GORDON GEOTECHNICAL ENGINEERING, INC.

REPORT
GEOTECHNICAL STUDY
PROPOSED GORILLA WASH RIVERTON
2014 WEST 12600 SOUTH
RIVERTON, UTAH

June 28, 2017

Job No. 476-002-17

Prepared for:
Prime Wash Properties, LLC
3409 West Shiloh Creek Circle
Bluffdale, Utah 84065

Prepared by:
Gordon Geotechnical Engineering, Inc.
4426 South Century Drive, Suite 100
Salt Lake City, Utah 84123
Tel: 801-327-9600
Fax: 801-327-9601
www.gordongeotech.com

ok

June 28, 2017
Job No. 476-002-17

Prime Wash Properties, LLC
3409 West Shiloh Creek Circle
Bluffdale, Utah 84065

Attention: Mr. Steve Cloward

Ladies and Gentlemen:

Re: Report
Geotechnical Study
Proposed Gorilla Wash Riverton
2014 West 12600 South
Riverton, Utah

1. INTRODUCTION

1.1 GENERAL

This report presents the results of our geotechnical study performed at the site of the proposed Gorilla Wash Riverton which is located at 2014 West 12600 South in Riverton, Utah. The general location of the site with respect to major topographic features and existing facilities, as of 1999, is presented on Figure 1, Vicinity Map. A detailed location of the site showing existing roadways and structures, on an air photograph base, is presented on Figure 2, Area Map. A more detailed layout of the site showing the proposed development and approximate location of existing roadways is presented on Figure 3, Site Plan. The test pit locations excavated in conjunction with this study are also presented on Figure 3.

During the course of this study, many of the conclusions and recommendations were presented to the design team and owner.

1.2 OBJECTIVES AND SCOPE

The objectives and scope of our study were planned in discussions between Mr. Steve Cloward of Prime Wash Properties, LLC and Mr. Patrick Emery of Gordon Geotechnical Engineering, Inc. (G^2).

In general, the objectives of this study were to:

1. Define and evaluate the subsurface soil and groundwater conditions across the site.

2. Provide appropriate foundation, earthwork, and geoseismic recommendations to be utilized in the design and construction of the proposed facility.

In accomplishing these objectives, our scope has included the following:

1. A field program consisting of the excavating, logging, and sampling of four test pits.

2. A laboratory testing program.

3. An office program consisting of the correlation of available data, engineering analyses, and the preparation of this summary report.

1.3 AUTHORIZATION

Authorization was provided by returning a signed copy of our Professional Services Agreement No. 17-0402 dated April 5, 2017.

1.4 PROFESSIONAL STATEMENTS

Supporting data upon which our recommendations are based are presented in subsequent sections of this report. Recommendations presented herein are governed by the physical properties of the soils encountered in the exploration test pits, projected groundwater conditions, and the layout and design data discussed in Section 2., Proposed Construction, of this report. If subsurface conditions other than those described in this report are encountered and/or if design and layout changes are implemented, G^2 must be informed so that our recommendations can be reviewed and amended, if necessary.

Our professional services have been performed, our findings developed, and our recommendations prepared in accordance with generally accepted engineering principles and practices in this area at this time.

2. PROPOSED CONSTRUCTION

An automatic car wash is planned for the approximately 0.8-acre site. The main tunnel structure will be rectangular-shaped and located in the central portion of the site. The structure is anticipated to be one to one-extended level in height and of wood-frame construction established slab-on-grade.

Maximum column and wall loads are projected to be on the order of 40 to 60 kips and 2 to 4 kips per lineal foot, respectively.

Site development will require a moderate amount of earthwork in the form of site grading. It is estimated that maximum cuts and fills to achieve design grades will be on the order of two to three feet.

Paved surface roadway/parking areas will be constructed on all sides of the tunnel structure. Traffic over the pavements will consist of a light to moderately light volume of automobiles and light trucks, and some medium-weight trucks. In roadways, the traffic will be somewhat higher.

3. SITE INVESTIGATIONS

3.1 FIELD PROGRAM

In order to define and evaluate the subsurface soil and groundwater conditions at the site, 4 test pits were excavated to depths of 5 to 15 feet below existing grade. The test pits were excavated using a moderate-sized trackhoe. Locations of the test pits are presented on Figure 3.

The field portion of our study was under the direct control and continual supervision of an experienced member of our geotechnical staff. During the course of the excavation operations, a continuous log of the subsurface conditions encountered was maintained. In addition, samples of the typical soils encountered were obtained for subsequent laboratory testing and examination. The soils were classified in the field based upon visual and textural examination. These classifications have been supplemented by subsequent inspection and testing in our laboratory. Detailed graphical representation of the subsurface conditions encountered is presented on Figures 4A through 4D, Log of Test Pits. Soils were classified in accordance with the nomenclature described on Figure 5, Unified Soil Classification System.

A 2.5-inch outside diameter, 2.42-inch inside diameter drive hand driven thin wall sampler was utilized in the subsurface sampling at the site.

Following completion of excavating and logging, each test pit was backfilled. Although an effort was made to compact the backfill with the backhoe, backfill was not placed in uniform lifts and compacted to a specific density. Consequently, settlement of the backfill with time is likely to occur.

3.2 LABORATORY TESTING

3.2.1 General

In order to provide data necessary for our engineering analyses, a laboratory testing program was completed. The program included moisture, density, partial gradation, collapse/swell-consolidation, and chemical tests. The following paragraphs describe the tests and summarize the test data.

3.2.2 Moisture and Density Tests

To aid in classifying the soils and to help correlate consolidation test data, moisture and density tests were performed on selected undisturbed samples. The results of these tests are presented to the right on the test pit logs, Figures 4A through 4D.

3.2.3 Partial Gradation Test

To aid in classifying the granular soils, partial gradation tests were performed. Results of the tests are tabulated below:

Test Pit No.	Depth (feet)	Percent Passing No. 200 Sieve	Soil Classification
TP-1	3.0	91.5	CL/ML
TP-1	6.0	97.3	CL/ML

3.2.4 Consolidation Tests

To provide data necessary for our settlement analyses, a consolidation test was performed on a representative sample of the fine-grained soils encountered in the exploration test pits. The data available indicates that the soils are moderately over-consolidated and when loaded below the over-consolidated pressure the soils will exhibit moderate compressibility characteristics. Detailed results of the tests are maintained within our files and can be transmitted to you, at your request.

3.2.5 Chemical Tests

To determine if the site soils will react detrimentally with concrete, chemical tests were performed on a representative sample of the natural soils. The results of the chemical tests are tabulated on the following page.

Test Pit No.	Depth (feet)	Soil Classification	pH	Total Water Soluble Sulfate (mg/kg-dry)
TP-1	3.0	SM/ML	8.3	< 5.42

4. SITE CONDITIONS

4.1 SURFACE

The site is rectangular in shape and consists of 0.8-acres of vacant/undeveloped land. The site is bordered by a 12600 South Street to the north; gas station to the east; church to the south; and similar vacant lot to the west. Vegetation consists of a moderate growth of ankle-high weeds and grasses. A fill pile, approximately seven to eight feet in height, was observed along the western boundary of the site.

The topography of the site is relatively flat with a gentle slope down to the east. Overall relief across the site is on the order of one to two feet. The average site grade is at approximately the same elevation as the adjacent roadways.

Representative photographs of the site area are shown on Figure 6, Photographs.

4.2 SUBSURFACE SOIL AND GROUNDWATER

The soil conditions encountered in the test pits were relatively similar. From the surface and extending to depths ranging from one and one-half to two and one-half feet at each of the test pit locations, non-engineered fill was encountered. The fill consists of silty clay/clayey silt with trace to some fine sand and varying gravel content which is slightly moist, brown, and varies in density/stiffness. The fill is anticipated to exhibit variable and, most likely, poor engineering characteristics.

Underlying the fill in each of the test pits and extending to the maximum explored depths of 5 to 14 feet, natural soils consisting of silty clay/clayey silt was encountered. The clay grades with numerous thin layers of silty fine sand with depth and is dry grading to slightly moist, brown, very stiff, and is projected to exhibit moderate strength and compressibility characteristics under the anticipated loading range.

The lines designating the interface between soil types on the test pit logs generally represent approximate boundaries. In-situ, the transition between soil types may be gradual.

During excavation operations, groundwater was not encountered at the maximum explored depth, 14 feet.

5. DISCUSSIONS AND RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS

The proposed structures may be supported upon conventional spread and continuous wall foundations over suitable natural soils and/or structural fill extending to suitable natural soils.

The most significant geotechnical aspect of the site is the non-engineered fills encountered to depths ranging from one and one-half to two and one-half feet below existing grades at each of the test pit locations. Non-engineered fills must be completely removed from beneath the building footprint and rigid pavement areas.

Due to the variable nature of the non-engineered fills encountered, a qualified geotechnical engineer must aid in verifying that all non-engineered fills have been completely removed prior to the placement of structural site grading fills, footings, or foundations.

Detailed discussions pertaining to earthwork, foundations, floor slabs, lateral resistance, and the geoseismic setting of the site are discussed in the following sections.

5.2 EARTHWORK

5.2.1 Site Preparation

Preparation of the site must consist of the removal of all non-engineered fills, debris, surface vegetation, topsoil, root bulbs, sod, and any other deleterious materials extending out at least three feet beyond the perimeter of the building footprint and rigid pavement areas. Stripping in areas containing major root bulbs will be deeper. Stripped topsoil will be unsuitable for structural fill but may be stockpiled for subsequent landscaping purposes. Any existing utilities will need to be properly abandoned and/or relocated.

Non-engineered fills may remain in flexible pavement areas as long as they are properly prepared. Proper preparation will consist of scarifying and moisture conditioning the upper nine inches and recompacting to the requirements of structural fill. However, it should be noted that compaction of fine-grained soils (clays and silts) as structural site grading fill will be very difficult, if not impossible, during wet and cold periods of the year.

Subsequent to the above operations and prior to the placement of footings, structural site grading fill, or floor slabs, the exposed natural subgrade must be proofrolled by passing moderate-weight rubber tire-mounted construction equipment over the surface at least twice. If any loose, soft, or disturbed zones are encountered, they must be completely removed in footing and floor slab areas and replaced with granular structural fill. If removal depth required is greater than two feet, G^2 must be notified to provide further recommendations. In pavement

areas, unsuitable soils encountered during recompaction and proofrolling must be removed to a maximum depth of two feet and replaced with compacted granular structural fill.

5.2.2 Temporary Excavations

Groundwater is anticipated to be encountered at depths greater than 15 feet below the ground surface. Temporary construction excavations in cohesive soil, above or below the water table, not exceeding four feet in depth, may be constructed with near-vertical sideslopes. Temporary excavations up to eight feet deep in fine-grained cohesive soils (clays) may be constructed with sideslopes no steeper than one-half horizontal to one vertical. Temporary excavations up to eight feet deep in granular soils may be constructed with sideslopes no steeper than one horizontal to one vertical.

Excavations encountering loose and/or saturated cohesionless soils (not anticipated) will be very difficult and will require very flat sideslopes and/or shoring, bracing, and dewatering as these soils will tend to flow into the excavation.

Excavations deeper than eight feet are not anticipated at the site.

All excavations must be inspected periodically by qualified personnel. If any signs of instability or excessive sloughing are noted, immediate remedial action must be initiated.

5.2.3 Structural Fill

Structural fill is defined as all fill which will ultimately be subjected to structural loadings, such as imposed by footings, floor slabs, pavements, etc. Structural fill will be required as backfill over foundations and utilities, as site grading fill, and possibly as replacement fill below footings. All structural fill must be free of sod, rubbish, topsoil, frozen soil, and other deleterious materials.

Structural site grading fill is defined as structural fill placed over relatively large open areas to raise the overall grade. For structural site grading fill, the maximum particle size shall not exceed four inches; although, occasional larger particles not exceeding six inches in diameter may be incorporated if placed randomly in a manner such that "honeycombing" does not occur and the desired degree of compaction can be achieved. The maximum particle size within structural fill placed within confined areas shall be restricted to two inches.

The on-site non-engineered fills and natural fine-grained soils (clays and silts) may be utilized as structural site grading fill if they meet the requirements of such stated herein. It should be noted that unless moisture control is maintained, utilization of fine-grained soils as structural site grading fill will be very difficult, if not impossible, during wet and cold periods of the year. Only granular soils are recommended as structural fill in confined areas, such as around foundations and within utility trenches.

All imported granular structural fills should consist of a fairly well-graded mixture of sand and gravel containing less than 18 percent fines (percent by weight of material passing the No. 200 sieve).

To stabilize soft subgrade conditions (if needed), a mixture of coarse gravels and cobbles (stabilizing fill) should be utilized. A layer of stabilizing fill approximately 12 to 18 inches thick is typically sufficient to stabilize most soft/disturbed areas.

Non-structural site grading fill is defined as all fill material not designated as structural fill and may consist of any cohesive or granular soils not containing excessive amounts of degradable material.

5.2.4 Fill Placement and Compaction

All other structural fill shall be placed in lifts not exceeding eight inches in loose thickness. Structural fills shall be compacted in accordance with the percent of the maximum dry density as determined by the AASHTO[1] T-180 (ASTM[2] D-1557) compaction criteria in accordance with the following table:

Location	Total Fill Thickness (feet)	Minimum Percentage of Maximum Dry Density
Beneath an area extending at least 3 feet beyond the perimeter of the structure	0 to 8	95
Outside area defined above	0 to 5	90
Outside area defined above	5 to 8	92
Road base	-	96

Structural fills greater than eight feet thick are not anticipated at the site.

Subsequent to stripping and prior to the placement of structural site grading fill, the subgrade must be prepared as discussed in Section 5.2.1, Site Preparation, of this report. In confined areas, subgrade preparation should consist of the removal of all loose or disturbed soils.

Non-structural fill may be placed in lifts not exceeding 12 inches in loose thickness and compacted by passing construction, spreading, or hauling equipment over the surface at least twice.

---

1 American Association of State Highway and Transportation Officials
2 American Society for Testing and Materials

Coarse gravel and cobble mixtures (stabilizing fill), if utilized, shall be end-dumped, spread to a maximum loose lift thickness of 15 inches, and compacted by dropping a backhoe bucket onto the surface continuously at least twice. As an alternative, the fill may be compacted by passing moderately heavy construction equipment or large self-propelled compaction equipment over the site at least twice. Subsequent fill material placed over the coarse gravels and cobbles shall be adequately placed so that the "fines" are "worked into" the voids in the underlying coarser gravels and cobbles.

5.2.5 Utility Trenches

All utility trench backfill material below structurally loaded facilities (flatwork, floor slabs, roads, etc.) shall be placed at the same density requirements established for structural fill. If the surface of the backfill becomes disturbed during the course of construction, the backfill shall be proofrolled and/or properly compacted prior to the construction of any exterior flatwork over a backfilled trench. Proofrolling shall be performed by passing moderately loaded rubber tire-mounted construction equipment uniformly over the surface at least twice. If excessively loose or soft areas are encountered during proofrolling, they shall be removed to a maximum depth of two feet below design finish grade and replaced with structural fill.

Most utility companies and City-County governments are now requiring that Type A-1a or A-1b (AASHTO Designation – basically granular soils with limited fines) soils be used as backfill over utilities. These organizations are also requiring that in public roadways the backfill over major utilities be compacted over the full depth of fill to at least 96 percent of the maximum dry density as determined by the AASHTO T-180 (ASTM D-1557) method of compaction. We recommend that as the major utilities continue onto the site that these compaction specifications are followed.

The on-site clays and silts are not suitable for re-use as trench backfill.

5.3 SPREAD AND CONTINUOUS WALL FOUNDATIONS

5.3.1 Design Data

The proposed structures may be supported upon conventional spread and continuous wall foundations established upon suitable natural soils and/or structural fill extending to suitable natural soils.

For design, the following parameters are provided with respect to the projected loading discussed in Section 2., Proposed Construction, of this report:

Minimum Recommended Depth of Embedment for Frost Protection	- 30 inches
Minimum Recommended Depth of Embedment for Non-frost Conditions	- 15 inches
Recommended Minimum Width for Continuous Wall Footings	- 18 inches
Minimum Recommended Width for Isolated Spread Footings	- 24 inches
Recommended Net Bearing Pressure for Real Load Conditions	
For footings on suitable natural soils and/or structural fill extending to suitable natural soils	- 2,000 pounds per square foot
Bearing Pressure Increase for Seismic Loading	- 50 percent

The term "net bearing pressure" refers to the pressure imposed by the portion of the structure located above lowest adjacent final grade. Therefore, the weight of the footing and backfill to the lowest adjacent final grade need not be considered. Real loads are defined as the total of all dead plus frequently applied live loads. Total load includes all dead and live loads, including seismic and wind.

5.3.2 Installation

Under no circumstances shall the footings be established upon non-engineered fills, loose or disturbed soils, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water. If unsuitable soils are encountered, they must be completely removed and replaced with compacted structural fill.

The width of structural replacement fill below footings should be equal to the width of the footing plus one foot for each foot of fill thickness.

5.3.3 Settlements

Settlements of foundations designed and installed in accordance with above recommendations and supporting maximum projected structural loads are anticipated to be on the order of one-half

to five-eighth of an inch. Settlements are expected to occur rapidly with approximately 60 to 70 percent of the settlements occurring during construction.

5.4 LATERAL RESISTANCE

Lateral loads imposed upon foundations due to wind or seismic forces may be resisted by the development of passive earth pressures and friction between the base of the footings and the supporting soils. In determining frictional resistance, a coefficient of 0.40 should be utilized for the natural fine-grained soils. Passive resistance provided by properly placed and compacted granular structural fill above the water table may be considered equivalent to a fluid with a density of 300 pounds per cubic foot. Below the water table, this granular soil should be considered equivalent to a fluid with a density of 150 pounds per cubic foot.

A combination of passive earth resistance and friction may be utilized provided that the friction component of the total is divided by 1.5.

5.5 FLOOR SLABS

Floor slabs may be established directly upon suitable natural soils and/or structural fill extending to suitable natural soils. Non-engineered fills and topsoil are not considered suitable. To provide a capillary break, it is recommended that interior floor slabs are directly underlain by a minimum of four inches of "free-draining" fill, such as "pea" gravel or three-quarter- to one-inch minus clean gap-graded gravel. Settlements of lightly to moderately loaded floor slabs are anticipated to be minor.

5.6 PAVEMENTS

The near-surface natural clay soils will exhibit poor engineering characteristics when saturated or near saturated. Considering fine-grained soils as the subgrade soils and the projected traffic, the pavement sections on the following pages are recommended.

Parking Areas

(Light Volume of Automobiles and Light Trucks,
Occasional Medium-Weight Trucks,
and No Heavy-Weight Trucks)
[1 equivalent 18-kip axle load per day]

Flexible:

2.5 inches	Asphalt concrete
8.0 inches	Aggregate base
Over	Properly prepared natural soils, properly prepared existing non-engineered fills, and/or structural site grading fill extending to suitable stabilized natural soils.

Rigid:

5.0 inches	Portland cement concrete (non-reinforced)
4.0 inches	Aggregate base
Over	Properly prepared natural soils, and/or structural site grading fill extending to suitable stabilized natural soils.*

* Rigid pavements shall not be placed over non-engineered fills, even if properly prepared.

Primary Roadway Areas

(Moderate Volume of Automobiles and Light Trucks,
Light Volume of Medium-Weight Trucks,
and Occasional Heavy-Weight Trucks)
[5 equivalent 18-kip axle loads per day]

Flexible:

3.0 inches	Asphalt concrete
8.0 inches	Aggregate base
Over	Properly prepared natural soils, properly prepared existing non-engineered fill, and/or structural site grading fill extending to suitable stabilized natural soils.

Rigid:

5.5 inches	Portland cement concrete (non-reinforced)
5.0 inches	Aggregate base
Over	Properly prepared natural soils, and/or structural site grading fill extending to suitable stabilized natural soils.*

* Rigid pavements shall not be placed over non-engineered fills, even if properly prepared.

For dumpster pads, we recommend a pavement section consisting of six and one-half inches of Portland cement concrete, four inches of aggregate base, over properly prepared natural stabilized subgrade or site grading structural fills.

These above rigid pavement sections are for non-reinforced Portland cement concrete. Concrete should be designed in accordance with the American Concrete Institute (ACI) and joint details should conform to the Portland Cement Association (PCA) guidelines. The concrete should have a minimum 28-day unconfined compressive strength of 4,000 pounds per square inch and contain 6 percent ±1 percent air-entrainment.

5.7 CEMENT TYPES

The laboratory tests indicate that the site soils contain negligible amounts of water soluble sulfates. Therefore, all concrete which will be in contact with the site soils may be prepared using standard Type I cement.

5.8 GEOSEISMIC SETTING

5.8.1 General

As of July 2016, the State of Utah has adopted the International Building Code (IBC) 2015. The IBC 2015 code determines the seismic hazard for a site based upon 2008 mapping of bedrock accelerations prepared by the United States Geologic Survey (USGS) and the soil site class. The USGS values are presented on maps incorporated into the IBC code and are also available based on latitude and longitude coordinates (grid points).

The structures must be designed in accordance with the procedure presented in Section 1613, Earthquake Loads, of the IBC 2015 edition.

5.8.2 Faulting

Based upon our review of available literature, no active faults are known to pass through or immediately adjacent to the site. The site is located outside fault investigation zones identified by Salt Lake County. The nearest active fault is the Salt Lake section of the Wasatch Fault, approximately six miles east of the site.

5.8.3 Soil Class

For dynamic structural analysis, the Site Class D - Stiff Soil Profile as defined in Table 20.3-1, Site Classification, of ASCE 7-10 April 6, 2011 can be utilized.

5.8.4 Ground Motions

The IBC 2015 code is based on 2008 USGS mapping, which provides values of short and long period accelerations for the Site Class B boundary for the Maximum Considered Earthquake (MCE). This Site Class B boundary represents a hypothetical sandstone bedrock surface and must be corrected for local soil conditions. The following table summarizes the peak ground and short and long period accelerations for a MCE event and incorporates a soil amplification factor for a Site Class D soil profile in the second column. Based on the site latitude and longitude (40.5218 degrees north and -111.9449 degrees west, respectively), the values for this site are tabulated on the following page.

Spectral Acceleration Value, T Seconds	Site Class B Boundary [mapped values] (% g)	Site Class D [adjusted for site class effects] (% g)
Peak Ground Acceleration	53.1	53.1
0.2 Seconds (Short Period Acceleration)	S_S =132.7	S_{MS} =132.7
1.0 Seconds (Long Period Acceleration)	S_1 =44.2	S_{M1} =68.9

The IBC 2015 code design accelerations (S_{DS} and S_{D1}) are based on multiplying the above accelerations (adjusted for site class effects) for the MCE event by two-thirds.

5.8.5 Liquefaction

Liquefaction is defined as the condition when saturated, loose, finer-grained sand-type soils lose their support capabilities because of excessive pore water pressure which develops during a seismic event.

Due to the lack of a shallow groundwater table and relatively dense nature of the granular soils encountered, liquefaction is not likely to occur at the site during the design seismic event.

5.9 SITE OBSERVATIONS

As stated previously, due to the variable nature of the non-engineered fills encountered, a qualified geotechnical engineer must aid in verifying that all non-engineered fills have been completely removed prior to the placement of structural site grading fills, footings, or foundations.

We appreciate the opportunity of providing this service for you. If you have any questions or require additional information, please do not hesitate to contact us.

Respectfully submitted,

Gordon Geotechnical Engineering, Inc.

Patrick R. Emery, State of Utah No. 7941710
Senior Engineer

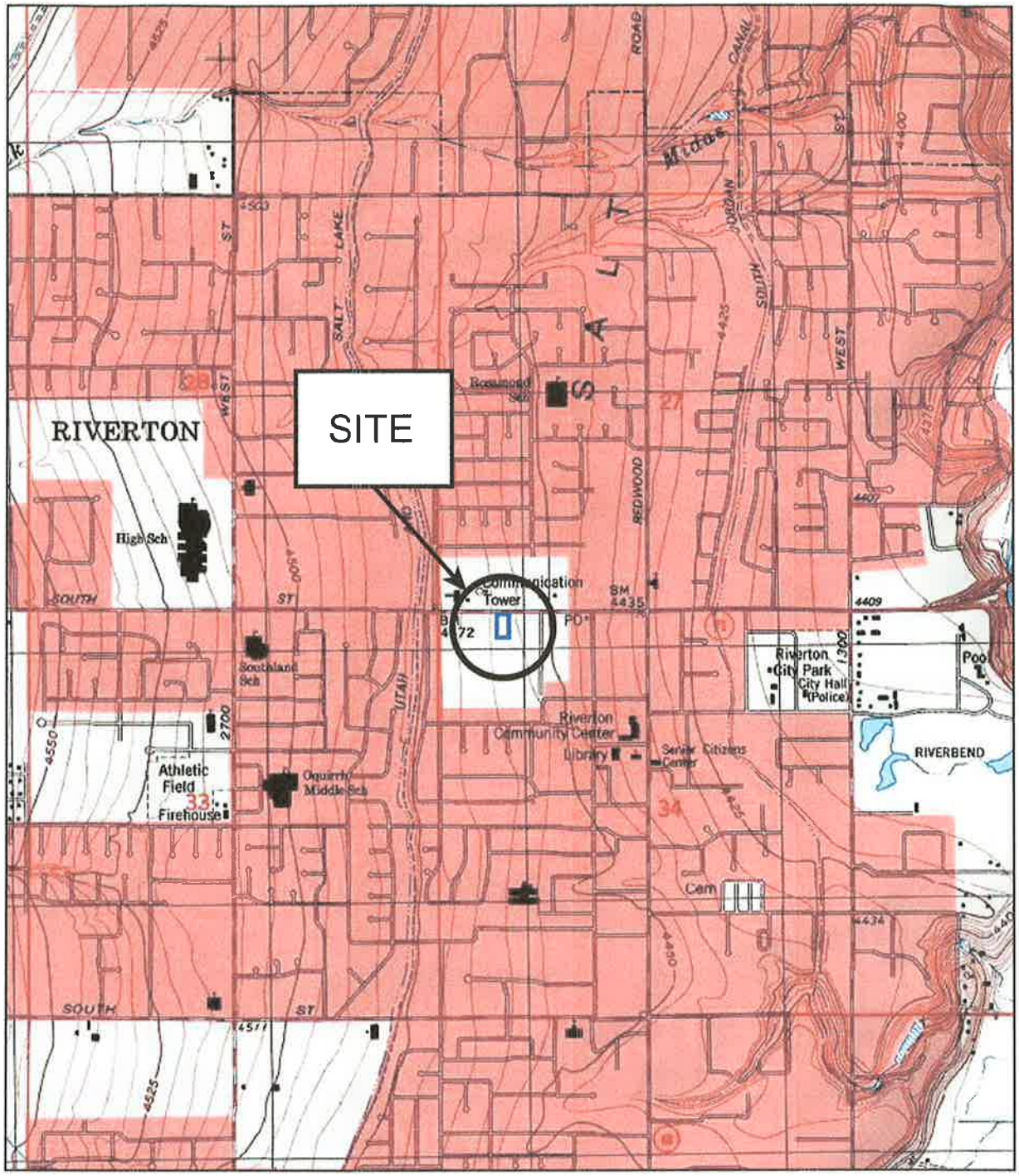
PRE:sn

Encl. Figure 1, Vicinity Map
Figure 2, Area Map
Figure 3, Site Plan
Figures 4A through 4D, Log of Test Pits
Figure 5, Unified Soil Classification System
Figure 6, Photographs

Addressee (3 + email)

PRIME WASH PROPERTIES, LLC
JOB NO. 476-002-17

GORDON GEOTECHNICAL ENGINEERING, INC.



SCALE IN FEET
1000 0 1000 2000

REFERENCE:
USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAPS
TITLED "MIDVALE, UTAH" AND "JORDAN NARROWS, UTAH"
BOTH DATED 1999

FIGURE 1
VICINITY MAP

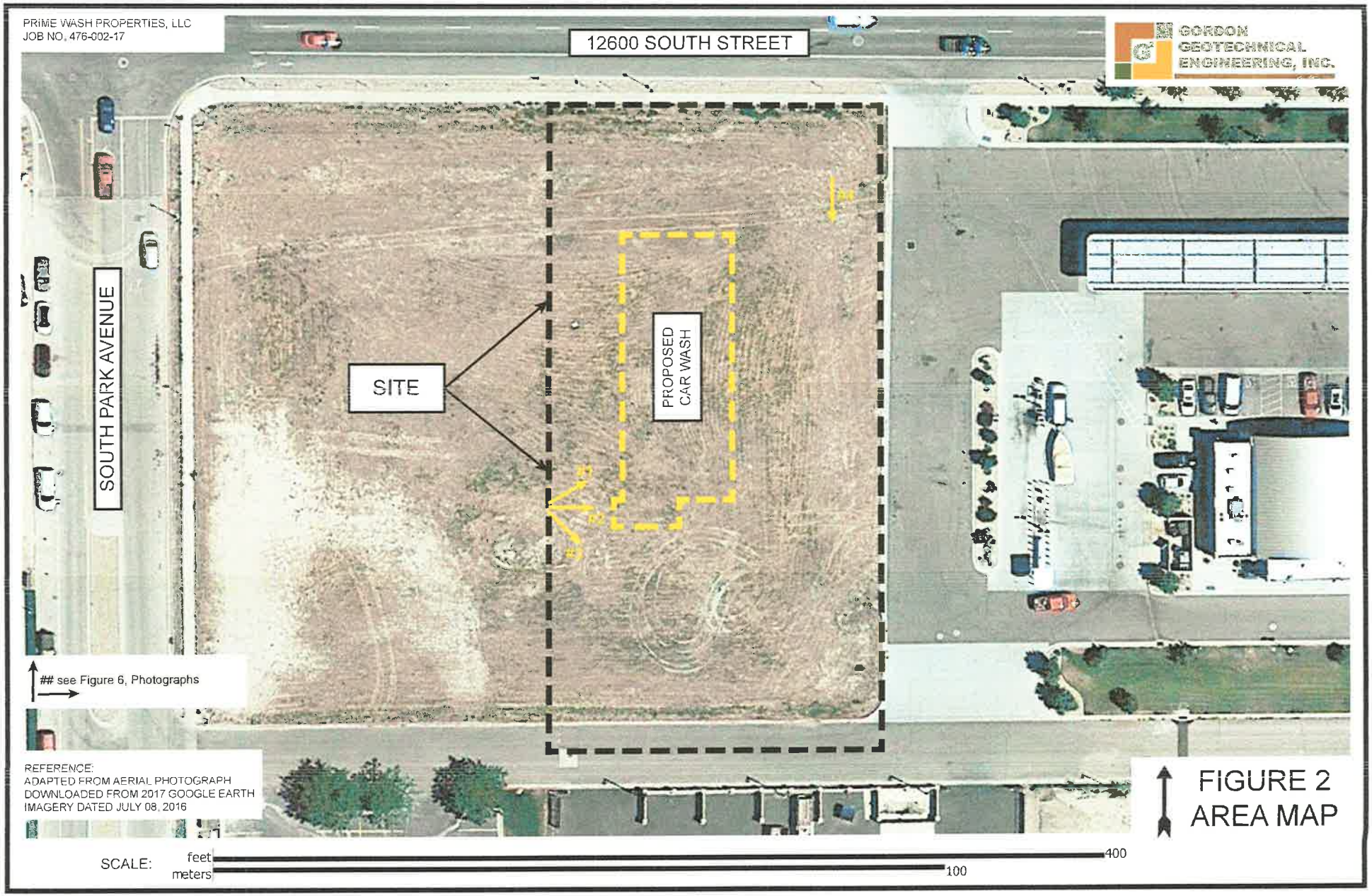


FIGURE 2
AREA MAP

PRIME WASH PROPERTIES, LLC
JOB NO. 476-002-17

GORDON GEOTECHNICAL ENGINEERING, INC.

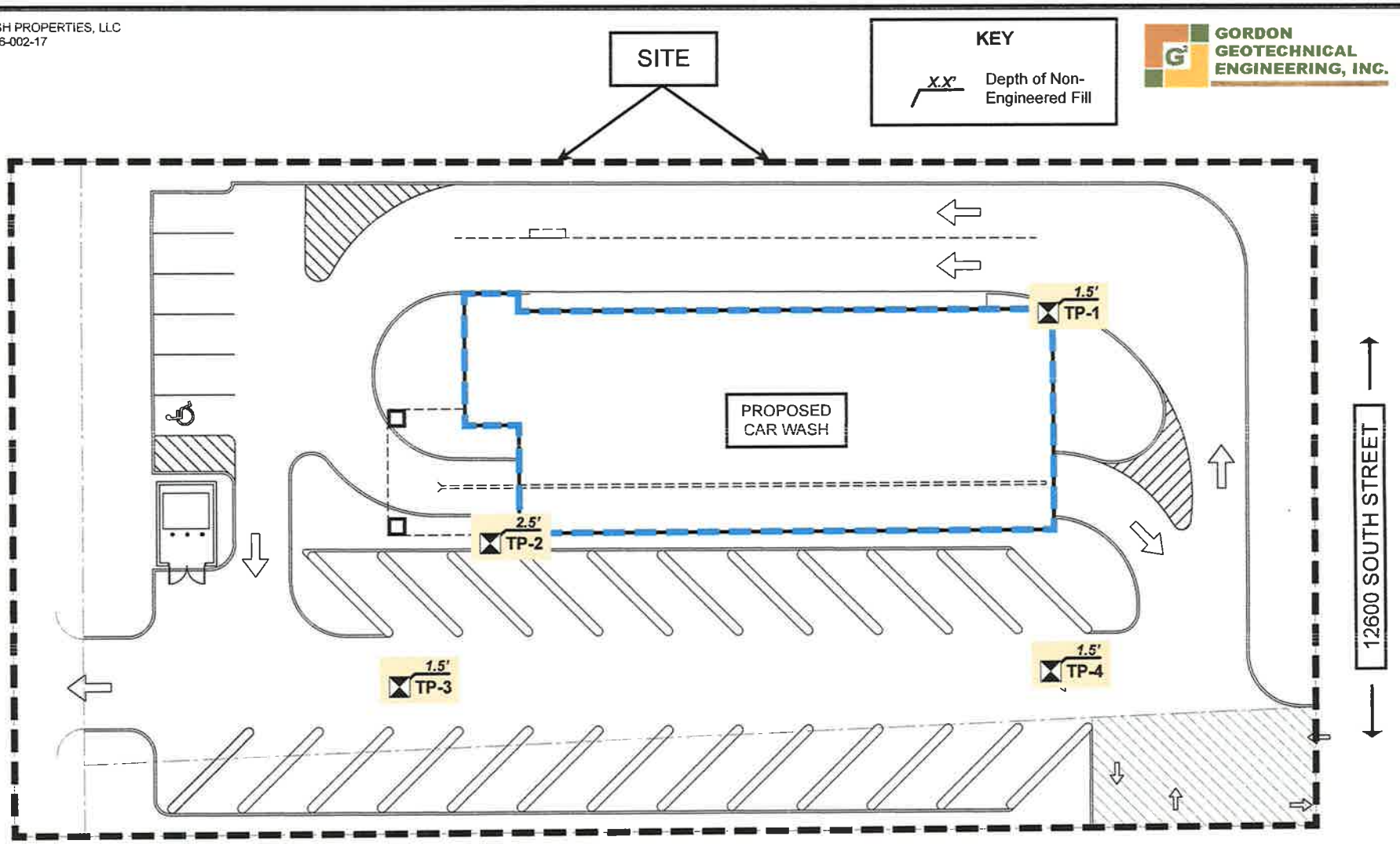


FIGURE 3
SITE PLAN

REFERENCE:
ADAPTED FROM DRAWING ENTITLED
"ARCHITECTURAL SITE PLAN"
BY DESIGN WEST ARCHITECTS, DATED MARCH 6, 2017

NOT TO SCALE

Gordon Geotechnical Engineering, Inc.
4426 South Century Drive, Suite 100
Salt Lake City, Utah 84123

TEST PIT TP-1

Project Name: Proposed Gorilla Wash Riverton
Project No.: 476-002-17
Location: 2014 West 12600 South, Riverton, Utah
Client: Prime Wash Properties, LLC
Excavating Method: Kubota KX75
Date Excavated: 06-05-17
Elevation: —
Water Level: No groundwater encountered.
Remarks:

DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	SAMPLE TYPE	BLOWS/FT.	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	REMARKS
SILTY CLAY/CLAYEY SILT, FILL with some fine sand; brown (CL/ML-FILL)										loose to 5" dry "very stiff"
SILTY CLAY/CLAYEY SILT with some fine sand; blocky; root holes; brown (CL/ML)			TW		10.3		91.5			dry "very stiff"
grades without root holes; grades with trace fine sand	5		B		11.4		97.3			
	10		B							slightly moist
Stopped excavating at 14.0'. Stopped sampling at 10.5'. No groundwater encountered at time of excavating. No signficant sidewall caving	15 20 25									

The discussion in the text under the section titled, SUBSURFACE CONDITIONS, is necessary for a proper understanding of the nature of the subsurface material.

FIGURE 4A

Gordon Geotechnical Engineering, Inc.
4426 South Century Drive, Suite 100
Salt Lake City, Utah 84123

TEST PIT TP-3

Project Name: Proposed Gorilla Wash Riverton
Project No.: 476-002-17
Location: 2014 West 12600 South, Riverton, Utah
Client: Prime Wash Properties, LLC
Excavating Method: Kubota KX75
Date Excavated: 06-05-17
Elevation: —
Water Level: No groundwater encountered.
Remarks:

DESCRIPTION	GRAPHIC LOG	WATER LEVEL	DEPTH (FT.)	SAMPLE SYMBOL	SAMPLE TYPE	BLOWS/FT.	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	REMARKS
SILTY CLAY/CLAYEY SILT, FILL with trace fine sand; brown (CL-FILL)												
SILTY CLAY/CLAYEY SILT with trace fine sand; root holes; brown (CL/ML)			5									dry "stiff"
Stopped excavating at 5.0'. No groundwater encountered at time of excavating. No signficant sidewall caving .			10 15 20 25									

The discussion in the text under the section titled, SUBSURFACE CONDITIONS, is necessary for a proper understanding of the nature of the subsurface material.

FIGURE 4C

GORDON GEOTECHNICAL ENGINEERING, INC.

UNIFIED SOIL CLASSIFICATION SYSTEM

[illegible]	Group Symbol	Typical Descriptions
[illegible]	GW	[illegible]
[illegible]	GP	[illegible]
[illegible]	GM	[illegible]
[illegible]	GC	[illegible]
[illegible]	SW	[illegible]
[illegible]	SP	[illegible]
[illegible]	SM	[illegible]
[illegible]	SC	[illegible]
[illegible]	ML	[illegible]
[illegible]	CL	[illegible]
[illegible]	OL	[illegible]
[illegible]	MH	[illegible]
[illegible]	CH	[illegible]
[illegible]	OH	[illegible]
Highly Organic Soils	Pt	[illegible]

1 Boundary classifications: Soils possessing characteristics of two groups are designated by combinations of group symbols. For example GW-GC, well graded gravel-sand mixture with clay binder.
2 All sieve sizes on this chart are U.S. standard.

GENERAL NOTES

1. In general, Unified Soil Classification Designations presented on the logs were evaluated by visual methods only. Therefore, actual designations (based on laboratory testing) may vary.

2. Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual.

3. Logs represent general soil conditions observed at the point of exploration on the date indicated.

4. No warranty is provided as to the continuity of soil conditions between individual sample locations.

LOG KEY SYMBOLS

Bulk / Bag Sample	Tube Sample
Standard Penetration Split Spoon Sampler	No Recovery
Rock Core	[illegible]
Water Level	[illegible]
	[illegible]

FINE - GRAINED SOIL

CONSISTENCY	SPT	TORVANE UNDRAINED SHEAR STRENGTH	POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH	FIELD TEST
Very Soft	<2	<0.125	<0.25	Easily penetrated several inches by Thumb. Squeezes through fingers.
Soft	2 - 4	0.125 - 0.25	0.25 - 0.5	Easily penetrated 1" by Thumb. Molded by light finger pressure.
Medium Stiff	4 - 8	0.25 - 0.5	0.5 - 1.0	Penetrated over 1/2" by Thumb with moderate effort. Molded by strong finger pressure.
Stiff	8 - 15	0.5 - 1.0	1.0 - 2.0	Indented about 1/2" by Thumb but penetrated only with great effort.
Very Stiff	15 - 30	1.0 - 2.0	2.0 - 4.0	Readily indented by Thumbnail.
Hard	>30	>2.0	>4.0	Indented with difficulty by Thumbnail.

COARSE - GRAINED SOIL

APPARENT DENSITY	SPT	RELATIVE DENSITY	FIELD TEST
Very Loose	<4	0 - 15	Easily penetrated with 1/2" reinforcing rod pushed by hand.
Loose	4 - 10	15 - 35	Difficult to penetrate with 1/2" reinforcing rod pushed by hand.
Medium Dense	10 - 30	35 - 65	Easily penetrated a foot with 1/2" reinforcing rod driven with 5-lb hammer.
Dense	30 - 50	65 - 85	Difficult to penetrate a foot with 1/2" reinforcing rod driven with 5-lb hammer.
Very Dense	>50	85 - 100	Penetrated only a few inches with 1/2" reinforcing rod driven with 5-lb hammer.

STRATIFICATION

DESCRIPTION	THICKNESS
SEAM	1/16 - 1/2"
LAYER	1/2 - 12"

DESCRIPTION	THICKNESS
Occasional	One or less per foot of thickness
Frequent	More than one per foot of thickness

CEMENTATION

DESCRIPTION	DESCRIPTION
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

MODIFIERS

DESCRIPTION	%
Trace	<5
Some	5 - 12
With	>12

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil below Water Table

FIGURE 5

PRIME WASH PROPERTIES, LLC
JOB NO. 476-002-17

GORDON GEOTECHNICAL ENGINEERING, INC.

#1 Facing northeast from western boundary of the site.

#2 Facing east from the western boundary of the site.

#3 Facing south/southwest from the western boundary of the site.

#4 Facing south along the eastern boundary of the site.

Locations and direction, see Figure 2, Area Map

FIGURE 6
PHOTOGRAPHS