PRELIMINARY STORMWATER MANAGEMENT REPORT

FOR

SWC I-5 & Kincaid Street Project

Mount Vernon, WA

April 22, 2019

Prepared For:

VWA-Mount Vernon LLC

Land Development Engineering & Surveying Inc

5160 Industrial Place Suite 108

Ferndale, WA 98248

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2 ENGINEER'S DECLARATION

I, Ramon Llanos, a Professional Engineer registered in the State of Washington as a Civil Engineer, do hereby declare that the stormwater design report titled *"SWC I-5 & Kincaid Street Project"*, and dated April 22, 2019 was prepared by, or under my personal supervision, and that said report was prepared in accordance with generally accepted engineering practices. I hereby affirm that, to the best of my knowledge, information and belief, subject report was prepared in full compliance with the City of Mount Vernon Development Standards and all technical standards adopted thereunder.

Sincerely,

Ramon Llanos, PE

Land Development Engineering & Surveying, Inc

3 INTRODUCTION

3.1 PROJECT BACKGROUND

The Proposed is the development of approximately 4.6-acres of vacant property located on the north end of what was historically called the ALFCO site (Alf Christianson Seed Company once owned and operated a seed processing plant on a portion of the subject development site).

As many as five future lots could be created, depending on yet to-be-determined tenants. While tenants are not yet known, the general uses of the overall site are known and will include a mix of retail and commercial uses/buildings such as restaurants, retail sales, coffee shops, hotel, offices, gas station and other similar uses.

Addition general information for this project is as follows:

PROJECT NAME:	SWC I-5 & Kincaid Street Project
LOCATION:	ALFCO site, Mount Vernon, WA
MAIN ADDRESS:	100 EAST KINKAID STREET
TAX PARCEL No.:	*P26886 ,P53375,P26788–Partial,P121047,P53376*
	P54114- Partial,P53372 – Pending,P53377,P54122
	P53373,P53378,P103224,P53374,P53379 – Pending
OWNER APLLICANT:	VWA-Mount Vernon, LLC
ENGINEER & CONTACT:	Ramon Llanos, P.E.
	5160 Industrial Pl
	Ferndale, WA. 98248
	Ph: (360) 383-0620, Fax: (360) 383-0639

3.2 SCOPE OF STUDY

The purpose of this report is to evaluate the effects and consequences of the stormwater surface runoff resulting from the proposed development of the subject property and provide mitigation design recommendations to assure that the stormwater runoff is not degraded. This report will also detail the methods and assumptions used for this evaluation.

3.3 METHOD OF APPROACH

The analyses method utilized to create this report are based on computer aided modeling of rainfall runoff and level pool reservoir routing techniques. Specifically, the software program

WWHM2012, developed by WSDOE, will be used for both runoff and routing simulations. Per the 2014 *Stormwater Management Manual for Western Washington* (SWMM), the stormwater site plan (this report) is required to address minimum requirements 1-9 as the project will generate more than 5,000 sf of new plus replaced impervious surface. A flow chart is included in Appendix III showing the minimum requirements applied to this project.

4 EXISTING CONDITIONS

4.1 LAND USE AND ZONING

The existing site is currently undeveloped. The site is zoned as General Commercial District (C2) by the City of Mount Vernon.

4.2 VEGETATION

The existing site vegetation is located in the east portion of the site there remains a grassy area with a couple trees that will be removed, approximately 1.4 acres. The remaining of the site was comprised of buildings and roads from the ALFCO site (Alf Christianson Seed Company once owned and operated a seed processing plant on a portion of the subject development site).

4.3 TOPOGRAPHY AND DRAINAGE

The site slopes overall to the middle of the property sloping from the east and west with slopes ranging from 0% to 2%. The existing conditions map does not clearly show the existing drainage patterns. It appears the storm drainage connects to a combined sewer system that conveys the stormwater to the wastewater treatment plan, which ultimately outfalls to the Skagit River.

4.4 SOILS

A Draft Geotechnical Report by Terra Associates, Inc., dated March 29, 2019, described the existing soils as the following:

- In general, underlying one to eight inches of topsoil, soil conditions observed in the test pits consisted of 1.5 to 4 feet of medium dense fill composed mostly of silty sand with gravel.

- The fill overlies native alluvial deposits consisting primarily of medium dense, fine-grained silty sand as well as loose to medium dense sand and medium dense fill with varying sand content.

- On-site soils are not suitable for infiltration facilities.

5 STORMWATER SYSTEM EVALUATION

5.1 PRE-DEVELOPMENT BASIN ANALYSIS

The preliminary pre-development basin was determined based upon the project improvement extents and the property lines. The pre-developed basin is 1.4 acres of lawns and the remaining 3.2 of gravel, and impervious surfaces.

5.2 POST-DEVELOPMENT BASIN ANALYSIS

The post-developed basin will be updated after the SEPA is approved and the final basin breakdown is developed. In total, the project will generate 3.3 acres of impervious surface (sidewalk/road/roof).

Stormwater runoff will be generated by the proposed buildings, associated concrete walkways, and proposed parking. Stormwater will be collected and conveyed via an onsite stormwater drainage system consisting of roof downspouts, catch basins, and piping. Collected stormwater will be treated and discharged to the existing combined sewer system on Kincaid.

At the proposed gas station, the drive slab where cars park during fueling is covered with a canopy, to minimize exposure to rain and the resulting impact to the storm system. The proposed design isolates the drive slabs from the overall site drainage and directs all drive slab drainage through an oil/water separator and into the sewer system or system of choice by the City of Mount Vernon.

5.3 WATER QUALITY

For the preliminary submittal, the project will construct more than 5,000 square feet of pollution generating hard surface (PGHS). As such, the project will be required to provide water quality, more specifically enhanced treatment because it will be a commercial use site. Runoff treatment will be provided by storm filter vault prior to connecting to the combined sewer line near Kincaid.

Per the 2014 WSDOE Stormwater Management Manual for Western Washington, Volume 1, Appendix I-C, the Skagit River is listed as a basic treatment receiving water, thus does not require enhance treatment for the commercial development.

At the proposed gas station, the drive slab where cars park during fueling is covered with a canopy, to minimize exposure to rain and the resulting impact to the storm system. The proposed design isolates the drive slabs from the overall site drainage and directs all drive slab drainage through an oil/water separator and into the sewer system or system of choice by the City of Mount Vernon.

5.4 DETENTION

For the preliminary submittal, the project is presumed to construct 3.3 acres of new plus replaced impervious surface. As such, the project will generate more than 10,000 square feet of impervious surface requiring flow control.

Per the 2014 WSDOE Stormwater Management Manual for Western Washington, Volume 1, Appendix I-E, the Skagit River is considered a flow control exempt surface water, thus does not require flow control for the commercial development.

All stormwater piping will be able to adequately convey the peak flow per the 2014 SWMM. The temporary erosion and sedimentation control design plan shall outline the control measures to minimize site erosion and sedimentation during construction. A quarry spall construction access road, and silt fencing will be used to provide protection of neighboring properties and downstream drainage systems.

5.5 EXCEPTIONS TO CITY OF MOUNT VERNON DEVELOPMENT STANDARDS

The stormwater management and conveyance systems proposed in this design report are in general compliance with the WSDOE 2014 publication of the *Stormwater Management Manual for Western Washington* and of the City of Mount Vernon's *Development Standards*. No exceptions to the City of Mount Vernon Standards have been made to the best of our knowledge.

6 MINIMUM STORMWATER MANAGEMENT REQUIREMENTS

This project will comply with the nine minimum requirements outlined in the WSDOE *"Stormwater Management Manual for Western Washington"* (SWMM*)*, 2014 publication. The minimum requirements have each been addressed as follows:

6.1 REQUIREMENT NO. 1 – PREPARE STORMWATER SITE PLANS

We have completed the requirements of a stormwater site plan per the 2014 SWMM for the preliminary submittal. The required steps have been performed as follows.

6.1.1 COLLECT AND ANALYZE EXISTING CONDITIONS INFORMATION

For the preliminary submittal the site was analyzed from Google Earth DEM, Mount Vernon Online GIS, and topographic survey.

6.1.2 PREPARE PRELIMINARY DEVELOPMENT LAYOUT

The preliminary site development plan has been determined; refer to the site plan located in Appendix II.

6.1.3 PERFORM OFF-SITE ANALYSIS (AT LOCAL GOVERNMENT'S OPTION)

An off-site analysis has not been completed at this time.

6.1.4 DETERMINE APPLICABLE MINIMUM REQUIREMENTS

This project shall comply with minimum requirements 1-9 as outlined in the 2014 *Stormwater Management Manual for Western Washington.*

6.1.5 PREPARE A PERMANENT STORMWATER CONTROL PLAN

The permanent stormwater control proposed for this project consists of stormwater piping, stormwater catch basins, and storm filters. An operations and maintenance manual for this system will be included for the final submittal.

6.1.6 PREPARE A CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

A construction stormwater pollution prevention will be provided after the preliminary submittal.

6.1.7 COMPLETE THE STORMWATER SITE PLAN

The stormwater site plan has been completed per the 2014 SWMM. This stormwater design report is the Stormwater Site Plan.

6.1.8 CHECK COMPLIANCE WITH ALL APPLICABLE MINIMUM REQUIREMENTS

The stormwater facilities proposed in this report will comply with the applicable WSDOE minimum requirements.

6.2 REQUIREMENT NO. 2 – CONSTRUCTION STORMWATER POLLUTION PREVENTION (SWPPP)

A SWPPP will be completed after the preliminary submittal.

6.3 REQUIREMENT NO. 3 – SOURCE CONTROL OF POLLUTION

This project is proposing to construct four new commercial buildings and associated site improvements. All commercial business will be conducted inside of the buildings. There will be no source pollution from inside the building that could impact stormwater. The roofs will be constructed with materials that do not leech or produce pollution. It will not produce additional pollution other than that associated with roads and driveways, and therefore no additional source controls are proposed for this project other than what are proposed for the typical operation and maintenance of a multi-family housing project.

Water quality treatment for the site improvements is proposed as addressed in Section 6.6, Minimum Requirement #6.

6.4 REQUIREMENT NO. 4 – PRESERVATION OF NATURAL DRAINAGE SYSTEMS AND OUTFALLS

The existing conditions map does not clearly show the existing drainage patterns. It appears the storm drainage connects to a combined sewer system that conveys the stormwater to the wastewater treatment plan, which ultimately outfalls to the Skagit River.

6.5 REQUIREMENT NO. 5 – ON-SITE STORMWATER MANAGEMENT

List #2 will be utilized (per Volume I, table 2.5.1 of the SWMM) for the proposed surface types.

LAWNS AND LANDSCAPE AREAS:

BMP T5.13 will be utilized for all lawn and landscape areas for this project. Per this BMP (see Vol. V, pg 5-7), these areas can be modeled as pasture in the post developed condition.

ROOFTOPS:

1. Full dispersion is not considered feasible, as each lot will have more than 10% of effective impervious surface and will not be retaining 65% of native vegetation cover. Full Infiltration is not considered feasible due to poor infiltrating soils found on-site.

2. Raingardens are not feasible due to poor infiltrating soils found on-site.

3. Bio-Retention is not feasible due to poor infiltrating soils found on-site.

4. Downspout Dispersion Systems are not feasible due to lack of space to disperse flows.

5. Perforated Stub Out Connection are not feasible due lack of space for the trenches and the size of trench needed for the roof area.

OTHER HARD SURFACES (Roads and Sidewalks):

1. Full dispersion is not considered feasible, as each lot and the ROW will have more than 10% of effective impervious surface and will not be retaining 65% of native vegetation cover.

2. Permeable pavement is not considered feasible as it is unlikely it will provide sufficient strength to support the heavy loads and turning movements from delivery trucks accessing the commercial buildings.

3. Bioretention is not considered feasible due to poor infiltrating soils found on site.

4. Flow dispersion is not feasible as not enough room will be available to disperse the flows.

6.6 REQUIREMENT NO. 6 – RUNOFF TREATMENT

Per the SWMM, Vol I, section 2.5.6 the project will construct more than 5,000 square feet of PGHS. As such, runoff treatment will be required for this project. Runoff treatment will be provided by storm filters.

6.7 REQUIREMENT NO. 7 – FLOW CONTROL

Per the 2014 WSDOE Stormwater Management Manual for Western Washington, Volume 1, Appendix I-E, the Skagit River is considered a flow control exempt surface water, thus does not require flow control for the commercial development.

6.8 REQUIREMENT NO. 8 – WETLANDS PROTECTION

There are no known wetlands associated with this project.

6.9 REQUIREMENT NO. 9 – OPERATION AND MAINTENANCE

An operation and maintenance (O&M) manual will be developed for the project.

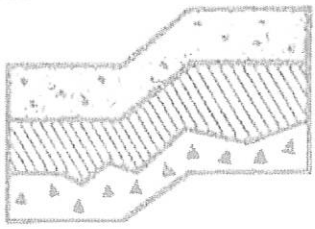
7 APPENDIX I – SOILS INFORMATION

GEOTECHNICAL REPORT

DRAFT

Mt. Vernon Retail
Mount Vernon, Washington

Project No. T-8129



Terra Associates, Inc.

Prepared for:

Visconsi Companies, Ltd.
Pepper Pike, Ohio

March 29, 2019

TERRA ASSOCIATES, Inc.

Consultants in Geotechnical Engineering, Geology
and
Environmental Earth Sciences

March 29, 2019
Project No. T-8129

Mr. Shawn Jurisch
Visconsi Companies, Ltd.
30050 Chagrin Blvd., Suite 360
Pepper Pike, OH 44124

DRAFT

Subject: Geotechnical Report
Mt. Vernon Retail
Mount Vernon, Washington

Dear Mr. Jurisch:

As requested, we have conducted a geotechnical engineering study for the subject project. The attached report presents our findings and recommendations for the geotechnical aspects of project design and construction.

The site soils generally consisted of consisted of 1.5 to 4 feet of medium dense fill composed silty sand with gravel. The fill contains scattered rubble and debris. This granular fill overlies alluvial deposits consisting primarily of medium dense, fine-grained silty sands, as well as medium dense sands and medium stiff to stiff silts with varying sand content. The soils are generally moist to wet. An approximately one-foot layer of peat was observed at approximately seven feet below existing site grades at Test Pit TP-2. We observed groundwater in three of the five test pits at approximately seven to nine feet below current site grades.

In our opinion, soil and groundwater conditions at the site will be suitable for support of the development as planned provided recommendations contained herein are incorporated into project design and construction specifications.

We trust the information provided in the attached report is sufficient for your current needs. If you have any questions or need additional information, please call.

Sincerely yours,
TERRA ASSOCIATES, INC.

DRAFT

Michael J. Xenos, E.I.T.
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1.0 PROJECT DESCRIPTION

The project consists of redeveloping the site consisting of two tax parcels with commercial and retail buildings along with associated access, parking, and utility improvements. Building and grading plans were not available at the time of this report. Based on existing site grades, we would expect grading to be minimal with cuts and fills generally ranging between one and five feet.

We expect the commercial and retail buildings will be single-story wood-framed or masonry structures with floors constructed at grade. We expect structural loads will be light, about 50 kips for isolated columns and 2 to 4 kips per foot for continuous perimeter bearing walls.

The recommendations contained in the following sections of this report are based on the above design features. If actual features vary or changes are made, we should review them in order to modify our recommendations, as required. We should review the final design drawings and specifications to verify that our recommendations have been properly interpreted and incorporated into project design and construction.

2.0 SCOPE OF WORK

Our scope of work was completed in accordance with our authorized proposal, dated June 12, 2018. Accordingly, on March 12, 2019, we observed and sampled soil conditions at 5 test pits excavated to maximum depths of 8 to 10 feet below current site grades. On March 7, 2019, In-Situ Engineering, under subcontract with Terra Associates, Inc., performed 3 cone penetration tests (CPTs) to maximum depths of about 73 to 76 feet below existing surface grades. Using the information obtained from this subsurface exploration, we performed analyses to develop geotechnical recommendations for development at the site.

Specifically, this report addresses the following:

- Soil and groundwater conditions
- Geologic Hazards per the City of Mount Vernon Municipal Code
- Seismic design parameters per the 2015 International Building Code (IBC)
- Site preparation and grading
- Preload/surcharge
- Excavations
- Foundations

- Slab-on-grade floors
- Infiltration feasibility
- Stormwater facilities
- Subsurface drainage
- Utilities
- Pavements

It should be noted that recommendations outlined in this report regarding drainage are associated with soil strength, design earth pressures, erosion, and stability. Design and performance issues with respect to moisture as it relates to the structure environment are beyond Terra Associates' purview. A building envelope specialist or contractor should be consulted to address these issues, as needed.

3.0 SITE CONDITIONS

3.1 Surface

The site consists of the northern approximately 4 acres of an approximately 11-acre assemblage of several tax parcels located in between State Route 536 and East Section Street, west of the Interstate 5 corridor in Mount Vernon, Washington. The approximate site location is shown on Figure 1.

Most of the property was previously developed with buildings occupied by the Alf Christianson Seed Plant. Currently, the structures have been demolished with asphalt and concrete pavement surfaces remaining. Site vegetation consisted of a small grassy area to the northwest and a larger grassy field to the east which also contained a small number of small- to medium-sized trees. Site topography is relatively flat with no obvious signs of sloping.

3.2 Soils

In general, underlying one to eight inches of topsoil, soil conditions observed in the test pits consisted of 1.5 to 4 feet of medium dense fill composed mostly of silty sand with gravel. The fill was noted to contain scattered rubble and debris. At Test Pit TP-2, a remnant 6-inch thick concrete slab was observed at a depth of 18 inches along with a 1-inch diameter PVC pipe at about 3 feet. Topsoil was absent at Test Pit TP-5 with surface conditions consisting of three inches of asphalt concrete followed by four inches of crushed rock base.

The fill overlies native alluvial deposits consisting primarily of medium dense, fine-grained silty sand as well as loose to medium dense sands and medium dense silt with varying sand content. The soils are generally moist to wet. An approximately one-foot layer of peat was observed at approximately seven feet below existing site grade at Test Pit TP-2. The deeper CPT data indicates these upper soils are underlain by medium dense to dense sand with variable silt content and interbedded layers of medium stiff silts and clays to the CPT termination depths of about 73 to 76 feet below existing site grades.

The *Preliminary Geologic Map of the Mount Vernon 7 ½" Quadrangle, Skagit County, Washington*, by D.P. Dethier and J.T. Whetten (1981) maps the site as Alluvium (Qal). This map unit is consistent with the native soils observed in our field explorations.

The preceding discussion is intended to be a brief review of the soil conditions observed at the site. More detailed descriptions are presented on the Test Pit Logs attached in Appendix A and the CPT logs attached in Appendix B.

3.3 Groundwater

We observed light to moderate groundwater seepage in three of the five test pits at approximately seven to nine feet below current site grades. Perched groundwater seepage was observed at Test Pit TP-2 around a log which was released upon excavation. Additionally, we performed three pore water dissipation tests at all three CPT locations. The test results indicate the static groundwater level to be located at approximately 11 feet to 16 feet below existing site. Based on the groundwater observed and our experience in the area, we expect that the groundwater observed is a part of the regional groundwater table for the area.

Fluctuations in the static groundwater level will occur seasonally. Typically, groundwater will reach maximum levels during the wet winter months. Based on the time of year the water levels were recorded, the groundwater levels observed at the site likely represent near seasonal high groundwater levels.

3.4 Geologic Hazards

We evaluated the site conditions for the presence of geologic hazards including erosion hazard areas, landslide hazard areas, seismic hazard areas, volcanic hazard areas, and alluvial fan hazard areas.

3.4.1 Erosion Hazard Areas

Section 15.40.070.B.1 of the City of Mount Vernon Municipal Code (MVMC) defines an erosion hazard as "an area that contains one or more of the following characteristics:

> a. Those areas containing soils that, according to the U.S. Natural Resource Conservation Service Survey, have severe to very severe erosion hazard potential.
>
> b. Those project areas that fall within any soil sloping greater than or equal to 30 percent.
>
> c. Those areas that may be considered to have an erosion hazard as a result of rapid stream incision or stream bank erosion."

The Natural Resources Conservation Service (NCRS) classifies the site as predominantly *Urban land – Mt. Vernon – Field complex* which exhibits a slight susceptibility to erosion when exposed. Therefore, the site would not be considered an erosion hazard per the MVMC. Regardless, erosion protection measures as required by the City of Mount Vernon will need to be in place prior to starting grading activities on the site. This would include perimeter silt fencing to contain erosion on-site and cover measures to prevent or reduce soil erosion during and following construction.

3.4.2 Landslide Hazard Areas

Section 15.40.070.B.2 of the MVMC defines landslide hazard areas as "areas that exhibit one or more of the following characteristics:

> a. Contains or lies within 200 feet from slopes having the following characteristics: gradients of 15 percent or greater intersecting geologic contacts with permeable sediments overlying low permeability sediment or bedrock and springs or groundwater seepage are present.
>
> b. Contains or lies within 200 feet from any area having a 40 percent slope or steeper and with a vertical relief of 10 feet or more.
>
> c. Contains or lies within 200 feet from areas of historic failure such as areas designated as quaternary earth slumps, earthflows, mudflows, lahars, debris flows, rock slides, landslides or other slope failures on maps or technical reports published by the U.S. Geological Survey such as topographic or geologic maps, or the Geology and Earth Resources Division of the Washington Department of Natural Resources, or other documents authorized by government agencies.
>
> d. Contains or lies within 200 feet from areas potentially unstable as a result of rapid stream incision, stream bank erosion, and undercutting by wave action. Such area shall be addressed as a flood hazard consistent with this chapter.
>
> e. Areas that have shown movement (e.g., slides, rotational or mass failures, subsidence) during the Holocene epoch (i.e., the last 8,000 through 10,000 years) or that are underlain or covered by wastage debris of that epoch.
>
> f. Contains or lies within 200 feet from slopes that are parallel or sub-parallel to planes of weakness (such as bedding planes, joint systems, and fault planes) in subsurface materials.
>
> g. Contains or lies within 200 feet from slopes with a gradient greater than 80 percent and subject to rock fall during seismic shaking."

The site is relatively flat with no slopes. Therefore, the site is not a landslide hazard area.

3.4.3 Seismic Hazard Areas

Section 15.40.070.B.3 of the MVMC defines seismic hazard areas as "areas that are subject to severe risk of damage as a result of earthquake induced ground shaking, slope failure, settlement, soil liquefaction or surface faulting as follows:

> a. Areas that have a potential for soil liquefaction and soil strength loss during ground shaking as identified on the city of Mount Vernon Soil Liquefaction Potential Map derived from Washington State Department of Natural Resources data or as identified by investigative maps or studies by the United States Geologic Survey.
>
> b. Areas located on a Holocene fault line as indicated on investigative maps or described in studies by the United States Geologic Survey, Geology and Earth Resources Division of the Washington Department of Natural Resources, or other documents authorized by government agencies, or as identified in the field."

As described below, subsurface conditions at the site are subject to the liquefaction phenomenon during a design level earthquake. Therefore, the site is in a seismic hazard area. The nearest known fault is located approximately 2.3 miles northeast of the site. The risk for site impacts from surface rupturing due to fault activity would be low.

Site Class

Based on the site soil conditions and our knowledge of the area geology, per the 2015 International Building Code (IBC), site class "E" should be used in structural design.

Soil Liquefaction

Liquefaction is a phenomenon where there is a reduction or complete loss of soil strength due to an increase in water pressure induced by vibrations. Liquefaction mainly affects geologically recent deposits of fine-grained sands underlying the groundwater table. Soils of this nature derive their strength from intergranular friction. The generated water pressure or pore pressure essentially separates the soil grains and eliminates this intergranular friction; thus, eliminating the soil's strength.

We completed a liquefaction analysis using the computer program LiquefyPro published by CivilTech Corporation. The analysis was completed using a ground acceleration value of 0.398g, which is the ASCE 7-10 site-modified peak ground acceleration value (PGA_M) determined using the map-based online ground motion parameter calculator at https://seismicmaps.org/ for Latitude 48.417°N and Longitude 122.335°W. The results of the liquefaction analysis are attached in Appendix C.

The results of our analysis indicate soil liquefaction could occur during the design earthquake event. Estimated total potential settlement from our analysis of the CPT data is in the range 2 to 3.5 inches, one-half of which would likely be differential in nature. This amount of differential settlement would not structurally impact the building but could result in damage of a cosmetic nature. If the owner is not willing to accept the risk of cosmetic building damage requiring repair in the event seismic-induced settlements occur, foundations would need to be supported on ground improved with stone columns or aggregate piers.

3.4.4 Volcanic Hazard Areas

Section 15.40.070.B.4 of the MVMC defines volcanic hazard areas as "those lands identified as a volcanic hazard zone for Glacier Peak, Washington (USGS Open-File Report 95-499); or in a volcanic hazard area of Mount Baker, Washington (USGS Open-File Report 95-498)."

The site is mapped just within the Inundation zone for Case M debris flows on the *Potential Volcanic Hazards from Future Activity of Mount Baker, Washington* map, dated 1995. Case M represents a maximum known or envisioned debris flow for the Nooksack and Skagit Rivers. The maximum known debris flow is the 6800-year old debris flow in the Middle Fork of the Nooksack River that can be traced as far downstream as Deming, Washington some 30 miles north of Mount Vernon. The likely cause of a Case M debris flow would be a debris avalanche that transformed into a cohesive debris flow. As only one event of this size is known, the recurrence interval is on the order of 1 in 14,000 years and so this event is considered to be a high consequence, but low-probability event.

3.4.5 Alluvial Fan Hazard Areas

Section 15.40.070.B.5 of the MVMC defines alluvial fan hazard areas as "Areas within or 200 feet from an alluvial fan as designated on the Skagit County Alluvial Fan Study Orthophoto Maps. An alluvial fan is an accumulation of sediment deposited by a stream where it issues from steep, confined hill slopes onto a floodplain or valley floor. The sediment mass includes rock, mud, woody debris, and other accumulations. The depositional mechanism is the decrease in gradient that causes the material to stop its downhill course. Repeated debris flows tend to obstruct the channel, forcing the material to find a new path of least resistance."

The site is not mapped within 200 feet of an alluvial fan. Therefore, the site does not meet the above criteria defining an alluvial fan hazard area per the MVMC.

4.0 DISCUSSION AND RECOMMENDATIONS

4.1 General

Based on our study, in our opinion, development of the site as proposed is feasible from a geotechnical engineering standpoint. The soft, fine grained soil layers observed at the site will consolidate under static dead loads imposed by the structures. To mitigate the potential for post-construction settlement due to this consolidation, we recommend surcharging the building locations. Surcharging will involve placing four feet of surcharge fill above finished floor grades and allowing settlements to occur under this load before building construction is initiated. After completing the surcharge program, the buildings can be supported on conventional spread footings bearing on a minimum of two feet of structural fill.

Though a surcharge program will mitigate settlements under static loads, as discussed earlier, the risk of some building cracking and distortion resulting from soil liquefaction during the design earthquake would remain. If that risk is unacceptable to the owner, the building should be supported on ground improved by installing vibrated stone columns. The stone columns/aggregate piers subgrade option would preclude the need for a surcharge program.

The native and existing fill soils observed at the site contain a significant amount of fines and will be difficult to compact as structural fill when too wet. The ability to use native soil and existing fill soils from site excavations as structural fill will depend on its moisture content and the prevailing weather conditions at the time of construction. If grading activities will take place during winter, the owner should be prepared to import clean granular material for use as structural fill and backfill. Alternatively, stabilizing the moisture in the native and existing fill soils with cement or lime can be considered.

Detailed recommendations regarding these issues and other geotechnical design considerations are provided in the following sections. These recommendations should be incorporated into the final design drawings and construction specifications.

4.2 Site Preparation and Grading

To prepare the site for construction, all vegetation, organic surface soils, and other deleterious material should be stripped and removed from the site. Surface stripping depths ranging from four to eight inches should be expected to remove the organic surface soils. Organic topsoil will not be suitable for use as structural fill but may be used for limited depths in nonstructural areas. Demolition of existing structures should include removal of existing foundations, floor slabs, and other buried utilities. Abandoned utility pipes that fall outside of new building areas can be left in place provided they are sealed to prevent intrusion of groundwater seepage and soil.

Once clearing and stripping operations are complete, cut and fill operations can be initiated to establish desired building grades. Prior to placing fill, all exposed bearing surfaces should be observed by a representative of Terra Associates, Inc. to verify soil conditions are as expected and suitable for support of new fill or building elements. Our representative may request a proofroll using heavy rubber-tired equipment to determine if any isolated soft and yielding areas are present. If excessively yielding areas are observed, and they cannot be stabilized in place by compaction, the affected soils should be excavated and removed to firm bearing and grade restored with new structural fill. If the depth of excavation to remove unstable soils is excessive, the use of geotextile fabrics, such as Mirafi 500X, or an equivalent fabric, can be used in conjunction with clean granular structural fill. Our experience has shown that, in general, a minimum of 18 inches of a clean, granular structural fill placed and compacted over the geotextile fabric should establish a stable bearing surface.

All building footings should obtain support on two feet of compacted granular structural fill. The fill should extend laterally from the edge of footing a minimum distance of one-foot.

If building subgrades constructed using native soils or weather sensitive import fill will be exposed during wet weather, it would be advisable to place 12 inches of wet weather granular structural fill on the building pad to prevent deterioration of the floor subgrade. Alternatively, the upper 12 inches of the floor subgrade could be stabilized by cement amending.

Our study indicates that the native soils contain a sufficient percentage of fines (silt and clay size particles) that will make them difficult to compact as structural fill if they are too wet or too dry. Accordingly, the ability to use these native soils from site excavations as structural fill will depend on their moisture content and the prevailing weather conditions when site grading activities take place. Soils that are too wet to properly compact could be dried by aeration during dry weather conditions or mixed with an additive such as cement or lime to stabilize the soil and facilitate compaction. If an additive is used, additional Best Management Practices (BMPs) for its use will need to be incorporated into the Temporary Erosion and Sedimentation Control plan (TESC) for the project.

If grading activities are planned during the wet winter months, or if they are initiated during the summer and extend into fall and winter, the contractor should be prepared to import wet weather structural fill. For this purpose, we recommend importing a granular soil that meets the following grading requirements:

U.S. Sieve Size	Percent Passing
6 inches	100
No. 4	75 maximum
No. 200	5 maximum*

*Based on the 3/4-inch fraction.

Prior to use, Terra Associates, Inc. should examine and test all materials to be imported to the site for use as structural fill.

Structural fill should be placed in uniform loose layers not exceeding 12 inches and compacted to a minimum of 95 percent of the soil's maximum dry density, as determined by American Society for Testing and Materials (ASTM) Test Designation D-698 (Standard Proctor). The moisture content of the soil at the time of compaction should be within two percent of its optimum, as determined by this ASTM standard. In nonstructural areas, the degree of compaction can be reduced to 90 percent.

4.3 Surcharge

Once grading to establish the building floor elevation is completed, we recommend surcharging the building areas to limit building and floor slab settlements to tolerable levels. For this procedure, we recommend placing a minimum of four feet of surcharge fill in the building area and delaying building construction until settlement under this fill load has occurred. The surcharge fill should extend a minimum of two feet beyond the outside edge of the perimeter building footing. The surcharge fill does not need to meet any special requirements other than having a minimum in place unit weight of 120 pounds per cubic foot (pcf). However, it may be advisable to use a good quality fill that can be used to raise grades in other portions of the site, such as parking and driveway areas, if necessary.

We estimate that total settlement under the surcharge fill will be in the range of two to four inches. It is estimated that 90 percent of the consolidation settlement will occur in about 4 to 6 weeks following full application of the surcharge.

To evaluate the amount of settlement and the time rate of movement, the surcharge program should be monitored by installing settlement markers. The settlement markers should be installed on the existing grade prior to placing any surcharge fill. Once installed, elevations of both the fill height and marker should be taken daily until the full height of the surcharge is in place. Once fully surcharged, readings should continue weekly until the anticipated settlements have occurred. Monitoring data should be forwarded to us within two days after it is obtained for review and comment. A typical settlement marking detail is shown on Figure 3.

It is critical that the grading contractor recognize the importance of the settlement marker installations. All efforts must be made to protect the markers from damage during fill placement. It is difficult, if not impossible, to evaluate the progress of the surcharge program if the markers are damaged or destroyed by construction equipment. If the markers are impacted, it may be necessary to install new markers and extend the surcharging time period in order to ensure that settlements have ceased and building construction can begin.

Potential long-term settlements due to secondary compression of the peat layers, which cannot be fully mitigated by surcharging, may also occur. The thickness of the peat layer is minimal and the potential secondary settlement is estimated to be on the order of one-half inch in 20 years.

Following the successful completion of the surcharge program, with foundations supported on a minimum of two feet of granular structural fill and dimensioned as recommended in Section 4.5 of this report, you should expect maximum total and differential post-construction settlement of about one-inch and one-half inch, respectively.

4.4 Excavations

All excavations at the site associated with confined spaces, such as those for utility construction, must be completed in accordance with local, state, or federal requirements. Based on current Washington Industrial Safety and Health Act (WISHA) regulations, soils found on the project site would be classified as Type C soils.

For properly dewatered excavations more than 4 feet, but less than 20 feet in depth, the side slopes should be laid back at an inclination no steeper than 1.5:1 (Horizontal:Vertical). If there is insufficient space to complete the excavations in this manner, or if excavations greater than 20 feet in depth are planned, temporary shoring to support the excavations may be required. Properly designed and installed shoring trench boxes can be used to support utility trench excavations where required.

Based on our study, groundwater should be anticipated within excavations extending below depths of about seven feet below native surface grades. Excavations extending below this depth will likely encounter groundwater with volumes and flow rates sufficient to require some level of dewatering. Shallow excavations that do not extend more than two to three feet below the groundwater table can likely be dewatered by conventional sump-pumping procedures along with a system of collection trenches. Deeper excavations will require dewatering by well points or isolated deep-pump wells. The utility subcontractor should be prepared to implement excavation dewatering by well point or deep-pump wells, as needed. This will be an especially critical consideration for any deep excavations such for lift stations and sanitary sewer tie-ins.

This information is provided solely for the benefit of the owner and other design consultants and should not be construed to imply that Terra Associates, Inc. assumes responsibility for job site safety. It is understood that job site safety is the sole responsibility of the project contractor.

4.5 Foundations

The building may be supported on conventional spread footing foundations bearing on subgrade prepared as recommended in the Site Grading and Preparation, Section 4.2 of this report. Perimeter foundations exposed to the weather should bear at a minimum depth of 1.5 feet below final exterior grades for frost protection. Interior foundations can be constructed at any convenient depth below the floor slab.

We recommend designing foundations bearing on two feet of structural fill for a net allowable bearing capacity of 2,500 psf. For short-term loads, such as wind and seismic, a one-third increase in this allowable capacity can be used. With the expected building loads and this bearing stress applied, in general, total and differential settlements should not exceed one-inch and one-half inch, respectively. The differential settlement is expected to occur between perimeter wall and interior column locations. Long-term settlement associated with secondary compression of the organic peat layer is estimated at one-half inch over the next 20 years.

For designing foundations to resist lateral loads, a base friction coefficient of 0.35 can be used. Passive earth pressures acting on the sides of the footings can also be considered. We recommend calculating this lateral resistance using an equivalent fluid weight of 300 pounds per cubic foot (pcf). We recommend not including the upper 12 inches of soil in this computation because it can be affected by weather or disturbed by future grading activity. This value assumes the foundations will be backfilled with structural fill, as described in Section 4.2 of this report. The values recommended include a safety factor of 1.5.

4.6 Slab-on-Grade Floors

Slabs on grade may be supported on subgrade prepared as recommended in Section 4.2 of this report. Immediately below the floor slabs, we recommend placing a four-inch thick capillary break layer of clean, free-draining, coarse sand or fine gravel that has less than three percent passing the No. 200 sieve. This material will reduce the potential for upward capillary movement of water through the underlying soil and subsequent wetting of the floor slabs.

The capillary break layer will not prevent moisture intrusion through the slab caused by water vapor transmission. Where moisture by vapor transmission is undesirable, such as covered floor areas, a common practice is to place a durable plastic membrane on the capillary break layer and then cover the membrane with a layer of clean sand or fine gravel to protect it from damage during construction, and aid in uniform curing of the concrete slab. It should be noted that if the sand or gravel layer overlying the membrane is saturated prior to pouring the slab, it will be ineffective in assisting in uniform curing of the slab and can actually serve as a water supply for moisture transmission through the slab and affecting floor coverings. Therefore, in our opinion, covering the membrane with a layer of sand or gravel should be avoided if floor slab construction occurs during the wet winter months and the layer cannot be effectively drained. We recommend floor designers and contractors refer to the current American Concrete Institute (ACI) Manual of Concrete Practice for further information regarding vapor barrier installation below slab-on-grade floors.

4.7 Infiltration Feasibility

Based on our study, it is our opinion that the on-site soils are not suitable for support infiltration facilities. The site is generally underlain at relatively shallow depths by impermeable silt and silty sand that would impede the downward migration of any site stormwater. In addition, shallow groundwater seepage was observed that would further impede any site stormwater. Even low impact development (LID) methods would likely fill up and overtop during rain events and cause minor local flooding. Conventional stormwater detention with controlled release to the drainage basin should be used to manage development stormwater.

4.8 Stormwater Facilities

Site drainage plans are currently not available; however, we anticipate that stormwater runoff from the development will be routed to detention vaults.

Detention Vault

Vault foundations obtaining support on native soils at depths of less than ten feet below existing surface grades can be designed for an allowable bearing capacity of 2,500 psf. At depths of greater than ten feet CPT data indicates the native sand relative density increases substantially. If vault foundations will be founded at depths of 10 feet or greater they may be designed for an allowable bearing capacity of 4,000 psf. For short-term loads, such as seismic, a one-third increase in these allowable capacities can be used.

The magnitude of earth pressure development on below-grade walls will partly depend on the quality of the wall backfill. We recommend placing and compacting wall backfill as structural fill as described in Section 4.2 of this report. To guard against hydrostatic pressure development, wall drainage must also be installed. A typical recommended wall drainage detail is shown on Figure 4.

With wall backfill placed and compacted as recommended, and drainage properly installed, we recommend designing unrestrained walls for an active earth pressure equivalent to a fluid weighing 35 pounds per cubic foot (pcf). For restrained walls, an additional uniform load of 100 psf should be added to the 35 pcf. To account for typical traffic surcharge loading, the walls can be designed for an additional imaginary height of two feet (two-foot soil surcharge). For evaluation of wall performance under seismic loading, a uniform pressure equivalent to 8H psf, where H is the height of the below-grade portion of the wall should be applied in addition to the static lateral earth pressure. These values assume a horizontal backfill condition and that no other surcharge loading, sloping embankments, or adjacent buildings will act on the wall. If such conditions exist, then the imposed loading must be included in the wall design. Friction at the base of foundations and passive earth pressure will provide resistance to these lateral loads. Values for these parameters are provided in Section 4.5 of this report.

If it is not possible to discharge collected water at the footing invert elevation, the invert elevation of the wall drainpipe could be set equivalent to the outfall invert. For any portion of the wall that falls below the invert elevation of the wall drain, an earth pressure equivalent to a fluid weighing 85 pcf should be used.

We should review the stormwater plans when they are completed and revise our recommendations, if required.

4.9 Drainage

Surface

Final exterior grades should promote free and positive drainage away from the site at all times. Water must not be allowed to pond or collect adjacent to foundations or within the immediate building areas. We recommend providing a positive drainage gradient away from the building perimeters. If this gradient cannot be provided, surface water should be collected adjacent to the structures and disposed to appropriate storm facilities

Subsurface

We recommend installing a continuous drain along the outside lower edge of the perimeter building foundations. The drains can be laid to grade at an invert elevation equivalent to the bottom of footing grade. The drains can consist of four-inch diameter perforated PVC pipe that is enveloped in washed ½- to ¾-inch gravel-sized drainage aggregate. The aggregate should extend six inches above and to the sides of the pipe. The foundation drains and roof downspouts should be tightlined separately to an approved point of controlled discharge. All drains should be provided with cleanouts at easily accessible locations. These cleanouts should be serviced at least once each year.

4.10 Utilities

Utility pipes should be bedded and backfilled in accordance with American Public Works Association (APWA), or City of Mount Vernon specifications. As a minimum, trench backfill should be placed and compacted as structural fill, as described in Section 4.2 of this report. The native alluvial soils will likely be excavated in a wet condition and would not be suitable for use as trench backfill unless dried back to a moisture content that will facilitate proper compaction. If utility construction takes place during the wet winter months, it will likely be necessary to import suitable wet weather fill for utility trench backfilling.

The utility contractor should also be prepared for encountering unstable soft alluvial and peat soils below the pipe invert elevations. If not removed from below the pipe and replaced with crushed rock or additional bedding material, pipe deflections may occur as a result of the soil yielding and compressing in response to loading imposed during trench backfilling. The need to overexcavate and stabilize the pipe foundation before backfilling should be evaluated by observation and testing during construction.

4.11 Pavements

Pavement subgrades should be prepared as described in Section 4.2 of this report. Regardless of the degree of relative compaction achieved, the subgrade must be firm and relatively unyielding before paving. The subgrade should be proofrolled with heavy rubber-tired construction equipment such as a loaded 10-yard dump truck to verify this condition.

The thickness of the various components of the pavement depends not only on the subgrade soils, but also the traffic loading conditions to which the pavement will be subjected. For design, we have assumed the traffic loading for the retail facility can be represented by design 18-kip equivalent single axle load (ESAL) of 100,000. This ESAL represents traffic loading equal to approximately six loaded (80,000-pound gross vehicle weight) tractor-trailer rigs traversing the pavement per day over a 20-year design period. If heavier traffic loading or volumes are expected, we should reevaluate the following recommended pavement section.

- Three inches of hot mix asphalt (HMA) over six inches of crushed surfacing rock
- Full Depth HMA – 5 inches

The paving materials used should conform to the Washington State Department of Transportation (WSDOT) specifications for ½-inch class HMA and crushed surfacing top and base course rock.

Long-term pavement performance will depend on surface drainage. A poorly-drained pavement section will be subject to premature failure resulting from surface water infiltrating the subgrade soils and reducing their supporting capability. For optimum performance, we recommend surface drainage gradients of at least two percent. Some degree of longitudinal and transverse cracking of the pavement surface should be expected over time. Regular maintenance should be planned to seal cracks as they occur. In addition, because of long-term secondary compression of the peat layer, some subsidence of the pavement surface resulting in depressed bird bath areas should be expected. Above normal maintenance of the pavement requiring repair of failed pavement in these areas should be planned for.

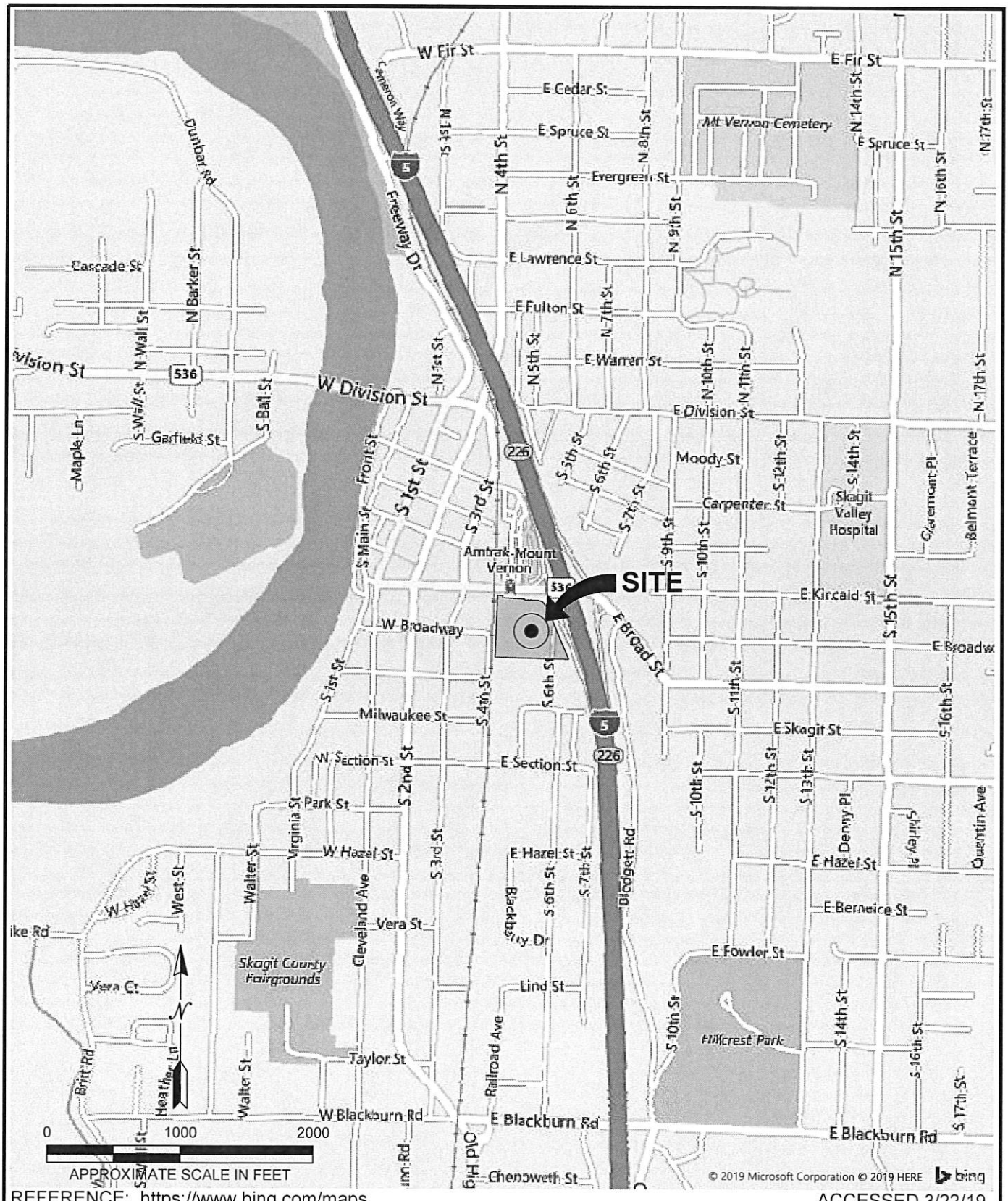
5.0 ADDITIONAL SERVICES

Terra Associates, Inc. should review project designs and specifications to verify that earthwork and foundation recommendations have been properly interpreted and incorporated into project design. We should also provide geotechnical services during construction to observe compliance with our design concepts, specifications, and recommendations. This will allow for expedient design changes if subsurface conditions differ from those anticipated prior to the start of construction.

6.0 LIMITATIONS

We prepared this report in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made. This report is the copyrighted property of Terra Associates, Inc. and is intended for specific application to the Mt. Vernon Retail project in Mount Vernon, Washington. This report is for the exclusive use of Visconsi Companies, Ltd. and their authorized representatives.

The analyses and recommendations presented in this report are based on data obtained from the subsurface explorations completed on-site. Variations in soil conditions can occur, the nature and extent of which may not become evident until construction. If variations appear evident, Terra Associates, Inc. should be requested to reevaluate the recommendations in this report prior to proceeding with construction.



REFERENCE: https://www.bing.com/maps ACCESSED 3/22/19

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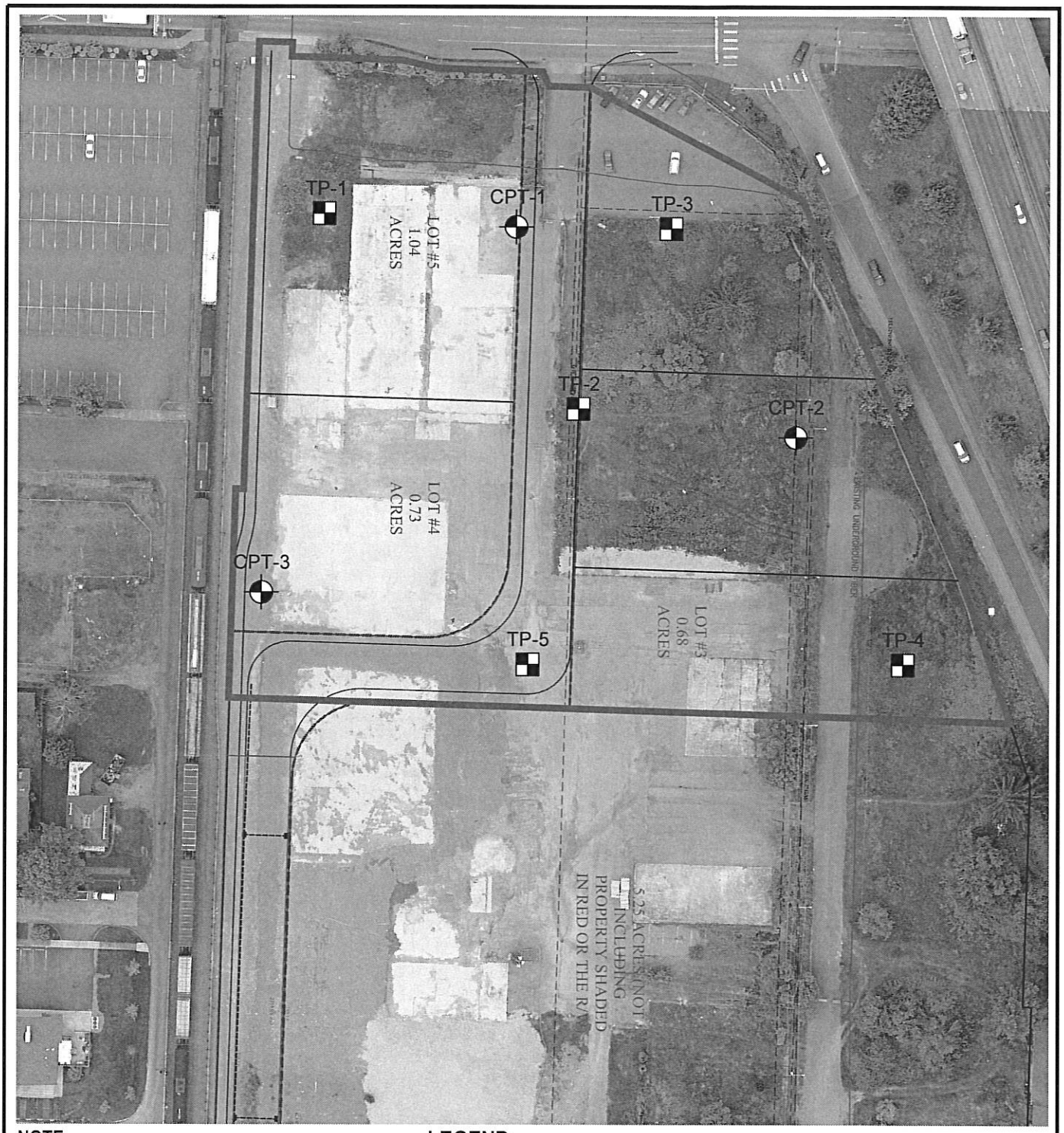
VICINITY MAP
MT VERNON RETAIL
MOUNT VERNON, WASHINGTON

Proj.No. T-8129	Date: MAR 2019	Figure 1



NOTE:

THIS SITE PLAN IS SCHEMATIC. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE. IT IS INTENDED FOR REFERENCE ONLY AND SHOULD NOT BE USED FOR DESIGN OR CONSTRUCTION PURPOSES.

REFERENCE: SITE PLAN PROVIDED CLIENT.

LEGEND:

APPROXIMATE TEST PIT LOCATION

APPROXIMATE CONE PENETRATION TEST LOCATION

0 100 200

APPROXIMATE SCALE IN FEET

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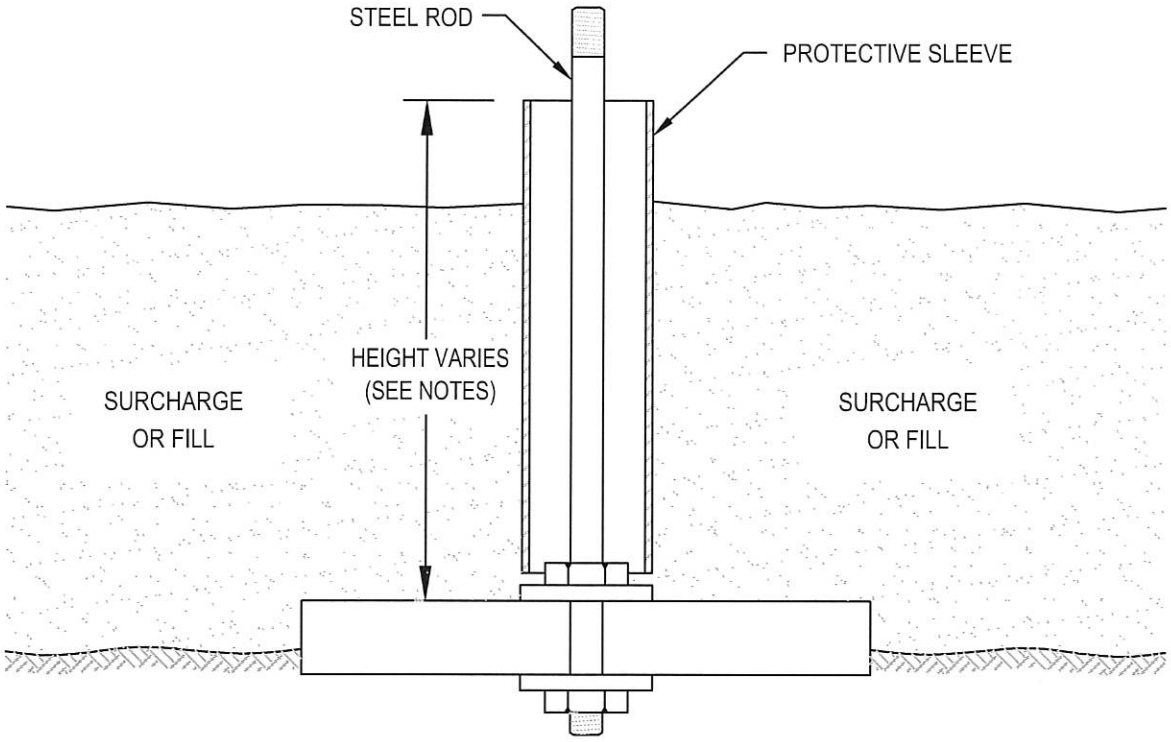
EXPLORATION LOCATION PLAN
MT VERNON RETAIL
MOUNT VERNON, WASHINGTON

Proj.No. T-8129	Date: MAR 2019	Figure 2



NOT TO SCALE

NOTES:

1. BASE CONSISTS OF 3/4" THICK, 2'x2' PLYWOOD WITH CENTER DRILLED 5/8" DIAMETER HOLE.
2. BEDDING MATERIAL, IF REQUIRED, SHOULD CONSIST OF CLEAN COARSE SAND.
3. MARKER ROD IS 1/2" DIAMETER STEEL ROD THREADED AT BOTH ENDS.
4. MARKER ROD IS ATTACHED TO BASE BY NUT AND WASHER ON EACH SIDE OF BASE.
5. PROTECTIVE SLEEVE SURROUNDING MARKER ROD SHOULD CONSIST OF 2" DIAMETER PLASTIC TUBING. SLEEVE IS NOT ATTACHED TO ROD OR BASE.
6. ADDITIONAL SECTIONS OF STEEL ROD CAN BE CONNECTED WITH THREADED COUPLINGS.
7. ADDITIONAL SECTIONS OF PLASTIC PROTECTIVE SLEEVE CAN BE CONNECTED WITH PRESS-FIT PLASTIC COUPLINGS.
8. STEEL MARKER ROD SHOULD EXTEND AT LEAST 6" ABOVE TOP OF PLASTIC PROTECTIVE SLEEVE.
9. PLASTIC PROTECTIVE SLEEVE SHOULD EXTEND AT LEAST 1" ABOVE TOP OF FILL SURFACE.

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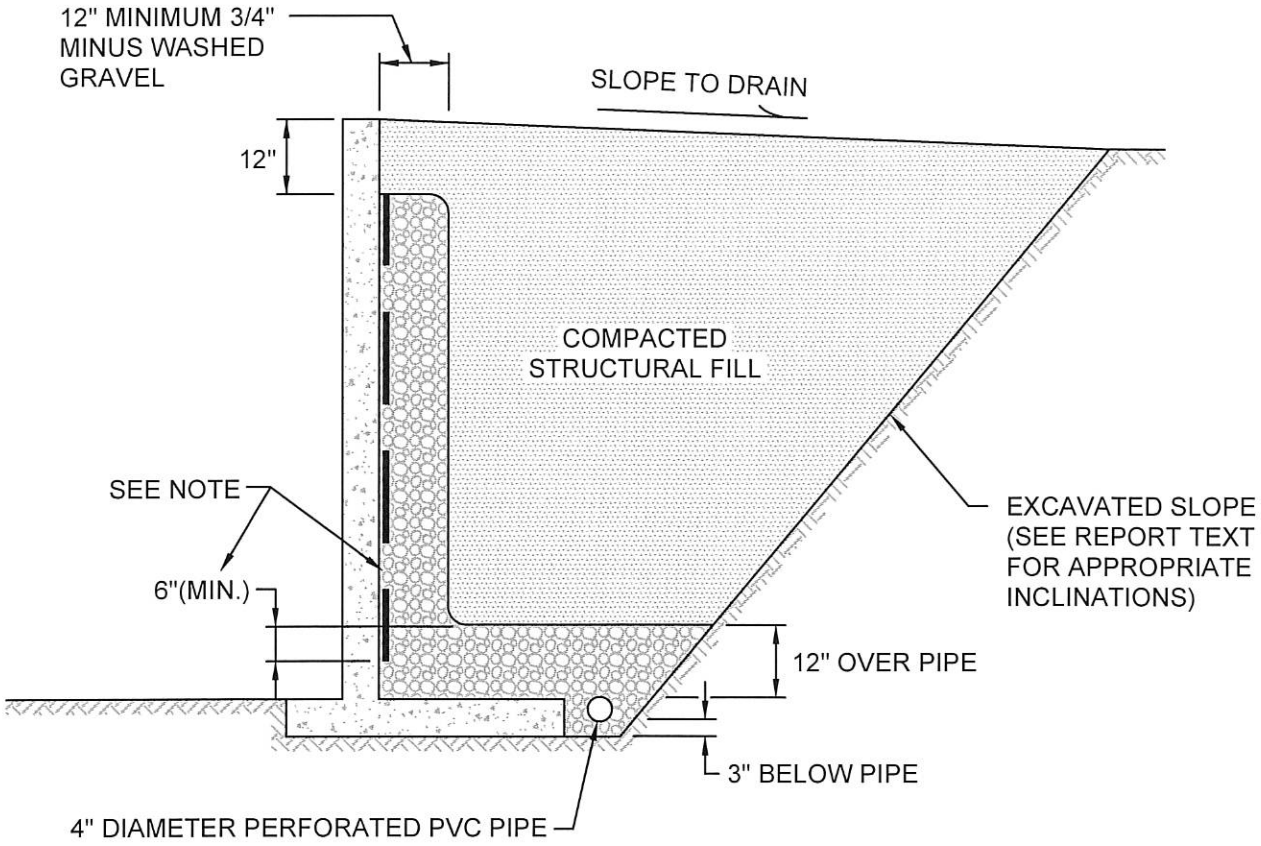
SETTLEMENT MARKER DETAIL
MT VERNON RETAIL
MOUNT VERNON, WASHINGTON

Proj.No. T-8129	Date: MAR 2019	Figure 3



NOT TO SCALE

NOTE:

MIRADRAIN G100N PREFABRICATED DRAINAGE PANELS OR SIMILAR PRODUCT CAN BE SUBSTITUTED FOR THE 12-INCH WIDE GRAVEL DRAIN BEHIND WALL. DRAINAGE PANELS SHOULD EXTEND A MINIMUM OF SIX INCHES INTO 12-INCH THICK DRAINAGE GRAVEL LAYER OVER PERFORATED DRAIN PIPE.

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TYPICAL WALL DRAINAGE DETAIL
MT VERNON RETAIL
MOUNT VERNON, WASHINGTON

Proj.No. T-8129	Date: MAR 2019	Figure 4

APPENDIX A
FIELD EXPLORATION AND LABORATORY TESTING

Mt. Vernon Retail
Mount Vernon, Washington

On March 12, 2019, we completed our site exploration by observing soil conditions at 5 test pits. The test pits were excavated using a mini-trackhoe to maximum depth of approximately eight to ten feet below existing site grades. Test pit locations were determined in the field by measuring from existing site features. The approximate location of the test pit is shown on the attached Exploration Location Plan, Figure 2. Test Pit Logs are presented on Figures A-2 through A-6.

A geotechnical engineer from our office conducted the field exploration. Our representative classified the soil conditions encountered, maintained a log of each test pit, obtained representative soil samples, and recorded water levels observed during excavation. All soil samples were visually classified in accordance with the Unified Soil Classification System (USCS) described on Figure A-1.

Representative soil samples obtained from the test pits were placed in sealed plastic bags and taken to our laboratory for further examination and testing. The moisture content of selected samples was measured and is reported on the corresponding Test Pit Logs. Grain size analyses were also performed on select samples. The results are shown on Figure A-7.

InSitu Engineering, under subcontract with Terra Associates, Inc. conducted four electric CPTs at locations selected by Terra Associates, Inc. which are shown on Figure 2. The CPTs were advanced to depths of 73 to 76 feet below the surface. The CPT is an instrumented approximately 1 ½-inch diameter cone that is pushed into the ground at a constant rate. During advancement, continuous measurements are made of the resistance to penetration of the cone and the friction of the outer surface of the sleeve. The cone is also equipped with a porous filter and a pressure transducer for measuring groundwater or pore water pressure generated. Measurements of tip and sleeve frictional resistance, pore pressure, and interpreted soil conditions are summarized in graphical form on the attached CPT Logs.

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MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTION
COARSE GRAINED SOILS (More than 50% material larger than No. 200 sieve size)	**GRAVELS** More than 50% of coarse fraction is larger than No. 4 sieve	Clean Gravels (less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines.
		Gravels with fines	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS More than 50% of coarse fraction is smaller than No. 4 sieve	Clean Sands (less than 5% fines)	SW	Well-graded sands, sands with gravel, little or no fines.
			SP	Poorly-graded sands, sands with gravel, little or no fines.
		Sands with fines	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS (More than 50% material smaller than No. 200 sieve size)	**SILTS AND CLAYS** Liquid Limit is less than 50%		ML	Inorganic silts, rock flour, clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity. (Lean clay)
			OL	Organic silts and organic clays of low plasticity.
	SILTS AND CLAYS Liquid Limit is greater than 50%		MH	Inorganic silts, elastic.
			CH	Inorganic clays of high plasticity. (Fat clay)
			OH	Organic clays of high plasticity.
HIGHLY ORGANIC SOILS			PT	Peat.

DEFINITION OF TERMS AND SYMBOLS

COHESIONLESS

Density	Standard Penetration Resistance in Blows/Foot
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	>50

COHESIVE

Consistancy	Standard Penetration Resistance in Blows/Foot
Very Soft	0-2
Soft	2-4
Medium Stiff	4-8
Stiff	8-16
Very Stiff	16-32
Hard	>32

I	2" OUTSIDE DIAMETER SPILT SPOON SAMPLER
II	2.4" INSIDE DIAMETER RING SAMPLER OR SHELBY TUBE SAMPLER
▼	WATER LEVEL (Date)
Tr	TORVANE READINGS, tsf
Pp	PENETROMETER READING, tsf
DD	DRY DENSITY, pounds per cubic foot
LL	LIQUID LIMIT, percent
PI	PLASTIC INDEX
N	STANDARD PENETRATION, blows per foot

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UNIFIED SOIL CLASSIFICATION SYSTEM
MT VERNON RETAIL
MOUNT VERNON, WASHINGTON

Proj.No. T-8129	Date: MAR 2019	Figure A-1

LOG OF TEST PIT NO. TP-1

FIGURE A-2

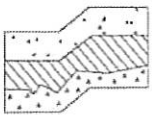
PROJECT NAME: Mt. Vernon Retail **PROJ. NO:** T-8129 **LOGGED BY:** MJX

LOCATION: Mount Vernon, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** N/A

DATE LOGGED: March 12, 2019 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0				
1		(1-inch organic TOPSOIL) (3 inches 5/8" minus CRUSHED ROCK) FILL: Brown silty SAND with gravel, fine to medium sand, fine to coarse gravel, moist, occasional cobble. (SM)		9.4
2				30.7
		Light brown silty SAND, fine sand, moist, trace roots. (SM)		
3				9.9
		Gray silty SAND, fine sand, dry to moist. (SM)		
4			Medium Dense	
5				
6				37.1
		Gray silty SAND, fine sand, moist, mottled, frequent silt seams. (SM)		
7				
8				
9				36.0
		Test pit terminated at approximately 9 feet. No groundwater seepage observed. No caving observed.		
10				
11				
12				
13				
14				
15				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-2

FIGURE A-3

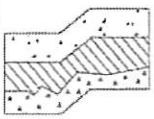
PROJECT NAME: Mt. Vernon Retail **PROJ. NO:** T-8129 **LOGGED BY:** MJX

LOCATION: Mount Vernon, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** N/A

DATE LOGGED: March 12, 2019 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8 inches ORGANIC TOPSOIL)		
1		FILL: Brown silty SAND with gravel, fine to medium sand, fine to coarse gravel, moist, trace roots, occasional sand with silt and gravel inclusions. (SM)		17.3
2		*6-inch thick concrete slab observed at approximately 18 inches.		
3		*1-inch diameter PVC pipe observed at approximately 3 feet.	Medium Dense	43.8
4		Gray sandy SILT to SILT with sand, fine sand, moist, mottled, interbedded silty sand layers, occasional roots. (ML)		
5				
6		*1-foot diameter log observed at approximately 6 feet.		51.3
7				424.8
8		Brown organic PEAT, fibrous, wet. (PT)	Very Loose	
9		Gray SILT, moist. (ML)	Stiff	48.6
10		Test pit terminated at approximately 10 feet. No groundwater seepage observed. No caving observed.		
11				
12				
13				
14				
15				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-3

FIGURE A-4

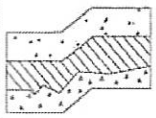
PROJECT NAME: Mt. Vernon Retail **PROJ. NO:** T-8129 **LOGGED BY:** MJX

LOCATION: Mount Vernon, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** N/A

DATE LOGGED: March 12, 2019 **DEPTH TO GROUNDWATER:** 9 Feet **DEPTH TO CAVING:** N/A

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(6 inches ORGANIC TOPSOIL)		
1		FILL: Brown silty SAND, fine to medium sand, moist, scattered rootlets, scattered trash, trace gravel, occasional cobble, occasional silt with gravel inclusions. (SM)		26.3
2				
3				
4				34.8
		Gray sandy SILT, fine sand, moist, mottled, trace roots. (ML)		
5			Medium Dense	44.4
6				33.1
		Gray silty SAND to sandy SILT, fine sand, moist, mottled, frequent silt layers. (SM/ML)		
7				
8				
▼ 9				34.4
10				37.1
		Test pit terminated at approximately 10 feet. Moderate groundwater seepage observed at approximately 9 feet. No caving observed.		
11				
12				
13				
14				
15				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



Terra Associates, Inc.
Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences

LOG OF TEST PIT NO. TP-4

FIGURE A-5

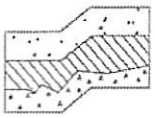
PROJECT NAME: Mt. Vernon Retail **PROJ. NO:** T-8129 **LOGGED BY:** MJX

LOCATION: Mount Vernon, Washington **SURFACE CONDITIONS:** Grass **APPROX. ELEV:** N/A

DATE LOGGED: March 12, 2019 **DEPTH TO GROUNDWATER:** 8 Feet **DEPTH TO CAVING:** N/A

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(8 inches ORGANIC TOPSOIL)		
1		FILL: Brown silty SAND, fine to coarse sand, moist, trace gravel, trace rootlets, trace brick debris. (SM)		11.6
2				
3		Gray silty SAND to sandy SILT, fine sand, moist, mottled, occasional root, occasional cobble, occasional silt seam. (SM/ML)		38.1
4			Medium Dense	
5				32.1
6		Gray SILT with sand to sandy SILT, fine sand, moist, mottled, occasional root. (ML)		50.0
7				
▼ 8		Gray SAND, fine to coarse sand, wet, trace gravel. (SP)		30.3
9		Test pit terminated at approximately 9 feet. Light groundwater seepage observed at approximately 8 feet. No caving observed.		24.4
10				
11				
12				
13				
14				
15				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. TP-5

FIGURE A-6

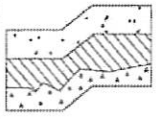
PROJECT NAME: Mt. Vernon Retail **PROJ. NO:** T-8129 **LOGGED BY:** MJX

LOCATION: Mount Vernon, Washington **SURFACE CONDITIONS:** Asphalt **APPROX. ELEV:** N/A

DATE LOGGED: March 12, 2019 **DEPTH TO GROUNDWATER:** 7 Feet **DEPTH TO CAVING:** 7 to 8 Feet

Depth (ft)	Sample No.	Description	Consistency/ Relative Density	W (%)
0		(3 inches ASPHALT) (4 inches 5/8" minus CRUSHED ROCK)	Dense	6.7
1		FILL: Brown silty SAND with gravel, fine to coarse sand, fine to coarse gravel, moist, trace brick debris, occasional cobble, occasional silt inclusions. (SM)		15.2
2		Light brown silty SAND, fine sand, moist, mottled. (SM)		22.1
3				
4		Gray silty SAND, fine sand, moist, mottled. (SM)	Medium Dense	19.6
5				
6				28.6
▼ 7		Gray SAND, fine to coarse sand, wet, trace gravel. (SP)	Loose to Medium Dense	
8		Test pit terminated at approximately 8 feet. Moderate groundwater seepage observed at approximately 7 feet. Slight caving observed from approximately 7 to 8 feet.		26.7
9				
10				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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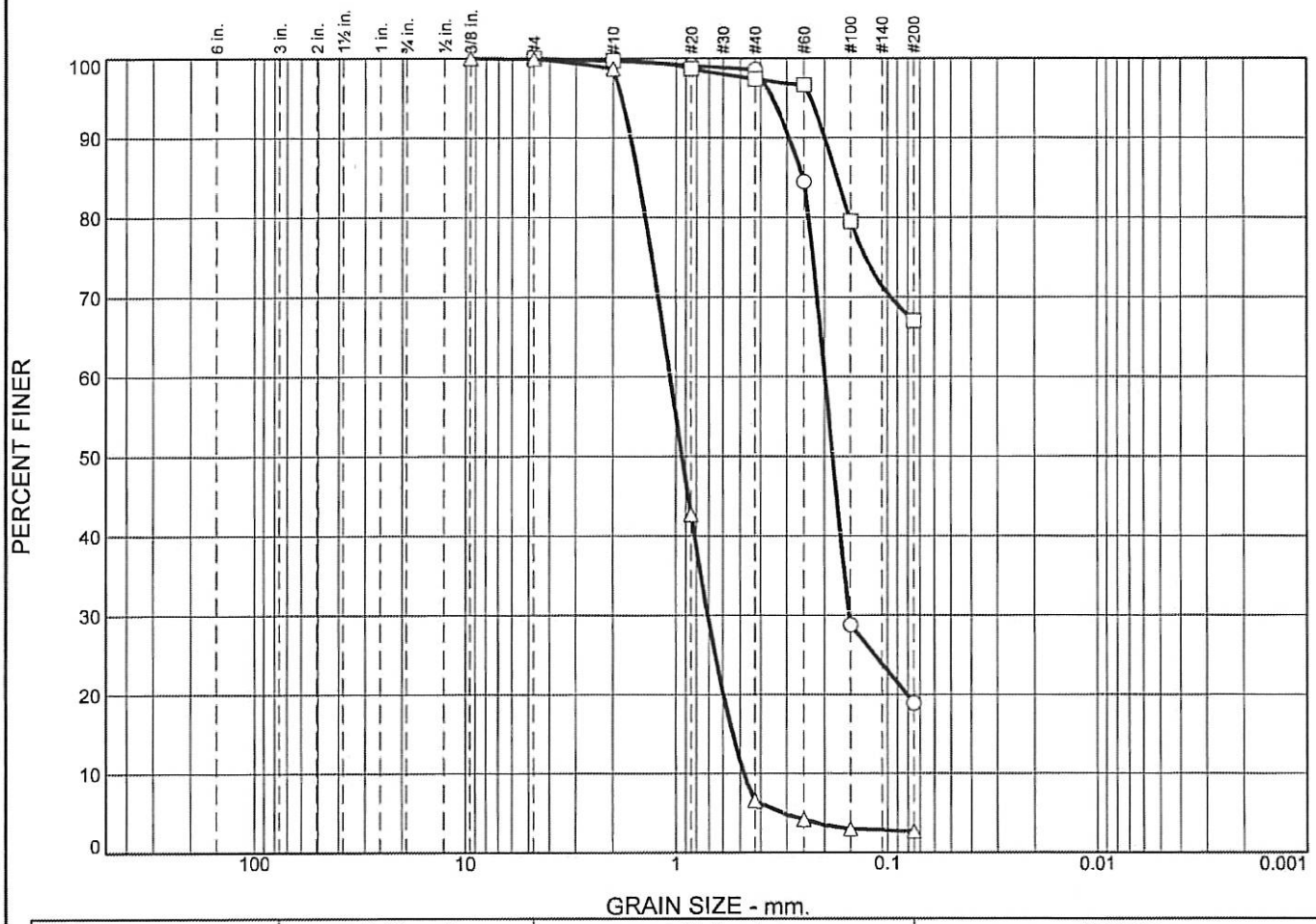
Geology and
Environmental Earth Sciences

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.3	1.1	79.7	18.9	
□	0.0	0.0	0.0	0.3	2.3	30.4	67.0	
△	0.0	0.0	0.1	1.2	92.2	3.8	2.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.2540	0.1989	0.1832	0.1521				
□			0.1748							
△			1.5144	1.0673	0.9369	0.7083	0.5427	0.4801	0.98	2.22

Material Description	USCS	AASHTO
○ silty SAND	SM	
□ sandy SILT	ML	
△ SAND	SP	

Project No. T-8129 **Client:** Visconsi Companies, Ltd.

Project: Mt. Vernon Retail

○ **Location:** Test Pit TP-1 **Depth:** -3 feet **Sample Number:** 3

□ **Location:** Test Pit TP-3 **Depth:** -4 feet **Sample Number:** 2

△ **Location:** Test Pit TP-5 **Depth:** -8 feet **Sample Number:** 6

Terra Associates, Inc.

Kirkland, WA

Remarks:

○ Tested on March 19, 2019

□ Tested on March 19, 2019

△ Tested on March 19, 2019

Figure A-7

Tested By: FQ

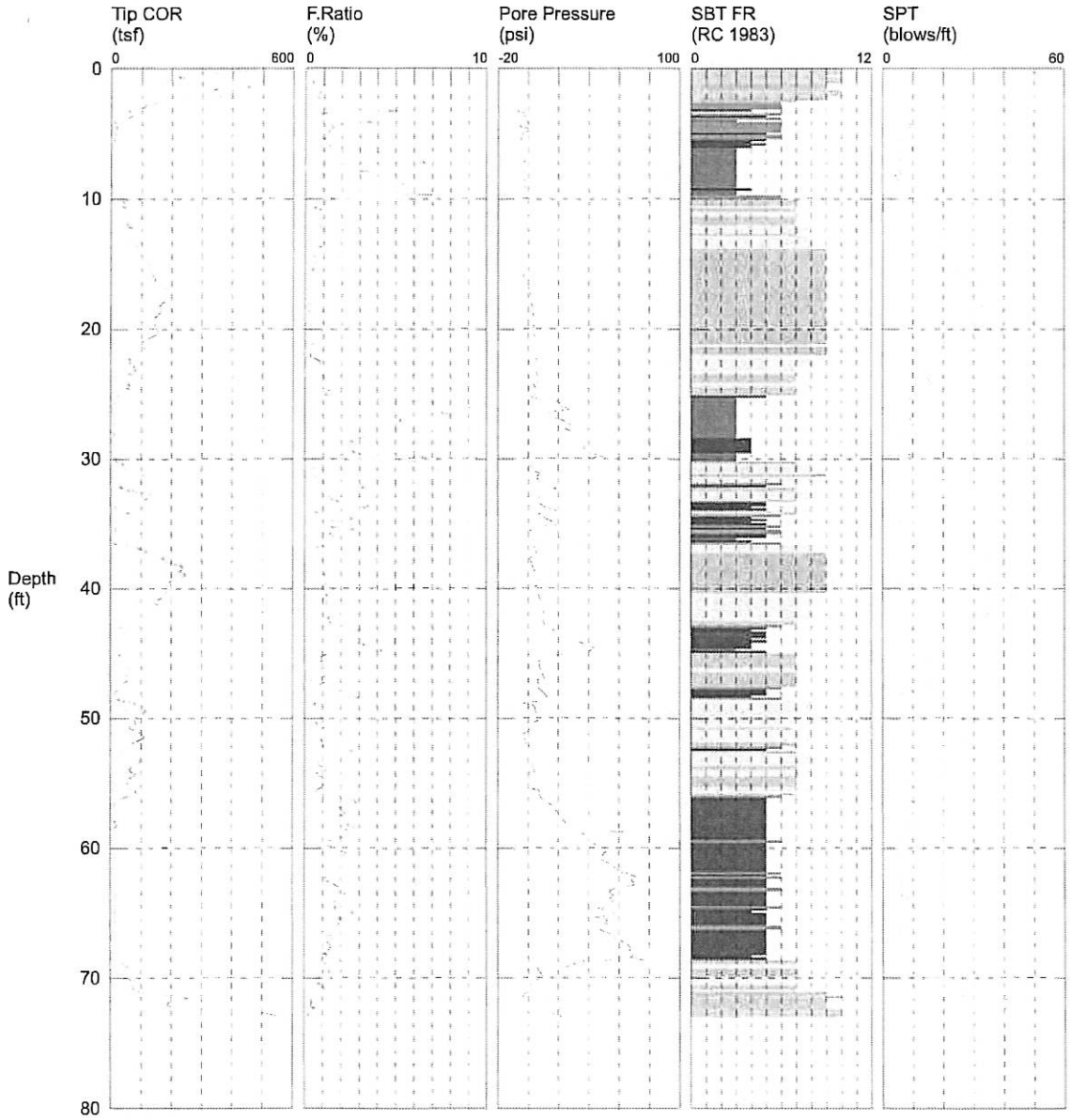
APPENDIX B

CPT LOGS

CPT-01

CPT CONTRACTOR: In Situ Engineering
CUSTOMER: Terra
LOCATION: Mt Vernon
JOB NUMBER: T-8129
NOTES: Refused at 550 TSF

OPERATOR: Mayfield
CONE ID: DDG1424
TEST DATE: 3/7/2019 10:24:58 AM
PREDRILL:
BACKFILL: 20% Bentonite Slurry
SURFACE PATCH: Cold Patch



COMMENT:

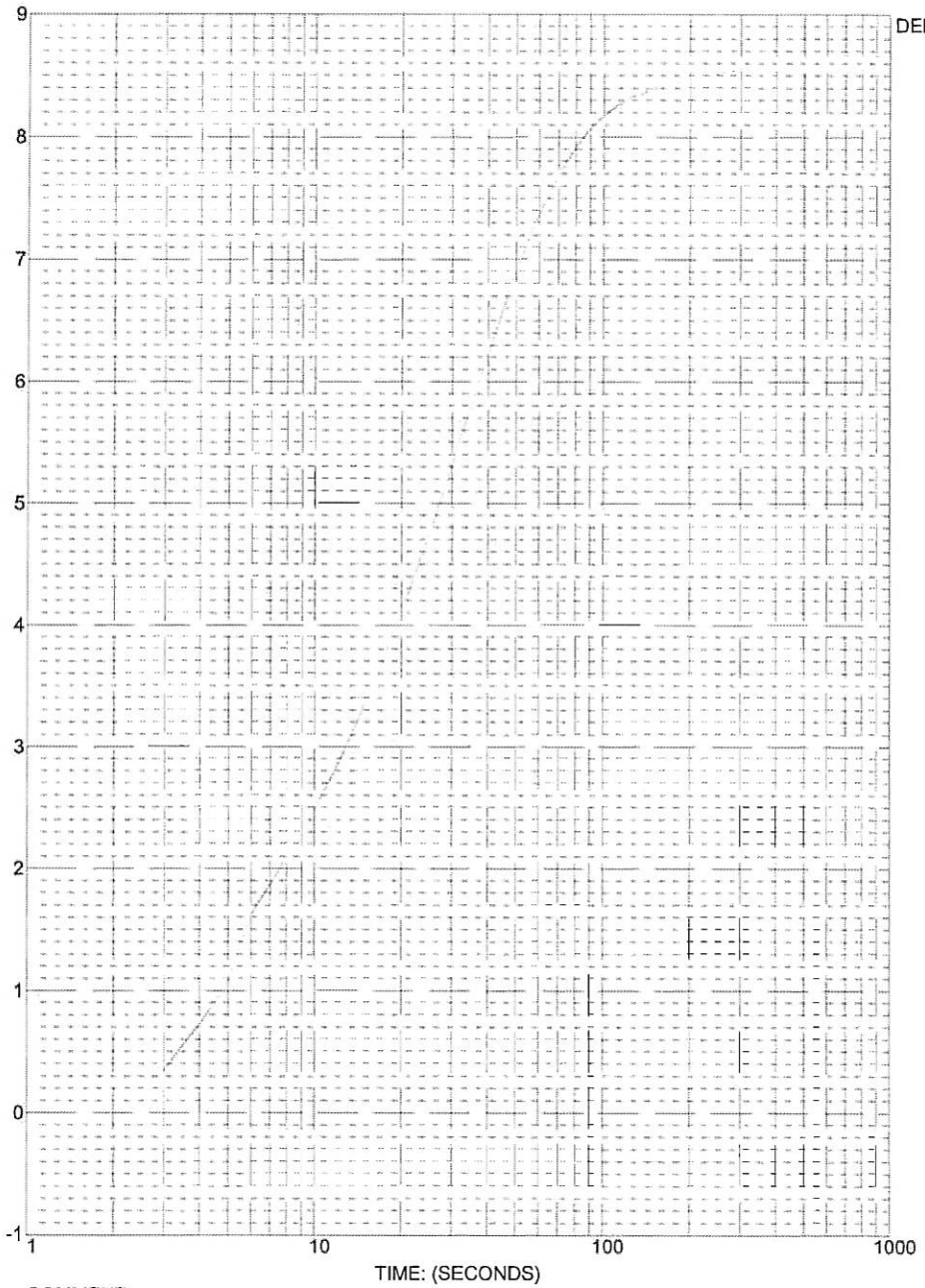
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

CPT-01

CPT CONTRACTOR: In Situ Engineering
CUSTOMER: Terra
LOCATION: Mt Vernon
JOB NUMBER: T-8129

OPERATOR: Mayfield
CONE ID: DDG1424
TEST DATE: 3/7/2019 9:05:54 AM
PREDRILL:
BACKFILL: 20% Bentonite Slurry
SURFACE PATCH: Cold Patch

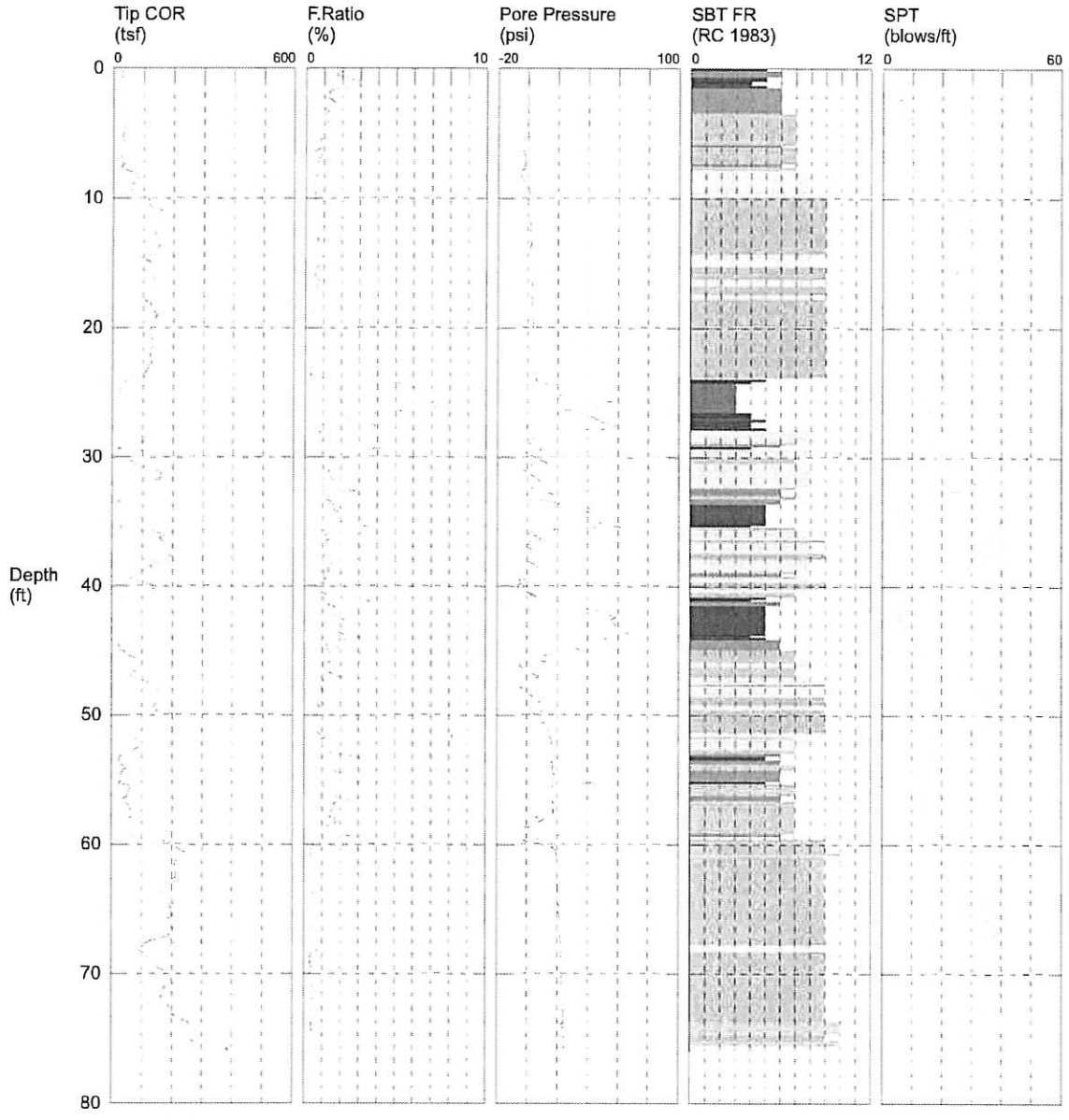


COMMENT:

CPT-02

CPT CONTRACTOR: In Situ Engineering
CUSTOMER: Terra
LOCATION: Mt Vernon
JOB NUMBER: T-8129
NOTES: Refused at 450 TSF, lifting track

OPERATOR: OKBAY/MAYFIELD
CONE ID: DDG1263
TEST DATE: 3/7/2019 9:05:54 AM
PREDRILL:
BACKFILL: 20% Bentonite Slurry
SURFACE PATCH:



COMMENT:

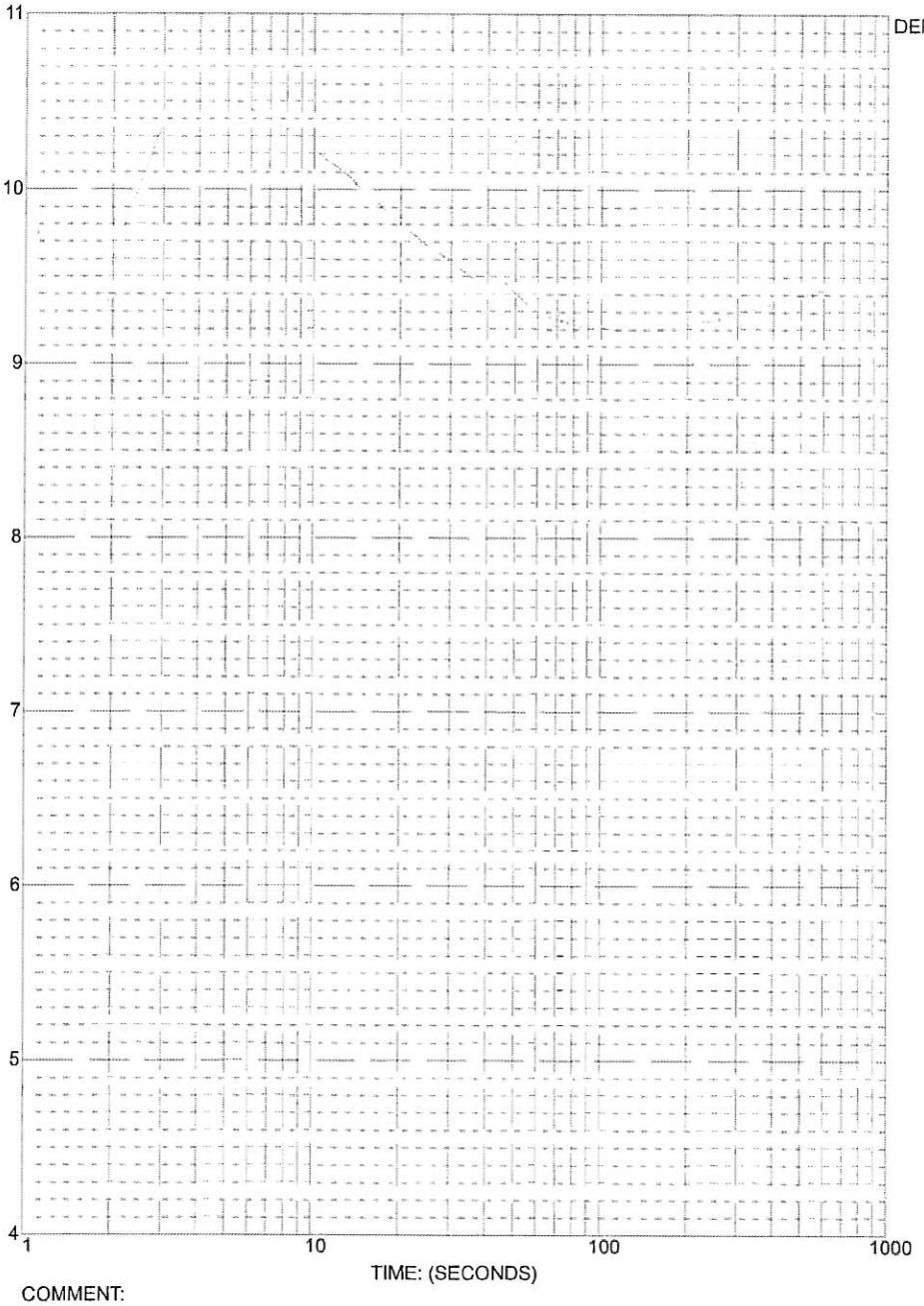
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

CPT-02

CPT CONTRACTOR: In Situ Engineering
CUSTOMER: Terra
LOCATION: Mt Vernon
JOB NUMBER: T-8129

OPERATOR: OKBAY/MAYFIELD
CONE ID: DDG1263
TEST DATE: 3/7/2019 9:05:54 AM
PREDRILL:
BACKFILL: 20% Bentonite Slurry
SURFACE PATCH:



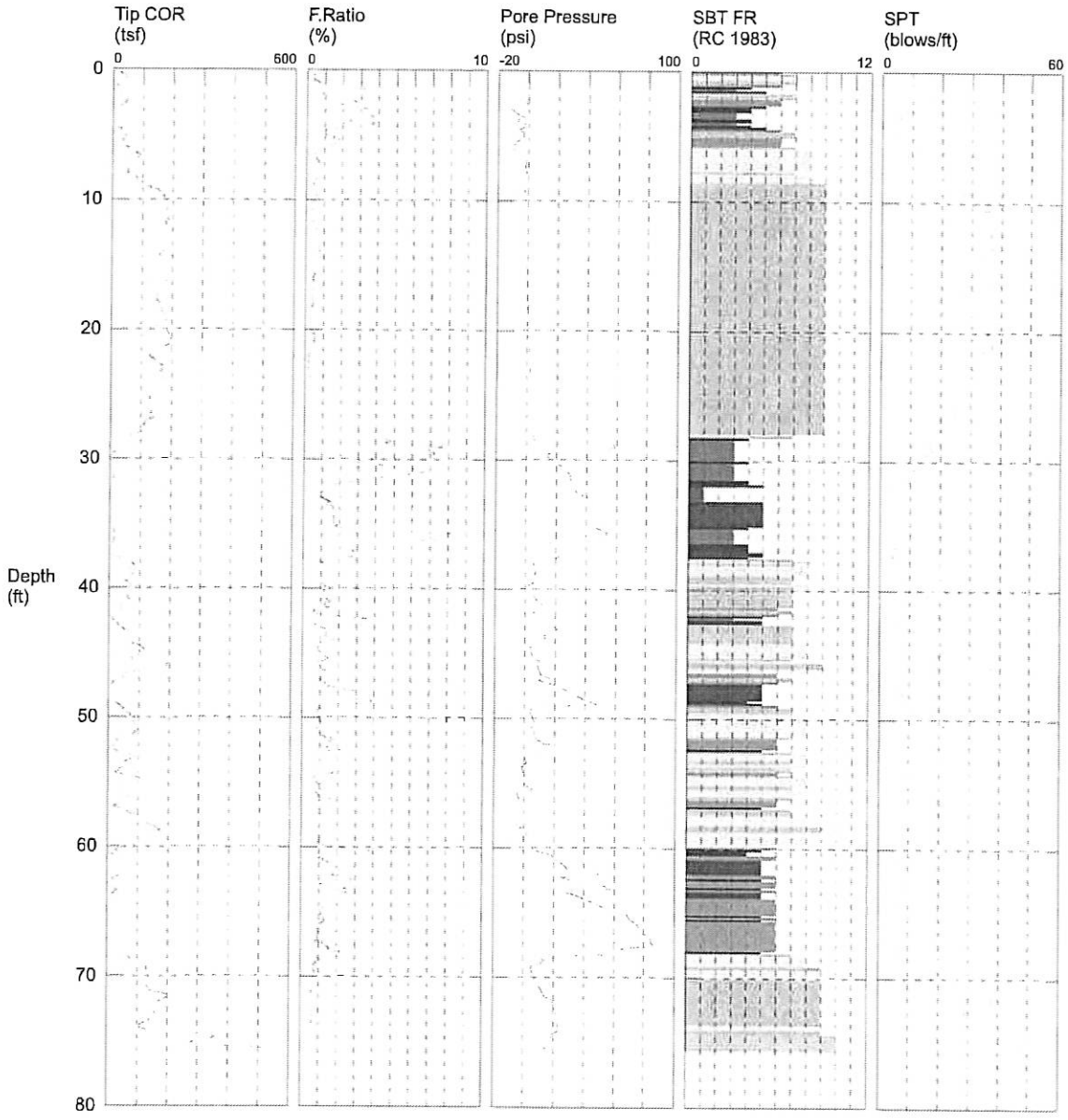
≥ 14.3'

COMMENT:

CPT-03

CPT CONTRACTOR: In Situ Engineering
CUSTOMER: Terra
LOCATION: Mt Vernon
JOB NUMBER: T-8129
NOTES: Refused at 550 TSF

OPERATOR: Mayfield
CONE ID: DDG1424
TEST DATE: 3/7/2019 9:13:12 AM
PREDRILL:
BACKFILL: 20% Bentonite Slurry
SURFACE PATCH:



COMMENT:

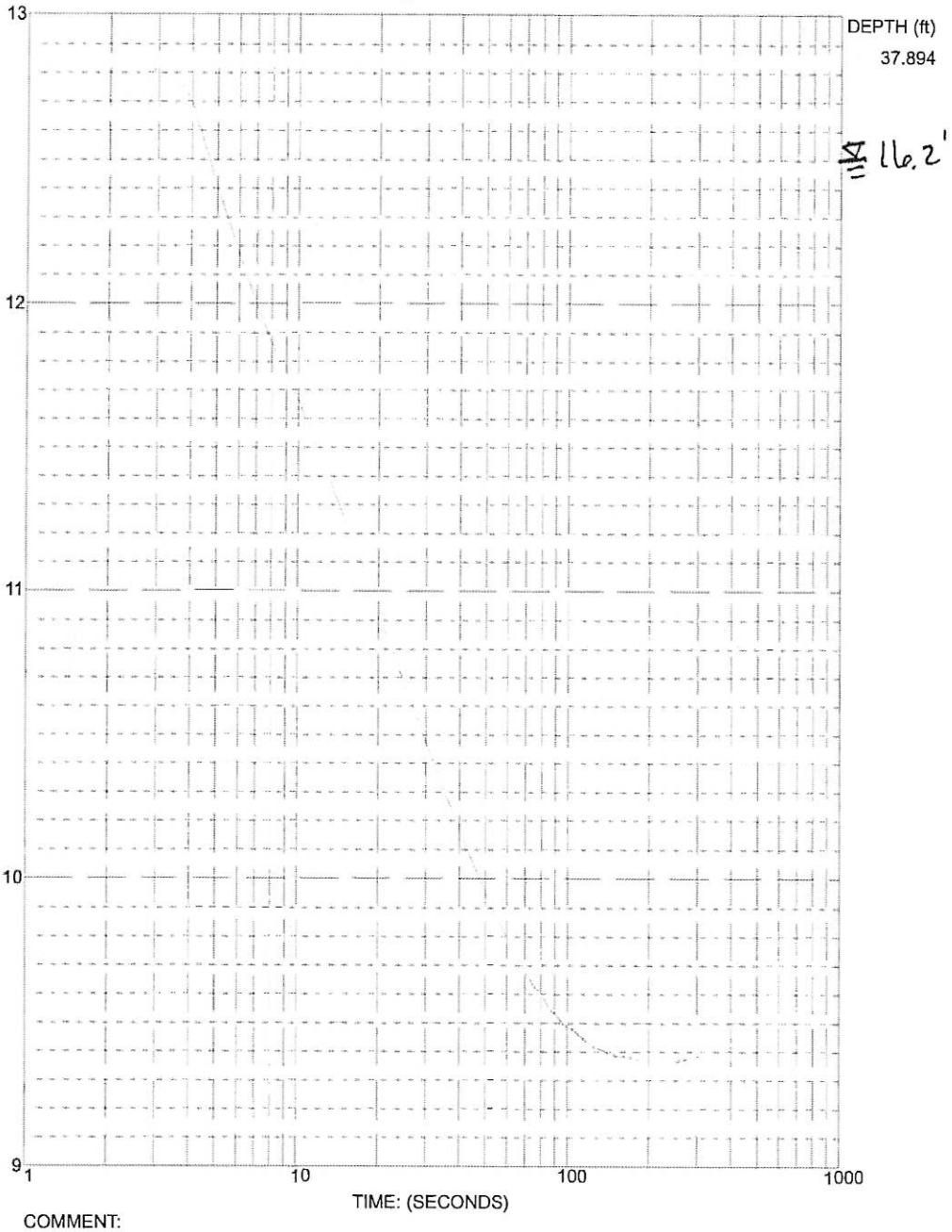
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

CPT-03

CPT CONTRACTOR: In Situ Engineering
CUSTOMER: Terra
LOCATION: Mt Vernon
JOB NUMBER: T-8129
NOTES: Refused at 550 TSF

OPERATOR: Mayfield
CONE ID: DDG1424
TEST DATE: 3/7/2019 9:05:54 AM
PREDRILL:
BACKFILL: 20% Bentonite Slurry
SURFACE PATCH:



COMMENT:

APPENDIX C

LIQUEFACTION ANALYSIS RESULTS

LIQUEFACTION ANALYSIS

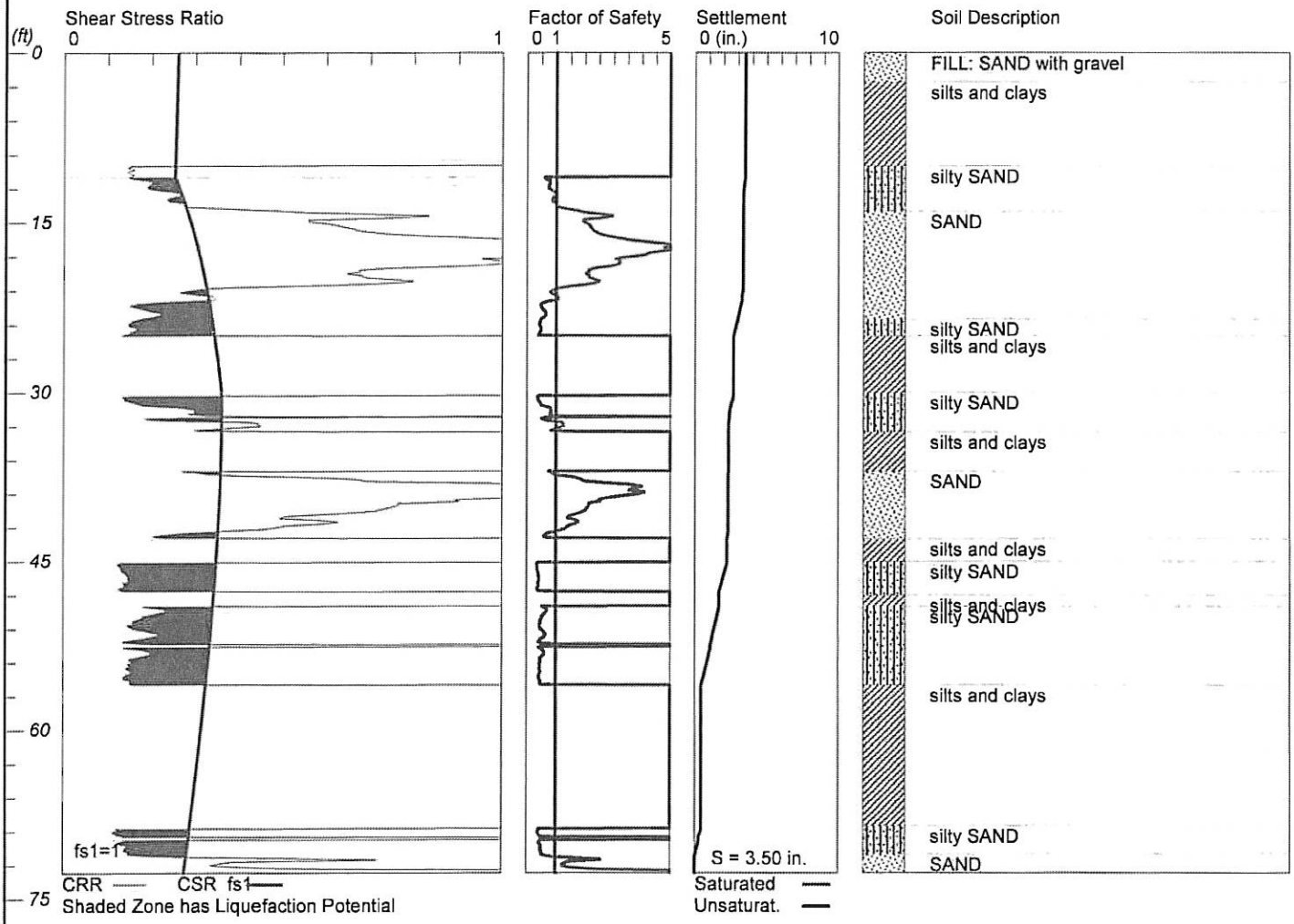
CPT-1

Hole No.=CPT-1 Water Depth=11 ft

Ground Improvement of Fill=1 ft

Magnitude=7

Acceleration=0.398g



LIQUEFACTION ANALYSIS

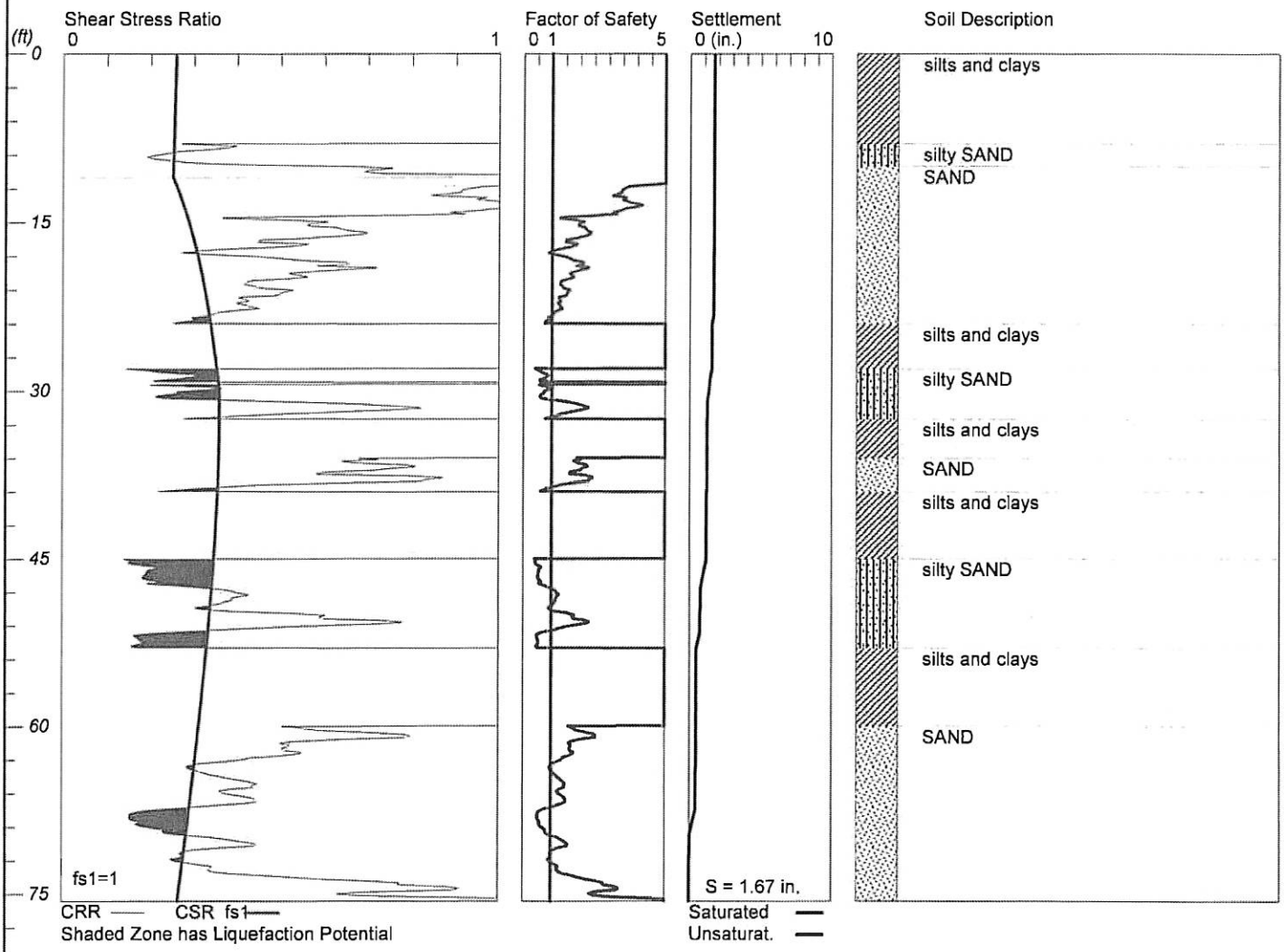
CPT-2

Hole No.=CPT-2 Water Depth=11 ft

Ground Improvement of Fill=1 ft

Magnitude=7

Acceleration=0.398g



LIQUEFACTION ANALYSIS

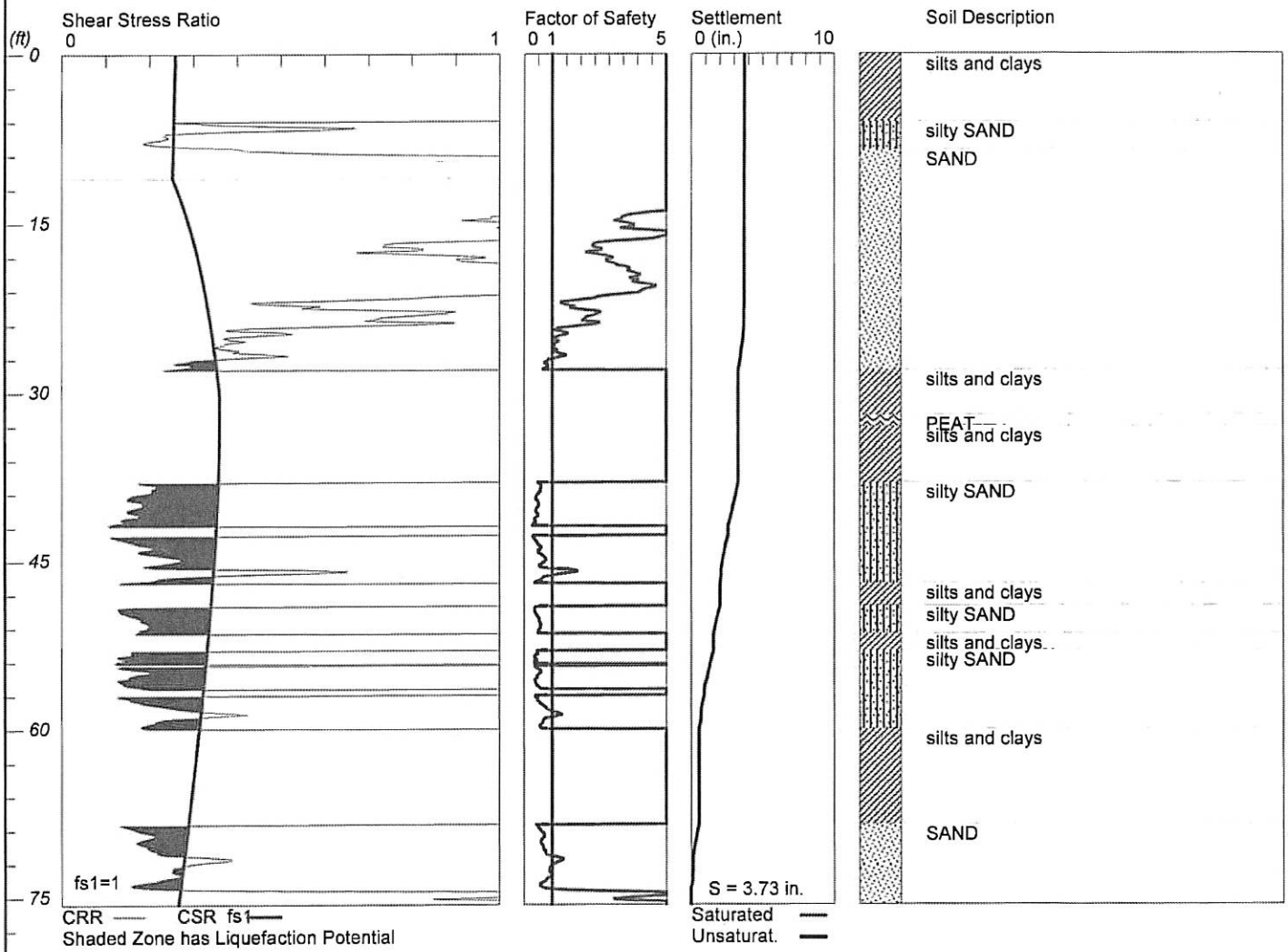
CPT-3

Hole No.=CPT-3 Water Depth=11 ft

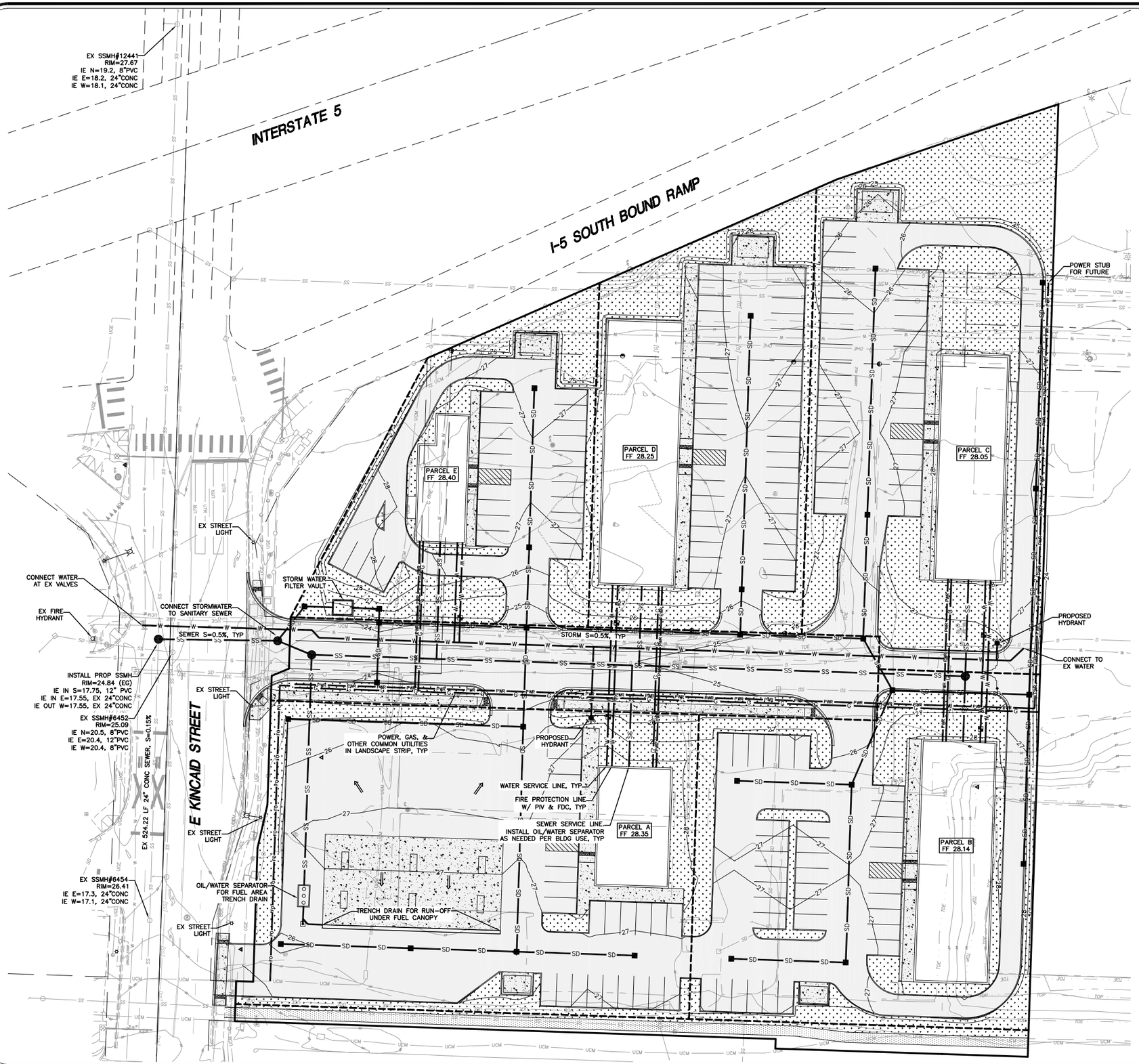
Ground Improvement of Fill=1 ft

Magnitude=7

Acceleration=0.398g



8 APPENDIX II – PROJECT DRAWINGS



GRAPHIC SCALE

0 15 30 60

(IN FEET)
1 inch = 30 ft.
24" X 36" PLOT

PROPOSED LEGEND

- = PROPOSED STORM CATCHBASIN
- = PROPOSED SEWER MANHOLE
- = PROPOSED SANITARY SEWER CLEANOUT
- = PROPOSED FIRE HYDRANT
- = PROPOSED WATER METER
- SD = PROPOSED STORM WATER LINE
- SS = PROPOSED SEWER LINE
- W W = PROPOSED WATER LINE
- PWR PWR = PROPOSED POWER LINE
- G G = PROPOSED GAS LINE
- FO FO = PROPOSED FIBER OPTIC
- 25 = PROPOSED CONTOUR (INDEX)
- 24 = PROPOSED CONTOUR (NORMAL)
- = PROPOSED ASPHALT
- = PROPOSED CONCRETE
- = PROPOSED TRAIL
- = PROPOSED LANDSCAPE AREA

STORMWATER NOTES

1. INFILTRATION INFEASIBLE PER THE DRAFT GEOTECHNICAL REPORT, PREPARED BY TERRA ASSOCIATED INC, mARCH 29, 2019.
2. THIS PROJECT REQUIRES TREATMENT, WHICH IS EXPECTED BE PROVIDED BY A FILTER VAULT, INSTALLED AT THE END OF ON-SITE STORMWATER CONVEYANCE, BEFORE CONNECTING TO THE COMBINED SEWER LINE NEAR KINCAID.
3. PER THE 2014 STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON, VOLUME 1, APPENDIX I-E, THE SKAGIT RIVER IS CONSIDERED A FLOW CONTROL EXEMPT SURFACE WATER, THUS WILL NOT REQUIRE DETENTION.
4. PER THE 2014 STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON, VOLUME 1, APPENDIX I-C, THE SKAGIT RIVER IS LISTED AS A BASIC TREATMENT RECEIVING WATER, THUS DOES NOT REQUIRED ENHANCED TREATEMENT FOR THE COMMERCIAL DEVELOPMENT.

LDES, INC.
5160 INDUSTRIAL PL. #108
FERNDALE, WA 98248
PHONE 360-383-0620
FAX 360-383-0639

RANON LLANSOTY
REGISTERED PROFESSIONAL ENGINEER
4-10-19

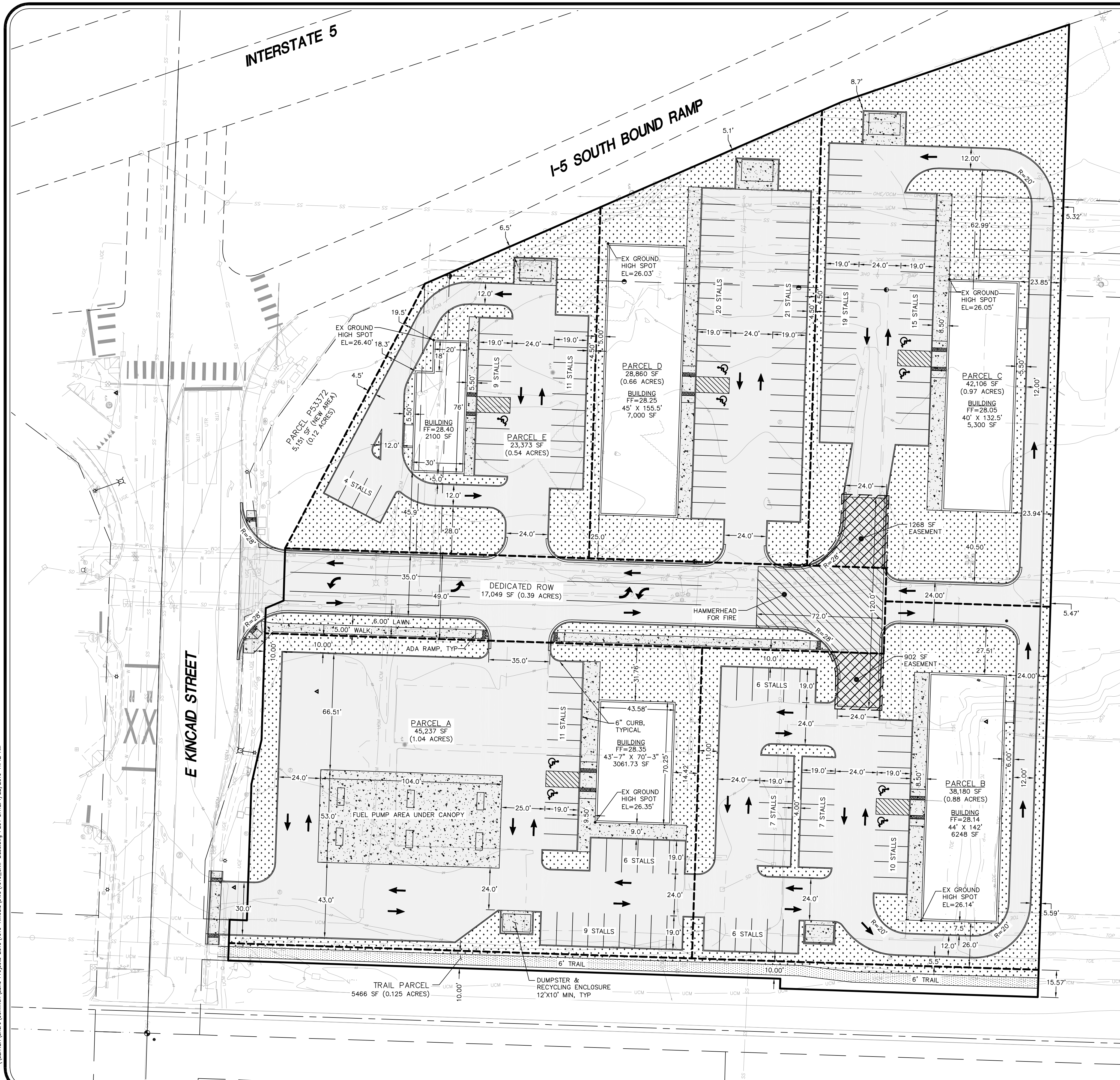
JOB NO.: 1910
DWG. NAME: 1910_Civil-Base.dwg
DESIGNED BY: RL
DRAWN BY: RL
CHECKED BY: RL
OWNER:
VISCONSI COMPANIES LTD
30050 CHAGRIN BOULEVARD
SUITE 330
PEPPER PILE, OH 44124

CITY OF MOUNT VERNON, SKAGIT COUNTY, WASHINGTON
SWC SR 5 & EAST KINCAID STREET PROJECT

UTILITY PLAN
STORMWATER, SEWER, WATER, ETC

NO.	REVISION	BY	DATE
1	PRELIMINARY EXHIBITS	RL	04/10/19

SHEET 02
OF 02



GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.
24" X 36" PLOT

PROPOSED LEGEND

- = PROPOSED ASPHALT
- = PROPOSED CONCRETE
- = PROPOSED TRAIL
- = PROPOSED LANDSCAPE AREA
- = PROPOSED HAMMERHEAD TURNING AREA
- = PROPOSED EASEMENT AREA
- = PROPOSED EASMENT LINE
- = PROPOSED LOT LINE

PROJECT SUMMARY

APPLICANT/CONTACT	VWA-MOUNT VERNON, LLC 30050 CHAGRIN BOULEVARD, SUITE 360 PEPPER PIKE, OH 44124 CONTACT: SHAWN JURISCH, (216)464-5550
SITE ADDRESS	SEE EXISTING PARCEL TABLE
ASSESSOR'S PARCEL #	SEE EXISTING PARCEL TABLE
CITY ZONING	C-2 GENERAL COMMERCIAL DISTRICT
SITE AREA	200,285 SF (4.60 ACRES)
PROJECT DESCRIPTION	- 5 PARCELS FOR RETAIL/COMMERCIAL: PARCEL A: C-STORE W/ 12 FUELING DISPENSERS PARCEL B: MULTI-TENANT BUILDING & FAST FOOD W/ DRIVE-THRU PARCEL C: FAST FOOD W/ DRIVE-THRU PARCEL D: HIGH TURNOVER SIT DOWN RESTAURANT PARCEL E: COFFE SHOP W/ DRIVE-THRU - DEDICATED ROW PARCEL - TRAIL PARCEL - PROVIDE STORM, SEWER, WATER & DRY UTILTIES - PAVED PARKING AREAS
PROPOSED LOT COVERAGE	72% - SEE PROPOSED PARCEL TABLE
PARKING	PROPOSED PARCEL A: (26) 9'X19' STALLS, INCL. 2 ADA PROPOSED PARCEL B: (36) 9'X19' STALLS, INCL. 2 ADA PROPOSED PARCEL C: (34) 9'X19' STALLS, INCL. 2 ADA PROPOSED PARCEL D: (41) 9'X19' STALLS, INCL. 2 ADA PROPOSED PARCEL E: (11) 9'X19' STALLS, INCL. 1 ADA

NOTES
1. BUILDING SIZES AND SITE LAYOUT ARE APPROXIMATE. PARKING COUNT, INCL. ADA, TO BE REVISED PER MVMC.
2. LIGHTING LOCATIONS AND SIGNAGE TO BE DETERMINED WITH FINAL SITE LAYOUT.
3. BUILDING CODES PER MVMV 15.04
4. BUILDING HEIGHTS TO BE DETERMINED, PER MVMC 15.04
5. SEE ALTA/NSPS LAND TITILE SURVEY BY PACIFIC SURVEYING & ENGINEERING FOR EXISTING SITE INFORMATION, INCLUDING THE FOLOWING: LEGAL DESCRIPTIONS, PARCELS, EASEMENTS, SURFACE STRUCTURES, UNDERGROUND UTILITIES, AND HORIZONAL AND VERTICAL CONTROL DATUM.

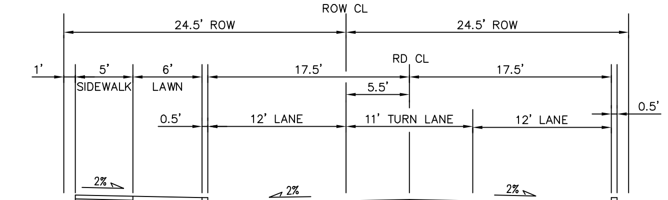
EXISTING PARCEL INFORMATION

ASSESSOR'S PARCEL #	SITE ADDRESS	OWNER	ZONING
P26886	100 E KINCAID ST	ALFCO LLC	C-2
P121047	NONE	ALFCO LLC	C-2
P53372 - PENDING	NONE	WASHINGTON STATE HWY DEPT	C-2
P53373	815 S 6TH ST	ALFCO LLC	C-2
P53374	NONE	ALFCO LLC	C-2
P53375	NONE	ALFCO LLC	C-2
P53376	907 S 6TH ST	ALFCO LLC	C-2
P53377	901 S 6TH ST	ALFCO LLC	C-2
P53378	NONE	ALFCO LLC	C-2
P53379 - PENDING	NONE	CITY OF MOUNT VERNON	C-2
P26788 - PARTIAL	101 E SECTION ST	ALFCO LLC	C-2
P54114 - PARTIAL	NONE	ALFCO LLC	C-2
P54122	906 S 6TH ST	ALFCO LLC	C-2
P103224	NONE	ALFCO LLC	C-2

PROPOSED PARCEL INFORMATION

PARCEL	TOTAL AREA	IMPERVIOUS				LANDSCAPE	PERCENT LANDSCAPE
		BUILDINGS	PAVEMENT CONCRETE	TRAIL	TOTAL LOT COVERAGE		
A	45,237 SF	3,062 SF	33,962 SF	NA	37,024 SF	8,213 SF	18.16%
B	38,180 SF	6,248 SF	22,039 SF	NA	28,287 SF	9,893 SF	25.19%
C	42,106 SF	5,300 SF	19,515 SF	NA	24,815 SF	17,291 SF	41.07%
D	28,874 SF	7,000 SF	14,485 SF	NA	21,485 SF	7,389 SF	25.59%
E	23,373 SF	2,100 SF	12,697 SF	NA	14,797 SF	8,576 SF	36.69%
ROW	17,049 SF	NA	14,950 SF	NA	14,950 SF	2,099 SF	12.31%
TRAIL	5,466 SF	NA	NA	2,785 SF	2,785 SF	2,681 SF	49.05%
TOTAL	200,285 SF	23,710 SF	117,648 SF	2,785 SF	144,143 SF	56,142 SF	28.03%

NOTE
THE PROPOSED PARCELS SHOWN ABOVE REFLECT THE ANTICIPATED ACQUISITION OF PARCEL P53379 & A PORTION OF P53372 ALONG WITH THE VACATION OF 6TH STREET & THE ALLEY SOUTH OF PARCEL P53372.



PROPOSED PUBLIC ROAD
NTS

LDES, INC.
5160 INDUSTRIAL PL. #108
FERNDALE, WA 98248
PHONE 360-383-0620
FAX 360-383-0639

RAMON LLANOS, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY — 4-10-19

JOB NO.:	1910
DWG. NAME:	1910_Civil-Base.dwg
DESIGNED BY:	RL
DRAWN BY:	RL
CHECKED BY:	RL
OWNER:	VISCONSI COMPANIES LTD 30050 CHAGRIN BOULEVARD SUITE 330 PEPPER PILE, OH 44124

CITY OF MOUNT VERNON, SKAGIT COUNTY, WASHINGTON
SWC SR 5 & EAST KINCAID STREET PROJECT

SITE PLAN

LOTS, BUILDING, SURFACE IMPROVEMENTS

NO.	REVISION	BY	DATE
1	PRELIMINARY EXHIBITS	RL	04/10/19

SHEET 01 OF 02

\\SERVER\Share\Common\Land Projects 2019\1910-Kincaid\DWG\1910_Civil-Base.dwg PLOT DATE: 4/22/2019 11:42 AM

9 APPENDIX III – FLOW CHART

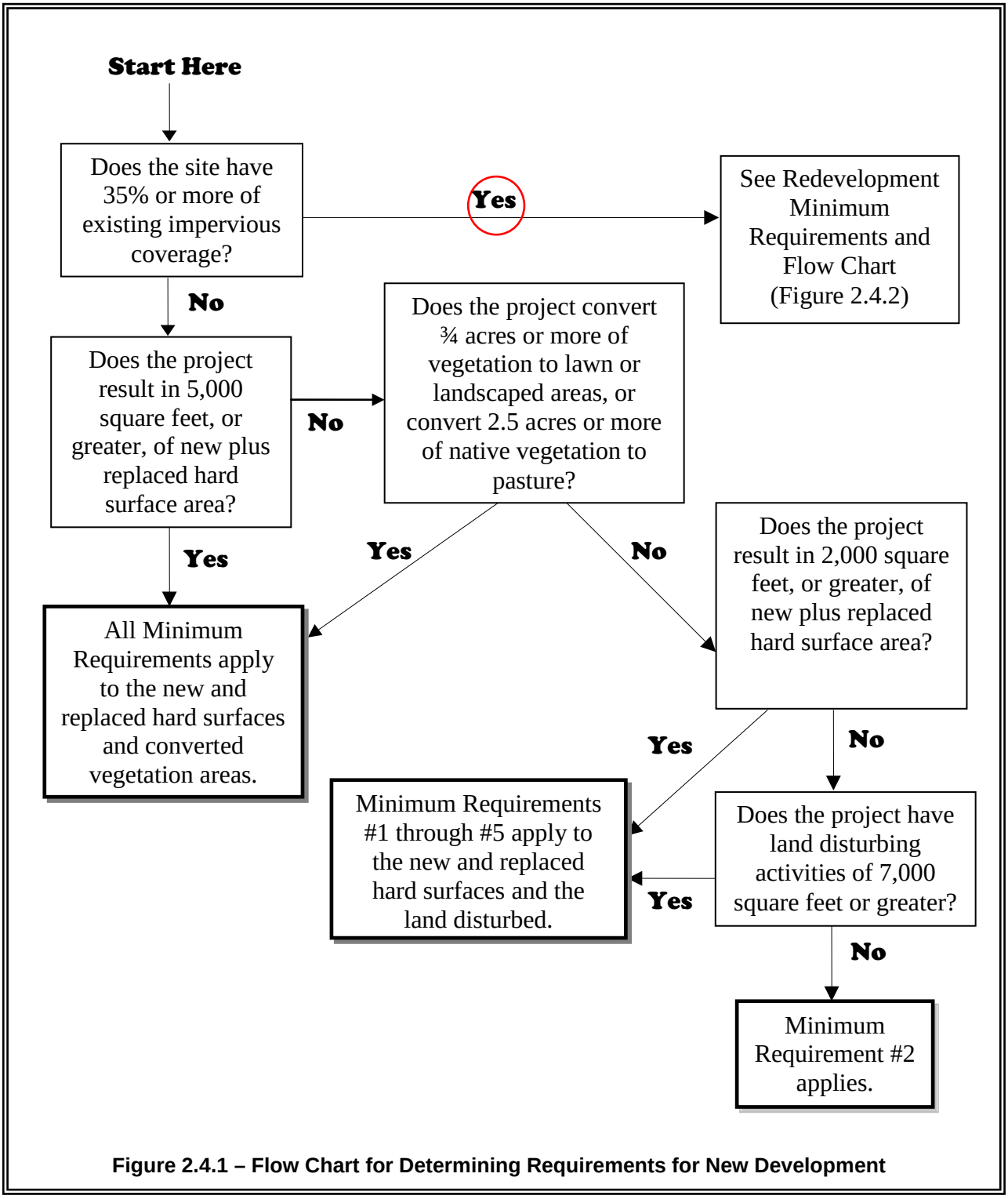


Figure 2.4.1 – Flow Chart for Determining Requirements for New Development

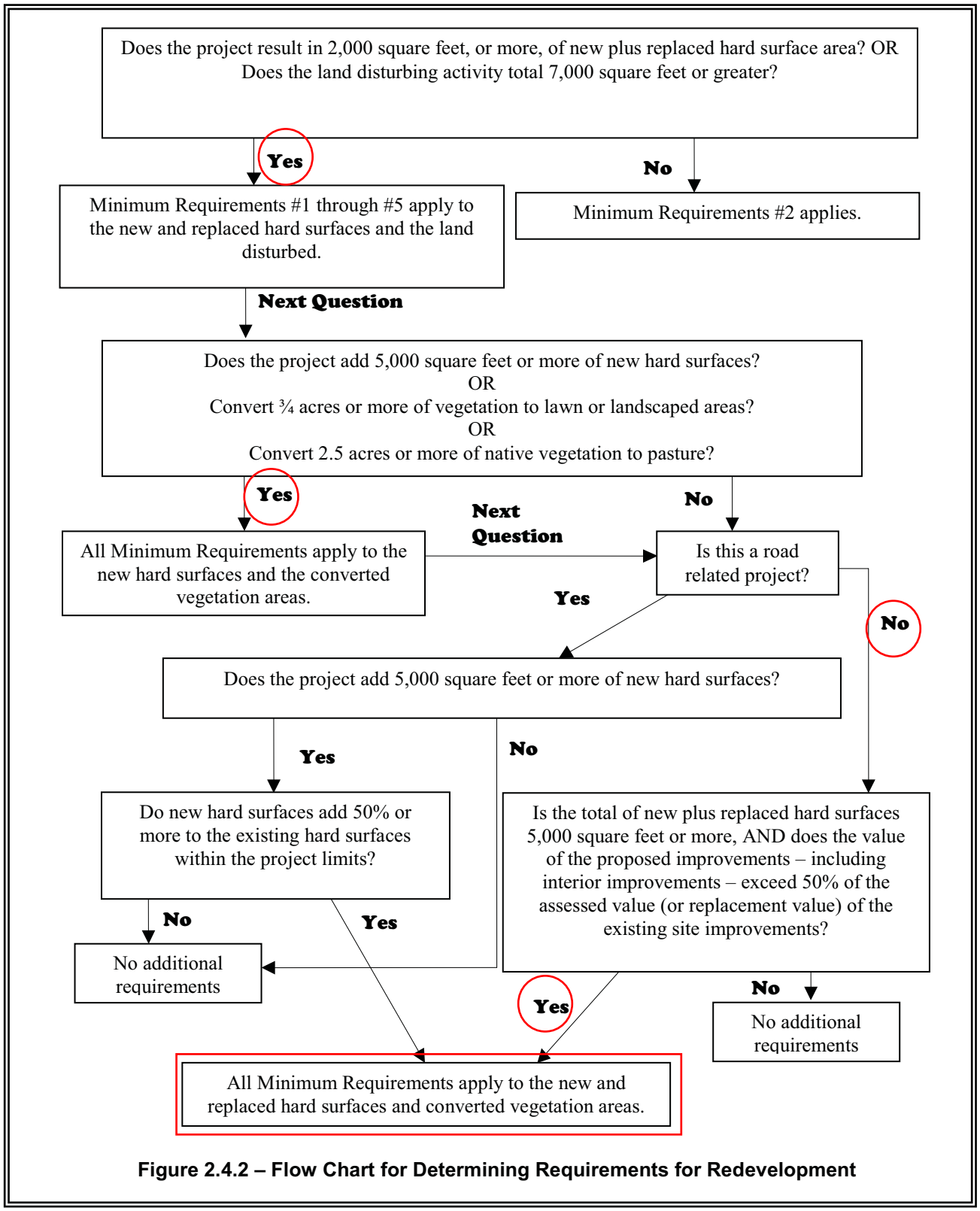


Figure 2.4.2 – Flow Chart for Determining Requirements for Redevelopment