Countryman, Ryan

From: Tom McCormick <tommccormick@mac.com>
Sent: Monday, August 29, 2016 11:56 AM
To: Countryman, Ryan
Subject: Ecology document
Attachments: Wells_to_Warren_Remediation_Approach_Final.pdf

Ryan,

Are you aware of the attached document?

Tom

Memorandum

To: Bob Warren, P.H /Department of Ecology

Cc: Mark Wells/Paramount Petroleum
Rod Brown/Cascadia Law

From: Steven Hoffman, P.E.

Date: April 16, 2014

Subject: **Remediation Approach for Pt. Wells Urban Center EIS, Richmond Beach Asphalt and Marine Fuels Terminal**

Introduction

This memorandum provides a brief introduction to the Richmond Beach Terminal (Site) related to the history and status of current and potential future remedial activities at the Site in support of Ecology's review and comment on the EIS being prepared by Snohomish County for the Pt. Wells Urban Center project.

This memorandum is also intended to be combined with a yet-to-be scheduled meeting to discuss the details of the information presented here and available from the extensive files and data sources for the Site. This memorandum also reflects information submitted to Ecology on January 31, 2014 in regard to Ecology's request for an Agreed Order for the Site.

Background

In 1911, Standard Oil purchased waterfront property on Point Wells, also known as Richmond Beach, from the Factory Improvement Company, 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, and 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 Cooperage 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, Point Wells LLC and Paramount of Washington, Inc., purchased the 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 onsite 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 LNAPL, and the groundwater extraction/LNAPL 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 DMRs and annual groundwater and O&M reports.

Stormwater / Wastewater

The site historically maintained a NPDES discharge permit and a Storm Water Permit. The Site currently has three outfalls that discharge to Puget Sound:

- Outfall 001: Located west of the Tank Farm area. Outfall 001 discharges a combination of treated process water and stormwater runoff from the site (NPDES Permit WA-000323-9).
- Outfall 002: Located west of the South Seawall area. Outfall 002 discharges a combination of treated contaminated groundwater and off-site storm water conveyed through the facility (NPDES Permit WA-003170-4).
- Outfall 003: Located near the southern tip of the site. Outfall 003 discharges a combination of surface water from an intermittent stream flowing southwest through the site, storm water from a housing development located east of the site, and storm water from administrative buildings and a parking lot on-site (NPDES Permit WA-000323-9).

Known Spills

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. Information for petroleum spills/releases that occurred between 1989 and 1997 at the Point Wells facility are attached. Historically, spills have occurred more frequently in areas where oil product 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 onsite drainage systems which drain to the onsite 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).
- In 1990, approximately 176,400 gallons of heavy North Slope product (Nikiski Residual Charge Stock) was released as a result 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 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 in the vicinity of 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.

Existing Environmental Data

Over 200 environmental monitoring wells, push probes, and test pits have been installed at the site since the 1980s. Groundwater and soil samples have also been collected and analyzed at these location over the same timeframe. These sampling and analysis programs have documented the presence of Separate Phase Hydrocarbons (SPH) in the Site soils and groundwater along with total petroleum hydrocarbons (TPH, e.g., gasoline, diesel, and heavier oil constituents), benzene, toluene, ethylbenze, and xylenes (BTEX), heavy metals (lead), and PAHs. These constituents are present in soil and groundwater in limited areas of the property

at concentrations above the Model Toxics Control Act (MTCA) criteria for unrestricted land use. There are also large areas of the property where ongoing sampling and laboratory analysis show to be either uncontaminated (below detection limits) or where constituents are present below MTCA unrestricted land use cleanup criteria. Figures 1A and 1B show these soil and groundwater sampling locations.

The nature and long history of the operations at the Site has also resulted in contamination in surficial marine sediments. From available sampling and analytical data, the contamination appears to be focused around former and existing discharge/outfall locations, spill sites, and loading/unloading areas. The sediment investigation data indicates that concentrations of VOCs, PAHs, metals, and petroleum hydrocarbons are found in sediments located west of the Site.

Remediation Approach

For discussion purposes, the property can be divided into two areas: the “inland” and “near shore” areas as shown on Figure 2. The Inland Area comprises approximately 75 percent of the uplands property. In this area, groundwater, soil, and SPH data show constituent concentrations to be below unrestricted land use criteria in large areas, with other large areas showing groundwater, soil, and/or SPH contamination. Paramount currently estimates that approximately 50 percent of this inland area may ultimately need to be remediated. The areas of soil contamination are primarily limited to an average of 5 feet (below highest groundwater levels) and could be cleaned up by excavation and onsite or offsite treatment of impacted soil. Areas of contaminated groundwater within the inland area that exceed MTCA cleanup criteria could be remediated by *in situ* treatment methods.

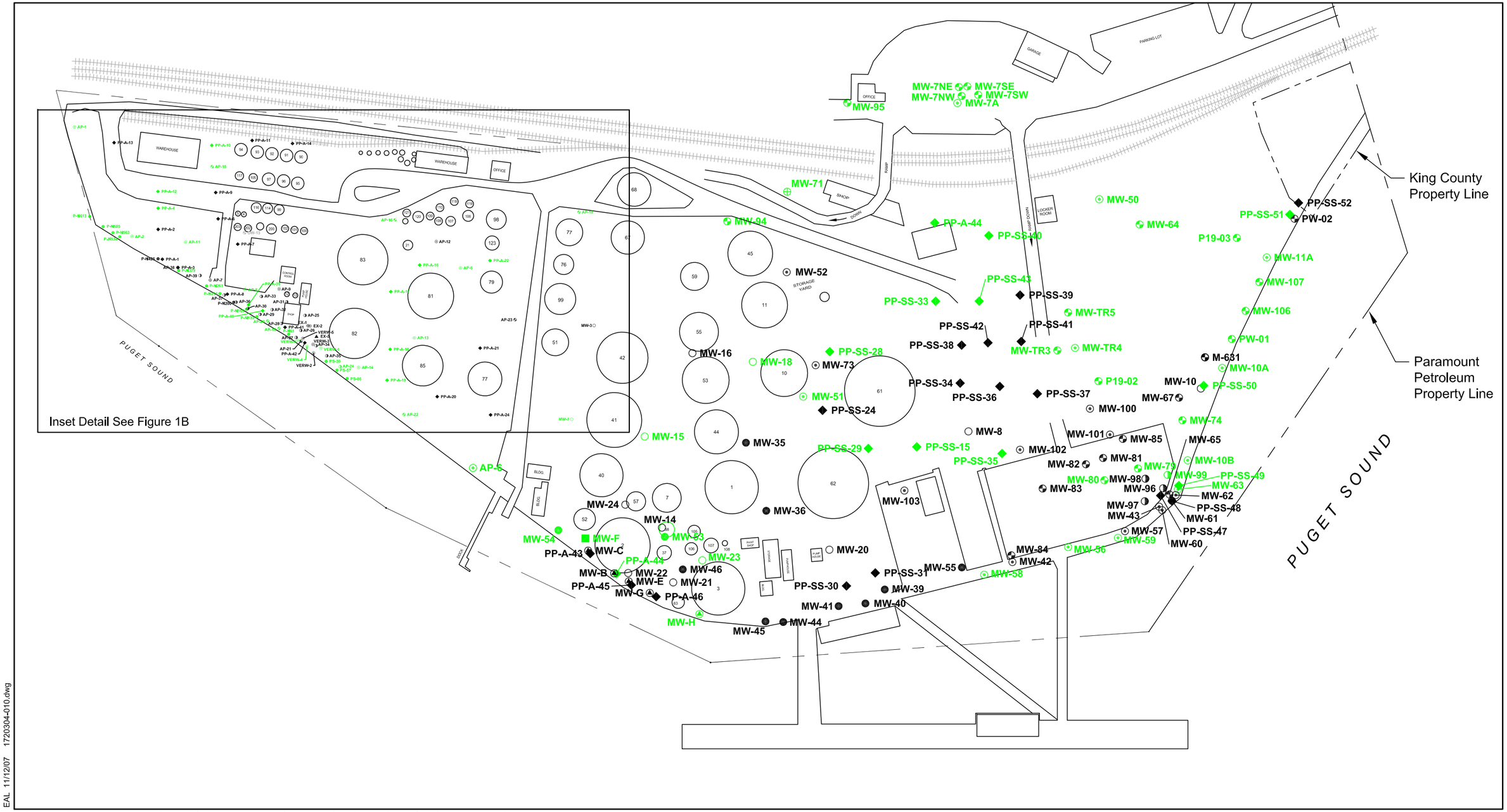
The near shore uplands area (roughly the remaining 25 percent of the property) has the higher concentrations of soil and groundwater contamination and is the location of all of the SPH skimming recovery operations at the property. Remediation of the soils in this area could involve more extensive excavation because groundwater and smear zone depths are greater. Excavation could extend to an average of 10 feet in depth. Groundwater extraction and SPH skimming (currently being accomplished in wells) may be conducted within the excavation areas to remove any additional SPH that accumulates during removal of contaminated soil. The excavated soils could be treated on or offsite, with offsite disposal on metals contaminated soil (lead paint debris in the immediate areas of the tanks). In the areas outside of the excavation limits where low levels of residual soil and groundwater contamination remains, *in situ* remediation measures (i.e., bioremediation, oxidation) could be implemented to achieve the required cleanup levels.

Less remediation planning and no additional sampling has been conducted by Paramount in the beach and offshore sediments at the Site. Paramount anticipates that if nearshore (beach) or sediment remediation is required, a combination of beach excavation, offshore dredging, and capping may be implemented.

EIS Approach for Site Remediation

As discussed in previous meetings and as identified in the Pt. Wells Urban Center EIS scoping notice, environmental impacts and mitigation measures will be presented in broad terms as part of this EIS, but the detailed requirements of the SEPA process will be met as part of the Ecology led MTCA process under the terms of a future Agreed Order to be negotiated with Ecology. Pleased see the attached sections of two example EIS documents prepared for other development projects that incorporated the Ecology lead SEPA process included as part of the MTCA cleanup.

Recent Sampling Locations
Paramount Petroleum - Richmond Beach Asphalt and Marine Fuels Terminal



EAL 11/12/07 1720304-010.dwg

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

AP-38 Sample Location - Contaminates above MTCA Unrestriction Land Use Standards

AP-22 Sample Location - Contaminates below Detection Limits or MTCA Unrestriction Land Use Standards

OW-13 Sample Location - Not Recently Sampled

Well Location and Number

MW-45	1-Inch-Diameter	**MW-99**	8-Inch-Diameter
MW-22	2-Inch-Diameter	**EX-3**	12-Inch-Diameter
MW-1	2.5-Inch-Diameter	**AP-7**	18-Inch-Diameter
MW-103	4-Inch-Diameter	**MW-F**	24-Inch-Diameter
		MW-B	36-Inch-Diameter

PP-A-4 Soil Probe

N

0 200 400

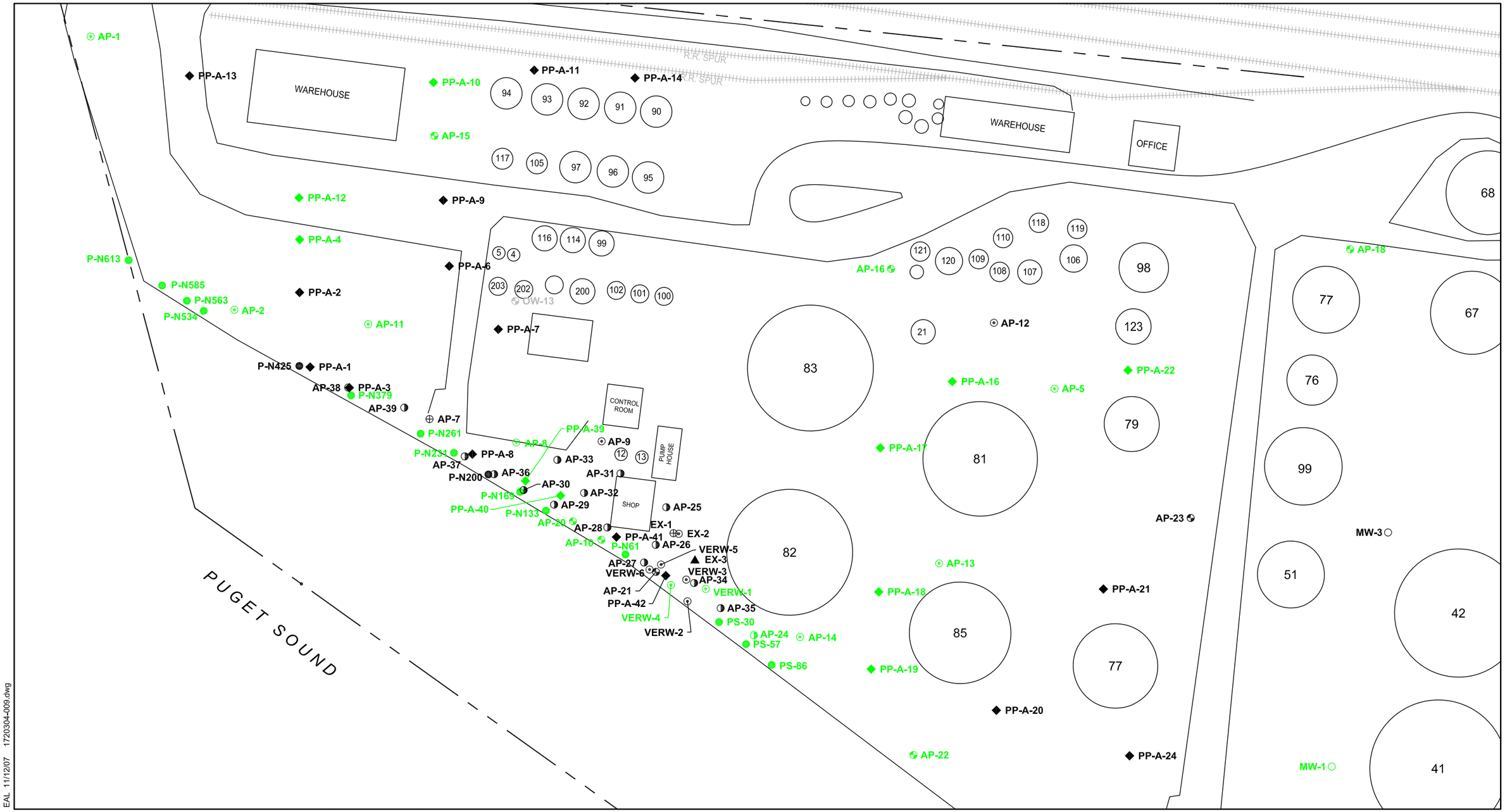
Scale in Feet

HARTCROWSER

17203-04 *11/07*

Figure 1A

Recent Sampling Locations
Paramount Petroleum - Richmond Beach Asphalt and Marine Fuels Terminal



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

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AP-22 Sample Location - Contaminates below Detection Limits or MTCA Unrestriction Land Use Standards

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Well Location and Number

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MW-99 8-Inch-Diameter

EX-3 12-Inch-Diameter

AP-7 18-Inch-Diameter

MW-F 24-Inch-Diameter

MW-B 36-Inch-Diameter

PP-A-4 Soil Probe

N

0 80 160

Scale in Feet

HARTCROWSER

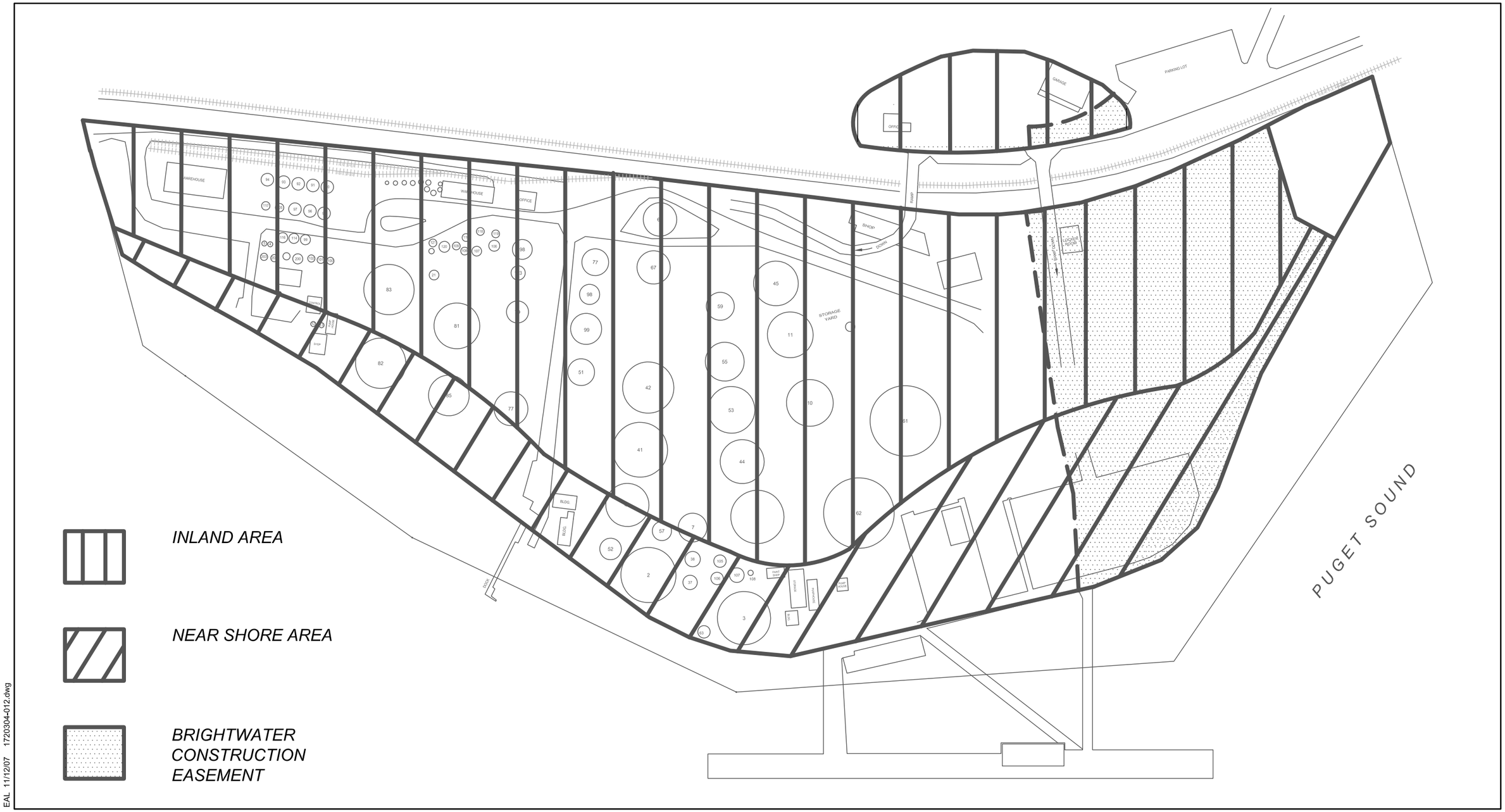
17203-04 *11/07*

Figure 1B

EAL 11/12/07 1720304-009.dwg

Point Wells Remediation Areas

Paramount Petroleum - Richmond Beach Asphalt and Marine Fuels Terminal



EAL 11/12/07 1720304-012.dwg

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

N

0 200 400

Scale in Feet

HARTCROWSER

17203-04 ***11/07***

Figure 2

EIS Examples

3.3 ENVIRONMENTAL HEALTH

This section of the DEIS describes the existing environmental health-related conditions on the Quendall Terminals site and provides a summary of the site remediation and cleanup process. Potential environmental health-related impacts associated with redevelopment under the EIS alternatives and mitigation measures to address potential impacts are identified. This section is based on the Hazardous Substances section of the *Technical Report: Geology, Groundwater, and Soils* (November 2010) prepared by Associated Earth Sciences, Inc. (see **Appendix D** to this DEIS).

3.3.1 Affected Environment

Site History

In 1916, early homesteaders sold the Quendall Terminals Main Property to Peter Reilly, who began the operation of Republic Creosoting in 1917. The property was used for creosote manufacturing for more than 50 years, until 1969. Operations on the property primarily included the distillation of coal and oil-gas tar residues (coal tar) that were obtained from local coal gasification plants. Tar feedstock was typically transported to the facility onsite from Lake Union and unloaded from tankers or barges at a t-dock that extended out into Lake Washington or at a shorter, near-shore pier. The feed stock was unloaded into two two-million gallon, above-ground storage tanks. Above-ground pipes transferred the feedstock from the tanks to the manufacturing facilities. Once distilled, several fractions were stored in tanks (light distillates and creosote) or below-grade pitch bays (heavy distillates) prior to being transported offsite for various uses. Light distillates were used for chemical manufacturing feedstock, middle distillates (creosote) were used for wood preservation and heavy (bottom) distillates (pitch) were used for applications such as roofing tar. At the peak of its productivity, the Republic Creosoting facility produced approximately 500,000 gallons of tar per month. Wastes produced by the manufacturing processes were disposed of onsite; solid wastes were placed near the shoreline and liquid wastes were discharged to two sumps. In addition to site-produced wastes, foundry slag from PACCAR was reportedly used as fill at the site.

In 1971, Quendall Terminals purchased the site and leased the above-ground tanks that remained from the creosote facility for the storage of waste oil, diesel, and lard. From 1975 until 2009, Quendall Terminals used the Main Property for log storage and sorting.

The Quendall Terminals Isolated Property is generally vacant and is comprised of existing trees and vegetation associated with two wetlands. There have been no historic industrial uses on the Isolated Property site and no associated site contamination or hazardous substance issues.

Both the Quendall Terminals Main Property and Isolated Property are currently vacant and essentially unused.

Site Remediation and Cleanup Process

As stated above, from about 1916 to 2008, various industrial activities, including creosote manufacturing, petroleum product storage, and log sorting/storage, have occurred on the Quendall Terminals Main Property, and have resulted in the release of various contaminants to the soil and groundwater at the property. From the 1980s through 2005, the Washington State

Department of Ecology (Ecology) provided oversight for the remediation/cleanup of the site under the Model Toxics Control Act (MTCA). Under Ecology's guidance, a Remedial Investigation report was completed in 1997 and a draft Risk Assessment/Feasibility Study was completed in 2004.

In 2005, Ecology requested that the United States Environmental Protection Agency (EPA) assume responsibility for directing and overseeing the remediation of the Quendall Terminals Main Property and the property was subsequently added to EPA's Superfund National Priorities List (NPL) in 2006. In September 2006, the property owners (Altino Properties and J.H. Baxter and Company) entered into an Administrative Order on Consent (AOC) with EPA that required them to complete a remedial investigation (RI) and feasibility study (FS). The RI/FS is intended to comprehensively evaluate environmental conditions at the site and review various remediation options from which EPA will chose a preferred cleanup remedy; a final cleanup remedy will be selected following a public comment period. Remediation activities will be conducted as part of a separate action and are not a part of the AOC requirements or the environmental review for the proposed Quendall Terminals redevelopment.

Currently, the property owners have completed a Draft RI that is under review by EPA and are in the process of preparing a Draft FS. It is anticipated that the draft RI/FS will be completed by April 2011. A summary of the Draft RI and Draft FS are provided below. The site will undergo cleanup/remediation under its status as a superfund site by EPA, pursuant to the final cleanup plans defined by EPA. EPA is expected to select the final site remedy in late 2011.

Draft Remedial Investigation (RI)

The Draft RI for the Quendall Terminals Main Property includes a summary of the history of the property and past industrial activities; a summary of past site characterization data; identification of data gaps; identification of contaminants of interest; and, documentation of the extent of contamination in all the media (soil, groundwater and sediment). The Draft RI identifies hazardous chemicals associated with past site use that could potentially pose a risk to human health and the environment. Chemicals of potential concern are listed in Table 2 of **Appendix D** and include arsenic, benzene and polynuclear aromatic hydrocarbons (PAHs), among others.

Extent of Contamination

Most of the contamination that is present on the Quendall Terminals Main Property is isolated and contained within the property. Contamination on the Main Property consists of chemicals of potential concern that are adhered to soil particles, dissolved into water or concentrated as dense, non-aqueous phase liquid (DNAPL) in the subsurface. The DNAPL represents actual liquid product that has leaked into the ground. Since DNAPL has a higher density than water, it will tend to sink below the water table to accumulate in the higher permeability portions of the subsurface soils (see Figure 11 in **Appendix D** for the approximate locations of DNAPL in the subsurface of the site).

Large areas of soil contamination are located on the east side of the Main Property, near the former manufacturing facility and railroad auxiliary track, and at the east end of the former T-dock pier. Along the southern and eastern boundaries of the property, fill soils range from about 1 to 2 feet thick, while in other areas the fill is more than 10 feet thick (see Figures 12 and 13 in **Appendix D** for the approximate extent of soil contamination).

Groundwater contamination in the Shallow Aquifer beneath the site underlies a majority of the Quendall Terminals Main Property. Contamination in the Deep Aquifer mostly occurs under the western portion of the Main Property, generally centered along the shoreline of Lake Washington (see Figures 14 and 15 in **Appendix D** for the approximate extent of groundwater contamination).

Sediment contamination is generally centered around the former T-dock pier and east of the Quendall Terminals Main Property boundary (see Figures 16 and 17 in **Appendix D** for the approximate extent of contamination in the sediments underlying Lake Washington).

Draft Feasibility Study (FS)

The purpose of the Draft FS is to evaluate appropriate remedial alternatives and select a preferred remediation alternative for the Quendall Terminals site. Various remedial alternatives have been evaluated as part of the Draft FS process and it is anticipated that EPA will select a remedial alternative that consists of the following elements (the remedial actions assumed in this DEIS):

- Placement of a two-foot thick sand cap over the upland portion of the Main Property.
- Placement of a two- to three-foot thick layered cap consisting of organoclay, sand, gravels and topsoil over most of the sediments within the shoreline area adjacent to and lakeside of the former Quendall Pond (approximately 300 linear feet of shoreline).
- Excavation of shoreline soil to accommodate the placement of the shoreline cap.
- Filling of certain existing on-site wetlands. Implementation of a Shoreline Restoration Plan, including re-establishing and expanding certain wetlands, and recreating/enhancing riparian habitat.
- Possible localized soil removal in the former railroad loading area and in planned utility corridors onsite.
- Possible installation of a permeable shoreline groundwater treatment wall adjacent to the lake, spanning the entire shoreline area.
- Implementation of institutional controls to prevent the alteration of the cap without EPA approval, and to prevent the use of on-site groundwater for any purpose.
- Implementation of an Operations, Maintenance, and Monitoring Plan (OMMP) that would present a process for obtaining EPA approval if future excavations, utility installations or other site disturbances are necessary after implementation of the final remedial action.

Impacts

Redevelopment under Alternatives 1 and 2 would include mixed-use development with a variety of densities and building heights; however, construction activities under Alternatives 1 and 2 are anticipated to be similar and would require a similar amount of grading and cut/fill as part of redevelopment. Therefore, it is anticipated that potential environmental health-related impacts associated with redevelopment would be similar under Alternatives 1 and 2.

Alternatives 1 and 2

Prior to redevelopment under Alternatives 1 and 2, the Quendall Terminals Main Property will undergo cleanup and remediation under the oversight of the EPA, as described in the previous section. The assumed elements of this cleanup/remediation are listed above. It is assumed that the entire Main Property will be capped with remediation, which will limit the potential for exposure to contaminated soils and groundwater that pose a risk to humans and the environment during and following construction. As necessary, a permeable shoreline groundwater treatment wall could also be installed to prevent the migration of contaminants in groundwater to Lake Washington. Redevelopment of the site is being coordinated with the cleanup/remediation process and would be conducted consistent with the requirements in the final cleanup remedy selected and overseen by EPA, and with any associated institutional controls.

The majority of the upland portion of the Main Property, outside of the shoreline setback area, would be developed with new buildings and paved areas under Alternatives 1 and 2. Due to the soft and loose nature of the existing subsurface soils, construction of these features could result in settlement of the site as a result of the potential loads imposed by foundations, utilities and traffic (see Section 3.1, **Earth**, and **Appendix D** for details). It is assumed that Alternatives 1 and 2 would not include any below-grade excavations for parking or basements; however, it is likely that the construction of new buildings onsite would require deep foundation supports (such as piles) due to the nature of existing soils on the site. The construction of deep foundations for each building could generate contaminated soil or groundwater to which workers would be exposed. As necessary, personal protection equipment for workers would be used and special handling and disposal measures followed during construction activities to prevent contact with hazardous materials and substances, and no significant impacts would be anticipated. Personal protection measures and special training could also be provided for City of Renton staff that provides inspection during construction and maintenance following construction in areas of the site that could generate contaminated soils or groundwater. Alternatively, buried utilities and public roads serving the site could be placed in clean fill material. The clean fill material should be of sufficient width and depth (3 to 4 feet below the invert of the utility) to allow for maintenance of utilities without human exposure to contaminated soils. In order to prevent future contamination of clean fill material a barrier to prevent recontamination of the fill material could be provided.

Under Alternatives 1 and 2, the main utility corridors for the proposed development could be installed during the proposed remedial action onsite. Additional utility excavations could also be required to connect specific buildings to the main utility corridor with redevelopment. Additional excavations during redevelopment could generate contaminated soil or groundwater that would require additional personal protection measures for workers and special handling and disposal measures.

In addition to potential impacts from utility and deep foundation excavations, there is also the potential for volatile contaminants in the subsurface to generate vapors that could intrude into utility trenches and above-grade structures due to the fact that the planned remedial action would leave contaminated soil, groundwater, sediments and DNAPL in place beneath the site. If no addressed by the development design, these vapors could pose a potential risk to human health. Separation of living/working areas from the contaminants by the soil cap and under-building garage, as well as implementation of potential institutional control measures would ensure that future building inhabitants would not be exposed to unacceptable vapors accumulating within buildings or utility corridors from contaminated soils and groundwater, and no significant impacts would be anticipated.

No Action Alternative

Under the No Action Alternative, no redevelopment and its potential environmental health-related impacts would occur on the Quendall Terminals site at this time. The site would remain in a post-remediation condition, which would include placement of soil caps over the entire Main Property and possible installation of a permeable shoreline groundwater treatment wall adjacent to the lake. These remediation features would prevent direct contact with contaminants at the ground surface, and address the potential for contaminants to enter Lake Washington via groundwater.

3.3.2 Mitigation Measures

Required/Proposed Mitigation Measures

- Redevelopment of the site is being coordinated with the cleanup/remediation process, and would be conducted consistent with the requirements in the final cleanup remedy selected and overseen by EPA, and with any associated institutional controls.

- The appropriate management of contaminated soils that could be disturbed and groundwater that could be encountered during redevelopment of the site would be addressed through the cleanup/remediation process and by institutional control requirements overseen by EPA. As necessary, lightweight fill materials, special capping requirements, vapor barriers and other measures would be implemented to ensure that unacceptable exposures to contaminated soils, groundwater or vapors would not occur.

- Institutional controls would be followed to prevent the alteration of the soil cap without EPA approval, and to prevent the use of on-site groundwater for any purpose.

- An Operations, Maintenance and Monitoring Plan would be implemented to prevent the excavation of soils, installation of utilities or other site disturbances without prior EPA approval.

- As necessary, personal protection equipment for workers would be used and special handling and disposal measures followed during construction activities to prevent contact with hazardous materials and substances.

- Living/working areas on the Main Property would be separated from soil/groundwater contaminants by under-building garages; institutional controls would also be implemented to prevent exposure of residents/employees to unacceptable vapors.

Other Possible Mitigation Measures

- Planned utilities (including the main utility corridors) could be installed as part of the planned remedial action so that disturbance of the soil cap and underlying contaminated soils/groundwater would not be necessary subsequent to capping of the Main Property.

- Personal protection measures and special training should be provided for City of Renton staff that provides inspection during construction and maintenance following construction in areas of the site that could generate contaminated soils or groundwater.

- Buried utilities and public roads serving the site development should be placed in clean fill material (with the utilities in a trench with sufficient width and depth of 3 to 4 feet below the invert of the utility), along with an acceptable barrier to prevent recontamination of the clean fill material, in order to protect the utility from contamination and to allow future maintenance of the road or utility lines.

3.3.3 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse environmental health-related impacts would be anticipated.

3.4 ENVIRONMENTAL HEALTH

This section of the DEIS describes the existing environmental health conditions on and in the vicinity of the Shelton Hills site. Potential environmental health-related impacts from development of the Shelton Hills site under the DEIS alternatives are evaluated, and mitigation measures identified to address potential impacts.

3.4.1 Affected Environment

Existing Environmental Hazard Areas

Past dumping activities by others on properties located adjacent to the Shelton Hills site (the Goose Lake property to the north and the City of Shelton C Street Landfill to the south) have resulted in the release of contaminants to the soil and in the case of Goose Lake, potentially the groundwater. A small amount of contamination from dumping on the Goose Lake property could extend onto the Shelton Hills site (in the ravine in the northeastern portion of the site). See below for details on the environmental hazard areas on and in the vicinity of the site, and activities that have been undertaken, are underway, and/or are proposed to address these areas.

Goose Lake Property

History

Goose Lake is an approximately 23-acre, naturally-occurring lake that is located immediately north of the Shelton Hills site. From 1931 to 1943, the Goose Lake property was the recipient of waste by-products from the former Rayonier Pulp Mill in the City of Shelton. Waste products primarily included calcium sulfite liquor, which was discharged to Goose Lake from 1931 to 1934 via a wood stave pipeline between the former mill and Goose Lake. In 1934, the discharge point was moved to the disposal lagoons located to the west of the lake on the Shelton Hills site. In 1943, the discharge of calcium sulfite liquor to Goose Lake was discontinued.

Between 1936 and 1974, a landfill was also operated by Rayonier, Inc. near Goose Lake. The landfill was located at the east end of Goose Lake and received solid waste from the former Rayonier mill and research laboratory, ash and char from the burning of sulfite liquor, and demolition debris from the decommissioning of the former pulp mill. Unauthorized household waste was also placed in the landfill during this time period.

Cleanup/Remediation Activities

In 1994, after an investigation by the U.S. Environmental Protection Agency (EPA), the Washington State Department of Ecology (Ecology) was directed to study the effects of past activities on Goose Lake and its surrounding area. A study area was defined by Ecology for the Goose Lake area, which contained limited areas on the Shelton Hills site (i.e., the former disposal lagoons and a small drainage ravine area (see below for details).

In 1997 and 1998, two environmental investigations were completed to evaluate the potential impacts to the Goose Lake area as a result of past disposal activities. Soil samples were taken from the former landfill area and disposal lagoons, and water samples and sediment samples were taken from the lake. Contaminants were detected in the landfill area at concentration

levels exceeding Washington State Model Toxics Control Act (MTCA) cleanup levels for arsenic, lead, and mercury; samples from the disposal lagoons did not detect contaminants at concentrations above MTCA levels. Groundwater samples were shown to have arsenic, chromium, and/or lead concentrations that were above MTCA levels. Sediments in Goose Lake also contained sulfide, mercury, and polychlorinated biphenyl (PCB) at concentrations above background levels.

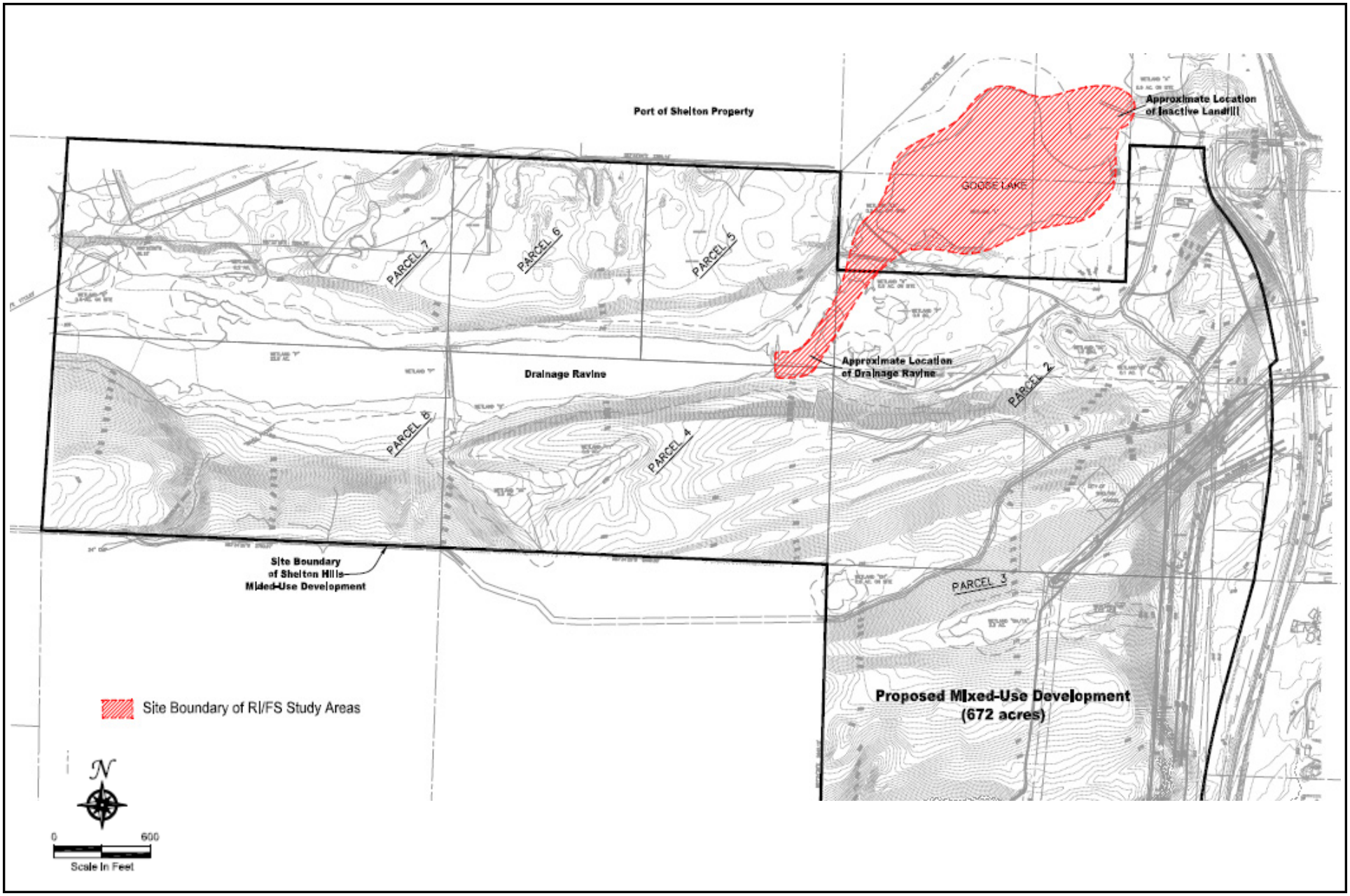
Based on these initial studies, Rayonier, Inc. and Ecology developed a list of Contaminants of Potential Concern (COPCs) for the study area, and in 2001, Ecology entered into an Agreed Order with Rayonier and Peninsula Holdings Company (the former owner of the Shelton Hills site) for the development and implementation of a Remedial Investigation (RI) and Feasibility Study (FS) for the Goose Lake area.

In 2003, a RI was completed in accordance with the work plan approved by Ecology and a Draft Final RI report was submitted to Ecology in 2004. The Draft Final RI identified evidence of impacted sediments in Goose Lake, the drainage ravine southwest of Goose Lake, and the former landfill. The Draft Final RI recommended that additional work be conducted to further assess Goose Lake and the drainage ravine sediments; no additional sampling was recommended for the disposal lagoons or former landfill areas. After reviewing the Draft Final RI, Ecology responded with comments to the report and requested that additional testing be conducted.

At the request of Ecology, several supplemental studies were conducted subsequent to the submittal of the Draft Final RI. In 2005, additional soil and groundwater sampling and analytical testing were conducted at Goose Lake. Sediment studies in Goose Lake were conducted in 2007 and 2008. In 2008, additional soil sampling and analytical testing in the disposal lagoon and the drainage ravine area were also conducted.

In May 2009, an updated Draft Final RI report was completed and submitted to Ecology. The study area for the RI established the limits where clean-up is deemed necessary, and was defined by Ecology after extensive studies. The limits of the areas of concern for contaminants included Goose Lake and the drainage ravine that extends onto the Shelton Hills site (see **Figure 3.4-1** for map of the RI/FS study area. The updated report identified constituents at concentrations above RI screening levels within the Goose Lake study area, as summarized below:

- Dioxins and furans were detected in soil in the disposal lagoon area at concentrations exceeding ecological-based screening levels. However, the detected concentrations were consistent with natural background concentrations in Western Washington.
- Arsenic was detected in one groundwater sample taken from a well to the east of Goose Lake at a concentration slightly exceeding the RI screening level. Arsenic was not detected above the screening level in previous or subsequent samples.
- Some constituents were detected in the landfill waste horizon that exceed screening levels, including metals, carcinogenic polycyclic aromatic hydro carbons, PCBs, and dioxins/furans. Chromium, copper, lead, and/or mercury were detected at concentrations exceeding screening levels in two samples of native soil beneath the waste horizon.



Source: Kleinfelder, 2009.

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Figure 3.4-1
Goose Lake RI/FS Study Area

- Arsenic and lead were detected in Goose Lake surface water at concentrations that would slightly exceed screening levels. The RI data suggests that the source of the arsenic may be natural background concentrations in the groundwater.

Constituents were detected in the Goose Lake sediment that would exceed screening levels, including PCBs, sulfide, mercury, and dioxins/furans. These constituents were generally found in the three-inch layer of black silt.

In March 2010, Ecology requested further testing in the Goose Lake area. In 2011, a Supplemental Investigation of soils and groundwater was performed in accordance with Ecology's proposed approach. Revisions to previous findings include the following; changes to the Revised RI will be submitted to Ecology based on this investigation:

- Metals in the disposal lagoon area do not exceed screening levels protective of human health.
- There have been no exceedances of groundwater screening levels protective of drinking water uses in groundwater samples from the monitoring wells.
- There are no indications of groundwater quality impairment beneath or downgradient (southeast/east) of the disposal lagoons.
- There are no impacts to shallow groundwater downgradient (southeast/east) of the landfill.
- Groundwater along the Goose Lake/landfill margin does not pose a significant risk to Goose Lake surface water quality.
- Dioxins/furans in groundwater are at concentrations close to detection limits.
- COPCs at concentrations exceeding soil screening levels in the inactive landfill include: antimony, nickel, silver and zinc.
- COPCs detected at concentrations exceeding sediment screening levels along the lake/landfill margin include: metals, TOCs, sulfides PCBs, dioxins/furans and SVOCs.
- None of the Goose Lake surface water samples contained contaminant concentrations greater than surface water screening levels.
- Metals were detected at concentrations exceeding soil and/or sediment screening levels in soil samples from outside the landfill, lagoons, and upgradient of the drainage ravine.
- Metals collected immediately southwest of Goose Lake exceed the soils screening level.

Based on work accomplished to date under the Agreed Order, it is assumed that cleanup of Goose Lake will include removal of contaminated silt from the bottom of Goose Lake and placement on top of the former land fill area. The former land fill area will then be capped with an impermeable membrane and surrounded by a perimeter sheet piling wall.

As described in **Chapter 2** of this DEIS, the cleanup/remediation of Goose Lake is being conducted as part of a separate action and is not part of the currently proposed Shelton Hills Project. As such, these separate actions are not evaluated in this DEIS.

City of Shelton C Street Landfill

The former City of Shelton C Street Landfill is located immediately south of the Shelton Hills site and adjacent to the Miles Sand and Gravel property. Beginning in the late 1920s, the City of used the property as a municipal garbage dump, and during this time, it was common practice to occasionally burn piles of accumulated trash. During the 1950s, the City of Shelton constructed and used a small incinerator on the property, and deposited ash into the pit area. In

the mid to late 1960s, the incinerator was demolished (with the exception of the concrete foundation) and open burning occurred in the pit area. The C Street Landfill was officially closed to municipal solid waste in 1974. An EPA Land Disposal Site Modification Report was filed by Ecology on August 5, 1975, and recorded that the property had been "eliminated, rats eradicated, burning stopped, water pollution corrected, and site covered." The Modification was listed as being completed in May 1975.

The C Street Landfill property was also used for sludge disposition from the Pine Street wastewater treatment plant in the City of Shelton that was completed in 1951. The Port of Shelton also operated an imhoff tank (a chamber used for the reception and processing of sewage) and used the site to deposit sludge over the same time period. In 1979, the City constructed a new wastewater treatment plant on Fairmount Avenue. This plant included a secondary treatment process which caused increased volumes of sludge. From July 1979 to November 1981, sludge from the new plant was disposed of at the C Street Landfill site. In December 1981, the City of Shelton began hauling sludge to the Mason County Landfill and intended to cover the sludge deposition area in the C Street Landfill by 1982; however, there is nothing in the City of Shelton's records that indicates the sludge deposition area was ever covered with soil.

Sludge material deposited on the C Street Landfill property also included baghouse (an air pollution control device) residues from the Simpson Timber Company Plant, which were slurried for discharge to the new wastewater treatment plant. Testing that was completed in 1986 indicated that the baghouse residue contained very low concentrations of chlorinated dioxin and furan compounds. The concentrations that were present on the property were not considered a public health threat, but it was noted that the deposition area should be covered with soil as a precautionary measure.

Illegal dumping activities continued to occur on the C Street Landfill property after closure of the landfill to municipal waste in 1975, and included dumping, road sweepings, and pruning debris by City crews, as well as the above referenced sludge deposition. Concerns by regulatory agencies regarding the continued activities at the landfill property were primarily regarding the property's use for sludge deposition and the need to locate an alternative property for this activity. There was also a concern related to continued public access and illegal dumping; however, this concern was primarily regarding the public having access to an area with ongoing sludge deposition. As a result, a locked gate was installed at the end of C Street (east of the overpass) to limit vehicular access and prevent illegal dumping activities at the site.

Existing information indicates that the current groundwater level is well below the zone within which landfill activities occurred (see Section 3.2, **Water Resources**, and **Appendix B** for details on groundwater in the site vicinity). Based on the materials contained in the landfill (ash residue, dredge spoils, inert materials such as car hulks, appliances, etc.), there is no concern with leaching of substances into the groundwater. Prior studies performed on behalf of EPA concluded that because of the low levels of concentration of dioxin compounds, it would be unlikely that substances originating from the sludge deposition could leach to areas surrounding the landfill. Based on the existing conditions of the landfill and the unlikely possibility for leaching, impacts to the Shelton Hills site are not anticipated (EPA, National Dioxin Study-Simpson Timber Company Report of Dioxin Study Finding; Memo dated April 13,1987).

Shelton Hills Site

As described above, a small amount of contamination from the waste disposal on the Goose Lake property could extend onto the Shelton Hills site. This contamination could occur in the Goose Lake drainage ravine area located in the northeastern portion of the site. As part of the RI/FS sampling program for Goose Lake, a series of shallow soil samples were collected from behind a series of man-made dams within the drainage ravine area to assess the potential presence of historic contaminants. One soil sample collected in the drainage ravine area behind Dam 1 (closest to Goose Lake) revealed the presence of low levels of PCBs and dioxins/furans. Based on these findings, Ecology revised the boundaries of the Goose Lake RI/FS study area to include a portion of the drainage ravine area located on the Shelton Hills site. In addition, Ecology requested additional sampling to fully characterize the nature and extent of PCBs and dioxins/furans within the drainage ravine.

In June 2008, additional soil sampling was conducted in the on-site drainage ravine area that focused on collecting samples in a portion of the drainage ravine behind Dam 1. This sampling was designed to meet the scope of work outlined in the draft 1st amendment to the Goose Lake Agreed Order. The soil sample results indicated that PCB concentrations would be acceptable for unrestricted land use except at one sample location in the area, and that dioxins/furans concentrations are within typical concentrations found in forest, open, and urban locations, with the exception of the same location. As such, Ecology suggested that an interim action[1] would be applicable to address the low levels of PCBs and dioxins/furans found within the drainage ravine area.

3.4.2 Impacts

This section identifies and analyzes environmental health-related impacts on and in the vicinity of the Shelton Hills site with proposed development. Impacts are expected to be similar for Alternatives 1 and 2; where impacts would differ, they are so noted.

Alternatives 1 and 2

Goose Lake Property

Proposed development under Alternatives 1 and 2 would include new commercial, business park, and multifamily residential uses in the northern portion of the site in proximity to the contaminated areas on the Goose Lake property. With development and implementation of the cleanup/remediation plan for the Goose Lake area under the oversight of Ecology (including removal of contaminated silt from the bottom of Goose Lake and placement on top of the former land fill area. Then capping of the former land fill area with an impermeable membrane and surrounding the landfill with a perimeter sheet piling wall), significant environmental health-related impacts would not be anticipated. The proposed timing of cleanup/remediation on the Goose Lake property is not known at this time, and it is possible that these activities would occur subsequent to development on the Shelton Hills site. Should development in the northern

[1] An interim action consists of a remedial action that partially addresses the cleanup of a site, is technically necessary to reduce the threat to human health or the environment, and corrects a problem that may have become substantially worse or cost substantially more if remedial action is delayed (WAC 173-340-430).

portion of the Shelton Hills site occur prior to implementation of the clean-up/remediation plan for Goose Lake, measures could be implemented to prevent Shelton Hills residents and employees from accessing the Goose Lake area and significant impacts from exposure to contaminants would not be anticipated (see the Mitigation Measures section below for details).

City of Shelton C Street Landfill

Residential, elementary school, and sports park development proposed in the southern portion of the Shelton Hills site would be located in proximity to the former City of Shelton C Street Landfill property. As described above, the former C Street Landfill property does not contain significant contamination concentration levels and would not be considered a risk to public health. Therefore, no significant environmental health-related impacts would be anticipated with new development in the southern portion of the site under Alternatives 1 and 2. A mitigation measure could be implemented to prevent Shelton Hills residents and employees from accessing the former C Street Landfill site to further limit impacts from potential exposure to contaminants (see the Mitigation Measures discussion below for further details).

Shelton Hills Site

As described above, a small amount of contamination from previous dumping activities in the Goose Lake area by others could extend onto the Shelton Hills site (in the former drainage ravine located in the northeastern portion of the site). This potentially contaminated area was identified as having higher concentrations of PCBs and dioxins/furans at one location within the drainage ravine.

In accordance with direction and guidance from Ecology, an interim action would be conducted as part of development under Alternatives 1 and 2 to address the low levels of PCBs and dioxin/furans that were previously detected within the drainage ravine area. Under the interim action, soil would be removed from an approximately 25-foot wide by 25-foot long area surrounding the detected contamination to a depth of approximately one-foot (approximately 35 tons of soil material would be excavated). Soil that is excavated from the site would be removed for off-site disposal, and soil transportation and disposal would be conducted in accordance with applicable local, state, and federal regulations.

The excavated area would be re-sampled and tested to ensure that all contaminants have been removed and that the area is in compliance with the cleanup criteria for the site. Once it has been established that the cleanup levels have been addressed, the excavation area would be backfilled and compacted with clean imported soil that would be compatible with the surrounding on-site soils. Specific precautions would also be taken to minimize any potential disruption to the surrounding wetland areas. As part of the restoration of the area, native plants and woody debris would be placed within the filled excavation area to enhance the overall native environment. Subject to the completion of these activities, it is anticipated that Ecology would remove the drainage ravine area from the Goose Lake Agreed Order and RI/FS study area.

As described previously, the cleanup/remediation of Goose Lake and associated areas is being conducted as part of a separate action with a separate environmental review process. Development of the Shelton Hills site under Alternatives 1 and 2 could be coordinated with cleanup/remediation activities of Goose Lake and would comply with the identified cleanup/remediation plan, as applicable. Contaminated materials within the former drainage ravine area on the Shelton Hills site would be addressed prior to the development of the

proposed adjacent business park on the site. Subsequent to the cleanup/remediation, this area of the Shelton Hills site would be set aside as open space to minimize the potential for extensive human contact and potential related health impacts.

Alternative 3 – No Action Alternative

Under the No Action Alternative, no new development would occur on the Shelton Hills site and no potential environmental health-related impacts would be anticipated. Future commercial, business park and residential development could occur on the site in accordance with the existing Comprehensive Plan designations and zoning classifications of the site, which could result in potential environmental health-related impacts, depending on the location and nature of development. Similar to under Alternatives 1 and 2, with implementation of the cleanup/remediation plans for the Goose Lake area by others and the interim action on the Shelton Hills site, no significant health-related impacts would be expected.

3.4.3 Mitigation Measures

Required/Proposed Mitigation Measures

The following required/proposed mitigation measures would address the potential environmental health-related impacts associated with development of the Shelton Hills Mixed-Use Project under Alternatives 1 and 2.

Prior to and During Construction

- In accordance with direction and oversight from Ecology, cleanup of the existing contamination within the drainage ravine in the northeastern portion of the site would be addressed through an interim action. The interim action would consist of the following:
    - Removal of contaminated soils from an approximately 25-foot wide by 25-foot long by 1-foot deep area;
    - Re-sampling of on-site soils to ensure that all contaminants have been removed from the area;
    - Backfill and compact the excavation area with clean, imported soils; and,
    - Replant the area with native vegetation and woody debris.

Other Possible Mitigation Measures

The following other possible mitigation measures could be implemented with development of the Shelton Hills site under Alternatives 1 and 2 to further address potential environmental health-related impacts .

- Development of the Shelton Hills site could be coordinated with the cleanup/remediation plans for the Goose Lake area and would comply with the identified cleanup/remediation plan implemented under the oversight of Ecology, as applicable.

- If development of the Shelton Hills site occurs prior to implementation of the Goose Lake cleanup/remediation plan, fencing and/or signage could be placed along the northern

border of the site to prevent access by residents and employees to the Goose Lake area and limit their potential exposure to contaminants.

- Fencing and/or signage could be installed along a portion of the southern boundary of the site to prevent access by residents and employees to the adjacent former C Street Landfill site and limit the potential exposure to contaminants.

3.4.4 Significant Unavoidable Adverse Impacts

With the implementation of required/proposed mitigation measures listed above, no significant unavoidable adverse environmental health-related impacts would be anticipated.