INITIAL INVESTIGATION FIELD REPORT

WASHINGTON STATE DEPARTMENT OF ECOLOGY

☐ **Check this box if you have attached any documents to this form (using the paperclip icon on the left).**

ERTS #(s):	708177
Parcel #(s):	n/a
County:	Whatcom
FSID #:	99997341
CSID #:	16632
UST #:	

SITE INFORMATION

Site Name (Name over door):	Site Address (including City, State and Zip):	Phone / Email
Diablo Dry Dock	Diablo Dam Rd, Diablo, WA 98283 north shore of Diablo Lake, adjacent to SCL NCELC	
Site Contact, Title, Business: Steve Mitchell National Park Service	Site Contact Address (including City, State and Zip):	Phone Email steve_mitchell@nps.gov
Site Owner, Title, Business: National Park Service , US Dept. of Interior	Site Owner Address (including City, State and Zip):	Phone Email
Site Owner Contact, Title, Business:	Site Owner Contact Address (including City, State and Zip):	Phone Email
Previous Site Owner(s): Alternate Site Name(s):	Additional Info (for any Site Information Item): Ecology contacted NPS twice to determine if the release had been reported to EPA, but received no response.	

Latitude (Decimal Degrees):	48.71759
Longitude (Decimal Degrees):	-121.11723

INSPECTION INFORMATION

☑ Please check this box if there is relevant inspection information, such as data or photos, in an existing site report for this site.

Inspection Conducted? Yes ☐ No ☒	Date/Time:	Entry Notice: Announced ☐	Unannounced ☐
Photographs taken? Yes ☐	No ☒	Note: Attach photographs or upload to PIMS	
Samples collected? Yes ☐	No ☒	Note: Attach record with media, location, depth, etc.	

RECOMMENDATION

No Further Action (Check appropriate box below):		**LIST on Confirmed and Suspected Contaminated Sites List**: ☒
Release or threatened release does not pose a threat	☐	
No release or threatened release	☐	
Refer to program/agency (Name: _____)	☐	
Independent Cleanup Action Completed (contamination removed)	☐	

COMPLAINT (Brief Summary of ERTS Complaint):

On July 21, 2021, the National Park Service (NPS) submitted a Sampling & Analysis Plan to remediate surface soil and sediment around and within the dry dock building that were found to have elevated levels of arsenic, lead, and cPAHs. The contaminated media were discovered during 2014 and 2015 field investigations and not previously reported to Ecology.

CURRENT SITE STATUS (Brief Summary of why Site is recommended for Listing or NFA):

Sampling confirmed impacts to soil and sediment above MTCA cleanup levels. Further action needed: List on Confirmed & Suspected Contaminated Sites List.

Investigator: Krystal Rodriguez Date Submitted: 11/3/2021

OBSERVATIONS ☑ **Please check this box if you included information on the Supplemental Page at end of report.**

Description (If site visit made, please be sure to include the following: site observations, site features and cover, chronology of events, sources/past practices likely responsible for contamination, presence of water supply wells and other potential exposure pathways, etc.):

The Diablo Dry Dock is located on the north shore of Diablo Lake on National Park Service (NPS) land and within the Ross Lake National Recreation Area. The Dry Dock was constructed in the late 1930s and includes marine railway tracks and a shelter. It is listed in the National Register of Historical Places. Diablo Lake primarily provides habitat for bull trout, however, the lake was designated critical habitat in 2010 for the red shiner, a minnow species.

The Dry Dock is partially developed with numerous gravel roads, footpaths, buildings, and other infrastructure. Historical use of the facility for boat storage and maintenance suggests that contaminants of concern include metals from sand blast grit, petroleum from boat fueling activities, and cPAH (carcinogenic polycyclic aromatic hydrocarbons) from petroleum and/or treated timber supports. The NPS also used pesticides to control pests around buildings, which may have been used or stored at the Dry Dock. Soils at the site are generally gravelly sandy silt or silty sand.

The Dry Dock shoreline varies significantly depending on the depth of the reservoir and has been observed at least 150 feet from the dock building, according to the report submitted to Ecology. The shoreline consists of bedrock and unconsolidated sedimentary deposits and is susceptible to erosion because of wave action.

Hart Crowser conducted limited upload soil and sediment investigations in 2014 and 2015 to determine if metals, PAHs (polycyclic aromatic hydrocarbons), or petroleum were released to soil and metals or petroleum were released to sediments. Samples were collected around and within the Dry Dock building and from the marine railway (Figure 1).

Twenty-two samples were collected from surface and subsurface soils (Figures 2 and 3), eight surface sediment samples were collected south and east of the Dry Dock building, and two subsurface sediment samples were collected immediately below the marine railway close to the building (Figure 4). Hart Crowser compared analytical results to MTCA Method A cleanup levels for all samples, however, Ecology believes a more conservative approach, using Method B cleanup levels, is more appropriate because the location of this site is within a national recreation area and Method A cleanup levels do not consider protection of surface water, sediment, and ecological receptors.

Analytical results confirm the presence of metals, petroleum, and cPAHs in soil and/or sediment samples. For soil, total cPAHs and at least eight metals exceed Method A and/or Method B cleanup levels. For sediments, at least five metals were detected, but lead (in sample DD-S2) was the only metal to have a concentration greater than Method B cleanup levels. Table 1 provides a summary of the soil samples with the highest concentrations and how they compare to Method A and/or Method B cleanup levels. This is not an extensive list of all samples where contaminant concentrations exceeded cleanup levels, but it demonstrates the severity of the contamination.

Diesel and oil-range petroleum organics were also detected in soil and sediments samples, however, concentrations at most sample locations did not exceed cleanup levels for Method A or for the terrestrial ecological evaluation. Sample DD-S4, collected from 0-3 inches of the surface below the railway at the entry to the Dry Dock building, had the highest concentration of total diesel and oil-range organics at 310 mg/kg, which exceeds the Method B cleanup level of 260 mg/kg for the terrestrial ecological evaluation.

During a 2007 groundwater assessment, HWA Geosciences concluded that groundwater (measured at depths ranging from 25-42 feet below ground surface in three wells) flowed in a southerly direction, toward Diablo Lake. Deer Creek lies less than 200 feet west of the dock and is a minor tributary to Diablo Lake.

Geosyntec, the author of the April 2021 Sampling and Analysis Plan (SAP), reviewed historical data and site history to identify data gaps: 1) nature and extent of soil and sediments contaminated by metals and PAHs and 2) proof that pesticides were absent in soil and sediments at the site. The SAP describes upcoming efforts to collect additional samples to eliminate these data gaps.

On July 16, 2019, Seattle City Light (SCL) entered into an Administrative Settlement and Order on Consent with the US Department of the Interior and NPS for the performance of removal actions by SCL.

Documents reviewed:

Engineering Evaluation/Cost Analysis Sampling and Analysis Plan, Geosyntec Consultants, April 20, 2021.

CONTAMINANT GROUP	CONTAMINANT	SOIL	GROUNDWATER	SURFACE WATER	AIR	SEDIMENT	DESCRIPTION
Non-Halogenated Organics	Phenolic Compounds						Compounds containing phenols (Examples: phenol; 4-methylphenol; 2-methylphenol)
	Non-Halogenated Solvents						Organic solvents, typically volatile or semi-volatile, not containing any halogens. To determine if a product has halogens, search HSDB (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB) and look at the Chemical/Physical Properties, and Molecular Formula. If there is not a Cl, I, Br, F in the formula, it's not halogenated. (Examples: acetone, benzene, toluene, xylenes, methyl ethyl ketone, ethyl acetate, methanol, ethanol, isopropranol, formic acid, acetic acid, stoddard solvent, Naptha). *Use this when TEX contaminants are present independently of gasoline.*
	Polynuclear Aromatic Hydrocarbons (PAH)	C					Hydrocarbons composed of two or more benzene rings.
	Tributyltin						The main active ingredients in biocides used to control a broad spectrum of organisms. Found in antifouling marine paint, antifungal action in textiles and industrial water systems. (Examples: Tributyltin; monobutyltin; dibutyltin)
	Methyl tertiary-butyl ether						MTBE is a volatile oxygen-containing organic compound that was formerly used as a gasoline additive to promote complete combustion and help reduce air pollution.
	Benzene						Benzene
	Other Non-Halogenated Organics						TEX
	Petroleum Diesel	C					Petroleum Diesel
	Petroleum Gasoline						Petroleum Gasoline
	Petroleum Other						Oil-range organics
Halogenated Organics (see notes at bottom)	PBDE						Polybrominated di-phenyl ether
	Other Halogenated Organics						Other organic compounds with halogens (chlorine, fluorine, bromine, iodine). search HSDB (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB) and look at the Chemical/Physical Properties, and Molecular Formula. If there is a Cl, I, Br, F in the formula, it is halogenated. (Examples: Hexachlorobutadiene; hexachlorobenzene; pentachlorophenol)
	Halogenated solvents						PCE, chloroform, EDB, EDC, MTBE
	Polychlorinated Biphenyls (PCB)						Any of a family of industrial compounds produced by chlorination of biphenyl, noted primarily as an environmental pollutant that accumulates in animal tissue with resultant pathogenic and teratogenic effects
	Dioxin/dibenzofuran compounds (see notes at bottom)						A family of more than 70 compounds of chlorinated dioxins or furans. (Examples: Dioxin; Furan; Dioxin TEQ; PCDD; PCDF; TCDD; TCDF; OCDD; OCDF). *Do not use for 'dibenzofuran', which is a non-chlorinated compound that is detected using the semivolatile organics analysis 8270*
Metals	Metals - Other	C				C	Cr, Se, Ag, Ba, Cd
	Lead	C				C	Lead
	Mercury	C					Mercury
	Arsenic						Arsenic
Pesticides	Non-halogenated pesticides						Pesticides without halogens (Examples: parathion, malathion, diazinon, phosmet, carbaryl (sevin), fenoxycarb, aldicarb)
	Halogenated pesticides						Pesticides with halogens (Examples: DDT; DDE; Chlordane; Heptachlor; alpha-beta and delta BHC; Aldrin; Endosulfan, dieldrin, endrin)

CONTAMINANT GROUP	CONTAMINANT	SOIL	GROUNDWATER	SURFACE WATER	AIR	SEDIMENT	DESCRIPTION
Other Contaminants	Radioactive Wastes						Wastes that emit more than background levels of radiation.
	Conventional Contaminants, Organic						Unspecified organic matter that imposes an oxygen demand during its decomposition (Example: Total Organic Carbon)
	Conventional Contaminants, Inorganic						Non-metallic inorganic substances or indicator parameters that may indicate the existence of contamination if present at unusual levels (Examples: Sulfides, ammonia)
	Asbestos						All forms of Asbestos. Asbestos fibers have been used in products such as building materials, friction products and heat-resistant materials.
	Other Deleterious Substances						Other contaminants or substances that cause subtle or unexpected harm to sediments (Examples: Wood debris; garbage (e.g., dumped in sediments))
	Benthic Failures						Failures of the benthic analysis standards from the Sediment Management Standards.
	Bioassay Failures						For sediments, a failure to meet bioassay criteria from the Sediment Management Standards. For soils, a failure to meet TEE bioassay criteria for plant, animal or soil biota toxicity.
Reactive Wastes	Unexploded Ordinance						Weapons that failed to detonate or discarded shells containing volatile material.
	Other Reactive Wastes						Other Reactive Wastes (Examples: phosphorous, lithium metal, sodium metal)
	Corrosive Wastes						Corrosive wastes are acidic or alkaline (basic) wastes that can readily corrode or dissolve materials they come into contact with. Wastes that are highly corrosive as defined by the Dangerous Waste Regulation (WAC 173-303-090(6)). (Examples: Hydrochloric acid; sulfuric acid; caustic soda)

(fill in contaminant matrix above with appropriate status choice from the key below the table)

Status choices for contaminants	
Contaminant Status	**Definition**
B— Below Cleanup Levels (Confirmed)	The contaminant was tested and found to be below cleanup levels. (Generally, we would not enter each and every contaminant that was tested; for example if an SVOC analysis was done we would not enter each SVOC with a status of "below". We would use this for contaminants that were believed likely to be present but were found to be below standards when tested
S— Suspected	The contaminant is suspected to be present; based on some knowledge about the history of the site, knowledge of regional contaminants, or based on other contaminants known to be present
C— Confirmed Above Cleanup Levels	The contaminant is confirmed to be present above any cleanup level. For example—above MTCA method A, B, or C; above Sediment Quality Standards; or above a presumed site-specific cleanup level (such as human health criteria for a sediment contaminant).
RA— Remediated - Above	The contaminant was remediated, but remains on site above the cleanup standards (for example—capped area).
RB— Remediated - Below	The contaminant was remediated, and no area of the site contains this contaminant above cleanup standards (for example— complete removal of contaminated soils).

Halogenated chemicals and solvents: Any chemical compound with chloro, bromo, iodo or fluoro is halogenated; those with eight or fewer carbons are generally solvents (e.g. halogenated methane, ethane, propane, butane, pentane, hexane, heptane or octane) and may also be used for or registered as pesticides or fumigants. Most are dangerous wastes, either listed or categorical. Organic compounds with more carbons are almost always halogenated pesticides or a contaminant or derivative. Referral to the HSDB is recommended if you are unfamiliar with a chemical name or compound, as it contains useful information about synonyms, uses, trade names, waste codes, and other regulatory information about most toxic or potentially toxic chemicals.

Dibenzodioxins and dibenzofurans are normalized to a combined equivalent toxicity based on 2,3,7,8-tetrachloro-p-dibenzodioxin as set out in WAC 173-340-708(8)(d) and in the Evaluating the Toxicity and Assessing the Carcinogenic Risk of Environmental Mixtures using Toxicity Equivalency Factors Focus Sheet (https://fortress.wa.gov/ecy/clarc/FocusSheets/tef.pdf). Results may be reported as individual compounds and isomers (usually lab results), or as a toxic equivalency value (reports).

FOR ECOLOGY II REVIEWER USE ONLY (For Listing Sites):

How did the Site come to be known: ☐ **Site Discovery (received a report):** _____ (Date Report Received)
☐ **ERTS Complaint**
☑ **Other (please explain):** _____

Does an Early Notice Letter need to be sent: ☒ Yes ☐ No
If *No*, please explain why: _____

NAICS Code (if known): _____
Otherwise, briefly explain how property is/was used (i.e., gas station, dry cleaner, paint shop, vacant land, etc.):
_____

Site Unit(s) to be created (Unit Type): ☒ Upland (includes VCP & LUST) ☒ Sediment
If multiple Units needed, please explain why: _____

Cleanup Process Type (for the Unit): ☑ No Process ☐ Independent Action
☐ Voluntary Cleanup Program ☐ Ecology-supervised or conducted
☐ Federal-supervised or conducted

Site Status: ☐ Awaiting Cleanup ☐ Construction Complete – Performance Monitoring
☒ Cleanup Started ☐ Cleanup Complete – Active O&M/Monitoring
☐ No Further Action Required

Model Remedy Used? ☐
If yes, was this a transformer spill? ☐

Site Manager (Default: _____): _____

Specific confirmed contaminants include:

_____ in Soil

_____ in Groundwater

_____ in Other (specify matrix: _____)

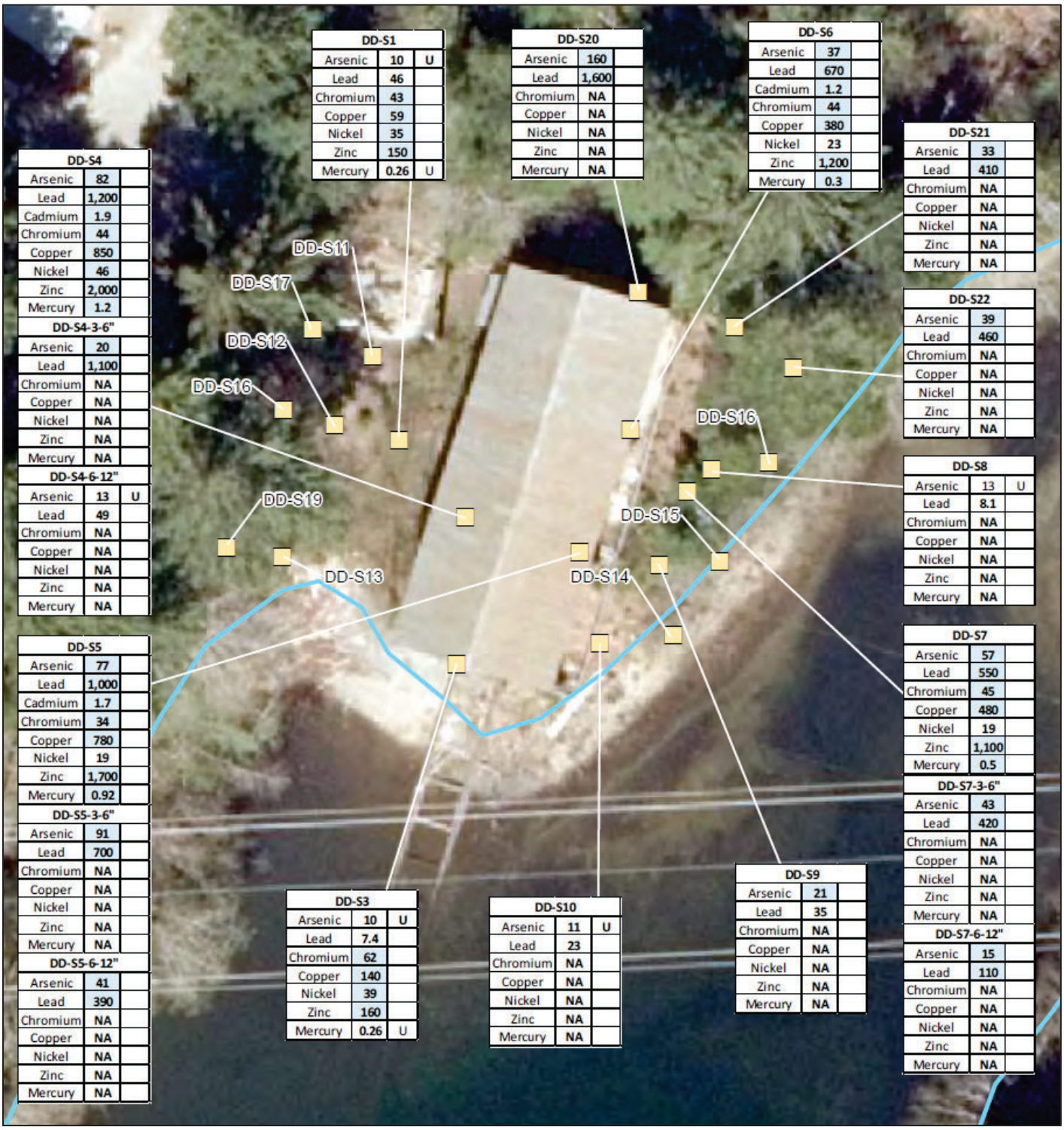
Facility/Site ID No. (if known):
99997341
Cleanup Site ID No. (if known):
16632

COUNTY ASSESSOR INFO: Please attach to this report a copy of the tax parcel/ownership information for each parcel associated with the site, as well as a parcel map illustrating the parcel boundary and location.

Additional or Supplemental Information from Observations Page

Figure 1: Soil and sediment sampling locations (source: Geosyntec)

Figure 2: Analytical results for select metals in soil samples (source: Geosyntec)



Legend

Historical Soil Sample Location

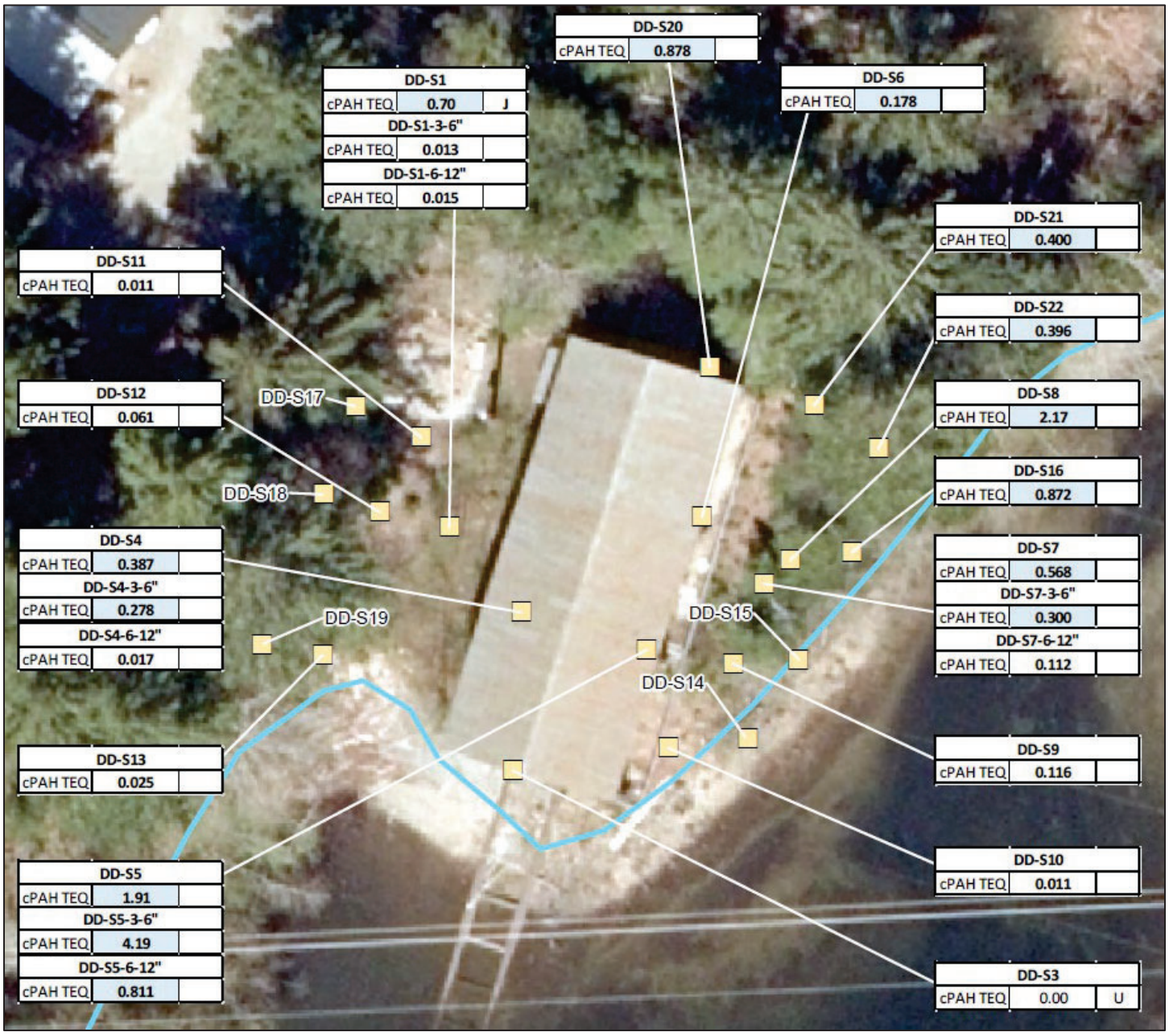
Approximate Ordinary High Water Mark

Notes:
1. Detected concentrations that exceed MTCA Method A levels or ecological screening values are shaded.
2. U = Not detected at the reporting limit indicated.
3. Samples shown with no data were sampled, but were not analyzed for metals.
4. Chemical data from Soil and Sediment Characterization Seattle City Light Diablo Lake Dry Dock Building (Hart Crowser, 2016).
5. NA - Not Analyzed

N

0 20 Feet

Figure 3: Analytical results for cPAHs in soil samples (source: Geosyntec)



Legend

Soil Sample Location

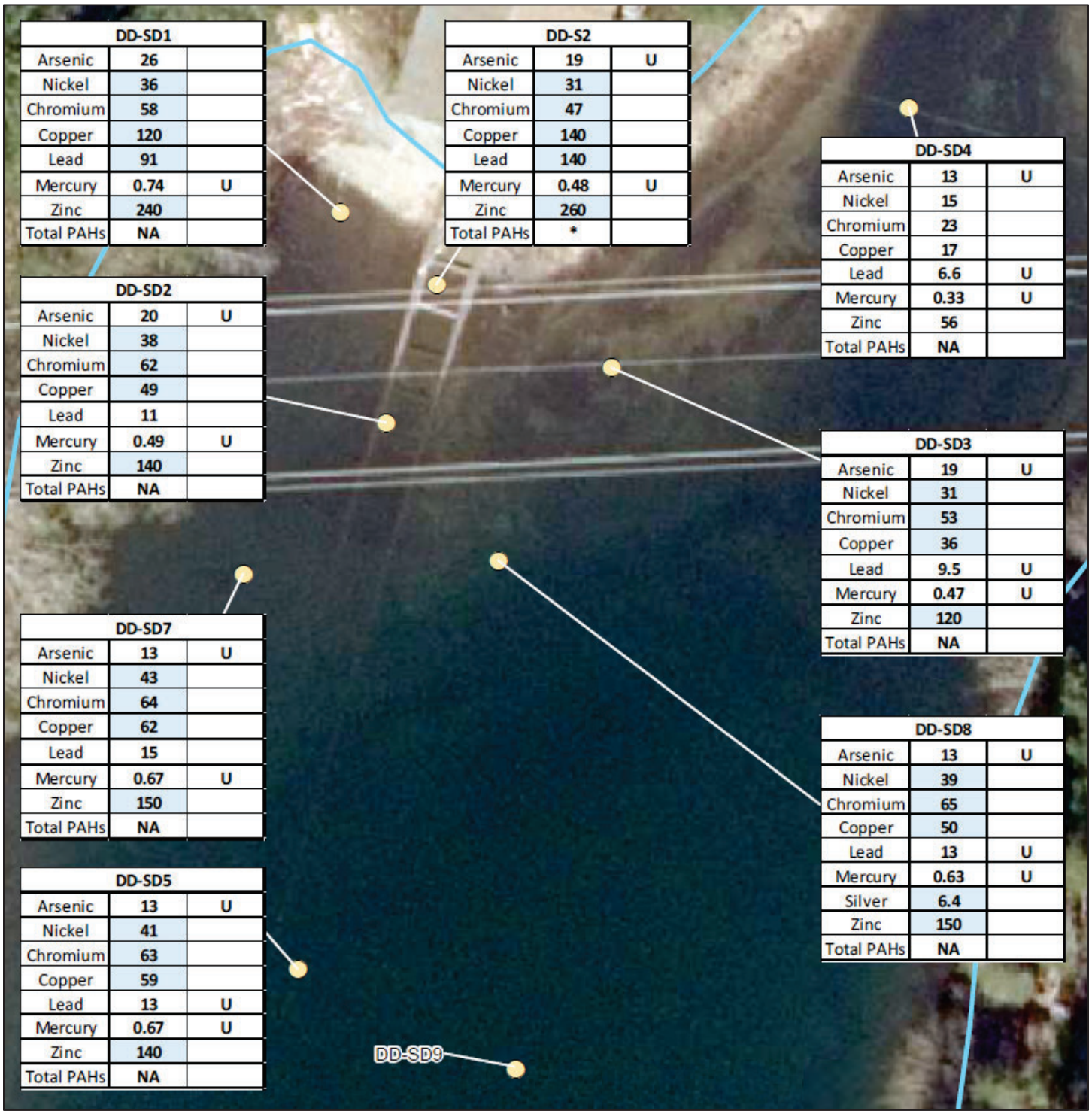
Approximate Ordinary High Water Mark

N

0 20 Feet

Notes:
1. Concentrations that exceed MTCA Method A levels are shaded.
2. U = Not detected at the reporting limit indicated.
3. Samples shown with no data were sampled, but were not analyzed for metals.
4. Total cPAH TEQs are calculated by multiplying toxicity equivalency factor (SCUM, 2019) by the detected concentration; non detected are multiplied by half the reporting limit.
5. Total cPAH TEQs calculated using WAC 173-340-708(8) in the historical dataset.

Figure 4: Analytical results of select metals and total PAHs in sediment samples (source: Geosyntec)



Legend

Historical Surface Sediment Sample

Approximate Ordinary High Water Mark

Notes:
1. Concentrations that exceed ecological screening values shaded.
2. Chemical data from Soil and Sediment Characterization Seattle City Light Diablo Lake Dry Dock Building (Hart Crowser, 2016).
3. NA - Not Analyzed
4. DD-SD6 and DD-SD9 were archived (not tested).
*DD-S2, DD-S2-3-6" and DD-S2-6-12" contained PAH concentrations above ecological screening values.

N

0 20 Feet

Table 1: Summary of highest concentrations of metals and cPAHs detected in soil

Category	Contaminant of Concern	**Highest** Concentration Detected (mg/kg)	Sample ID	Sample location description	Method B cleanup level (mg/kg)	Method A soil cleanup level (mg/kg)
Metals	Arsenic	160	DD-S20	immediately north of the dry dock building	7.30	20
	Cadmium	2	DD-S7	east of the dry dock building	0.77	2
	Copper	850	DD-S4	within the dry dock building	36.00	n/a
	Lead	1,600	DD-S20	immediately north of the dry dock building	21.00	250
	Mercury	1	DD-S4	within the dry dock building	0.07	2
	Nickel	46	DD-S4	within the dry dock building	38.00	n/a
	Zinc	2,000	DD-S4	within the dry dock building	86.00	n/a
cPAHs	Total cPAHs TEQ	4	DD-S4	within the dry dock building	0.00031	0.1