Independent Remedial Action Report

Facility/Site: 2821735
Wyman's Marina and Wholesale Supply
202 U Avenue
Anacortes, Washington

for
Washington State Department of Ecology
on Behalf of Port of Anacortes

October 8, 2014

GeoEngineers
Earth Science + Technology

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Table of Contents

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1.0 INTRODUCTION

This document presents the results of the independent remedial action completed by the Port of Anacortes (Port) at the Wyman's Marina and Wholesale Supply property (Site) located in Anacortes, Washington. The Site is listed on the Washington Department of Ecology (Ecology) Confirmed and Suspected Contaminated Sites List and has been assigned Facility/Site number 2821735. The cleanup site ID is 2097.

Cleanup of the Site was completed in conjunction with the Port's Project Pier 1 Redevelopment Project. As part of the compensatory mitigation package for the Pier 1 Redevelopment Project (Project Pier 1; United States Army Corps of Engineers [USACE] reference 200501451; HPA #104269-1), the construction of a habitat mitigation area was required by the permitting agencies. To fulfill these mitigation requirements, the Wyman's Marina and Wholesale Supply property was selected as the location for replacing the aquatic habitat affected by the Pier 1 Redevelopment Project. In the process of completing the habitat mitigation construction at the Site, suspected contamination was confirmed and remediated.

The purpose of GeoEngineers, Inc.'s (GeoEngineers) Independent Remedial Action Report is to present the data summarizing the environmental condition of the Site before and after the remedial action; describe the remedial actions completed and how the selected actions meet the substantive requirements for cleanup under the Model Toxics Control Act (MTCA); and formally request a No Further Action (NFA) opinion from Ecology for this site through Ecology's Voluntary Cleanup Program (VCP).

1.1. Property Description

The property is located approximately ½ mile northeast of downtown Anacortes, Washington (Figure 1). The property is bounded to the north by the Guemes Channel, to the east by private residences, to the south by 3rd Street and to the west by a boat ramp and restaurant. The concrete boat ramp located west of the property is utilized for the commercial transportation of goods and services to the San Juan Islands. Prior to the construction activities, the former Wyman's Marina Building (which had been vacant for several years) consisted of three wooden and sheet metal buildings with a gravel parking area to the east and south. A concrete pier supported by creosote treated piles and a floating dock extended north from the former building into Guemes Channel.

During the fall of 2013, the former Wyman's building and associated structures were removed and a significant portion of the property was excavated to create an intertidal habitat. The current configuration of the Site includes new intertidal areas including salt marsh, bedrock outcroppings, shoreline revetment to prevent erosion, landscaped riparian areas, a path, and shoreline overlook with public access. The Site is now called Robinson's Cove and is open to the public.

Skagit county records indicate that the property is comprised of four parcels. Tax parcel numbers and legal descriptions that comprise the property are as summarized in the following table.

Tax Parcel Number	Legal Description
P56510	Anacortes Tide Lands East 1880 feet Tract 8 Plate 9 (0.4100 acre)
P56511	Lots 15 to 20 of Block 289, Together with the North 1/2 of Vacated 2nd Street Adjacent thereto, Anacortes
P56526	Anacortes South ½ Vacated 2nd Street Adjacent to Lots 1 to 6, Block 288
P32869	Anacortes Block 288 Lots 1 to 6

1.2. Historical Operations and Property Use

Prior to the late 1940s the property and surrounding area were used for lumber milling and ship building operations. With the decline in the demand for lumber and the cost to rebuild many of the mill facilities following fires, the property was sold to Raymond and Kathleen Robinson (Robinson; Kohler, 2003) who operated an 80 berth marina with a fueling, dry dock, and maintenance and storage facilities (Robinson's Marina). The area in front of the marina was reportedly dredged in the 1950s to create deep water mooring for up to 160 boats and the upland portion of the property south of the main building was graded to provide on-site parking. On December 15, 1964, Robinson's Marina and many of the moored boats were damaged by a storm event resulting in the discontinuation of the moorage and marina operations at the property. Robinson's Marina continued with boat maintenance and engine repair services until 1965 when the property was sold to the Port of Anacortes. The Port leased the property to Don and Rayetta Wyman to continue the boat repair and fueling services.

The Wyman's Marina operated until 1998. At this time, marina and boat maintenance operations ceased and underground storage tanks (USTs) associated with the marine fueling operations were decommissioned and removed from the property. In 2011, the Port replaced the boat ramp located west of the former Wyman's building. As part of the recent construction activities, contaminated materials and in-water and upland structures (with the exception of the existing boat ramp) were removed as further summarized in this report.

The layout of the Property and surrounding area prior to recent construction activities for the habitat mitigation area are shown on Figure 2. Historical photographs showing the layout of the property and surrounding area prior to 1973 are presented in Appendix A.

1.3. Ecology's Listing of the Site

Ecology maintains a list of confirmed and suspected contaminated sites. Ecology sent an Early Notice Letter (Ecology, 2003) notifying the Port that the Wyman's Marina Site was being added to Ecology's list as a site known to be contaminated by hazardous substances. The Ecology assigned Site identification number is #2821735. Ecology referenced previous investigations as evidence that contaminated media exists at the Site and completed a Site Hazard Assessment Worksheet attached to the letter and dated February 19, 2009. The letter states that if an independent cleanup action is undertaken, a report may be submitted to Ecology through the Voluntary Cleanup Program for formal review.

2.0 CHARACTERIZATION OF THE SITE

This section provides characterization of the Site including the geologic setting, summary of environmental investigations, the nature and extent of contamination and exposure pathways at the Site.

2.1. Geologic Setting

The United States Geological Survey (USGS) map of the Bellingham Quadrangle (Lapen, 2000) was reviewed for geologic information in the vicinity of the Site. Mapped soils in the vicinity of the property include both glacial and non-glacial processes that have occurred during the last 12,000 years. Surface soil deposits are identified as artificial fill and recessional marine (glaciomarine) drift from the Everson interstade of the Fraser glaciation. Bedrock outcroppings from the Lummi Formation are present east and west of the property.

Based on previous environmental investigations, soil at the Site consists of fill material overlying glaciomarine deposits. Fill deposits consist primarily of fine to coarse sand with gravel and varying silt content. The underlying glaciomarine deposits consist primarily of unsorted, unstratified silt and clay with varying amounts of sands and gravels. Slow groundwater seepage was observed at the fill/native soil contact located at a depth of approximately 4 to 5 feet below ground surface (bgs) and is reported as an isolated, perched zone over fine grained native sediments and bedrock (Hart Crowser, 2001). The inferred groundwater flow is to the north and may be locally affected by tidal intrusion of salt water from Guemes Channel.

2.2. Previous Environmental Investigations

Four previous environmental investigations were completed at the Site prior to the start of planning for the habitat mitigation construction project including:

- Environmental Site Assessment (Otten, 1997);
- Underground Storage Tank Closure in 1985 (Otten, 1998);
- Preliminary Environmental Assessment (Hart Crowser, 2001); and
- Soil and Sediment Investigation in 2004 (Landau, 2004).

The results for these environmental investigations are summarized in the following sections. Chemical analytical results for soil, sediment and groundwater samples obtained in conjunction with these studies are presented in Tables 1 through 3, respectively. Previous investigation sampling locations are shown on Figure 3. The complete reports documenting these environmental studies are presented in Appendix B.

2.2.1. Phase 2 Environmental Assessment (Otten Engineering, 1997)

A Phase 2 Environmental Assessment was conducted by Otten Engineering (Otten) in July 1997 (Otten, 1997) to evaluate the potential for contamination in surface soil, building materials, and marine sediment. During this investigation, portions of the property believed to have the highest potential for contamination including shallow sediment in and around the pier and floating dock, shallow soil in the vicinity of the former Wyman's building and adjacent gravel parking lot were evaluated. In addition, building materials potentially containing asbestos and lead were also evaluated. Soil, sediment and

building material investigation activities, and chemical analytical results are summarized in the following sections.

2.2.1.1. Otten – Soil Investigation and Analytical Results

Soil investigation activities completed by Otten included the collection of shallow soil samples (i.e., less than 1-foot from the surface) from fifteen locations (WY-UPLD-SS-1 through WY-UPLD-SS-15) for chemical analysis. Samples were collected from areas in which surficial staining or sand blast grit was observed. Selected samples obtained as part of this investigation were analyzed for petroleum hydrocarbons, metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs) and/or pesticides. Results of the soil investigation indicated that contaminants of potential concern were not detected or were detected at concentrations less than MTCA Method A or B soil cleanup levels for unrestricted land use, with the following exceptions:

- Exceedances of petroleum hydrocarbons were detected in shallow soil samples WY-UPLD-SS-2, WY-UPLD-SS-6, WY-UPLD-SS-12, WY-UPLD-SS-14, and WY-UPLD-SS-15 located in the gavel parking area and/or adjacent to the former machine/mechanic's shop.
- Exceedances of metals including arsenic, copper and/or lead were detected in shallow soil samples WY-UPLD-SS-8A, WY-UPLD-SS-9, WY-UPLD-SS-13, WY-UPLD-SS-14, and WY-UPLD-SS-15 located adjacent to the former machine/mechanic's shop, former concrete pier and historical slide rail boat launch ramp.
- Exceedances of pesticides were detected in shallow soil sample WY-UPLD-SS-13 located adjacent to the former wood shop.

Soil sampling locations and a summary of investigation findings are shown on Figure 3. Soil chemical analytical results are summarized in Table 1.

In 2011, the former slide rail boat launch was replaced with a new concrete boat ramp to facilitate transportation of goods to the San Juan Islands. To facilitate the construction of the new boat ramp, the former rails and associated concrete foundation, and the upper 8-inches (approximate thickness of the new concrete ramp) of soil within the footprint of the new ramp were removed. As a result, soil represented by sample WY-UPLD-SS-8A was removed from the Site.

2.2.1.2. Otten – Sediment Investigation and Analytical Results

The sediment investigation activities completed by Otten included the collection of surficial sediment samples from six locations (WY-SED-01 through WY-SED-06) for chemical analysis. Sediment samples were obtained within the former marina area adjacent the slide rail boat launch and over-water floats. Selected samples obtained as part of this investigation were analyzed for total organic carbon (TOC), total solids (TS), metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), polycyclic aromatic hydrocarbons (PAHs), VOCs, PCBs and tributyltin (TBT). Results of the sediment investigation indicated that contaminants of potential concern either were not detected or were detected at concentrations less than MTCA Sediment Quality Standards (SQS) and sediment Cleanup Screening Levels (CSLs) for marine sediments.

Sediment sampling locations and a summary of investigation findings are shown on Figure 3. Sediment chemical analytical results are summarized in Table 2.

2.2.1.3. Otten – Asbestos and Lead Study and Analytical Results

To evaluate building materials suspected of containing asbestos, a total of seventeen building material samples were collected by Otten for laboratory analysis. Each of the bulk material samples were discretely analyzed using polarized light microscopy (PLM) techniques. Laboratory results indicated the positive presence of asbestos fibers in vinyl tiles and mastic located in the main retail portion of the 1st floor and roofing material above the wood shop portion of the former building. Asbestos fibers were not detected in acoustical ceiling materials, insulation materials or wall plaster.

Interior and exterior paint chip samples were also collected for chemical analysis of lead. Detectable concentrations of lead were identified in each of the five paint chip samples analyzed. Asbestos and lead results are presented in the Phase 2 Environmental Assessment report (Otten, 1997) included in Appendix B.

2.2.2. Underground Storage Tank Closure Assessment (Otten Engineering, 1998)

The decommissioning of four USTs associated with the fueling services at the former Wyman's Marina was completed between February and March 1998 (Otten, 1998). An assessment was conducted to evaluate the potential presence of petroleum hydrocarbons in subsurface soil beneath and adjacent to the removed fuel storage and delivery system. The approximate location of the UST removal excavation and product supply lines are shown on Figure 3.

During closure activities, two gasoline USTs, (one 2,000-gallon and one 3,000-gallon), two 3,000-gallon diesel USTs, one fuel dispenser and associated product piping were removed. Excavation activities included the removal of approximately 300 cubic yards of soil based on field screening evidence of petroleum contamination and chemical analytical results. Excavated soil was transferred from the property for thermal treatment and disposal. The final dimensions of the UST removal excavation measured approximately 37 feet long by 27 feet wide by 12 feet deep. The final limit of the product pipe excavation measured approximately 25 feet long by 3 feet wide by 2.5 feet deep.

During UST excavation activities, a water line located within the excavation area was reportedly damaged releasing an estimated 1,500 gallons of water. During excavation, an additional 7,500 gallons of water were recovered using a vacuum truck. Samples of the wastewater generated by the excavation were submitted for chemical analysis of petroleum hydrocarbons (gas, diesel and heavy oil) and fuel additives including benzene, ethylbenzene, toluene and xylenes (BETX), and lead for waste disposal characterization.

At the limits of the UST excavation, discrete soil samples were obtained from the sidewalls of the tank excavation, from beneath the USTs, and from the base of the product pipe excavation for chemical analysis of gasoline-, diesel- and heavy oil-range petroleum hydrocarbons, BETX and lead. Verification samples West W12, NW Wall and N Wall obtained from the initial western and northern excavation sidewalls (see Figure 3) indicated the presence of residual petroleum hydrocarbon at concentrations exceeding MTCA Method A cleanup levels. As a result, the excavation limit was extended to the west and to the north to remove soil represented by these samples and additional sidewall samples collected to verify the removal of petroleum contaminated soil. Contaminants of potential concern were not detected or were detected at concentrations less than MTCA Method A cleanup levels in soil samples obtained from the final limit of the UST and product pipe excavations.

Soil sample locations and a summary of investigation findings are shown on Figure 3. Soil chemical analytical results are summarized in Table 1.

2.2.3. Preliminary Environmental Assessment (Hart Crowser, 2001)

In 2001, Hart Crowser conducted a limited Phase 1 Environmental Assessment for the property and surrounding area. The purpose of this investigation was to review previous investigations completed at the property and to conduct a regulatory agency list and file review. Hart Crowser contracted Environmental Data Resources, Inc. (EDR) to compile data from government agencies. The file review was to acquire regulatory agency file information for the property and adjacent properties to identify sites of potential concern based on their database-type listing and to identify potential sources of contamination or activities of environmental concern. The EDR review was limited to current files and did not include a review of archived information. Findings by Hart Crowser are described in the Draft Preliminary Environmental Assessment (Hart Crowser, 2001) presented in Appendix B and are summarized in the following sections.

2.2.3.1. EDR Review – Wyman's Marina Property Findings

Available file information from Ecology indicates that Wyman's Marina was granted coverage under General National Pollutant Discharge Elimination System (NPDES) Permit for boatyards beginning in 1993. Application materials indicated that approximately 65 percent of the boats were hauled out for service and 40 percent had hull pressure washing. The application also noted that sandblasting had been discontinued in the yard areas, and that Wyman's Marina had a pesticide application license. This license was likely related to applications of hull coatings with metals to resist biological degradation in the marine environment.

As part of NPDES permit requirements, Wyman's also submitted plans for a pressure wash treatment system that included effluent containment from the crane/concrete dock and marine ways areas. Plans called for the treated water to be recycled, with accumulated sludge disposed of at a local incinerator. Construction was noted as completed in a 1994 Ecology compliance inspection report. Visible overfilling and ground staining were apparent in inspection photographs taken near a waste oil above-ground storage tank (AST) and waste antifreeze drums located near the mechanic's shop. A follow-up inspection by Ecology in 1996 indicated that "the yard was in good shape." Spill control and solid waste disposal plans had also been completed by that time, and standard best management practices (BMPs) were being implemented. Laboratory testing data (presumably for a sample of the pressure washing treatment system sludge) indicated leachable metals concentrations at concentrations below limits for designation as Dangerous Waste.

On February 6, 2001, Hart Crowser conducted a reconnaissance of the property. During their visit, the property was vacant with no drums or other debris stored in the yard or dock areas. Exposed gravel and soil areas exhibited only incidental, local soil staining without indication of widespread surficial contamination.

2.2.3.2. EDR Review – Surrounding Area Information

The EDR report was reviewed for surrounding properties located in the apparent up-gradient and cross-gradient groundwater flow direction, within about 500 feet from the subject property that had reported releases of contaminants to soil and/or groundwater. There were no such sites listed in the vicinity of the subject property.

During the February 2001 Hart Crowser reconnaissance of the property, no obvious indications of adverse environmental conditions were identified on or at the adjacent properties. Potential up-gradient sources identified included home heating oil tanks, however it was noted that these represented a low potential for migratory contamination because of their distance from the Wyman's Marina Property.

2.2.4. Multiple Site Investigation (Landau, 2004)

In 2004, Landau Associates (Landau) conducted a multiple site investigation at the request of the Port as part of a voluntary due diligence study to further evaluate previously identified contamination. The multiple site investigation was performed on six properties owned by the Port including the Wyman's Marina Property.

Investigation activities at the Wyman's Marina Property included the completion of five borings (MSI-4-1 through MSI-4-5) using direct-push drilling methods in areas where historical practices were considered most likely to impact subsurface soil or groundwater. In addition, one composite sediment sample (MSI-4-6SD) was generated from three discrete sampling locations (MSI-4-6a, MSI-4-6b and MSI-4-6c) adjacent to the former over-water floats.

Selected soil samples from all five borings and a grab groundwater sample from boring MSI-4-4 were submitted for chemical analysis of gasoline-, diesel- and heavy oil-range petroleum hydrocarbons, BETX and metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc). The composite sediment sample (MSI-4-SD) was submitted for chemical analysis of metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver and zinc), PCBs, semi-volatile organic compounds (SVOCs), TBT, TOC and TS. Groundwater samples from other boring locations were not collected because groundwater was not encountered.

Contaminants analyzed were not detected or were detected at concentrations less than MTCA Method A or B cleanup levels in soil and groundwater samples submitted for analysis. In addition, contaminants analyzed in sediment samples were either not detected or were detected at concentrations less than SQSs and CSLs.

Chemical analytical results for soil, sediment and groundwater samples obtained during this investigation are summarized in Tables 1, 2 and 3, respectively. Sampling locations and a summary of investigation findings are shown on Figure 3.

2.3. Supplemental Site Characterization

In support of project planning and design for the habitat mitigation project, a supplemental soil investigation was completed to:

- Further define the vertical and lateral extent of previously identified shallow soil contamination associated with historic Site use;
- Confirm the removal of petroleum related contamination in soil in the northern portion of the UST removal excavation;
- Evaluate soil disposal options for clean and contaminated soil that would be generated during mitigation habitat construction activities; and

- Characterize soil conditions relative to the Sediment Management Standards ([SMS]; Washington Administrative Code [WAC] 173-204-320) at the final excavation surface to ensure that the exposed surface would not result in degradation of the marine environment.

Selected soil samples obtained from the Property were submitted for analysis of contaminants previously identified at the Property including gasoline-, diesel- and heavy oil-range petroleum hydrocarbons, BETX, PCBs, metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc), SVOCs and organochlorine pesticides (DDD).

A letter documenting the supplemental soil investigation activities are presented in Appendix C. Sampling activities and the chemical analytical results of this investigation are summarized in the following sections.

2.3.1. Surface Soil Investigation and Analytical Results

A total of 21 shallow soil samples (summarized in Table 4) were obtained to evaluate the vertical and lateral extent of the previously identified contamination in soil at the Site. Discrete soil samples were obtained adjacent to and beneath historical soil sample locations in which previous environmental investigations encountered contaminants exceeding the MTCA Method A or B cleanup levels for unrestricted land use.

Contaminants were not detected or were detected at concentrations less than MTCA Method A or B cleanup levels in each of the samples submitted for chemical analysis. Soil sampling locations and a summary of investigation findings are shown on Figure 4. Chemical analytical results are summarized in Table 4.

2.3.2. Waste Disposal Characterization

2.3.2.1. Toxicity Characteristic Leaching Procedure Analyses

Due to the detected lead concentration in soil greater than 20 times[1] the associated toxicity characteristic threshold (WAC 173-303-090(8)) at locations WY-UPLD-SS-13, WY-UPLD-SS-14 and WY-UPLD-SS-15 (sample locations shown on Figure 3), two discrete soil samples (GEI-SS-13-0.5 and GEI-SS-14/15-0.5) were obtained from these locations and submitted for analysis by the toxicity characteristic leaching procedure (TCLP) to evaluate whether the soil generated from these areas would designate as a dangerous waste.

TCLP test results indicated that soil represented by samples GEI-SS-13-0.5 and GEI-SS-14/15-0.5 (sample locations shown on Figure 4) did not designate as a dangerous waste. TCLP analytical results are summarized in Table 4.

2.3.2.2. Landfill Disposal Evaluation

To evaluate landfill disposal options for contaminated soil to be excavated during the habitat mitigation project, a composite soil sample GEI-SS-COMP was obtained from shallow soil at locations WY-UPLD-SS-2,

[1] This is referred to as the "20-times rule" and is described in a September 21, 1992 EPA letter titled "Calculation of TCLP Concentrations from Total Concentrations". This reference is available at:
http://yosemite.epa.gov/osw/rcra.nsf/ea6e50dc6214725285256bf00063269d/95e9e57b91ea2e9f8525670f006c0acd!OpenDocument

WY-UPLD-SS-6, WY-UPLD-SS-9 and WY-UPLD-SS-12 (locations in which previous investigation results identified contaminants of concern exceeding MTCA cleanup levels).

Chemical analytical results of sample GEI-SS-COMP indicated that soil generated by the cleanup action was acceptable for permitted disposal to a Subtitle C Landfill in accordance with Washington State Dangerous Waste Regulations (WAC 173-303). Chemical analytical results for sample GEI-SS-COMP are summarized in Table 4.

2.3.2.3. Unrestricted End Use Disposal Evaluation

To characterize soil that would be excavated for the habitat mitigation project beyond the limits of contamination, a total of six soil samples (GEI-11-8.0 through GEI-16-5.0) were obtained from direct-push borings GEI-11 through GEI-16 for chemical analysis.

Contaminants of concern were not detected with the exception of barium and chromium which were detected at concentrations less that MTCA Method A or B cleanup levels. Chemical analytical results are summarized in Table 4. Soil sample locations are shown on Figure 4.

2.3.3. Proposed Mitigation Habitat Surface Investigation and Analytical Results

To evaluate soil conditions that would be exposed to marine waters following the completion of the mitigation habitat construction excavation, soil samples obtained from the approximate elevation of the final habitat excavation limit in borings GEI-11, GEI-14, GEI-15 and GEI-16 were composited in the field for chemical analysis of SMS constituents (WAC 173-204-320). Due to the presence of bedrock at locations GEI-12 and GEI-13 at elevations above the proposed final habitat cut surface, soil samples from these locations were not obtained for chemical analysis.

Contaminants analyzed were not detected or were detected at concentrations less than the SMS criteria (WAC 173-204-320) in composite soil sample GEI-COMP-1. Chemical analytical results are summarized in Table 5. Soil sample locations are shown on Figure 4.

2.4. Nature and Extent of Contamination

Sampling locations and concentration exceedances over MTCA Method A or B for soil, sediment and groundwater investigations are shown on Figures 3 and 4. Contaminants of potential concern were identified in shallow soil (less than 1 foot) during previous investigations completed at the property at concentrations exceeding MTCA Method A or B cleanup levels for unrestricted land use.

Contaminants of concern based on environmental investigations of the Site include:

- Gasoline-, diesel- and heavy oil-range petroleum hydrocarbons;
- Metals including arsenic, cadmium, copper, lead and mercury; and,
- Pesticides (4,4 DDD).

The results of previous investigations completed at the Property identified contaminants of concern in shallow soil within the gravel parking area south and east of the former Wyman's building as well as in shallow soil adjacent to the machine/mechanics shop west of the former Wyman's building as shown in Figures 3 and 4.

Contaminants of potential concern exceeding MTCA Method A or B cleanup levels were not identified in groundwater in the vicinity of the former USTs (area with the highest potential for contamination). Additionally, contaminants of concern exceeding SQS or CSL were not identified in sediment off shore of the property within the former marina area.

2.5. Potential Contaminant Exposure Pathways and Receptors

Releases from former fueling and marine maintenance operations at the Property have resulted in direct impacts to soil. Impacts to groundwater and sediment were not identified during previous environmental investigations performed at the Property. Potential exposure pathways and receptors related to the Property are discussed below.

2.5.1. Soil

The following potential exposure pathways and receptors for soil include:

- Contact (dermal, incidental ingestion or inhalation) by humans with hazardous substances in soil;
- Contact (dermal, incidental ingestion or inhalation) by terrestrial wildlife with hazardous substances in soil;
- Erosion and deposition of soil containing hazardous substances; and
- Leaching to groundwater.

Sampling data at the Site confirm that contaminated soils are present and therefore, the potential exposure pathways exist.

2.5.2. Groundwater

The following potential exposure pathways and receptors for groundwater include:

- Migration of hazardous substances in groundwater to surface water released from the Site leading to the exposure of aquatic receptors resulting in acute or chronic effects; and,
- Ingestion by humans of aquatic organisms affected by the discharge of impacted groundwater to surface water.

Sampling and analysis data from the Site show that groundwater located within the highest potential source area does not contain contamination. Furthermore, groundwater flow through the Site is erratic due to Site geology and the extensive bedrock located at the Site (encountered during excavation activities). Sediment data from the Site show that there is no evidence of transport from contaminated soils in the adjacent upland areas. These data confirm that there is no contaminant exposure pathway associated with groundwater at the Site.

The cleanup action, as detailed in the following sections, includes complete removal of the soil contamination from the Site. As a result, the potential for groundwater exposure has been eliminated.

2.5.3. Sediment

The following potential exposure pathways and receptors exist for sediment:

- Exposure of benthic organisms to hazardous substances in the biologically active zone of sediment released from the Site, the upper 10 centimeters (cm) below the mudline;
- Ingestion by aquatic organisms of benthic organisms contaminated by hazardous substances released from the Site in sediment; and,
- Ingestion by humans of marine organisms contaminated by hazardous substances released from the Site in sediment.

Sampling and analysis data from the Site show that sediments located offshore of the property are not contaminated relative to the SMS and therefore, there is no complete contaminant exposure pathway associated with sediments at the Site.

3.0 CLEANUP STANDARDS

Cleanup standards have been derived for media with identified exposure pathways at the Site. As described above, soil is the only media at the Site with a complete exposure pathway.

Cleanup standards consist of: (1) cleanup levels that are protective of human health and the environment, and (2) the point of compliance at which the cleanup levels must be met. The following sections describe the cleanup standards for the Site. As discussed in the previous section a complete contaminant exposure pathway does not exist for groundwater or sediment, so cleanup standards have not been developed for these media. Cleanup levels have been developed for soil.

3.1. Cleanup Levels for Soil

The proposed soil cleanup levels are presented in Tables 1 and 4 and were used to screen existing data for the Site. The Site meets the exemption criteria for a terrestrial ecological evaluation (WAC 173-340-7491) because there is less than 1.5 acres of contiguous undeveloped land (portion of the property impacted by hazardous substances) on the Site or within 500 feet of any area of the Site. Based on current site use as a habitat area with public access, proposed cleanup levels for Site soil were developed for unrestricted land use and were based on following regulatory criteria:

- MTCA Method A Soil Cleanup Levels. MTCA Method A values for unrestricted land uses are published in MTCA Table 740-1 (Chapter 173-340-900 WAC).
- MTCA Method B Soil Cleanup Levels. MTCA Method B carcinogen and non-carcinogen values for human health protection, which are based on unrestricted land use (incidental soil ingestion) exposure scenario, were obtained from Ecology's cleanup levels and risk calculations (CLARC) online database.

In addition to the regulatory criteria listed above, Washington State soil background concentrations for metals (Ecology, 1994) are considered in accordance with WAC 173-340-709 and WAC 173-340-705(6).

In general, the lowest of the regulatory criteria listed above were identified as the proposed soil cleanup levels with the following exception.

- If the lowest regulatory criterion was less than the background concentration, the proposed soil cleanup level was set at the background concentration.

3.2. Point of Compliance for Soil

Under MTCA, the point of compliance is the point or location on a site where the cleanup levels must be attained. The point of compliance for soil is throughout the soil column from the ground surface to 15 feet bgs, in accordance with WAC 173-340-740(6)(d).

4.0 SELECTION OF THE CLEANUP ACTION

As previously discussed, the Site was selected as the location for the replacement of aquatic habitat affected by the Pier 1 Redevelopment Project. The habitat mitigation requirements included adding intertidal and shoreline habitat. To achieve the required intertidal and shoreline habitat much of the Site was required to be excavated. A range of cleanup alternatives were not evaluated for this Site because the excavation required for construction of the habitat mitigation included full removal of the identified contaminated soil at the Site and therefore, provided for a conservative and permanent remedy. The excavation and disposal of contaminated soil at a permitted landfill was utilized as the cleanup action. This cleanup action achieves the substantive requirements for a MTCA cleanup action as described in the following sections.

4.1. Threshold Requirements

Remedial actions performed under MTCA must comply with basic threshold requirements. Remedial actions that do not comply with the threshold requirements are not considered suitable remedial actions under MTCA. As provided in WAC 173-340-360(2)(a), the four threshold requirements for remedial actions are that they must:

- Protect human health and the environment;
- Comply with cleanup standards;
- Comply with applicable state and federal laws; and
- Provide for compliance monitoring.

The following sections describe how the selected cleanup action for the Wyman's Marina Site achieves these requirements.

4.1.1. Protection of Human Health and the Environment

The results of remedial actions performed under MTCA must ensure that both human health and the environment are protected. The selected cleanup action achieves protection of human health and the environment through complete removal of contaminated material from the Site and disposal at a permitted landfill.

4.1.2. Compliance with Cleanup Standards

Compliance with cleanup standards requires, in part, that cleanup levels are met at the applicable points of compliance. If a remedial action does not comply with cleanup standards, the remedial action is an interim action, not a remedial action. Where a remedial action involves containment of soils with hazardous substance concentrations exceeding cleanup levels at the point of compliance, the remedial action may be determined to comply with cleanup standards, provided the requirements specified in WAC 173-340-740(6)(f) are met.

The selected cleanup action achieves cleanup standards because the soil exceeding cleanup levels is removed and disposed at a permitted landfill. Soil samples collected at the elevation exposed to aquatic habitat upon completion of the habitat mitigation excavation were analyzed and found to be at concentrations below the Sediment Management Standards.

4.1.3. Compliance with Applicable State and Federal Laws

Remedial actions conducted under MTCA must comply with applicable state and federal laws. The term "applicable state and federal laws" includes legally applicable requirements and those requirements that Ecology determines to be relevant and appropriate as described in WAC 173-340-710.

The selected cleanup was conducted in accordance with applicable state and federal laws including obtaining project permits.

4.1.4. Provision for Compliance Monitoring

The remedial action must allow for compliance monitoring in accordance with WAC 173-340-410. Compliance monitoring consists of protection monitoring, performance monitoring and confirmational monitoring. Protection monitoring is conducted to confirm that human health and the environment are adequately protected during construction and the operation and maintenance period of a cleanup action. Performance monitoring is conducted to confirm that the remedial action has attained cleanup standards and, if appropriate, remediation levels or other performance standards. Confirmational monitoring (soil, groundwater, and/or sediment) is conducted to confirm the long-term effectiveness of the remedial action once cleanup standards and, if appropriate, remediation levels or other performance standards have been attained.

The selected cleanup action included protection monitoring during construction through field screening and monitoring to confirm that human health and the environment were protected during construction. Performance monitoring and verification samples were utilized from existing site soil sample data collected at the Site.

Confirmational monitoring is not applicable to the selected cleanup action because all contaminated material identified in the characterization of the Site was removed during the cleanup.

5.0 CLEANUP OF THE SITE

The habitat mitigation project construction was completed from October 2013 through January 2014. Construction included excavation of a total of approximately 13,520 cubic yards of soil to provide intertidal habitat for juvenile salmonids. In total, the mitigation project resulted in the removal of

approximately 7,600 square feet (approximately 0.17 acre) of overwater structures, creation of approximately 17,800 square feet (approximately 0.41 acre) of intertidal habitat, and approximately 8,500 square feet (approximately 0.2 acre) of riparian/salt marsh habitat.

The Port's general contractor for the project was Strider Construction Company with oversight by GeoEngineers for demolition, excavation, and rock wall construction activities; Coast and Harbor Engineering for slope revetment and habitat fill activities; and WHPacific for landscaping, fence installation, public pathway construction, and site restoration activities. The following sections summarize construction activities and document how cleanup of the Site was achieved.

Appendix D presents the contract design drawings for the habitat mitigation project. The construction work was completed in accordance with state and federal laws. Appropriate permits were obtained prior to construction including:

- United States Army Corps of Engineers (USACE) – Section 404 (discharge into waters of United States) and Section 10 (work in navigable waters);
- Washington State Department of Ecology – Section 401 Water Quality Certification;
- Washington Department of Fish and Wildlife (WDFW) – Hydraulic Project Approval (HPA); and
- City of Anacortes, Department of Planning, Community and Economic Development – Shoreline Substantial Development Permit.

Copies of these permits are included in Appendix E.

5.1. Site Preparation

5.1.1. Utility Protection

Prior to any groundbreaking activities, utility locating agencies were contacted to identify utilities in the vicinity of the work area. Identified utilities within the project area including water, sewer, power and natural gas were cut and capped at the Property boundary as necessary to the construct the habitat area. Respective utility providers including Puget Sound Power and the City of Anacortes were notified in advance of excavation to coordinate the decommissioning and removal of these utilities.

5.1.2. Temporary Site Controls

Temporary site controls including site access and security control, vehicular and pedestrian traffic control, erosion and sediment control, and dust and noise control were implemented throughout the project.

During construction, site access was controlled in general accordance with the construction traffic control plans included in the project contract documents (see Appendix D Sheet 5.0). The contractor provided signage, and other traffic control devices as necessary for cordoning off the work area in accordance with the City of Anacortes codes/requirements. Temporary fencing, barricades, and traffic control flaggers were used as necessary, to control access to construction work area. The fencing and other traffic control measures remained in-place throughout the duration of the project.

BMPs were used to control erosion during construction. BMPs implemented were consistent with Ecology's Stormwater Management Manual for Western Washington. Temporary erosion and sediment control elements included:

- Prevention of sediment, debris and sediment-laden water from leaving the Site and entering adjacent surface streets/storm drains through the use of silt fencing and silt dikes, and a floating debris boom for the offshore area of the Site.
- Implementation of BMPs at construction entrance/exit to minimize the tracking of sediment onto the adjacent surface streets.
- Securing of soil stockpiles with plastic sheeting to control erosion and dust from wind, rain, and other disturbances, as appropriate.

Work associated with the construction was performed during hours allowed by City of Anacortes municipal code with the exception of shoreline work which was performed during periods of low tide. Prior to performing any work outside of the allowable work window, a variance from the City of Anacortes was obtained.

5.1.3. Building Abatement and Demolition

Demolition of upland structures included the removal of the Wyman's Building associated building foundation, a concrete pad located south of the Wyman's Building, a mature tree located northeast of the Wyman's Building and a concrete bulkhead located along the southern edge of Wyman's Pier and surficial concrete/asphalt debris located along the Property shoreline.

Prior to building demolition activities, GeoTest Services Inc., (GeoTest) conducted an asbestos, lead and PCB survey for the Wyman's Building. Suspected materials containing asbestos, lead and/or PCBs were evaluated to ensure the proper handling and disposal of these materials during demolition.

Based on the result of GeoTest's survey, floor tiles identified as containing asbestos and potential PCB containing lighting fixtures were abated by a licensed contractor (Environmental Abatement Service, Inc.) prior to building demolition. Material generated by the abatement activities were placed in secured containers and transferred from the property for permitted disposal. Waste disposal receipts for these materials are presented in Appendix F. Other demolition debris generated by the upland demolition activities were transferred from the Property for disposal at a construction solid waste facility.

5.1.4. Over- and In-Water Structure Demolition

Demolition of existing marine structures included the removal of the following:

- Six mooring dolphins located approximately 200 feet from the shore, each of which includes five to seven creosote-treated timber piles totaling approximately 40 piles;
- Approximately 20 isolated creosote-treated timber piles, existing as a single pile or as pairs;
- Two timber pile clusters located water ward of the northwest corner of the Wyman's Pier, each of which consisting of 20 creosote-treated timber piles;
- A fuel float and associated structures including a gangway ramp, three floating docks and miscellaneous abandoned fueling equipment/pump;

- Eight creosote-treated timber piles anchoring the fuel float;
- A pile-supported concrete deck (Wyman's Pier) with a timber deck in the northeast corner from which the fuel float gangway ramp extended to the floating docks; and,
- Approximately 180 creosote-treated timber piles supporting the Wyman's Pier.

Orion Marine Group was hired by Strider to remove creosote treated piles from the marine area using vibratory removal methods. Piles were removed and transported to a disposal facility. Other demolition debris generated by the marine area demolition activities including the pier and floating docks were transferred from the Property for disposal at a construction solid waste facility.

In accordance with USACE Permit No. 200501451, water quality monitoring was completed during in-water activities. Exceedances of the water quality criteria beyond the compliance point were not observed during demolition activities.

5.2. Remedial Excavation Activities

Remedial excavation activities to remove contaminated soil were competed prior to conducting full excavation for the habitat site. The remedial excavation occurred between October 7 and October 19, 2013.

Remedial excavation included removal of six shallow, isolated areas of gasoline-, diesel- and heavy oil-range petroleum hydrocarbons, metals (arsenic, cadmium, copper, lead and mercury), and/or pesticides (4,4 DDD) contamination. Throughout the remedial excavation a GeoEngineers field representative was onsite to observe soil generated by the excavation and to assist the earthwork contractor in segregating soil with contaminant concentrations exceeding the cleanup standards for the Site. In addition, an archeological monitor was onsite during excavation of fill material (non-native soil) during remedial excavation activities to screen excavated material for potential archeological significance as required by project permits.

The soil samples obtained during the supplemental soil investigation as well as previous environmental studies were used as final excavation limit verification soil samples. The excavation limits were extended vertically and laterally within each remedial excavation area (RA-1 through RA-6) to the location of the previously collected samples in which contaminants either were not detected or detected at concentrations less than the cleanup levels.

Contaminated soil generated by the remedial excavation either was temporarily stockpiled on Site pending permitting landfill disposal or loaded directly into truck and trailers and transported from the Property for permitted landfill disposal at a Subtitle C landfill facility as required by Washington Dangerous Waste regulations (WAC 173-303). In total, approximately 417 tons of contaminated soil was excavated and removed from the Property for permitted landfill disposal at Chemical Waste Management facility located in Arlington, Oregon. Copies of the tipping receipts documenting delivery of contaminated soil to the landfill facility are presented in Appendix G. Remedial excavation activities and verification soil sample results for RA-1 through RA-6 are summarized as follows:

- **Remedial Excavation Area RA-1**: Based on GeoEngineers construction observations, field screening results and chemical analytical results of verification soil samples, approximately 23 cubic yards of gasoline-, diesel- and heavy oil-range petroleum hydrocarbon contaminated soil was excavated from

RA-1 to complete the cleanup action at this location. A total of four verification soil samples (GEI-SS-6-1-1.5 through GEI-SS-6-4-0.5) represent soil conditions from the final RA-1 excavation limit.

- **Remedial Excavation Area RA-2**: Based on GeoEngineers construction observations, field screening results and chemical analytical results of verification soil samples obtained, approximately 20 cubic yards of diesel- and heavy oil-range petroleum hydrocarbon contaminated soil was excavated from RA-2 to complete the cleanup action at this location. A total of four verification soil samples (GEI-SS-2-1-1.5 through GEI-SS-2-4-0.5) represent soil conditions from the final RA-2 excavation limit.
- **Remedial Excavation Area RA-3**: Based on GeoEngineers construction observations, field screening results and chemical analytical results of verification soil samples obtained, approximately 6 cubic yards of diesel- and heavy oil-range petroleum hydrocarbon, cadmium, lead and mercury contaminated soil was excavated from RA-3 to complete the cleanup action at this location. A total of five verification soil samples (GEI-SS-14/15-1-1.5 through GEI-SS-14/15-4-0.5 and WY-UPLD-SS-3) represent soil conditions from the final RA-3 excavation limit.
- **Remedial Excavation Area RA-4**: Based on GeoEngineers construction observations, field screening results and chemical analytical results of verification soil samples obtained, approximately 3 cubic yards of diesel- and heavy oil-range petroleum hydrocarbon contaminated soil was excavated from RA-4 to complete the cleanup action at this location. A total of four verification soil samples (GEI-SS-12-1-1.5 through GEI-SS-12-4-0.5) represent soil conditions from the final RA-4 excavation limit.
- **Remedial Excavation Area RA-5**: Based on GeoEngineers construction observations, field screening results and chemical analytical results of verification soil samples obtained, approximately 4 cubic yards of cadmium, lead, mercury and organochlorine pesticide contaminated soil was excavated from RA-5 to complete the cleanup action at this location. A total of four verification soil samples (GEI-SS-13-1-1.5 through GEI-SS-13-4-0.5) represent soil conditions from the final RA-5 excavation limit.
- **Remedial Excavation Area RA-6**: Based on GeoEngineers construction observations, field screening results and chemical analytical results of verification soil samples obtained, approximately 1.5 cubic yards of arsenic and copper contaminated soil was excavated from RA-6 to complete the cleanup action at this location. A total of four verification soil samples (GEI-SS-9-1-1.5 through GEI-SS-9-4-0.5) represent soil conditions from the final RA-6 excavation limit.

Contaminants of concern were not detected or were detected at concentrations less than the cleanup standards in the verification samples as summarized in Table 4. The final limits of the remedial excavations (RA-1 through RA-6) and the location of verification soil samples are shown on Figure 5.

5.3. Habitat Area Excavation

On completion of the contaminated soil removal, underlying soil was excavated to achieve the habitat design elevations specified in the project design. Soil excavated for disposal is represented by soil samples that were collected and analyzed to characterize the material for unrestricted land use disposal options (GEI-11-8 through GEI-16-5). Based on the chemical analytical result of these samples (see Table 4), soil generated by the habitat excavation was approved for disposal at Concrete Nor' West disposal facility. Excavated soil either was temporarily stockpiled on Site or loaded directly into truck and trailers and transported from the Property to the reclamation facility for disposal. In total, approximately 27,670 tons of clean soil was excavated to achieve the excavation limits for the habitat area. Copies of

the tipping receipts documenting delivery of clean soil to the reclamation facility are presented in Appendix H.

An archeological monitor was onsite during excavation of fill material (non-native soil) to screen excavated material for potential archeological significance. On October 30, 2013, the archeological monitor found a potential shell midden deposit during excavation in the northeast portion of the Site. The Port contacted the USACE and tribes as required in project permits and also developed a proposal for addressing the potential shell midden. Following meetings with the USACE and various tribal representatives the USACE accepted the Port's plan to remove the shell midden, screen the material and submit a report detailing the results. On November 7, 2013 the shell midden deposit was excavated and stockpiled on a parking lot adjacent to the Site. The material was screened and disposed of at the reclamation pit over the course of approximately 4 weeks. No other potential archeologically significant items or evidence was encountered during the remainder of the excavation activities.

To represent soil conditions at the excavation limit of habitat area, composite soil sample GEI-COMP-1 was collected and analyzed for SMS contaminants of concern (see Table 5). Contaminants of concern were either not detected or were detected at concentrations less than SQS and CSLs in this sample. The final limits of the habitat excavation and the discrete soil sampling locations in which composite sample GEI-COMP-1 was generated are shown on Figure 6.

5.4. Habitat Area Construction

Figure 7 presents the habitat area after construction was completed at the Site.

5.4.1. Rock Wall Construction

A rock wall was constructed to help achieve the desired elevations and areal extent for intertidal habitat at the Site. The rock wall effectively separates the public access and boat ramp portion of the Site from the intertidal and shoreline areas. The rock wall was constructed as specified in the design drawings (see Appendix D Sheets 13.0 and 13.1).

5.4.2. Shoreline Revetment Construction

A shoreline revetment was constructed for the slopes in the northern portion of the Site to protect against erosion along the shoreline. The revetment was constructed with a layer of bedding stone underlying armor stone. Material was imported and placed for the revetment wall with oversight by Coast and Harbor Engineering and was constructed as specified in the design drawings (see Appendix D Sheets 11.0 and 11.1). The Contractor provided analytical data to demonstrate that the quarry from which the bedding and armor stone was imported was free of contaminants as presented in Appendix I. Analytical results show all concentrations to be below SMS standards.

5.4.3. Habitat Fill Backfill and Grading

Grading was completed consistent with the design drawings to provide a transition slope from the intertidal area to the base of the rock wall. In the southwest corner of the Site significant bedrock was encountered during excavation. A near vertical cut was excavated in this area in replacement of a transition slope to provide the adequate areal extent for riparian plantings.

Gravel/cobble fish mix and salt marsh mix materials were imported and placed within the intertidal portion of the habitat area as specified in the design drawings (see Appendix D Sheets 11.0 and 11.1). The Contractor provided analytical data to show that imported fish mix and salt marsh mix was free of contaminants as presented in Appendix I. Analytical results show all concentrations to be below SMS standards.

5.5. Site Restoration

5.5.1. Public Access, Fences, and Pathway

A pedestrian pathway was constructed along the eastern edge of the Site to allow public access to an overlook at the northeast corner of the Property. Fences were installed as required by City of Anacortes because the rock wall is adjacent to the pathway. Fences were also installed along the west and south property boundaries to restrict access to the Site from the boat ramp and street, respectively. These site restoration activities were completed in accordance with design drawings and specifications.

5.5.2. Landscaping

Landward of the salt marsh fringe (between +10 feet and approximately +16 feet mean lower low water [MLLW]), the transition slope was planted with native riparian low growing trees, shrubs, and groundcover. Additional riparian plantings consisting of native riparian low growing trees, shrubs, and groundcover were installed at the southern end of the mitigation site above the retaining wall. Natural colonization of the salt marsh fringe is expected; however, if required salt marsh vegetation will be planted within the salt marsh fringe to assist with the establishment of salt marsh habitat.

6.0 CONCLUSIONS

Previous environmental investigations summarized in this report showed that shallow soil was contaminated with petroleum hydrocarbons and metals exceeding MTCA cleanup levels. Data from these previous investigations also indicated that groundwater and sediment at the Site was not contaminated. During construction of the habitat mitigation project at the Former Wyman's Marina Property shallow soil was excavated to completely remove contaminated soil. Contaminated soil was transported and disposed of at a permitted landfill facility. Soil samples and construction field observations confirm the complete removal of contaminated soil. The contaminated material at the Site has been removed; therefore, the cleanup action completed as part of the habitat mitigation project is protective of human health and the environment.

7.0 LIMITATIONS

We have prepared this Independent Remedial Action Report for use by Washington State Department of Ecology and the Port of Anacortes to document the remedial action completed at the Wymans Marina and Wholesale Supply Site. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

8.0 REFERENCES

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TABLES

GeoEngineers

Table 1

Summary of Historical Soil Chemical Analytical Data

Wyman's Marina Site

Anacortes, Washington

Sample Identification[1]	WY-UPLD-SS-1	WY-UPLD-SS-2	WY-UPLD-SS-3	WY-UPLD-SS-4	WY-UPLD-SS-5	WY-UPLD-SS-6	WY-UPLD-SS-7	WY-UPLD-SS-8A[2]	WY-UPLD-SS-8B	WY-UPLD-SS-9	MTCA Cleanup Level[3]
Sampled By	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	
Sample Date	**Jul-97**	**Jul-97**	**Jul-97**	**Jul-97**	**Jul-97**	**Jul-97**	**Jul-97**	**Jul-97**	**Jul-97**	**Jul-97**	
Sample Depth (ft bgs)	**0.0 - 0.2**	**0.0 - 0.3**	**0.2 - 0.6**	**0.0 - 0.6**	**0.0 - 0.9**	**0.0 - 0.6**	**0.0 - 0.6**	**0.0 - 0.4**	**0.4 - 1.0**	**0.0 - 0.3**	
Petroleum Hydrocarbons by TPH-HCID, TPH-G, TPH-Dx or 418.1 (mg/kg)											
HCID	--	D, HO	HO	HO	HO	G, D, HO	--	D, HO	G, D, HO	--	NE
Gasoline-Range	--	--	--	--	--	**551**	--	--	33	--	30/100[4]
Diesel-Range	--	**3,530**	ND	--	--	**8,820**	--	--	642	--	2,000
Oil-Range	--	**14,200**	ND	--	--	ND	--	--	1,250	--	2,000
Petroleum-Range	--	**27,300**	304	ND	ND	**7,930**	--	1,350	1,250	--	2,000
Volatile Organic Compounds (VOCs) by EPA 8260 (mg/kg)											
Benzene	--	ND	--	--	ND	--	--	--	ND	--	0.03
Ethylbenzene	--	ND	--	--	ND	--	--	--	ND	--	6
Toluene	--	ND	--	--	ND	--	--	--	ND	--	7
Xylenes	--	ND	--	--	ND	--	--	--	ND	--	9
Other	--	ND	--	--	ND	ND	--	--	ND	--	varies
Semivolatile Organic Hydrocarbons (SVOCs) by EPA 8270 (mg/kg)											
1,3,5-Trimethylbenzene	--	ND	--	--	ND	0.493	--	--	ND	--	800
Dimethyl Phthalate	--	ND	--	--	0.735	ND	--	--	ND	--	NE
Fluorene	--	ND	--	--	ND	1.19	--	--	ND	--	3,200
n-Butylbenzene	--	ND	--	--	ND	0.504	--	--	ND	--	4,000
Naphthalene	--	ND	--	--	ND	0.256	--	--	ND	--	5
Phenanthrene	--	ND	--	--	ND	ND	--	--	0.211	--	NE
p-Isopropyltoluene	--	ND	--	--	ND	1.31	--	--	ND	--	NE
Pyrene	--	ND	--	--	ND	1.75	--	--	0.135	--	2,400
sec-Butylbenzene	--	ND	--	--	ND	0.229	--	--	ND	--	8,000
Metals by EPA 6000/7000 Series (mg/kg)											
Antimony	--	ND	ND	--	ND	ND	--	ND	7.56	ND	32
Arsenic	--	11.9 J	6.84 J	--	10.1 J	6.09 J	--	4.59 J	5.10 J	**24.4**	20
Cadmium	--	0.664 J	ND	--	ND	ND	--	0.446 J	ND	0.892	2
Chromium	--	31.2 J	26.3 J	--	18.2 J	14.9 J	--	8.27 J	42.4 J	42.6	2,000
Copper	--	1120 J	2690 J	--	576 J	358 J	--	**3,300**	176 J	**3,660**	3,200
Lead	--	141 J	109 J	--	63.7 J	91.6 J	--	81.9	220 J	92	250
Mercury	--	0.846	0.899	--	0.114	ND	--	0.788	1.1	0.363	2
Nickel	--	39.0 J	30.2 J	--	31.3 J	61.5 J	--	3.81 J	36.8 J	39.7	1,600
Silver	--	0.109	0.593	--	0.0968	0.058	--	0.0732	0.0548	ND	400
Zinc	--	353 J	308 J	--	109 J	440 J	--	584 J	220	1,110	24,000
Polychlorinated Biphenyls (PCBs) by EPA 8082 (mg/kg)											
PCBs	--	0.178	--	--	ND	ND	--	--	ND	--	1
Organochlorine Pesticides by EPA 8081A (mg/kg)											
4,4' DDD	--	--	--	--	--	--	--	--	--	--	4.2
4,4' DDE	--	--	--	--	--	--	--	--	--	--	2.9

Sample Identification[1]	WY-UPLD-SS-10	WY-UPLD-SS-11	WY-UPLD-SS-12	WY-UPLD-SS-13	WY-UPLD-SS-14	WY-UPLD-SS-15	NW Wall[2]	N Wall[2]	West W12[2]	NE Wall	MTCA Cleanup Level[3]
Sampled By	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	
Sample Date	Jul-97	Jul-97	Jul-97	Jul-97	Jul-97	Jul-97	2/25/1998	2/25/1998	2/27/1998	2/25/1998	
Sample Depth (ft bgs)	0.0 - 0.6	0.0 - 0.3	0.0 - 0.3	0.0 - 0.3	0.0 - 0.3	0.0 - 0.3	5.0	5.0	6.0	5.5	
Petroleum Hydrocarbons by TPH-HCID, TPH-G, TPH-Dx or 418.1 (mg/kg)											
HCID	--	--	G, D, HO	D, HO	G, D, HO	G, D, HO	--	--	--	--	NE
Gasoline-Range	--	--	ND	--	14.5 J	ND	**140**	**96**	**117**	ND	30/100[4]
Diesel-Range	--	--	**25,100**	194	**6,300**	**6,920**	52.8	1,300	171	ND	2,000
Oil-Range	--	--	ND	ND	ND	ND	--	--	--	--	2,000
Petroleum-Range	--	--	--	--	--	--	--	--	--	--	2,000
Volatile Organic Compounds (VOCs) by EPA 8260 (mg/kg)											
Benzene	--	--	--	--	--	--	**0.16**	ND	ND	ND	0.03
Ethylbenzene	--	--	--	--	--	--	1.09	ND	ND	ND	6
Toluene	--	--	--	--	--	--	0.2	ND	ND	ND	7
Xylenes	--	--	--	--	--	--	2.5	ND	ND	ND	9
Other	--	--	--	--	--	--	--	--	--	--	varies
Semivolatile Organic Hydrocarbons (SVOCs) by EPA 8270											
1,3,5-Trimethylbenzene	--	--	--	--	ND	--	--	--	--	--	800
Dimethyl Phthalate	--	--	--	--	ND	--	--	--	--	--	NE
Fluorene	--	--	--	--	ND	--	--	--	--	--	3,200
n-Butylbenzene	--	--	--	--	ND	--	--	--	--	--	4,000
Naphthalene	--	--	--	--	ND	--	--	--	--	--	5
Phenanthrene	--	--	--	--	ND	--	--	--	--	--	NE
p-Isopropyltoluene	--	--	--	--	ND	--	--	--	--	--	NE
Pyrene	--	--	--	--	ND	--	--	--	--	--	2,400
sec-Butylbenzene	--	--	--	--	ND	--	--	--	--	--	8,000
Metals by EPA 6000/7000 Series (mg/kg)											
Antimony	--	ND	ND	ND	ND	ND	--	--	--	--	32
Arsenic	--	ND	13.8	9.14	16.9	17.1	--	--	--	--	20
Cadmium	--	ND	0.386 J	**7.78 J**	0.79 J	**9.5 J**	--	--	--	--	2
Chromium	--	ND	29.2	41.4	41.5	39.4	--	--	--	--	2,000
Copper	--	ND	140	1,630	1,650	642	--	--	--	--	3,200
Lead	--	ND	67.5 J	**378 J**	**1,390 J**	**894 J**	ND	ND	--	ND	250
Mercury	--	ND	0.279	**2.11**	0.558	0.499	--	--	--	--	2
Nickel	--	ND	36.6	50.2 J	35.2 J	35.8 J	--	--	--	--	1,600
Silver	--	ND	ND	0.149	0.193	0.225	--	--	--	--	400
Zinc	--	ND	699	2,750	1010	1020	--	--	--	--	24,000
Polychlorinated Biphenyls (PCBs) by EPA 8082 (mg/kg)											
PCBs	--	--	--	--	0.105 J	--	--	--	--	--	1
Organochlorine Pesticides by EPA 8081A (mg/kg)											
4,4' DDD	--	--	--	90	ND	--	--	--	--	--	4.2
4,4' DDE	--	--	--	ND	0.028	--	--	--	--	--	2.9

Sample Identification[1]	SW Wall	SE Wall	N BTM	South B9	South W1	West W11	Southwest W13	Northwest W14	Piping #1	MSI-4-1	MTCA Cleanup Level[3]
Sampled By	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Landau	
Sample Date	2/25/1998	2/25/1998	2/25/1998	2/27/1998	2/27/1998	2/27/1998	2/27/1998	3/2/1998	2/25/1998	3/30/2004	
Sample Depth (ft bgs)	6.0	5.5	8.5	9.0	9.0	6.0	6.0	6.0	2.5	2	
Petroleum Hydrocarbons by TPH-HCID, TPH-G, TPH-Dx or 418.1 (mg/kg)											
HCID	--	--	--	--	--	--	--	--	--	--	NE
Gasoline-Range	ND	ND	ND	ND	ND	16.9	ND	ND	ND	5.8 U	30/100[4]
Diesel-Range	ND	ND	ND	ND	ND	105	ND	ND	10.3	5.8	2,000
Oil-Range	--	--	--	--	--	--	--	--	--	37	2,000
Petroleum-Range	--	--	--	--	--	--	--	--	--	--	2,000
Volatile Organic Compounds (VOCs) by EPA 8260 (mg/kg)											
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.029 U	0.03
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.029 U	6
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.029 U	7
Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.058 U	9
Other	--	--	--	--	--	--	--	--	--	--	varies
Semivolatile Organic Hydrocarbons (SVOCs) by EPA 8270											
1,3,5-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	800
Dimethyl Phthalate	--	--	--	--	--	--	--	--	--	--	NE
Fluorene	--	--	--	--	--	--	--	--	--	--	3,200
n-Butylbenzene	--	--	--	--	--	--	--	--	--	--	4,000
Naphthalene	--	--	--	--	--	--	--	--	--	--	5
Phenanthrene	--	--	--	--	--	--	--	--	--	--	NE
p-Isopropyltoluene	--	--	--	--	--	--	--	--	--	--	NE
Pyrene	--	--	--	--	--	--	--	--	--	--	2,400
sec-Butylbenzene	--	--	--	--	--	--	--	--	--	--	8,000
Metals by EPA 6000/7000 Series (mg/kg)											
Antimony	--	--	--	--	--	--	--	--	--	--	32
Arsenic	--	--	--	--	--	--	--	--	--	--	20
Cadmium	--	--	--	--	--	--	--	--	--	--	2
Chromium	--	--	--	--	--	--	--	--	--	--	2,000
Copper	--	--	--	--	--	--	--	--	--	--	3,200
Lead	ND	ND	ND	--	--	--	--	--	--	--	250
Mercury	--	--	--	--	--	--	--	--	--	--	2
Nickel	--	--	--	--	--	--	--	--	--	--	1,600
Silver	--	--	--	--	--	--	--	--	--	--	400
Zinc	--	--	--	--	--	--	--	--	--	--	24,000
Polychlorinated Biphenyls (PCBs) by EPA 8082 (mg/kg)											
PCBs	--	--	--	--	--	--	--	--	--	--	1
Organochlorine Pesticides by EPA 8081A (mg/kg)											
4,4' DDD	--	--	--	--	--	--	--	--	--	--	4.2
4,4' DDE	--	--	--	--	--	--	--	--	--	--	2.9

Sample Identification[1]	MSI-4-2	MSI-4-3	MSI-4-4	MSI-4-5	MTCA Cleanup Level[3]
Sampled By	Landau	Landau	Landau	Landau	
Sample Date	3/30/2004	3/30/2004	3/30/2004	2004	
Sample Depth (ft bgs)	6	2	6	6	
Petroleum Hydrocarbons by NWTPH-G or NWTPH-Dx (mg/kg)					
HCID	--	--	--	--	NE
Gasoline-Range	6.5 U	6.2 U	5.1 U	5.6 U	30/100[4]
Diesel-Range	5.0 U	5.0 U	5.0 U	16	2,000
Oil-Range	10 U	10 U	10 U	10 U	2,000
Petroleum-Range	--	--	--	--	2,000
Volatile Organic Compounds (VOCs) by EPA Method 8260 (mg/kg)					
Benzene	--	0.031 U	--	--	0.03
Ethylbenzene	--	0.031 U	--	--	6
Toluene	--	0.031 U	--	--	7
Xylenes	--	0.062 U	--	--	9
Other	--	--	--	--	varies
Semivolatile Organic Hydrocarbons (SVOCs) by EPA 8270					
1,3,5-Trimethylbenzene	--	--	--	--	
Dimethyl Phthalate	--	--	--	--	
Fluorene	--	--	--	--	
n-Butylbenzene	--	--	--	--	
Naphthalene	--	--	--	--	
Phenanthrene	--	--	--	--	
p-Isopropyltoluene	--	--	--	--	
Pyrene	--	--	--	--	
sec-Butylbenzene	--	--	--	--	
Metals by EPA Method 6000/7000 Series (mg/kg)					
Antimony	--	--	--	--	32
Arsenic	6.6	4.1	3.6	2.7	20
Cadmium	0.6 U	0.2 U	0.2 U	0.2 U	2
Chromium	55	46.6	41.5	50.2	2,000
Copper	45.3	25.7	20.7	20.6	3,200
Lead	6	13	3	3	250
Mercury	0.07	0.07	0.04 U	0.04	2
Nickel	77	44	77	66	1,600
Silver	--	--	--	--	400
Zinc	75	71.5	36.4	39.7	24,000
Polychlorinated Biphenyls (PCBs) by EPA 8082 (mg/kg)					
PCBs	--	--	--	--	1
Organochlorine Pesticides by EPA Method 8081A (mg/kg)					
4,4'-DDE	--	--	--	--	4.2
4,4'-DDD	--	--	--	--	2.9

Notes:

[1]Sample locations are shown on Figures 3.

[2]Soil represented by this samples was subsequently excavated and removed from the Site during underground storage tank (UST) decomissioning and removal activities.

[3]Soil cleanup levels are MTCA Method A or B cleanup levels referenced from CLARC database (*https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx*).

[4]Gasoline cleanup level is 30 mg/kg if benzene is present.

MTCA = Model Toxics Control Act

mg/kg = milligrams per kilograms

G = Gasoline

D = Diesel

HO = Heavy oil

NE = Not established

ND = Not detected

-- = not tested

U = The analyte is not detected at or above the reported concentration.

J = Estimated Concentration

Shading indicates analyte was detected at a concentration above the MTCA Method A or B cleanup level.

Table 2

Summary of Historical Sediment Conventional and Chemical Analytical Data

Wyman's Property Mitigation Habitat Site
Anacortes, Washington

Sample Identification[1]	WY-SED-1	WY-SED-2	WY-SED-3	WY-SED-4	WY-SED-5	WY-SED-6	MSI-4-SD	Sediment Quality Standard (SQS)[2]	Cleanup Screening Level (CSL)[3]
Sampled By	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Landau		
Sample Date	8/6/1997	8/6/1997	8/6/1997	8/6/1997	8/6/1997	8/6/1997	4/1/2004		
Sample Type	Discrete	Discrete	Discrete	Discrete	Discrete	Discrete	Composite		
Conventionals									
Total Organic Carbon (%)	2.12	2.38	3.94	2.23	2.25	2.86	2.19	NE	NE
Total Solids	--	--	--	--	--	--	38.3	NE	NE
Metals by EPA Method 6000/7000 Series (mg/kg)									
Arsenic	6.89 J	6.50 J	6.21 J	5.85 J	6.46 J	6.84 J	6.4	57	93
Cadmium	0.294	0.452	0.501	0.33	0.38	0.251	0.5	5.1	6.7
Chromium	26.1	31.6	31.3	28.9	27.8	19.8	41	260	270
Copper	258	136	80.9	40.3	29	131	65.9	390	390
Lead	10.7 J	13.2 J	16.8 J	11.6 J	11 J	17.7 J	18	450	530
Mercury	ND	ND	ND	ND	ND	ND	0.2	0.41	0.59
Nickel	25.8	30.7	31.2	32	27.5	20	--	NE	NE
Silver	0.123	0.111	0.111	0.0922	0.0932	0.1	0.7 U	6.1	6.1
Zinc	193	98.5	87.1	75.9	62	74.1	98	410	960
Organometallic Compounds									
Tributyltin ion (interstitial water; µg/L)	0.7	0.14	ND	ND	ND	0.15	--	NE	NE
Tributyltin ion (bulk; µg/kg)	--	--	--	--	--	--	6.5	NE	NE
Organics by EPA Method 8270D/SIM (mg/kg OC)[4]									
LPAH	23.3	11.4	5.4	ND	ND	5.8	5.02	370	780
Naphthalene	0.642	1.7	0.452	ND	ND	0.766	0.91 U	99	170
Acenaphthylene	ND	ND	ND	ND	ND	ND	0.91 U	66	66
Acenaphthene	1.4	2.90	0.3	ND	ND	0.510	0.91 U	16	57
Fluorene	1.7	2	ND	ND	ND	0.427	0.91 U	23	79
Phenanthrene	17.2	8.8	2.9	ND	ND	2.8	5.02	100	480
Anthracene	2.5	3.2	1	ND	ND	0.937	0.91 U	220	1,200
2-Methylnaphthalene	ND	0.811	0.259	ND	ND	0.381	0.91 U	38	64
HPAH	82.6	35.7	22.4	ND	ND	22.5	42.47	960	5,300
Fluoranthene	20.5	13.1	7.9	ND	ND	6.1	14.61	160	1,200
Pyrene	18.3	9.7	6.1	ND	ND	4.8	9.59	1,000	1,400
Benz(a)anthracene	ND	2.6	1.6	ND	ND	2.2	1.96	110	270
Chrysene	8.7	4	2.6	ND	ND	3.1	5.02	110	460
Benzofluoranthenes (b, j ,k)	11.5	3.4	2.5	ND	ND	3.3	4.89	230	450
Benzo(a)pyrene	5.5	1.3	ND	ND	ND	1.4	1.51	99	210
Indeno(1,2,3-c,d)pyrene	3.2	0.761	0.419	ND	ND	0.724	0.91 U	34	88
Dibenz(a,h)anthracene	1.1	ND	ND	ND	ND	ND	0.91 U	12	33
Benzo(g,h,i)perylene	3.7	0.811	0.482	ND	ND	0.937	0.91 U	31	78
Chlorinated Hydrocarbons by EPA Method 8270D (mg/kg OC)[4]									
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	0.91 U	3.1	9
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	0.91 U	2.3	2.3
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	0.91 U	0.81	1.8
Hexachlorobenzene (HCB)	ND	ND	ND	ND	ND	ND	0.91 U	0.38	2.3
Phthalates by EPA Method 8270D (mg/kg OC)[4]									
Dimethyl phthalate	ND	6.4	6	ND	ND	7.6	0.91 U	53	53
Diethyl phthalate	ND	ND	ND	ND	ND	ND	0.91 U	61	110
Di-n-butyl phthalate	ND	ND	ND	ND	ND	ND	0.91 U	220	1,700
Butyl benzyl phthalate	ND	ND	ND	ND	ND	ND	0.91 U	4.9	64.0
Bis(2-ethylhexyl) phthalate	ND	ND	ND	ND	ND	ND	0.91 U	47	78
Di-n-octyl phthalate	ND	ND	ND	ND	ND	ND	0.91 U	58	4,500

Sample Identification[1]	WY-SED-1	WY-SED-2	WY-SED-3	WY-SED-4	WY-SED-5	WY-SED-6	MSI-4-SD	Sediment Quality Standard (SQS)[2]	Cleanup Screening Level (CSL)[3]
Sampled By	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Landau		
Sample Date	8/6/1997	8/6/1997	8/6/1997	8/6/1997	8/6/1997	8/6/1997	4/1/2004		
Sample Type	Discrete	Discrete	Discrete	Discrete	Discrete	Discrete	Composite		
Miscellaneous Extractables by EPA Method 8270D (µg/kg OC)[4]									
Dibenzofuran	ND	ND	ND	ND	ND	ND	0.91 U	NE	58
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	0.91 U	NE	6
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	0.91 U	NE	11
Polychlorinated Biphenyls by EPA Method 8082 (mg/kg OC)[4]									
Total PCBs	ND	ND	ND	ND	ND	ND	0.91 U	12	65
Phenols by EPA Method 8270D (µg/kg)									
Phenol	ND	ND	ND	ND	ND	ND	20 U	420	1,200
2-Methylphenol	ND	ND	ND	ND	ND	ND	20 U	63	63
4-Methylphenol	ND	ND	ND	ND	ND	ND	20 U	670	670
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	20 U	29	29
Pentachlorophenol	ND	ND	ND	ND	ND	ND	98 U	360	690
Miscellaneous Extractables by EPA Method 8270D (µg/kg)									
Benzyl alcohol	ND	ND	ND	ND	ND	ND	20 U	57	73
Benzoic acid	ND	ND	ND	ND	ND	ND	200 U	650	650

Notes:

[1]Sample locations are shown on Figure 3.

[2]Marine Sediment Quality Standards – Chemical Criteria (WAC 173-204-320).

[3]Marine Cleanup Screening Level – Chemical Criteria (WAC 173-204-520).

[4]Value normalized to organic carbon and is expressed as mg/kg organic cabon (oc).

NE = Not established

ND = Not detected

mg/kg = miligram per kilogram

µg/kg = microgram per kilogram

µg/L = microgram per liter

OC = organic carbon

U = The analyte is not detected at or above the reported concentration.

J = Estimated Concentration

-- = not tested

Shading indicates detected concentrations exceeds one or more of the DMMP Guidline Chemistry Values.

Table 3
Summary of Historical Groundwater Chemical Analytical Data
Wyman's Marina Site
Anacortes, Washington

Sample Identification[1]	MSI-4-4-GW	MTCA Cleanup Level
Sampled By	Otten Engineering	
Sample Date	3/29/2004	
Petroleum Hydrocarbons by NWTPH-G or NWTPH-Dx (mg/L)		
Gasoline-Range	0.25 U	0.8
Diesel-Range	0.25 U	0.5
Oil-Range	0.5 U	0.5
Volatile Organic Compounds (VOCs) by EPA 8260 (µg/L)		
Benzene	1 U	5.00
Ethylbenzene	3.2	700
Toluene	1 U	1,000
Xylenes	1.3	1,000
Dissolved Metals by EPA 6000/7000 Series (mg/L)		
Arsenic	0.003	0.005
Cadmium	0.002 U	0.005
Chromium	0.01	0.05
Copper	0.011	0.032
Lead	0.022	0.015
Mercury	0.0001 U	0.002
Nickel	0.01 U	0.176
Zinc	0.029	4.8

Notes:

[1]Sample location is shown on Figure 3.

[3]Groundwater cleanup levels are MTCA Method A or B cleanup levels referenced from CLARC database (*https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx*).

[4]Gasoline cleanup level is 30 mg/L if benzene is present.

MTCA = Model Toxics Control Act

mg/L = milligrams per liter

µg/L = milligrams per liter

U = The analyte is not detected at or above the reported concentration.

Shading indicates analyte was detected at a concentration above the MTCA Method A or B cleanup level.

Table 4

Summary of Supplemental Site Characterization Soil Chemical Analytical Data

Wyman's Marina Site

Anacortes, Washington

Sample Identification[1]	GEI-11-8.0	GEI-12-2.5	GEI-13-10.0	GEI-14-5.0	GEI-15-10.0	GEI-16-5.0	GEI-SS-2-1-1.5	GEI-SS-2-2-0.5	GEI-SS-2-3-0.5	MTCA Cleanup Level[2]
Sampled By	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	
Sample Date	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	
Sample Depth (ft bgs)	8	2.5	10	5	10	5	1.5	0.5	0.5	
Petroleum Hydrocarbons by NWTPH-G or NWTPH-Dx (mg/kg)										
Gasoline-Range	4.8 U	7.3 U	4.9 U	4.1 U	6.1 U	4.4 U	--	--	--	30/100[3]
Diesel-Range	--	--	--	--	--	--	31 U	27 U	30 U	2,000
Oil-Range	--	--	--	--	--	--	62 U	**59**	60 U	2,000
Volatile Organic Compounds (VOCs) by EPA Method 8260 (mg/kg)										
Benzene	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	--	--	--	0.03
Ethylbenzene	0.048 U	0.073 U	0.049 U	0.041 U	0.061 U	0.044 U	--	--	--	6
Toluene	0.048 U	0.073 U	0.049 U	0.041 U	0.061 U	0.044 U	--	--	--	7
Xylenes	0.048 U	0.073 U	0.049 U	0.041 U	0.061 U	0.044 U	--	--	--	9
Metals by EPA Method 6000/7000 Series (mg/kg)										
Arsenic	11 U	12 U	12 U	11 U	12 U	11 U	--	--	--	20
Barium	**69**	**58**	**60**	**59**	**75**	**52**	--	--	--	16,000
Cadmium	0.57 U	0.61 U	0.58 U	0.55 U	0.59 U	0.55 U	--	--	--	2
Chromium	**44**	**37**	**85**	**35**	**43**	**32**	--	--	--	2,000
Copper	**--**	**--**	**--**	**--**	**--**	**--**	--	--	--	3,200
Lead	5.7 U	6.1 U	5.8 U	5.5 U	5.9 U	5.5 U	--	--	--	250
Mercury	0.28 U	0.31 U	0.29 U	0.27 U	0.29 U	0.27 U	--	--	--	2
Selenium	11 U	12 U	12 U	11 U	12 U	11 U	--	--	--	400
Silver	0.57 U	0.61 U	0.58 U	0.55 U	0.59 U	0.55 U	--	--	--	400
TCLP Metals by EPA Method 1311/6010B/7470A (mg/L)										
Arsenic	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	--	--	--	5
	0.21	**0.45**	0.02 U	**0.59**	**0.26**	**0.43**	--	--	--	100
Cadmium	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	--	--	--	1
Barium	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	--	--	--	5
Copper										NE
Lead	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--	5
Mercury	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	--	--	--	0.2
Selenium	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	--	--	--	1
Silver	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	--	--	--	5
Organochlorine Pesticides by EPA Method 8081A (mg/kg)										
4,4'-DDE	--	--	--	--	--	--	--	--	--	2.9
4,4'-DDD	--	--	--	--	--	--	--	--	--	4.2
Dioxins/Furans TEQ by EPA Method 8290 (ng/kg)										
Total Dioxin Congener TEQ (ND=0.5DL) - Human/Mammal	--	--	--	--	--	0.279 T	--	--	--	--
Total Furan Congener TEQ (ND=0.5DL) - Human/Mammal	--	--	--	--	--	0 .0693 T	--	--	--	--
Total Dioxin/Furan TEQ (ND=0.5DL) - Human/Mammal	--	--	--	--	--	0.349 T	--	--	--	--

Sample Identification[1]	GEI-SS-2-4-0.5	GEI-SS-6-1-1.5	GEI-SS-6-2-0.5	GEI-SS-6-3-0.5	GEI-SS-6-4-0.5	GEI-SS-9-1-1.5	GEI-SS-9-2-0.5	GEI-SS-9-3-0.5	GEI-SS-9-4-0.5	MTCA Cleanup Level[2]
Sampled By	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	
Sample Date	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	
Sample Depth (ft bgs)	0.5	1.5	0.5	0.5	0.5	1.5	0.5	0.5	0.5	
Petroleum Hydrocarbons by NWTPH-G or NWTPH-Dx (mg/kg)										
Gasoline-Range	--	--	--	--	--	--	--	--	--	30/100[3]
Diesel-Range	30 U	29 U	28 U	**68**	--	--	--	--	--	2,000
Oil-Range	61 U	57 U	**69**	**330**	--	--	--	--	--	2,000
Volatile Organic Compounds (VOCs) by EPA Method 8260 (mg/kg)										
Benzene	--	--	--	--	--	--	--	--	--	0.03
Ethylbenzene	--	--	--	--	--	--	--	--	--	6
Toluene	--	--	--	--	--	--	--	--	--	7
Xylenes	--	--	--	--	--	--	--	--	--	9
Metals by EPA Method 6000/7000 Series (mg/kg)										
Arsenic	--	--	--	--	--	--	--	--	--	20
Barium	--	--	--	--	--	--	--	--	--	16,000
Cadmium	--	--	--	--	--	0.61 U	0.74 U	0.69 U	0.62 U	2
Chromium	--	--	--	--	--	--	--	--	--	2,000
Copper	--	--	--	--	--	--	--	--	--	3,200
Lead	--	--	--	--	--	6.1 U	**81**	**95**	6.2 U	250
Mercury	--	--	--	--	--	0.31 U	**1.2**	0.34 U	0.31 U	2
Selenium	--	--	--	--	--	--	--	--	--	400
Silver	--	--	--	--	--	--	--	--	--	400
TCLP Metals by EPA Method 1311/6010B/7470A (mg/L)										
Arsenic	--	--	--	--	--	--	--	--	--	5
Barium	--	--	--	--	--	--	--	--	--	100
Cadmium	--	--	--	--	--	--	--	--	--	1
Chromium	--	--	--	--	--	--	--	--	--	5
Copper										NE
Lead	--	--	--	--	--	--	--	--	--	5
Mercury	--	--	--	--	--	--	--	--	--	0.2
Selenium	--	--	--	--	--	--	--	--	--	1
Silver	--	--	--	--	--	--	--	--	--	5
Organochlorine Pesticides by EPA Method 8081A (mg/kg)										
4,4'-DDE	--	--	--	--	--	12 U	15 U	14 U	12 U	2.9
4,4'-DDD	--	--	--	--	--	12 U	15 U	14 U	12 U	4.2
4,4'-DDT	--	--	--	--	--	12 U	15 U	14 U	12 U	3

Sample Identification[1]	GEI-SS-12-1-1.5	GEI-SS-12-2-0.5	GEI-SS-12-3-0.5	GEI-SS-12-4-0.5	GEI-SS-13-1-0.5	GEI-SS-13-1-1.5	GEI-SS-13-2-0.5	GEI-SS-13-3-0.5	GEI-SS-13-4-0.5	MTCA Cleanup Level[2]
Sampled By	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	
Sample Date	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	
Sample Depth (ft bgs)	1.5	0.5	0.5	0.5	0.5	1.5	0.5	0.5	0.5	
Petroleum Hydrocarbons by NWTPH-G or NWTPH-Dx (mg/kg)										
Gasoline-Range	--	--	--	--	--	--	--	--	--	30/100[3]
Diesel-Range	30 U	29 U	28 U	**68**	--	--	--	--	--	2,000
Oil-Range	61 U	57 U	**69**	**330**	--	--	--	--	--	2,000
Volatile Organic Compounds (VOCs) by EPA Method 8260 (mg/kg)										
Benzene	--	--	--	--	--	--	--	--	--	0.03
Ethylbenzene	--	--	--	--	--	--	--	--	--	6
Toluene	--	--	--	--	--	--	--	--	--	7
Xylenes	--	--	--	--	--	--	--	--	--	9
Metals by EPA Method 6000/7000 Series (mg/kg)										
Arsenic	--	--	--	--	--	--	--	--	--	20
Barium	--	--	--	--	--	--	--	--	--	16,000
Cadmium	--	--	--	--	--	0.61 U	0.74 U	0.69 U	0.62 U	2
Chromium	--	--	--	--	--	--	--	--	--	2,000
Copper	--	--	--	--	--	--	--	--	--	3,200
Lead	--	--	--	--	--	6.1 U	**81**	**95**	6.2 U	250
Mercury	--	--	--	--	--	0.31 U	**1.2**	0.34 U	0.31 U	2
Selenium	--	--	--	--	--	--	--	--	--	400
Silver	--	--	--	--	--	--	--	--	--	400
TCLP Metals by EPA Method 1311/6010B/7470A (mg/L)										
Arsenic	--	--	--	--	--	--	--	--	--	5
Barium	--	--	--	--	--	--	--	--	--	100
Cadmium	--	--	--	--	--	--	--	--	--	1
Chromium	--	--	--	--	--	--	--	--	--	5
Copper										NE
Lead	--	--	--	--	0.2 U	--	--	--	--	5
Mercury	--	--	--	--	--	--	--	--	--	0.2
Selenium	--	--	--	--	--	--	--	--	--	1
Silver	--	--	--	--	--	--	--	--	--	5
Organochlorine Pesticides by EPA Method 8081A (mg/kg)										
4,4'-DDE	--	--	--	--	--	12 U	15 U	14 U	12 U	2.9
4,4'-DDD	--	--	--	--	--	12 U	15 U	14 U	12 U	4.2
4,4'-DDT	--	--	--	--	--	12 U	15 U	14 U	12 U	3

Sample Identification[1]	GEI-SS-14/15-1-0.5	GEI-SS-14/15-1-1.5	GEI-SS-14/15-2-0.5	GEI-SS-14/15-3-0.5	GEI-SS-14/15-4-0.5	GEI-SS-COMP[2]	MTCA Cleanup Level[3]
Sampled By	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	
Sample Date	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	
Sample Depth (ft bgs)	0.5	1.5	0.5	0.5	0.5	0.5	
Petroleum Hydrocarbons by NWTPH-G or NWTPH-Dx (mg/kg)							
Gasoline-Range	--	--	--	--	--	4.5 U	30/100[4]
Diesel-Range	--	30 U	27 U	30 U	27 U	--	2,000
Oil-Range	--	61 U	55 U	63 U	**150**	--	2,000
Volatile Organic Compounds (VOCs) by EPA Method 8260 (mg/kg)							
Benzene	--	--	--	--	--	0.02 U	0.03
Ethylbenzene	--	--	--	--	--	0.045 U	6
Toluene	--	--	--	--	--	0.045 U	7
Xylenes	--	--	--	--	--	0.045 U	9
Metals by EPA Method 6000/7000 Series (mg/kg)							
Arsenic	--	--	--	--	--	**56**	20
Barium	--	--	--	--	--	--	16,000
Cadmium	--	0.61 U	0.55 U	0.59 U	**0.91**	**0.73**	2
Chromium	--	--	--	--	--	**70**	2,000
Copper	--	--	--	--	--	**390**	3,200
Lead	--	**9.2**	5.5 U	**110**	**200**	**93**	250
Mercury	--	0.3 U	0.27 U	0.92 U	**0.48**	0.28 U	2
Selenium	--	--	--	--	--	--	400
Silver	--	--	--	--	--	--	400
TCLP Metals by EPA Method 1311/6010B/7470A (mg/L)							
Arsenic	--	--	--	--	--	--	5
Barium	--	--	--	--	--	--	100
Cadmium	--	--	--	--	--	--	1
Chromium	--	--	--	--	--	--	5
Copper							NE
Lead	0.2 U	--	--	0.2 U	0.2 U	--	5
Mercury	--	--	--	--	--	--	0.2
Selenium	--	--	--	--	--	--	1
Silver	--	--	--	--	--	--	5
Organochlorine Pesticides by EPA Method 8081A (mg/kg)							
4,4'-DDE	--	--	--	--	--	0.011 U	2.9
4,4'-DDD	--	--	--	--	--	0.011 U	4.2
4,4'-DDT	--	--	--	--	--	0.011 U	3

Notes:

[1]Sample locations are shown on Figures 4.

[2]Soil cleanup levels are MTCA Method A or B cleanup levels referenced from CLARC database (*https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx*).

[3]Gasoline cleanup level is 30 mg/kg if benzene is present.

MTCA = Model Toxics Control Act

mg/kg = milligrams per kilograms

NE = Not established

-- = not tested

U = The analyte is not detected at or above the reported concentration.

J = Estimated Concentration

Shading indicates analyte was detected at a concentration above the MTCA Method A or B cleanup level.

Table 5

Summary of Marine Surface Chemical Analytical Data

Wyman's Property Mitigation Habitat Site

Anacortes, Washington

Sample Identification	GEI-COMP-1	Sediment Quality Standard (SQS)[1]	Cleanup Screening Level (CSL)[2]
Sampled By	GeoEngineers		
Sample Date	7/5/2012		
Sample Type	Composite		
Conventionals			
Total Organic Carbon (%)	5.5	NE	NE
Metals by EPA Method 6000/7000 Series (mg/kg)			
Arsenic	12 U	57	93
Cadmium	0.6 U	5.1	6.7
Chromium	74	260	270
Copper	28	390	390
Lead	6 U	450	530
Mercury	0.3 U	0.41	0.59
Silver	0.6 U	6.1	6.1
Zinc	47	410	960
Organics by EPA Method 8270D/SIM (mg/kg OC)[3]			
Total LPAH	0.087 U	370	780
Naphthalene	0.087 U	99	170
Acenaphthylene	0.087 U	66	66
Acenaphthene	0.087 U	16	57
Fluorene	0.087 U	23	79
Phenanthrene	0.087 U	100	480
Anthracene	0.087 U	220	1,200
2-Methylnaphthalene	0.087 U	38	64
Total HPAH	0.087 U	960	5,300
Fluoranthene	0.087 U	160	1,200
Pyrene	0.087 U	1,000	1,400
Benz(a)anthracene	0.087 U	110	270
Chrysene	0.087 U	110	460
Benzofluoranthenes (b, j ,k)	0.087 U	230	450
Benzo(a)pyrene	0.087 U	99	210
Indeno(1,2,3-c,d)pyrene	0.087 U	34	88
Dibenz(a,h)anthracene	0.087 U	12	33
Benzo(g,h,i)perylene	0.087 U	31	78
Chlorinated Hydrocarbons by EPA Method 8270D (mg/kg OC)[3]			
1,4-Dichlorobenzene	0.436 U	3.1	9
1,2-Dichlorobenzene	0.436 U	2.3	2.3
1,2,4-Trichlorobenzene	0.436 U	0.81	1.8
Hexachlorobenzene (HCB)	0.436 U	0.38	2.3
Phthalates by EPA Method 8270D (mg/kg OC)[3]			
Dimethyl phthalate	0.436 U	53	53
Diethyl phthalate	0.436 U	61	110
Di-n-butyl phthalate	0.436 U	220	1,700
Butyl benzyl phthalate	0.436 U	4.9	64.0
Bis(2-ethylhexyl) phthalate	0.436 U	47	78
Di-n-octyl phthalate	0.436 U	58	4,500

Sample Identification	GEI-COMP-1	Sediment Quality Standard (SQS)[1]	Cleanup Screening Level (CSL)[2]
Sampled By	GeoEngineers		
Sample Date	7/5/2012		
Sample Type	Composite		
Miscellaneous Extractables by EPA Method 8270D (µg/kg OC)[3]			
Dibenzofuran	24 U	NE	58
Hexachlorobutadiene	24 U	NE	6
N-Nitrosodiphenylamine	24 U	NE	11
Polychlorinated Biphenyls by EPA Method 8082 (mg/kg OC)[3]			
Total PCBs	1.1 U	12	65
Phenols by EPA Method 8270D (µg/kg)			
Phenol	24 U	420	1,200
2-Methylphenol	24 U	63	63
4-Methylphenol	24 U	670	670
2,4-Dimethylphenol	24 U	29	29
Pentachlorophenol	24 U	360	690
Miscellaneous Extractables by EPA Method 8270D (µg/kg)			
Benzyl alcohol	24 U	57	73
Benzoic acid	24 U	650	650

Notes:

[1]Marine Sediment Quality Standards -- Chemical Criteria (WAC 173-204-320).

[2]Marine Cleanup Screening Level -- Chemical Criteria (WAC 173-204-520).

[3]Value normalized to organic carbon and is expressed as mg/kg organic cabon (oc).

NE = not established

mg/kg = miligram per kilogram

µg/kg = microgram per kilogram

ng/kg = nonogram oer kilogram

OC = organic carbon

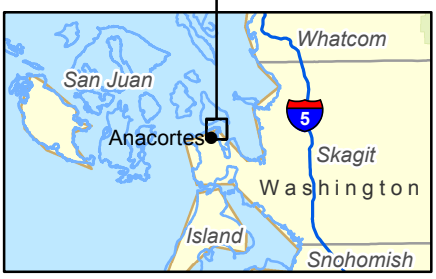
U = The analyte is not detected at or above the reported concentration.

J = Estimated Concentration

Chemical analyses performed by OnSite Environmental, Inc of Redmond, Washington.

FIGURES

GeoEngineers



2,000 0 2,000

Feet

Notes:
1. The locations of all features shown are approximate.
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Data Sources: ESRI Data & Maps

Projection: NAD 1983 UTM Zone 10N

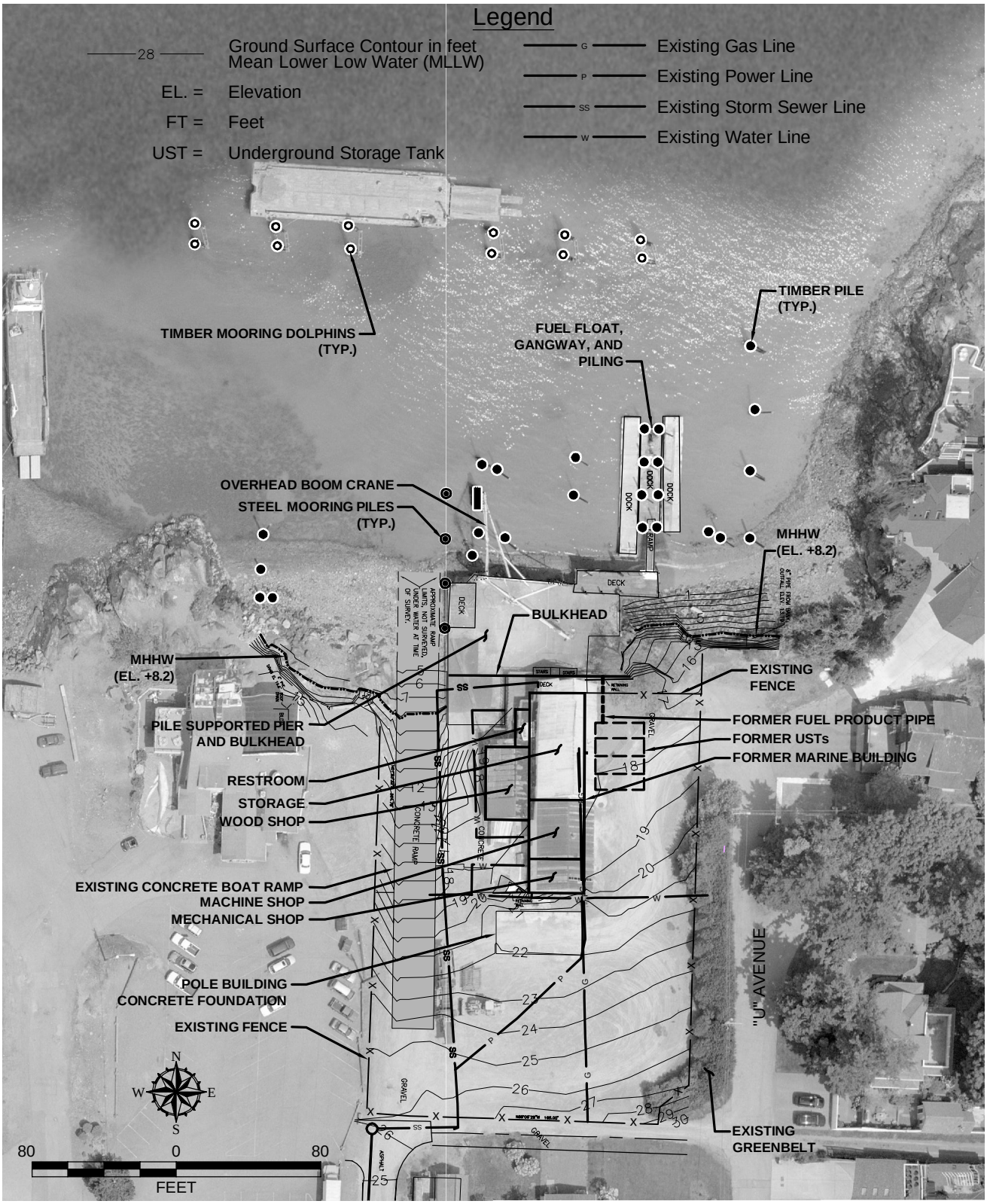
Vicinity Map

Wyman's Marina Site
Anacortes, Washington

GeoEngineers

Figure 1

Path: \\sea\projects\5\5147019\GIS\5147019_CleanupAction_Report_Fig01.mxd Map Revised: 27 August 2014 maugust



Notes

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Reference: Base Aerial taken by David C. Smith & Associates, Inc. on 6/17/2009.

Pre-Construction Site Conditions

Wyman's Marina Site
Anacortes, Washington

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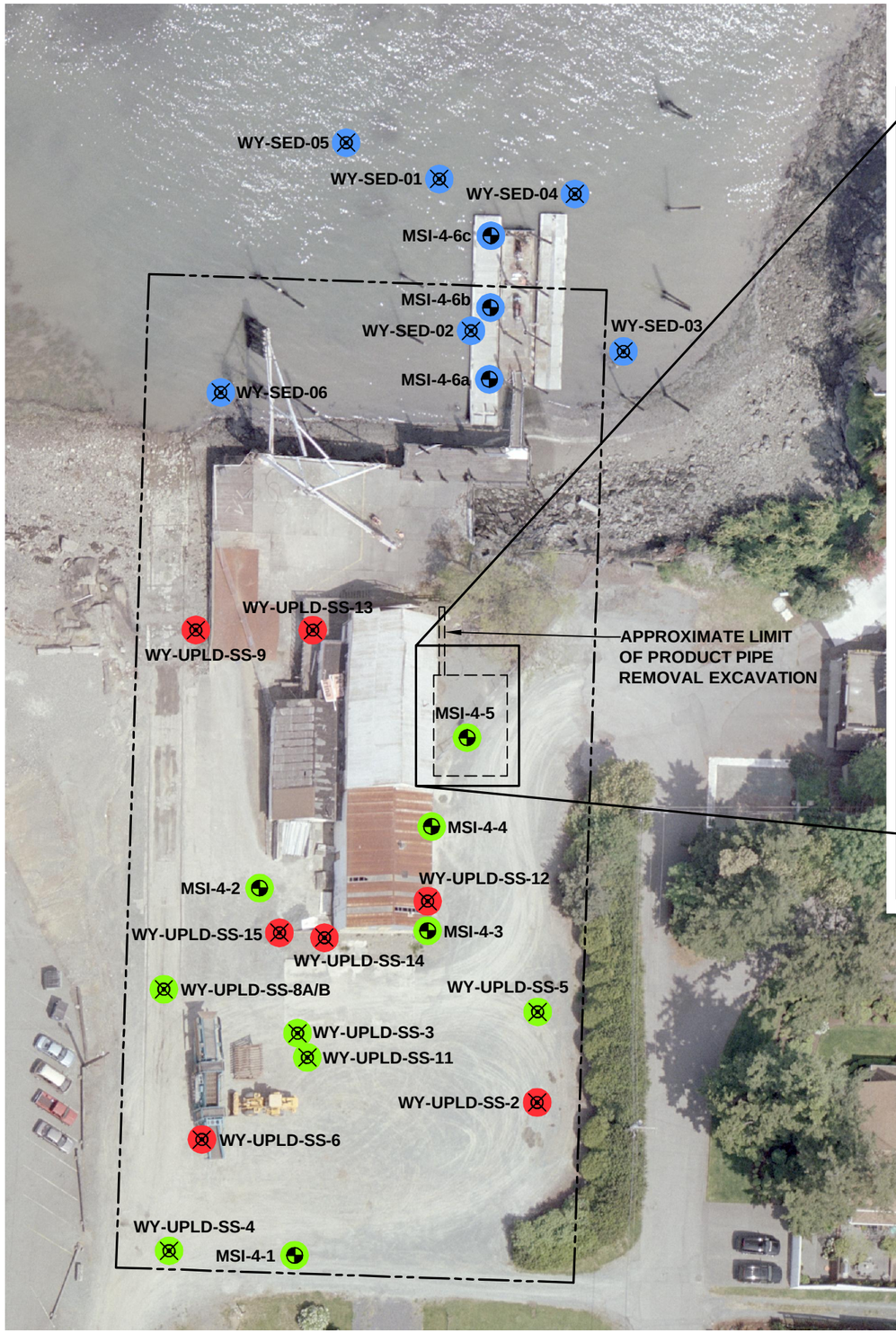
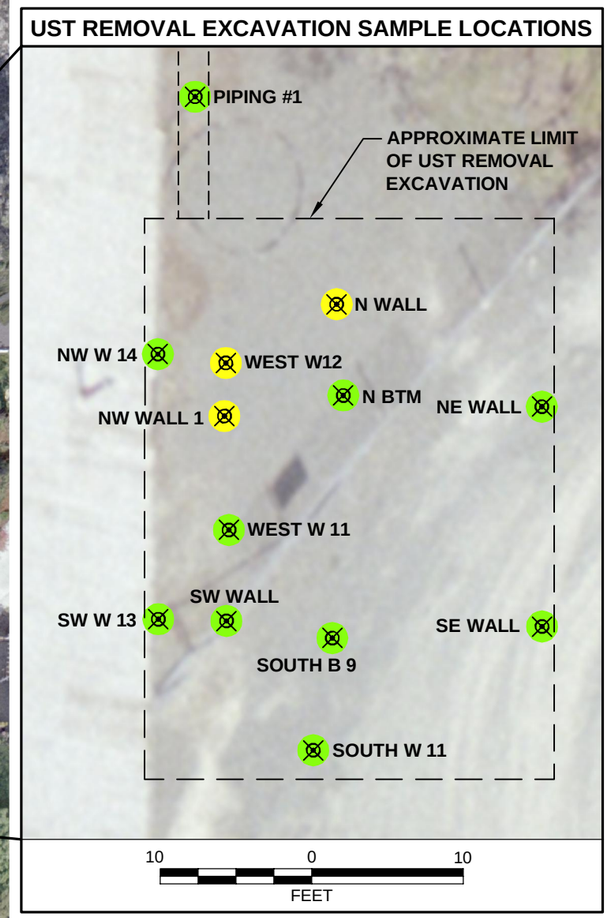
Figure 2

P:\15\14701\07\CAD\14701-07 CAR Fig 2.dwg\TAB:2 to 1 modified by tmichaud on Sep 26, 2014 - 10:29





Legend

WY-UPLD-SS-1 ⊗	Sample Location (Otten Engineering, 1997 & 1998)
MSI-4-4 ◔	Sample Location (Landau Associates, 2004)
●	One or more analyte exceeds MTCA cleanup levels (See Table 1)
●	Analytes either not detected or detected at concentrations less than MTCA cleanup levels (See Table 1 and 3)
●	Soil represented by this sample was subsequently excavated and removed from the site during historical UST removal excavation activities
●	Analytes either not detected or detected at a concentration less than Marine Sediment Quality Standards (See Table 2)
— - — - —	Site Boundary
MTCA	Model Toxics Control Act

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Notes

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Reference: Base Aerial taken by David C. Smith & Associates, Inc. on 6/17/2009.

Previous Environmental Investigations Sampling Locations

Wyman's Marina Site
Anacortes, Washington

GeoEngineers

Figure 3

Legend

- **GEI-SS-2-1** — Surface Soil Sample Location (GeoEngineers, 2012)
- **GEI-11** — Direct Push Boring Location (GeoEngineers, 2012)
- Analytes either not detected or detected at concentrations less than MTCA cleanup levels (See Tables 4 and 5)
- Site Boundary
- Proposed Mitigation Habitat Excavation Area

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Notes

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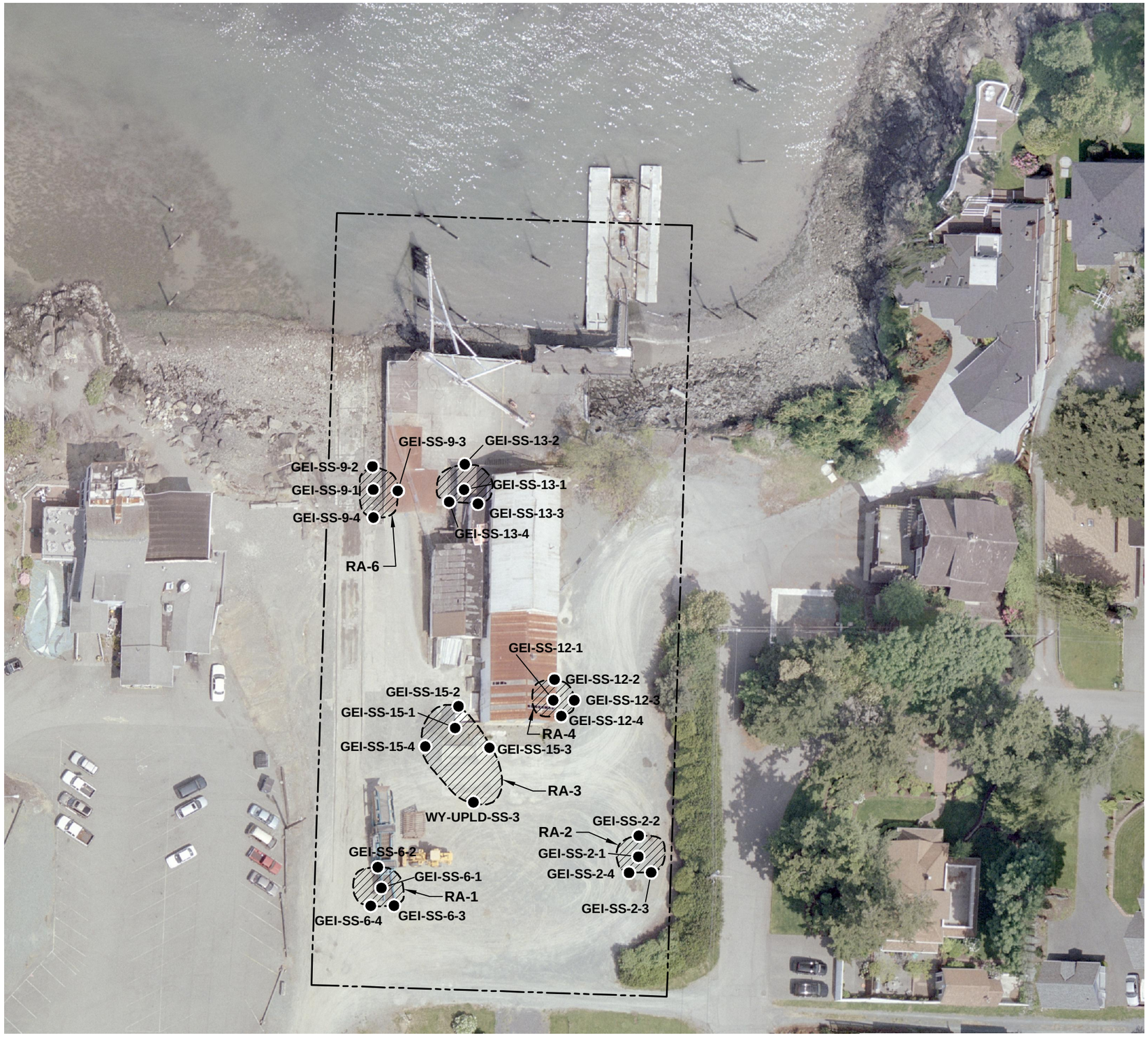
Reference: Base Aerial taken by David C. Smith & Associates, Inc. on 6/17/2009.

Supplemental Site Characterization
Soil Sampling Locations

Wyman's Marina Site
Anacortes, Washington

GeoEngineers | **Figure 4**

P:\15\14701907\CAD\15147019-07 CAR Fig 4.dwg\TAB:LANDSCAPE MODIFIED BY TMICHAUD ON SEP 26, 2014 - 10:36



Legend

- GEI-SS-2-1 ● Verification Soil Sample Location
- Site Boundary
- Remedial Excavation Area

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Notes

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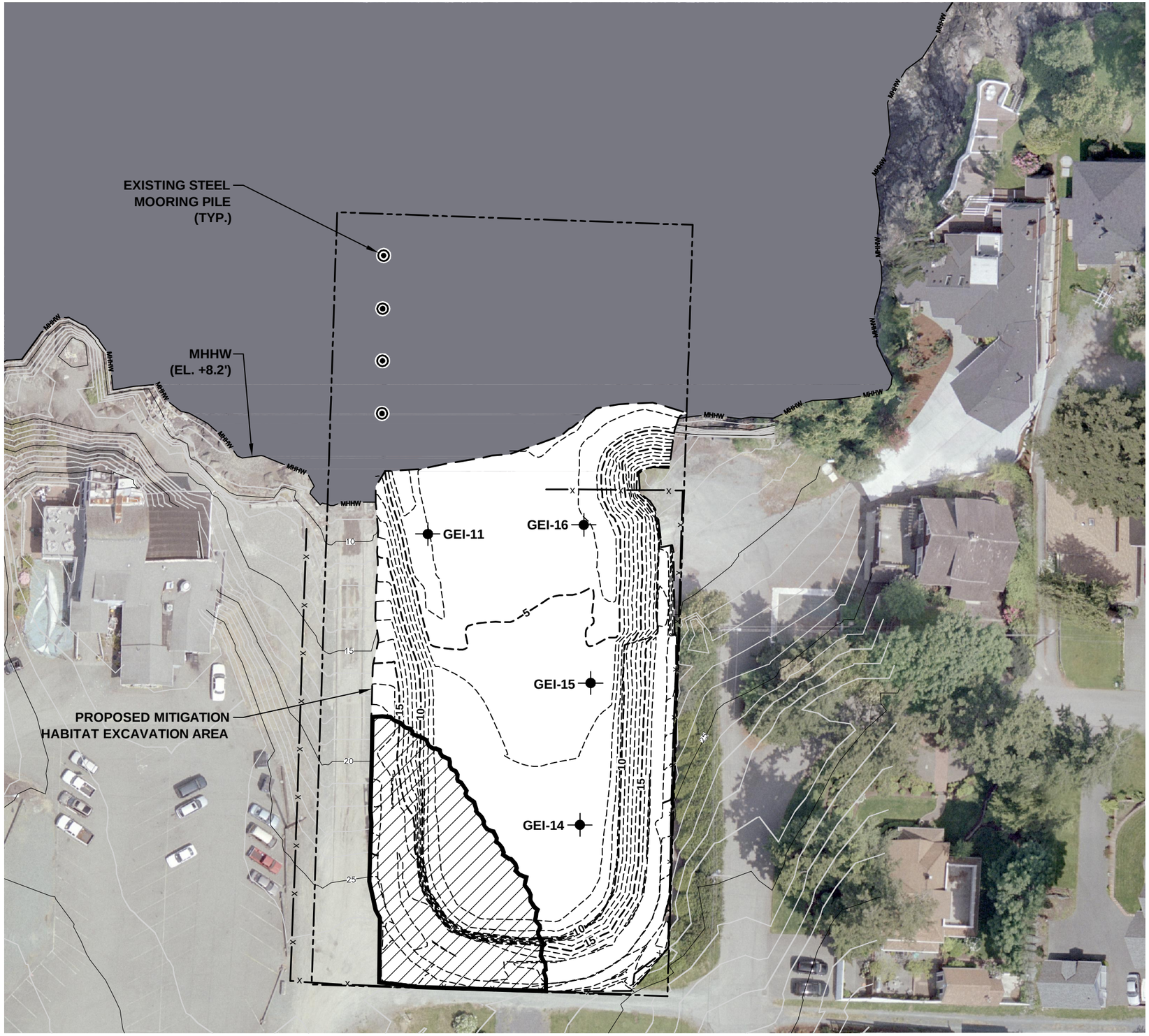
Reference: Base Aerial taken by David C. Smith & Associates, Inc. on 6/17/2009.

Remedial Excavation Areas

Wyman's Marina Site
Anacortes, Washington

GeoEngineers | **Figure 5**

P:\5\5147019\07\CAD\5147019-07 CAR Fig 5.dwg\TAB:LANDSCAPE modified by thichaud on Sep 26, 2014 - 10:39



Legend

- GEI-11 — Discret Sample Location (GeoEngineers, 2012)
- Existing Fence
- 20 — Existing Topographic Contour (Feet MLLW)
- 20 — Excavation Grade Contour (Feet MLLW)
- Approximate Area of Bedrock Encountered within Habitat Excavation
- Site Boundary
- Habitat Excavation Area
- MHHW = Mean Higher High Water

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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. can not 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.

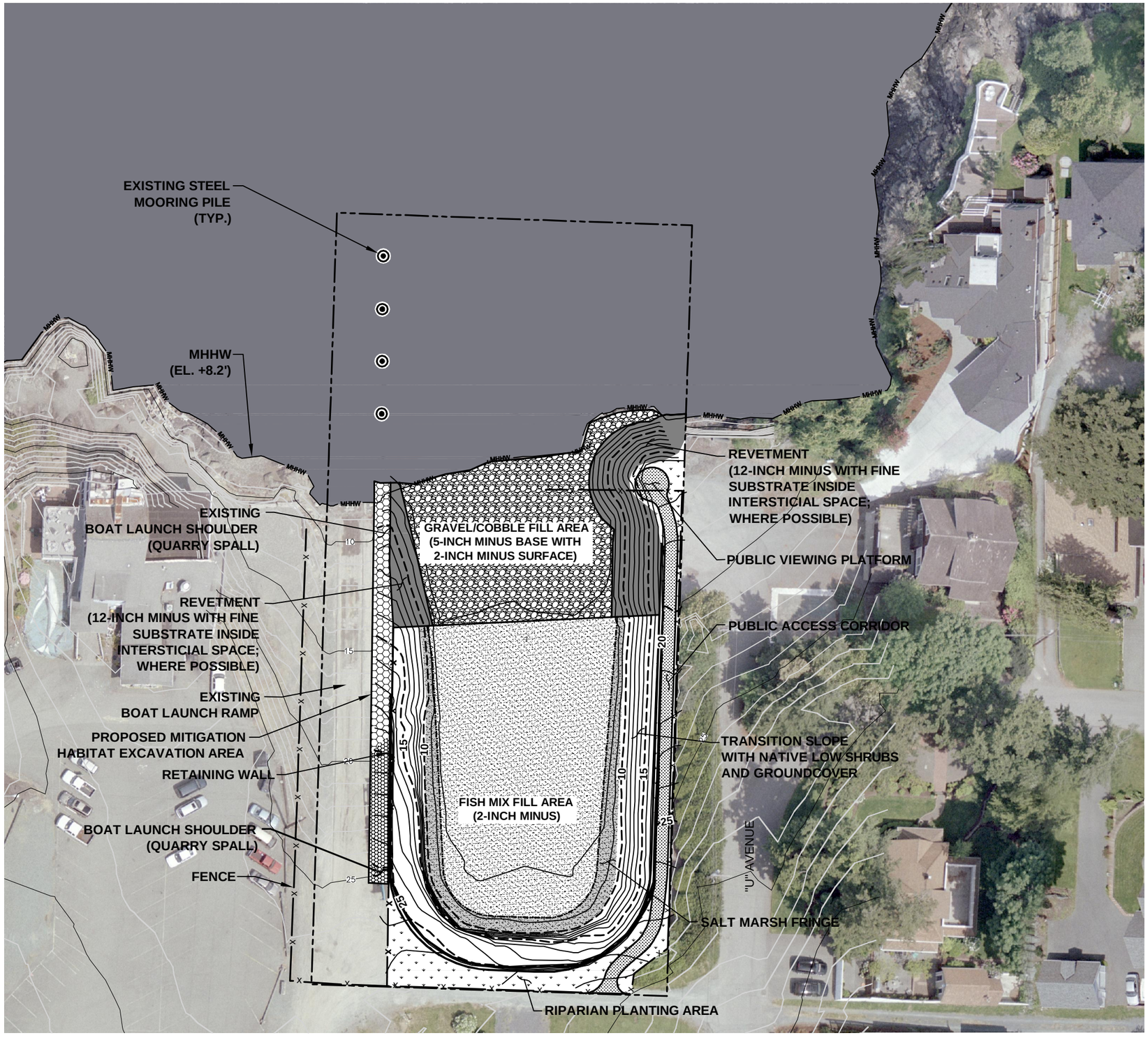
Reference: Base Aerial taken by David C. Smith & Associates, Inc. on 6/17/2009.

Habitat Excavation Area

Wyman's Marina Site
Anacortes, Washington

GeoEngineers | **Figure 6**

P:\15\15470191007\CAD\15470107-07 CAR Fig 6.dwg\TAB:LANDSCAPE Modified by TMICHAUD on Oct 01, 2014 - 12:25



Legend

- 20 — Existing Topographic Contour (Feet MLLW)
- 20 — Backfill Grade Contour (Feet MLLW)
- Site Boundary
- MHHW = Mean Higher High Water

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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. can not 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.

Reference: Base Aerial taken by David C. Smith & Associates, Inc. on 6/17/2009.

Post-Construction Site Conditions

Wyman's Marina Site
Anacortes, Washington

GeoEngineers

Figure 7

P:\15\4701907\CAD\SI\4701907 CAR FIG 7.DWG\TAB:LANDSCAPE MODIFIED BY THICHAUD ON OCT 01, 2014 - 12:27