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July 30, 2018

Mr. Ralph Dunham, PE
Stuntzner Engineering & Forestry, LLC
705 South 4th Street
Coos Bay, Oregon 97420
Email: ralphdunham@stuntzner.com

Preliminary Geologic Site Assessment
Coquille Indian Tribe Land
Miluk Drive
Coos Bay, OR 97420
CGS Project No 18059

Dear Mr. Dunham:

Cascadia Geoservices, Inc. (CGS) is pleased to submit this Preliminary Geologic Site Assessment regarding a portion of the Coquille Indian Tribe land in Coos Bay, Oregon (Figure 1, Location Map). We understand that the Coquille Indian Tribe is proposing to build a medical facility building on their land which is currently being used as a cranberry farm. This report summarizes our project understanding, site investigation and subsurface explorations and provides our conclusions and recommendations for developing the site.

PROJECT UNDERSTANDING

Our understanding is based on email and telephone correspondence with you beginning May 15, 2018 and on two site visits: the first on May 22, 2018 and the second on June 26, 2018 at which time a geologic reconnaissance of the site was conducted and two test pits were excavated. We understand that the Coquille Indian Tribe (CIT) is proposing to build a new medical facility building on their reservation in Coos Bay. The site that they are proposing to use is currently a cranberry bog and adjoining dike. According to a site plan provided to us by you (Figure 2, Site Plan), the building will be

20,000 ft. sq. and will include a 34,000 ft. sq. parking area. We further assume that other appurtenances associated with commercial development will be part of the build out of the site.

SITE DESCRIPTION

The site is within the Coast Range Physiographic region of southwestern Oregon. It is located on a gently west sloping marine terrace located east of and elevated above the Coos River. Based on our review of historical aerial photographs, the site was leveled as part of the development of a cranberry farm sometime between 1994 and 2000. According to the site plan provided, the medical facility building will be located on an existing bog and dike and the and the proposed parking area will be located on the bog to the south (Photo 1).

Based on mapping done by others [1],[2], soils at the site consist of sandy loam (8D—Bullards sandy loam, 12 to 30 percent slopes). These soils are described as well drained with the capacity of the most limiting layer to transmit water (Ksat) moderately high to high. The soils are derived from mixed eolian and marine deposits. The soils overlay surficial deposits of Quaternary (Metcalf) Marine Terrace deposits (QMTD) which consist of semi consolidated to consolidated sand, silts, clay and gravels. These sediments consist of well cemented fine-grained sands which are exposed in cuts east and south of the site (Photo 2). These surficial deposits are assumed to be less than 100 feet thick at the site. Below these surficial soils are Miocene Age Empire Formation sediments. Empire Formation sediments were not observed either in surface outcrop or in our test pits. This assemblage of sediments is uplifted and warped as a result of the South Slough Syncline. Based on a review of water well cards[3] for the area, the primary aquifer is less than 50 feet deep.

SUBSURFACE EXPLORATIONS

Our subsurface explorations consisted of observing the excavation of 2 test pits and 1 hand augered boring. The test pits were excavated by a contractor provided by CIT.

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[1] USDA United State Department of Agriculture. Natural Resource Conservation Service Web Soil Survey. Retrieved from http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx
[2] Beaulieu, J. D., & Hughes, P. W. (1975). Environmental Geology of Western Coos and Douglas Counties, Oregon. *Oregon Department of Geology and Mineral Industries, Bulletin 87* (p. 148).
[3] Oregon Department of Water Resources (ODWR) retrieved from http://www.oregon.gov/OWRD

The test pits were observed by a Certified Engineering Geologist from our Port Orford office. The test pits were logged, groundwater observed and samples collected. Figure 2, Site Map shows the location of the test pits and hand augered boring.

In order to minimize disturbance of the cranberry bog, Test Pits 1 and 2 were excavated in the dike south of the cranberry bog. From 0.0 to 3.0 feet below ground surface (bgs), TP-1 encountered medium dense tan orange clayey sand: with some wood and gravel: dry. At 3.0 feet bgs, TP-1 encountered a 1-foot wide section of black organics. Below the organics from 4.0 to 5.4 feet bgs, TP-1 encountered medium stiff, gray clay: dry. We interpret these soils to be fill placed during construction of the cranberry bogs. Under the fill, at 5.5 feet bgs, TP-1 encountered medium dense tan-orange fine sand: damp. The sand was observed to be moderately cemented. We infer that these sands are Quaternary (Metcalf) Marine Terrace deposits (QMTD).

From 0.0 to 9.0 feet bgs, TP-2 encountered medium dense dark brown sand with some organics and wood: dry. We infer that this is fill. The fill was noted as being variable in consistency and in composition. At 9.0 feet bgs, TP-2 encountered medium dense light tan fine sand: damp. We infer that this is sand is part of the native QMTD.

Hand Augered boring HA-1 was drilled at the base of the dike of the cranberry bog (see Figure 2). From 0.0 to 2.3 feet bgs, HA-1 encountered soft brown-gray organic silt and clay: damp. At 2.3 to 4.0 feet bgs, HA-1 encountered loose, dark brown clayey fine sand: wet. We infer that this is fill placed in the cranberry bog.

Soils Encountered

A summary of the soils encountered in the test pits and hand augered boring are summarized below.

> **Fill:** Encountered from 0.0 to 9.0 feet bgs. Consists of medium dense dark brown sand with some organics and wood, soft black organics, medium stiff gray clay, organic silt and clay and clayey fine sand. The fill was likely placed to level the site, to form an impermeable layer under the bogs so that they can be flooded during harvest and as a growing medium.
>
> **Sand:** Encountered at 5.5 feet bgs (east side) deepening to the west to 9.0 feet bgs. Consists of medium dense light tan and tan-orange fine sand: damp. The

sand was observed to be moderately cemented. We infer that these sands are part of the Quaternary (Metcalf) Marine Terrace deposits (QMTD).

GROUNDWATER

We saw no indication of near surface groundwater in the areas east and south of the cranberry bogs. We note that the soils are described as well drained. We further infer that the hydraulic gradient follows the original topography of the site and is towards the west and the Coos River and that groundwater is recharged by seasonal rainfall and rises during periods of sustained rainfall.

GEOLOGIC HAZZARDS

Based on a review of Oregon State databases[4], the site is not in an area impacted by landslides, earthflow or debris flows. Based on a review of LIDAR for the area, the site has been leveled using cut/fill methods with cuts evident in the terrace sands to the east and south of the cranberry bogs. Our LIDAR review indicates that there are no anomalous landforms present on the site which may be indicative of either landslide or earth flow terrain and no buried or offset drainages.

The subject property is located in an area that is highly influenced by regional seismicity due to its proximity to the Cascadia Subduction Zone (CSZ). A review of US Geological Survey Maps[5] indicates that there are geologically young faults (Barview Fault) which have been identified less than 1 mile north of the site. The latest movement on these faults has occurred less than 15,000 years ago. Because of this, Seismic Design Criteria including the site classification should be determined at the time a site-specific geotechnical evaluation for the site is completed. Liquefaction potential for the site should also be reviewed. And, based on recent mapping and modeling done by the State of Oregon[6], the subject property is within the Tsunami Inundation Zone.

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[4] Oregon Department of Geology and Mineral Industries (DOGAMI) Oregon HazVu: Statewide Geohazards Viewer viewed at https://gis.dogami.oregon.gov/maps/hazvu
[5] U.S. Geologic Survey (USGS), Quaternary Faults Web Mapping Application, retrieved May 15, 2017 from http://earthquake.usgs.gov/hazards/qfaults/imsintro.php

[6] Local Source (Cascadia Subduction Zone) Tsunami Inundation Map Bullards Beach, Oregon. 2012. STATE OF OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES view at http://www.oregongeology.org

DISCUSSION

It is our opinion that he site is suitable for the proposed medical facility provide that it is prepared in accordance with our recommendations. We recommend that prior to design, that a detailed geotechnical site evaluation be conducted. The evaluation should include exploratory borings near the building footprint to determine if and where deleterious material may exist and what special siting measures should be implemented. It is further our opinion that the fill which was encountered from 5.5 feet on the east side of the site and which thickens to 9.0 feet bgs on the west end of the site will need to be more carefully delineated prior to construction. This is particularly important due to soft organics and clays which were encountered in our test pits and which were used in the bogs in order to seal them during flooding.

Based on the results of the detailed geotechnical site evaluation, a treatment for the fill will need to be developed. Possible treatment scenarios may include either excavating and replacing the existing fill with mechanically compacted structural fill or the use of geopiers. Based on the composition of the fill encountered in our borings and on the organic content present, the current fill where soft clays and organics are not present may be suitable to use as structural fill. The building will need to be constructed on either treated fill on the site or on structural fill placed on the medium dense native sands. Treatment of the parking area may be either partial excavation and replacement of the upper 3 feet of fill or soil densification by dynamic consolidation.

LIMITATIONS

This report has been prepared for the exclusive use of the addressee, and their agents, and is intended for their use only. It is not to be photographed, photocopied, or similarly reproduced, in total or in part, without the expressed written consent of the Client and Cascadia Geoservices Inc.

The opinions, comments, and conclusions presented in this report are based upon information derived from our literature review, historical topographic map and aerial photograph review, and on our site observations. Conditions between, or beyond, our site observations may vary from those encountered. It is possible that soil, rock, or groundwater conditions could vary between or beyond the points explored.

If there is a substantial lapse of time between the submission of this report and the start of work at the site, if conditions have changed due to natural causes or construction operations at or adjacent to the site, or if the basic project scheme is significantly modified from that assumed, this report should be reviewed to determine the applicability of the conclusions and recommendations. Land use, site conditions (both on and off site), or other factors may change over time and could materially affect our findings. Therefore, this report should not be relied upon after two years from its issue, or in the event that the site conditions change.

The southern Oregon coast is subject to intense Pacific Ocean storms, subduction zone earthquakes, and tsunamis. As such, we cannot predict nor preclude the possibility of a catastrophe. By necessity, the current and future owners of this property must assume the risks associated with any "act of God" and hold harmless their realtors, professional consultants, contractors, and involved regulatory agencies.

We appreciate the opportunity to provide our services and trust that this report meets your requirements at this time. Please contact us at 541-655-0021 so we can further assist in any way.

PROFESSIONAL QUALIFICATIONS

Please see our website at www.cascadiageoservices.com to review our qualifications.

Sincerely,

Cascadia Geoservices, Inc.

Eric Oberbeck, CEG
Expires May 31, 2019

Frederick G. Thrall, PE, GE
Expires June 30, 2020

Photos

Figures

Figure 1, Site Location

Figure 2, Site Reconnaissance Map

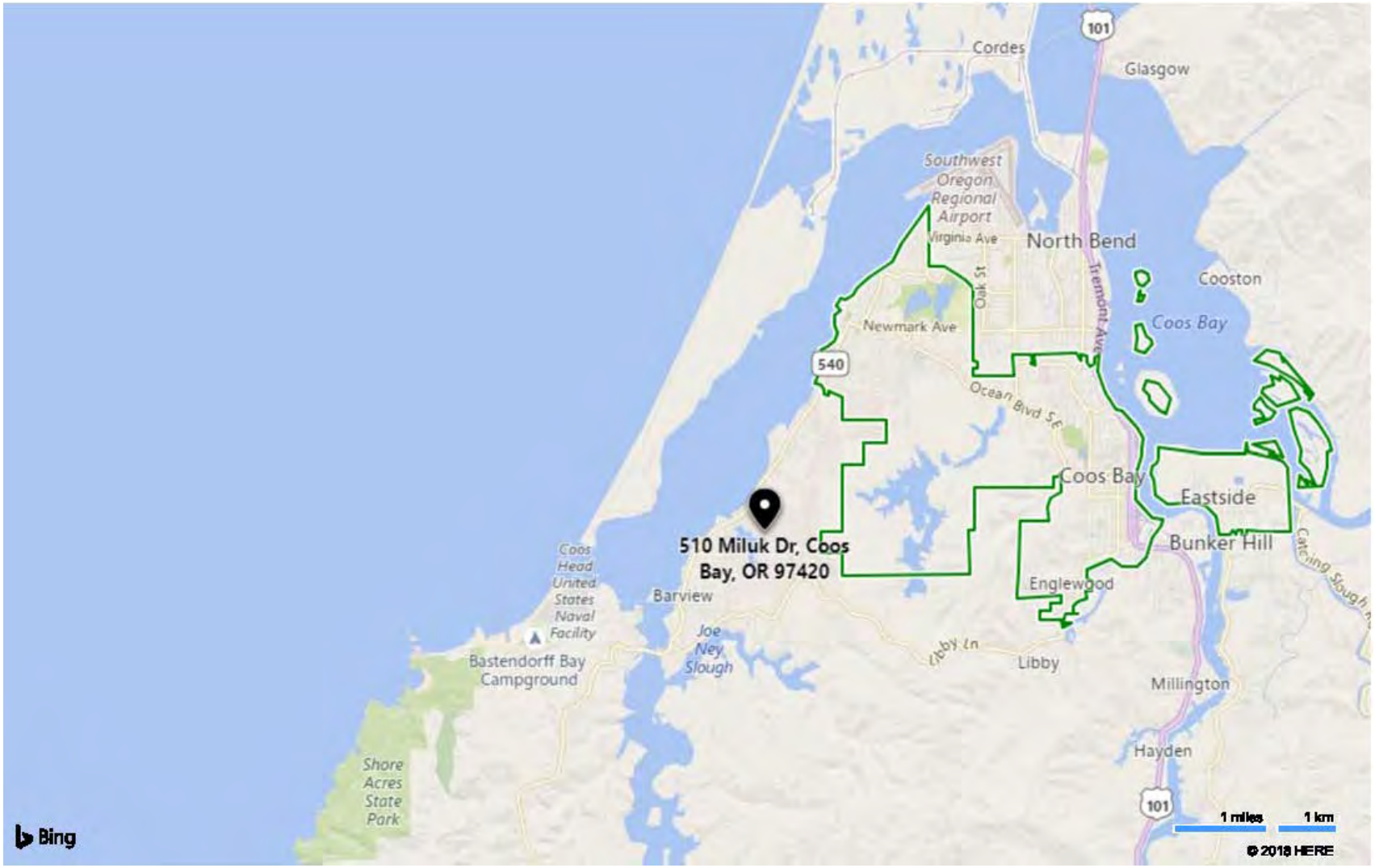
Attachments

Attachment 1, Test Pit Logs

CASCADIA Geoservices Geologists and Engineers	Coquille Indian Tribe Land Miluk Drive Coos Bay, OR 97420	**Photographic Log**
	Date: July, 2018	Cascadia Geoservices, Inc. Project No: 18059

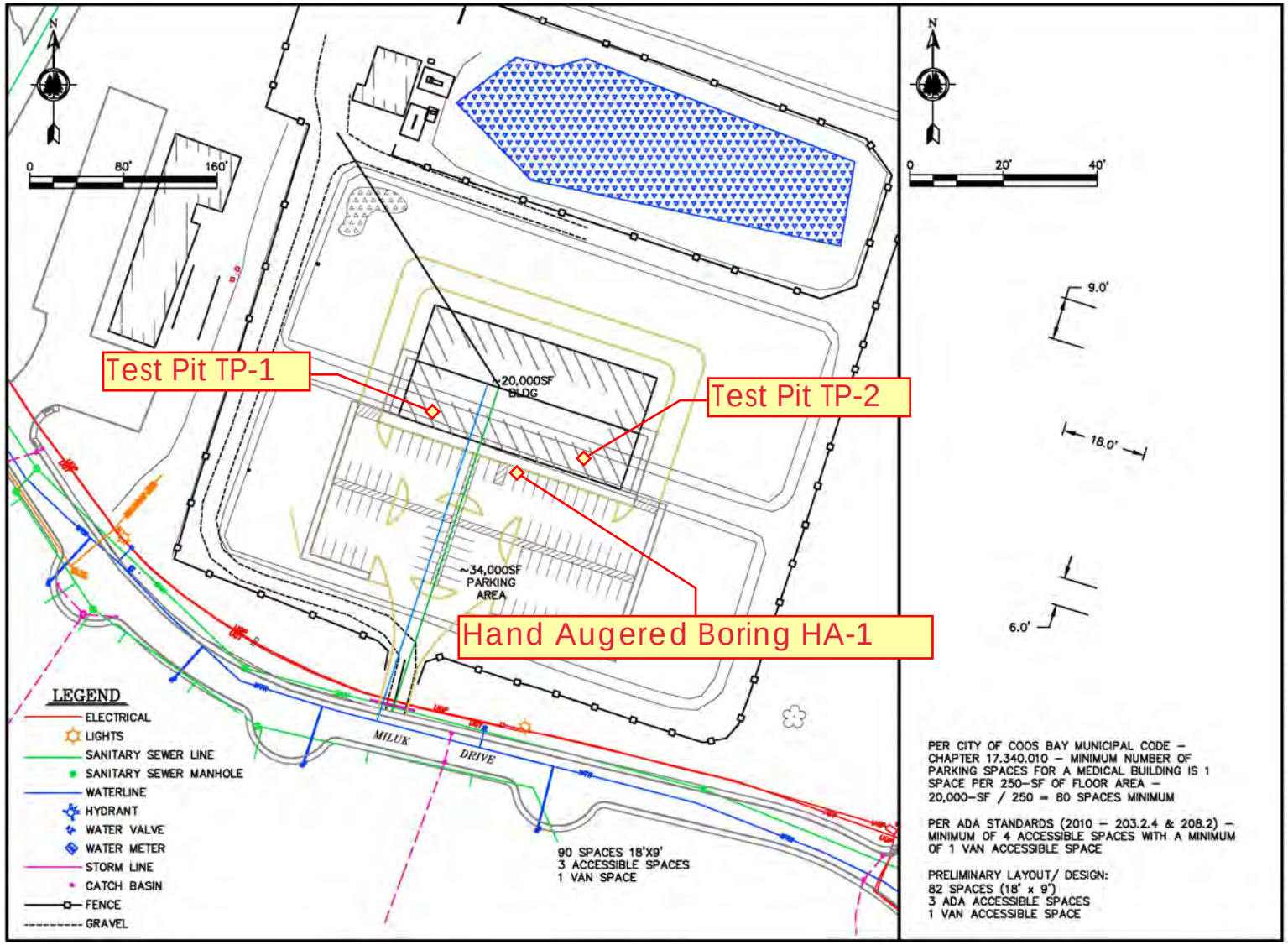
Photo No:	**1**
Direction Photo is Taken: East	
Photo Description:	
The site looking east. Note staked location of Test Pit 2	

Photo No:	**2**
Direction Photo is Taken: East	
Photo Description:	
Cut slope east of the site.	



Prepared for Stuntzner Engineering & Forestry, LLC

CASCADIA Geoservices Geologists and Engineers	Project: 18059 July, 2018	**Location Map** Coquille Indian Tribe Reservation Miluk Drive Coos Bay, OR 97420	**Figure 1**



Site Plan Provided by Stuntzner Engineering, LLC

Prepared for Stuntzner Engineering & Forestry, LLC

CASCADIA Geoservices Geologists and Engineers	Project: 18059 July, 2018	**Site Map** Coquille Indian Tribe Reservation Miluk Drive Coos Bay, OR 97420	**Figure 2**

TABLE 1 SOILS Attachment 1
FIELD CLASSIFICATIONS

SOIL DESCRIPTION FORMAT	
(1) consistency,	(9) structure,
(2) color,	(10) cementation,
(3) grain size,	(11) reaction to HCL,
(4) classification name [secondary PRIMARY additional];	(12) odor,
(5) moisture,	(13) groundwater seepage,
(6) plasticity of fines,	(14) caving,
(7) angularity	**(15) (unit name and/or origin),**
(8) shape,	

Note: Bolded items are the minimum required elements for a soil description.

1. CONSISTENCY - COARSE-GRAINED

TERM	SPT (140-LB. HAMMER)[1]	D & M SAMPLER (140-LB. HAMMER)[1]	DYNAMIC CONE PENETROMETER PENETRATION RATE SAMPLER (DCP)[4,5,6]	FIELD TEST (USING ½-INCH REBAR)
Very loose	0 – 4	0 – 11	0 – 2	Easily penetrated when pushed by hand
Loose	4 – 10	11 – 26	2 – 5	Easily penetrated several inches when pushed by hand
Medium dense	10 – 30	26 – 74	6 – 31	Easily to moderately penetrated when driven by 5 lb. hammer
Dense	30 – 50	74 – 120	32 – 42	Penetrated 1-foot with difficulty when driven by 5 lb. hammer
Very dense	>50	>120	>43	Penetrated only few inches when driven by 5 lb. hammer

1. CONSISTENCY - FINE-GRAINED

TERM	SPT (140-LB. HAMMER)[1]	D & M SAMPLER (140-LB. HAMMER)[1]	DYNAMIC CONE PENETROMETER PENETRATION RATE SAMPLER (DCP)[5,6]	POCKET PEN.[2]	TORVANE[3]	FIELD TEST
Very soft	<2	<3	<2	<0.25	<0.13	Easily penetrated several inches by fist
Soft	2 – 4	3 – 6	2 – 3	0.25 – 0.5	0.13 – 0.25	Easily penetrated several inches by thumb
Medium stiff	5 – 8	7 – 12	4 – 7	0.50 – 1.0	0.25 – 0.5	Can be penetrated several inches by thumb with moderate effort
Stiff	9 – 15	13 – 25	8 – 16	1.0 – 2.0	0.5 – 1.0	Readily indented by thumb but penetrated only with great effort
Very stiff	16 – 30	26 – 65	17 – 27	2.0 – 4.0	1.0 – 2.0	Readily indented by thumbnail
Hard	>30	>65	>28	>4.0	>2.0	Difficult to indent by thumbnail

1 Standard penetration resistance (SPT N-value); Dames and Moore (D & M) sampler, number of blows/ft. for last 12" and 30" drop. Unconfined
2 compressive strength with pocket penetrometer; in tons per square foot (tsf).
3 Undrained shear strength with torvane (tsf).
4 Up to maximum medium-size sand grains only.
5 Dynamic cone penetration resistance; number of blows/inch.
6 Reference: George F. Sowers et. al. "Dynamic Cone for Shallow In-Situ Penetration Testing of In-Situ Soils, ASTM STP 399, ASTM, , pg. 29. 1966.

2. COLOR

Use common colors. For combinations use hyphens. To describe tint use modifiers: pale, light, and dark. For color variations use adjectives such as "mottled" or "streaked". Soil color charts may be required by client. **Examples:** red-brown; or orange-mottled pale green; or dark brown.

3. GRAIN SIZE

DESCRIPTION		SIEVE*	OBSERVED SIZE
boulders		–	>12"
cobbles		–	3" – 12"
gravel	coarse	¾" – 3"	¾" – 3"
	fine	#4 – ¾"	4.75 mm (0.19") – ¾"
sand	coarse	#10 – #4	2.0 – 4.75 mm
	medium	#40 – #10	0.425 – 2.0 mm
	fine	#200 – #40	0.075 – 0.425 mm
fines		<#200	<0.075 mm

4. CLASSIFICATION NAME

* Use of #200 field sieve encouraged for estimating percentage of fines.

	NAME AND MODIFIER TERMS	CONSTITUENT PERCENTAGE	CONSTITUENT TYPE
Coarse grained	GRAVEL, SAND, COBBLES, BOULDERS	>50%	PRIMARY
	sandy, gravelly, cobbley, bouldery	30 – 50%	secondary
	silty, clayey*	15 – 50%	
	with (gravel, sand, cobbles, boulders)	15 – 30%	additional
	with (silt, clay)*	5 – 15%	
	trace (gravel, sand, cobbles, boulders)		
	trace (silt, clay)*	<5%	
Fine grained	CLAY, SILT*	>50%	PRIMARY
	silty, clayey*	30 – 50%	secondary
	sandy, gravelly		
	with (sand, gravel, cobbles, boulders)	15 – 30%	additional
	with (silt, clay)*		
	trace (sand, gravel, cobbles, boulders)	5 – 15%	
	trace (silt, clay)*		
Organic	PEAT	50 – 100%	PRIMARY
	organic (soil name)	15 – 50%	secondary
	(soil name) with some organics	5 – 15%	additional

* For classification and naming fine-grained soil: dry strength, dilatancy, toughness, and plasticity testing are performed (see Describing Fine-Grained Soil page 2). Confirmation requires laboratory testing (Atterberg limits and hydrometer).

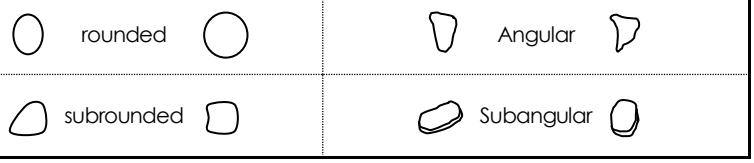
TABLE 1 SOILS
FIELD CLASSIFICATIONS

5. MOISTURE	
TERM	FIELD TEST
dry	absence of moisture, dusty, dry to touch
moist	contains some moisture
wet	visible free water, usually saturated

6. PLASTICITY OF FINES

See "Describing fine-grained Soil" on Page 2.

7. ANGULARITY



8. Shape	
TERM	OBSERVATION
flat	particles with width/thickness ratio >3
elongated	particles with length/width ratio >3
flat and elongated	particles meet criteria for both flat and elongated

9. STRUCTURE	
TERM	OBSERVATION
stratified	alternating layers >1 cm thick, describe variation
laminated	alternating layers <1 cm thick, describe variation
fissured	contains shears and partings along planes of weakness
slickensides	partings appear glossy or striated
blocky	breaks into lumps, crumbly
lensed	contains pockets of different soils, describe variation
homogenous	same color and appearance throughout

10. CEMENTATION	
TERM	FIELD TEST
weak	breaks under light finger pressure
moderate	breaks under hard finger pressure
strong	will not break with finger pressure

11. REACTION TO HCL	
TERM	FIELD TEST
none	no visible reaction
weak	bubbles form slowly
strong	vigorous reaction

12. ODOR

Describe odor as organic; or potential non-organic*
*Needs further investigation

13. GROUNDWATER SEEPAGE

Describe occurrence (i.e. from soil horizon, fissures with depths) and rate:
slow (<1 gpm); moderate (1-3 gpm); fast (>3 gpm)

14. CAVING

Describe occurrence (depths, soils) and amount with term

Test Pits	minor (<1 ft^3)	moderate (1-3 ft^3)	Severe (>3 ft^3)

15. (UNIT NAME/ORIGIN)

Name of stratigraphic unit (e.g. Willamette Silt), and/or origin of deposit (Topsoil, Alluvium, Colluvium, Decomposed Basalt, Loess, Fill, etc.).

DESCRIBING FINE-GRAINED SOIL

	FIELD TEST			
NAME	PLASTICITY (A BELOW)	DRY STRENGTH (B BELOW)	DILATANCY REACTION (C BELOW)	TOUGHNESS OF THREAD (D BELOW)
SILT	non-plastic, low	none, low	rapid	low
SILT with some clay	low	low, medium	rapid, slow	low, medium
clayey SILT	low, medium	medium	slow	medium
silty CLAY	medium	medium, high	slow, none	medium, high
CLAY with some silt	high	High	none	high
CLAY	high	very high	none	high
organic SILT	non-plastic, low	low, medium	slow	low, medium
organic CLAY	medium, high	medium to very high	none	medium, high

A. PLASTICITY

TERM	OBSERVATION
non-plastic	A 1/8" (3-mm) thread cannot be rolled at any water content.
low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be re-rolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
high	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be re-rolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

B. DRY STRENGTH

TERM	OBSERVATION
none	Dry specimen crumbles into powder with mere pressure of handling.
low	Dry specimen crumbles into powder with some finger pressure.
medium	Dry specimen breaks into pieces or crumbles with considerable finger pressure.
high	Dry specimen cannot be broken with finger pressure. Will break into pieces between thumb and a hard surface.
very high	Dry specimen cannot be broken between thumb and a hard surface.

C. DILATANCY REACTION

TERM	OBSERVATION
none	No visible change in the specimen.
slow	Water appears slowly on surface of specimen during shaking and doesn't disappear or disappears slowly upon squeezing.
rapid	Water appears quickly on the surface of the specimen during shaking and disappears quickly upon squeezing.

D. TOUGHNESS OF THREAD

TERM	OBSERVATION
low	Only slight hand pressure is required to roll the thread near the plastic limit. The thread and lump are weak and soft.
medium	Medium pressure is required to roll the thread to near the plastic limit. The thread and lump have medium stiffness.
high	Considerable hand pressure is required to roll the thread to near the plastic limit. The thread and lump have very high stiffness.

TABLE 2

KEY TO TEST PIT AND BORING LOG SYMBOLS

SAMPLE NUMBER ACRONYMS/WATER SYMBOLS

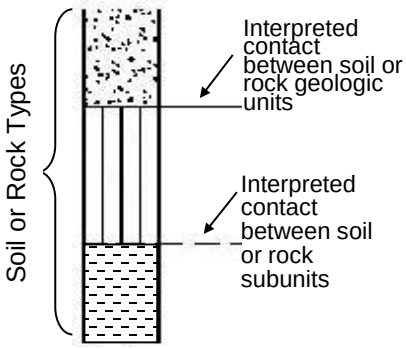
DM - Dames & Moore Sampler
GR - Grab or Bulk Samples
OS - Osterberg (Piston) Sampler
C - Rock Core
SA - Screen Air Sampling
SW - Screen Water Sampling
SS - SPT Standard Penetration Drive Sampler (ASTM D1586)
ST - Shelby Tube Push Sampler (ASTM D1587)

Water Level During Drilling/ Excavation

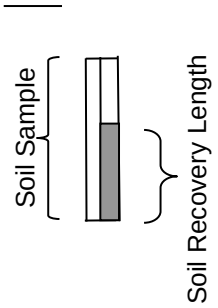
Water Level on Date Measured

LOG GRAPHICS/INSTALLATIONS

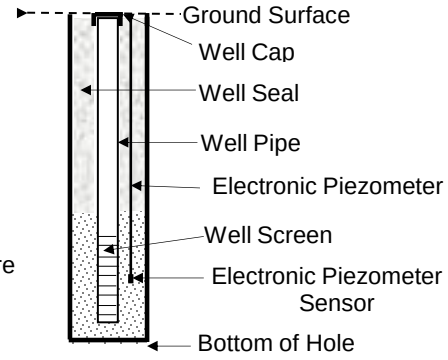
Soil and Rock



Soil and Rock Sampling Symbols



Instrumentation Detail



GEOTECHNICAL FIELD & LABORATORY TESTING/ACRONYM EXPLANATIONS

ATT	Atterberg Limits	OC	Organic Content
AMSL	Above Mean Sea Level	OD	Outside Diameter
BGS	Below ground surface	P200	Percent Passing U.S. Standard No. 200 Sieve
CBR	California Bearing Ratio	PI	Plasticity Index
CON	Consolidation	PL	Plasticity Limit
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer
DD	Dry Density	RES	Resilient Modulus
DS	Direct Shear	SC	Sand Cone
GPS	Global Positioning System	SIEV	Sieve Gradation
HCL	Hydrochloric Acid	SP	Static Penetrometer
HYD	Hydrometer Gradation	TOR	Torvane
kPa	kiloPascal	UC	Unconfined Compressive Strength
LL	Liquid Limit	VS	Vane Shear

ENVIRONMENTAL TESTING/ACRONYM EXPLANATIONS

ATD	At Time of Drilling	ND	Not Detected
BGS	Below ground surface	NS	No Sheen
CA	Sample Submitted for Chemical Analysis	PID	Photoionization Detector Headspace Analysis
HS	High Sheen		
MS	Moderate Sheen	PPM	Parts Per Million

HAND AUGER BORING HA-1

Page 1 of 1

COQUILLE INDIAN TRIBE CRANBERRY BOG
MILUK DRIVE
COOS BAY, OREGON

1087 Lewis River Road #309
Woodland, WA 98674
D. 360-225-3945
C. 971-201-7359

190 6th Street
Port Orford, OR 97465
D. 541-332-0433
C. 541-655-0021

COORDINATES/LOCATION:
In drainage ditch N side of Cranberry Bog
Lat 43.3592001 Long: -124.295568 (See Figure 2)

CASCADIA GEOSERVICES
PROJECT NUMBER:
18070

DEPTH (FEET)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	TESTING	SAMPLE TYPE / SAMPLE ID	COMMENTS
		SURFACE CONDITIONS: Damp				
0.0		Soft, brown-gray, organic SILT and CLAY; damp (FILL)	0.0			
2.3		Dark brown, loose, clayey fine SAND; wet (FILL)	2.3	DCPs	SS-1	
4.0		Final depth 4.0 feet bgs due to refusal; hand auger boring backfilled with bentonite chips	4.0			No groundwater encountered at the time of exploration

DYNAMIC CONE PENETROMETER (DP/DCP)
STATIC PENETROMETER (SP)
MOISTURE CONTENT (%)
BLOW COUNT (N-VALUE)
INDEX PROPERTIES (IP)
NUCLEAR DENSITY (ND)
DRY DENSITY (DD)
SIEVE (SIEV)

0 25 50

1
3

0 25 50

DRILLING METHOD: Hand Auger
DRILLED BY: Coquille Indian Tribe

LOGGING COMPLETED: 6/26/18
LOGGED BY: E. Oberbeck

HAND AUGER BORING HA-1
Page 1 of 1

TEST PIT TP-1

Page 1 of 1

COQUILLE INDIAN TRIBE CRANBERRY BOG
MILUK DRIVE
COOS BAY, OREGON

COORDINATES/LOCATION:
East side of dike
Lat: 43.361965 Long: -124.294916 (See Figure 2)

CASCADIA GEOSERVICES
PROJECT NUMBER:
18070

1087 Lewis River Road #309
Woodland, WA 98674
D. 360-225-3945
C. 971-201-7359

190 6th Street
Port Orford, OR 97465
D. 541-332-0433
C. 541-655-0021

DEPTH (FEET)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	TESTING	SAMPLE TYPE SAMPLE ID	COMMENTS
		SURFACE CONDITIONS: Dry				
0.0		Medium dense, tan-orange, clayey SAND with some gravel and wood; dry (FILL)	0.0			
3.0		Soft, black ORGANICS; damp (FILL)	3.0			
4.0		Medium stiff, gray CLAY (FILL)	4.0			
5.4		Medium dense, tan-orange, fine SAND; damp	5.4			No groundwater encountered at the time of exploration
		QUATERNARY MARINE TERRACE DEPOSITS				
5.5		Final depth 5.5 feet bgs; test pit backfilled with uncompacted excavated material	5.5			

SAMPLE TYPE / SAMPLE ID:
- DYNAMIC CONE PENETROMETER (DP/DCP)
- STATIC PENETROMETER (SP)
- MOISTURE CONTENT (%)
- BLOW COUNT (N-VALUE)
- INDEX PROPERTIES (IP)
- NUCLEAR DENSITY (ND)
- DRY DENSITY (DD)
- SIEVE (SIEV)

0 25 50

DRILLING METHOD: Excavator
DRILLED BY: Coquille Indian Tribe

LOGGING COMPLETED: 6/26/18
LOGGED BY: E. Oberbeck

TEST PIT TP-1
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TEST PIT TP-2

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COQUILLE INDIAN TRIBE CRANBERRY BOG
MILUK DRIVE
COOS BAY, OREGON

COORDINATES/LOCATION:
West side of dike
Lat: 43.359766 Long: -124.295933 (See Figure 2)

CASCADIA GEOSERVICES
PROJECT NUMBER:
18070

1087 Lewis River Road #309
Woodland, WA 98674
D. 360-225-3945
C. 971-201-7359

190 6th Street
Port Orford, OR 97465
D. 541-332-0433
C. 541-655-0021

DYNAMIC CONE PENETROMETER (DP/DCP)
STATIC PENETROMETER (SP)
MOISTURE CONTENT (%)
BLOW COUNT (N-VALUE)
INDEX PROPERTIES (IP)
NUCLEAR DENSITY (ND)
DRY DENSITY (DD)
SIEVE (SIEV)

DEPTH (FEET)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	TESTING	SAMPLE TYPE SAMPLE ID	COMMENTS
0.0		SURFACE CONDITIONS: Dry	0.0			
		Medium dense, dark brown, SAND with some organics and wood; dry (FILL)				
9.0		Light tan, fine SAND; damp **QUATERNARY MARINE TERRACE DEPOSITS**	9.0		SS-2	
10.0		Final depth 10.0 feet bgs due to depth limit of excavator; test pit backfilled with uncompacted excavated material	10.0			No groundwater encountered at the time of exploration

DRILLING METHOD: Excavator
DRILLED BY: Coquille Indian Tribe

LOGGING COMPLETED: 6/26/18
LOGGED BY: E. Oberbeck

TEST PIT TP-2
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