REVISED

Geotechnical Investigation

Pueblo Pintado Tank Site
Includes NGWSP Reaches 26.1 & 26.2
Pueblo Pintado in New Mexico

Prepared for:
Souder, Miller & Associates

Project No.: 15-1-057

June 9, 2016

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1.0 INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed Pueblo Pintado Tank Site located in Pueblo Pintado of the Navajo Nation, New Mexico.

The investigation was performed to determine site subsurface conditions and, based upon the conditions observed in the test holes, to develop geotechnical recommendations for:

Foundation Design;
Slabs-on-Grade;
Lateral Earth Pressures;
Site Grading; and
Earthwork Construction.

The conclusions and recommendations presented are based on information provided to us regarding the proposed development, on subsurface conditions disclosed by the test holes, on laboratory testing, and upon the local standards of our profession at the time this report was prepared.

The conclusions and recommendations presented in this report also considered the historical data contained in the Geotechnical Investigation Navajo Gallup Water Supply Project (NGWSP) Reaches 26.1 and 26.2 Ojo Encino to Pueblo Pintado, prepared by X8e Vinyard, X8e Vinyard Project No.: 14-1-086, dated December 11, 2014, a copy of which is presented in the Appendix. Due to the changes from one large capacity water tank to two smaller capacity water tanks and subsequent re-siting of the water tanks and Chlorinator Building, the site preparation and foundation recommendations in this report, 15-1-057rev, supersede the recommendations previously provided in the 14-1-086 report. Recommendations addressed in the 14-1-086 report concerning the proposed pipeline remain applicable.

This investigation was not performed to determine the presence of potentially hazardous waste or radon gas. Determination of the presence of potentially hazardous materials was beyond the scope of this investigation and requires the use of exploration techniques and analytic testing which were not appropriate for this investigation. If desired, X8e Vinyard will perform an environmental audit of the site.

2.0 PROPOSED CONSTRUCTION

We anticipate that the proposed project will consist of two water storage tanks, which will replace the previous design based on one water storage tank at the Pueblo Pintado Tank site. Both tanks will be approximately 32 feet in height, 31 feet in diameter, and hold approximately 175,000 gallons. The project also includes a Chlorinator Building, approximately 130 square feet in plan, which will consist of pre-cast concrete construction. No basements or below grade structures are anticipated. Maximum exterior wall loads of up to 2.0 kips per lineal foot are anticipated for the proposed Chlorinator Building based on information recently provided indicating a maximum building height of 9 feet 2 inches. It is anticipated that the supporting soils at the base of the proposed water storage tank will be subjected to approximately 2,000 pounds per square foot based on the foregoing dimensions. If structure loads or configuration differ from those indicated in this report, this office should be notified.

3.0 SITE CONDITIONS

The project site is situated south of Counselor and east of Pueblo Pintado, New Mexico, with the 19 miles of pipeline traversing across the counties of Sandoval and McKinley. The project site in the area of the proposed Chlorinator Building has been re-sited where the existing water storage tank is to be removed. The two new water storage tanks will be located west and southwest of the existing water storage tank. The new tanks are bounded to the north by a building beyond, to the east by undeveloped land, and to the south and west by Indian Service Route N474. Drainage visually appears to be from north to south. Vegetation consisted of weeds and small shrubs. The project site in the area of the proposed Water Storage Tank and Chlorination Building is bounded to the west, north and east by undeveloped land and to the south by an existing water storage tank. Drainage visually appears to from east to west. Vegetation in this area consisted of weeds and grasses a far distance beyond the existing tank as the immediate surrounding area is nearly void of vegetation. Configuration of the project area is indicated on the Site Plan, Figure 1.

4.0 SITE SUBSURFACE CONDITIONS

To explore the site subsurface conditions, three test holes were drilled during September 30, 2015 at the approximate locations shown on the Site Plan, Figure1. The soils encountered at the site of the proposed Water Storage Tanks and Chlorinator Building consisted of silty gravel (GM) with sand, silty sand (SM) with varying amounts of gravel, clayey sand (SC) with varying amounts of gravel, sandy silt (ML) and sandy lean clay (CL). The gravel is described as slightly moist and very dense. The silty sands are described as fine grained, slightly moist to medium moist, medium dense to very dense. The clayey sands are described as fine grained, slightly moist to moist and very dense. The sandy silt is described as slightly moist and hard. The sandy lean clays are described as slightly moist and very stiff to hard.

Neither flowing groundwater nor bedrock was encountered in the test holes to a depth of twenty feet and eleven and one half inches, the maximum depth of exploration. However, groundwater conditions may change with time due to precipitation, variations in groundwater level, seepage from ponding areas, or leaking utilities.

Most of the soils encountered in the test holes exhibit slight consolidation potential under the anticipated structural loads. Slight to moderate additional consolidation (collapse) occurs when site soils increase in moisture content. Refer to Figures 6 through 8.

The soils encountered at the originally proposed site of the Water Storage Tank and Chlorinator Building as indicated in the Geotechnical Investigation NGWSP Reaches 26.1 & 26.2 Ojo Encino to Pueblo Pintada report prepared by X8e Vinyard, Project No.: 14-1-086, dated December 11, 2014, consisted of silty sand (SM), clayey sand (SC), sandy silt (ML) and lean clay (CL) with varying amounts of sand. A layer of dense, silty gravel (GM) with sand was encountered below 10 feet of dense, silty sand and the gravel was underlain by hard, lean clay extending to the total depth investigated in Test Hole V38-A drilled at the proposed Chlorinator Building location. Test Holes V38-B, V38-C and V38-D were drilled at the proposed water storage tank location. The soils encountered within the originally single water storage tank location varied appreciably with respect to soil type, both with depth and laterally across the proposed tank area. Locations of these test holes drilled for the above referenced report are shown on the attached Site Plan, Figure 1D, in Appendix B.

Most of the soils that were encountered in the earlier investigation exhibited slight to moderate consolidation potential under the anticipated structural loads. Slight to moderate additional consolidation (collapse) occurred when the tested soils increased in moisture content. Refer to Figures 36 through 41 of Appendix B.

The test holes allow observation of a very small portion of the soils below the site. Significant variations in subsurface conditions may occur across the project site, which were not disclosed by the test holes.

5.0 LABORATORY TESTING

A laboratory testing program was performed on samples obtained during the field investigation which appeared representative of the soils encountered in the test holes and test pits. The laboratory testing program was structured to determine the physical properties of the soils encountered in the test holes necessary for development of geotechnical recommendations.

The laboratory testing program included:

- Moisture Content;
- Dry Density;
- Sieve Analysis;
- Atterberg Limits; and
- Consolidation/Collapse.

Moisture Content and Dry Density tests were performed to evaluate the in-place soil density and moisture content. Test results help to evaluate settlement potential. Test results indicate the soils encountered in the test holes have an average dry density of approximately 106 pcf. Natural moisture content averaged approximately 6.7 percent. Test results are presented on the Logs of Test Holes, Figures 2 through 4, and are summarized on Table 1.

Sieve Analysis and Atterberg Limits tests were performed to confirm field soil classifications and to provide information on general physical soil properties. Test results are presented on Table 1.

Consolidation/Collapse tests were performed to evaluate structure settlement and to determine the effect of water on site soils. The results indicate that the tested soils are slightly compressible under anticipated loads. Minimal additional settlement (collapse) occurred when the tested soils increased in moisture content. Test results are presented on Figures 6 through 8.

Results of consolidation/collapse tests performed as part of the previously referenced geotechnical report indicated that the tested soils were slightly to moderately compressible under anticipated loads. Slight to moderate additional settlement (collapse) occurred when the tested soils increased in moisture content. Test results for the soil samples of the referenced geotechnical report are presented on Figures 36 through 41 in Appendix B.

6.0 FOUNDATIONS

If the recommendations presented in this report are implemented particularly those regarding site grading and drainage, the proposed Chlorinator Building may be supported on conventional spread and strip footings or turned down edge and the two (2) proposed 175,000-Gallon Water Storage Tanks may be supported on either reinforced concrete ring wall footings or a steel floor with a steel retainer ring. The foundation for the Chlorinator and Surge Tank buildings should bear on a minimum thickness of two feet of structural fill. The ring wall footings of Water Storage Tank No. 1, as indicated on the attached Site Plan, Figure 1, should bear on a minimum thickness of three feet of structural fill. The base of the Water Storage Tank No. 1 should bear on a minimum thickness of five feet of structural fill. The ring wall footings of Water Storage Tank No. 2, as indicated on Figure 1, should bear on a minimum thickness of five feet of structural fill. The base of the Water Storage Tank No. 2 should bear on a minimum thickness of eight feet of structural fill. A four-inch layer of oil-treated sand should be provided below the tank bases. Weep holes through the ring wall footings should be provided at frequent spacings or as recommended by the tank manufacturer. Structural fill should extend a minimum of three feet laterally beyond the edge of all footings. Foundations may be designed for an allowable bearing pressure of 2,000 pounds per square foot. This value may be increased by one-third for short-term loads due to wind and earthquakes. If it is not feasible to implement the site grading, drainage, and landscaping recommendations presented herein, an alternate foundation system may be required. This office should be contacted for additional recommendations.

The base of exterior footings for each of these structures should be embedded a minimum of three feet below lowest adjacent grade. The base of interior footings should be embedded a minimum of twenty-four inches below finish pad grade. Spread and strip footings should be a minimum of twenty-four and eighteen inches wide, respectively. However, local building codes may require greater dimensions.

Lateral foundation loads will be resisted by a combination of passive soil pressure against the sides of footings and friction along the base. A passive soil resistance of 300 pounds per cubic foot may be utilized for design. Frictional resistance may be determined by multiplying foundation dead load by a coefficient of friction of 0.40.

Prior to fill placement and following footing excavation, the natural soils should be scarified to a depth of eight inches and moistened to near optimum moisture content (±3%). The exposed soils should then be compacted to a minimum of 95% of maximum density as determined by ASTM D-1557. All fill below structures should be placed and compacted as detailed in the attached Appendix. Prior to pouring concrete footing excavations should be cleaned of any slough, loose soil, or debris. Footing excavations should be compacted as detailed in the attached Appendix.

Foundations designed and constructed as described herein are not anticipated to settle more than one inch. Differential settlement between adjacent column footings should not exceed one-half of the above value. Foundations should be designed and constructed to tolerate the above settlement. Foundations should be designed by a qualified structural engineer.

The site soils will consolidate if allowed to increase in moisture content. With appropriate landscape irrigation and site grading and drainage as detailed in this report the moisture content of the soils within five to ten feet of the ground surface may increase. The recommendations presented in this report for site preparation are the minimum we consider prudent to address this

degree of moisture penetration. In the event moisture penetration to depths greater than seven feet occurs, movement substantially greater than quoted above will occur.

Based upon the results of this investigation and our previous experience in the site vicinity, an International Building Code Site Classification of "D" may be utilized for design.

7.0 CONCRETE SLABS-ON-GRADE

Concrete slabs-on-grade may be utilized. The slab of the Chlorinator Building should bear on a minimum thickness of three feet of structural fill. Minimum floor slab thickness, overall slab reinforcement, and sawed joints or control joints should be determined by a qualified structural engineer. Conventional slabs should be isolated from all foundations, stem walls, and utility lines. Monolithic slabs should be isolated from all utilities. Frequent joints should be scored or cut in slabs to control the location of cracks.

Thickened slabs may be utilized to support interior partitions. Thickened slabs should be a minimum of twelve inches in width and should be designed to exert a maximum earth pressure of 500 pounds per square foot. Wall loads on thickened slabs should not exceed 800 pounds per linear foot. The thickness and reinforcement should be determined by a qualified structural engineer.

Slabs should be adequately reinforced with steel. Slab reinforcement should be turned down into turned down edges.

For structural design of the floor slab, a modulus of subgrade reaction of 300 kips per cubic foot may be utilized. This value is for a 1' x 1' square or a 1' wide strip. The above value may be modified for various effective widths based upon the following equation:

$K_s = 300\left[\frac{B+1}{2B}\right]^2$

K_s = Modulus of subgrade reaction (kips per cubic foot)

B = Effective width of loaded area (feet)

If moisture-sensitive floor covering is utilized, the flooring manufacturer should be contacted to determine the necessity of a vapor barrier. The moisture barrier may consist of a 6-mil polyethylene film or equivalent. The barrier may be overlain with one or two inches of clean sand to provide a working surface and reduce shrinkage cracking.

Slabs of the proposed Chlorinator Building should bear on a minimum of three feet of structural fill. Prior to placing slabs or structural fill, the natural soils should be stripped of vegetation, scarified to a depth of eight inches, and moistened to a near optimum (±3%) moisture content. The exposed soils should then be compacted to a minimum of 95% of maximum density as determined by ASTM D-1557. All fill below slabs should be placed and compacted as detailed in the attached Appendix.

8.0 EARTHWORK

8.1 General

The settlement estimates presented in this report are based upon the assumption that site earthwork will be performed as recommended in this report and the attached Appendix. Presented below is a summary of the site earthwork recommendations. Detailed earthwork procedures are presented in the attached Appendix.

Prior to commencing earthwork the Contractor should obtain appropriate Proctor tests. Field density testing and evaluation of the suitability of the proposed materials performed prior to completion of the Proctor is "Preliminary" and may change based upon the results of the Proctor testing.

8.2 Clearing and Grubbing

Prior to placing structural fill, all borrow and fill areas should be stripped of vegetation and deleterious materials. All strippings should be hauled off-site or utilized in landscaped areas.

All existing utilities, septic tanks, leach fields, and disturbed soil should be removed from below the proposed structures. The resulting excavations should be backfilled with compacted fill as detailed in the attached Appendix.

8.3 Excavation

We anticipate that on-site soils can be excavated with conventional earthwork equipment. The designer should consider the effects of deep excavations in close proximity of existing structures. Occasional cobbles or boulders may be encountered during excavation. Cobbles and boulders should be disposed of off-site or utilized for landscaping. Cobbles and boulders should not be placed within structural fills. Cobbles and boulders as defined in ASTM D-2487.

8.4 Natural Ground Preparation

Prior to placing structural fill and subsequent to final grading in cut areas, the exposed soils should be scarified to a depth of eight inches and moisture conditioned to a near optimum (±3%) moisture content. The exposed soils should then be compacted to a minimum of 95% of maximum density as determined by ASTM D-1557. If vibratory compaction poses a threat to nearby structures, static compaction should be utilized.

8.5 Fill Placement and Compaction

Structural fill should be placed in horizontal lifts a maximum of eight inches in loose thickness, moisture conditioned to near optimum moisture content, and mechanically compacted. Fill below footings and slabs should be compacted to a minimum of 95% of maximum dry density as determined by ASTM D-1557. The upper five feet of subsurface soils at the site of the proposed Chlorinator Building are not anticipated to be suitable for re-use as structural fill. The previously referenced Geotechnical Investigation report also indicated the possibility that the upper five feet of subsurface soils within the area of Test Hole V38-D was not anticipated to be suitable for re-use as structural fill. Imported soils may be blended with the existing soils, provided that the resulting

blended material satisfies structural fill criteria. The designer should consider the effects of vibrations associated with compaction operations within deep excavations situated near existing structures.

8.6 Observation and Testing

Placement and compaction of structural fill should be observed and tested by a qualified geotechnical engineer or his representative. The purpose of the observation and testing is to confirm that the recommendations presented herein are followed and to provide supplemental recommendations, if subsurface conditions differ from those anticipated.

Foundation excavations should be observed by a qualified geotechnical engineer, or his representative, prior to placement of reinforcement or concrete. The purpose of the observation is to determine if the exposed soils are similar to those anticipated.

8.7 Frequency of Testing

Earthwork should be tested periodically to confirm the fill is compacted to the criteria presented in this report. Prior to placing fill, the natural ground should be moisture conditioned, compacted, and tested to confirm it is properly compacted. Fill should be placed in maximum eight-inch thick loose lifts, but in no case thicker than can be compacted with the equipment being utilized. Fill should be moisture conditioned and compacted as detailed in this report. Fill areas should be tested at maximum one-foot vertical intervals. If fill areas are worked at different times, each individual area should be tested. Following finish grading, the final surface should be tested. Following foundation excavation, the footing excavations should be tested. Utility trench backfill should be tested as necessary.

9.0 SITE GRADING AND DRAINAGE

The settlement estimates presented in this report assume the site will be graded to drain properly. If the site does not drain properly, structure settlement substantially greater than quoted in this report will occur.

The site soils are slightly to moderately collapsible if allowed to increase in moisture content. To reduce the risk of structure settlement the site should be graded to rapidly drain away from structures. Splash blocks should be utilized below down spouts and canales.

If ponding areas are required, they should be located as far away from structures as possible, a minimum of ten feet. If this criteria cannot be met, this office should be contacted for supplemental recommendations.

Roof gutters and downspouts should be utilized. Roof gutters should discharge to a hard surface at the front of the structure. Water should run off rapidly.

10.0 LANDSCAPING

Landscaping adjacent to structures should be designed and constructed to minimize the potential for wetting of soils supporting the proposed facilities. If soils supporting the proposed

facilities are allowed to increase in moisture content to a depth greater than seven feet settlement greater than quoted in this report will occur.

Trees and shrubs within five feet of structures should be hand watered or watered using controlled drip irrigation. If drip irrigation is used, emitters should discharge no more than one gallon per hour. If grass must be planted within five feet of structures, watering should be carefully controlled to prevent overwatering. Grassed areas adjacent to structures should be sloped so that excess irrigation water will run off promptly. Sprinkler lines and drip irrigation mains should be located a minimum of five feet away from foundations.

Mowing strips, planters and sidewalks should not "dam" water adjacent to structures. If necessary, mowing strips should be perforated to allow water to flow away from structures.

All interior planters should be closed bottom and watertight.

11.0 UTILITIES

The site soils are collapsible if allowed to increase in moisture content. If post-construction water or sewer line leaks occur, localized settlement will occur. Following installation, all water and sewer lines should be pressure checked for leaks. Any leaks found should be repaired.

Backfill in utility line trenches below slabs, driveways, and pavement should be compacted to a minimum of 90% of maximum density as determined by ASTM D-698. Backfill in pipe line trenches beyond these areas should be compacted to a minimum of 85% of maximum density as determined by ASTM D-698. Utility trenches should be as narrow as can be properly compacted. To reduce the possibility of breaking utility lines with compaction equipment, heavy compactors should not be utilized.

Utility trenches may not be compacted to the same degree as the remainder of the building pad. Therefore, wall footings, interior walls and thickened slabs should not be placed longitudinally over utility trenches. Column footings should not be placed over utility trenches.

12.0 TRENCHES AND EXCAVATIONS

All trenches greater than four feet in depth must be sloped, shored or braced or otherwise supported according to OSHA Construction and Safety Standards. Material excavated from the trench or spoil must be placed a minimum of two feet from the edge of the excavation. The spoil should be retained in an effective manner such that no loose material can fall into the excavation.

Temporary construction excavations less than eight feet deep should be sloped no steeper than 1½:1 (horizontal:vertical). If deeper excavations are required, this office should be contacted for supplemental recommendations. Limited raveling of slopes will occur particularly as the exposed soils dry out. Heavy equipment and material stockpiles should be located a minimum of five feet from the top of slope.

13.0 CLOSURE

This report was prepared for the exclusive use of our Client. The recommendations presented in this report are based upon the subsurface conditions disclosed by the test holes. Soil

and groundwater conditions may vary between test holes and with time. Note that the recommendations regarding the water tanks and the Chlorinator Building as addressed in this report supersede those that had previously been addressed in the earlier (NGWSP) Reaches 26.1 and 26.2 Ojo Encino to Pueblo Pintado (Project No. 14-1-086) report. The recommendations associated with the pipeline of the earlier report are still applicable.

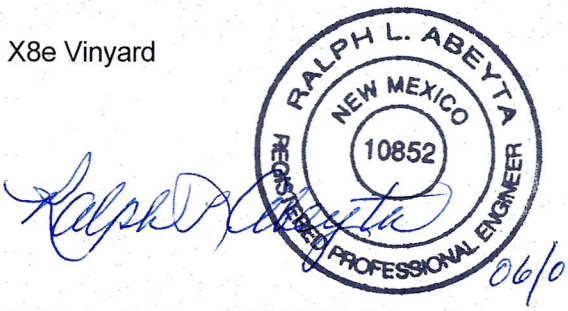
This report reflects our interpretation of the site subsurface conditions. We strongly recommend that prior to bidding all contractors perform their own subsurface investigation to form their own opinion of the site soil, rock, and groundwater conditions. Should contractors elect to use this report for construction, bidding or estimating purposes, they do so at their own risk.

In a southwest climate it is particularly important to protect the soils supporting the proposed structure from an increase in moisture content. If soils supporting the structure increase in moisture content due to any cause such as poor site drainage, ponding areas, or leaking utility lines, significant structural settlement and distress may occur.

If conditions are encountered during construction which differ from those presented herein, this office should be contacted for supplemental recommendations. The staff of X8e Vinyard is available for supplemental consultation as necessary.

This office would be pleased to review site grading and drainage plans to evaluate conformance with the recommendations presented herein. All site earthwork should be observed by a qualified geotechnical engineer or his representative. X8e Vinyard would be pleased to provide these services.

X8e Vinyard

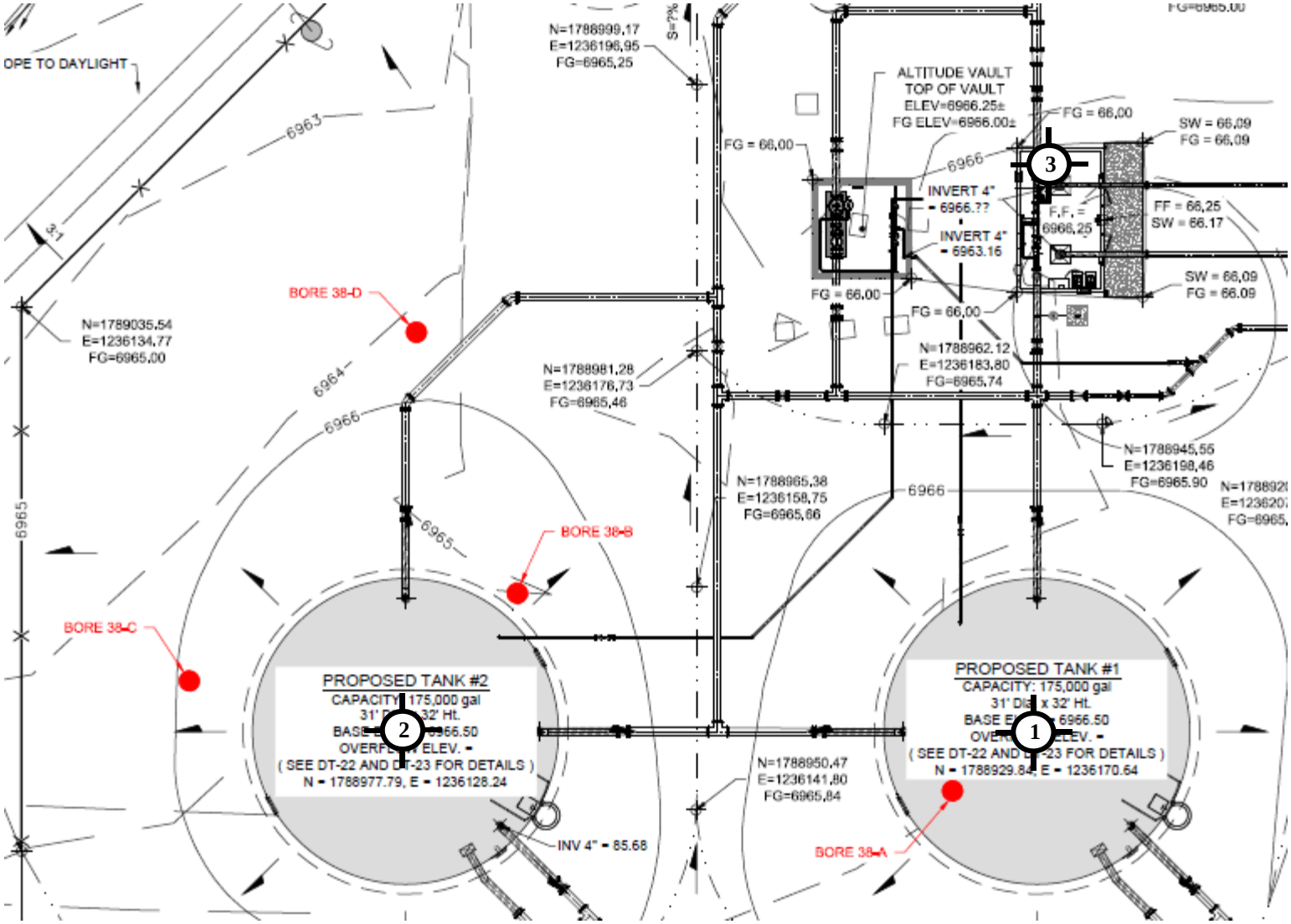


06/09/16

Ralph L. Abeyta, P.E., M. ASCE

X8e Vinyard Project No.: 15-1-057

SITE PLAN
***Scale Unknown**



= Test Hole Location

FIGURE 1

LOG OF TEST HOLE NO. 1

Project: Pueblo Pintado Tank Site
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 15-1-057
Date Drilled: 9/30/15
Drilling Method: 7" H.S.A.

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
						SM	SAND, silty, fine grained, dense, slightly moist, light brow
	40	R	109	4.7	1,2,5		
5							
	51	R	109	5.4	1,2		Very dense, brown
10							
	81	S		9.6	1,2	CL	CLAY, sandy lean, hard, slightly moist, greenish brown, caliche
15							
	50/1.5"	S		1.8		SM	SAND, silty with gravel, fine grained, very dense, slightly mois yellowish brown
20							
	50/5.5"	S		11.7		CL	CLAY, sandy lean, hard, slightly moist, greenish brow
							Bottom of hole at 20' - 11½"
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 2

LOG OF TEST HOLE NO. 2

Project: Pueblo Pintado Tank Site
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 15-1-057
Date Drilled: 9/30/15
Drilling Method: 7" H.S.A.

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5	20	R	102	5.1		SM	SAND, silty, fine grained, medium dense, slightly moist, ligl brown
10	34	R	108	6.5	1,2,5	ML	SILT, sandy, hard, slightly moist, light brow
	50/3"	S		6.7	1,2	SC	SAND, clayey, fine grained, very dense, slightly moist, greenish brown, caliche
15							
20	50/2"	S		2.0	1,2	GM	GRAVEL, silty with sand, fine to coarse grained, very dense, slightly moist, light brow
	50/4"	S		3.5			Bottom of hole at 20' - 4"
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 3

LOG OF TEST HOLE NO. 3

Project: Pueblo Pintado Tank Site
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 15-1-057
Date Drilled: 9/30/15
Drilling Method: 7" H.S.A.

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5	21	R	106	6.7	1,2,5	CL	CLAY, sandy, lean, very stiff, slightly moist, light brow
10	21	R	103	4.6	1,2	SM	SAND, silty, fine grained, medium dense, medium moist, ligl brown
	23	S		9.6		CL	CLAY, sandy lean, very stiff, slightly moist, greenish brown, caliche
15							
20	50/4"	S		9.9	1,2	SC	SAND, clayey with gravel, fine grained, very dense, moist, brown
	50/2"	S		12.0			Slightly more gravelly
25							Bottom of hole at 20' - 8"
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 4

NOTES - LOGS OF TEST HOLES

Test hole locations were determined by compass bearing and pacing distances from known topographic points.

"Drilling Method" refers to the equipment utilized to advance the test hole. A seven-inch outside diameter, continuous flight, hollowstem auger was utilized.

"S" under "Sample Type" indicates a Standard Penetration test (ASTM D-1586). The Standard Penetration sampler is 2 inches in outside diameter and 1 3/8 inches inside diameter.

"R" under "Sample Type" indicates a 3-inch outside diameter by 2.5-inch inside diameter sampler. The sampler is lined with 1-inch high brass rings.

"B" under "Sample Type" indicates a bulk sample.

"Blows Per Foot" indicates the number of blows of a 140-pound hammer falling 30 inches required to drive the indicated sampler 12 inches.

"NR" under "Blows/Foot" indicates that no sample was recovered.

"Dry Density PCF" indicates the laboratory determined soil dry density in pounds per cubic foot.

"Water Content %" indicates the laboratory determined soil moisture content in percent (ASTM D-2216).

"Unified Classification" indicates the field soil classification as per ASTM D-2488. When appropriate, the field classification is modified based upon subsequent laboratory tests.

Variations in soil profile, consistency, and moisture content may occur between test holes. Subsurface conditions may also vary between test holes and with time.

Figure No.: 5

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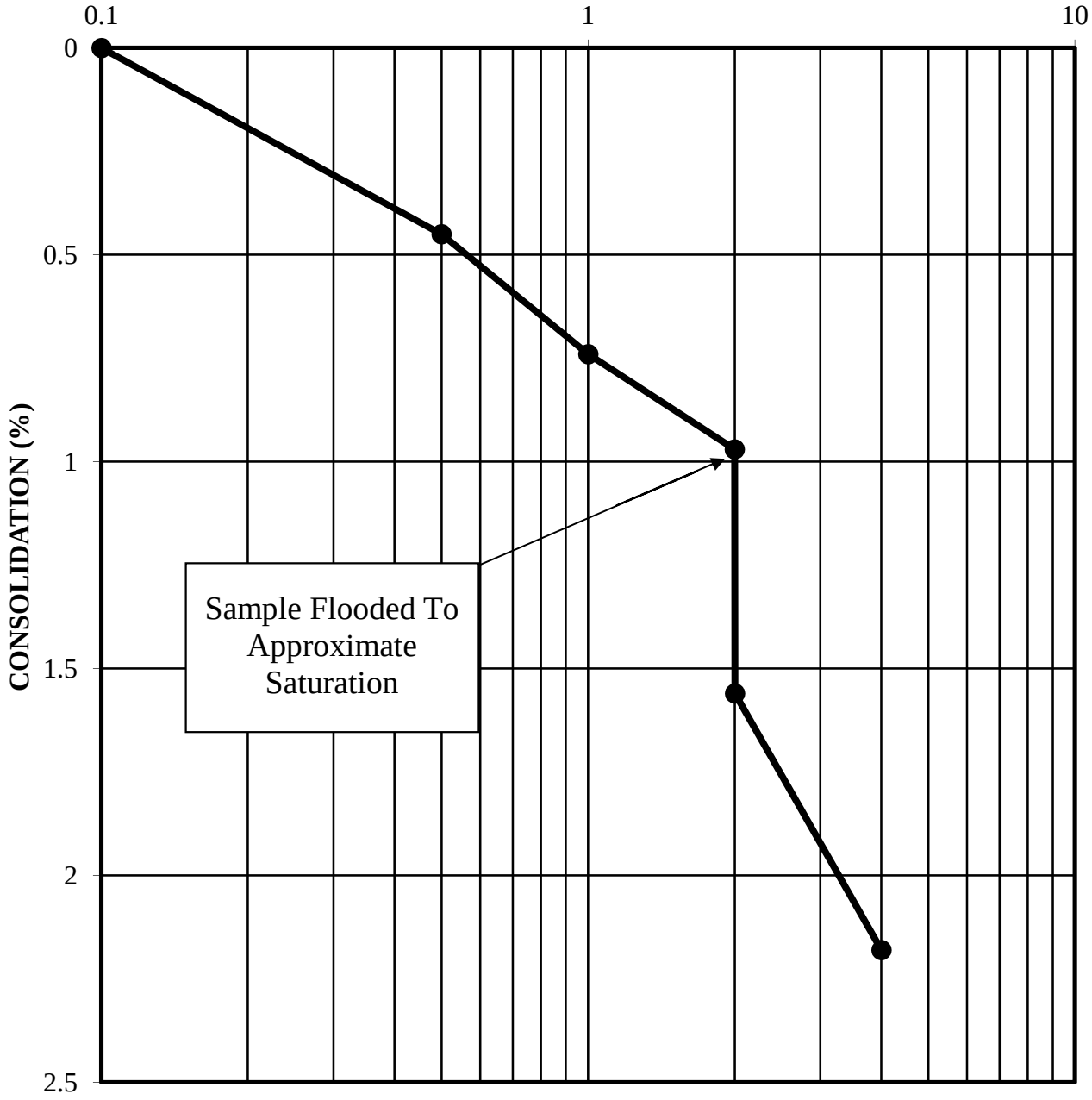
CONSOLIDATION TEST RESULTS



TEST HOLE NUMBER: 1
SAMPLE DEPTH: 2 FEET
SOIL DESCRIPTION: Silty SAND (SM)
MOISTURE CONTENT: 4.7 %
BULK UNIT WEIGHT: 109 pcf

PROJECT: Pueblo Pintado Tank Site in Pueblo Pintado, New Mexico
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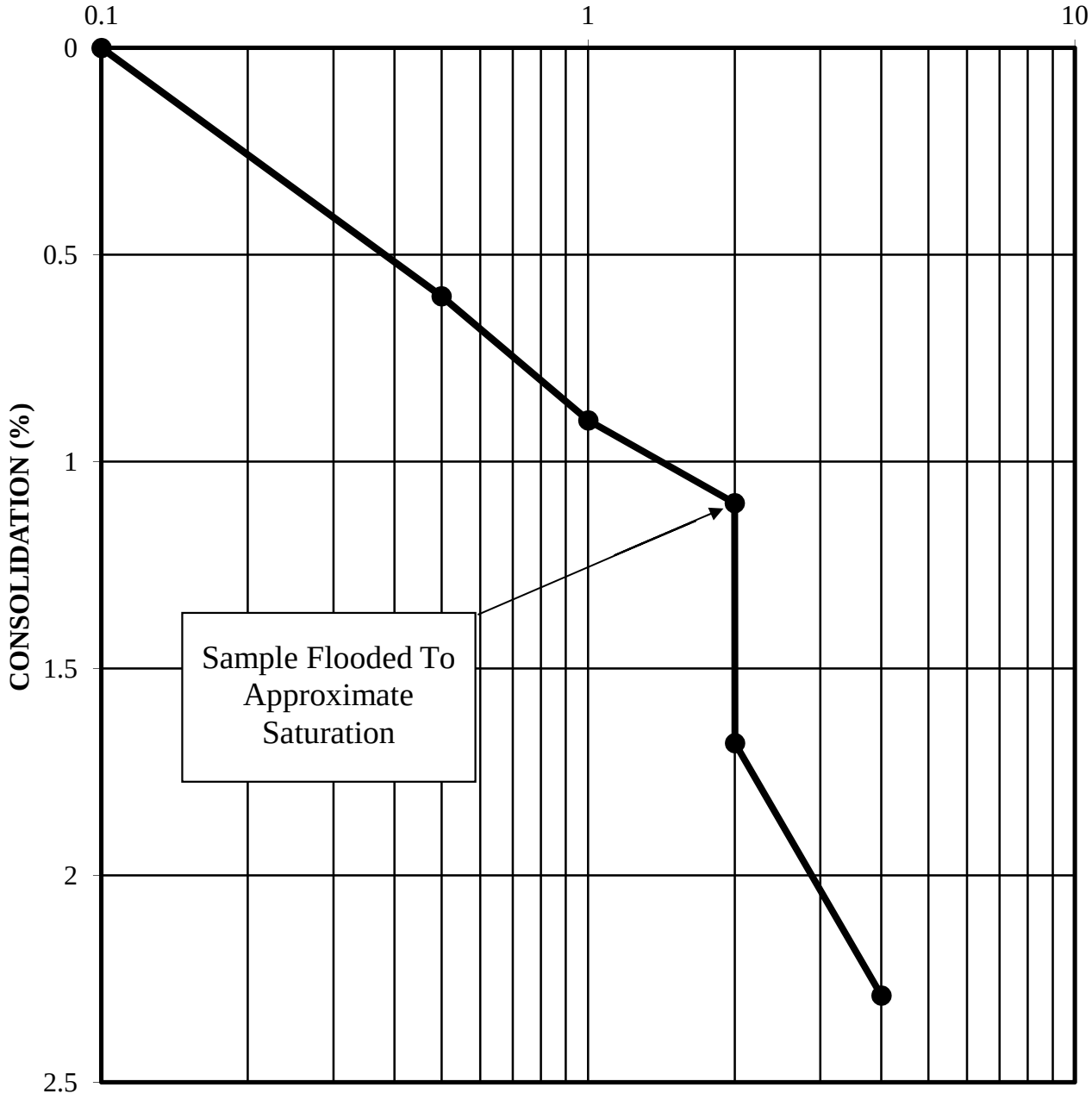
FIGURE NO.: 6

CONSOLIDATION TEST RESULTS

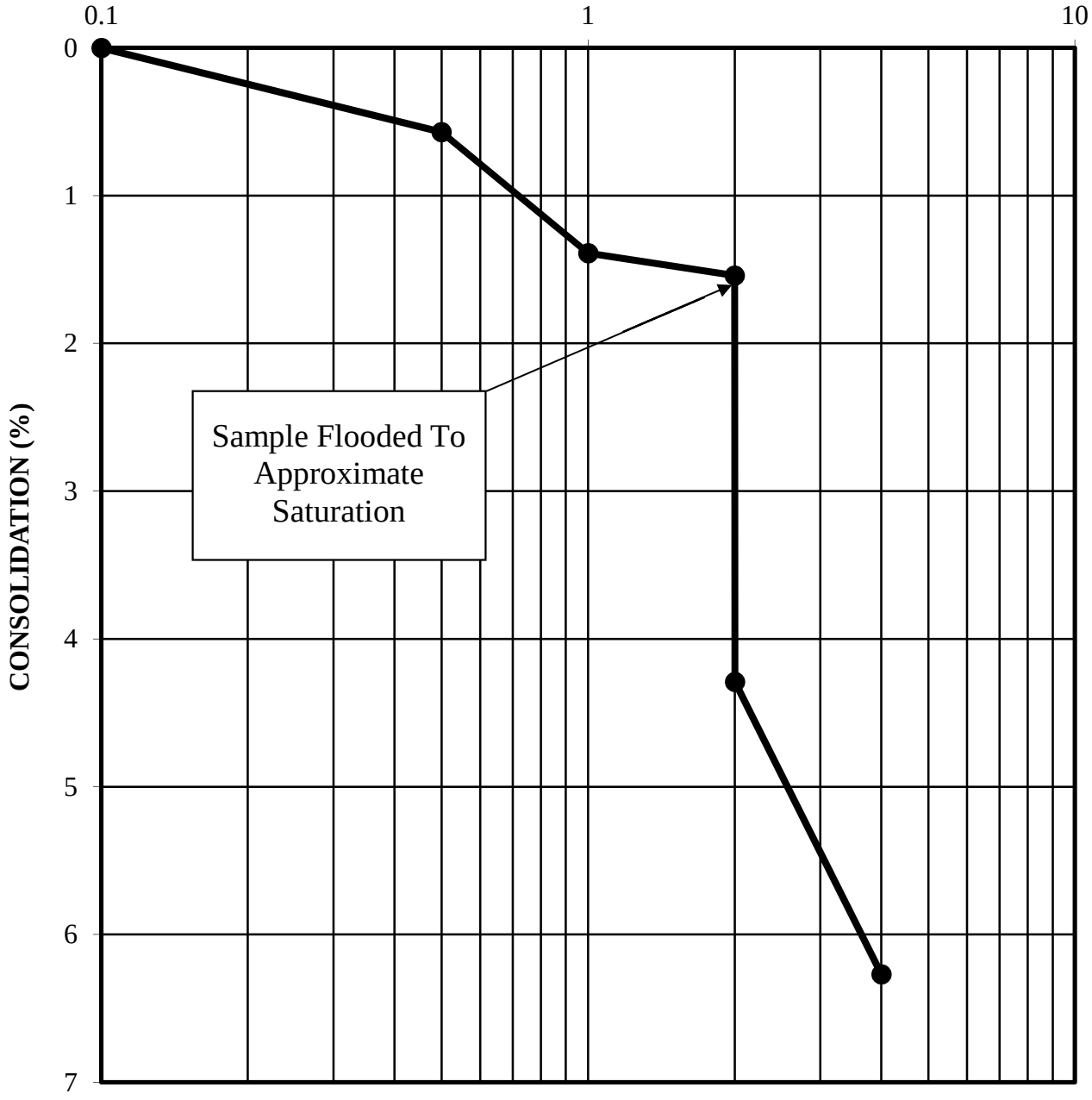


TEST HOLE NUMBER: 2
SAMPLE DEPTH: 5 FEET
SOIL DESCRIPTION: Sandy SILT (ML)
MOISTURE CONTENT: 6.5 %
BULK UNIT WEIGHT: 108 pcf

PROJECT: Pueblo Pintado Tank Site in Pueblo Pintado, New Mexico
PROJECT NO.: 15-1-057

FIGURE NO.: 7

CONSOLIDATION TEST RESULTS



TEST HOLE NUMBER: 3
SAMPLE DEPTH: 2 FEET
SOIL DESCRIPTION: Sandy lean CLAY (CL)
MOISTURE CONTENT: 6.7 %
BULK UNIT WEIGHT: 106 pcf

PROJECT: Pueblo Pintado Tank Site in Pueblo Pintado, New Mexico
PROJECT NO.: 15-1-057

FIGURE NO.: 8

SUMMARY OF LABORATORY TEST DATA

Test Hole	Depth (feet)	Unified Classification	Natural Dry Density (pcf)	Natural Moisture Content (%)	Atterberg Limits		SIEVE ANALYSIS-% PASSING BY WEIGHT										Description
					LL	PI	1 1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200	
1	2	SM	109	4.7	NV	NP								100	91	35.2	Silty SAND
1	5	SM	109	5.4	24	NP							100	99	94	36.4	Silty SAND
1	10	CL		9.6	36	21			100	98	95	93	91	89	86	54.5	Sandy lean CLAY
1	15			1.8													
1	20			11.7													
2	2		102	5.1													
2	5	ML	108	6.5	26	NP							100	99	96	50.6	Sandy SILT
2	10	SC		6.7	30	17		100	95	93	91	89	88	86	82	46.0	Clayey SAND
2	15	GM		2.0	NV	NP	100	68	55	50	47	45	44	43	41	18.0	Silty GRAVEL with sand
2	20			3.5													
3	2	CL	106	6.7	25	8								100	96	63.6	Sandy lean CLAY
3	5	SM	103	4.6	NV	NP								100	93	32.0	Silty SAND
3	10			9.6													
3	15	SC		9.9	33	21	100	89	86	82	80	77	75	73	70	47.8	Clayey SAND with gravel
3	20			12.0													

X8e Vinyard Project No.: 15-1-057

Project: Pueblo Pintado Tank Site - Pueblo Pintado, NM **Table No.: 1**

APPENDIX A
EARTHWORK PROCEDURES

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APPENDIX
EARTHWORK PROCEDURES

General

The Geotechnical Engineer shall be the Owner's representative to observe and evaluate the earthwork operations. The Contractor shall cooperate with the Geotechnical Engineer in the performance of the Engineer's duties.

Clearing and Grubbing

Prior to placing structural fill all borrow areas and areas to receive structural fill shall be stripped of vegetation and deleterious materials. Strippings shall be hauled off-site or stockpiled for subsequent use in landscaped areas or nonstructural fill areas as designated by the Owner or his representative and approved by the Geotechnical Engineer.

Site Preparation - Fill Areas

Prior to placing structural fill the areas to be filled shall be scarified to a depth of eight inches and moisture conditioned as described below. The area to be filled shall then be compacted to a minimum of 95 percent of maximum density as determined by ASTM D-1557. If vibratory compaction techniques pose a threat to the structural integrity of nearby facilities a static compactor shall be used. Any soft or "spongy" areas shall be removed as directed by the Geotechnical Engineer and replaced with structural fill as described herein.

Site Preparation - Cut Areas

Following excavation to rough grade, all building and pavement areas shall be scarified to a depth of eight inches and moisture conditioned as described below. All building and paved areas shall be compacted to a minimum of 95 percent of maximum density as determined by ASTM D-1557. If vibratory compaction techniques pose a threat to the structural integrity of nearby facilities, a static compactor shall be used. Any soft or "spongy" areas shall be removed as directed by the Geotechnical Engineer and replaced with structural fill as described herein.

Foundation, Slab and Pavement Subgrade Preparation

Prior to placing reinforcement, footings, slabs, or pavement, the supporting soils shall be prepared, moisture conditioned, and compacted as described herein.

Structural Fill Material

Structural fill material shall be nonexpansive soil which may be gravel, sand, silt or clay, or a combination there of.

Sieve Size	Percent Passing By Weight
4”	100
1”	90-100
No. 4	70-100
No. 200	10-40

Structural fill material shall exhibit a plasticity index of ten or less. No organic, frozen or

decomposable material shall be utilized. All structural fill material shall be approved by the Geotechnical Engineer.

Structural Fill Placement

Structural fill material shall be blended as necessary to produce a homogeneous material. Fill material shall be spread in horizontal lifts no greater than eight inches in uncompacted thickness, but in no case thicker than can be properly compacted with the equipment to be utilized. If structural fill is to be placed on slopes steeper than 5:1 (horizontal:vertical) the natural ground shall be benched with minimum three foot wide benches at maximum two foot vertical intervals.

Moisture Conditioning

Structural fill material shall be dried or moistened as necessary, prior to compacting, to within ± three percent of optimum moisture content as determined by ASTM D-1557. Moisture shall be distributed uniformly throughout each lift.

Compaction

Structural fill shall be mechanically compacted to the following:

	Minimum Compaction ASTM D-1557
Foundation Support	95%
Slab Support	95%
Below Slab Utility Trenches	90%
General Site Grading	90%
Pavement Support	-
Upper 8" of Subgrade	95%
All other fill below pavement	90%

Aggregate Base Course shall be compacted to a minimum of 95% of maximum density as determined by ASTM D-1557.

Asphaltic concrete shall be compacted to a range of 93% to 97% of the maximum Theoretical Unit Weight in accordance with ASTM D2041.

Compaction by flooding and jetting is specifically prohibited unless authorized in advance by the Owner or his representative and the Geotechnical Engineer.

Observation and Testing

The Geotechnical Engineer or his representative shall perform field density tests with a frequency and at the locations he feels appropriate. The Geotechnical Engineer or his representative will perform Proctor tests on representative samples of all structural fill material for compliance to structural fill requirements on page A-1. To minimize delays, the Earthwork Contractor is encouraged to submit soil samples prior to use for proctor testing.

APPENDIX B

NGWSP REACHES 26.1 & 26.2 OJO ENCINO TO PUEBLO PINTADO

(X8E VINYARD PROJECT NUMBER 14-1-086)

8916-A Adams Street NE
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Phone: 505.797.9743
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X8e Vinyard Project No.: 14-1-086

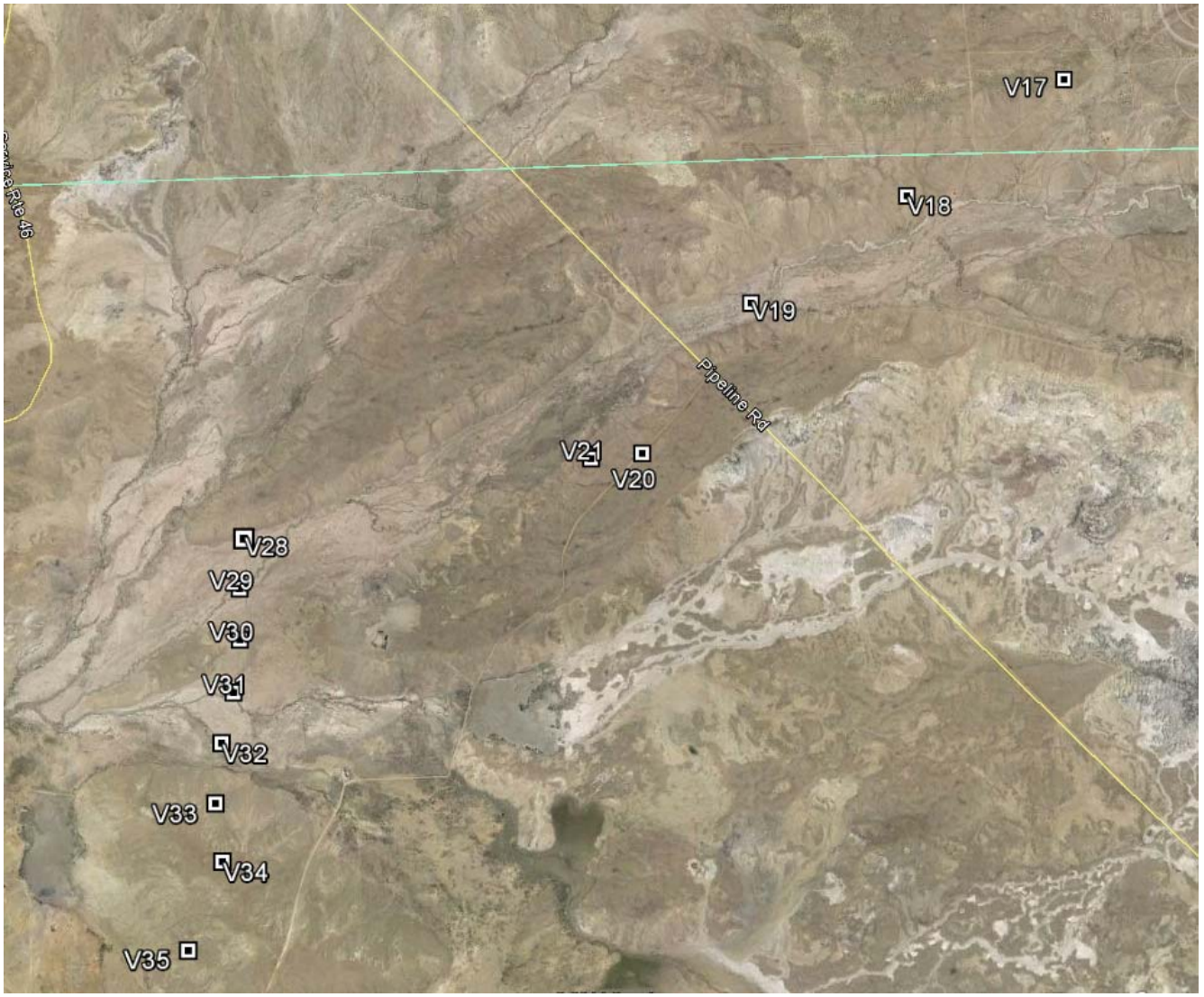
SITE PLAN
***Scale Unknown**

Test Pit Location

FIGURE 1A

X8e Vinyard Project No.: 14-1-086

SITE PLAN
***Scale Unknown**



Test Pit Location

FIGURE 1B

X8e Vinyard Project No.: 14-1-086

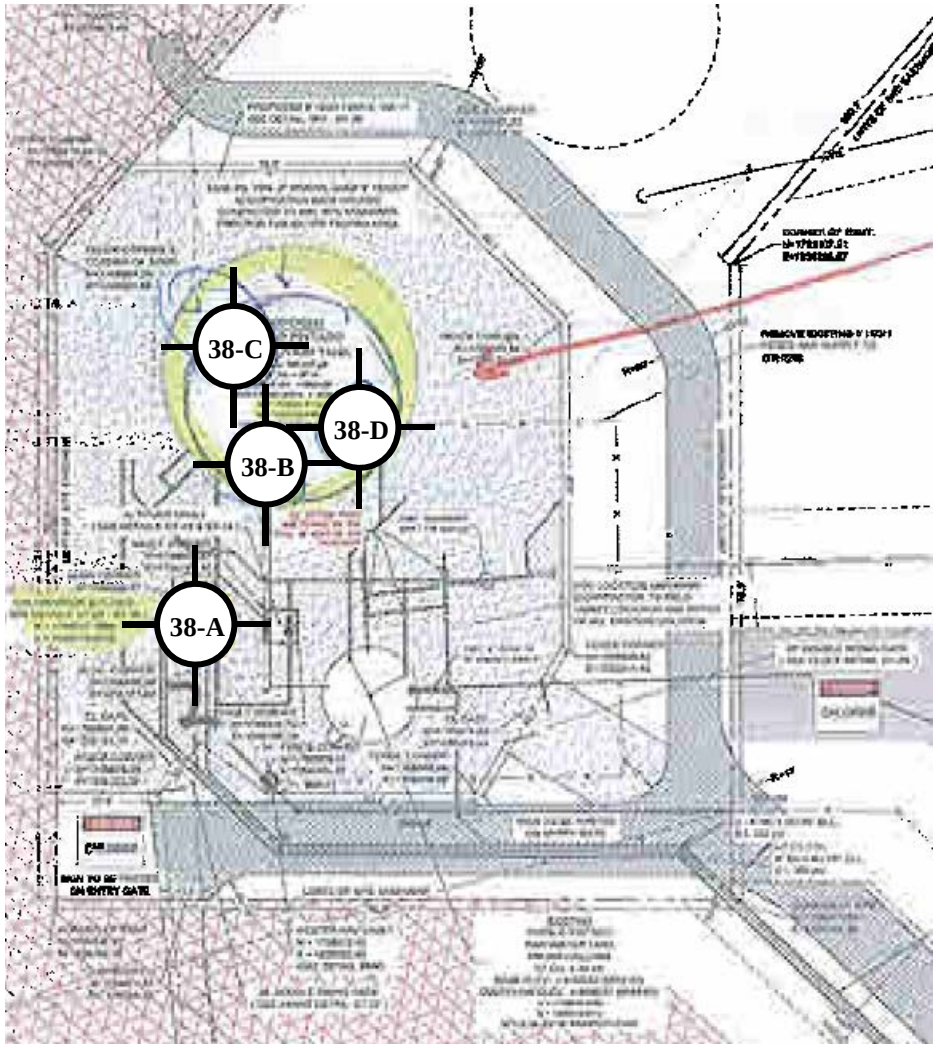
SITE PLAN
***Scale Unknown**

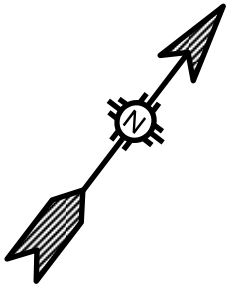
Test Pit Location

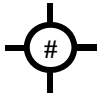
FIGURE 1C

X8e Vinyard Project No.: 14-1-086

SITE PLAN
***Scale Unknown**







Test Boring Location

FIGURE 1D

X8e Vinyard Project No.: 14-1-086

SITE PLAN
***Scale Unknown**

Test Boring Location

FIGURE 1E

X8e Vinyard Project No.: 14-1-086

SITE PLAN
***Scale Unknown**

Test Boring Location

FIGURE 1F

LOG OF TEST HOLE NO. V1

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 11/24/2014
Drilling Method: 7" H.S.A.

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5	21	R	109	3.3	1,2,5	SM	SAND, silty, fine to medium grained, medium dense, slightl moist, yellowish browr
	28	R	107	2.3		SP-SM	SAND, poorly graded with silt, fine to medium grained, medium dense, slightly moist, yellow
10	13	S		4.0		SC	SAND, clayey, fine to medium grained, medium dense, slightly moist, light brown
15	13	S		2.3		SM	SAND, silty, fine to medium grained, trace gravel, medium dense, slightly moist, light brown
20	14	S		2.7		SC	SAND, clayey, fine to medium grained, medium dense, slightl moist, grayish brown
25							Bottom of hole at 21½'
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 2

LOG OF TEST PIT NO. V2

Project: NGWSP Reaches 26.2 Pueblo Pintado
Project No.: 14-1-086
Elevation: N/A
Date Drilled: 10/2/2014
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, dry, loose, light brown Slightly moist, medium dense, brown Dense Sandstone fragments, damp, light brown/white Medium dense Dense, light brown Orange brown
10 15 20 25 30 35							Bottom of pit 8'

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 3

LOG OF TEST PIT NO. V3

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/2/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, slightly damp, medium dense, dark brown Moist, brown Thin layer of weathered sandstone fragments Dry, light brown
10							Bottom of pit 6'
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 4

LOG OF TEST PIT NO. V4

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/2/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B				SM	SAND, silty, loose, moist, dark brown Medium dense, dry Moist
10							Bottom of pit 8'
15							NOTE: Bulk sample for proctor.
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 5

LOG OF TEST PIT NO. V5

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/2/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, medium dense, dry, light brown Brown Slightly moist, brown Dry, light brown
10 15 20 25 30 35							Bottom of pit 6'

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 6

LOG OF TEST PIT NO. V7

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/2/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B				SM	Silty SAND, dry, medium dense, light brown Dense, slightly moist, light brown Medium dense Loose
10							Bottom of pit 8' Note: Bult sample for proctor.
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 7

LOG OF TEST PIT NO. V8

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/3/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, dense, dry, light brown Weathered sandstone fragments, slightly moist, light brown/white
10							Loose, light brown Bottom of pit 6'
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 8

LOG OF TEST PIT NO. V9

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/3/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, dry, loose, light brown Slightly moist, medium dense, brown Slight calcium deposit with silty sand Dense Medium dense
		B				SW-SM	Well graded SAND with silt, dense, slightly moist, brown
10							Bottom of pit 8'
15							Note: Bulk sample for proctor.
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 9

LOG OF TEST PIT NO. V10

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/3/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, loose, dry, light brown Medium dense Dense
10 15 20 25 30 35							Bottom of pit 8'

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 10

LOG OF TEST PIT NO. V11

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/3/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B				SM	Silty SAND, loose, dry, light brown Medium dense Dense Silty sand with calcium deposits
10							Bottom of pit 8' Note: Bulk sample for proctor
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 11

LOG OF TEST PIT NO. V12

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/3/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, loose, dry, light brown Medium dense, slightly moist
10							Bottom of pit 6'
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 12

LOG OF TEST PIT NO. V17

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/3/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
						SM	Silty SAND, loose, dry, light brown Medium dense
						CL	Lean CLAY with sand, stiff, dry, brown
						SM	Silty SAND, medium dense, dry, loose
5		B				ML	Sandy SILT, very stiff, dry, brown
10							Bottom of pit 5' Note: Bulk sample for proctor
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 13

LOG OF TEST PIT NO. V18

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/3/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, loose, dry, light brown Dense Medium dense, slightly moist, brown
10							Bottom of pit 6'
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 14

LOG OF TEST PIT NO. V19

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/3/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, loose, dry, light brown Medium dense Loose, slightly moist
10							Bottom of pit 6'
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 15

LOG OF TEST PIT NO. V20

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/3/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, loose, dry, light brown Medium dense
10							Bottom of pit 6'
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 16

LOG OF TEST PIT NO. V21

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/3/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, loose, dry, light brown Medium dense Slightly moist
10 15 20 25 30 35							Bottom of pit 8'

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 17

LOG OF TEST PIT NO. V28

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/6/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, loose, dry, light brown Medium dense, slightly moist, brown Dry, light brown
10 15 20 25 30 35							Bottom of pit 6'

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 18

LOG OF TEST PIT NO. V29

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/6/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
						SM	Silty SAND, loose, dry, light brown Medium dense, slightly moist
5		B				SC	Clayey SAND, medium dense, moist, dark brown Dry, light brown Slightly moist, dark brown
10							Bottom of pit 8' Note: Bulk sample for proctor.
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 19

LOG OF TEST PIT NO. V30

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/6/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, dense, dry, light brown Medium dense, moist, dark brown Dense Dry, light brown
10							Bottom of pit 8'
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 20

LOG OF TEST PIT NO. V31

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/6/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, loose, dry, light brown Medium dense, brown Very dense Dense, dark brown
10 15 20 25 30 35							Bottom of pit 8'

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 21

LOG OF TEST PIT NO. V32

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/6/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
						SM	Silty SAND, loose, dry, light brown Medium dense
5						SC	Clayey SAND, loose, dry, light brown
10							Bottom of pit 6'
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 22

LOG OF TEST PIT NO. V33

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/6/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
						SM	Silty SAND, loose, dry, light brown Medium dense
5							Sandstone fragments, dense, very dry, white/light brown
							Bottom of pit 4'-2"
10							
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 23

LOG OF TEST PIT NO. V34

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/6/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
						SM	Silty SAND, loose, dry, light brown
							Medium dense
							Slightly moist, brown
							Calcium deposits, dry, brown/white
5							Weathered sandstone fragments, dense, white
							Sandstone, hard
							Bottom of pit 5½'
10							
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 24

LOG OF TEST PIT NO. V35

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/6/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
						SM	Silty SAND, loose, dry, light brown Medium dense
5						SC	Clayey SAND, loose to medium dense, slightly moist, light brown
10							Bottom of pit 6'
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 25

LOG OF TEST PIT NO. V36

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/6/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
						SM	Silty SAND, loose, dry, light brown
							Medium dense
							Weathered sandstone fragments, very dense, white
							Sandstone, moderately hard
5							Bottom of pit 3½'
10							
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 26

LOG OF TEST PIT NO. V37

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 10/6/2014
Drilling Method: Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5						SM	Silty SAND, loose, dry, light brown Medium dense Slightly moist, brown Calcium deposits, dry brown/white
							Sandstone, hard, white/light brown
							Bottom of pit 6'
10							
15							
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 27

LOG OF TEST HOLE NO. V38-A

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 11/24/2014
Drilling Method: 7" H.S.A.

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
	35	R	104	5.2	1,2,5	SM	SAND, silty, fine grained, dense, slightly moist, light brown, caliche
5	39	R	109	5.0			
10	39	S		3.6	1,2	GM	GRAVEL, silty, dense, slightly moist, brown and yellow, sandstone fragments
						CL	CLAY, lean, slight gravel-size sandstone fragments, hard, slightly damp, light brown and yellow
15	50/1"	S		1.4			Trace gravel, dry
20	50/4"	S		10.7			No gravel, no sandstone fragments recovered in split spoon sampler
							Bottom of hole at 20'-10"
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 28

LOG OF TEST HOLE NO. V38-B

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 11/24/2014
Drilling Method: 7" H.S.A.

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
						SM	SAND, silty, fine to medium grained, medium dense, moist, brown
	17	R	108	7.1	1,2,5		
5							
	33	R	102	7.1	1,2,5	ML	SILT, sandy, fine grained, hard, moist, brown
10							
	50/2"	S		8.6		CL	CLAY, lean, hard, slightly moist, yellowish brown
15							
	50/3"	S		1.6			Sandstone fragments, yellow
20							
	50/6"	S		10.7			Brown and yellow Bottom of hole at 20½'
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 29

LOG OF TEST HOLE NO. V38-C

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 11/24/2014
Drilling Method: 7" H.S.A.

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5	13	S		6.3		SC	SAND, clayey, fine grained, medium dense, moist, brown
	24	R	107	7.2	1,2,5		Caliche pieces
10	55	R		9.1	1,2,5	CL	CLAY, sandy lean, hard, slightly moist, brown with orange spots
15	78	S	120	5.1	1,2	SM	SAND, silty, fine to medium grained, slight gravel, very dense, moist, yellow
20	50/1.5"	S		2.1			
25	50/2"	S		11.2	1,2	CL	CLAY, sandy lean, hard, moist, yellow and brown
30							Bottom of hole at 20'-8"
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 30

LOG OF TEST HOLE NO. V38-D

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 11/24/2014
Drilling Method: 7" H.S.A.

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5	33	S		5.8	1,2	ML	SILT, sandy, hard, moist, brown
10	47	R	107	5.5		SM	SAND, silty, fine grained, dense, slightly moist, light brown Fine to medium grained, brown with orange spots
15	36	R	104	5.8	1,2,5		Gravel size sandstone fragments
20	50/1"	S		1.2		SC	SAND, clayey, fine grained, very dense, slightly moist, yellow
25	50/2"	S		11.8			Bottom of hole at 20'-2"
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 31

LOG OF TEST HOLE NO. V-Bore

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

Project No.: 14-1-086
Date Drilled: 11/24/2014
Drilling Method: 7" H.S.A.

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5	29	S		3.2	1,2	SM	SAND, silty, fine grained, medium dense, slightly moist, light brown
	35	S		2.3		SP-SM	SAND, poorly graded with silt, fine grained, dense, slightly moist, light brown
10	34	S		6.0		CL	CLAY, lean with sand, hard, dry, light brown
15							Bottom of hole at 11½'
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 32

LOG OF TEST HOLE NO. 80

Project: NGWSP Reaches 26.2 Pueblo Pintado
Elevation: N/A
Depth to Groundwater: Not Encountered

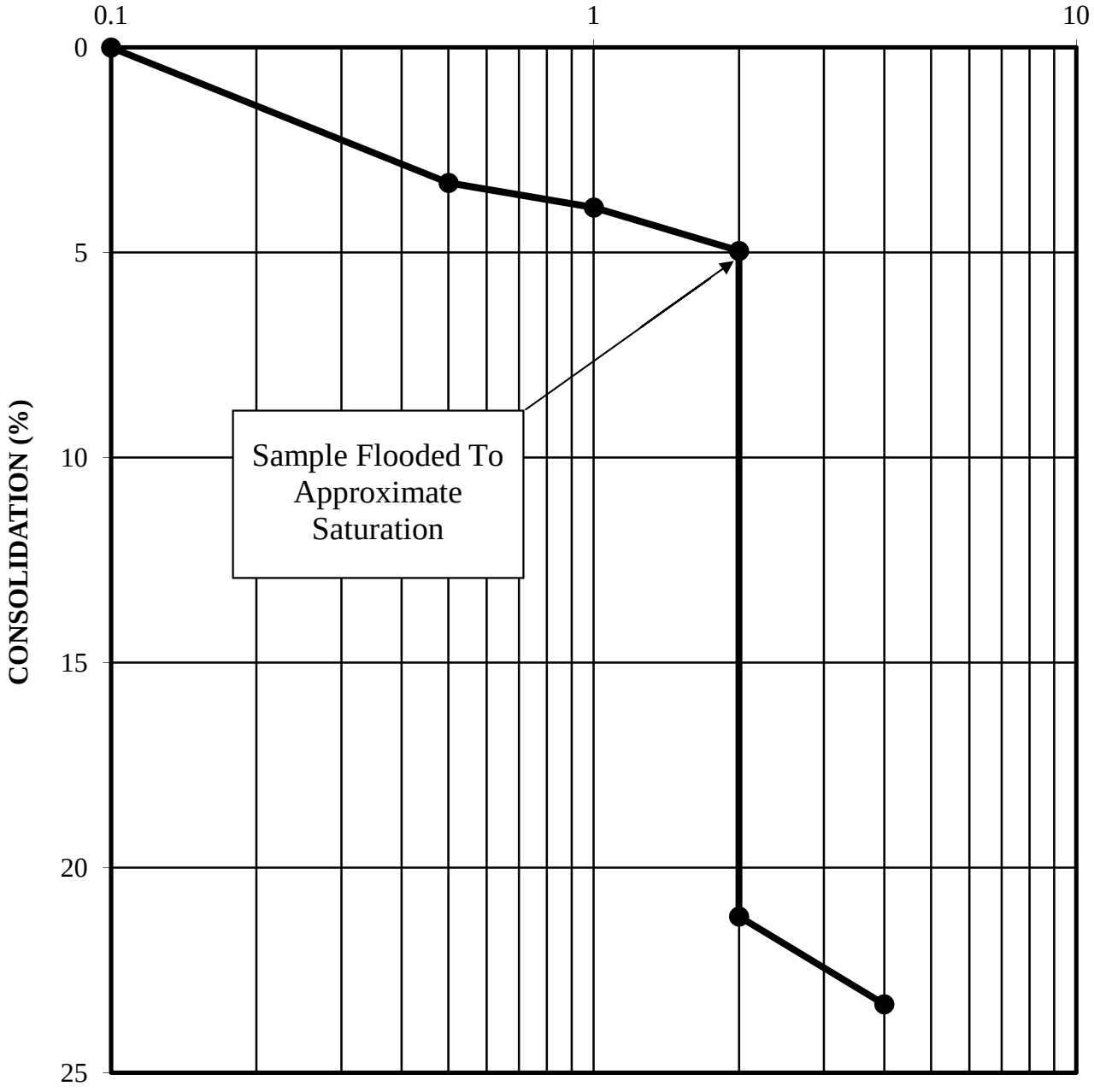
Project No.: 14-1-086
Date Drilled: 11/24/2014
Drilling Method: 7" H.S.A.

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
						CL	CLAY, lean, slightly sandy, very stiff, slightly moist, light brown
	25	S		5.1			
5							
	7	S		5.8			Medium stiff
10							
	52	S		9.8			Sandy, light brown/brown and burgundy stripes
15							Sandstone fragments, slightly silty, less moisture, light brown
	81	S		9.4			
							Bottom of hole at 16½'
20							
25							
30							
35							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 33

CONSOLIDATION TEST RESULTS

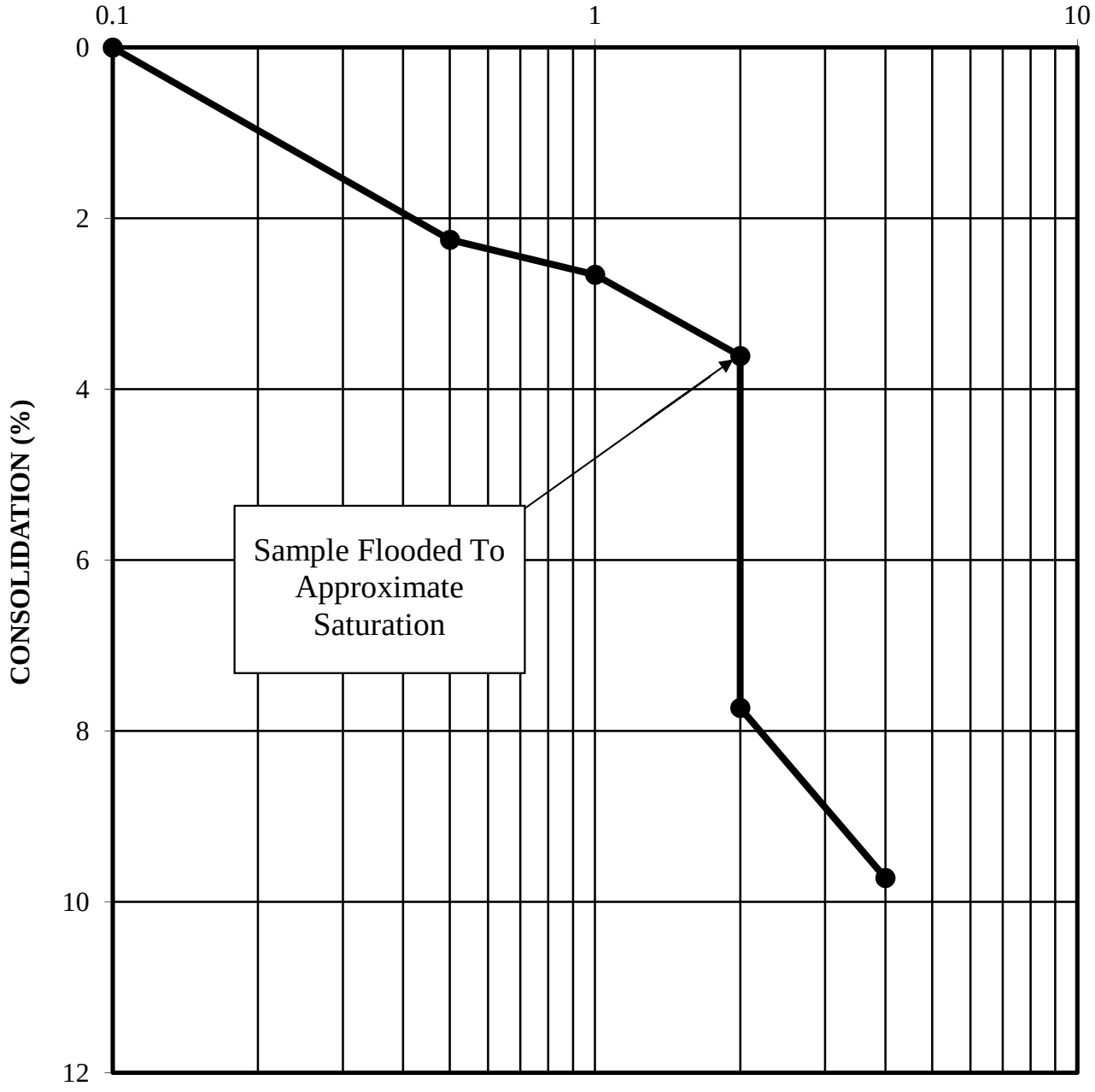


TEST HOLE NUMBER: V1
SAMPLE DEPTH: 2 FEET
SOIL DESCRIPTION: Silty SAND (SM)
MOISTURE CONTENT: 3.3 %
BULK UNIT WEIGHT: 109 pcf

PROJECT: NGWSP Reaches 26.2 Pueblo Pintado
PROJECT NO.: 14-1-086

FIGURE NO.: 35

CONSOLIDATION TEST RESULTS

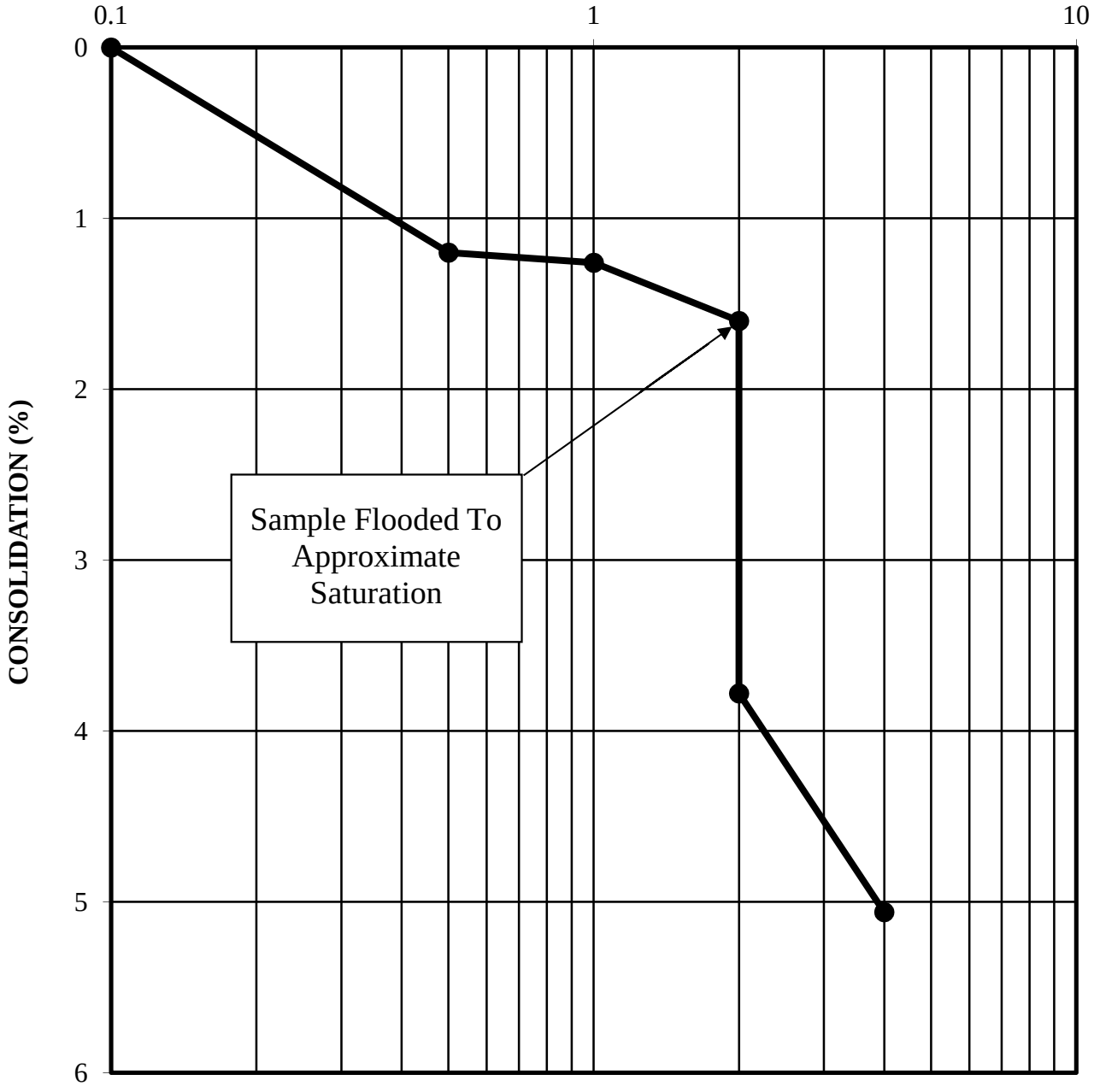


TEST HOLE NUMBER: V38-A
SAMPLE DEPTH: 2 FEET
SOIL DESCRIPTION: Silty SAND (SM)
MOISTURE CONTENT: 5.2 %
BULK UNIT WEIGHT: 104 pcf

PROJECT: NGWSP Reaches 26.2 Pueblo Pintado
PROJECT NO.: 14-1-086

FIGURE NO.: 36

CONSOLIDATION TEST RESULTS

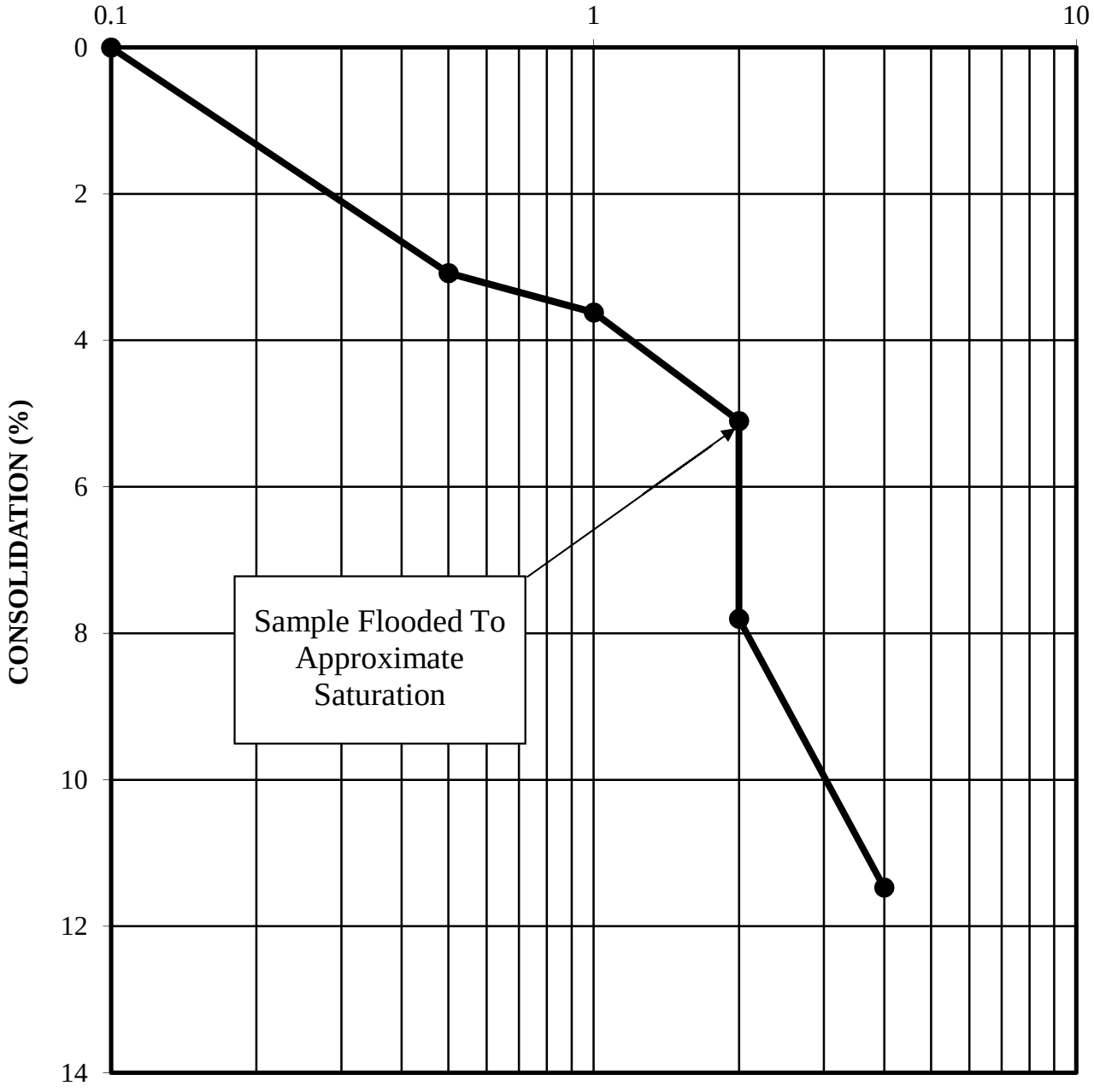


TEST HOLE NUMBER: V38-B
SAMPLE DEPTH: 2 FEET
SOIL DESCRIPTION: Silty SAND (SM)
MOISTURE CONTENT: 7.1 %
BULK UNIT WEIGHT: 108 pcf

PROJECT: NGWSP Reaches 26.2 Pueblo Pintado
PROJECT NO.: 14-1-086

FIGURE NO.: 37

CONSOLIDATION TEST RESULTS

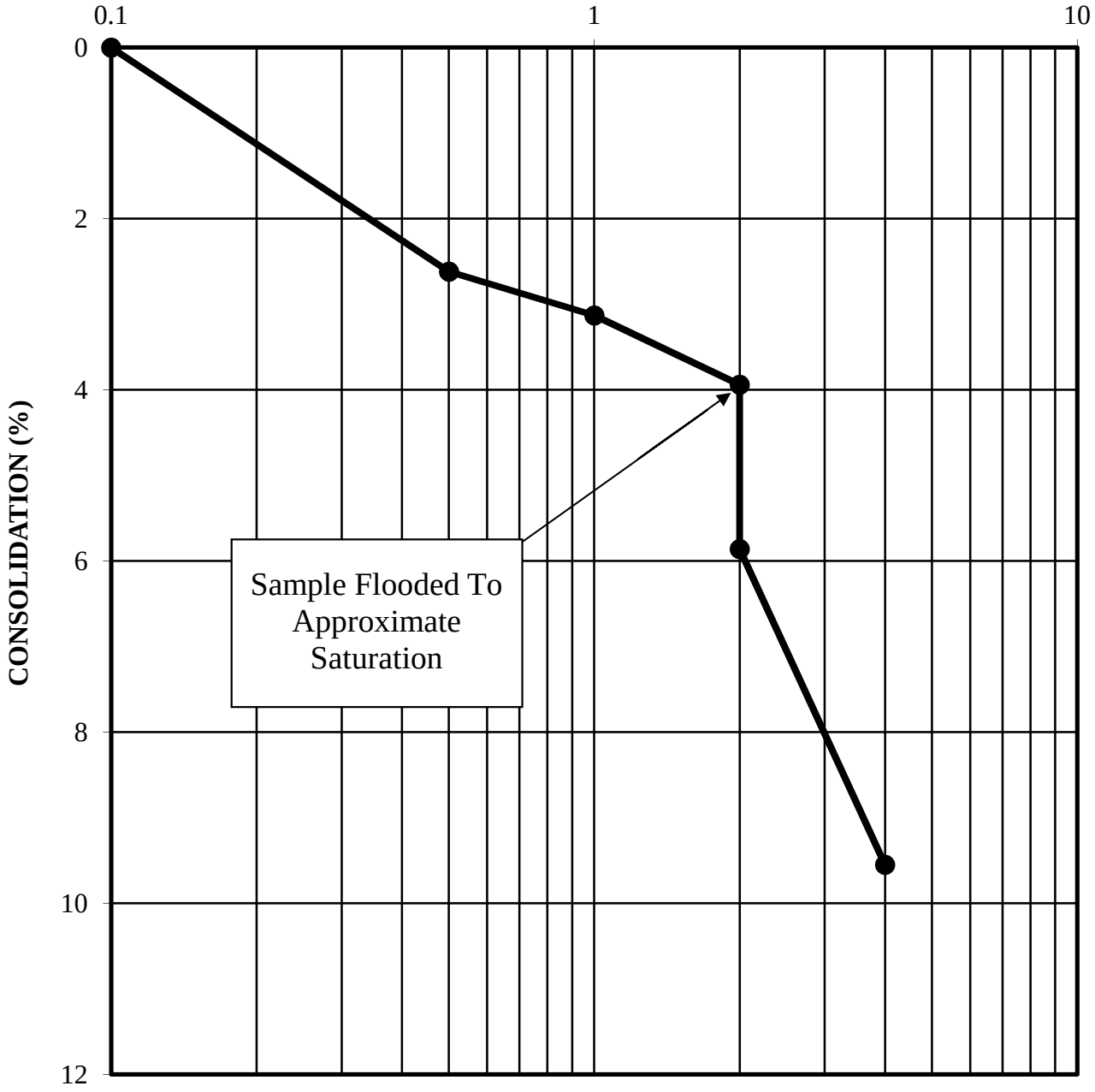


TEST HOLE NUMBER: V38-B
SAMPLE DEPTH: 5 FEET
SOIL DESCRIPTION: Sandy SILT (ML)
MOISTURE CONTENT: 7.1 %
BULK UNIT WEIGHT: 102 pcf

PROJECT: NGWSP Reaches 26.2 Pueblo Pintado
PROJECT NO.: 14-1-086

FIGURE NO.: 38

CONSOLIDATION TEST RESULTS

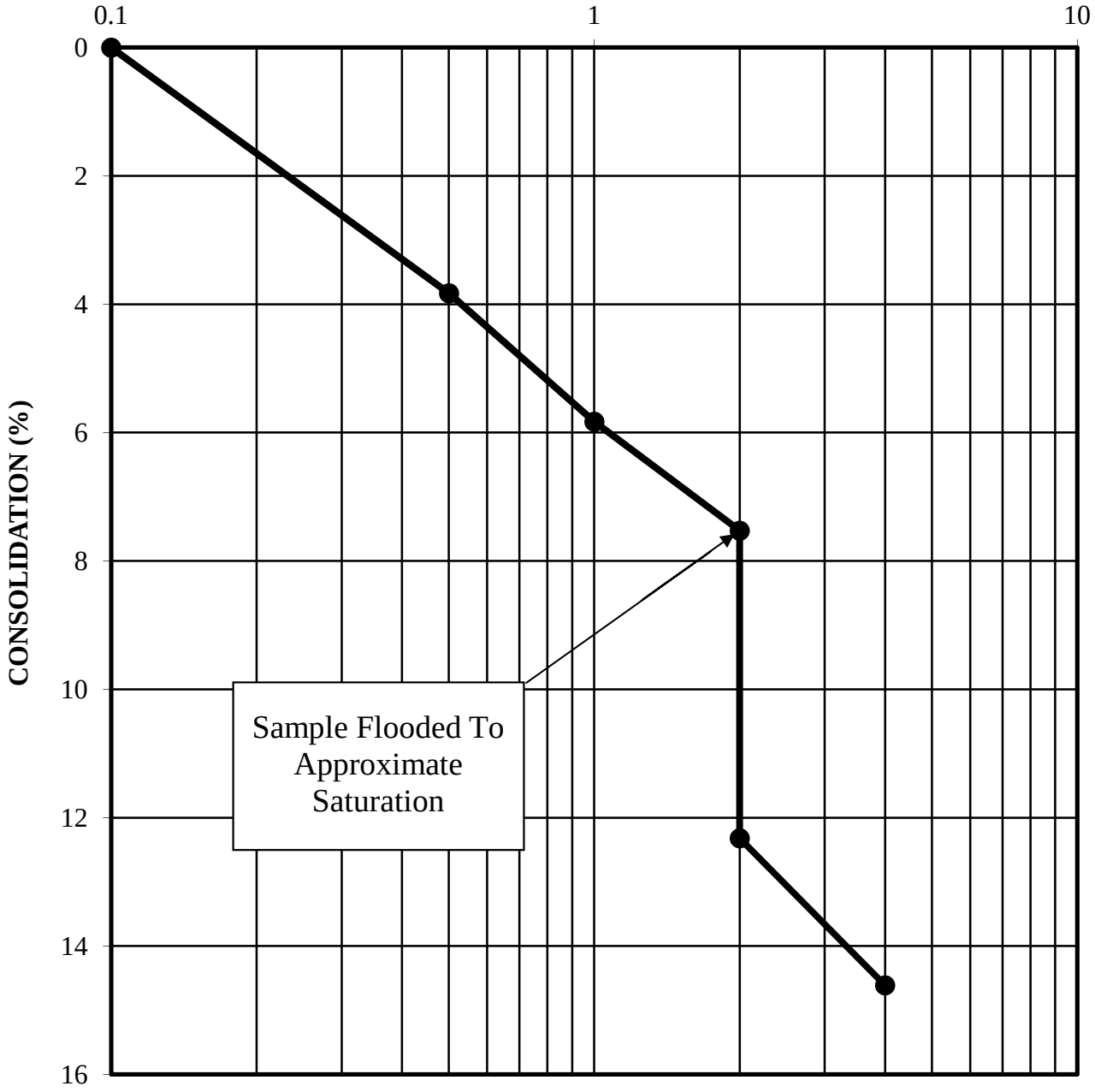


TEST HOLE NUMBER: V38-C
SAMPLE DEPTH: 5 FEET
SOIL DESCRIPTION: Clayey SAND (SC)
MOISTURE CONTENT: 7.2 %
BULK UNIT WEIGHT: 107 pcf

PROJECT: NGWSP Reaches 26.2 Pueblo Pintado
PROJECT NO.: 14-1-086

FIGURE NO.: 39

CONSOLIDATION TEST RESULTS

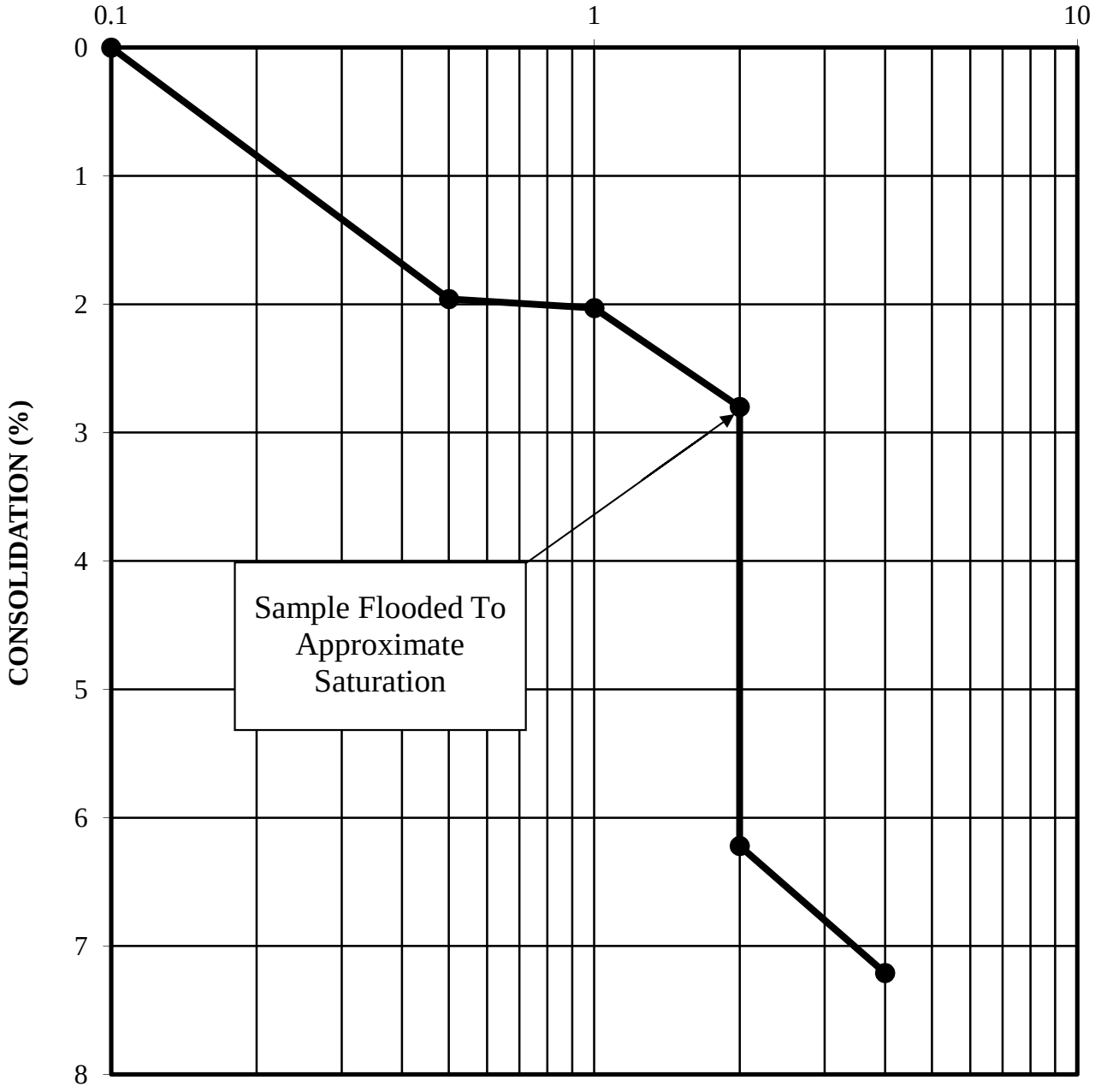


TEST HOLE NUMBER: V38-C
SAMPLE DEPTH: 7 FEET
SOIL DESCRIPTION: Sandy lean CLAY (CL)
MOISTURE CONTENT: 9.1 %
BULK UNIT WEIGHT: 120 pcf

PROJECT: NGWSP Reaches 26.2 Pueblo Pintado
PROJECT NO.: 14-1-086

FIGURE NO.: 40

CONSOLIDATION TEST RESULTS



TEST HOLE NUMBER: V38-D
SAMPLE DEPTH: 10 FEET
SOIL DESCRIPTION: Silty SAND with gravel (SM)
MOISTURE CONTENT: 5.8 %
BULK UNIT WEIGHT: 104 pcf

PROJECT: NGWSP Reaches 26.2 Pueblo Pintado
PROJECT NO.: 14-1-086

FIGURE NO.: 41

COMPACTION TEST RESULTS

PROJECT : NGWSP Reaches 26.2 Pueblo Pintado CLIENT: Souder, Miller & Associates

TECHNICIAN: Alex Abeyta

PROJECT NO.: 14-1-086 REPORT NO.: 1 pg 1/2 DATE: 10/2/14 - 10/3/14

COA PROJECT NO.:

Test No.	Location	Elevation	Proctor Number	Field Moisture (%)	Field Dry Density (PCF)	Relative Compaction (%)	Specified Compaction (%)
1	Test pit V3	-4' FSG	2	12.0	71.9	62	NA
2	Test pit V3	-6' FSG	2	3.4	67.8	59	NA
3	Test pit V5	-4' FSG	1	6.5	84.3	91	NA
4	Test pit V5	-6' FSG	1	5.1	66.1	72	NA
5	Test pit V8	-4' FSG	6	13.8	69.5	66	NA
6	Test pit V8	-6' FSG	6	8.9	69.0	66	NA
7	Test pit V12	-4' FSG	4	6.8	84.0	70	NA
8	Test pit V12	-6' FSG	4	8.2	85.8	72	NA
9	Test pit V17	-4' FSG	1	29.7	65.8	71	NA
10	Test pit V18	-4' FSG	3	11.5	77.7	65	NA
11	Test pit V18	-6' FSG	3	8.3	70.0	58	NA
12	Test pit V19	-4' FSG	3	11.1	64.7	54	NA
13	Test pit V19	-6' FSG	3	6.0	68.9	58	NA
14	Test pit V20	-4' FSG	3	4.9	96.0	80	NA
15	Test pit V20	-6' FSG	3	8.0	88.7	74	NA
16	Test pit V28	-4' FSG	3	4.9	86.3	72	NA
17	Test pit V28	-6' FSG	3	4.9	86.8	73	NA

Proctor Test Utilized

Proctor No.	Sample Location	Opt. Moisture Content (%)	Maximum Dry Dens (pcf)	Soil Description
2	V4 @ 2' backhoe pit (14-434)	10.8	115.9	Silty SAND
1	V17 @ 4' backhoe pit (14-433)	13.5	92.2	Sandy SILT
3	V7 @ 4' backhoe pit (14-435)	12.3	119.7	Silty SAND
4	V11 @ 7' backhoe pit (14-436)	12.0	119.2	Silty SAND
6	V9 @ 7' backhoe pit (14-432)	13.4	104.6	Well-graded SAND with silt

WEATHER: Cloudy, 42º, light breeze

EQUIPMENT: Backhoe

REMARKS: Contracting personnel informed of the test results.

Figure 42

COMPACTION TEST RESULTS

PROJECT : NGWSP Reaches 26.2 Pueblo Pintado CLIENT: Souder, Miller & Associates

TECHNICIAN: Alex Abeyta

PROJECT NO.: 14-1-086 REPORT NO.: 1 pg 2/2 DATE: 10/2/14 - 10/3/14

COA PROJECT NO.:

Test No.	Location	Elevation	Proctor Number	Field Moisture (%)	Field Dry Density (PCF)	Relative Compaction (%)	Specified Compaction (%)
18	Test pit V32	-4' FSG	5	8.6	59.9	54	NA
19	Test pit V32	-6' FSG	5	8.2	71.0	64	NA
20	Test pit V35	-4' FSG	5	11.6	65.4	59	NA
21	Test pit V35	-6' FSG	5	8.9	74.4	67	NA
22	Test pit V36	-3.5' FSG	3	6.4	92.3	77	NA
23	Test pit V37	-4' FSG	3	13.6	70.7	59	NA
24	Test pit V37	-6' FSG	3	28.5	64.2	54	NA

Proctor Test Utilized

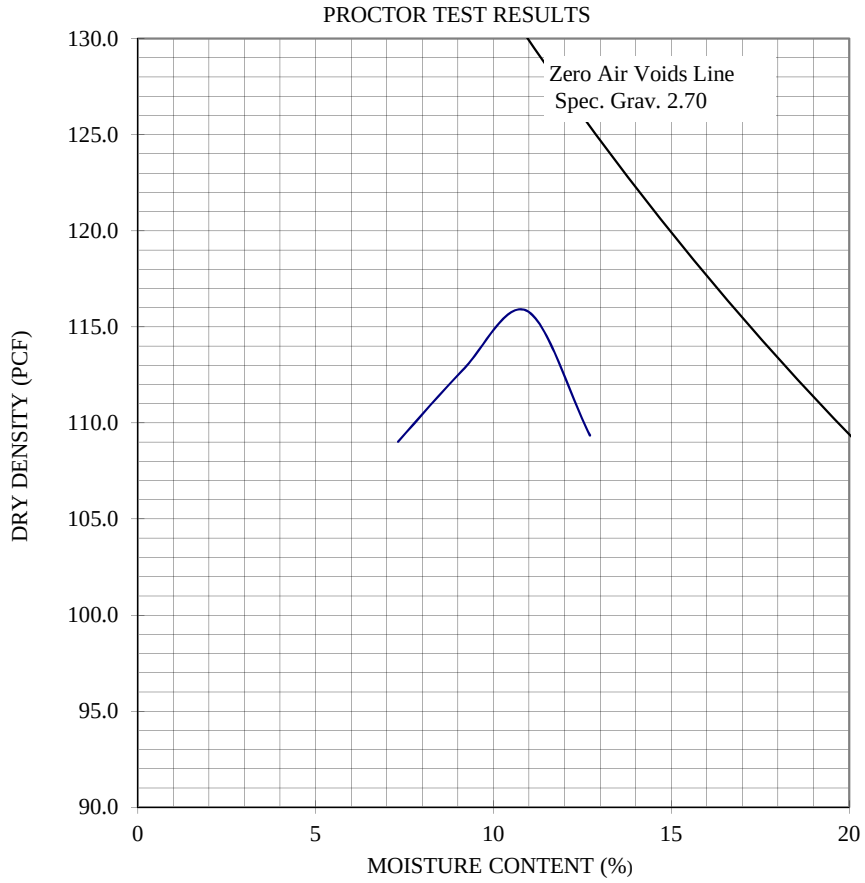
Proctor No.	Sample Location	Opt. Moisture Content (%)	Maximum Dry Dens (pcf)	Soil Description
5	V29 @ 3' backhoe pit (14-437)	14.5	111.0	Clayey SAND
3	V7 @ 4' backhoe pit (14-435)	12.3	119.7	Silty SAND

WEATHER: Cloudy, 42º, light breeze

EQUIPMENT: Backhoe

REMARKS: Contracting personnel informed of the test results.

Figure 43



Max Dry Density= 115.9 PCF

Optimum Moist.= 10.8 %

Test Method : ASTM D698-A

X8eVinyard Project No.: **14-1-086** **COA Number:**

Project Title : **NGWSP Reaches 26.2**

Date Sampled : **10/3/14** **Sample No. :** **434**

Sample Location : **V4 @ 2' backhoe pit**

Sieve Analysis ASTM C-136

Sieve	mm	% Passing	Spec.
3"	75.0		
2"	50.0		
1 1/2"	37.5		
1"	25.0		
3/4"	19.0		
1/2"	12.5		
3/8"	9.5		
No. 4	4.75		
No. 8	2.36		
No. 10	2.00		
No. 16	1.18	100	
No. 30	0.60	97	
No. 40	0.425	94	
No. 50	0.300	85	
No. 80	0.180	60	
No. 100	0.150	49	
No. 200	0.075	24	

Atterberg Limits ASTM D4318

	Results	Spec.
LIQUID LIMIT	NV	
PLASTIC LIMIT	NV	
PLASTICITY INDEX	NP	

NV=Not Valid NP=Non Plastic

ASTM D2487 USCS: **SM** **(Silty SAND.)**

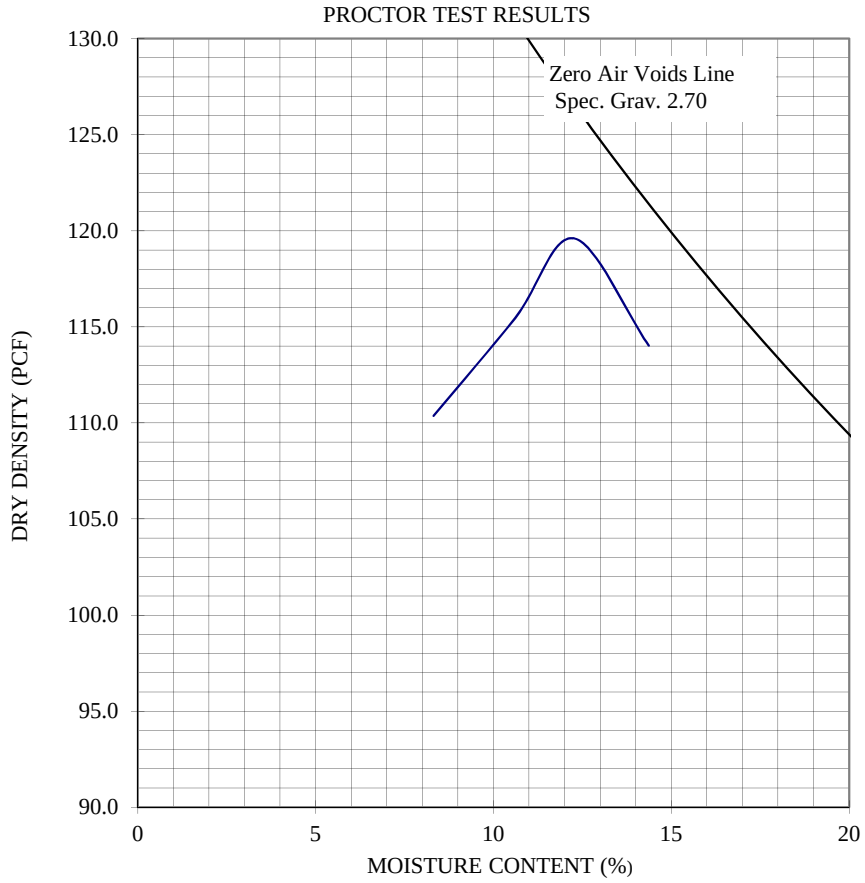
AASHTO M145 CLASS.: **A-2-4**

EST. R-VALUE: **50**
(Based on NMSHTD 97 Charts)

Specification Used : **None**

Figure: 44

Revision 11/21/12



Max Dry Density= 119.7 PCF

Optimum Moist.= 12.3 %

Test Method : ASTM D698-B

X8eVinyard Project No.: **14-1-086** **COA Number:**

Project Title : **NGWSP Reaches 26.2**

Date Sampled : **10/3/14** **Sample No. :** **435**

Sample Location : **V7 @ 4' backhoe pit**

Sieve Analysis ASTM C-136

Sieve	mm	% Passing	Spec.
3"	75.0		
2"	50.0		
1 1/2"	37.5		
1"	25.0		
3/4"	19.0		
1/2"	12.5		
3/8"	9.5	100	
No. 4	4.75	99	
No. 8	2.36	98	
No. 10	2.00	98	
No. 16	1.18	95	
No. 30	0.60	81	
No. 40	0.425	69	
No. 50	0.300	56	
No. 80	0.180	39	
No. 100	0.150	34	
No. 200	0.075	21	

Atterberg Limits ASTM D4318

	Results	Spec.
LIQUID LIMIT	NV	
PLASTIC LIMIT	NV	
PLASTICITY INDEX	NP	

NV=Not Valid NP=Non Plastic

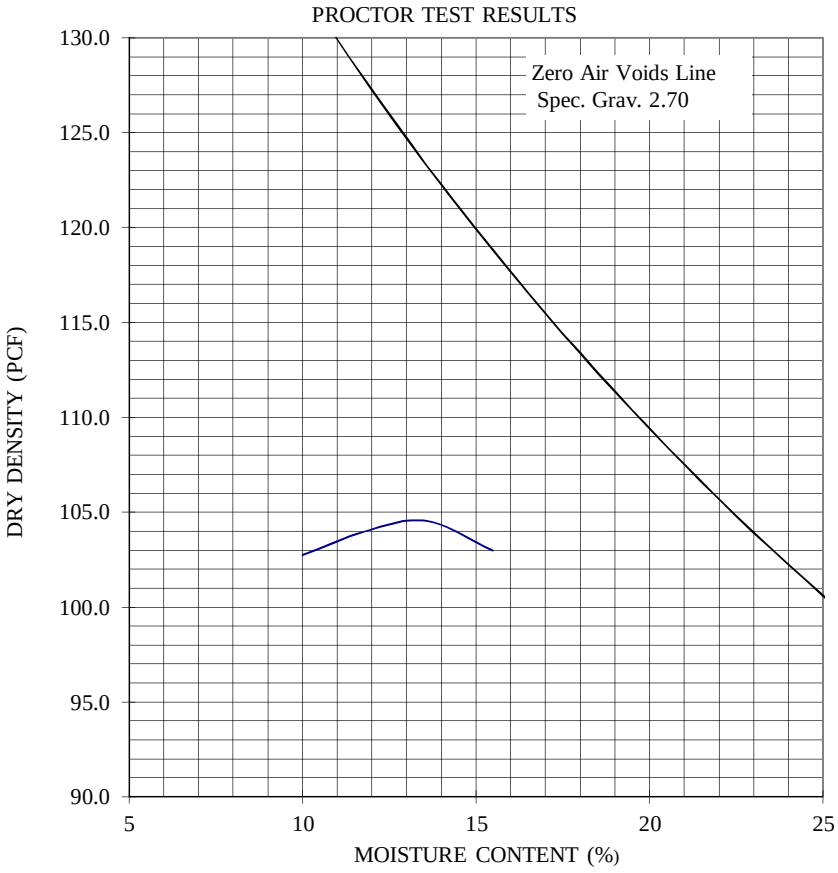
ASTM D2487 USCS: **SM** **(Silty SAND.)**

AASHTO M145 CLASS.: **A-2-4**

EST. R-VALUE: **50**
(Based on NMSHTD 97 Charts)

Specification Used : **None**

Figure: 45



Max Dry Density= 104.6 PCF

Optimum Moist.= 13.4 %

Test Method : ASTM D698-B

X8eVinyard Project No.: 14-1-086 **COA Number:**

Project Title : NGWSP Reaches 26.2

Date Sampled : 10/3/14 **Sample No. : 432**

Sample Location : V9 @ 8' backhoe pit

Sieve Analysis ASTM C-136

Sieve	mm	% Passing	Spec.
3"	75.0		
2"	50.0		
1 1/2"	37.5		
1"	25.0		
3/4"	19.0		
1/2"	12.5		
3/8"	9.5		
No. 4	4.75		
No. 8	2.36		
No. 10	2.00	100	
No. 16	1.18	98	
No. 30	0.60	88	
No. 40	0.425	74	
No. 50	0.300	51	
No. 80	0.180	21	
No. 100	0.150	15	
No. 200	0.075	6.2	

Atterberg Limits ASTM D4318

	Results	Spec.
LIQUID LIMIT	NV	
PLASTIC LIMIT	NV	
PLASTICITY INDEX	NP	

NV=Not Valid NP=Non Plastic

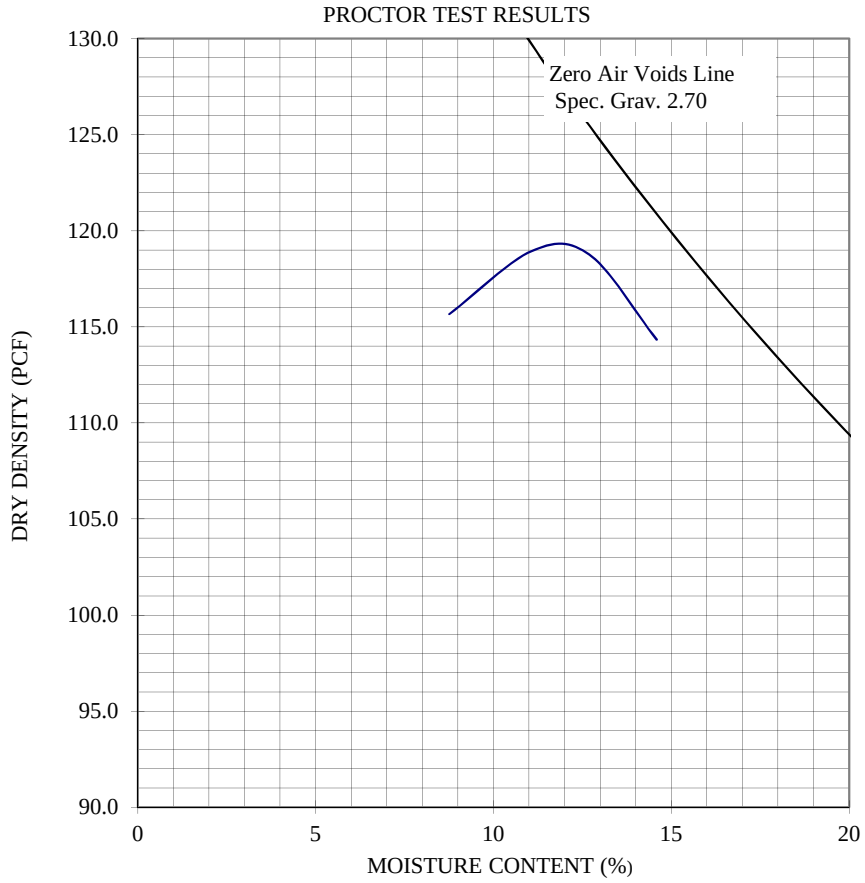
ASTM D2487 USCS: SW-SM **(Well graded SAND with silt.)**

AASHTO M145 CLASS. A-3

EST. R-VALUE: 55
(Based on NMSHTD 97 Charts)

Specification Used : None

Figure: 46



Max Dry Density= 119.2 PCF

Optimum Moist.= 12.0 %

Test Method : ASTM D698-A

X8eVinyard Project No.: **14-1-086** **COA Number:**

Project Title : **NGWSP Reaches 26.2**

Date Sampled : **10/3/14** **Sample No. :** **436**

Sample Location : **V11 @ 7' backhoe pit**

Sieve Analysis ASTM C-136

Sieve	mm	% Passing	Spec.
3"	75.0		
2"	50.0		
1 1/2"	37.5		
1"	25.0		
3/4"	19.0		
1/2"	12.5		
3/8"	9.5		
No. 4	4.75		
No. 8	2.36		
No. 10	2.00		
No. 16	1.18	100	
No. 30	0.60	96	
No. 40	0.425	91	
No. 50	0.300	80	
No. 80	0.180	58	
No. 100	0.150	51	
No. 200	0.075	30	

Atterberg Limits ASTM D4318

	Results	Spec.
LIQUID LIMIT	NV	
PLASTIC LIMIT	NV	
PLASTICITY INDEX	NP	

NV=Not Valid NP=Non Plastic

ASTM D2487 USCS: **SM** **(Silty SAND.)**

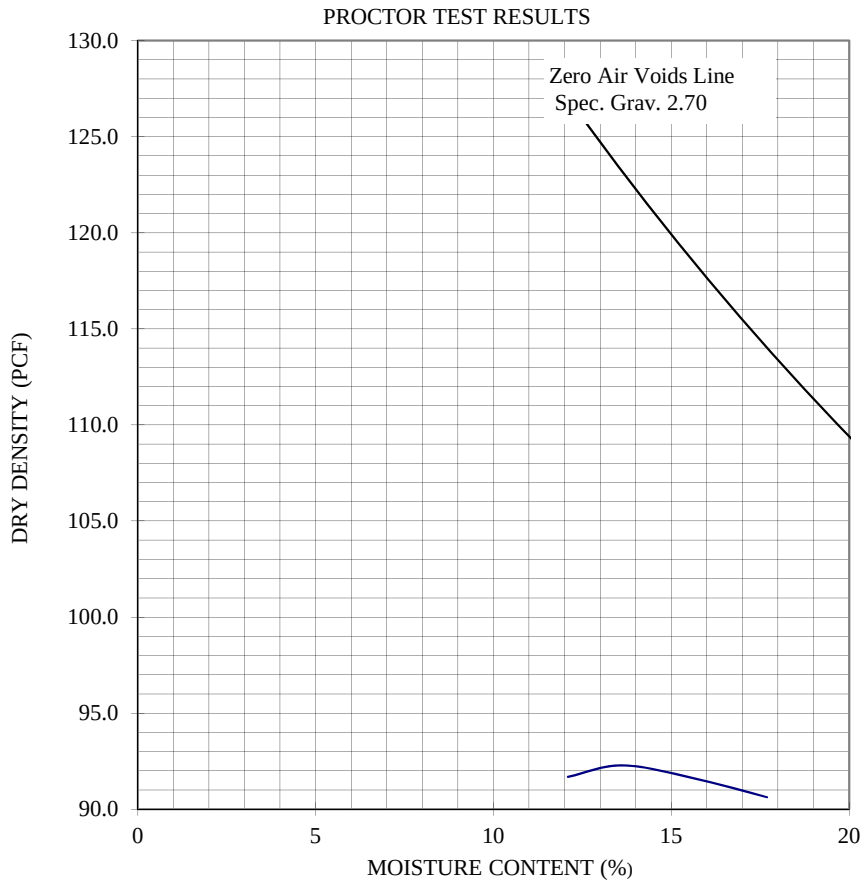
AASHTO M145 CLASS.: **A-2-4**

EST. R-VALUE: **50**
(Based on NMSHTD 97 Charts)

Specification Used : **None**

Figure: 47

Revision 11/21/12



Max Dry Density= 92.2 PCF

Optimum Moist.= 13.5 %

Test Method : ASTM D698-C

X8eVinyard Project No.: **14-1-086** **COA Number:**

Project Title : **NGWSP Reaches 26.2**

Date Sampled : **10/3/14** **Sample No. :** **433**

Sample Location : **V17 @ 4' backhoe pit**

Sieve Analysis ASTM C-136

Sieve	mm	% Passing	Spec.
3"	75.0		
2"	50.0		
1 1/2"	37.5		
1"	25.0		
3/4"	19.0	100	
1/2"	12.5	99	
3/8"	9.5	99	
No. 4	4.75	99	
No. 8	2.36	98	
No. 10	2.00	98	
No. 16	1.18	98	
No. 30	0.60	97	
No. 40	0.425	93	
No. 50	0.300	84	
No. 80	0.180	70	
No. 100	0.150	66	
No. 200	0.075	57	

Atterberg Limits ASTM D4318

	Results	Spec.
LIQUID LIMIT	NV	
PLASTIC LIMIT	NV	
PLASTICITY INDEX	NP	

NV=Not Valid NP=Non Plastic

ASTM D2487 USCS: **ML** **(Sandy SILT.)**

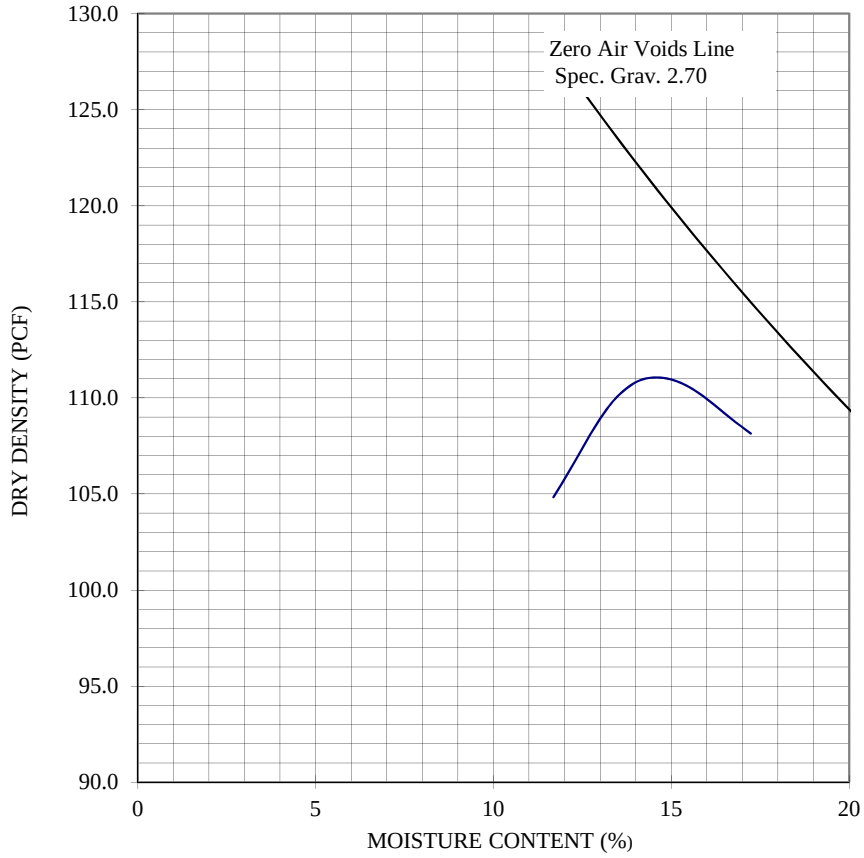
AASHTO M145 CLASS.: **A-4**

EST. R-VALUE: **45**
(Based on NMSHTD 97 Charts)

Specification Used : **None**

Figure: 48

PROCTOR TEST RESULTS



Max Dry Density= 111.0 PCF

Optimum Moist.= 14.5 %

Test Method : ASTM D698-A

X8eVinyard Project No.: **14-1-086** **COA Number:**

Project Title : **NGWSP Reaches 26.2**

Date Sampled : **10/3/14** **Sample No. :** **437**

Sample Location : **V29 @ 3' backhoe pit**

Sieve Analysis ASTM C-136

Sieve	mm	% Passing	Spec.
3"	75.0		
2"	50.0		
1 1/2"	37.5		
1"	25.0		
3/4"	19.0		
1/2"	12.5		
3/8"	9.5		
No. 4	4.75		
No. 8	2.36		
No. 10	2.00		
No. 16	1.18	100	
No. 30	0.60	99	
No. 40	0.425	97	
No. 50	0.300	82	
No. 80	0.180	72	
No. 100	0.150	54	
No. 200	0.075	44	

Atterberg Limits ASTM D4318

	Results	Spec.
LIQUID LIMIT	29	
PLASTIC LIMIT	15	
PLASTICITY INDEX	14	

ASTM D2487 USCS: **SC** **(Clayey SAND.)**

AASHTO M145 CLASS.: **A-6**

EST. R-VALUE: **12**
(Based on NMSHTD 97 Charts)

Specification Used : **None**

Figure: 49

SUMMARY OF LABORATORY TEST DATA

Test Hole	Depth (feet)	Unified Classification	Natural Dry Density (pcf)	Natural Moisture Content (%)	Atterberg Limits		SIEVE ANALYSIS-% PASSING BY WEIGHT										Description
					LL	PI	1 1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200	
vbore	2	SM		3.2	NV	NP						100	98	86	45	18.2	SAND, silty
vbore	5			2.3													
vbore	10			6.0													
V1	2	SM	109	3.3	NV	NP				100	99	96	83	58	33	21.9	SAND, silty
V1	5		107	2.3													
V1	10			4.0													
V1	15			2.3													
V1	20			2.7													
V38-A	2	SM	104	5.2	NV	NP							100	99	94	42.5	SAND, silty
V38-A	5		109	5.0													
V38-A	10	GM		3.6	NV	NP	100	93	69	60	57	55	54	52	48	23.4	GRAVEL, silty
V38-A	15			1.4													
V38-A	20			10.7													
V38-B	2	SM	108	7.1	24	NP							100	99	93	42.0	SAND, silty
V38-B	5	ML	102	7.1	22	NP					100	99	98	98	94	52.2	SILT, sandy
V38-B	10			8.6													
V38-B	15			1.6													
V38-B	20			10.7													
V38-C	2			6.3													
V38-C	5	SC	107	7.2	26	9								100	96	47.5	SAND, clayey

X8e Vinyard Project No.: 14-1-086

Project: NGWSP Reaches 26.2 Pueblo Pintado **Table No.: 1**

SUMMARY OF LABORATORY TEST DATA

Test Hole	Depth (feet)	Unified Classification	Natural Dry Density (pcf)	Natural Moisture Content (%)	Atterberg Limits		SIEVE ANALYSIS-% PASSING BY WEIGHT										Description
					LL	PI	1 1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200	
V38-C	7	CL	120	9.1	31	16	100	100	100	99	98	98	97	96	94	60.7	CLAY, sandy lean
V38-C	10	SM		5.1	NV	NP		100	95	90	86	83	82	81	77	37.8	SAND, silty
V38-C	15			2.1													
V38-C	20	CL		11.2	26	10		100	99	98	97	96	96	94	92	67.5	CLAY, sandy lean
V38-D	2	ML		5.8	24	NP							100	99	95	50.0	SILT, sandy
V38-D	5		107	5.5													
V38-D	10	SM	104	5.8	NV	NP		100	89	85	82	81	80	79	75	36.3	SAND, silty with gravel
V38-D	15			1.2													
V38-D	20			11.8													
80	2			5.1													
80	5			5.8													
80	10	CL		9.8	30	17			100	99	98	96	95	93	91	63.0	CLAY, sandy lean
80	15			9.4													

X8e Vinyard Project No.: 14-1-086

Project: NGWSP Reaches 26.2 Pueblo Pintado **Table No.: 1**

APPENDIX C

PARTIAL PIPELINE RE-ROUTE

NGWSP REACHES 26.1 & 26.2 PUEBLO PINTADO

(X8E VINYARD PROJECT NUMBER 16-1-032)

8916-A Adams Street NE
Albuquerque, NM 87113
contactus@x8evinyard.com
Phone: 505.797.9743
Fax: 505.797.9749

APPENDIX B

PARTIAL PIPELINE RE-ROUTE

NGWSP REACHES 26.2 PUEBLO PINTADO

X8E VINYARD PROJECT NUMBER 16-1-032

8916-A Adams Street NE
Albuquerque, NM 87113
contactus@x8evinyard.com
Phone: 505.797.9743
Fax: 505.797.9749

X8e Vinyard Project No.: 16-1-032

SITE PLAN
*Scale Unknown

Test Pit Location

FIGURE 1

LOG OF TEST HOLE NO. 1

Project: NGWSP Reaches 26.2 Pueblo Pintado
Project No.: 16-1-032
Elevation: N/A
Date Drilled: 3/24/16
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe - 24" Bucket

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
1 2 3 4		B				CL	CLAY, lean with sand, stiff, slightly moist, brown
5 6		B				SC-SM	SAND, silty, clayey, medium dense, slightly moist, olive brown
							Bottom of hole at 6½'

LOG OF TEST HOLE NO. 2

Elevation: N/A
Date Drilled: 3/24/16
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe - 24" Bucket

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
1 2 3 4 5 6		B				SC	SAND, clayey, medium dense, slightly moist, olive brown
		B				CL	CLAY, lean, medium stiff, slightly moist, brown with white caliche, nodules
7							Bottom of hole at 6½'

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 2

LOG OF TEST HOLE NO. 3

Project: NGWSP Reaches 26.2 Pueblo Pintado
Project No.: 16-1-032
Elevation: N/A
Date Drilled: 3/24/16
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe - 24" Bucket

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
1						CL	CLAY, lean, stiff, slightly moist, brown with white caliche pieces
2							
3		B					
4							
5							
6							
		B				SM	SAND, silty, trace clay lumps, medium dense, olive brown
							Bottom of hole at 6½'

LOG OF TEST HOLE NO. 4

Elevation: N/A
Date Drilled: 3/24/16
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe - 24" Bucket

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
1						SC-SM	SAND, silty, clayey, medium dense, slightly moist, brown
2							
3							
		B					
4							
5							
6		B				CL	CLAY, lean with sand, stiff, slightly moist, brown with white caliche pieces
7							Bottom of hole at 6½'

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 3

LOG OF TEST HOLE NO. 5

Project: NGWSP Reaches 26.2 Pueblo Pintado
Project No.: 16-1-032
Elevation: N/A
Date Drilled: 3/24/16
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe - 24" Bucket

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
1							NOTE: Site was inaccessible.
2							
3							
4							
5							
6							

LOG OF TEST HOLE NO. 6

Elevation: N/A
Date Drilled: 3/24/16
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe - 24" Bucket

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
1							NOTE: Site was inaccessible.
2							
3							
4							
5							
6							
7							

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 4

LOG OF TEST HOLE NO. 7

Project: NGWSP Reaches 26.2 Pueblo Pintado
Project No.: 16-1-032
Elevation: N/A
Date Drilled: 3/24/16
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe - 24" Bucket

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
1						SM	SAND, silty, fine grained, trace small clay nodules, loose, slightly moist, brown
2							
3							
4		B					
5							
6							
							Bottom of hole at 6½'

LOG OF TEST HOLE NO. 8

Elevation: N/A
Date Drilled: 3/24/16
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe - 24" Bucket

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
1						SM	SAND, silty, fine grained, trace small clay nodules, loose, slightly moist, brown
2							
3							
4							
5							
6							
		B					
7							Bottom of hole at 6½'

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 5

LOG OF TEST HOLE NO. 9

Project: NGWSP Reaches 26.2 Pueblo Pintado
Project No.: 16-1-032
Elevation: N/A
Date Drilled: 3/25/16
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe - 24" Bucket

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
1						SM	SAND, silty, fine grained, trace small clay nodules, loose, slightly moist, brown
2							
3							
4		B					
5							
6							
							Bottom of hole at 6½'

LOG OF TEST HOLE NO. 10

Elevation: N/A
Date Drilled: 3/25/16
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe - 24" Bucket

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
1						SC-SM	SAND, silty, clayey, loose, slightly moist, brown
2							
3							
4		B					
5							
6							
		B				SM	SAND, silty, fine grained, loose, slightly moist, brown
7							Bottom of hole at 6½'

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 6

LOG OF TEST HOLE NO. 11

Project: NGWSP Reaches 26.2 Pueblo Pintado
Project No.: 16-1-032
Elevation: N/A
Date Drilled: 3/25/16
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe - 24" Bucket

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
1						SM	SAND, silty, trace of silty, clayey fines, fine grained, loose, slightly moist, brown
2							
3							
4		B					
5							
6							
							Bottom of hole at 6½'

LOG OF TEST HOLE NO. 12

Elevation: N/A
Date Drilled: 3/25/16
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe - 24" Bucket

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
1						SM	SAND, silty, trace of silty, clayey fines, fine grained, loose, slightly moist, brown
2							
3							
4		B					
5							
6							
7							Bottom of hole at 6½'

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 7

LOG OF TEST HOLE NO. 13

Project: NGWSP Reaches 26.2 Pueblo Pintado
Project No.: 16-1-032
Elevation: N/A
Date Drilled: 3/25/16
Depth to Groundwater: Not Encountered
Drilling Method: Backhoe - 24" Bucket

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
1 2 3 4 5 6		B				SM	SAND, silty, trace silty, clayey fines, fine grained, loose, moist, light brown
							Bottom of hole 6½'

ADDITIONAL TESTS: 1= Sieve Analysis 2= Atterberg Limits 3=Direct Shear 4=R-Value 5=Other

Figure: 8

COMPACTION TEST RESULTS

PROJECT : Partial Pipeline Re-Route NGWSP Reaches 26.2 CLIENT: Souder, Miller, & Associates
Pueblo Pintado, Pueblo Pintado, NM TECHNICIAN: Anthony Carabajal
PROJECT NO.: 16-1-032 REPORT NO.: 1 pg 1 DATE: 3/24/16
COA PROJECT NO.:

Test No.	Location	Elevation	Proctor Number	Field Moisture (%)	Field Dry Density (PCF)	Relative Compaction (%)	Specified Compaction (%)
1	Pit #1	FSG	1	6.4	91.4	76	95
2	Pit #1	-1' FSG	1	6.2	88.0	73	95
3	Pit #1	-2' FSG	1	5.4	86.2	72	95
4	Pit #1	-3' FSG	1	6.8	86.0	71	95
5	Pit #1	-4' FSG	1	6.0	84.1	70	95
6	Pit #1	-5' FSG	1	5.6	85.2	71	95
7	Pit #1	-6' FSG	1	5.4	88.0	73	95
8	Pit #2	FSG	1	6.8	87.4	73	95
9	Pit #2	-1' FSG	1	7.2	84.3	70	95
10	Pit #2	-2' FSG	1	5.3	86.2	72	95
11	Pit #2	-3' FSG	1	5.8	84.8	70	95
12	Pit #2	-4' FSG	1	4.2	86.2	72	95
13	Pit #2	-5' FSG	1	6.8	84.0	70	95
14	Pit #2	-6' FSG	1	7.2	85.2	71	95
15	Pit #3	FSG	1	3.1	92.4	77	95
16	Pit #3	-1' FSG	1	6.6	88.0	73	95

Proctor Test Utilized

Proctor No.	Sample Location	Opt. Moisture Content (%)	Maximum Dry Dens (pcf)	Soil Description
1	3rd pit, 3' down (16-094)	11.5	120.4	Silty SAND

WEATHER: Clear
EQUIPMENT: Backhoe
REMARKS:

Figure: 9

COMPACTION TEST RESULTS

PROJECT : Partial Pipeline Re-Route NGWSP Reaches 26.2 CLIENT: Souder, Miller, & Associates
Pueblo Pintado, Pueblo Pintado, NM TECHNICIAN: Anthony Carabajal
PROJECT NO.: 16-1-032 REPORT NO.: 1 pg 2 DATE: 3/24/16
COA PROJECT NO.:

Test No.	Location	Elevation	Proctor Number	Field Moisture (%)	Field Dry Density (PCF)	Relative Compaction (%)	Specified Compaction (%)
17	Pit #3	-2' FSG	1	5.0	88.2	73	95
18	Pit #3	-3' FSG	1	4.4	86.4	72	95
19	Pit #3	-4' FSG	1	4.8	88.2	73	95
20	Pit #3	-5' FSG	1	4.4	84.6	70	95
21	Pit #3	-6' FSG	1	3.5	84.2	70	95
22	Pit #4	FSG	1	3.5	88.4	73	95
23	Pit #4	-1' FSG	1	7.8	89.2	74	95
24	Pit #4	-2' FSG	1	3.7	88.2	73	95
25	Pit #4	-3' FSG	1	4.4	87.5	73	95
26	Pit #4	-4' FSG	1	4.8	84.3	70	95
27	Pit #4	-5' FSG	1	4.6	82.0	68	95
28	Pit #4	-6' FSG	1	5.2	83.4	69	95
29	Pit #7	FSG	1	5.5	94.0	78	95
30	Pit #7	-1' FSG	1	5.0	93.2	77	95
31	Pit #7	-2' FSG	1	4.0	90.0	75	95
32	Pit #7	-3' FSG	1	4.4	84.2	70	95

Proctor Test Utilized

Proctor No.	Sample Location	Opt. Moisture Content (%)	Maximum Dry Dens (pcf)	Soil Description
1	3rd pit, 3' down (16-094)	11.5	120.4	Silty SAND

WEATHER: Clear
EQUIPMENT: Backhoe
REMARKS:

Figure: 10

COMPACTION TEST RESULTS

PROJECT : Partial Pipeline Re-Route NGWSP Reaches 26.2 CLIENT: Souder, Miller, & Associates
Pueblo Pintado, Pueblo Pintado, NM TECHNICIAN: Anthony Carabajal
PROJECT NO.: 16-1-032 REPORT NO.: 1 pg 3 DATE: 3/24/16 and 3/25/16
COA PROJECT NO.:

Test No.	Location	Elevation	Proctor Number	Field Moisture (%)	Field Dry Density (PCF)	Relative Compaction (%)	Specified Compaction (%)
33	Pit #7	-4' FSG	1	4.7	86.4	72	95
34	Pit #7	-5' FSG	1	4.8	88.3	73	95
35	Pit #7	-6' FSG	1	5.2	87.0	72	95
36	Pit #8	FSG	1	3.0	90.2	75	95
37	Pit #8	-1' FSG	1	2.8	91.4	76	95
38	Pit #8	-2' FSG	1	3.6	88.9	74	95
39	Pit #8	-3' FSG	1	4.5	86.4	72	95
40	Pit #8	-4' FSG	1	4.0	85.6	71	95
41	Pit #8	-5' FSG	1	5.2	87.4	73	95
42	Pit #8	-6' FSG	1	5.4	83.2	69	95
43	Pit #9	FSG	1	3.8	94.6	79	95
44	Pit #9	-1' FSG	1	3.0	93.2	77	95
45	Pit #9	-2' FSG	1	4.2	91.4	76	95
46	Pit #9	-3' FSG	1	4.0	92.2	77	95
47	Pit #9	-4' FSG	1	4.2	90.1	75	95
48	Pit #9	-5' FSG	1	4.8	87.6	73	95

Proctor Test Utilized

Proctor No.	Sample Location	Opt. Moisture Content (%)	Maximum Dry Dens (pcf)	Soil Description
1	3rd pit, 3' down (16-094)	11.5	120.4	Silty SAND

WEATHER: Clear
EQUIPMENT: Backhoe
REMARKS:

Figure: 11

COMPACTION TEST RESULTS

PROJECT : Partial Pipeline Re-Route NGWSP Reaches 26.2 CLIENT: Souder, Miller, & Associates
Pueblo Pintado, Pueblo Pintado, NM TECHNICIAN: Anthony Carabajal
PROJECT NO.: 16-1-032 REPORT NO.: 1 pg 4 DATE: 3/25/16
COA PROJECT NO.:

Test No.	Location	Elevation	Proctor Number	Field Moisture (%)	Field Dry Density (PCF)	Relative Compaction (%)	Specified Compaction (%)
49	Pit #9	-6' FSG	1	5.0	88.4	73	95
50	Pit #10	FSG	2	3.4	94.4	86	95
51	Pit #10	-1' FSG	2	3.6	93.2	85	95
52	Pit #10	-2' FSG	2	3.4	92.4	85	95
53	Pit #10	-3' FSG	2	3.8	96.5	88	95
54	Pit #10	-4' FSG	2	4.5	88.2	81	95
55	Pit #10	-5' FSG	2	4.8	89.6	82	95
56	Pit #10	-6' FSG	2	4.6	87.4	80	95
57	Pit #11	FSG	2	3.8	88.4	81	95
58	Pit #11	-1' FSG	2	4.2	86.5	79	95
59	Pit #11	-2' FSG	2	3.6	78.5	72	95
60	Pit #11	-3' FSG	2	3.4	84.3	77	95
61	Pit #11	-4' FSG	2	3.8	82.2	75	95
62	Pit #11	-5' FSG	2	4.4	80.2	73	95
63	Pit #11	-6' FSG	2	4.0	83.6	77	95
64	Pit #12	FSG	2	3.8	89.2	82	95

Proctor Test Utilized

Proctor No.	Sample Location	Opt. Moisture Content (%)	Maximum Dry Dens (pcf)	Soil Description
1	3rd pit, 3' down (16-094)	11.5	120.4	Silty SAND
2	10th pit, 4' down (16-095)	7.4	109.2	Well graded SAND with silt

WEATHER: Clear
EQUIPMENT: Backhoe
REMARKS:

Figure: 12

COMPACTION TEST RESULTS

PROJECT : Partial Pipeline Re-Route NGWSP Reaches 26.2 CLIENT: Souder, Miller, & Associates
Pueblo Pintado, Pueblo Pintado, NM TECHNICIAN: Anthony Carabajal
PROJECT NO.: 16-1-032 REPORT NO.: 1 pg 5 DATE: 3/25/16
COA PROJECT NO.:

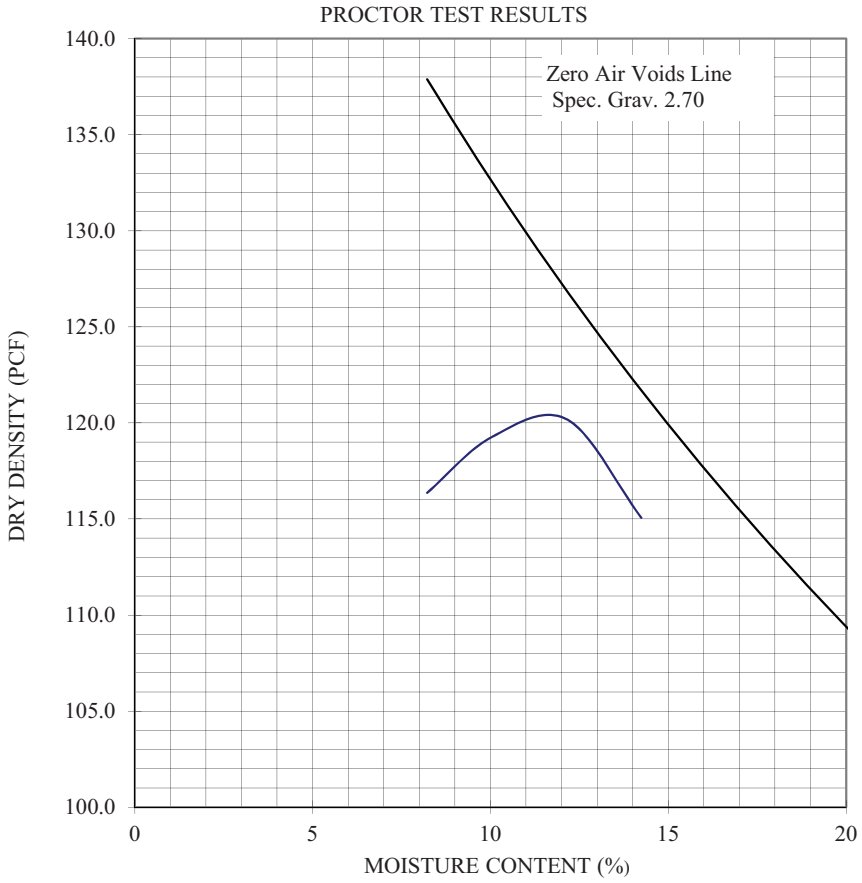
Test No.	Location	Elevation	Proctor Number	Field Moisture (%)	Field Dry Density (PCF)	Relative Compaction (%)	Specified Compaction (%)
65	Pit #12	-1' FSG	2	4.0	84.6	77	95
66	Pit #12	-2' FSG	2	4.4	88.0	81	95
67	Pit #12	-3' FSG	2	5.0	78.4	72	95
68	Pit #12	-4' FSG	2	5.6	83.6	77	95
69	Pit #12	-5' FSG	2	4.2	82.9	76	95
70	Pit #12	-6' FSG	2	4.4	86.4	79	95
71	Pit #13	FSG	2	4.0	88.4	81	95
72	Pit #13	-1' FSG	2	4.2	86.2	79	95
73	Pit #13	-2' FSG	2	3.8	84.4	77	95
74	Pit #13	-3' FSG	2	5.2	85.2	78	95
75	Pit #13	-4' FSG	2	4.8	80.1	73	95
76	Pit #13	-5' FSG	2	4.6	82.8	76	95
77	Pit #13	-6' FSG	2	4.8	81.0	74	95

Proctor Test Utilized

Proctor No.	Sample Location	Opt. Moisture Content (%)	Maximum Dry Dens (pcf)	Soil Description
1	3rd pit, 3' down (16-094)	11.5	120.4	Silty SAND
2	10th pit, 4' down (16-095)	7.4	109.2	Well graded SAND with silt

WEATHER: Clear
EQUIPMENT: Backhoe
REMARKS:

Figure: 13



Max Dry Density= 120.4 PCF

Optimum Moist.= 11.5 %

Test Method : ASTM D1557-B

X8eVinyard Project No.: **16-1-032** **COA Number:**

Project Title : **Pueblo Pintado**

Date Sampled : **3/25/2016** **Sample No. :** **94**

Sample Location : **3rd pit, 3' down.**

Sieve Analysis ASTM C-136

Sieve	mm	% Passing	Spec.
3"	75.0		
2"	50.0		
1 1/2"	37.5		
1"	25.0	100	
3/4"	19.0	99	
1/2"	12.5	97	
3/8"	9.5	96	
No. 4	4.75	94	
No. 8	2.36	94	
No. 10	2.00	94	
No. 16	1.18	93	
No. 30	0.60	89	
No. 40	0.425	85	
No. 50	0.300	73	
No. 80	0.180	49	
No. 100	0.150	42	
No. 200	0.075	26	

Atterberg Limits ASTM D4318

	Results	Spec.
LIQUID LIMIT	NV	
PLASTIC LIMIT	NV	
PLASTICITY INDEX	NP	

NV=Not Valid NP=Non Plastic

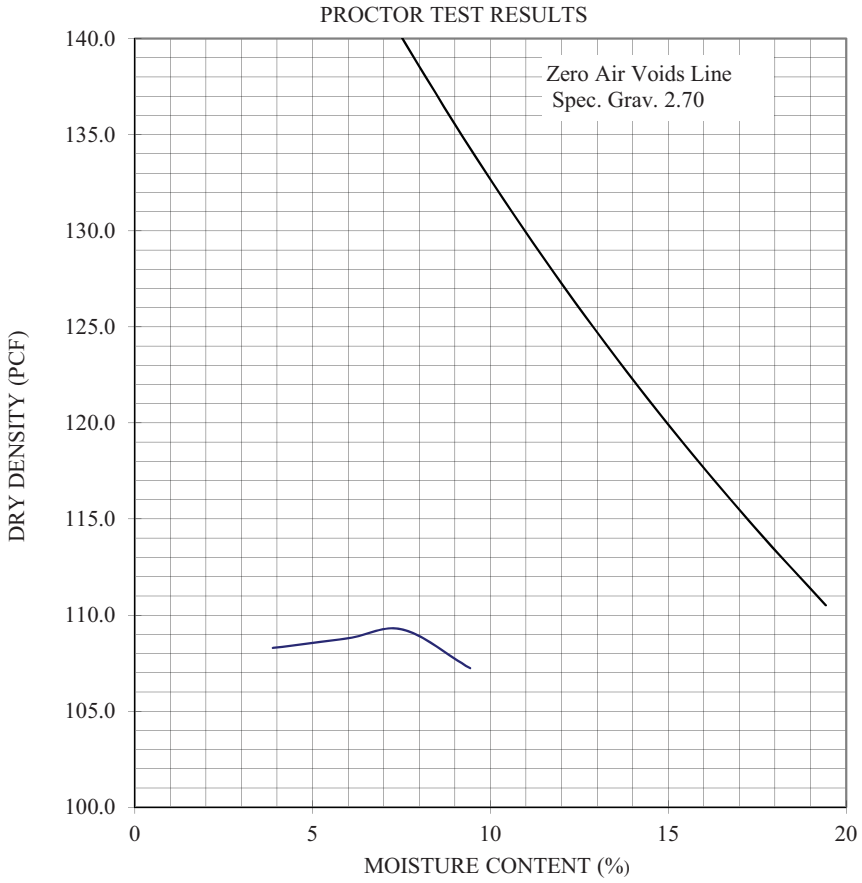
ASTM D2487 USCS: **SM** **(Silty SAND.)**

AASHTO M145 CLASS.: **A-2-4**

EST. R-VALUE: **50**
(Based on NMSHTD 97 Charts)

Specification Used : **None**

Figure: 14



Max Dry Density= 109.2 PCF

Optimum Moist.= 7.4 %

Test Method : ASTM D1557-A

X8eVinyard Project No.: **16-1-032** **COA Number:**

Project Title : **Pueblo Pintado**

Date Sampled : **3/25/2016** **Sample No. :** **95**

Sample Location : **10th pit, 4' down.**

Sieve Analysis ASTM C-136

Sieve	mm	% Passing	Spec.
3"	75.0		
2"	50.0		
1 1/2"	37.5		
1"	25.0		
3/4"	19.0	100	
1/2"	12.5	98	
3/8"	9.5	97	
No. 4	4.75	97	
No. 8	2.36	96	
No. 10	2.00	96	
No. 16	1.18	94	
No. 30	0.60	75	
No. 40	0.425	56	
No. 50	0.300	32	
No. 80	0.180	14	
No. 100	0.150	11	
No. 200	0.075	5.9	

Atterberg Limits ASTM D4318

	Results	Spec.
LIQUID LIMIT	NV	
PLASTIC LIMIT	NV	
PLASTICITY INDEX	NP	

NV=Not Valid NP=Non Plastic

ASTM D2487 USCS: **SW-SM** **(Well graded SAND with silt.)**

AASHTO M145 CLASS.: **A-3**

EST. R-VALUE: **55**
(Based on NMSHTD 97 Charts)

Specification Used : **None**

Figure: 15