

MEMORANDUM

DATE: April 20, 2018

TO: Doug Luetjen and Gary Huff, Karr Tuttle Campbell

FROM: Mark Dagel, LHG and Julie Wukelic

**RE: Point Wells Urban Center, Environmental Remediation Approach
Snohomish County, Washington
17203-54**

This memorandum describes an environmental remediation approach for the above-referenced site. It was prepared to address several comments received from Snohomish County in its 10/6/17 Review Completion Letter in response to the project developer's 4/17/17 application submittal.

Summary

The development of a plan for cleanup will require collaboration between the parties responsible for remediation, the project developer, and the Washington State Department of Ecology (Ecology). The appropriate cleanup plan, and how to implement it, depends upon the requirements of an approved plan for development of the site.

A conceptual approach for the preparation of a remediation plan and site cleanup is provided later in this memorandum. The remediation approach described is conceptual. It presents a cleanup scenario based on:

- Existing information;
- The planned future use of the site as mixed-use; and
- Experience with similar sites.

Environmental Review Process

The most recent draft (7/29/16) of the County's Draft Environmental Impact Statement indicates that environmental review of the site remediation will be separate from that for site redevelopment. Environmental review for the cleanup will be conducted by Ecology under the provisions of the Model Toxics Control Act (MTCA) and the State Environmental Policy Act (SEPA). Cleanup actions will be consistent with MTCA regulations and will provide adequate mitigation for the environmental health and hazardous substance concerns present at the site.



Background

Information in this memorandum is based on material provided by the current facility operator's consultant, SLR, including SLR's April 16, 2014, memorandum to Ecology titled "Remediation Approach for Pt. Wells Urban Center EIS, Richmond Beach Asphalt and Marine Fuels Terminal". It is also based on the "BSRE Point Wells, LP, Redevelopment Project, Critical Areas Report" prepared on behalf of the project developer by David Evans and Associates, dated April 2017.

The following discussion is drawn from SLR's 2014 memorandum. Based on a 3/15/18 telephone conversation with Mark Wells, the representative of the current site operator, the description of site conditions in the 2014 memorandum is still considered to be accurate.

Site History

In 1911, Standard Oil purchased waterfront property on Point Wells, also known as Richmond Beach, from the Factory Improvement Company. They constructed a 175-foot wharf and four large fuel oil tanks, and initially used the property primarily for a marine fueling station (this property is presumed to be the current Tank Farm Area). Royal Dutch Shell and Associated Oil Company bought smaller adjoining properties. By 1914, Standard Oil had enlarged the facility to handle a full range of products, adding 14 more tanks, a warehouse, a lube filling shed, an asphalt shed, and extending the wharf. Standard Oil purchased additional adjoining parcels south of the Tank Farm Area from Alaska Products Company in 1913. The Standard Oil property was expanded southward again in 1934, by the purchase of adjoining property owned and operated by Western Cooperaage Company; and in 1941, by the purchase of the remaining southern Point Wells parcels from the J.M. Colman Company and E.L. Reber. The properties purchased by Standard Oil in 1913, 1934, and 1941 are presumed to comprise the South Seawall Area.

Chevron purchased the South Seawall Area in 1950. On March 1, 2005, Paramount of Washington, Inc., purchased the subject property from Chevron. Paramount has operated the facility since that time, primarily for petroleum storage. The site's ownership was transferred to BSRE Point Wells LP in June 2010. Over 30 documents have been generated since 1983 that present the results of soil and groundwater investigation conducted at the site. These investigations repeatedly indicate soil and groundwater impacts from on-site operations. Continued investigations and sampling programs through the current time have continued to show similar results.

A groundwater extraction and treatment system was installed in 1997, and became operational in 1998. In 2003, belt-skimming units were installed for the recovery of free-product, and the groundwater extraction/free-product recovery system expanded to include the Asphalt Plant area in 2007. The groundwater treatment system and discharge outfall have been operated under an NPDES permit that has required submittal of quarterly Discharge Monitoring Reports and annual groundwater treatment system operation and maintenance reports.



Past Releases

Past accidental releases at the site are a potential source of impacts to marine sediments. Between 1989 and 1994, numerous spills ranging from 0.1- to 600-gallons of various products were documented at the Point Wells facility; however, the spills could not be specifically identified as having occurred within a specific area or reaching Puget Sound. Historically, spills have occurred more frequently in areas where oil products have been used or transferred than in storage areas. Spills from these areas are typically small (less than 100 gallons) and are often contained by the on-site drainage systems which drain to the on-site wastewater treatment system.

Additionally, some of the more significant spills that were documented to have reached Puget Sound, and potentially affected the intertidal and off-shore sediments at the site, are listed below:

- 1972 – An unknown quantity of gasoline was released into the water at the northwestern portion of the south dock.
- 1985 – Approximately 49,600 gallons of aviation fuel was released from a punctured pipeline underneath the BNSF railroad tracks located northeast of the South Seawall Area. The released product spilled onto the BNSF right-of-way, ditch, and northeast portion of the South Seawall Area (CDM, 2005). Approximately 500 gallons discharged to Puget Sound (Foster Wheeler, 1996b)
- October 31, 1989 – Approximately 2,200 gallons of Jet A-50 was spilled at an unknown location (CDM, 2005).
- 1990 – Approximately 176,400 gallons of heavy North Slope product (Nikiski Residual Charge Stock) was released from a ruptured tank. Approximately 4,200 gallons reached the beach and Puget Sound adjacent to the Tank Farm area. The impacted sand and gravel on the beach was removed, and the impacted portions of the rock riprap were pressure cleaned with high-pressure water wash (Foster Wheeler, 1996b).
- June 10, 2000 – The fishing vessel, Bowfin, collided with the fish-processing barge, Lucky Buck. The Lucky Buck was escorted to the Point Wells fuel dock for an initial diver survey. The divers discovered a large hole in its hull with flooding progressing forward on the barge. The vessel began to sink at the dock, so the vessel was beached on the sand and gravel beach just south of the fuel dock. The vessel was carrying between approximately 93,000 and 118,000 gallons of diesel fuel and an undetermined quantity of lube and hydraulic oil on board. A minor sheen was reported near the barge (NOAA, 2014).
- December 31, 2003 – Approximately 4,800 gallons of heavy fuel oil spilled into Puget Sound due to an overfill on a barge. Approximately 1,300 gallons were on the barge deck. The oil reached the north and south beaches.



Nature and Extent of Contamination

Environmental investigations conducted since the 1980s have documented the presence of petroleum-free-product in soil and groundwater at the site along with residual and dissolved-phase petroleum hydrocarbons (e.g., gasoline, diesel, and heavier oil constituents), benzene, toluene, ethylbenzene, and xylenes (BTEX), heavy metals (lead), and polycyclic aromatic hydrocarbons (PAHs).

Based on existing information, SLR's 2014 memorandum identifies the most highly contaminated area of the site as a 50- to 400-foot wide swath that lies immediately east (inland) of the current seawall (see attached figure from SLR report). This area is termed the "near-shore area." This area is underlain by free-product and is the location of the free-product recovery operations. SLR estimates that the near-shore area comprises about 25 percent of the site and that soil contamination in this area is fairly continuous and extends to an average depth of 10 feet below land surface.

SLR terms the rest of the site inside the current seawall the "inland area." This area is estimated to comprise about 75 percent of the site. Soil contamination in the inland area is estimated to extend to an average depth of 5 feet below land surface and is thought to be discontinuous, with about half the area underlain by free-product and/or soil and groundwater exceeding MTCA cleanup levels.

Seaward of the current seawall, the SLR memorandum states that beach and sediment contamination appear to be focused around former and existing discharge/outfall locations, spill sites, and loading/unloading areas. However, little or no recent sampling has been conducted in the beach and offshore sediments.

MTCA Cleanup Process

Washington's hazardous waste cleanup law, the Model Toxics Control Act (Chapter 70.105D RCW), mandates that site cleanups protect the state's citizens and environment. Regulations adopted under the law, Chapter 173-340 WAC (MTCA), describe the steps for conducting site cleanup.

At the Point Wells site, the initial steps of the MTCA process, Site Discovery, Initial Investigation, Site Hazard Assessment, and Hazard Ranking have been completed. The following steps remain:

- **Remedial Investigation/Feasibility Study:** A remedial investigation and feasibility study (RI/FS) would be conducted to define the extent and magnitude of contamination at the site. The study would consider historical data (e.g., it would provide a compilation of historic water-quality data) as well as data from studies conducted specifically for the RI. Potential impacts to human health and the environment and a range of alternative cleanup technologies must also be evaluated in this study. Sites being cleaned under a consent decree or agreed order must provide public review of the draft RI/FS report.



- Selection of Cleanup Action/Cleanup Action Plan: Using information gathered during the RI/FS, a Cleanup Action Plan (CAP) is developed. The CAP identifies preferred cleanup methods and specifies cleanup standards and other requirements at the site. The draft CAP is subject to review and comment by the public (including local agencies) before it is finalized.
- Environmental review: As mentioned previously, environmental review for the cleanup is expected to be conducted by Ecology under the provisions of MTCA and SEPA. WAC 197-11-250 specifies how the procedural requirements and documents required by SEPA are integrated with those required under MTCA. SEPA rules allow for environmental review of MTCA cleanups at development sites to be conducted in a combined SEPA process. However, the MTCA process can be lengthy and the most recent draft (7/29/16) of the County's Draft Environmental Impact Statement indicates that environmental review of the site remediation will be conducted separately from that for site redevelopment.
- Permitting: State law (RCW 70.105D.090) indicates that remedial actions conducted under a consent decree, order, or agreed order are exempt from the procedural requirements of chapters 70.94 (State Clean Air Act), 70.95 (Solid Waste Management), 70.105 (Hazardous Waste Management), 77.55 (Construction Projects in State Waters), 90.48 (Water Pollution Control), and 90.58 RCW (Shoreline Management Act of 1971). Such cleanups are also exempt from the procedural requirements of any laws requiring or authorizing local government permits or approvals for the remedial action (e.g., critical areas regulations). Ecology shall ensure compliance with the substantive provisions of these laws, permits, and approvals and shall consult with the state agencies and local governments charged with implementing these laws.
- Site Cleanup: Site cleanup encompasses an extensive range of activities beginning with remedial design, includes implementation of the actual cleanup measures, and continues through operation and long-term monitoring of the remedy. Remedial design requires development of an Engineering Design Report and construction plans and specifications. Actual cleanup begins when these plans are implemented. Cleanup actions typically include provisions for long-term monitoring and implementation of certain Institutional Controls to ensure protection of human health and the environment. Institutional Controls are applicable to most remedies where contaminants are not completely removed from the site. Institutional Controls involve documenting the presence of contaminated materials, regulating the future disturbance/management of these materials, and providing for long-term care of remedial actions including operation of treatment systems and continuation of long-term monitoring. A site may be taken off Ecology's Hazardous Sites List after cleanup is completed and Ecology determines cleanup standards have been met.

Ecology and the party responsible for conducting the cleanup often work cooperatively to reach cleanup solutions. Options for working with Ecology include formal agreements such as consent decrees and agreed orders and seeking technical assistance through the Voluntary Cleanup Program. These



mechanisms allow Ecology to take an active role in cleanup, providing help to potentially liable persons and minimizing costs by ensuring the job meets state standards the first time. This also minimizes the possibility that additional cleanup will be required in the future—providing significant assurances to investors and lenders. We anticipate that the site would be cleaned up under a consent decree or agreed order as these mechanisms provide a number of protections for the responsible party and provide exemptions from having to obtain certain state and local permits that could delay the cleanup.¹

A consent decree is a formal legal agreement filed in court. The work requirements in the decree and the terms under which it must be done are negotiated and agreed to by the potentially liable party, Ecology and the state Attorney General's office. Before consent decrees can become final, they must undergo a public review and comment period that typically includes a public hearing. Consent decrees protect the potentially liable person from being sued for "contribution" by other persons that incur cleanup expenses at the site while facilitating any contribution claims against the other persons when they are responsible for part of the cleanup costs.

An agreed order, unlike a consent decree, is not filed in court and is not a settlement. Rather, it is a legally binding administrative order issued by Ecology and agreed to by the potentially liable party. Agreed orders are available for remedial investigations, feasibility studies, and final cleanups. An agreed order describes the site activities that must occur for Ecology to agree not to take enforcement action for that phase of work. As with consent decrees, agreed orders are subject to public review and offer the advantage of facilitating contribution claims against other persons.

Actions under MTCA are typically required to undergo environmental review under SEPA. WAC 197-11-250 sets forth the requirements for SEPA/MTCA integration.

Cleanup Approach

Remedial Investigation/Feasibility Study

The nature and extent of contamination at the site requires additional characterization. For example, impacts below tanks and other obstructions and impacts to sediments beyond the current seawall require investigation. In addition, field or laboratory evaluations of possible treatment technologies (e.g., in situ bioremediation, soil washing, or groundwater remediation) need to be conducted. Potential vapor intrusion impacts will need to be assessed. Further characterization of the site and evaluation of cleanup alternatives will need to be conducted and documented in an RI/FS report. The selected cleanup alternative would then be documented in the CAP.

¹ State law (RCW 70.105D.090) exempts cleanups conducted under agreed order or consent decree with Ecology from obtaining local permits for the cleanup action. However, all substantive requirements must be complied with. Ecology is required to establish procedures for ensuring that remedial actions comply with the permit's substantive requirements and to consult with the local governments.



The following sections outline a possible cleanup approach given what is currently known about the site.

Anticipated Site Cleanup

Soil

Following decommissioning and demolition of existing site structures, soils exceeding MTCA cleanup standards for residential use; that pose a risk to groundwater, downgradient surface water, or marine sediments; or pose a vapor intrusion risk to on-site structures, will be excavated to the extent practicable. Given the nature of the main contaminants, removal in many places would likely extend downward to the seasonal low water table elevation or slightly below. While the excavations are open, free-product that accumulates would be pumped off and disposed of offsite. Excavated soil would also be hauled off site for disposal. It is anticipated that the current seawall would be left in place during cleanup operations, and augmented if necessary, to prevent migration of free-product and contaminated soil into Puget Sound during removal operations. The excavations would be backfilled with clean material to original grade or to the excavation limits called for by the site redevelopment plans (e.g., base of excavation for underground parking structures, intertidal restoration areas), whichever is lower.²

Groundwater

Once the contaminant sources—impacted soil and free-product—have been removed, contaminant levels in groundwater would be expected to attenuate through natural processes (e.g., biological activity). However, this can be a relatively slow process because some residual hydrocarbons typically remain in soil at and below the water table. Therefore, groundwater levels that exceed drinking water standards, are not protective of downgradient surface water and marine sediment, or pose a vapor intrusion risk to on-site structures, may well persist in groundwater for several years. Long-term groundwater monitoring would be required to demonstrate that concentrations are declining at an acceptable rate, an environmental covenant would need to be implemented to prohibit use of the groundwater as a drinking water source, and measures to limit or control vapor intrusion may need to be implemented.

Depending on the expected restoration timeframe, it is also possible that Ecology would require more aggressive groundwater cleanup measures to assure that downgradient surface water marine sediments are protected. These measures could include one-time or ongoing *in-situ* groundwater treatments, collection and treatment of groundwater before it discharges to the marine environment, or installation

² To minimize transportation and disposal costs of contaminated soil and reduce the volume of imported fill, it may be practicable to treat some contaminated soil on site for reuse. This could involve “washing” the coarser soil fraction using, for example, surfactants or thermal treatment. The feasibility of various of site cleanup components such as this would be evaluated in the RI/FS, documented in the CAP, and detailed during the remedial design phase.



of an amended sediment cap to treat discharging groundwater before it reaches the biologically active zone.

Intertidal and Subtidal Sediment

Sediment beyond (west of) the current seawall has not been well characterized. If remediation is required, a combination of beach excavation, offshore dredging, or capping (along with associated habitat restoration) may be necessary.

Phasing

Site remediation could be phased to align with site redevelopment. The phased remediation plan (including the Cleanup Action Plan and remedial design) would be reviewed and approved by Ecology. The remedial design would include with civil design plans showing the sequencing of the site remediation.

Considerations to be addressed with a phased cleanup approach include: (1) limiting recontamination of remediated areas from adjacent non-remediated areas, (2) working with more limited access for equipment and stockpiles as the site becomes more developed, and (3) addressing potential aesthetic, noise, and odor issues associated with conducting cleanup operations in proximity to residential and public spaces. Measures such as installing temporary vertical barriers (e.g., sheet pile walls) could address recontamination of clean areas from adjacent areas that will be addressed during later phases. Use of smaller equipment and limiting stockpile sizes could address physical site restrictions. Adjusting work hours, construction seasons, use of low-noise equipment, and limiting the sizes of open excavations could address aesthetic and noise concerns.

Soil Quantities

As described above, based on existing (limited) site data, SLR's 2014 memorandum estimated the depth and percentage of soil that might need to be removed from the site. The memorandum suggested that all the soil within the near-shore area would need to be removed to an average depth of 10 feet and half the soil within the inland area would need to be removed to an average depth of 5 feet. Based on Figure 2 in the SLR memorandum (attached)³, we estimate the area of the near-shore area to be about 12 acres and the area of the inland area to be about 30 acres. Applying SLR's assumed depths and percentages to the two areas yields a total of about 315,000 cubic yards of soil. To provide a more conservative estimate, if it is assumed that all soil to an average depth of 5 feet within the inland area would need to be removed, instead of just half, to calculated total soil removal volume would be about 435,000 cubic yards. No estimate of the quantity of marine sediment that may need to be removed is

³ The reference on Figure 2 to the "Brightwater Construction Easement" should be ignored as the work on this easement has been completed.



provided. In addition, a significant volume of petroleum-impacted groundwater would also likely be generated during excavation and would need to be treated on site and/or transported and disposed of offsite.

Considerations for Site Redevelopment

Some aspects of the remediation scenario laid out above may need to be considered in the design and construction of the proposed redevelopment project. These considerations include the following:

- If the cleanup process is phased with redevelopment, remediated areas would need to be protected from being recontaminated by adjacent areas that have not yet been cleaned up. Also, logistical and aesthetic concerns would need to be addressed.
- For efficiency, it may be desirable to coordinate the soil removal required for redevelopment (e.g., excavations for the parking garages and soil removal needed to bring the proposed beach restoration area down to grade) with the soil removal efforts undertaken for site cleanup.
- Groundwater contamination could persist for several years following removal of contaminated soils and redevelopment of the site. This would need to be accommodated. For example:
 - Groundwater monitoring wells would need to be installed, maintained, and periodically sampled until groundwater cleanup standards are met.
 - Active groundwater treatment may be required. This could involve, for example, installing and maintaining groundwater injection points or subsurface infiltration trenches for application of in-situ remediation reagents. It could also involve installing and operating a groundwater collection and treatment system on site.
 - Stormwater would likely need to be managed to avoid or limit infiltration to groundwater.
 - Measures to limit and/or control vapors in underground or on-grade structures may need to be implemented and maintained. These might include installing foundation vapor barriers during construction or implementing enhanced ventilation systems and/or monitoring programs.
- Should discharge of impacted groundwater cause recontamination of nearshore or offshore sediments, contingency measures may need to be implemented, such as targeted sediment removal, placement of an amended sediment cap, etc.
- Institutional controls would need to be established to limit or prohibit activities that may interfere with the integrity of the cleanup or that may result in exposure to hazardous substances. They could include restrictions on drilling water wells for drinking water, requirements for maintenance of engineered controls such as the inspection and repair of monitoring wells, treatment systems, or



groundwater barrier systems, etc. MTCA requires that institutional controls be described in a restrictive covenant on the property, recorded with the county and running with the land.

The cleanup plan that is ultimately approved and implemented may differ from the concepts outlined above. Some reasons why this might occur include:

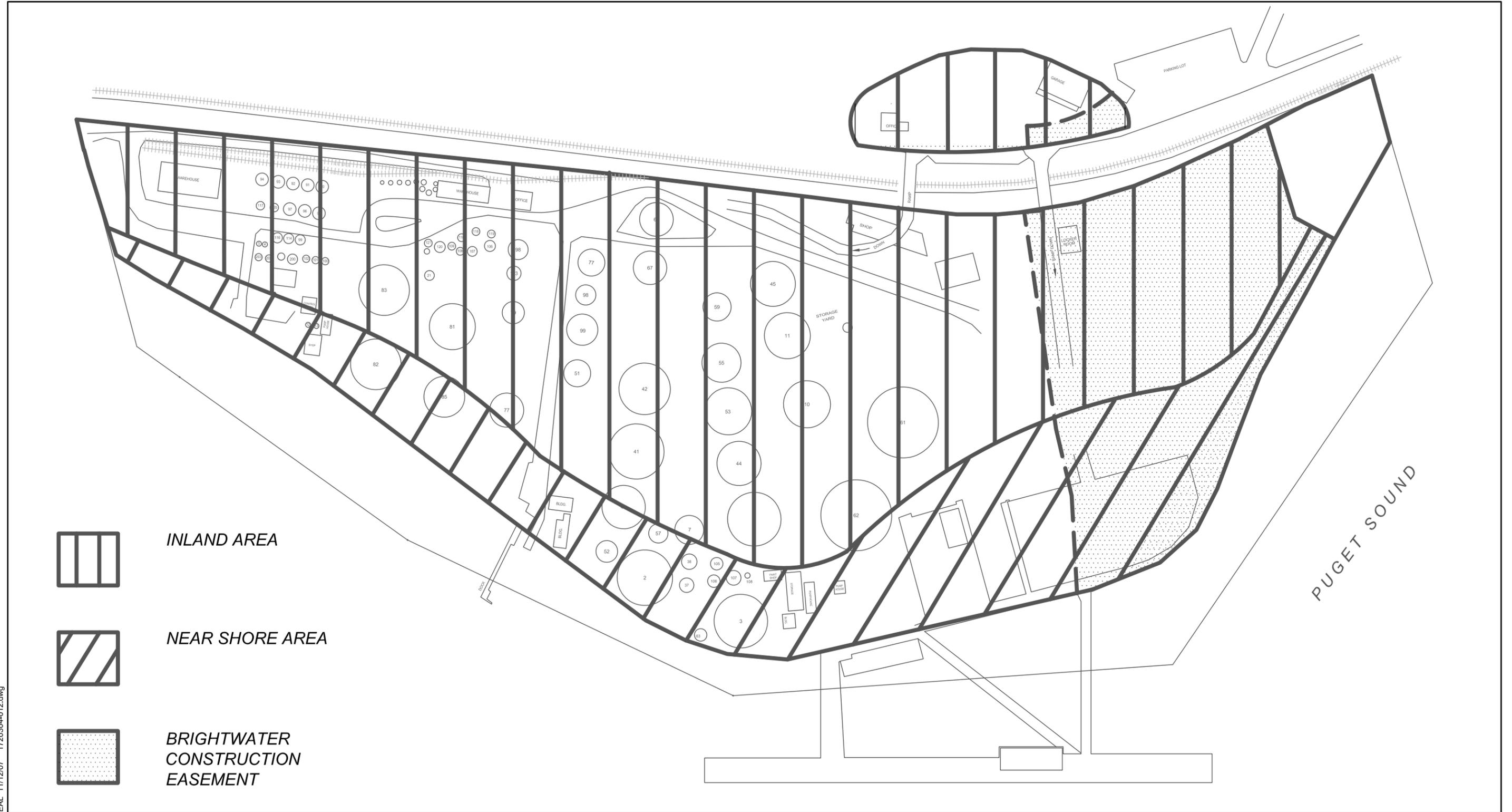
- The site has not been characterized adequately at present to allow a detailed cleanup action to be identified. In particular, there is little information on potential contamination beneath the storage tanks and other infrastructure or in intertidal and subtidal sediments west (outside) of the current seawall. In addition, the potential groundwater-to-surface water and groundwater-to-sediment contaminant transport pathways have not been evaluated.
- It is expected that the investigation and cleanup of the site will likely be done under an Agreed Order or Consent Decree in accordance with the Model Toxics Control Act regulations (Chapter 174-340 WAC). As part of this process, Ecology would review and approve all work plans and technical reports would have significant input into (and approval authority of) the selection of a final cleanup action. Ecology will require that the site be completely characterized before reviewing and approving a proposed cleanup action.
- Unforeseeable changes in cleanup regulations, remedial technologies, and costs of various cleanup components may occur before or during remediation that could affect the cleanup action that is ultimately implemented.
- Final plans and layouts of the proposed development structures and landscape that could affect the final cleanup approach.

Attachment: Figure 2 from SLR (2014)

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Point Wells Remediation Areas
Paramount Petroleum - Richmond Beach Asphalt and Marine Fuels Terminal

Figure 2 From SLR (2014)



EAL 11/12/07 1720304-012.dwg

Source: Base map prepared from aerial photograph provided by United States Geological Survey dated 6/02.

