K Ply Mill Site
Exhibit B

Interim Action Work Plan

Prepared for

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October 2012

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List of Abbreviations and Acronyms

Abbreviation/ Acronym	Definition
bgs	Below ground surface
BMP	Best Management Practice
BTEX	Benzene, toluene, ethylbenzene, and xylenes
Bulkhead	K Ply Bulkhead
CSWGP	Construction Stormwater General Permit
DAHP	Department of Archaeology and Historic Preservation
Ecology	Washington State Department of Ecology
Harbor	Port Angeles Harbor
HARN	High Accuracy Reference Network
Mill Demolition Project	Pen Ply Mill Demolition & Abatement Project
MTCA	Model Toxics Control Act

MTA Site	Marine Trades Area Site
NPDES	National Pollutant Discharge Elimination System
PCB	Polychlorinated biphenyl
PCP	Pentachlorophenol
PID	Photoionization detector
Port	Port of Port Angeles
QAPP	Quality Assurance Project Plan
Rayonier	Rayonier, Inc.
RI	Remedial investigation
RI/FS	Remedial Investigation/Feasibility Study
SAP	Sampling and Analysis Plan
SEPA	State Environmental Policy Act
Site	K Ply Site
SWPPP	Stormwater Pollution Prevention Plan
TESC	Temporary Erosion Sediment Control
TPH-D	Diesel-range total petroleum hydrocarbons
TPH-G	Gasoline-range total petroleum hydrocarbons
Tribe	Lower Elwha Klallam Tribe
UST	Underground storage tank

1.0 Introduction

1.1 REGULATORY BACKGROUND

This Interim Action Work Plan was developed for the Port of Port Angeles (Port) for implementation at the K Ply Site (Site; also referred to as the Pen Ply Site) located at 439 Marine Drive, Port Angeles, Washington 98362 (Figure 1.1). The Port intends to demolish the now defunct plywood mill. The Pen Ply Mill Demolition & Abatement Project (Mill Demolition Project) includes demolishing and removing the existing aboveground former mill, adjacent structures, and foundations at the Site to grade (Figures 1.2 and 1.3). The project also includes removal or abatement and proper disposal of regulated materials; and demolition and salvage, recycling, or disposal of building materials. No underground excavations are planned as part of mill demolition.

The mill and adjacent structures are being demolished to allow for the completion of a remedial investigation and feasibility study (RI/FS) and design of a cleanup action. The City of Port Angeles has requested demolition occur as soon as possible to address the fire hazard associated with the unused mill building. The Mill Demolition Project is described in a Port bid package that includes project plans and specifications. The Mill Demolition project is expected to begin in late 2012 and to be completed in 6 months (mid-2013).

Demolishing the mill structures will enable the Port to more effectively investigate and remediate site contamination, and redevelop the Site. The Site has been partially investigated as part of the Marine Trades Area Site (MTA Site) under a Model Toxics Control Act (MTCA) Agreed Order between the Port and other parties and the Washington State Department of Ecology (Ecology). The Agreed Order is currently being revised to separate the Site from the MTA Site. This will allow the final cleanup action to proceed at the MTA Site, while at the same time providing for a separate RI/FS for the K Ply Site.

The goal of this Interim Action Work Plan is to implement environmental controls to mitigate potential threats to human health and the environment at the Site generated as a result of mill demolition. The environmental controls taken as part of mill demolition are described in the demolition plans and specifications included in Appendix A and will be implemented by the demolition contractor.

Application for coverage under the National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General permit (CSWGP) and a Determination of Nonsignificance under the State Environmental Policy Act (SEPA) were filed for the Mill Demolition Project by the Port. During agency review of the permit and the SEPA Determination of Nonsignificance, Ecology raised concerns that soil disturbance and infiltration of stormwater to the subsurface contaminated soil could cause contaminant migration or leaching of contamination to groundwater. This Interim Action Work Plan will manage the risk associated with infiltration of stormwater through contaminated soil expected to be exposed to stormwater following mill demolition. This plan will also describe how stormwater will be managed to prevent the mobilization of contaminated soil and groundwater. No large-scale remediation of contaminated soil is anticipated to take place as part of this plan. Decisions on how to address wide areas of soil contamination is likely to take place in 2014 as part of site redevelopment following public

review and Ecology approval of the final Cleanup Action Plan for the Site. This Interim Action Work Plan is expected to be in effect until the beginning of the final cleanup action under MTCA

1.2 SCOPE AND PURPOSE OF THE INTERIM ACTION WORK PLAN

The primary purpose of this plan is to describe the removal of the existing mill structure and materials to allow for completion of a RI/FS and design of a cleanup action and to describe how site soils will be stabilized and protected from infiltration following mill demolition until the Site can be further investigated and fully remediated. To achieve this purpose, selected elements of this Interim Action Work Plan will be implemented by the Port during the Mill Demolition Project. The Mill Demolition Project is described in detail in the bid documents in Appendix A. The text of this plan does not supersede the Port's bid documents for the Mill Demolition project but is instead inclusive of them. The Port's bid documents will require their contractor to address removal of existing aboveground structures, stormwater controls, and abatement of hazardous materials, as described below in Section 3.0.

This Interim Action Work Plan covers the following major activities:

- Abatement/removal of the aboveground regulated and hazardous materials.
- Demolition and removal of the existing mill structures.
- Soil stabilization following demolition to minimize erosion in contaminated areas.
- Soil stabilization and covering following demolition to minimize stormwater infiltration in contaminated areas.
- Site assessment of potentially contaminated areas following demolition to assess if response actions should be completed to minimize environmental risk prior to site remediation.
- Supplemental stormwater sampling during and after demolition for water quality purposes.
- Installation of new groundwater wells and monitoring of wells before, during, and after demolition to ensure contaminants are not leaching to groundwater as a result of increased infiltration at the Site.

2.0 Interim Action Area and Background

2.1 SITE DESCRIPTION

The Site is generally level and mostly occupied by the mill building and associated structures, such as a boiler chimney and debarker (refer to Figure 1.3). The area of the debarker lies to the east of the mill building and is still active; it is not part of the demolition project. The main mill building is supported by a series of wooden columns set on concrete footings or, in places, wood piles. The first floor of the mill building is raised above grade and has an underlying crawl space, except for the southern one-third of the mill building, which is a newer addition and is constructed of a concrete slab on a raised grade. Based upon visual inspection of the crawl space, it appears as if the earthen floor of the crawl space is level; however, there is a low spot in the center of the mill where the hydraulic presses are located. The mill itself sits on sandy fill soils separated from the Port Angeles Harbor (Harbor) by a wooden bulk head supported by a rip rap slope that extends into the Harbor.

2.2 PRE-MILL DEMOLITION STORMWATER CONVEYANCE AND CONTROL

Stormwater that falls on-site is currently managed under a NPDES Industrial Stormwater General Permit. The permit covers the mill structures located on the west side of the Site and the log debarking operations on the east side of the Site. Stormwater under this permit is managed through on-site infiltration or is discharged to the Harbor via a stormwater conveyance ditch that runs through the middle of the Site (Figure 1.2). A portion of the stormwater that falls on the roof of the mill building and the parking lot, located on the south side of the mill building, is discharged to the City of Port Angeles's sanitary sewer.

The Port is in the process of dividing the Site up for permitting purposes and obtaining a NPDES CSWGP for the portion of the Site with the mill buildings that will be demolished. Stormwater under the new Port NPDES CSWGP would continue to discharge to the Harbor via the stormwater conveyance ditch shared with the debarking operations and potentially via an outfall located on the north end of the Site near Terminal 1.

The debarking operations are not addressed in this Interim Action Work Plan.

2.3 SUMMARY OF ENVIRONMENTAL CONDITIONS

A number of environmental conditions have been documented based on previous work at the Site, including an evaluation of the PenPly property (Landau 1988) and an RI/FS for the MTA Site, which included an investigation of the mill building (Floyd|Snider 2012). Understanding these conditions prior to demolition is necessary in order to manage potential mobilization of contaminants by runoff to surface water and infiltration to groundwater. These conditions are summarized here to provide a basis for assessment and monitoring as part of this interim action. Additional areas of potential concern, identified as part of a hazardous materials inventory (Argus Pacific 2012) and prepared as part of demolition planning, are summarized in Section 3.3.1.

Known areas of contamination are primarily petroleum related and best displayed on figures prepared as part of the MTA Site RI/FS. For reference, select figures illustrating characterization

of gasoline-range total petroleum hydrocarbons (TPH-G), diesel-range total petroleum hydrocarbons (TPH-D; including hydraulic oil), and benzene in soil and groundwater from the MTA Site RI/FS are included as Appendix B. Each known area of significance in soil and groundwater is described below.

2.3.1 Soil

Hydraulic oil area. The area beneath the north end of the mill, in the vicinity of the hydraulic presses, is of concern due to past releases of hydraulic oil from the former plywood presses. This area was the subject of a cleanup action by ITT Rayonier, Inc. (Rayonier) beginning in 1990. In addition to the visible staining of surface soils in this area, hydraulic oil is also currently present in measurable amounts as a separate phase product on the groundwater table. TPH-G and benzene groundwater contamination and some soil contamination have also co-mingled with the hydraulic oil in the subsurface soils in this area. Available data indicate that hydraulic oil does not extend to the K Ply Bulkhead (Bulkhead), either as dissolved constituents or as separate-phase product.

TPH-G, TPH-D, and BTEX. Petroleum constituents are present in soil beneath large portions of the mill in addition to the hydraulic oil area. The following summary is based on available data. Additional areas of soil contamination may be present.

Available data indicate that soil contaminated with TPH-G and/or benzene, toluene, ethylbenzene, and xylenes (BTEX) is generally present in the hydraulic oil area, the south end of the mill, in the alley south of the mill, and in a small area near the Bulkhead. In the hydraulic oil area, gasoline is commingled with hydraulic oil present at the water table and smear zone. At the southern end of the mill, petroleum-contaminated soil has been detected over a broad area, and includes some shallow vadose zone contamination (e.g., in the vicinity of PZ-6), which may extend to the ground surface. TPH-G is also present in subsurface soil in the paved alley south of the mill and in a small unpaved area near the Bulkhead.

Elevated TPH-D and heavier hydrocarbons have been detected in the hydraulic oil area[1], above the water table in the area of former underground storage tanks (USTs) and on the west side of the mill adjacent to Cedar Street. TPH has also been detected beneath the paved alley south of the mill, where a thin layer of diesel product has been observed intermittently at the water table. Low level TPH-D in soil has also been detected at scattered locations beneath the south portion of the mill and at one location near the Bulkhead.

Panel oiler. A release of pentachlorophenol (PCP) to soil near the former plywood panel oiler, beneath the southwest corner of the mill, was followed by a remedial action by Rayonier to remove the impacted soil. Further sampling indicated that PCP was detected at concentrations up to 720 ppm in soil, but Landau Associates, Inc. concluded that PCP contamination had not reached the groundwater at concentrations exceeding regulatory cleanup levels.

Former USTs west of building. Two USTs were located adjacent to the west side of the Site, reportedly including one 1,000-gallon gasoline UST and one 6,000-gallon fuel oil UST (Landau 1988), though the investigators subsequently found that the 1988 report was in error and that the tanks contained plywood form oil instead of gasoline. The report indicates that the

[1] Hydraulic oil is within the range of TPH-D analysis.

USTs were taken out of service in 1974 and removed by 1984; no other reports documenting tank removal activities were identified. As noted above, relatively low concentrations of TPH-D were measured in soil in this area during 2009 sampling.

Bamford lathe. Hydraulic oil spills were reported as part of operations in this area of the Site. Testing prior to the 1988 investigation adjacent to the slab indicated low levels of total oil and grease and suggested that the oil had not reached the water table in substantial quantities. The oil was collected on a bermed concrete slab that was periodically cleaned. The oil and oil-contaminated adsorbents were reportedly incinerated in the on-site boiler.

2.3.2 Groundwater

TPH-G and BTEX. A plume of TPH-G and benzene is present beneath large areas of the mill in the upper 5 to 10 feet of groundwater (approximately 10 to 20 feet below ground surface [bgs]). Other typical gasoline constituents (i.e., toluene, ethylbenzene, xylenes, trimethylbenzene, etc.) have also been detected in the plume but at substantially lower concentrations. Elevated benzene in groundwater extends in the direction of groundwater flow a considerable distance beyond the northwest mill boundary into Cedar Street. Elevated TPH-G also extends into Cedar Street and is present in groundwater south of the mill and at the Bulkhead north of the mill. The source area(s) for these plumes generally correspond to the soil contamination areas noted above, with the most elevated soil concentrations beneath the southern portion of the mill.

TPH-D. There is no known diesel contamination of groundwater beneath the mill. Detections of elevated concentrations of TPH-D in the hydraulic oil area are associated with hydraulic oil. TPH-D contamination of groundwater is present in the alley south of the mill, where a thin layer of diesel product has been measured intermittently in a well.

Hydraulic oil area. As mentioned above, free-phase hydraulic oil is present on the water table in the area under the presses (refer to Appendix B). To comply with the 1990 Remedial Action Order from Ecology, Rayonier installed two recovery wells in the middle of the hydraulic oil plume. Groundwater depression and skimmers were used to recover product that was pumped and stored in an aboveground tank. Because of the high viscosity of hydraulic oil, recovery efforts were generally ineffective, and Rayonier terminated the recovery efforts several years ago.

3.0 Interim Action Components

This Interim Action Work Plan will be in effect between the time the mill demolition begins and the start of final cleanup of the Site. This Interim Action Work Plan covers contamination that is located at and below the existing ground surface and contamination that will be uncovered and exposed following demolition. Structures, piling, hazardous materials, and contamination located above the ground surface will be addressed during the Mill Demolition project.

Interim action components are organized in this section in the following manner. A summary of the Mill Demolition Project is described in Section 3.1. Monitoring elements are described in Section 3.2. These include establishing the groundwater monitoring network, conducting pre-demolition groundwater and surface water monitoring, monitoring during demolition, and post-demolition monitoring. Site assessment activities, to be conducted following demolition, are described in Section 3.3. Specific actions that will be taken to address soil stability and infiltration are described in Sections 3.4 and 3.5, respectively. Interim action reporting content and frequency are described in Section 3.5.

3.1 MILL DEMOLITION PROJECT

The Mill Demolition Project will demolish and remove the existing aboveground mill structures at the Site to prepare the Site for cleanup and redevelopment. The project includes 1) the removal/abatement of regulated building and aboveground hazardous materials and 2) the dismantling and disposal of the former mill structures.

To inventory the regulated building materials and hazardous materials currently present on-site, a Regulated Building Materials Assessment Report and hazardous materials inventory was prepared for each structure by Argus Pacific, Inc. The reports detail the extent of lead and asbestos-containing building materials as well as the presence of other regulated building material such as polychlorinated biphenyl (PCB) transformers or mercury-containing lights. The hazardous materials inventory identifies the presence of paints, petroleum products, glue resins, transformer oil, and other hazardous materials. These regulated building materials and hazardous materials will be removed from the Site prior to demolition of the mill structures. The removal of these materials is included in the mill demolition contract.

The mill demolition plans and specifications include typical construction general requirements, as well as specifications detailing health and safety, environmental controls, well protection, facilities remediation, demolition, temporary erosion sediment control and sedimentation control, asbestos abatement, security fence maintenance, lead controls, PCB-related procedures, and waste removal and handling. The mill demolition will be conducted in compliance with the NPDES Construction Stormwater General Permit obtained for the Site. The bid specifications and plans as well as the site Stormwater Pollution Prevention Plan (SWPPP), required for compliance with the site NPDES CSWGP, are included in Appendix A (refer to attached CD-ROM). The bid package addendum related to hazardous material inventories is also included.

The following items will be implemented by the Port in the Mill Demolition Project (refer to Appendix A for more information):

- Abatement, removal, and disposal of hazardous materials in the mill structures.
- Removal and disposal of hazardous liquids in tanks and vaults, including the caustic storage area and press hydraulic oil vaults.
- Removal of Rayonier remedial action equipment and storage tanks.
- Protection and abandonment of the two hydraulic oil recovery wells maintained by Rayonier.
- Cleanup and removal of clean debris on the surface.
- Removal of electrical transformers.
- Implementation of best management practices (BMPs) for stockpiling of hazardous materials removed during demolition to be disposed of off-site.
- Asbestos wrapping on the vent stack and the fly ash on the inside of the stack.
- Removal of stockpiled fly ash.
- Placement of the plastic sheeting in the two TPH-G contamination areas that are described in the Temporary Erosion Sediment Control Plan (TESC; Port of PA 2012).

3.2 MONITORING

Groundwater monitoring, environmental oversight during mill demolition, and monitoring to ensure maintenance of BMPs installed following mill demolition will ensure protectiveness of human health and the environment, including the Harbor.

3.2.1 Groundwater Monitoring Well Installation and Survey

The existing and proposed groundwater interim action monitoring wells at the Site are shown on Figure 3.1. The existing network consists of 2-inch-diameter monitoring wells from prior to the remedial investigation (RI; PP-series), and 1inch-diameter piezometers installed as part of 2009 investigation activities (PZ-series). Existing monitoring wells are typically screened across the water table from 5 to 15 feet bgs. To provide for a network of wells representative of the area that will be exposed to infiltration and groundwater downgradient of the exposed area, five existing wells (PZ-6, PP-15, PP-13, PZ-12, and PZ-13) and three new wells (PP-17, PP-18, and PP-19) will be installed and monitored. The proposed well locations are downgradient of the petroleum-contaminated soil, the hydraulic oil release area, and the benzene (plume shown on Figure 3.1) and TPH-G plumes in groundwater and are considered representative of groundwater that would be affected by mobilized contaminants following increased infiltration. Well locations were selected to monitor both the western lobe and eastern lobe of the contaminant plume. The proposed well locations shown on Figure 3.1 are approximate and may be adjusted in the field depending on-site conditions and utilities.

Monitoring wells will be constructed, developed, and surveyed according to standard industry practice and in accordance with all applicable regulations, as summarized below. Underground utilities in the vicinity of borehole locations will be identified and marked prior to drilling. Wells will be drilled using a hollow-stem auger drill rig or equivalent. Soil samples will be collected for analytical testing; examined for soil staining and photoionization detector (PID) response; and logged by field personnel under the direction of a licensed geologist. Two soil samples will be

collected for each boring in accordance with standard industry practice and the applicable provisions of the Ecology-approved Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) for the MTA Site (Floyd|Snider 2005). One soil sample will be collected above the groundwater table and one soil sample will be collected below the water table. The soil samples will be submitted to an accredited laboratory and analyzed for TPH-G and BTEX by NWTPH-Gx, and TPH-D by NWTPH-Dx (which includes quantification of hydraulic fluid) with silica gel cleanup. All downhole drilling equipment will be decontaminated before use and between drilling locations. If water is added to the borehole to control heaving, only potable water will be used. All residual soil and water collected during drilling and development (investigation-derived waste) will be containerized, characterized, and transported off-site for disposal as necessary.

The wells will be constructed with the same approximate total depth (generally 15 feet bgs) and screen interval (generally 5 to 15 feet bgs) as the other wells in the network. The wells will be constructed of 2-inch Schedule 40 polyvinyl chloride (PVC) with a flush-threaded riser, including a threaded end plug and well screen with machined 0.010-inch slots. The annular space around the screen zone of each well will be backfilled with clean #10-20 silica sand, or equivalent. The annular space above the sandpack will be sealed with bentonite chips. Bentonite placed above the water table will be hydrated with potable water. All materials will be placed concurrent with auger withdrawal. The surface of each well will be completed with a flush-mounted steel monument, and the well will be secured by a lockable gasket cap. Bollards will also be placed around each monument to protect and aid in locating it. New and existing wells and piezometers will be protected during demolition.

As-built construction details, including the total depth of each boring and the placement depths of the filter sandpack, bentonite seal, and the surface completion will be measured to the nearest 0.1 foot. A licensed surveyor will locate the wells after installation and survey the top of well casing to the nearest 0.01 foot in the horizontal and vertical directions. Well coordinates will be reported in North American Datum 1983 (NAD 83) Washington State Plane North High Accuracy Reference Network (HARN). Elevations will be reported in North American Vertical Datum (NAVD 88). Well logs, including soil sample description and as-built construction details will be prepared after well completion. Well logs will include the Washington State Plane North HARN coordinates of the well and the top of casing elevation. The coordinate and elevation reference systems will be noted on the well log. The well construction drawing will show the distance between the top of casing and the ground surface. If appropriate, surveying will be coordinated with the Port before development surveying.

The three newly installed wells and five existing wells[2] will be developed by surging with a bailer or surge block followed by well evacuation. All down-hole well development tools will be decontaminated prior to use for each well. Surging and evacuation will be repeated until evacuated water is visibly clean and essentially sand-free. During well evacuation, water samples will be collected for field determination and documentation of temperature, specific conductivity, and pH. Well development will proceed until field parameters stabilize to within ±10 percent on 3 consecutive measurements or until 10 well volumes have been purged. If any of the existing wells have been damaged due to the mill demolition or site operations, they will not be sampled.

[2] The five existing monitoring wells will be developed or redeveloped because they have not been used in recent years and to ensure that chemical data collected are representative of the aquifer.

3.2.2 Groundwater Monitoring

Interim action monitoring wells will be sampled prior to demolition, to document baseline conditions; and quarterly following demolition, to monitor any effects of demolition (Table 3.1) and to document site conditions. Groundwater monitoring is anticipated to be conducted quarterly at the Site until final cleanup commences. The interim action groundwater monitoring plan may be modified to adjust the number of wells sampled or parameters selected based on trends observed after the initial four quarters of sampling.

Should the groundwater samples indicate unstable conditions (i.e., a sudden rise in one parameter), the groundwater will be re-sampled to verify the exceedance. If the verification groundwater sample is consistent with the first sample, the site BMPs will be evaluated for effectiveness, and additional stabilization or other control measures will be implemented as necessary.

Groundwater sampling will be done in accordance with standard industry practice and the applicable provisions of the Ecology-approved SAP and QAPP for the MTA Site (Floyd|Snider 2005). Groundwater samples will be submitted to an accredited laboratory and analyzed for TPH-G and BTEX by NWTPH-Gx, and TPH-D by NWTPH-Dx (which includes quantification of hydraulic fluid) with silica gel cleanup. These analyses correspond to the known constituents in soil and groundwater beneath the mill and the established constituents of concern for the MTA Site, and are a protective and representative suite of analytes for assessing potential mobilization from increased infiltration.

3.2.3 Stormwater Sampling

In accordance with the permit conditions, the Port will sample stormwater for the parameters listed in the CSWGP NPDES permit weekly when discharging stormwater. The list of monitoring requirements (i.e., turbidity, pH, visual oil sheen) in the CSWGP permit does not include quantification of petroleum compounds, which is of most concern at the Site; therefore, to ensure protectiveness, stormwater will also be sampled for additional parameters. Sampling will occur both prior to demolition, to document baseline conditions; and quarterly for one year following demolition, to monitor any effects of demolition. After the initial year of quarterly monitoring (four quarters), stormwater sampling will terminate assuming no exceedances of water quality parameters or applicable MTCA criteria. If there are exceedances of applicable water quality parameters, the site BMPs will be evaluated for effectiveness, and additional stabilization or other control measures will be implemented as necessary. If instability is noted in the initial four quarters of sampling, stormwater sampling will continue quarterly, following implementation of any additional stabilization or other control measures, and will continue until stable conditions are indicated.

Stormwater grab samples will be collected in accordance with standard industry practice at the stormwater outfall when it is raining, or within 12 hours of a storm event, as long as a discharge is occurring. When possible, the stormwater samples will be collected at the same time as groundwater samples are collected. Sample and data handling procedures and quality assurance will be consistent with the MTA site SAP and QAPP.

Stormwater samples will be submitted to an accredited laboratory and analyzed for TPH-G and BTEX by NWTPH-Gx; and extended THP-D including hydraulic fluid by NWTPH-Dx (which

includes quantification of hydraulic fluid) with silica gel cleanup. These analyses correspond to the known contaminants in groundwater and soil at the Site and stormwater monitoring will confirm that stormwater is not mobilizing or transporting contaminants to the Harbor. The results of the stormwater analysis will be reported to Ecology as described in Section 3.5.

3.2.4 Mill Demolition Monitoring

As the mill demolition project progresses and buildings or equipment are removed, the Port will monitor the Site for indications of contaminated soils, leaks, unknown vaults, or unknown tanks that are potentially dangerous to human health or the environment. Additionally, monitoring during mill demolition will inform the Port if any equipment, structures, or hoses that are removed during demolition could have historically caused a release to soil. These observations should be made during demolition as the structures are being removed because the overlying structures and equipment may indicate underlying issues. The Port will request that the contractor notify the Port of any areas or subsurface soil where they suspect hazardous materials were historically spilled based on evidence of leaking hoses, tanks, containment vaults, or other visual observations. Anything identified as potentially dangerous will be addressed by a response action to stabilize the contamination. Potential response actions could include the interim actions listed below in Section 3.5.

There are no known USTs at the Site, and the Port does not expect to encounter USTs during the Mill demolition project. If a UST is encountered during the demolition, Ecology will be notified and it will be properly removed by the Port or their contractor, consistent with Ecology regulations.

During the Mill Demolition Project, clean debris will be properly disposed by the Port's contractor, consistent with the bid documents. If oily debris is encountered (e.g., in the PCP storage area), special care will be taken to separate oily debris from clean debris. Oily debris will be managed separately and properly disposed of.

3.2.5 Post-mill Demolition Site Monitoring

Following mill demolition, the Port will conduct a one-time site assessment to identify areas needing immediate stabilization, as described below in Section 3.3. In addition to the site assessment, post-mill demolition monitoring will include the following:

- Site BMPs will be maintained and reviewed for stormwater and erosion control, consistent with the SWPPP.
- Stormwater and groundwater will be sampled as described above in Sections 3.2.2 and 3.2.3.
- The Port will monitor for fugitive dust and employ dust control measures, if necessary, to ensure that contaminated soil or debris is not leaving the Site. Control of fugitive dust is discussed below in Section 3.4.4.

Access to the Site will be restricted and monitored. The Site is currently fenced, and public access to the Site is controlled by the Port. The fence and access restrictions will continue following demolition of the mill to prevent direct contact with site soils by the public.

3.3 SITE ASSESSMENT

Following the Mill Demolition Project, a site assessment will be conducted by the Port to identify areas with surface soil contamination. The entire demolition footprint will be visually assessed, with a focus on assessing areas with known contamination and areas where historical operations that could have caused contamination occurred. Soil samples will also be collected (as described in Section 3.3.4) to better characterize post-demolition containment concentrations. The areas of potential concern are described in Section 3.3.1.

Following the assessment, the Port will identify if additional soil stabilization actions need to be implemented to mitigate emergency conditions identified as posing immediate risks to human health or the environment. Examples include areas with obvious odors/visual contamination, pooled oil, stained soils, active erosion, or other indications of unstable conditions. Efforts will be taken to stabilize these areas to prevent human exposure and infiltration of stormwater or runoff of contaminated soils, as described below.

The site assessment will also evaluate the effectiveness of BMPs at the Site. For example it will be determined if the extent of the silt fencing described in the TESC will need to be extended to capture any runoff in directions other than directly toward the Harbor.

The site assessment will occur upon substantial completion of the Mill Demolition Project, which is the date that all substantial work is complete on the project per the bid specifications and the Port has unrestricted use and benefit from an operational and safety standpoint. This date is anticipated to be approximately 6 months following contractor mobilization.

3.3.1 Areas of Potential Concern

As shown in Figure 3.2, the areas of potential concern are in locations where previous environmental investigations identified contamination, where historical operations were conducted that are typically associated with contamination, or where hazardous materials were found to be stored prior to mill demolition. Table 3.2 lists the areas of potential concern that are numbered on Figure 3.2. Special attention will be paid to these locations during the site assessment to determine if there was a potential release of contamination to the subsurface or if a soil stabilization action is needed. It is assumed that no further action would be required at this time if these locations are in an area with an existing impermeable cover, such as concrete or asphalt. Areas of potential concern include the following:

1. **Historical solvent use and distillation areas.** These areas include two locations in the main mill building and one location at the southwest side of the old slicer building. One of the locations in the mill building is covered by the concrete slab, and the other location in the mill building will be covered by plastic sheeting (refer to Figure 3.2). It is unknown if the third solvent area is paved or what the subsurface conditions are.
2. **Bamford Lathe.** This area is located along the west side of the Bamford Green End Tray System, near the air compressor. It is unknown if this area is paved or what the subsurface conditions are, but oil and grease were detected in soil during previous environmental investigations.
3. **Panel Oiler.** This area is located on the west side of the Site, near the TPH-G plume and concrete slab. The PCP tanks have been removed. Some of this area is covered

by the concrete slab, and some of this area will be covered by plastic sheeting installed as part of the TESC.

4. **Caustic Tank Area.** This area is located on the northwest area of the Site, near the hot presses. The caustic material will be pumped out prior to demolition. It is unknown what the subsurface conditions in this area are.
5. **Resin Tank Area.** This area is located on the northwest area of the Site, just south of the caustic tank area. It is unknown what the subsurface conditions in this area are.
6. **Hydraulic Oil/Hot Press Area.** This area is located within the vicinity of the hot presses where hydraulic oil has historically leaked to the soil. Some of this area is outside the extent of the plastic sheeting (installed as part of the TESC), which will be used to cover the TPH-G and benzene contamination. This area of potential concern is discussed further in Section 3.4.2.
7. **Electrical Shop.** Several cleaners, solvents, oils, and other chemicals were historically used in this area. There were no known releases in this area.
8. **Machine Shop.** Several cleaners, solvents, oils and other chemicals were historically used in this area. There were no known releases in this area.
9. **Room 14.** Room 14 is a small room identified on Sheet H1.0 of the Port's bid documents. An empty transformer oil bucket and other oil buckets were found in the room during the hazardous materials survey. There were no known releases in this area.
10. **Green Veneer Chipper Room and the East Exterior of the Green Veneer Chipper Room.** During the hazardous materials survey, transformers and transformer oil that contain PCBs were identified in this area. The transformers had a "contains PCBs" warning label and analytical testing confirmed the presence of PCBs. There are no known releases in this area.
11. **Paper Station.** Unknown liquids were found during the hazardous materials survey in this location. There are no known releases in this area.
12. **Glue Loft.** Several corrosive, toxic, and unknown materials were found in the glue loft areas during the hazardous materials survey. There are no known releases in this area.
13. **Forklift Shop.** Drums containing glue and degreaser were found in the forklift shop during the hazardous materials survey. This area is assumed to be paved.
14. **8 Foot Lathe Building.** This area is located directly next to the oil and grease area listed above. A drum containing glue and pole mounted electrical transformers that contain PCBs were found during the hazardous materials survey.
15. **Equipment/Storage Building #10.** A transformer, wastewater drum, gear lube drums, and other miscellaneous wastes were found in this area during the hazardous materials survey. This is in a paved area of the Site. The transformer contains PCBs.
16. **Pipeline 8.** Pipeline 8 is a buried former petroleum pipeline that runs parallel to Cedar Street beneath the west side of the mill building.

3.3.2 Other Site Assessment Areas

During the site assessment, unforeseen areas of concern may be identified that would require a soil stabilization action. Identification and treatment of these areas would be the same as the areas of potential concern listed above. In the event that unforeseen subsurface structures are uncovered during the mill demolition, these areas will be assessed and then stabilized or cleaned up as necessary

3.3.3 Soil Sampling

Soil sampling will occur under the entire mill footprint during the site assessment. The sampling will serve two purposes: 1) to better understand the nature of any suspect areas that are identified and 2) to verify that surface contaminants are not present in areas without known concerns. The area where surface sample collection will occur is shown in Figure 3.3. Approximately 12 to 20 surface samples are anticipated to be collected from areas under the entire mill footprint. Surface soil samples will be collected from the upper 3 to 6 inches of soil in accordance with standard industry practice. Each surface soil sample collected will be examined for soil staining and PID responses by field personnel under the direction of a licensed geologist. Surface soil samples will be submitted to an accredited laboratory and analyzed for TPH-G and BTEX by NWTPH-Gx, and TPH-D by NWTPH-Dx (which includes quantification of hydraulic fluid) with silica gel cleanup. These analyses correspond to the known constituents in soil and groundwater beneath the mill and are a protective and representative suite of analytes for assessing potential mobilization from increased infiltration. Additional parameters may be analyzed for depending on field conditions.

The results of the surface sample analyses will be evaluated to determine if an interim action should be implemented to control contaminants that pose a risk to humans or that may migrate via stormwater or erosion to the harbor. Results will also be used to verify the absence of contamination in areas left uncovered as described in Section 3.4 below. The presence and location of surface contamination will be used to inform and develop the RI/FS Work Plan.

3.4 SOIL AND STORMWATER INTERIM ACTIONS

Soil stabilization and stormwater management interim actions will be completed at the Site to minimize stormwater infiltration and minimize the transport of known contamination to soil and groundwater. Additionally, response actions may be implemented in the areas of potential concern following discovery of contamination and would consist of short-term measures implemented to prevent potentially dangerous conditions. The following sections describe the interim actions that will be taken.

3.4.1 Stormwater Management

Following the mill demolition, areas outside the mill footprint that are currently unpaved and where stormwater infiltrates will continue to be unpaved, and stormwater will be managed as it currently is via ponding and infiltration. Likewise, areas that are currently paved will remain paved and impervious following mill demolition; therefore, no change in stormwater management is necessary. Stormwater in these locations will either drain to the stormwater conveyance system that currently exists along the south portion of the Site or to the stormwater conveyance ditch and be discharged to the Harbor. Stormwater falling on newly-exposed

unpaved areas, such as existing under the current mill building will be managed under the conditions set forth in the NPDES CSWGP and the TESC.

Additional measures will be taken to limit infiltration in areas of concern as described in Section 3.4.3.

3.4.1.1 Erosion Control

Erosion sediment control BMPs will be maintained following mill demolition at the Site, consistent with what is described in the Port's TESC. These BMPs include silt fencing, catch basin inlet protection, stabilizing access roads, cleaning pavements, silt control, polyethylene sheeting over contaminated soils, and application of a bonded fiber matrix mulch. These BMP's will be maintained, consistent with the TESC, until the Site is cleaned up under MTCA, and until they are no longer required. BMPs may be adjusted, as needed, following demolition of the mill in the event that stormwater is pooling, causing erosion, or some other issue is identified.

The TESC describes how select areas of contamination under the mill will be covered with plastic sheeting and not allowed to infiltrate. Additional areas of potential concern, discussed above, may be covered or stabilized as determined necessary during the site assessment following mill demolition. Select areas of the Site may need to be graded or smoothed for stormwater control or other purposes.

3.4.2 Hydraulic Oil Recovery Equipment

Hydraulic oil recovery equipment and tanks that were used by Rayonier for the hydraulic oil recovery system are still on-site. The equipment and storage tanks located along Cedar Street will be removed, and the recovery wells will be protected prior to mill demolition.

Following the site assessment, the Port will evaluate if an interim action to stabilize the soil in the hydraulic oil area is needed (refer to soil stabilization actions described below).

3.4.3 Soil Stabilization and Infiltration Control Actions

During the site assessment, the areas of potential concern will be evaluated to determine if an interim action is needed to be implemented to temporarily address contaminant pathway control through consideration of increased stormwater infiltration or erosion. These interim actions will ensure that contamination does not reach the harbor and pose a threat to human health or the environment.

Following the site assessment, the following interim actions could be performed at the Site:

- **Identify area as an RI/FS concern—leave area as is until cleanup.** If no signs of contamination are detected, the area will be left as is. RI sampling may address these areas following the mill demolition. Cleanup plans and methods for remediation of contaminated soil and groundwater will be addressed during the RI/FS process.
- **Collect characterization surface soil samples.** Field screening will be conducted and soil samples collected in areas where a visual inspection is not adequate to determine if contamination that may migrate to subsurface soil or groundwater is present.

- **Cover the area with plastic sheeting.** Areas of concern, if large, could be leveled or mounded and covered with plastic sheeting, such as visqueen, to prevent infiltration. Minimal grading could occur in these areas to level the Site or create mounding. Mounding of these areas will create positive drainage and ensure that stormwater runs away from these contaminated areas and does not pool or seep underneath the plastic sheeting. Alternatively, large plastic sheeting with minimal or no seams could be used if the grade is flat. Sheeting with few or no seams would prevent infiltration, but allow stormwater pooling. Areas of concern that are identified during the site assessment could be covered consistent with what is described in the TESC for the contaminated areas underneath the mill building, or could be adjusted depending on site conditions. Areas of concern that could be covered and mounded include areas with unstable soils that could erode or areas identified to have contamination that could leach to groundwater.
- **Stabilization.** Contaminated areas could be stabilized via berming, mounding, grading, or leveling to prevent erosion or runoff/erosion of contaminated soil. Any holes encountered during demolition or created during demolition could be filled with suitable materials from on-site. Other stabilization measures, including temporary mulching, gravel placement, or seeding and planting could be implemented as determined necessary in the field.
- **Residual contamination removal.** If residual contamination or pooled contaminated stormwater is found to be remaining in vaults or other areas of the Site, it will be cleaned up with absorbent pads, a vacuum truck, or other appropriate measure.
- **Excavation or scraping and consolidation of contaminated soil or liquids.** Areas identified with contamination that is determined to be an immediate threat to human health or the environment may be excavated or scraped from the surface and consolidated in an isolated on-site location to the degree feasible. Excavation would target areas with free-phase product, unidentified liquids, or highly contaminated soil as identified by visual or olfactory means. Consolidated soils would be stockpiled in an area of the Site protected by pavement or plastic sheeting. The stockpile would be covered to prevent runoff. Contamination will not be chased if excavation is used, as cleanup levels for the Site have not been determined. The stockpiled contaminated soil would later be treated on-site or disposed of off-site during site cleanup. Substantial excavation and consolidation of soil under this plan is not anticipated. Substantial excavation would only be conducted as an emergency measure following consultation with Ecology.
- **Removal of hazardous materials.** Hazardous materials that are currently stored at the mill will be removed by the Port during the mill demolition project, consistent with the bid documents. This includes cleanout of liquids known to exist in the vaults located below the presses, removal of stockpiled fly ash, and removal of all tanks. BMPs will be employed to ensure that residual hazardous substances located within the mill do not contaminate the underlying soils. Residual hazardous materials identified during the site assessment may be removed from the Site and properly disposed of.

3.4.4 Dust Control

The bid documents for the Mill Demolition project require placement of bonded fiber matrix mulch with seeds for areas of the Site without a concrete or asphalt cover. Vegetation at the Site will minimize fugitive dust leaving the Site. Transport of contamination as fugitive dust is not expected to be a problem once the Site is vegetated. If fugitive dust becomes a problem following the Mill Demolition project, the Port will address the issue in coordination with Ecology.

3.5 CULTURAL RESOURCES

Cultural resources are not anticipated to be encountered because subsurface excavation is not proposed as part of the Interim Action Work Plan. If excavation is determined to be necessary during the site assessment because of an immediate threat to human health or the environment, the Port will comply with the procedures described in the 2006 Settlement Agreement between the State of Washington, the Lower Elwha Klallam Tribe (Tribe), the City of Port Angeles, and the Port (City of PA 2006).

3.6 REPORTING

The Port will provide quarterly reports to Ecology for one year that will summarize the site assessment outcomes, interim actions completed, and monitoring results. Additionally, interim reports will be provided to Ecology regarding any response to observations or actions that are completed at the Site. After the initial year, reports will be submitted annually until cleanup of the Site commences and/or the Site is no longer managed under this Interim Action Work Plan.

These reports will include the following:

- Field documentation for the site assessment, which includes locations of the areas of concern, recommended actions to be completed, field observations of contamination, results any analytical testing conducted, photographs, and any other field notes.
- Summary of the site assessment and recommendations for interim actions.
- Summary of response or interim actions completed, including procedures followed, areas impacted, photographs, and field observations.
- Field documentation for groundwater and stormwater sampling, which includes sample collection locations, sampling equipment, physical description of the samples, sample collection forms, and chain-of custody records.
- Well completion and survey information.
- Laboratory reports from the chemical testing laboratories for all analytical samples tested.
- Tables and maps displaying the chemical test results.
- Summary of findings and recommendations related to the need for additional sampling events.

The first quarterly report will be submitted to Ecology within 30 days of the installation of new wells and completion of baseline ground water sampling. . Subsequent reports will be submitted

to Ecology quarterly, based on the submittal date of the first report. Response action reports will be at the discretion of the Port but will be completed for all critical actions.

3.7 INTERIM ACTION SCHEDULE

The following schedule is anticipated for implementation of the Interim Action Work Plan:

Event or Document	Days from Schedule	Anticipated Calendar Date
Notice of Award for the Mill Demolition		Mid-October 2012
Installation of Monitoring Wells and Baseline Groundwater Monitoring		November 2012
Mill Demolition Begins—Notice to Proceed	30 days following Notice of Award.	December 2012
Submittal of First Quarterly Report	30 days from completion of baseline groundwater sampling.	January 2013
Mill Demolition Complete and Site Assessment/Post-demolition Monitoring Event	180 days following Notice to Proceed.	June 2013
Soil Sampling Report Submittal	30 days following the Post-demolition site assessment.	August 2013
Quarterly/Annual Interim Action Reports	Quarterly reports until the Site is considered stable. Annual reports continue until cleanup of the Site commences and/or the Site is no longer managed under this Interim Action Work Plan.	Spring, summer, fall, and winter 2013; annually thereafter

4.0 References

Argus Pacific. 2012. *Regulated Building Materials Assessment Reports, Former PenPly Mill Site*. Prepared for Port of Port Angeles. 29 May.

City of Port Angeles (City of PA). 2006. *Settlement Agreement: State of Washington, Lower Elwha Klallam Tribe, City of Port Angeles, Port of Port Angeles.* 14 August.

Floyd|Snider. 2005. *Marine Trades Area Site Remedial Investigation Work Plan*. Prepared for Washington State Department of Ecology and Marine Trades Area Group. 19 September.

———. 2012. (F:\projects\SJZ-MTA\Task 7 Final RIFS West Side\RIFS Report\Revised West Side RIFS May 2012)

Landau Associates, Inc. (Landau). 1988. Environmental Evaluation: Peninsula Plywood Property, Port Angeles, Washington. 19 December.

Port of Port Angeles (Port of PA). 2012. *Port of Port Angeles Pen Ply Demolition Site, Building Demolition, Temporary Erosion and Sediment Control.* 29 May.

K-Ply Mill Site

Interim Action Work Plan

Tables

Table 3.1
Groundwater and Stormwater Sampling Summary

Sample Location	Sample Frequency	Parameters and Analytical Method
Groundwater Monitoring		
PZ-6	Quarterly for the 1st year following mill demolition Annually after the 1st year[1]	TPH-gasoline range and BTEX (NWTPH-Gx) TPH-diesel range[2] (NWTPH-Dx with silica gel cleanup)
PP-13	Quarterly for the 1st year following mill demolition Annually after the 1st year	TPH-gasoline range and BTEX (NWTPH-Gx) TPH-diesel range[2] (NWTPH-Dx with silica gel cleanup)
PP-15	Quarterly for the 1st year following mill demolition Annually after the 1st year	TPH-gasoline range and BTEX (NWTPH-Gx) TPH-diesel range[2] (NWTPH-Dx with silica gel cleanup)
PZ-12	Quarterly for the 1st year following mill demolition Annually after the 1st year	TPH-gasoline range and BTEX (NWTPH-Gx) TPH-diesel range[2] (NWTPH-Dx with silica gel cleanup)
PZ-13	Quarterly for the 1st year following mill demolition Annually after the 1st year	TPH-gasoline range and BTEX (NWTPH-Gx) TPH-diesel range[2] (NWTPH-Dx with silica gel cleanup)
PP-17	Quarterly for the 1st year following mill demolition Annually after the 1st year	TPH-gasoline range and BTEX (NWTPH-Gx) TPH-diesel range[2] (NWTPH-Dx with silica gel cleanup)
PP-18	Quarterly for the 1st year following mill demolition Annually after the 1st year	TPH-gasoline range and BTEX (NWTPH-Gx) TPH-diesel range[2] (NWTPH-Dx with silica gel cleanup)
PP-19	Quarterly for the 1st year following mill demolition Annually after the 1st year	TPH-gasoline range and BTEX (NWTPH-Gx) TPH-diesel range[2] (NWTPH-Dx with silica gel cleanup)

Table 3.1
Groundwater and Stormwater Sampling Summary

Sample Location	Sample Frequency	Parameters and Analytical Method
Stormwater Monitoring[3]		
Stormwater Conveyance Ditch Outfall	Quarterly for the 1st year following demolition	TPH-gasoline range and BTEX (NWTPH-Gx) TPH-diesel range[2] (NWTPH-Dx with silica gel cleanup)

Notes:

1 Assumes stable groundwater conditions.
2 The TPH-diesel range analysis include quantification of hydraulic oil.
3 The monitoring frequency and parameters listed here do not include the monitoring requirements from the NPDES CSWGP.

Abbreviations:

BTEX Benzene, toluene, ethylbenzene, and xylenes
CSWGP Construction Stormwater General Permit
NPDES National Pollution Discharge Elimination System
TPH Total Petroleum Hydrocarbon

Table 3.2
Areas of Potential Concern for Reference on Figure 3.2[1]

Figure 3.2 Reference #	Area of Potential Concern
1	Historical solvent use and distillation areas
2	Bamford Lathe
3	Panel Oiler
4	Caustic Tank Area
5	Resin Tank Area
6	Hydraulic Oil/Hot Press Area
7	Electrical Shop
8	Machine Shop
9	Room 14
10	Green Veneer Chipper Room and the East Exterior of the Green Veneer Chipper Room
11	Paper Station
12	Glue Loft
13	Forklift Shop
14	8 Foot Lathe Building
15	Equipment/Storage Building #10
16	Pipeline 8

Note:

1 Sources for identifying the areas of concern include Landau's 1988 *Environmental Evaluation: Peninsula Plywood Property, Port Angeles Washington* and Argus Pacific's 2012 *PenPly Mill Demolition and Abatement Project Hazardous Material Survey.*

K-Ply Mill Site

Interim Action Work Plan

Figures

0 3000 6000

Approximate Scale in Feet

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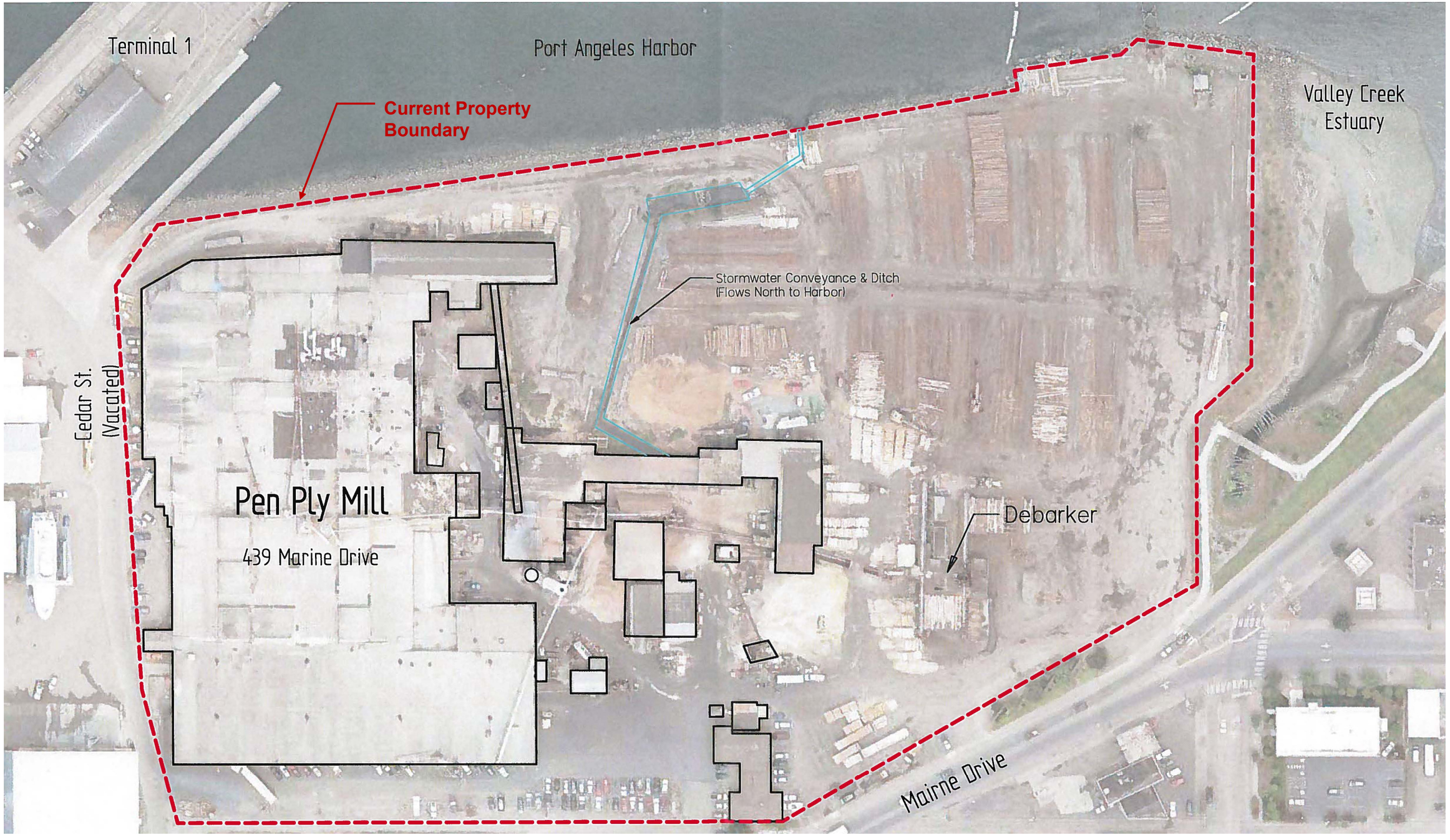
Interim Action Work Plan
K Ply Mill Site
Port Angeles, Washington

Figure 1.1
Vicinity Map

G:Project\Clients\Floyd Snider\PPA-OMW\Corel\Figure 1.1



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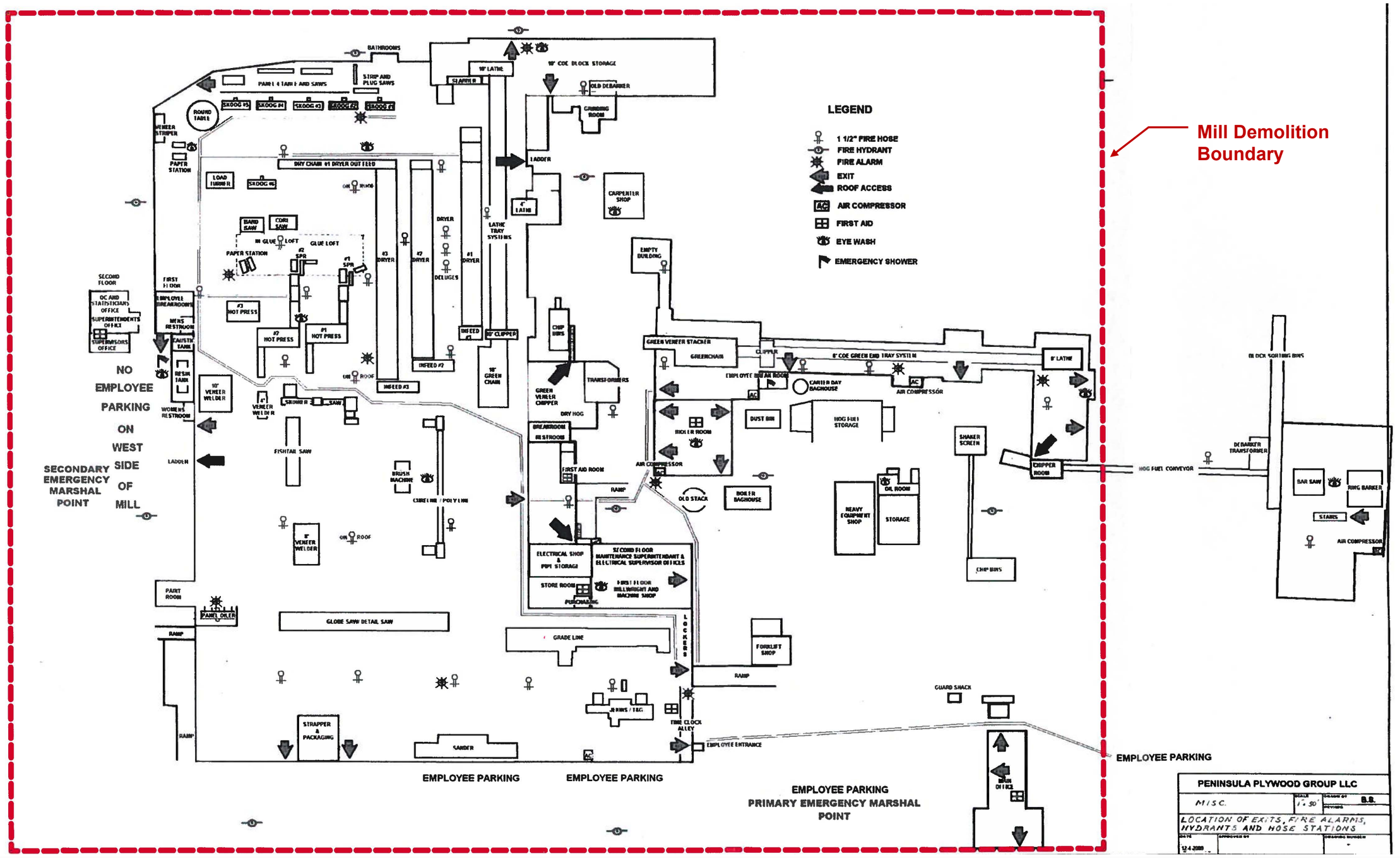
Interim Action Work Plan
K Ply Mill Site
Port Angeles, Washington

Figure 1.2
Property Boundary Map



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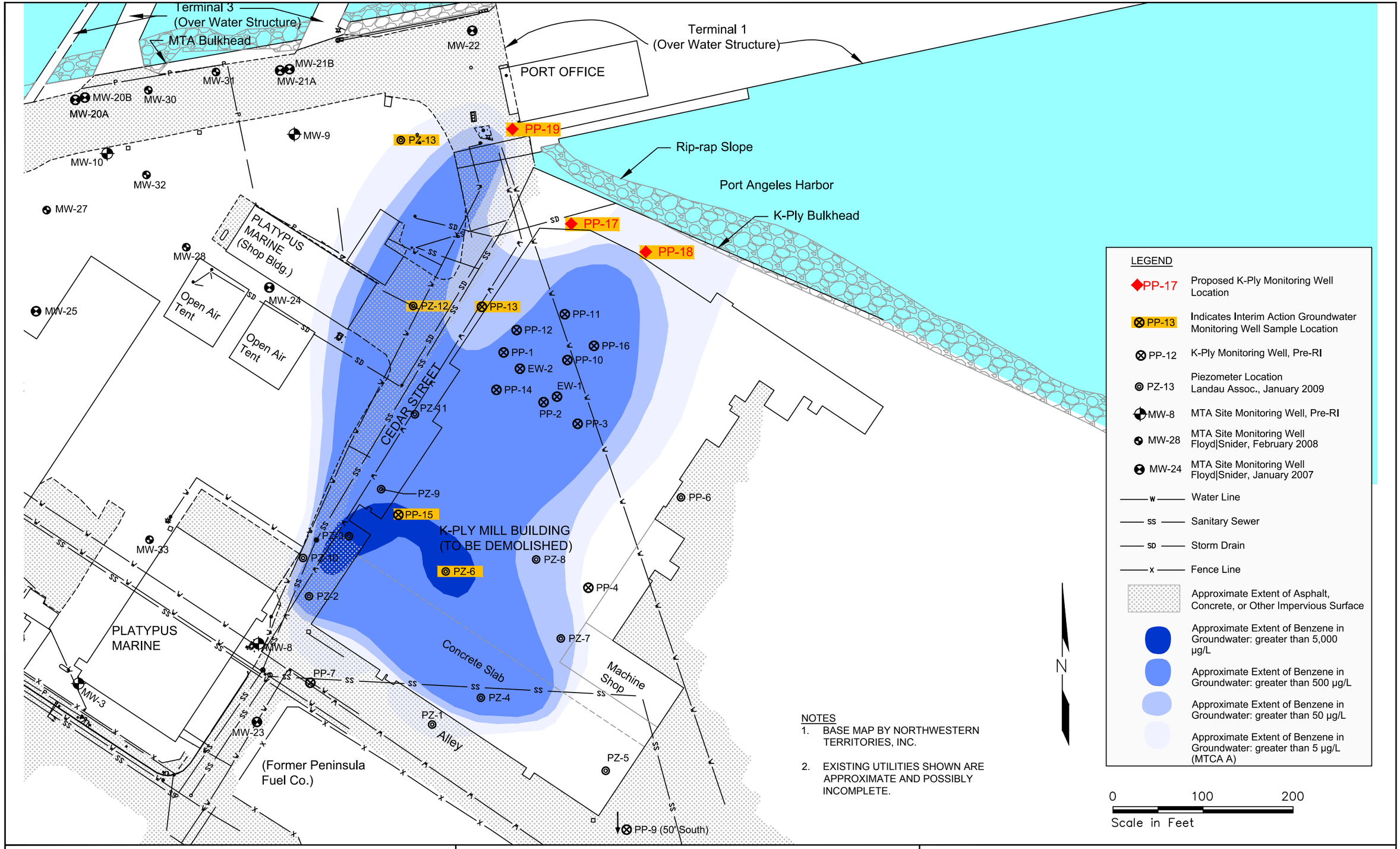
Interim Action Work Plan
K Ply Mill Site
Port Angeles, Washington

Figure 1.3
Former Pen Ply Mill Building Layout



NOTES

1. BASE MAP BY NORTHWESTERN TERRITORIES, INC.
2. EXISTING UTILITIES SHOWN ARE APPROXIMATE AND POSSIBLY INCOMPLETE.

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Interim Action Work Plan
K Ply Mill Site
Port Angeles, Washington

Figure 3.1
Proposed K Ply Interim Action Groundwater Monitoring Wells

DWG NAME: K:\Project\clients\Floyd and Snider\PPA-OMW\ppa0092rev2012-09.dwg
DATE: 9/20/2012 11:30 AM

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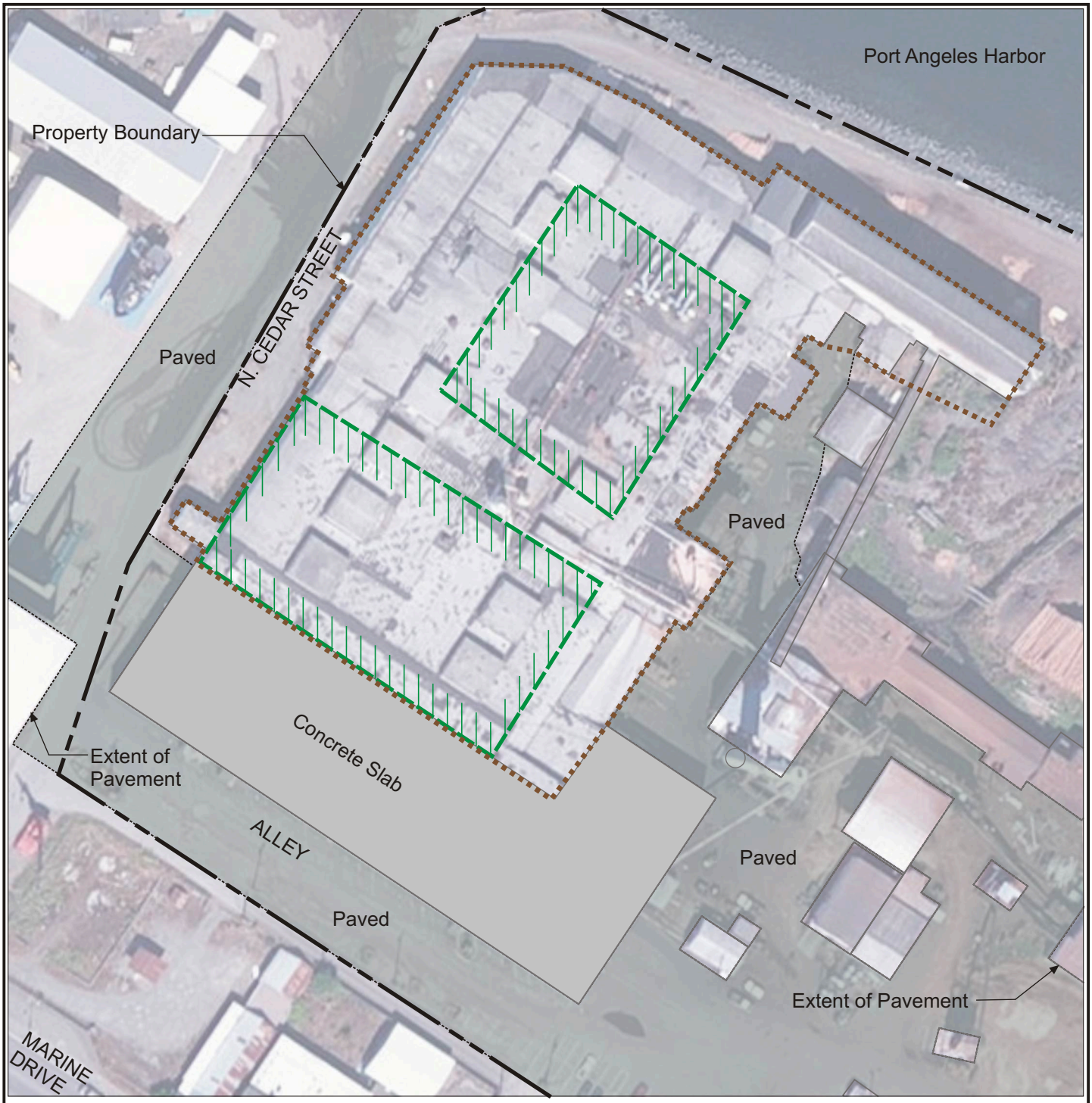
Interim Action Work Plan
K Ply Mill Site
Port Angeles, Washington

Figure 3.2
Areas of Potential Concern

G:Project\Clients\Floyd Snider\PPA-OMW\Corel\Figure 3.2



N

Exposed Soil Area[1]

TESC Plastic Sheeting Area

0 100 200

Approximate Scale in Feet

Note:

1. Soil sampling will occur under the entire mill footprint during the Site Assessment.

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Interim Action Work Plan
K Ply Mill Site
Port Angeles, Washington

Figure 3.3
Surface Sample and TESC Sheeting Areas

G:Project\Clients\Floyd Snider\PPA-OMW\Corel\Figure 3.3

K-Ply Mill Site

Interim Action Work Plan

Appendix A
PenPly Mill Demo Plans and Technical Specification

(Available on CD-ROM)

K-Ply Mill Site

Interim Action Work Plan

Appendix B
Marine Trades Area
Remedial Investigation/
Feasibility Study Figures

Appendix B
Marine Trades Area Remedial Investigation/Feasibility Study Figures

Table of Contents

LEGEND

- Approximate Extent of Maximum Detected TPH-G in Soil: greater than 5,000 mg/kg
- Approximate Extent of Maximum Detected TPH-G in Soil: greater than 500 mg/kg
- Approximate Extent of Maximum Detected TPH-G in Soil: greater than 30 mg/kg (MTCA A)
- PP-12 — K-Ply Monitoring Well, Pre-RI
- MW-4 — MTA Site Monitoring Well, Pre-RI
- MW-1 — Pettit Oil Monitoring Well, Pre-RI
- PZ-13 — Piezometer Location, Landau Assoc., January 2009
- B12 — Geoprobe Location, Landau Assoc., January 2009
- MW-29 — MTA Site Monitoring Well, Floyd|Snider, February 2008
- FS-5 — Geoprobe Location, Floyd|Snider, February 2008
- MW-24 — MTA Site Monitoring Well, Floyd|Snider, January 2007
- 210 — Geoprobe Location (approx.), Floyd|Snider, May-June 2006
- 114 — Geoprobe Location (approx.), Floyd|Snider, Nov.-Dec. 2005
- 69 — Geoprobe Location (approx.), Floyd|Snider, October 2005
- MW-8 — Pettit Oil Monitoring Well, SAIC, December 2004

Port Angeles Harbor

Terminal 3 (Over Water Structure)

MTA Bulkhead

Terminal 1 (Over Water Structure)

PORT OFFICE

Rip-rap Slope

Port Angeles Harbor

K-Ply Bulkhead

N

Log Storage (unpaved)

TUMWATER CREEK

PLATYPUS MARINE (Shop Bldg.)

Open Air Tent

Open Air Tent

WESTPORT MARINE FACILITY

CEDAR STREET

MARINE DRIVE

PETTIT OIL

PLATYPUS MARINE

(Former Peninsula Fuel Co.)

K-PLY MILL BUILDING

Concrete Slab

Machine Shop

Alley

0 100 200

Scale in Feet

NOTES

1. BASE MAP BY NORTHWESTERN TERRITORIES, INC.
2. EXTENT OF CONTAMINATION IS ESTIMATED BASED ON RESULTS SHOWN AND HISTORICAL DATA.

LEGEND

- P5 — 1995-1996 Soil Boring Location (Shannon & Wilson 1995, 1996)
- PS-25 — 1988 Soil Sample Location (Landau 1988)
- TP5 — Dec. 2002 Test Pit Location (FSM 2003)
- B1 — Nov. 2002 Soil Boring (FSM 2003)
- LAI-B1 — Geotechnical Soil Boring (approx.) Landau Assoc., 2003
- (2,300) — TPH-G Concentration (mg/kg)
- (2.6) — Benzene Concentration (mg/kg)
- * — Reported concentration is suspect due to chromatographic overlap from diesel-range hydrocarbon.
- ** — Tested with USEPA Method 418.1, hydrocarbon type not identified, but presumed to be diesel.

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Remedial Investigation/Feasibility Study
Marine Trades Area Site
Port Angeles, Washington

Figure 4.3
Historical and Current Areas of Elevated TPH-G and Benzene in Soil

DWG NAME: K:\Project\clients\Floyd and Snider\PPA-OMW\ppa0078rev2012-03.dwg
DATE: 4/3/2012 3:19 PM

LEGEND

- Approximate Extent of TPH-D greater than 10,000 mg/kg in Soil
- Approximate Extent of TPH-D greater than 2,000 mg/kg in Soil (MTCA A)
- PP-12 — K-Ply Monitoring Well, Pre-RI
- MW-4 — MTA Site Monitoring Well, Pre-RI
- MW-1 — Pettit Oil Monitoring Well, Pre-RI
- PZ-13 — Piezometer Location, Landau Assoc., January 2009
- B12 — Geoprobe Location, Landau Assoc., January 2009
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- FS-5 — Geoprobe Location, Floyd|Snider, February 2008
- MW-24 — MTA Site Monitoring Well, Floyd|Snider, January 2007
- 210 — Geoprobe Location (approx.), Floyd|Snider, May-June 2006
- 114 — Geoprobe Location (approx.), Floyd|Snider, Nov.-Dec. 2005
- 69 — Geoprobe Location (approx.), Floyd|Snider, October 2005
- MW-8 — Pettit Oil Monitoring Well, SAIC, December 2004

Port Angeles Harbor

Terminal 3 (Over Water Structure)

MTA Bulkhead

Terminal 1 (Over Water Structure)

PORT OFFICE

Rip-rap Slope

Port Angeles Harbor

K-Ply Bulkhead

N

Log Storage (unpaved)

TUMWATER CREEK

WESTPORT MARINE FACILITY

PLATYPUS MARINE (Shop Bldg.)

Open Air Tent

Open Air Tent

CEDAR STREET

MARINE DRIVE

PETTIT OIL

PLATYPUS MARINE

(Former Peninsula Fuel Co.)

K-PLY MILL BUILDING

Concrete Slab

Machine Shop

Alley

0 100 200

Scale in Feet

NOTES

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LEGEND

- P5 — 1995-1996 Soil Boring Location (Shannon & Wilson 1995, 1996)
- PS-25 — 1988 Soil Sample Location (Landau 1988)
- TP5 — Dec. 2002 Test Pit Location (FSM 2003)
- B1 — Nov. 2002 Soil Boring (FSM 2003)
- LAI-B1 — Geotechnical Soil Boring (approx.) Landau Assoc., 2003
- (11,800) — TPH-D Concentration (mg/kg)
- ND — Result was less than detection limit
- * — Reported concentration is suspect due to chromatographic overlap from diesel-range hydrocarbon.
- ** — Tested with USEPA Method 418.1, hydrocarbon type not identified, but presumed to be diesel.

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Remedial Investigation/Feasibility Study
Marine Trades Area Site
Port Angeles, Washington

Figure 4.4
Historical and Current Areas of Elevated TPH-D in Soil

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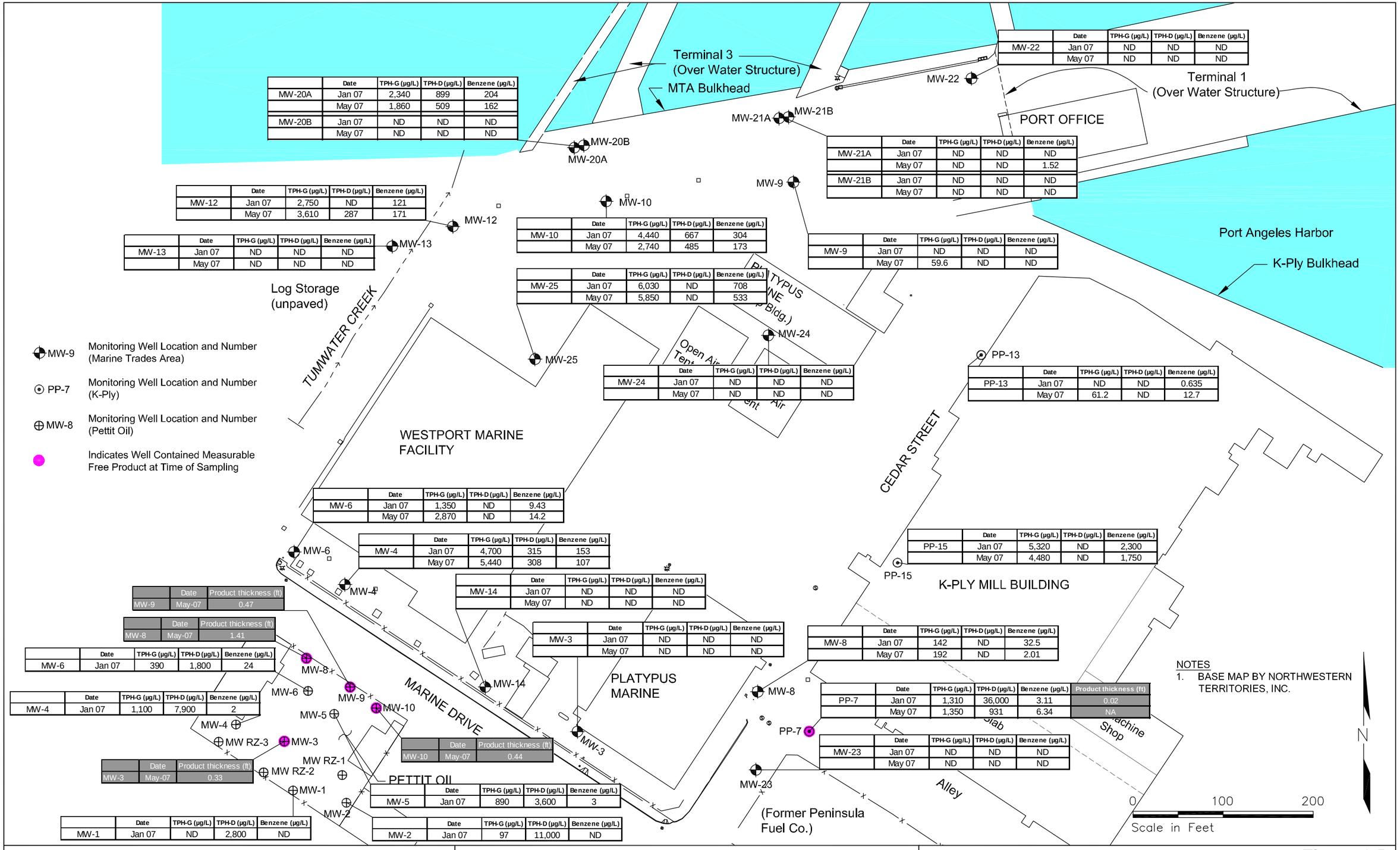

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-20A	Jan 07	2,340	899	204
	May 07	1,860	509	162
MW-20B	Jan 07	ND	ND	ND
	May 07	ND	ND	ND

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-22	Jan 07	ND	ND	ND
	May 07	ND	ND	ND

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-21A	Jan 07	ND	ND	ND
	May 07	ND	ND	1.52
MW-21B	Jan 07	ND	ND	ND
	May 07	ND	ND	ND

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-12	Jan 07	2,750	ND	121
	May 07	3,610	287	171

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-13	Jan 07	ND	ND	ND
	May 07	ND	ND	ND

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-10	Jan 07	4,440	667	304
	May 07	2,740	485	173

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-9	Jan 07	ND	ND	ND
	May 07	59.6	ND	ND

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-25	Jan 07	6,030	ND	708
	May 07	5,850	ND	533

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-24	Jan 07	ND	ND	ND
	May 07	ND	ND	ND

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
PP-13	Jan 07	ND	ND	0.635
	May 07	61.2	ND	12.7

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-6	Jan 07	1,350	ND	9.43
	May 07	2,870	ND	14.2

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-4	Jan 07	4,700	315	153
	May 07	5,440	308	107

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-14	Jan 07	ND	ND	ND
	May 07	ND	ND	ND

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-3	Jan 07	ND	ND	ND
	May 07	ND	ND	ND

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-8	Jan 07	142	ND	32.5
	May 07	192	ND	2.01

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
PP-15	Jan 07	5,320	ND	2,300
	May 07	4,480	ND	1,750

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-23	Jan 07	ND	ND	ND
	May 07	ND	ND	ND

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)	Product thickness (ft)
PP-7	Jan 07	1,310	36,000	3.11	0.02
	May 07	1,350	931	6.34	NA

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-5	Jan 07	890	3,600	3

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-2	Jan 07	97	11,000	ND

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-1	Jan 07	ND	2,800	ND

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-4	Jan 07	1,100	7,900	2

	Date	Product thickness (ft)
MW-9	May-07	0.47

	Date	Product thickness (ft)
MW-8	May-07	1.41

	Date	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)
MW-6	Jan 07	390	1,800	24

	Date	Product thickness (ft)
MW-10	May-07	0.44

	Date	Product thickness (ft)
MW-3	May-07	0.33

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Marine Trades Area Site
Port Angeles, Washington

Figure 4.5
Summary of 2007 Groundwater Analytical Results From Monitoring Wells

DWG NAME: G:\project\Clients\Floyd and Snider\PPA-OMW\ppa0080rev2010-08.dwg
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LEGEND

- Approximate Extent of Benzene in Groundwater: greater than 5,000 µg/L
- Approximate Extent of Benzene in Groundwater: greater than 500 µg/L
- Approximate Extent of Benzene in Groundwater: greater than 50 µg/L
- Approximate Extent of Benzene in Groundwater: greater than 5 µg/L (MTCA A)
- PP-12 — K-Ply Monitoring Well, Pre-RI
- MW-4 — MTA Site Monitoring Well, Pre-RI
- MW-1 — Pettit Oil Monitoring Well, Pre-RI
- PZ-13 — Piezometer Location Landau Assoc., January 2009
- B12 — Geoprobe Location Landau Assoc., January 2009
- MW-29 — MTA Site Monitoring Well Floyd|Snider, February 2008
- FS-5 — Geoprobe Location Floyd|Snider, February 2008
- MW-24 — MTA Site Monitoring Well Floyd|Snider, January 2007
- 210 — Geoprobe Location (approx.) Floyd|Snider, May-June 2006
- 114 — Geoprobe Location (approx.) Floyd|Snider, Nov.-Dec. 2005
- 69 — Geoprobe Location (approx.) Floyd|Snider, October 2005
- MW-8 — Pettit Oil Monitoring Well SAIC, December 2004
- (3,600) — Benzene in groundwater (µg/L)
- Indicates well contained measurable free product including gasoline at time of sampling

Results for MTA Site are from May 2007 and February 2008 Sampling events. Results for K-Ply Wells are from the most recent available data from 2002-2009 Sampling. Results for Pettit Oil wells are from the most recent available data from the February 2008 and February 2009 Sampling events.

NOTES

1. BASE MAP BY NORTHWESTERN TERRITORIES, INC.
2. EXTENT OF CONTAMINATION IS ESTIMATED BASED ON RESULTS SHOWN AND HISTORICAL DATA.

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Port Angeles, Washington

Figure 4.6
Benzene in Groundwater

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LEGEND

- Approximate Extent of TPH-G in Groundwater: greater than 50,000 µg/L
- Approximate Extent of TPH-G in Groundwater: greater than 5,000 µg/L
- Approximate Extent of TPH-G in Groundwater: greater than 800 µg/L (MTCA A)
- PP-12 K-Ply Monitoring Well, Pre-RI
- MW-4 MTA Site Monitoring Well, Pre-RI
- MW-1 Pettit Oil Monitoring Well, Pre-RI
- PZ-13 Piezometer Location Landau Assoc., January 2009
- B12 Geoprobe Location Landau Assoc., January 2009
- MW-29 MTA Site Monitoring Well Floyd|Snider, February 2008
- FS-5 Geoprobe Location Floyd|Snider, February 2008
- MW-24 MTA Site Monitoring Well Floyd|Snider, January 2007
- 210 Geoprobe Location (approx.) Floyd|Snider, May-June 2006
- 114 Geoprobe Location (approx.) Floyd|Snider, Nov.-Dec. 2005
- 69 Geoprobe Location (approx.) Floyd|Snider, October 2005
- MW-8 Pettit Oil Monitoring Well SAIC, December 2004
- (5,850) TPH-G in groundwater (µg/L)
- Indicates Well Contained Measurable Free Product including Gasoline at Time of Sampling

Results for MTA Site are from May 2007 and February 2008 Sampling events. Results for K-Ply Wells are from the most recent available data from 2002-2009 Sampling. Results for Pettit Oil wells are from the most recent available data from the February 2008 and February 2009 Sampling events.

NOTES
1. BASE MAP BY NORTHWESTERN TERRITORIES, INC.
2. EXTENT OF CONTAMINATION IS ESTIMATED BASED ON RESULTS SHOWN AND HISTORICAL DATA.

Port Angeles Harbor
Terminal 3 (Over Water Structure)
MTA Bulkhead
Terminal 1 (Over Water Structure)
PORT OFFICE
Rip-rap Slope
Port Angeles Harbor
K-Ply Bulkhead
Log Storage (unpaved)
TUMWATER CREEK
WESTPORT MARINE FACILITY
MARINE TRADES AREA PLUME
PLATYPUS MARINE (Shop Bldg.)
Open Air Tent
Open Air Tent
MARINE DRIVE
PETTIT OIL PLUME
PETTIT OIL
PLATYPUS MARINE
(Former Peninsula Fuel Co.)
K-PLY/CEDAR STREET PLUME
K-PLY MILL BUILDING
CEDAR STREET
Concrete Slab
Machine Shop
Alley
N
0 100 200
Scale in Feet

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Marine Trades Area Site
Port Angeles, Washington

Figure 4.7
TPH-G in Groundwater

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LEGEND

- Approximate Limit of TPH-D greater than 500 µg/L in Groundwater
- PP-12 — K-Ply Monitoring Well, Pre-RI
- MW-4 — MTA Site Monitoring Well, Pre-RI
- MW-1 — Pettit Oil Monitoring Well, Pre-RI
- PZ-13 — Piezometer Location Landau Assoc., January 2009
- B12 — Geoprobe Location Landau Assoc., January 2009
- MW-29 — MTA Site Monitoring Well Floyd|Snider, February 2008
- FS-5 — Geoprobe Location Floyd|Snider, February 2008
- MW-24 — MTA Site Monitoring Well Floyd|Snider, January 2007
- MW-8 — Pettit Oil Monitoring Well SAIC, December 2004
- (18,000) — May 2007 Monitoring Well Samples
- (250) — TPH-D in Groundwater from April 2009 K-PLY Monitoring Well Samples
- Indicates Well Contained Measurable Free Product, including Diesel (Pettit Oil, PP-7) or Hydraulic Oil (K-Ply) at Time of Sampling

Port Angeles Harbor
Terminal 3 (Over Water Structure)
MTA Bulkhead
MARINE TRADES AREA PLUME
Terminal 1 (Over Water Structure)
PORT OFFICE
Rip-rap Slope
Port Angeles Harbor
K-Ply Bulkhead
Log Storage (unpaved)
TUMWATER CREEK
WESTPORT MARINE FACILITY
PLATYPUS MARINE (Shop Bldg.)
Open Air Tent
Open Air Tent
CEDAR STREET
K-PLY/CEDAR STREET PLUME
K-PLY MILL BUILDING
Concrete Slab
Machine Shop
Alley
PETTIT OIL PLUME
PETTIT OIL
MARINE DRIVE
PLATYPUS MARINE
(Former Peninsula Fuel Co.)

MW-22 (ND); MW-21B (ND); MW-21A (ND); MW-31 (266); FS-3; MW-30 (356); MW-20B (ND); MW-20A (509); FS-2; FS-8; FS-1; (420) MW-29; FS-6; FS-7; FS-13; FS-14; MW-9 (ND); PZ-13; B27; FS-4; FS-5; MW-12 (287); MW-10 (485); FS-12; FS-29; FS-19; MW-13 (ND); FS-9; FS-10; FS-11; MW-32 (399); FS-18; FS-28; FS-17; MW-27 (ND); FS-15; FS-16; FS-21; FS-22; B26; FS-30; MW-26 (ND); FS-20; FS-26; MW-28 (ND); FS-27; FS-24; FS-25; MW-25 (ND); (ND) MW-24; PZ-12; PP-13 (ND); PP-11 (160,000); PP-12; PP-16 (300); PP-1; PP-10; EW-2; B25; PP-14; EW-1; PZ-11; PP-2; PP-3 (ND); B24; PZ-9; PP-15 (250); B23; PP-6; B14; B20; PZ-3; PZ-10; B15; PZ-8; PZ-6; PP-4; B13; PZ-2; B16; B21; B6; B7; PZ-7; MW-8 (ND); B17; B8; PP-7; B18; B22; B2; B9; PZ-4; B1; B3; B10; PZ-1; MW-23 (ND); B4; B5; PZ-5; B11; B19; B12; (ND) PP-9 (50' South); MW-6 (ND); MW-4 (308); MW-33 (313); MW-14 (ND); (ND) MW-3; (1,800) MW-6; MW-9; MW-10; (18,000); MW-8; MW-4; (6,200); MW-5; MW RZ-3; MW-3; MW RZ-1; MW RZ-2; MW-1 (6,200); MW-2 (20,000)

N

0 100 200
Scale in Feet

NOTES
1. BASE MAP BY NORTHWESTERN TERRITORIES, INC.

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Figure 4.8
TPH-D in Groundwater

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