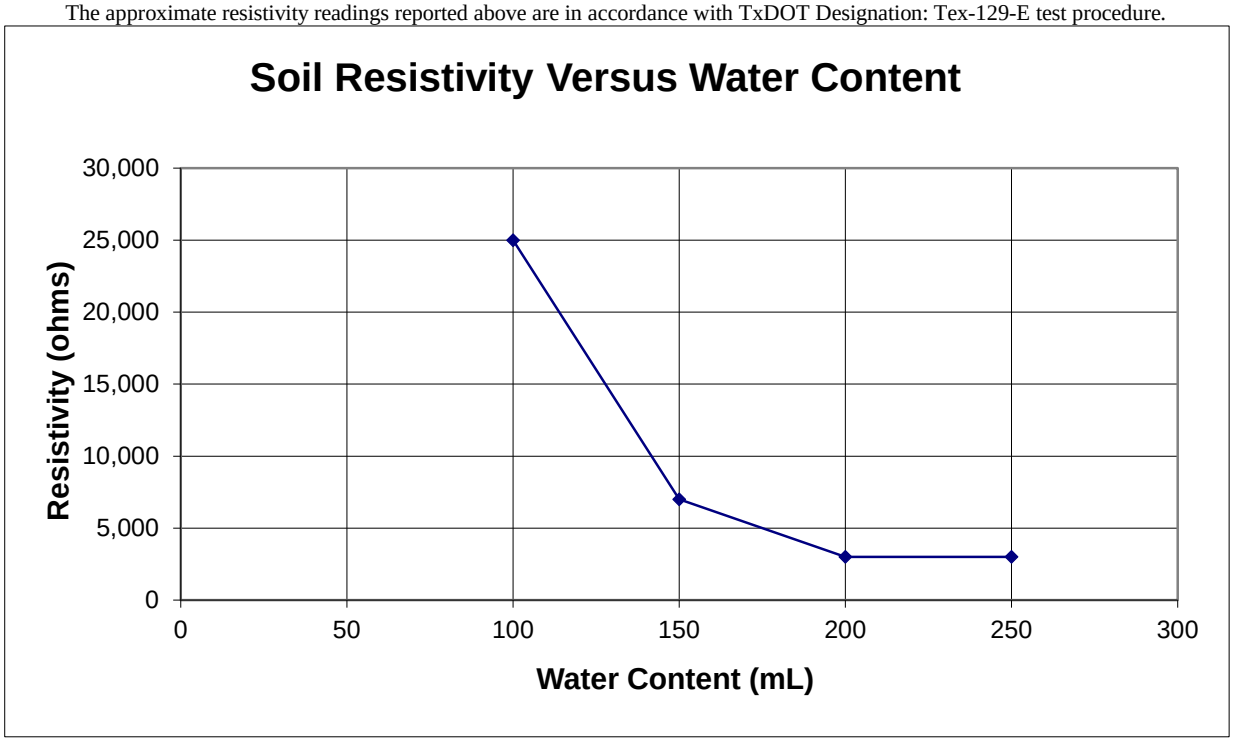
SAMPLE LOCATION: B-23

SAMPLE DEPTH: 0'-10'

SOIL TYPE/DESCRIPTION: SAND, Fine Grained, Clayey, Brown to Light Brown with calcareous material

Water Added (mL)	Dial Reading	Multiplier	Resistance (ohms)	Box Factor	Resistivity (ohms-cm)
100	2.5	10^4	25,000	1	25,000
150	0.7	10^4	7,000	1	7,000
200	3.0	10^3	3,000	1	3,000
250	3.0	10^3	3,000	1	3,000

The approximate resistivity readings reported above are in accordance with TxDOT Designation: Tex-129-E test procedure.



SOIL RESISTIVITY TEST RESULTS

MEASURING THE RESISTIVITY OF SOIL MATERIALS

TxDOT Designation: Tex-129-E

PROJECT NO.: AGCQC16-003

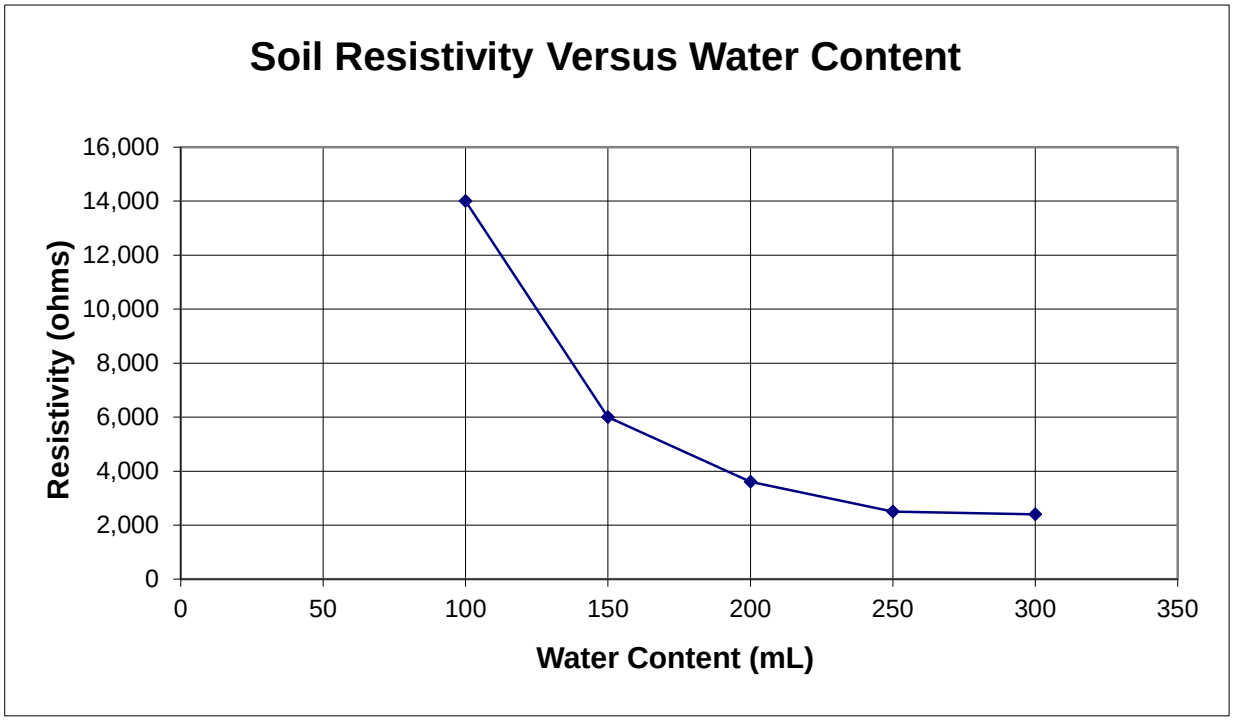
PROJECT NAME: General Subsurface Soils Evaluation
County of El Paso - Desert Acceptance (Square Dance) Wastwater System
El Paso, El Paso County, Texas

SAMPLE LOCATION: B-28

SAMPLE DEPTH: 5'-10'

SOIL TYPE/DESCRIPTION: SAND, Fine Grained, Silty, Clayey, Light Brown with calcareous material

Water Added (mL)	Dial Reading	Multiplier	Resistance (ohms)	Box Factor	Resistivity (ohms-cm)
100	1.4	10^4	14,000	1	14,000
150	0.6	10^4	6,000	1	6,000
200	3.6	10^3	3,600	1	3,600
250	2.5	10^3	2,500	1	2,500
300	2.4	10^3	2,400	1	2,400



SOIL RESISTIVITY TEST RESULTS

MEASURING THE RESISTIVITY OF SOIL MATERIALS

TxDOT Designation: Tex-129-E

PROJECT NO.: AGCQC16-003

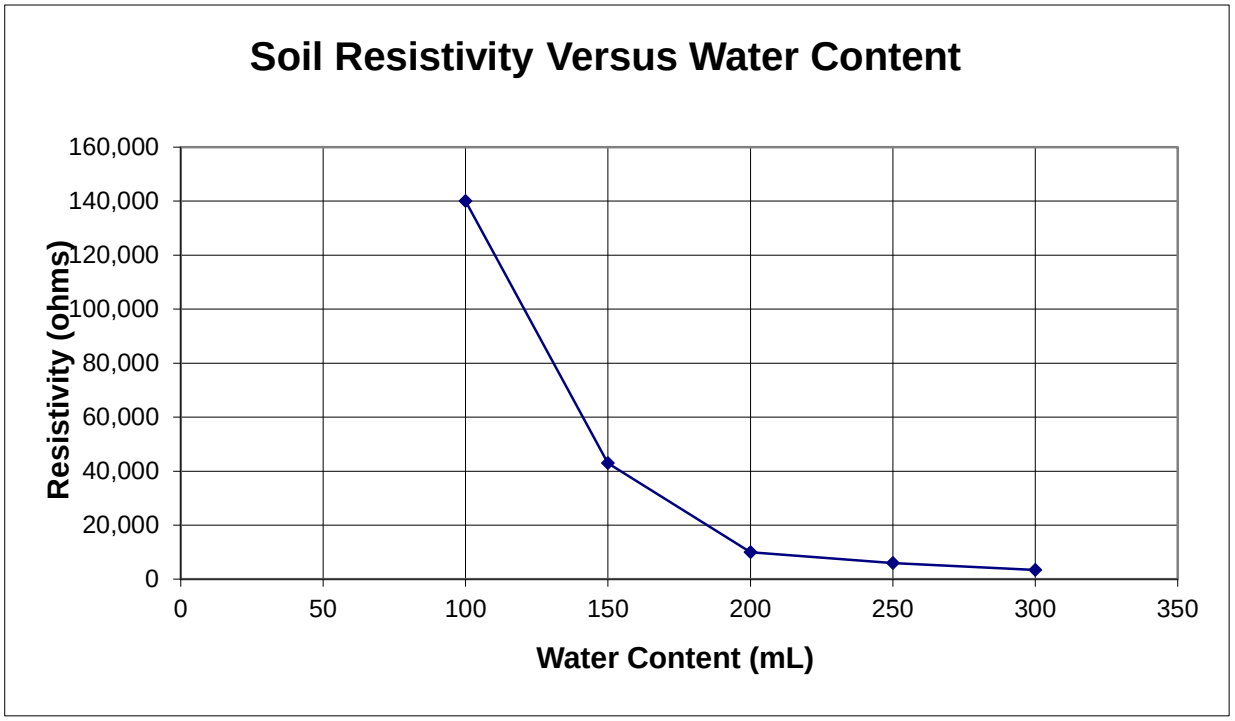
PROJECT NAME: General Subsurface Soils Evaluation
County of El Paso - Desert Acceptance (Square Dance) Wastwater System
El Paso, El Paso County, Texas

SAMPLE LOCATION: B-29

SAMPLE DEPTH: 5'

SOIL TYPE/DESCRIPTION: SAND, Fine to Coarse Grained, Silty, Brown to Whitish Brown with calcareous material

Water Added (mL)	Dial Reading	Multiplier	Resistance (ohms)	Box Factor	Resistivity (ohms-cm)
100	1.4	10^5	140,000	1	140,000
150	4.3	10^4	43,000	1	43,000
200	1.0	10^4	10,000	1	10,000
250	0.6	10^4	6,000	1	6,000
300	3.4	10^3	3,400	1	3,400



SOIL RESISTIVITY TEST RESULTS
MEASURING THE RESISTIVITY OF SOIL MATERIALS
TxDOT Designation: Tex-129-E

PROJECT NO.: AGCQC16-003

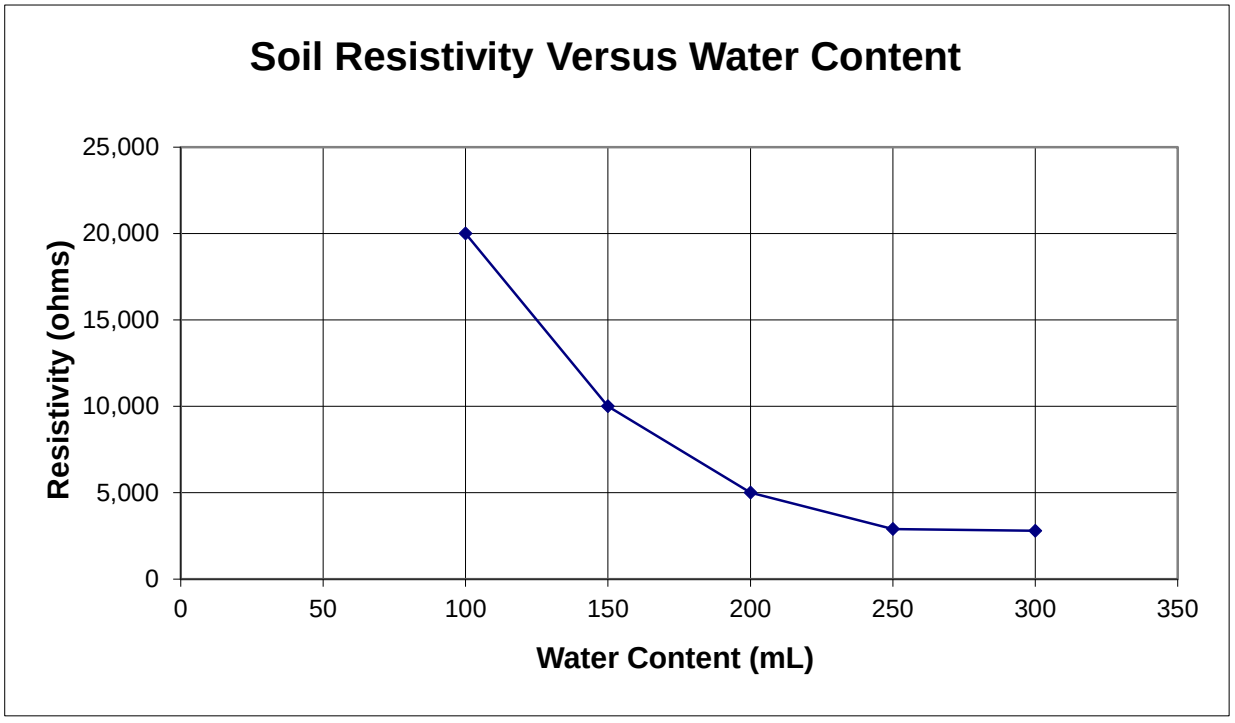
PROJECT NAME: General Subsurface Soils Evaluation
County of El Paso - Desert Acceptance (Square Dance) Wastwater System
El Paso, El Paso County, Texas

SAMPLE LOCATION: B-31

SAMPLE DEPTH: 10'

SOIL TYPE/DESCRIPTION: SAND, Fine to Coarse Grained, Clayey, Light Brown to Whitish Brown with calcareous material

Water Added (mL)	Dial Reading	Multiplier	Resistance (ohms)	Box Factor	Resistivity (ohms-cm)
100	2.0	10^4	20,000	1	20,000
150	1.0	10^4	10,000	1	10,000
200	0.5	10^4	5,000	1	5,000
250	2.9	10^3	2,900	1	2,900
300	2.8	10^3	2,800	1	2,800



CQC Testing and Engineering LLC-TBPE Firm No. F-10632
6802 Commerce, Unit "9A"
El Paso, Texas 79915
Telephone: (915) 771-7766
Fax: (915) 771-7786

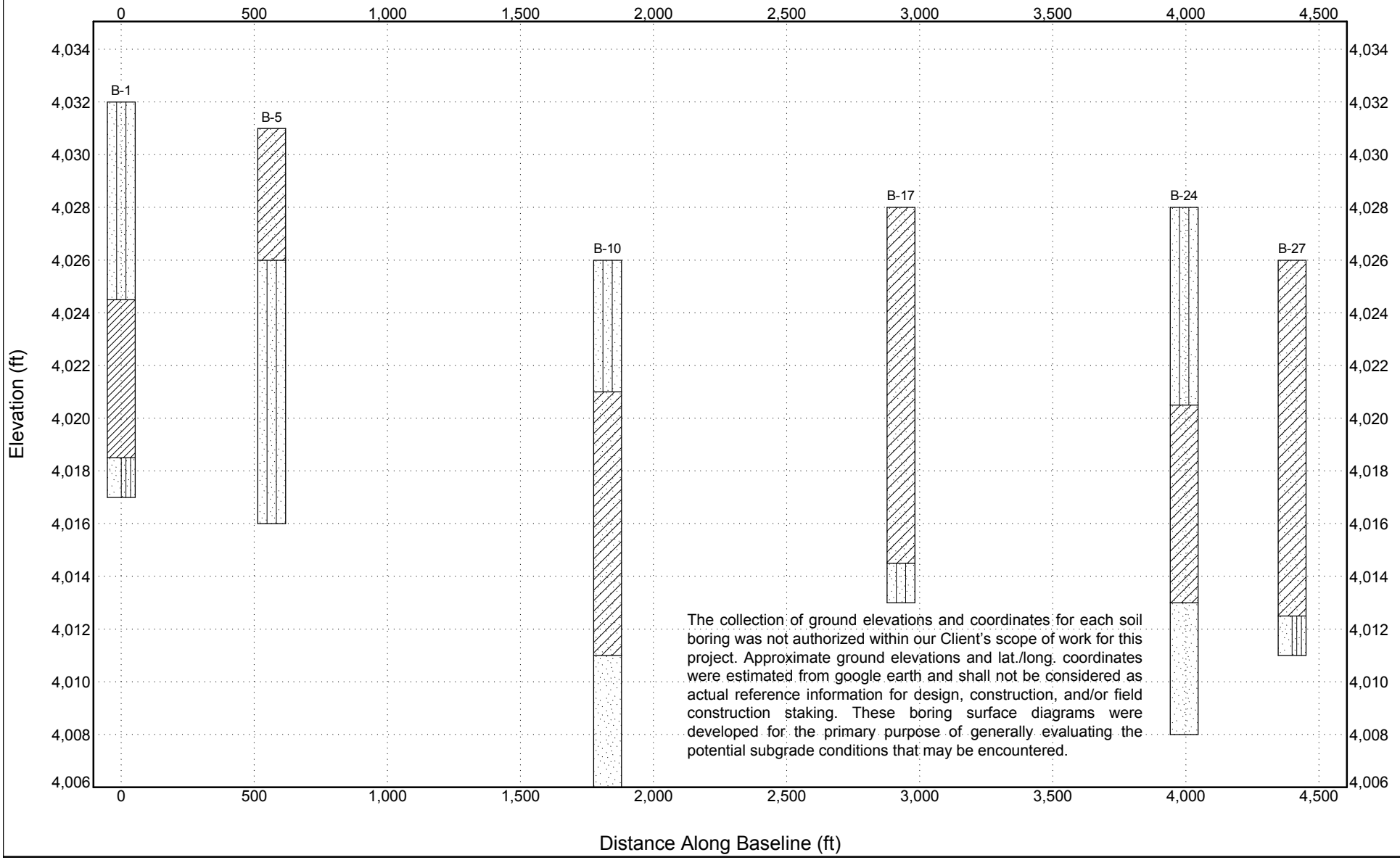
USCS Silty Sand | USCS Low Plasticity Clay | USCS Poorly-graded Sand with Silt | USCS Clayey Sand | USCS Poorly-graded Sand

SURFACE PROFILE No. 1

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

SUBSURFACE DIAGRAM



The collection of ground elevations and coordinates for each soil boring was not authorized within our Client's scope of work for this project. Approximate ground elevations and lat./long. coordinates were estimated from google earth and shall not be considered as actual reference information for design, construction, and/or field construction staking. These boring surface diagrams were developed for the primary purpose of generally evaluating the potential subgrade conditions that may be encountered.

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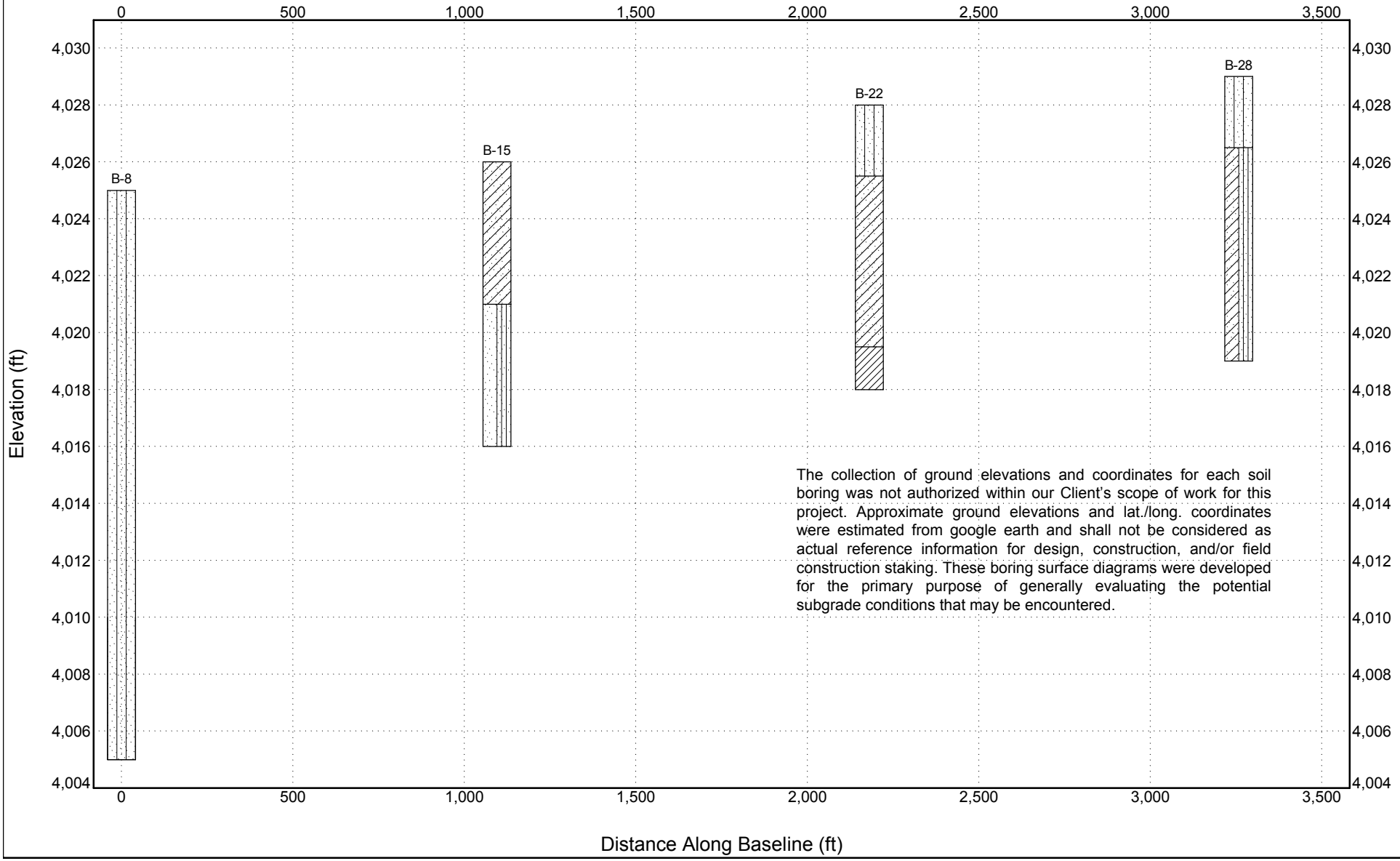
USCS Clayey Sand | USCS Poorly-graded Sand with Silt | USCS Silty Sand | USCS Low Plasticity Clay | USCS Clayey Sand

SURFACE PROFILE No. 2

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

SUBSURFACE DIAGRAM



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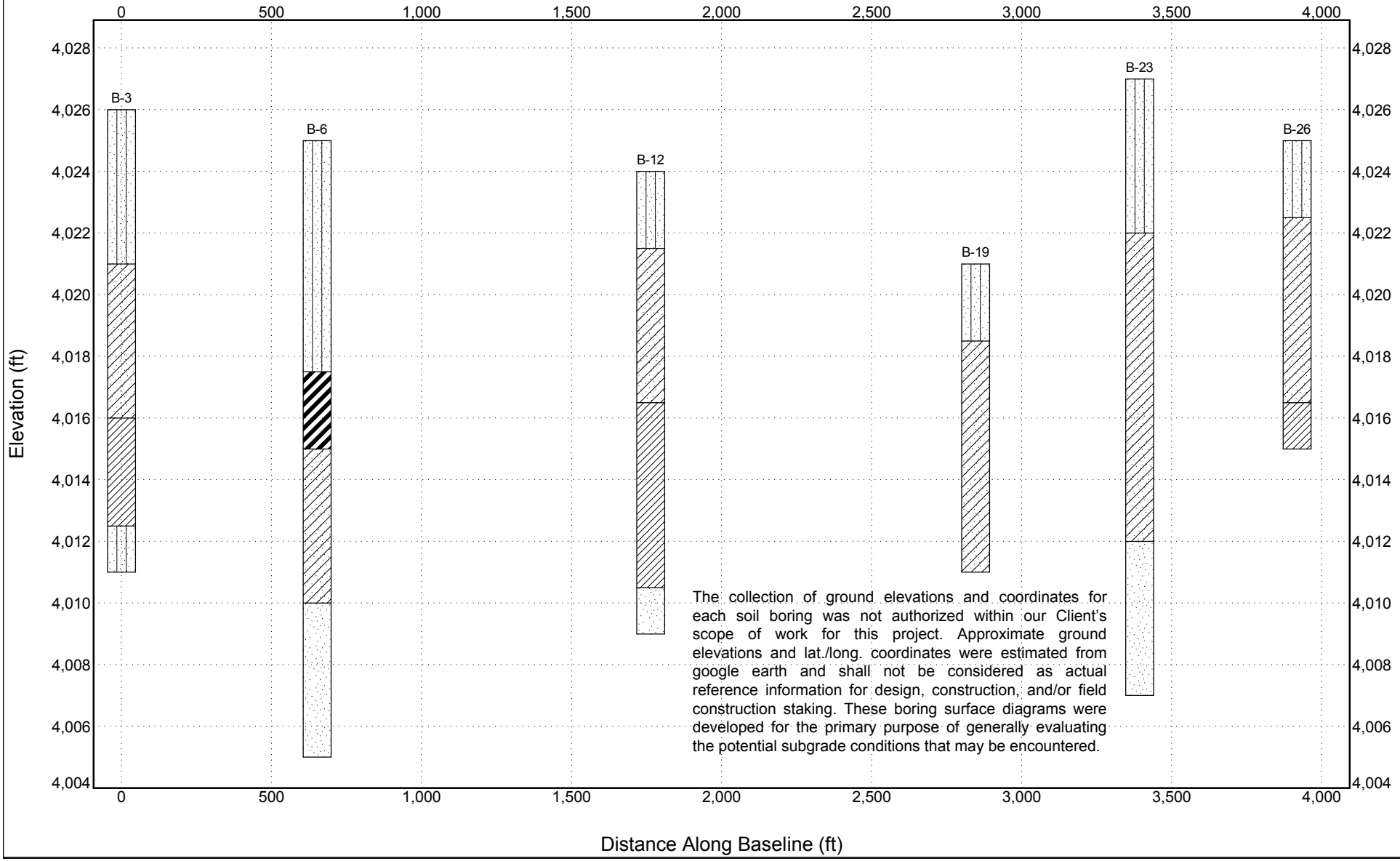
USCS Silty Sand | USCS Clayey Sand | USCS Low Plasticity Clay | USCS Poorly-graded Sand | USCS High Plasticity Clay

SURFACE PROFILE No. 3

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

SUBSURFACE DIAGRAM



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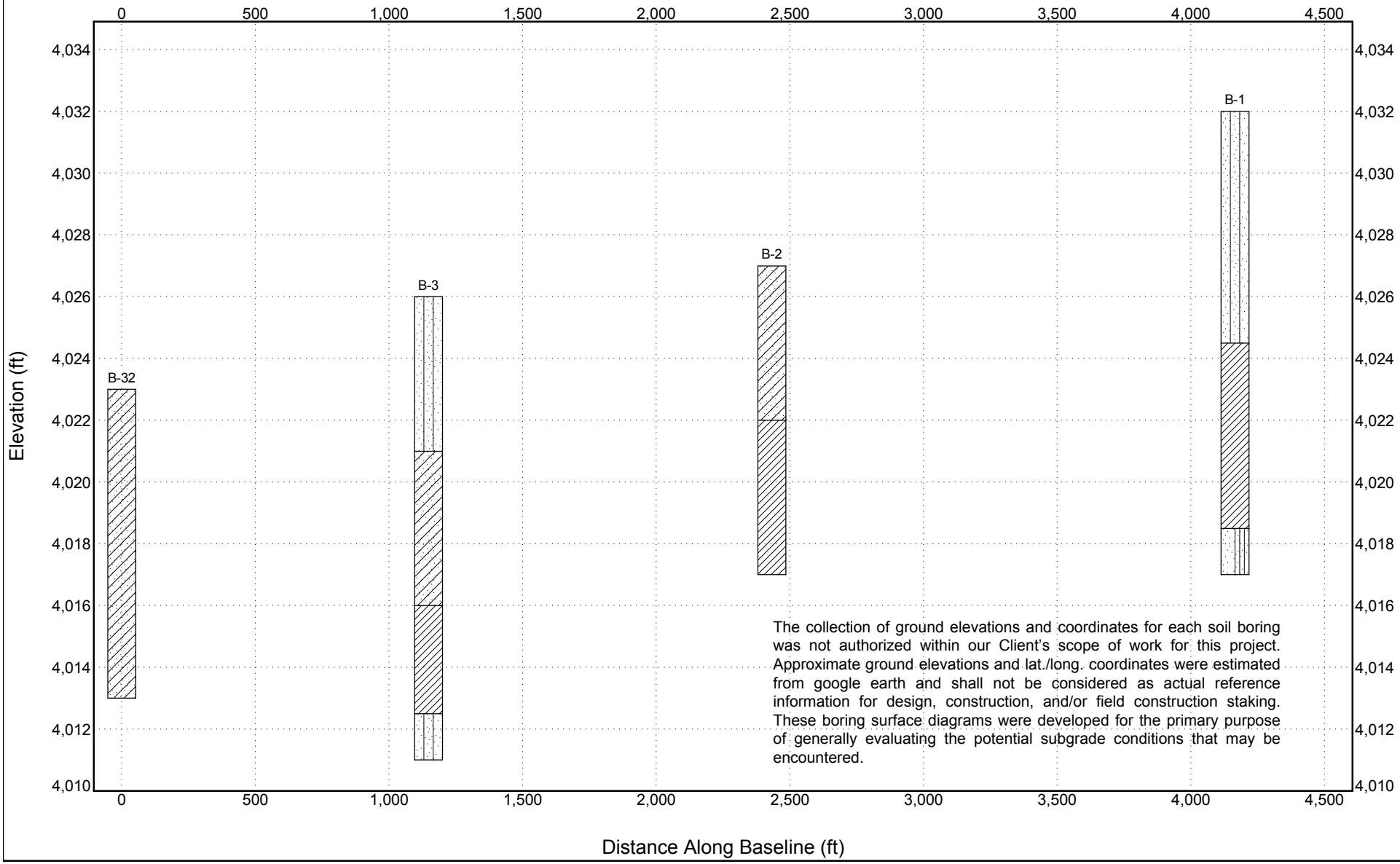
USCS Silty Sand | USCS Low Plasticity Clay | USCS Poorly-graded Sand with Silt | USCS Clayey Sand

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

SURFACE PROFILE No. 4

SUBSURFACE DIAGRAM



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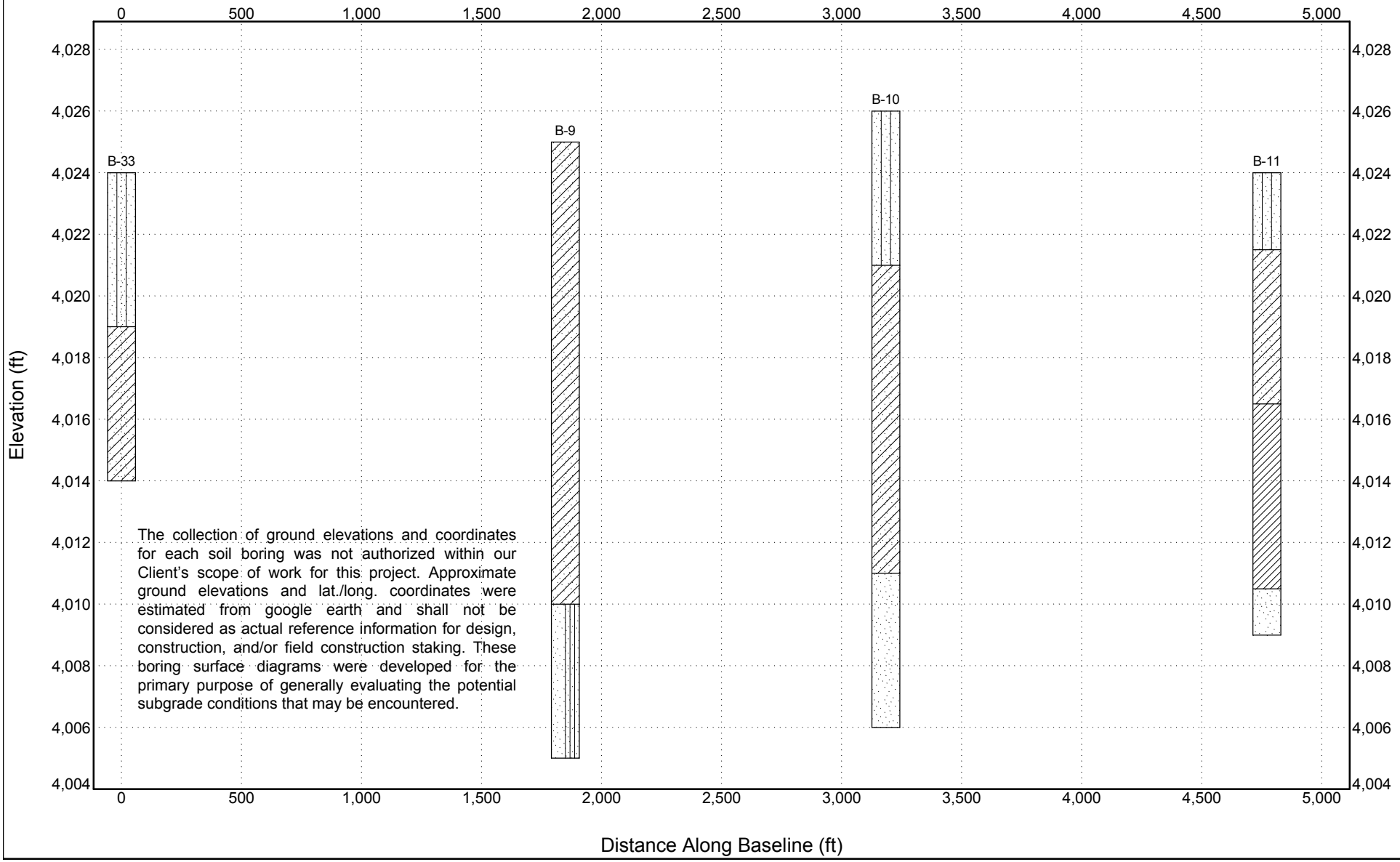
USCS Silty Sand | USCS Clayey Sand | USCS Poorly-graded Sand | USCS Low Plasticity Clay | USCS Poorly-graded Sand with Silt

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

SURFACE PROFILE No. 5

SUBSURFACE DIAGRAM



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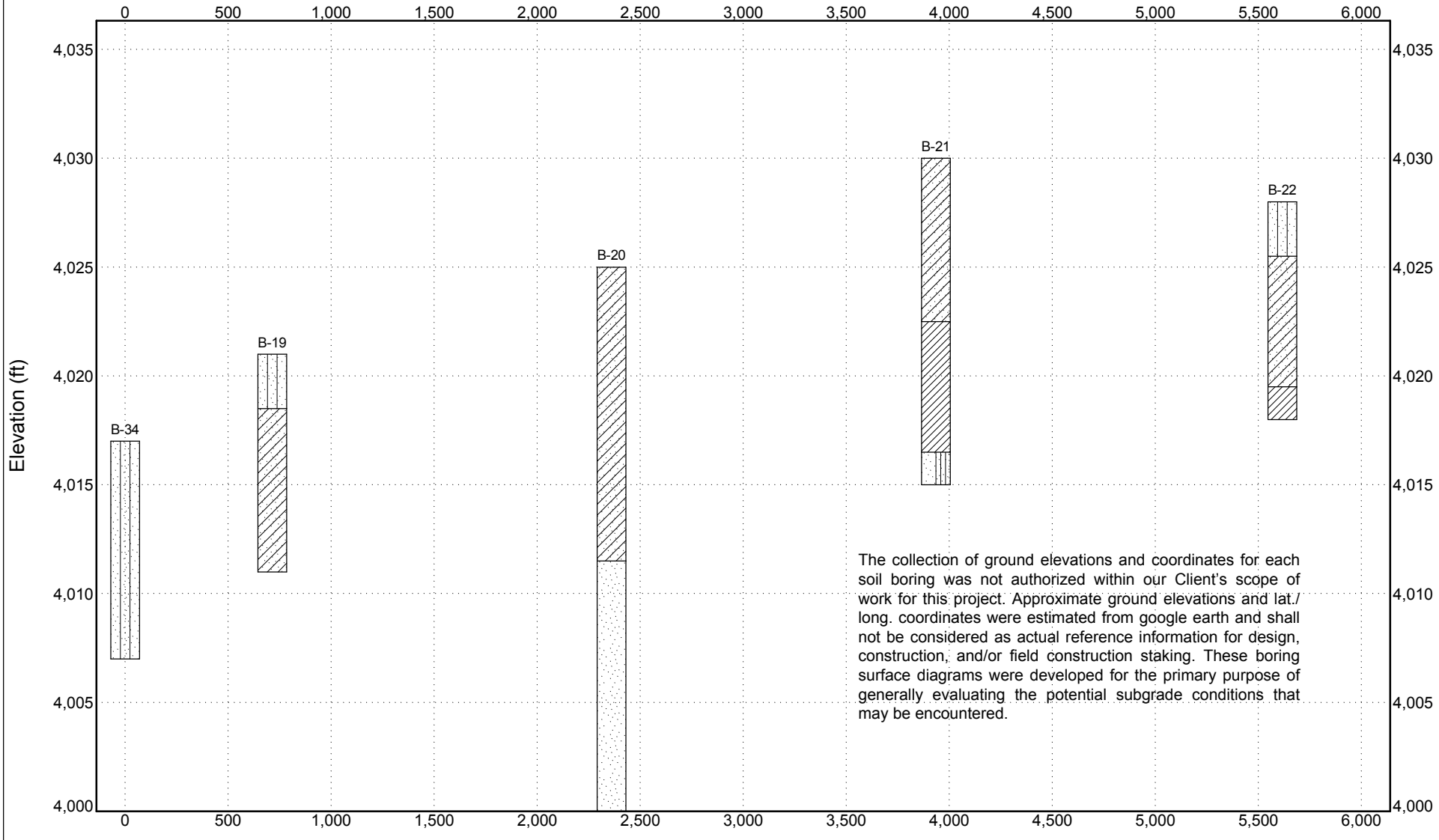
USCS Silty Sand | USCS Clayey Sand | USCS Poorly-graded Sand | USCS Low Plasticity Clay | USCS Poorly-graded Sand with Silt

SURFACE PROFILE No. 6

CLIENT Moreno Cardenas Inc. **PROJECT NAME** Desert Acceptance WW System Project

PROJECT NUMBER AGCQC16-003 **PROJECT LOCATION** El Paso, El Paso County, TX

SUBSURFACE DIAGRAM



The collection of ground elevations and coordinates for each soil boring was not authorized within our Client's scope of work for this project. Approximate ground elevations and lat./ long. coordinates were estimated from google earth and shall not be considered as actual reference information for design, construction, and/or field construction staking. These boring surface diagrams were developed for the primary purpose of generally evaluating the potential subgrade conditions that may be encountered.

APPENDIX B

GEOTECHNICAL REPORT
TECHNICAL REFERENCE INFORMATION

DEFINITION OF DESCRIPTIVE TERMS

DENSITY OF GRANULAR SOILS

SPT N Value	Relative Density
< 4	Very Loose
4 – 10	Loose
11 – 30	Med. Dense
31 – 50	Dense
50 – 80	Very Dense
> 80	Hard

CONSISTENCY OF COHESIVE SOILS

SPT N Value	Consistency
< 2	Very Soft
2 – 4	Soft
5 – 8	Medium Stiff
9 – 15	Stiff
16 – 50	Very Stiff
> 80	Very Hard

DEGREE OF PLASTICITY

Nonplastic –	Has no cohesion; will not roll into a thread.
Trace of Plasticity –	Barely hold its shape when rolled into a thread.
Low Plasticity –	Has sufficient cohesion to form a thread but will quickly rupture when deformed.
Med. Plasticity –	Has considerable cohesion. Can be molded into a thread and will withstand considerable deformation without rupture.
High Plasticity –	Can be kneaded like dough without trace of rupture.

MOISTURE DESCRIPTIONS

	GRANULAR SOILS	COHESIVE SOILS
Dry	No Apparent Moisture	No Apparent Moisture
Slightly Moist	< Than 3% by Weight	< Less Than Plastic Limit
Moist	3% to 9% by Weight	Approximately Plastic Limit
Very Moist	> 9% by Weight	> than PL but < than LL
Wet	Submerged or Saturated	Submerged or Saturated

PLASTICITY

Cohesion TSF	Plasticity Index	Degree of Plasticity
0-0.125	0-5	None
0.125-0.25	5-10	Low
0.25-0.5	10-20	Moderate
0.5-1.0	20-40	Plastic
1.0-2.0	> 40	Highly Plastic
> 2.0		

ABBREVIATIONS

V. – Very	Fl. – Fairly	Sl. – Slightly	Med. – Medium
Tr. – Trace	< - Less Than	> - Greater Than	PL – Plastic Limit
Mod. – Moderately			

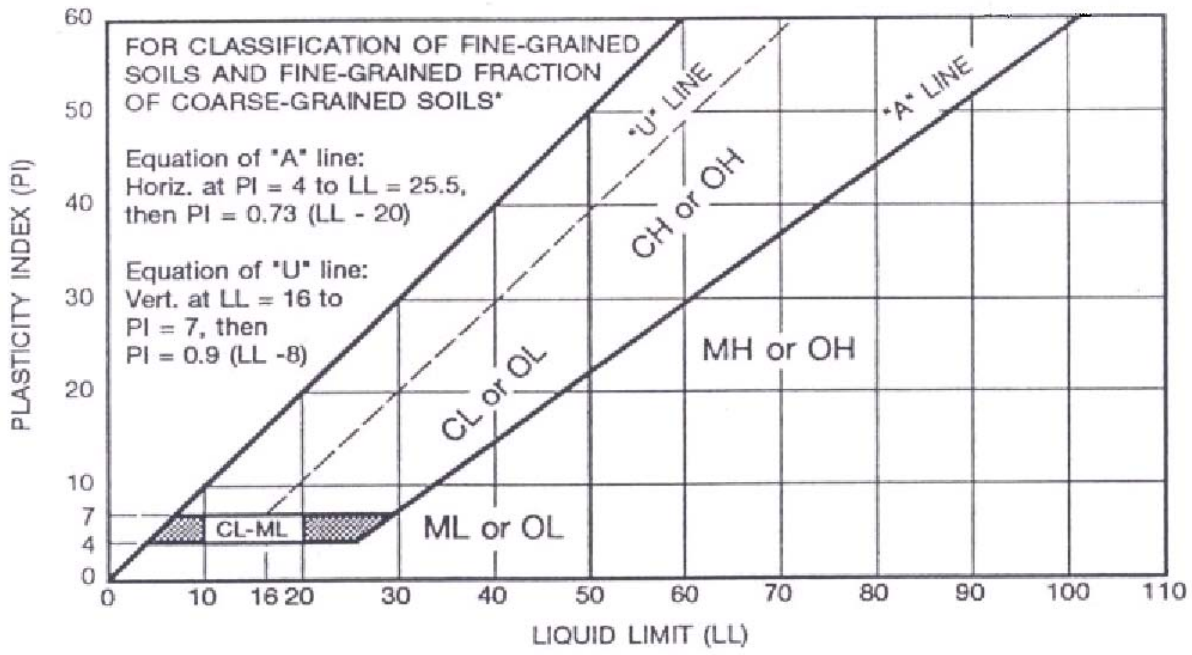
SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

GEOTECHNICAL REPORT
SOIL CLASSIFICATION REFERENCE INFORMATION

Cohesive Soil Classification Chart



U.S.STANDARD SIEVE

	12"	3"	¾"	4	10	40	200		
BOULDERS	COBBLES	GRAVEL		SAND				SILT	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE			
152	76.2	19.1	4.76	2.00	0.420	0.074	0.002		

SOIL GRAIN SIZE IN MILLIMETERS

Laboratory Test Methods:

Moisture Content Tests:

Moisture Contents are determined from representative portions of a soil sample. The samples initial weight is recorded and it is then dried to a constant weight. From this data the moisture content is calculated.

Atterberg Limit Tests:

Liquid Limit (LL), Plastic Limit (PL) and Shrinkage Limit (SL) tests are performed to aid in the classification of soils and to determine the plasticity and volume change characteristics of the materials. The Liquid Limit is the minimum moisture content at which a soil will flow as a heavy viscous fluid. The Plastic Limit is the minimum moisture content at which the soil behaves as a plastic material. The Shrinkage Limit is the moisture content below which no further volume change will take place with continued drying. The Plasticity Index (PI) is the numeric difference between the Liquid Limit and the Plastic Limit and indicates the range of moisture content over which a soil remains plastic.

Grain Size Distribution Test (Particle Size Analysis, Sieve Analysis):

The distribution of soils finer than the No. 200 sieve is determined by passing a representative soil sample through a standard set of nested sieves. The weight of material retained on each sieve is determined and the percentage passing (or retained) is calculated. For determination of the percentage of material finer than the No. 200 sieve, the specimen is first washed through the sieve. The distribution of the materials finer than the No. 200 is determined by use of the different size particles while suspended in water.

APPENDIX C

CLIENT: Moreno Cardenas Inc.
PROJECT NAME: County of El Paso – Desert Acceptance (Square Dance) Wastewater System Project
El Paso, El Paso County, Texas

SELECTED PROJECT PHOTOGRAPHS

PHOTO NO. 1: General view of one of the street sections looking northwest and existing site conditions.

PHOTO NO. 2: General view of one of the street sections looking east and existing site conditions.

PHOTO NO. 3: General view of the drilling and sampling operations along the street section of the project site.

PHOTO NO. 4: View of the drilling operations at soil boring B-15 and existing soil conditions.

CLIENT: Moreno Cardenas Inc.
PROJECT NAME: County of El Paso – Desert Acceptance (Square Dance) Wastewater System Project
El Paso, El Paso County, Texas

SELECTED PROJECT PHOTOGRAPHS

PHOTO NO. 5: View of soil boring location B-34 and operations and existing site conditions.

PHOTO NO. 6: View of the drilling activity at soil boring location B-30 and existing site conditions.

PHOTO NO. 7: View of the drilling activity at soil boring location B-31 and existing site conditions.

PHOTO NO. 8: General view of a soil boring location patched with 3,000 psi concrete along Montana Avenue alignment.

CLIENT: Moreno Cardenas Inc.
PROJECT NAME: County of El Paso – Desert Acceptance (Square Dance) Wastewater System Project
El Paso, El Paso County, Texas

SELECTED PROJECT PHOTOGRAPHS

PHOTO NO. 9: General view of the coring operations along Square Dance Road.

PHOTO NO. 10: General view of subsurface soils immediately below the existing pavement along Square Dance Road.

PHOTO NO. 11: View of the subsurface soils after being hydro-compacted and ready for the concrete patch along Square Dance Road.

PHOTO NO. 12: General view of a soil boring location patched with 3,000 psi concrete along Square Dance Road.

CLIENT: Moreno Cardenas Inc.
PROJECT NAME: County of El Paso – Desert Acceptance (Square Dance) Wastewater System Project
El Paso, El Paso County, Texas

SELECTED PROJECT PHOTOGRAPHS

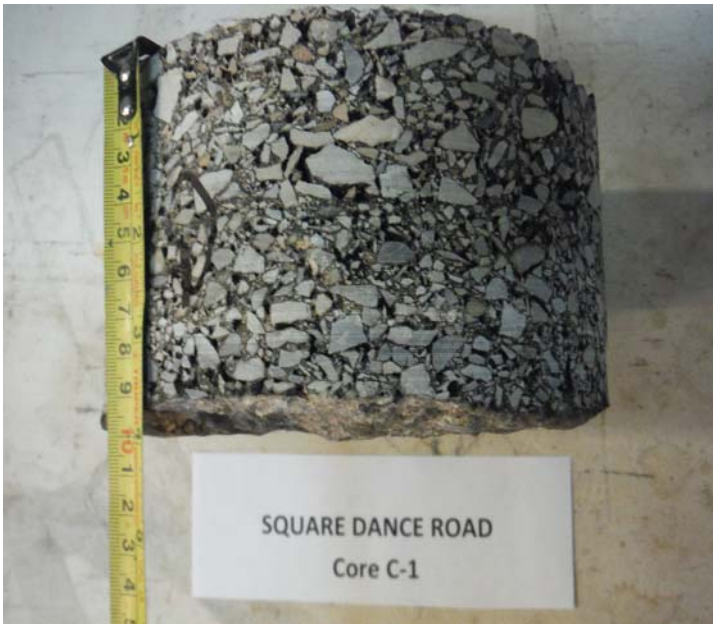


PHOTO NO. 13: General view of the asphalt concrete core C-1.

PHOTO NO. 14: General view of the asphalt concrete core C-2.

PHOTO NO. 15: General view of the asphalt concrete core C-3.

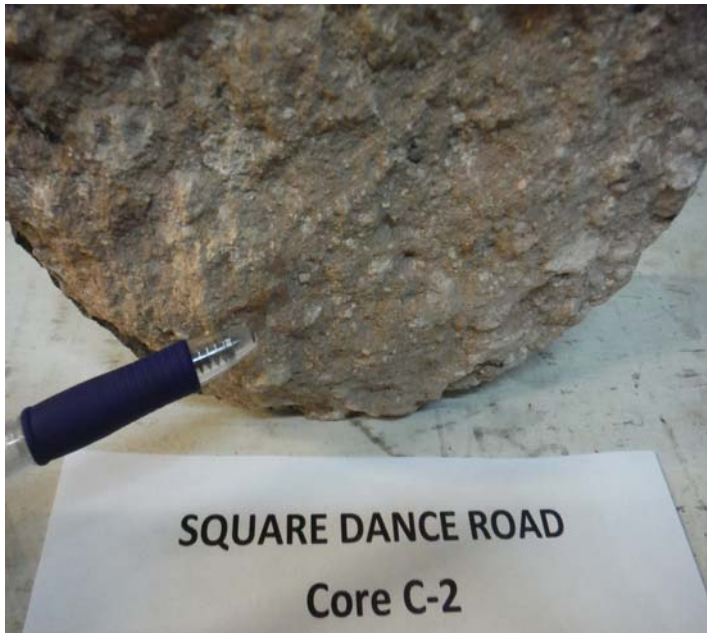


PHOTO NO. 16: Laboratory view of the gravelly sandy soils generally encountered immediately below the pavement along Square Dance Road.