Lower Duwamish Waterway
South Park Marina

Site Reconnaissance Plan

Prepared for

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List of Acronyms

EAA	Early Action Area
EPA	U.S. Environmental Protection Agency
LDW	Lower Duwamish Waterway
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PID	Photoionization Detector
PVC	Polyvinyl Chloride
RP	Reconnaissance Plan
SAIC	Science Applications International Corporation
SAP	Sampling and Analysis Plan
SEIDG	Summary of Existing Information and Data Gaps
SPM	South Park Marina
SVOC	Semivolatile Organic Compound
TPH	Total Petroleum Hydrocarbons

1.0 Introduction

This reconnaissance plan (RP) was prepared by Science Applications International Corporation (SAIC) on behalf of the Washington State Department of Ecology (Ecology). The plan outlines reconnaissance-level environmental investigation activities to be carried out at the South Park Marina (SPM) site. It is anticipated that this plan will form the foundation for a subsequent Sampling and Analysis Plan (SAP) which will be prepared prior to beginning the actual investigation.

The SPM is located at 8604 Dallas Avenue South in Seattle, Washington. The facility lies within the Lower Duwamish Waterway (LDW) Superfund site and is adjacent to the Duwamish River and the Terminal 117 Early Action Area (EAA) (Figure 1). Because of the presence of contamination, Terminal 117 was identified by the Environmental Protection Agency (EPA) as a candidate for early sediment cleanup action. Historical information and sampling results suggest that soil and groundwater contamination may also be present at the SPM.

The *Summary of Existing Information and Identification of Data Gaps, South Park Marina* (SEIDG) report, prepared by SAIC in June 2007, summarizes information relevant to the potential for sediment recontamination from the SPM site and identifies several data gaps. The activities outlined in this RP are intended to address data gaps associated with potential contamination from past site uses. Other data gaps identified in the SEIDG that are related to more-recent or ongoing potential contaminant sources will be addressed separately by Ecology.

2.0 Past Site Uses

The A&B Barrel Company, a drum reconditioning operation, occupied the southeastern part of what is now the SPM (Figure 1). This facility operated between 1946 and 1961 and included a square building located about 50 feet north of Dallas Avenue, a waste disposal pond located between the building and the river, and an outdoor yard area, apparently used for storage.

Based on historical photographs, it appears that the pond operated between at least the mid-1950s and 1961. Oils, grease, and sodium hydroxide were reportedly discharged to the pond; it is also likely that other types of waste residues remaining in the drum during cleaning were also disposed in the pond. Aerial photographs show what appear to be drums stored on the property to the north and west of the square building and also possibly surrounding the disposal pond.

In 1961 the site was completely vacated; the building was removed, the pond was filled in, and the site was regraded. The site was subsequently occupied by the SPM; the SPM has been in operation since 1970 and currently includes boat repair and maintenance facilities, upland boat storage, boat haul-out services, a boat-launch ramp, and moorage slips in the Duwamish River.

3.0 Site Visit and Current Conditions

Tom Dubé of SAIC conducted a site visit on June 6, 2007 in conjunction with Guy Crow, the current owner of SPM. During the visit, existing conditions were noted and access for sampling was evaluated.

The portion of the SPM formerly occupied by the A&B Barrel Company includes five buildings that are used for boatbuilding, repair, and maintenance. The buildings contain from one to three work bays each, for a total of eight bays; the bays are designated "0" through "7" (Figure 1). At the time of the site visit, Guy Crow did not have access to all the buildings. Observations regarding the buildings and potential access for sampling are presented below:

- Building "0" (containing work bay 0): This building is occupied by a boat under construction. The boat fills almost the entire building leaving no room for powered sampling equipment. There is a small nook outside the western corner of the building (adjacent to Building "1") that is unpaved and may be accessed by a small bobcat-mounted geoprobe rig.

- Building "1" (containing work bay 1): This building appears to be dirt-floored with the floor surface a foot or two below surrounding grade. This building appears to have no room for powered sampling equipment. From the outside, this building appears to be connected to Building 2-3; however, it is probably a separate unit inside.

- Building "2-3" (containing work bays 2 and 3): There is a large (~8-inch diameter) pipe coming out the back (east side) of work bay 3 that leads to the property to the southeast.

- Building "4-5-6" (containing work bays 4, 5, and 6): There is a narrow dirt strip between this building and Building "7", which could be used for hand augering if necessary. It is also possible that a bobcat-mounted geoprobe rig could access the western end of this building.

- Building "7" (containing work bay 7): This building has an asphalt floor. Access inside the building is unknown.

The outdoor areas of the SPM site formerly occupied by the A&B Barrel Company are asphalt-paved and largely occupied by boats being worked on, boatyard equipment, and stored masts and other items. There is little clearance for powered sampling equipment in many areas.

The current marina docks were built about 1981, when the shore was straightened and rip-rapped, and when the old marina docks were removed. The riverbank of the LDW in the area of concern has a concrete bulkhead with a chain-link fence above it. A gate in this fence and a short ladder on the bulkhead wall allow easy access down to the riverbank. The bank is largely covered with rip-rap material and algae, but the upper portion of the bank below the wall contains terrestrial vegetation and apparently a finer-grained substrate.

The former waste disposal pond was located beneath what is now parts of Buildings "0" and "1". The pond may also have extended slightly to the northeast of these buildings, toward the river, onto an unpaved area that is now used for mast storage.

The former drum storage areas on the A&B Barrel property extended west and north into an area that is currently paved and used for outdoor boat maintenance and as part of the facility roadway. A portion of the former A&B yard also extended to the northwest as far as two current maintenance facility buildings. The former A&B Barrel Company building was located on the area now covered by Buildings "2-3" and "4-5-6".

4.0 Proposed Sampling

The purpose of the proposed sampling is to preliminarily characterize residual soil contamination related to the former A&B Barrel Company—in particular, the vicinity of the former waste disposal pond and presumed drum storage areas—and to characterize contaminants in river bank sediment, groundwater, and seeps (if present) that could indicate contaminant transport to aquatic sediments.

4.1 Analytes

PCBs have previously been detected in soil samples collected at the easternmost corner of the SPM property and the draft *SEIDG* identified a number of other contaminants that could potentially be affecting LDW sediments from Terminal 117 and the SPM. Based on this, and the potential variety and uncertainty of wastes disposed at the A&B Barrel Company, a broad range of potential contaminants will be analyzed for. The list of these chemicals, as defined by standard analytical groups, is as follows:

- Semivolatile organic compounds (SVOCs), including polynuclear aromatic hydrocarbons (PAHs).
- Pesticides/herbicides.
- Polychlorinated biphenyls (PCBs)
- Total petroleum hydrocarbons (TPH), including gasoline, diesel, and heavy-oil ranges.
- Metals (for waters, both total and field-filtered samples will be collected and analyzed).

4.2 Sampling Locations and Methods

4.2.1 Subsurface Soil Sampling

Subsurface soil sampling will be collected to characterize residual soil contamination in the vicinity of the former waste disposal pond and presumed drum storage areas. Proposed sample locations are shown on Figure 1

Because much of the area of interest is covered by buildings, boats, or other obstacles and only narrow avenues of space are accessible next to buildings or between boats, most samples will be collected using a bobcat-mounted portable geoprobe rig (e.g., one available from Cascade Drilling of Woodinville, Washington). This device can be used in two operating modes: Where space allows, the geoprobe unit is mounted to the Bobcat vehicle, providing extra weight and pulldown pressure. For tighter locations, such as north or west of Building 0, the geoprobe unit can be removed from the bobcat and hand-wheeled up to approximately 100 feet, with power supplied by hydraulic hoses that extend from the bobcat. The rig is capable of penetrating the relatively fine-grained lithologies expected at the site. However, drilling depth may be limited should rock or glacial till be encountered while in the "portable" mode.

For areas that are not accessible to the geoprobe rig, soil samples will be collected using a stainless-steel hand auger. In areas where the surface soil is dense and compacted, or where asphalt is present, the surface material will first be removed with a shovel, rail iron, or other hand tool.

Soil samples collected by geoprobe are anticipated to extended down to a depth of approximately 10 to 15 feet below ground surface, but every attempt will be made to extend below the depth of contamination, as determined by field indicators. Based on work at adjacent Terminal 117, the water table is anticipated be approximately 5 to 12 feet deep, varying depending on the tidal level in the adjacent Duwamish River. Hand augering will continue until any of the following is encountered: the water table, the apparent base of contamination, refusal, or 8 feet maximum. Typically, a hand auger cannot readily access far below the water table due to soil caving and difficulty in removing the saturated soil; however, an attempt will be made to extend below the water table if contamination is apparent at that depth.

Determination of which samples are to undergo analytical testing will be based on field screening of odor, PID measurement, discoloration, and sheen. Samples collected from both the hand augers and the bobcat geoprobe will be screened using field indications of contamination, and at least one sample for analysis will be collected per boring. If no evident indicators of contamination are identified in any given boring, one soil sample will be collected for analysis from at or near the water table.

4.2.2 Monitoring Well Installation and Groundwater Sampling

Shallow groundwater at the site is expected to flow generally northeast toward the river. Thus, the area of greatest concern is downgradient of the former disposal pond, between it and the river. One well will be installed as close as possible to the presumed downgradient pathway from the disposal pond. This will be located in the center of the unpaved area northeast of Building 0. In addition, one well will be located west of this well, in the area northwest of Building 0, in order to characterize groundwater that migrates through the soil surrounding the former pond, where additional waste may have been stored. A third well will be located farther northwest near the material/container storage area of the former A&B yard, to attempt to characterize any groundwater affected by former activities in this part of the yard (Figure 1).

The bobcat limited-access geoprobe unit will be used to install groundwater monitoring wells. These small-diameter monitoring wells will be constructed of either 0.75 or 1.0-inch diameter PVC. Installation will be completed with pre-pack screens (0.010 screen slots). Wells will be completed with bentonite and a surface seal of concrete. The wells will be developed by using a swab or small-diameter weighted bailer to surge the wells, in conjunction with a peristaltic pump to remove the development water.

One round of groundwater sampling will be conducted as part of this reconnaissance investigation; subsequent rounds may be collected later depending on initial results. Groundwater sampling will be conducted during low-tide and will be accomplished by use of a peristaltic pump in low-flow mode. Well elevations will be surveyed relative to a known vertical datum. Water levels will be measured in each well prior to purging.

4.2.3 Bank and Subtidal Sediment Sampling

Sediment samples will be collected from three locations along each of two northeast-southwest transects (i.e., perpendicular to the shore). One transect will be located at the property boundary between the site and Terminal 117. The other transect will be located between the former disposal pond and the river (Figure 1). Three samples will be collected along each transect, one at the top of the retaining wall, one at the base of the retaining wall, and one at the water level at low tide. Samples will be collected from the 0 – 4-inch depth interval using hand tools.

4.2.4 Seep Sampling

Previous investigations have not identified seeps in the vicinity of the SPM shoreline; however, as part of this investigation, the accessible intertidal areas of the SPM site will be reexamined at low tide for seeps. A sample will be collected from all observed seeps, up to a maximum of 2 samples.

Seep water samples will be obtained by placing a plastic funnel, or equivalent device, with attached tubing into the flowing seep water channel and directing or pumping (using a peristaltic pump) the water directly into the sampling container.

Figure

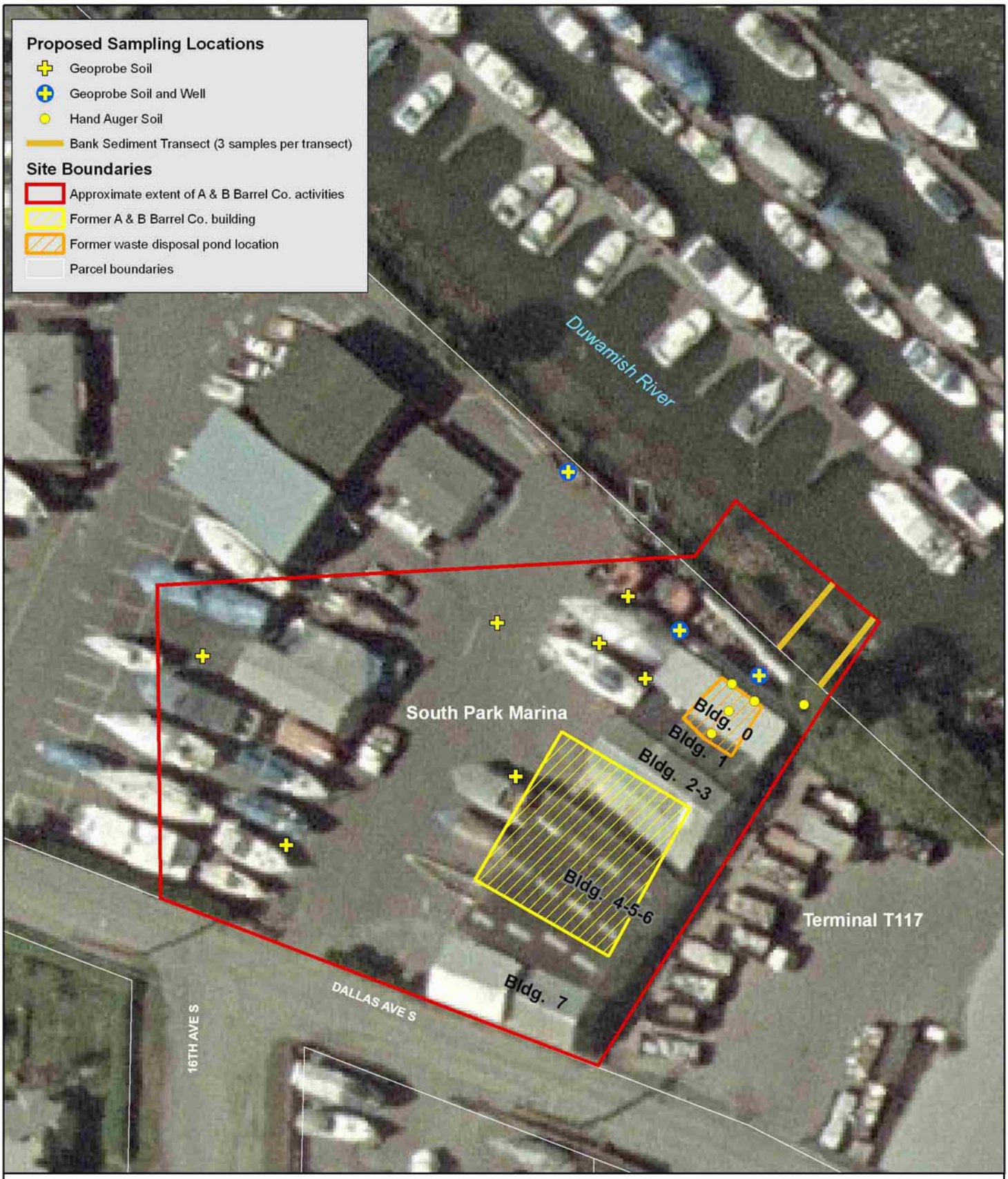

Figure 1. South Park Marina Site

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Table

Table 1. Samples and Analyses

Media	Sample Locations	Samples Collected for Analysis	Analyses
Subsurface soil, geoprobe	10	10 – 20	SVOCs (8270) PCBs (8082) Pesticides (8081) TPH (HCID, NWTPH-Gx, -Dx) Metals, total (As, Cd, Cr, Cu, Pb, Ag, Zn) (6020) Metals, total (Hg) (7470)
Subsurface soil, hand auger	5	5 – 10	
Bank and subtidal sediment	2 transects	6	
Groundwater, monitoring well	3	3	SVOCs (8270) PCBs (8082) Pesticides (8081) TPH (HCID, NWTPH-Gx, -Dx) Metals, tot. & diss. (As, Cd, Cr, Cu, Pb, Ag, Zn) (6020) Metals, total & dissolved (Hg) (7470)
Seeps	Up to 2	2	