GeoEngineers

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Memorandum

To:	Arianne Fernandez – Washington State Department of Ecology
From:	John Herzog and Robert Trahan – GeoEngineers, Inc.
cc:	Brad Tesch and Brenda Treadwell – Port of Anacortes
Date:	March 1, 2021
File:	5147-006-14
Subject:	Remedial Investigation/Feasibility Study (RI/FS) Work Plan Addendum for Supplemental Soil Investigation at the Dakota Creek Industries Site, Anacortes, Washington Ecology Agreed Order No. DE-07TCPHQ-5080

This memorandum provides an addendum to the Dakota Creek Industries Remedial Investigation/Feasibility Study (RI/FS) Work Plan (GeoEngineers 2008) and Upland Area Sampling and Analysis Plan (SAP; Appendix B to the RI/FS Work Plan) for the Dakota Creek Industries Site (Site) located in Anacortes, Washington (Figure 1). This Work Plan Addendum is being provided on behalf of the Port of Anacortes (Port) to describe supplemental soil sample collection and chemical analysis activities to verify the completeness of previous cleanup actions performed at the Site. This addendum has been prepared to supplement the RI/FS Work Plan to meet the requirements of Ecology's comments on data gaps identified in the RI/FS and Agreed Order No. DE-07TCPHQ-5080.

In accordance with the Washington State Department of Ecology (Ecology)-approved RI/FS Work Plan, remedial investigation activities were completed by the Port to evaluate Site conditions, supplement and fill identified data gaps, and to determine the nature and extent of contamination in sediment, soil and groundwater for both the marine and upland portions of the Site. In the upland portion of the Site (Upland Area), RI results identified concentrations of arsenic, nickel and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) at concentrations greater than the proposed cleanup levels (PCULs) in soil and/or groundwater and serve as the basis for the cleanup action evaluation and selection of a preferred remedial alternative for the Site. Results of previous sampling and analysis efforts, evaluation of remedial alternatives and selection of a preferred cleanup action for the Site are summarized in the RI/FS Report (GeoEngineers 2020).

Based on a review of the RI/FS Report, Ecology determined that additional sampling and analysis was required in the Upland Area to confirm the completeness of previously completed 1991 underground storage tank (UST) removal excavation, 2001 marine railway winch remedial excavation, 2002 Petroleum and Marine Railway Cleanup Action because the technical quality of verification sampling data could not be independently validated.

The sample collection and analysis described in this addendum will be used to confirm the completeness of the previous cleanup actions. The results of the supplemental investigation will be reported in the Cleanup Action Plan (CAP) and used to refine the preferred cleanup action alternative for the Site.

BACKGROUND

Location and Description

The Site, located at 115 Q Avenue in Anacortes, Washington, is an active shipyard used for new vessel construction and repair. The Site is comprised of both upland and marine areas and is bounded by the Port of Anacortes Pier 1 to the west and Pier 2 to the east, 3rd Street on the south, and the Guemes Channel to the north.

Dakota Creek Industries (DCI) currently leases the Site from the Port for vessel construction and maintenance operations. The Site includes a portion of the Port's Pier 1 Marine Terminal (Pier 1), a centrally located outfitting dock (Central Pier), a synchrolift, upland fabrication areas, shops, a sandblast grit storage shed, warehouses and storage areas. The northern portion of Pier 1 (which is a deep-water moorage terminal) is used by DCI to support dry dock operations.

Regulatory Framework

On December 12, 2007, the Port entered Agreed Order No. DE-07TCPHQ-5080 with Ecology. Under the Agreed Order, RI activities were completed by the Port in accordance with the Ecology-approved RI/FS Work Plan to supplement and fill identified data gaps in existing data for the Site, and to determine the nature and extent of contamination in sediment, soil and groundwater. Environmental data collected from the Marine Area was used to support planning and design of the 2008 Interim Action. Environmental data collected from the Upland Area was used to support completion of the RI and FS as required by the Agreed Order.

Previous Upland Area Cleanup Actions

Cleanup actions previously completed at the Site include:

- **1991 UST Cleanup Action** – In 1991, two USTs located near the south end of L dock were removed from the Site for permanent closure. During the removal of these tanks, approximately 20 cubic yards of petroleum impacted soil was removed from this area and transferred from the Site for landfill disposal. Verification samples at the final excavation limits were obtained to confirm the removal of the petroleum impacted soil observed during tank removal activities.
- **2001 Hydraulic Winch Cleanup Action** – In 2001, a hydraulic winch and its timber frame located near the south end of the east marine railway were removed from the Site. During removal of this structure and associate components, approximately 30 cubic yards of petroleum impacted soil were excavated and transferred from the Site for landfill disposal. Verification samples at the final excavation limits were obtained to confirm the removal of the petroleum impacted soil observed during removal of the hydraulic winch and associated timber frame.
- **2002 Petroleum and Marine Railway Cleanup Actions** – In 2002, the Port completed cleanup actions to address known soil contamination in the Petroleum Cleanup Action Area extending from the aluminum shop (building formerly identified as the equipment maintenance shed) to the former bulk fuel storage above ground storage tanks; and the Marine Railway Cleanup Action Area located near the eastern marine railway structure. Cleanup actions to remove soil contamination (approximately 1,650 cubic yards) in these areas were completed under Ecology's Voluntary Cleanup Program (VCP).

Verification samples at the final excavation limits were obtained to confirm the removal of the petroleum impacted soil form these areas.

Although verification sampling completed as part of these previous cleanup actions confirmed the removal of the petroleum-related contamination from these areas, the technical quality of these data could not be verified. As a result, Ecology has requested that additional sampling and analysis be performed for these areas to confirm the removal of the petroleum-related contamination and that the data be used to support selection of the preferred remedial alternative and meet the overall cleanup action objectives for the Site.

SUPPLEMENTAL SOIL INVESTIGATION

Additional investigation activities will be completed in the Upland Area to further characterize soil conditions at the Site and verify the effectiveness of the previous cleanup actions. As part of this investigation, sampling will be performed within the footprint of the previously completed remedial excavations which extended to depths greater than 1 foot (i.e., remedial excavations extending beneath the former gravel working surface). Samples will be collected from a depth of below the base of the previous remedial excavations to represent the previous verification sample interval and analyzed for contaminants of concern (COCs) previously identified for these areas including gasoline-, diesel- and heavy oil-range petroleum hydrocarbons and/or cPAHs. The results of this investigation will be reported in the CAP and used to refine the preferred cleanup action alternative for the Site.

The locations of the previous cleanup action areas and proposed sample locations to verify the removal of petroleum-related contamination are shown on Figure 2.

The proposed number samples has been selected to represent approximately 10 percent of the previous confirmation sampling results that were used to verify the completeness of the previous removal actions. The proposed sample locations were positioned within the previously completed remedial excavation footprints to provide adequate spatial coverage and to facilitate access by avoiding the known DCI operations and utilities.

Soil sampling and analysis activities will include:

- Completion of seven (7) soil borings using direct-push drilling (DP) methods.
- Collection of continuous cores at each location to document soil conditions.
- Collection of soil samples for chemical analysis representative of the previous remedial excavation limit.

The soil sample collection and analysis that will be completed as part of this RI/FS Work Plan Addendum is summarized in the following sections. Please note that the positioning of the sampling locations may need to be adjusted in the field to avoid utilities, structural obstruction and minimize impacts to DCI's operations. GeoEngineers will coordinate the positioning of the proposed sample locations with DCI in advance of drilling to ensure that the sampling locations are accessible, free of utility conflicts and do not impact DCI operations. Sampling locations that require significant repositioning (i.e., more than 10 feet from the target location) will be approved by Ecology prior to sample collection to ensure that the sampling objectives are being met.

Soil Sample Collection and Processing

As with the previous RI field study, DP borings for obtaining soil samples will be completed using a truck-mounted direct-push drilling rig. It is anticipated that the DP borings at the Site will be advanced at least 3 feet beyond the limit of the previously completed remedial excavation. If evidence of petroleum contamination is observed, the boring will be advanced to at least 3 feet below the observed depth of contamination, or until refusal. DP borings will be completed by a licensed driller in the State of Washington. A representative from GeoEngineers' staff will be present to examine and classify the soils encountered and prepare a detailed boring log of each exploration. Continuous soil samples in 2-foot intervals will be obtained from the DP borings. Soil from each sample interval will be visually classified, field screened and logged in the same manner in accordance with the RI/FS Work Plan.

Sample intervals will be individually homogenized and placed into the appropriate laboratory-supplied sample containers. Samples for volatile analysis (i.e., gasoline) will be collected from the center of the sampling interval from undisturbed soil sample prior to homogenization using United States Environmental Protection Agency (EPA) Method 5035A sampling procedures consistent with Ecology guidance to reduce volatilization and biodegradation of the sample constituents. Immediately upon collection of the samples, the samples will be placed into a cooler with ice and logged on the chain-of-custody using quality assurance and control procedures in accordance with the RI/FS Work Plan.

Soil Sample Laboratory Analysis

Soil samples will be submitted to OnSite Environmental, Inc. (OnSite) of Redmond, Washington, for chemical analysis. Table 1 identifies the proposed sample locations, target sample horizons, laboratory analysis and rationale for the data that will be collected to verify the completeness of the previous cleanup actions. Table 2 summarizes the analytical methods, sample size, containers, preservation and holding times for laboratory analysis. Sufficient material will be collected from each sample interval to perform each of the listed analysis in accordance with the RI/FS Work Plan and Upland Area SAP. Selected soil samples as identified in Table 1 will be submitted for a combination of the following:

- Gasoline-range petroleum hydrocarbons by NWTPH-Gx.
- Heavy oil- and diesel-range petroleum hydrocarbons by NWTPH-Dx using an acid-silica gel cleanup.
- Benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA 8260.
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) by EPA 8270-SIM.

Underground Utility Locate

Prior to drilling, an underground utility locate will be conducted in the area of the proposed soil boring locations to identify any subsurface utilities and/or potential underground physical hazards.

Surveying

GeoEngineers field personnel will record the soil boring locations, and other pertinent information, using hand-held Trimble global positioning system (GPS) unit (or similar device) during sampling activities. GPS data collected in the field will be processed in the office using measurements from the nearest reference station to each collection point. The accuracy of measured and recorded horizontal coordinates will be within 3 feet.

Decontamination

The drilling equipment will be decontaminated before beginning each exploration using a pressure washer. In addition, reusable sampling/monitoring equipment (trowels, split-spoons, hand augers, etc.) that comes in contact with soil will be decontaminated before each use. Decontamination procedures for this equipment will consist of the following:

- Wash with non-phosphate detergent solution (Liqui-Nox® and distilled water),
- Rinse with distilled water, and
- Place the decontaminated equipment on clean plastic sheeting or in a plastic bag.

Field personnel will limit cross-contamination by changing gloves between sampling events. Wash water used to decontaminate the sampling equipment will be stored on site in labeled drums for subsequent characterization and disposal.

Disposal of Investigation Derived Materials

Soil cuttings from borings completed during this investigation will be placed in labeled and sealed drums. The drums will be stored temporarily at a secure location pending receipt of analytical results and until appropriate final disposal is completed.

Incidental waste generated during sampling activities includes items such as gloves, plastic sheeting, paper towels and similar expended and discarded field supplies. These materials are considered *de minimis* and will be disposed of at local trash receptacle or county disposal facility.

Data Quality Objectives

The specific data quality objectives (DQOs) for soil sampling and analysis are detailed in the Ecology-approved RI/FS Work Plan. An EPA-defined Stage 2B validation will be performed on organic analytical data in general accordance with EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA 2017). Data packages will be checked for completeness upon receipt from the laboratory to ensure that data and quality assurance/quality control (QA/QC) information requested are present. At a minimum, the following items will be reviewed to verify the data as applicable:

- Data Package Completeness
- Chain-of-Custody Documentation
- Holding Times and Sample Preservation
- Surrogate Recoveries
- Method and Trip Blanks
- Matrix Spikes/Matrix Spike Duplicates
- Laboratory Control Samples/Laboratory Control Sample Duplicates
- Laboratory and Field Duplicates
- Initial Calibrations (ICALs)

- Continuing Calibrations (CCALs)
- Internal Standards
- Instrument Tunes
- Contract Required Reporting Limits

INADVERTENT DISCOVERY OF CULTURAL RESOURCES

This work is being conducted under an Ecology remedial action grant. As such Ecology initiated an 05-05 cultural resource consultation. Per the consultation for this site, the Department of Archaeology and Historic Preservation (DAHP) required the Port to perform a cultural resources survey. A survey has been recently performed (Lenz 2020), provided to DAHP and uploaded to DAHP's Washington Information System for Architectural and Archaeological Records Data (WISAARD) database. Ecology will work with the Port to complete an Inadvertent Discovery Plan (IDP) based on the survey and consultation results.

Ground penetrating field work (soil sampling) will commence after (1) the Port receives necessary approvals from DAHP, if applicable; and (2) Ecology provides notification to the Port that their cultural resources consultation with DAHP and interested Tribes is complete. The Port will coordinate with Ecology, DAHP, and other relevant parties regarding any requirements for the inadvertent discovery of cultural resources as outlined in the IDP.

SCHEDULE

Supplemental soil sampling and analysis will be completed as soon as possible following Ecology approval of this RI/FS Work Plan Addendum. Pending Ecology approval, driller availability, and DCI operations, it is anticipated that field sampling will occur in winter 2020.

REPORTING

Upon completion of the supplemental soil investigation, soil sampling activities and laboratory results will be documented in a Data Report that will be submitted to Ecology for review and approval. Following the draft Data Report, and agreement on comments, the results of the supplemental soil investigation will be presented as an appendix to the Draft CAP to support selection of the preferred remedial alternative. In addition, all relevant chemical analytical data will be submitted to Ecology in electronic format in accordance with Ecology's Environmental Information Management (EIM) Policy 840 following review and validation.

REFERENCES

GeoEngineers 2008, "Final Work Plan, Remedial Investigation/Feasibility Study and Interim Action Work Plan – Dakota Creek Industries," prepared for the Washington Department of Ecology on behalf of the Port of Anacortes, April 1, 2008.

GeoEngineers 2020, "Remedial Investigation/Feasibility Study Report, Dakota Creek Industries, Anacortes, Washington, Ecology Agreed Order No. DE-07TCPHQ-5080," prepared for the Washington Department of Ecology on behalf of the Port of Anacortes, April 27, 2020.

Lenz, Brett (Lenz) 2020, "A Cultural Resources Review of the Dakota Creek Industries Site, Skagit County, WA," prepared for the Port of Anacortes, November 2020.

United States Environmental Protection Agency (EPA) 2017, "Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA-540-R-2017-01," Office of Emergency and Remedial Response, US Environmental Protection Agency, Washington, DC, dated January 2017.

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Attachments:
Table 1. Proposed Soil Sampling and Analysis
Table 2. Soil Sample Test Methods, Sample Size, Containers, Preservation and Holding Times
Figure 1. Vicinity Map
Figure 2. Proposed Supplemental Data Collection Locations

Table 1

Proposed Soil Sampling and Analysis

Dakota Creek Industries

Anacortes, Washington

Sample Location[1]	Depth of Previous Cleanup Action (feet bgs)	Target Boring Depth (feet bgs)	Petroleum Hydrocarbons			BTEX (EPA 8260)	cPAHs (EPA 8270-SIM)	Rational
			Gasoline-Range (NWTPH-G)	Diesel-Range (NWTPH-Dx)	Heavy Oil-Range (NWTPH-Dx)			
1991 UST Cleanup Action Area								
GEI-47	9	12	X	X	X	X		Collect sample representative of the base of the 500-gallon gasoline and 1,000-gallon diesel underground storage tank (UST) removal excavation for chemical analysis to verify previous confirmation sample results.
2001 Hydraulic Winch Cleanup Action Area								
GEI-48	5	8		X	X			Collect sample representative of the base of the 2001 hydraulic winch remedial excavation completed to depths ranging between 4 and 5 feet bgs to remove heavy oil-petroleum contamination for chemical analysis to verify previous confirmation sample results.
2002 Petroleum Cleanup Action Area								
GEI-49	8	11	X	X	X	X		Collect samples representative of the base of the 2002 Petroleum Cleanup Action completed to depths ranging from 1 to 8 feet bgs to remove gasoline and diesel-range petroleum hydrocarbons contamination for chemical analysis to verify the completeness of the cleanup action.
GEI-50		11	X	X	X	X		
GEI-51		11	X	X	X	X		
GEI-52		11	X	X	X	X		

Sample Location[1]	Depth of Previous Cleanup Action (feet bgs)	Target Boring Depth (feet bgs)	Petroleum Hydrocarbons			BTEX (EPA 8260)	cPAHs (EPA 8270-SIM)	Rational
			Gasoline-Range (NWTPH-G)	Diesel-Range (NWTPH-Dx)	Heavy Oil-Range (NWTPH-Dx)			
2002 Marine Railway Cleanup Action Area								
GEI-53	5	8		X	X		X	Collect sample representative of the base of the 2002 Marine Railway Cleanup Action Area which was completed to depths ranging between 3.5 and 5 feet bgs to remove previously identified petroleum hydrocarbon and cPAH contamination for chemical analysis to verify the completeness of the cleanup action.

Notes:

[1] The approximate sample locations are shown on Figure 2.

bgs = below ground surface

BETX = Benzene, Ethylbenzene, Toluene and Xylenes

cPAH = carcinogenic polycyclic aromatic hydrocarbons

EPA = Environmental Protection Agency

NWTPH-G = Northwest Total Petroleum Hydrocarbon - Gasoline

NWTPH-Dx = Northwest Total Petroleum Hydrocarbon - Diesel Extended

Table 2

Soil Sample Test Methods, Sample Size, Containers, Preservation and Holding Times

Dakota Creek Industries

Anacortes, Washington

Laboratory Analysis	Analytical Method	Minimum Sample Size	Sample Container	Sample Preservation	Holding Time[1]
Gasoline-Range Hydrocarbons	NWTPH-Gx	5 g	Two 40mL glass vial (VOA)	≤ 6°C (field preservation kit- 5 ml of methanol)	14 days if properly preserved; 48 hours otherwise
Diesel- and Oil-Range Hydrocarbons	NWTPH-Dx	15 g	8-oz amber glass WM with Teflon-lined lid	Cool ≤6°C	14 days to laboratory extraction; 40 days to analysis
BTEX Compounds	SW8260	5 g	Three 40mL glass vial (VOA)	Cool ≤6°C Two VOAs - Sodium Bisulfate One VOA - Methanol	14 days if properly preserved; 48 hours otherwise
Carcinogenic PAHs	SW8270/SIM	150 g	8-oz amber glass WM with Teflon-lined lid	Cool ≤6°C	14 days to laboratory extraction; 40 days to analysis

Notes:

[1] Holding times are based on elapsed time from date of collection.

NWTPH = Northwest total petroleum hydrocarbons

Dx = diesel-range extended

SIM = selected ion mode

g = gram

Gx = gasoline-range extended

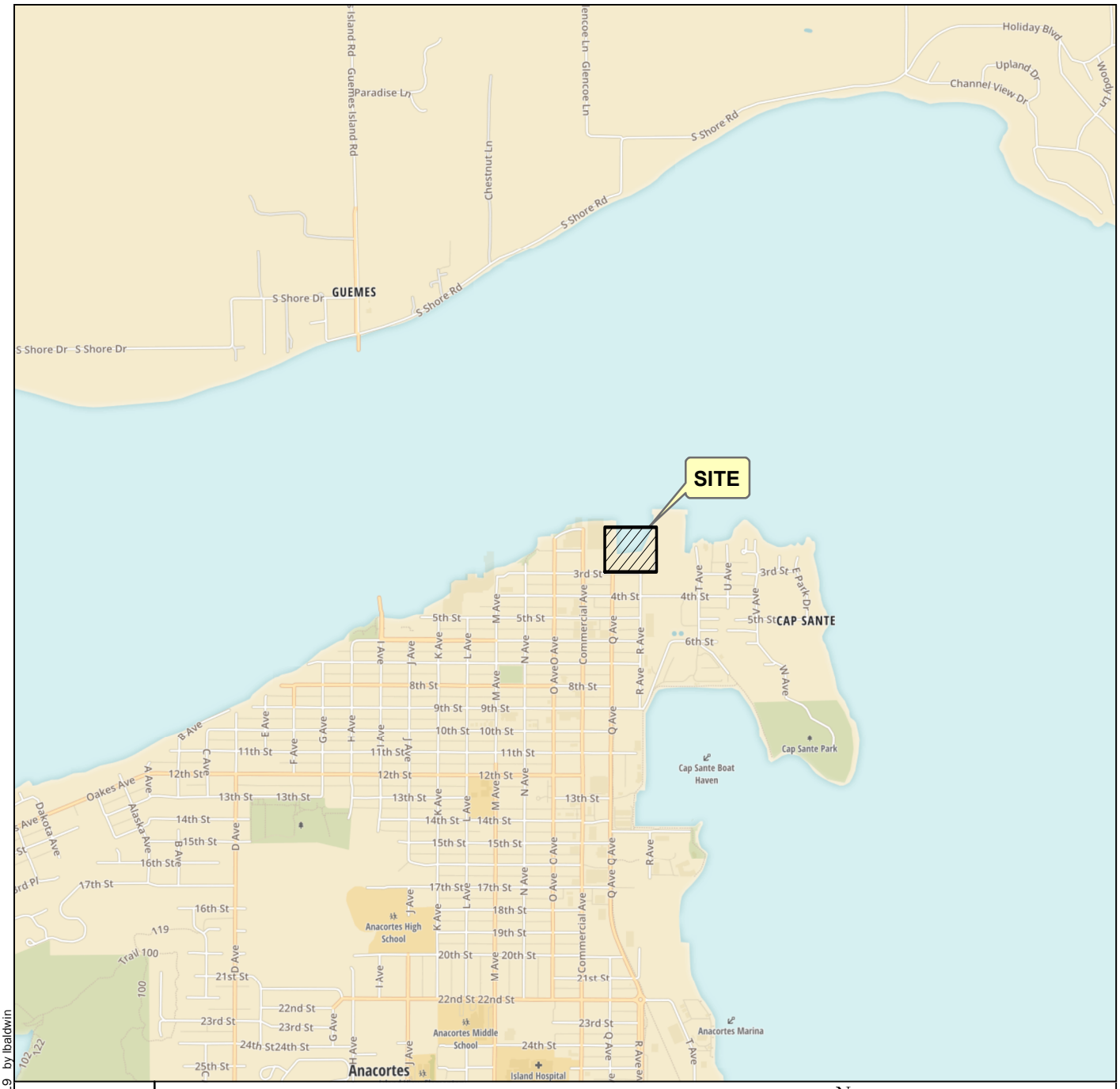
mL = milliliter

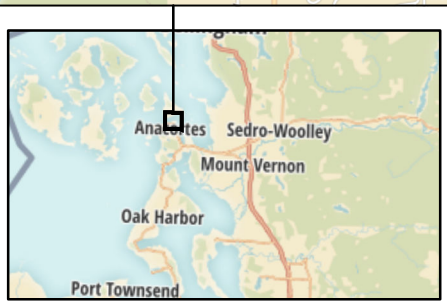
oz. = ounce

SVOC = semi-volatile organic compound

VOC = volatile organic compound

WM = wide mouth





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Feet

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 UTM Zone 10N

Vicinity Map

Dakota Creek Industries
Anacortes, Washington

GeoEngineers

Figure 1

C:\Users\lbaldwin\Desktop\Templates\VicinityMap.mxd Date Exported: 02/27/19 by lbaldwin

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Aerial from Google Earth Pro dated 8/2011.

Projection: WA State Plane, North Zone, NAD83, US Foot

N W E S

60 0 60
Feet

Syncrolift Pier
Open Cell Bulkhead
Warehouse 9
Guard Station
Gate
Pier 2 Detention Pond
Stormwater Treatment System
Paint Shed
Shop
Sand Shed
GEI-47
GEI-48
GEI-49
GEI-50
GEI-51
GEI-52
GEI-53
Guard Station
Gate
Commercial Ave
3rd Street

Legend

- Dakota Creek Industries (DCI) Property Boundary
- Previous Marine Area Dredge and Backfill Area
- Existing Bulkhead
- x — Existing Fence
- Proposed Soil Sample Location to Verify the Completeness of Previously Completed Soil Removal Actions

- UST Removal Enclosure Area (A-1 1991)
- Marine Railway Winch Removal Area (Landau 2001)
- Petroleum Cleanup Action Area (Landau 2002)
- Marine Railway Cleanup Action Area (Landau 2002)
- Contaminant Source Area - Area in Which Metals (Arsenic and/or Nickel) Exceed Three Times the Preliminary Soil Cleanup Level
- Soil Removal Area

- A — Compressed Air
- C — Comm Line
- E — Electrical
- F4 — Fireline 4
- F6 — Fireline 6
- SS — Sanitary Sewer
- SD — Stormwater Drain
- W — Water
- CW — Cold Water
- P — Power
- Catch Basin
- Manhole
- Outfall

Proposed Supplemental Soil Investigation

Dakota Creek Industries
Anacortes, Washington

GeoEngineers

Figure 2

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