STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
*PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000*
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March 30, 2015

Mr. Kip Summers
City of Olympia
222 Columbia Ave NE
Olympia, WA 98501

**Re: No Further Action at the following Site:**

- **Site Name:** Former Unocal Hulco Bulk Plant
- **Site Address:** 301 N Columbia, Olympia
- **Facility/Site No.:** 58484616
- **Cleanup Site ID No.:** 4808
- **VCP Project No.:** SW1146

Dear Mr. Summers:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the Former Unocal Hulco Bulk Plant facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

## Issue Presented and Opinion

Is further remedial action necessary to clean up contamination at the Site?

**NO. Ecology has determined that no further remedial action is necessary to clean up contamination at the Site.**

**This opinion is dependent on the continued performance and effectiveness of the post-cleanup controls and monitoring specified below.**

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

## Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following release:

- Petroleum hydrocarbons and related constituents into the Soil, Soil Vapor, and Groundwater.

**Enclosure A** includes a detailed description and diagram of the Site, as currently known to Ecology.

Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel(s) associated with this Site are affected by other sites.

## Basis for the Opinion

This opinion is based on the information contained in the following documents:

1. Remedial Investigation and Feasibility Study Report, Former Unocal Bulk Plant 0828 and Hulco Property, dated August 2012 by Anchor QEA, LLC (Anchor).

2. Upland Investigation Data Report, Percival Landing, dated August 2011 by Anchor.

3. Letter to Dr. Mark Brearley (Unocal Corporation) from Mr. Chuck Cline (Ecology), RE: No Further Action, dated October 10, 2003.

4. Final Cleanup Report, Supplemental Remedial Investigation, Former Unocal Bulk Plant 0828 and Hulco Property, 301 North Columbia Street and 206/216 Olympia Avenue West, Olympia, Washington, dated April 5, 2002 by GeoEngineers.

5. Results of Groundwater Sampling and Free Product Recovery, July and August 1998, Former Unocal Bulk Plant 0828 and Adjacent Former Hulco Property, 301/307 North Columbia Street and 206/216 Olympia Avenue Northwest, Olympia, Washington, dated October 7, 1998 by GeoEngineers.

6. Report of Environmental Services, Remedial Excavation Monitoring, Former Unocal Bulk Plant 0828 and Hulco Property, Olympia, Washington, dated December 19, 1995 by GeoEngineers.

7. Cleanup Action Plan, Unocal Olympia Bulk Plant and Hulco Property, Olympia, Washington, dated August 16, 1995 by GeoEngineers.

8. Risk Assessment, Development of Target Cleanup Levels, and Feasibility Study for Former Unocal Olympia Bulk Plant/Hulco Property, dated June 1995 by ICF Kaiser Engineers, Inc.

9. Report of Environmental Services, Subsurface Contamination Assessment and Ground Water Monitoring, Hulco Property and Unocal Bulk Plant 0828, Olympia, Washington, dated May 16, 1995 by GeoEngineers.

Those documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. You can make an appointment by calling the SWRO resource contact at (360) 407-6365.

This opinion is void if any of the information contained in those documents is materially false or misleading.

## Analysis of the Cleanup

Ecology has concluded that **no further remedial action** is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

### 1. Characterization of the Site.

Ecology has determined your characterization of the Site is sufficient to establish cleanup standards and select a cleanup action. The Site is described above and in **Enclosure A.**

The Site comprises Thurston County Tax Parcel Nos. 78507100200 (former Unocal property) and 78507100100 (former Hulco property), which are both currently owned by the City of Olympia (City). In addition, a portion of the Site along the shoreline is owned by the State of Washington and managed by the Department of Natural Resources. The Unocal Bulk Plant operated on the Site from about 1910 to 1993. The Hulco property was a bulk fuel storage facility operated by different companies, including Shell Oil Company (Shell) and Atlantic Richfield Company (ARCO). The Shell/ARCO bulk plant operated from about 1924 to about 1980. The Site is currently occupied by a portion of the recently redeveloped Percival Landing Park (park) *(see attached Figure 2)*.

Early characterization activities were conducted at the Site between 1988 and 1995. Contamination above MTCA cleanup levels was identified in both soil and groundwater. Contaminants were predominantly gasoline-, diesel-, and oil-range petroleum hydrocarbons (TPH-G, TPH-D, and TPH-O, respectively), and benzene. Free product was also present in some wells. In addition, halogenated volatile organic compounds (HVOCs) such as vinyl chloride, tetrachloroethylene (PCE), and trichloroethylene (TCE) were reportedly present in groundwater on the southern portion of the Site in 1995.

In 1995, a sizable cleanup was conducted on both parcels when the bulk plants ceased operations. Additional soil was removed in 2001. Please see Section 4 (Cleanup) for further details on this cleanup action. Following the cleanup, on October 20, 2003, Ecology issued a No Further Action (NFA) letter for the Site. However, the NFA stated that contaminated soils remained in the west wall of the excavated portion of the Site below the boardwalk, and in the northwest section adjacent a retaining wall *(see attached Figure 3)*. These soils were left in place due to concerns over compromising the

structural integrity of the boardwalk and retaining wall. Reportedly, soil contamination was also left in place along the common boundary of the former Unocal and Hulco properties in the center of the Site, and along the southern boundary of the properties. Five monitoring well locations (MW-12 through MW-15, and B-7) located along the western boundary of the Site, adjacent to the boardwalk, were used to demonstrate compliance for groundwater, which was reportedly achieved for all contaminants of concern (COCs) sometime in 2002.

In September 2010, during shoreline excavation as part of park redevelopment, petroleum contamination was identified that resulted in a visible sheen on the waterway. This release occurred when the contractor encountered and removed a timber cribwall that was buried in the shoreline embankment. The release was reported to Ecology and was assigned Environmental Report Tracking System (ERTS) #622261. The Ecology Spills Team responded and contained the release to the waterway.

Following the incident, the City initiated an upland investigation to determine the source of the petroleum contamination. Between September and December 2010, numerous soil samples were collected by Anchor at multiple depths from 30 soil borings and nine test pits in the upland area *(see attached Figure 4)*. Analytical results identified concentrations of TPH-G, TPH-D, TPH-O, benzene, and ethyl benzene in soil above MTCA Method A cleanup levels *(see attached Tables 2a and 2b)*. The contamination was primarily located on the properties adjacent to the shoreline. One of the areas identified included the former Unocal and Hulco properties. Another area of contamination was identified south of Olympia Avenue. However, based on data collected to date, this source area appears to be different and separate from the Unocal/Hulco area, and is being addressed as a separate site (Olympia City Sewer Pump Station – F/S ID No. 31651436).

As a follow up to this investigation, Anchor advanced an additional seven soil borings (BH-33 through BH-39) and excavated two test pits (TP-10 and TP-11) on the Site in June 2011. Soil samples were collected from each location at multiple depths, and groundwater samples were collected from four of the borings (BH-33, BH-34, BH-37, and BH-38) from a temporary wellpoint screen interval of about 6 to 11 feet below ground surface (bgs). Two soil vapor samples were also collected from borings BH-36 and BH-39 *(sample locations and analyses are shown in Figure 4 and Table 1, respectively)*.

Analytical results indicated the presence of TPH-G in one soil sample, TPH-D/TPH-O in one groundwater sample, and benzene, xylene, and air-phase hydrocarbons (APHs) in one or more soil vapor samples above MTCA cleanup levels or screening criteria *(see attached Tables 2a, 2b, 3b, and 4)*. No structures that could potentially be impacted by vapor intrusion are located within 100 feet of the benzene exceedance in soil vapor. This includes the Harbor House that was constructed as part of park redevelopment. Regardless, as a precaution, the Harbor House was constructed with a vapor barrier.

**2. Establishment of cleanup standards.**

Ecology has determined the cleanup levels and points of compliance you established for the Site meet the substantive requirements of MTCA.

A Method B soil cleanup level for TPH for protection of the direct contact pathway was calculated by Anchor for the Site. A soil sample collected from boring BH-36 was analyzed for volatile and extractable petroleum hydrocarbons (VPH/EPH) and the results run through Ecology's MTCATPH11.1 Worksheets. The calculation resulted in a direct contact cleanup level of 2,724 milligrams per kilogram (mg/kg). The calculation also indicated that 100% non-aqueous phase liquid in the soil would not cause an exceedance in groundwater. Additional soil cleanup levels were derived by Anchor for protection of surface water due to the Site's proximity to Budd Inlet. However, no comparison of these levels was made with cleanup levels that would be appropriate for protection of the direct contact pathway to determine which would be more stringent. Regardless, Method A cleanup levels would be considered the most stringent, and none of the COCs detected in soil at the Site, aside from TPH-G (which meets the Method B cleanup level), exceed Method A cleanup levels.

Also due to the location of the Site adjacent to surface water, groundwater beneath the Site is not considered suitable as a potable source of drinking water. Therefore, groundwater to surface water migration would be considered the primary exposure pathway, and groundwater cleanup levels protective of surface water were established. Since no surface water criteria exists for TPH, Method A cleanup levels were used for comparison.

Soil vapor data was compared against Method B Soil Gas Screening Levels as defined in Ecology's draft Guidance for Evaluating Soil Vapor Intrusion.

Standard points of compliance were used for the Site. The point of compliance for protection of groundwater was established in the soils throughout the Site. For soil cleanup levels based on human exposure via direct contact or other exposure pathways where contact with the soil is required to complete the pathway, the point of compliance was established in the soils throughout the Site from the ground surface to 15 feet bgs. In addition, the point of compliance for the groundwater was established throughout the Site from the uppermost level of the saturated zone extending vertically to the lowest most depth that could potentially be affected by the Site. Lastly, the point of compliance for the soil-to-vapor pathway was established in the ambient air throughout the Site.

**3. Selection of cleanup action.**

Ecology has determined the cleanup action you selected for the Site meets the substantive requirements of MTCA.

Cleanup activities conducted at the Site to date have included source removal, excavation and off-Site disposal of petroleum-contaminated soil, and natural attenuation. The use of

engineered and institutional controls was selected to address any remaining residual impacts at the Site.

**4. Cleanup.**

Ecology has determined the cleanup you performed meets the cleanup standards established for the Site. This determination is dependent on the continued performance and effectiveness of the post-cleanup controls and monitoring specified below.

Cleanup actions conducted to date have included the following:

- In 1995, a substantial cleanup was conducted at the Site. An estimated 9,438 tons of petroleum-contaminated soil were excavated and disposed of at the Kitsap County Sanitary Landfill. About 55% of this soil originated from the Hulco property and 45% from the Unocal property. Also, about 60,000 gallons of treated wastewater was discharged to nearby catchbasins per Ecology guidance. Confirmation soil samples collected from the base and sidewalls of the excavation indicated the presence of residual contamination in some areas *(see attached Figure 3)*.

- In 2001, an additional 890 tons of petroleum-contaminated soil was excavated from the Site and disposed of at Olympic View Landfill. Also, about 63,000 gallons of water from dewatering activities was discharged to the sanitary sewer per LOTT approval. Confirmation soil samples collected from the limits of the excavation identified residual contamination adjacent to the boardwalk and a retaining wall *(see attached Figure 3)*.

- Between September 2010 and July 2011, during park redevelopment activities, about 11,000 tons of contaminated soil was removed from the shoreline, cove, and playground areas and disposal off Site at the Weyerhaeuser landfill in Castle Rock, Washington. A total of 16 confirmation samples (CS-11 through CS-15, and CS-20 through CS-30) were collected throughout the excavated areas and analyzed for the Site COCs *(see attached Figure 4)*. Only two of the confirmation samples (CS-28 and CS-29) contained concentrations of COCs above MTCA cleanup levels; however, these areas were overexcavated and resampled (CS-30). Analytical results are presented in Tables 2a and 2b.

- The City had originally proposed to install sheet piling along a portion of the shoreline following the completion of in-water activities. However, since contamination was identified, the City altered their plans and installed sheet piling along the entire shoreline following the excavation of contaminated material *(the sheet pile wall is illustrated on Figure 8)*. This was done to provide a more substantial barrier to prevent upland contamination from further migrating to the waterway. Deep sheet pile walls (60 feet in length) were installed along the entire length of the Site (except the cove area) to about -43 feet mean lower low water (MLLW), and short sheet pile walls (15 to 20 feet in length) were installed in the

cove area to approximately 0 feet MLLW for bank stabilization. Analytical results of confirmation samples collected from in-water areas indicated that contamination was successfully removed from areas adjacent to the Site. However, according to Anchor, soil upland of the sheet pile wall in the vicinity of boring BH-11 may contain some residual petroleum contamination. A confirmation sample was not collected from the land side of the sheet pile wall when BH-11 was excavated. This area is currently capped by the concrete boardwalk.

In summary, residual contamination remaining at the Site includes a presumed small volume of petroleum contamination on the land side of the sheet pile wall in the vicinity of boring BH-11, and a combined TPH-D/TPH-O concentration of 811 micrograms per liter (µg/L) in a grab groundwater sample collected from boring BH-38, which exceeds the MTCA Method A cleanup level of 500 µg/L *(see attached Tables 1, 2a, 2b and 3b)*. In soil vapor, benzene concentrations of 93 micrograms per cubic meter (µg/m$^3$) and 11 µg/m$^3$ were present in borings BH-36 and BH-39, respectively, which exceed the soil gas screening level of 3.2 µg/m$^3$. In addition, APHs and m,p-xylene were also present in soil vapor in BH-36 at concentrations of 6,480 µg/m$^3$ (C8-C12 Aliphatic range), 2,800 µg/m$^3$ (C8-C10 Aromatic range), and 1,300 µg/m$^3$, which exceed their respective soil gas screening levels of 1,400 µg/m$^3$, 1,800 µg/m$^3$, and 460 µg/m$^3$ *(see attached Table 4)*.

As previously stated, the area of potential residual soil contamination is behind the sheet pile wall and is capped by the concrete boardwalk, and the soil vapor exceedance is not within 100 feet of any structure that could be impacted by vapor intrusion. The groundwater exceedance is less than twice the cleanup level and, based on existing data, appears to be localized. Due to the presence of the sheet pile wall, there is little to no movement of shallow groundwater beneath the Site. As such, it is not likely this localized exceedance would result in a release to surface water prior to natural attenuation to below cleanup levels occurring. Further, groundwater beneath the Site is not considered a potable source of drinking water.

Institutional Controls were implemented at the Site, and an Environmental Covenant was filed with Thurston County on October 1, 2014. With these controls in place, **the Site is considered to have achieved cleanup standards for all media, and no further action is warranted, with the exception of the Post-Cleanup Controls and Monitoring requirements noted below.**

## Post-Cleanup Controls and Monitoring

Post-cleanup controls and monitoring are remedial actions performed after the cleanup to maintain compliance with cleanup standards. This opinion is dependent on the continued performance and effectiveness of the following:

1. **Compliance with institutional controls.**

Institutional controls prohibit or limit activities that may interfere with the integrity of engineered controls or result in exposure to hazardous substances. The following institutional controls are necessary at the Site:

- Restrictions on groundwater use.
- Land use restrictions, such as modifying existing surface without prior approval from Ecology.
- Future buildings shall provide vapor intrusion protection.

To implement those controls, an Environmental Covenant has been recorded on the following parcels of real property in Thurston County:

- 78507100100.
- 78507100200.

Ecology approved the recorded Covenant. A copy of the Covenant is included in **Enclosure B.**

2. **Operation and maintenance of engineered controls.**

Engineered controls prevent or limit movement of, or exposure to, hazardous substances. The following engineered controls are necessary at the Site:

- Sheet piling along shoreline.
- Soil and concrete boardwalk cap.

**The City is responsible for ensuring the integrity of these controls over the long term.** As part of future Periodic Reviews (see below), Ecology may inspect these areas and require the City to conduct any needed maintenance to ensure protection to human health and the environment.

## Periodic Review of Post-Cleanup Conditions

Ecology will conduct periodic reviews of post-cleanup conditions at the Site to ensure that they remain protective of human health and the environment. If Ecology determines, based on a periodic review, that further remedial action is necessary at the Site, then Ecology will withdraw this opinion

## Listing of the Site

Based on this opinion, Ecology will initiate the process of removing the Site from our lists of hazardous waste sites, including:

- Hazardous Sites List.
- Confirmed and Suspected Contaminated Sites List.

That process includes public notice and opportunity to comment. Based on the comments received, Ecology will either remove the Site from the applicable lists or withdraw this opinion.

## Limitations of the Opinion

**1. Opinion does not settle liability with the state.**

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

**2. Opinion does not constitute a determination of substantial equivalence.**

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

**3. State is immune from liability.**

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70.105D.030(1)(i).

## Termination of Agreement

Thank you for cleaning up the Site under the Voluntary Cleanup Program (VCP). This opinion terminates the VCP Agreement governing this project (#SW1146).

For more information about the VCP and the cleanup process, please visit our web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion or the termination of the Agreement, please contact me at (360) 407-6347 or scott.rose@ecy.wa.gov.

Sincerely,

Scott Rose, L.G.
VCP Unit Manager
SWRO Toxics Cleanup Program

SIR: ANF

Enclosures (2): A – Description and Diagrams of the Site
B – Environmental Covenants for Institutional Controls

cc: Mike Riley
Rolin Christopherson
Gerald Tousley, Thurston County Health Department
Carol Johnston, Ecology
Dolores Mitchell, Ecology

By Certified Mail: 7011 3500 0003 5817 9466

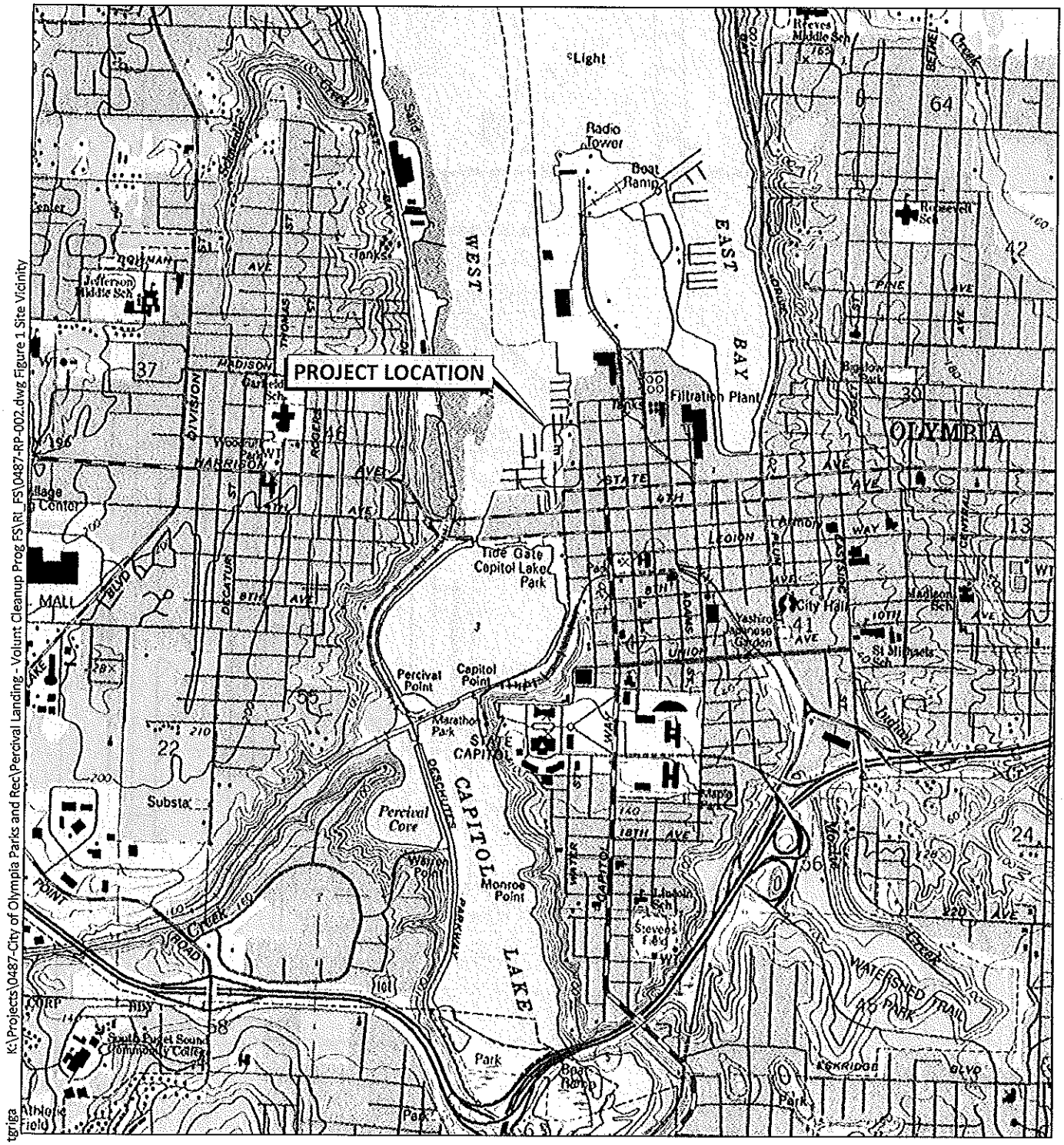
# Site Description

The former Unocal/Hulk Bulk Plant Site is located at 301 N Columbia Street in Olympia, Washington. The Site is bounded to the west by Budd Inlet, to the south by Olympia Avenue NW, to the east by N Columbia Street, and to the north by paved parking. The Site comprises Thurston County Tax Parcel Nos. 78507100200 (former Unocal property) and 78507100100 (former Hulco property), which are both currently owned by the City of Olympia (City). In addition, a portion of the Site along the shoreline is owned by the State of Washington and managed by the Department of Natural Resources. The Unocal Bulk Plant operated on the Site from about 1910 to 1993. The Hulco property was a bulk fuel storage facility operated by different companies, including Shell Oil Company (Shell) and Atlantic Richfield Company (ARCO). The Shell/ARCO bulk plant operated from about 1924 to about 1980. The Site is currently occupied by a portion of Percival Landing Park (park).

Soils encountered beneath the Site included well-graded fill, with occasional brick and concrete rubble, to about 6 feet below ground surface (bgs). Below the fill, soils were poorly graded fine sand with some shells. Depth to groundwater beneath the Site ranges from about 6 to 9 feet bgs and fluctuates seasonally and with the tides. Groundwater generally flows west towards Budd Inlet; however, some short-term reversal of gradient caused by tidal action has been historically observed in close proximity to Budd Inlet. Under current Site conditions, the sheet pile wall has caused a fairly flat gradient and lateral groundwater flow is minimal.

# Enclosure A

# Description and Diagrams of the Site

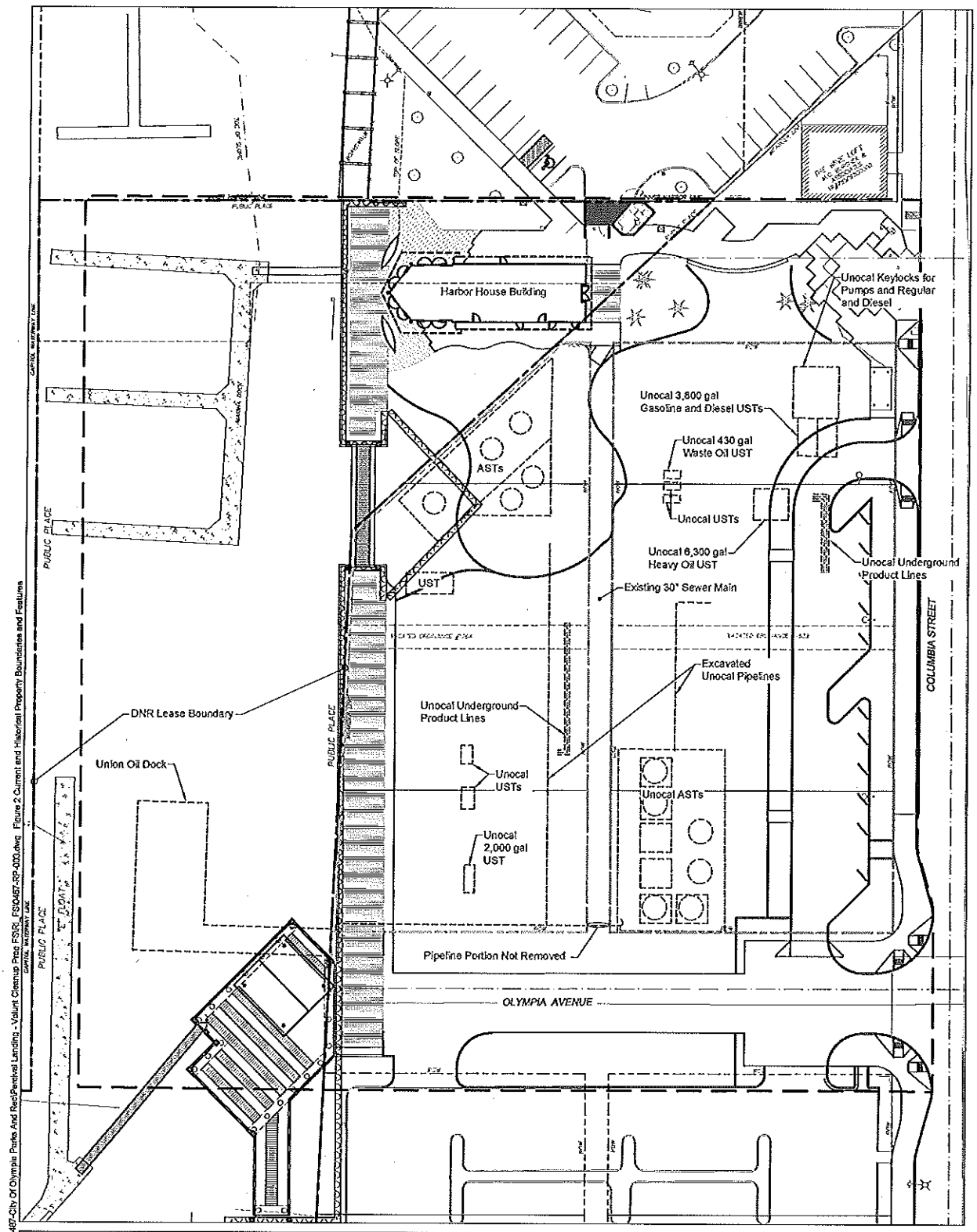



SOURCE: Base map prepared from Terrain Navigator Pro
USGS 7.5 minute quadrangle map(s) of Tumwater, WA.

K:\Projects\0487-City of Olympia Parks and Rec\Percival Landing - Volunt Cleanup Prog FS\RI_FS\0487-RP-002.dwg Figure 1 Site Vicinity
Apr 09, 2012 3:07pm tgriga

ANCHOR QEA

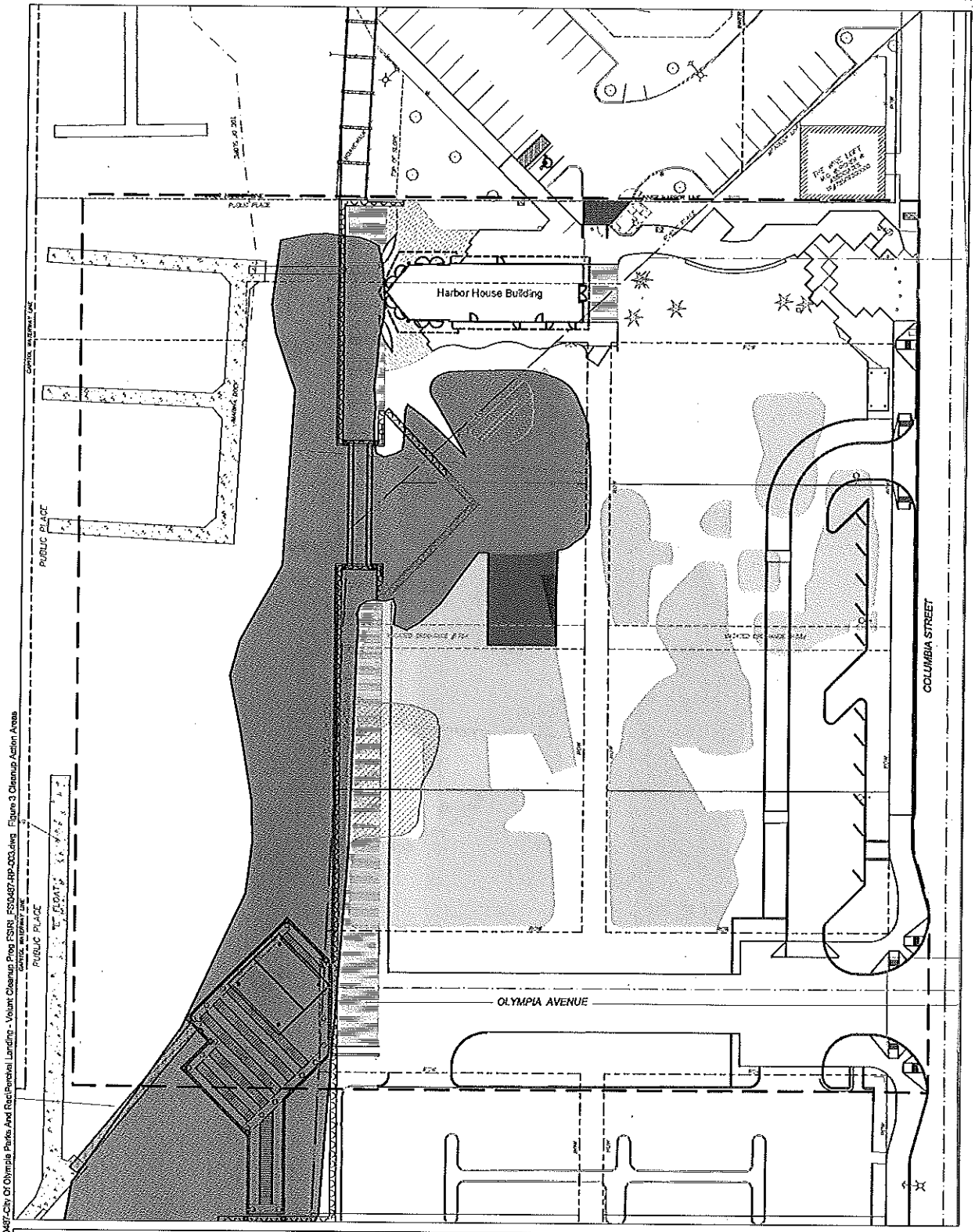
**Figure 1**
Site Vicinity
Remedial Investigation / Feasibility Study
Former Unocal Bulk Plant 0828 and Hulco Property




Aug 29, 2012 3:40pm lmiga K:\Projects\0487-City Of Olympia Parks And Rec\Percival Landing - Vallant Cleanup Proj FS\01_FS\0487-RP-003.dwg Figure 2 Current and Historical Property Boundaries and Features

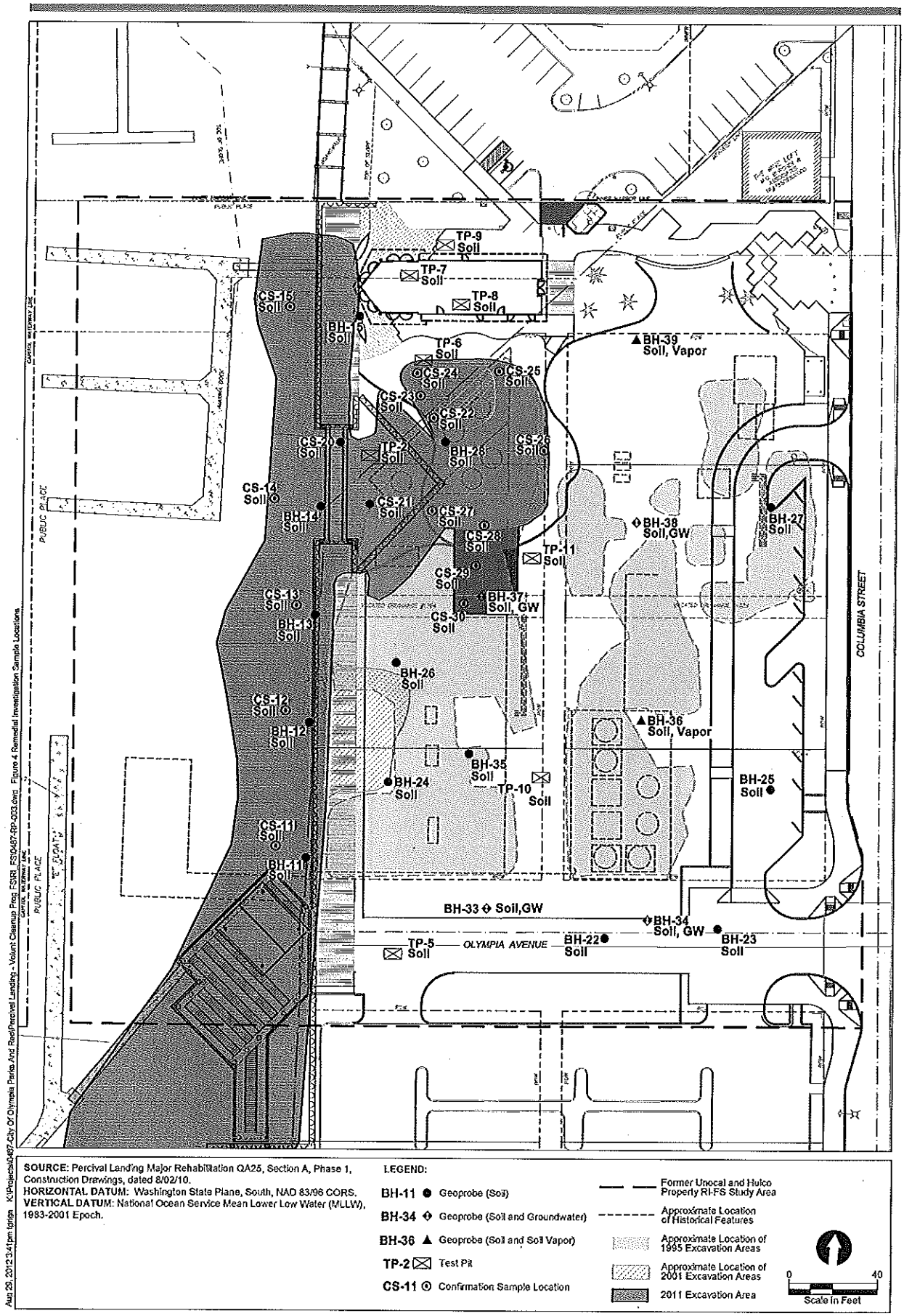
ANCHOR QEA

**Figure 2**
Current and Historical Property Boundaries and Features
Remedial Investigation / Feasibility Study
Former Unocal Bulk Plant 0828 and Hulco Property




ANCHOR QEA

**Figure 3**
Cleanup Action Areas
Remedial Investigation / Feasibility Study
Former Unocal Bulk Plant 0828 and Hulco Property




SOURCE: Percival Landing Major Rehabilitation QA25, Section A, Phase 1, Construction Drawings, dated 8/02/10.
HORIZONTAL DATUM: Washington State Plane, South, NAD 83/96 CORS.
VERTICAL DATUM: National Ocean Service Mean Lower Low Water (MLLW), 1983-2001 Epoch.

LEGEND:

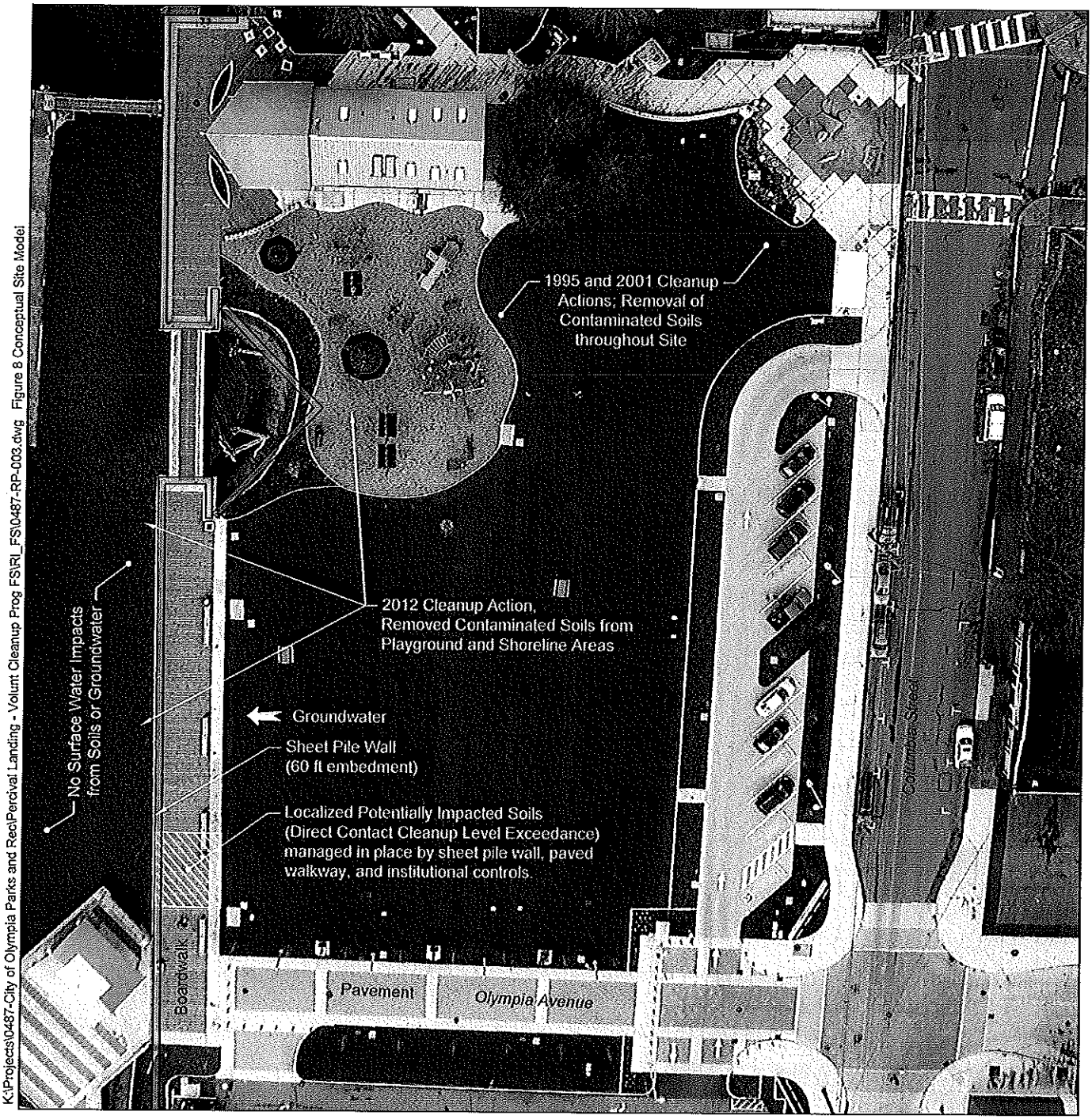
- BH-11 ● Geoprobe (Soil)
- BH-34 ◆ Geoprobe (Soil and Groundwater)
- BH-36 ▲ Geoprobe (Soil and Soil Vapor)
- TP-2 ☒ Test Pit
- CS-11 ⊙ Confirmation Sample Location
- Former Unocal and Hulco Property RI-FS Study Area
- Approximate Location of Historical Features
- Approximate Location of 1995 Excavation Areas
- Approximate Location of 2001 Excavation Areas
- 2011 Excavation Area

0 40
Scale in Feet

Aug 29, 2012 3:41pm tgriga K:\Projects\0487-City Of Olympia Parks And Rec\Percival Landing - Volunt Cleanup Prog FS\RI_FS\0487-RP-003.dwg Figure 4 Remedial Investigation Sample Locations

ANCHOR QEA

**Figure 4**
Remedial Investigation Sample Locations
Remedial Investigation / Feasibility Study
Former Unocal Bulk Plant 0828 and Hulco Property




K:\Projects\0487-City of Olympia Parks and Rec\Percival Landing - Volunt Cleanup Prog FS\RI_FS\0487-RP-003.dwg Figure 8 Conceptual Site Model

Aug 29, 2012 3:41pm tgriga

**AERIAL:** Aerial Images NW, March 2012
**NOT TO SCALE**

**LEGEND:**

Approximate Sheet Pile Wall Location

ANCHOR QEA

**Figure 8**
Conceptual Site Model
Remedial Investigation / Feasibility Study
Former Unocal Bulk Plant 0828 and Hulco Property

Table 1
Summary of RI Sample Collection and Testing

| Station ID | Sample ID | Sample Date | Start Depth (ft) bgs | End Depth (ft) bgs | Tier 1 Testing | Tier 2 Testing | Excavated Post-Sampling[3] |
|---|---|---|---|---|---|---|---|
| BH-11 | BH-11-0-5 | 9/27/2010 | 0 | 5 | TPH-HCID | -- | Yes |
| | BH-11-5-10 | 9/27/2010 | 5 | 10 | TPH-HCID | TPH-G, TPH-Dx, VOCs, total Metals, PAHs | Partially |
| | BH-11-10-15 | 9/27/2010 | 10 | 15 | TPH-HCID | -- | No |
| | BH-11-15-20 | 9/27/2010 | 15 | 20 | TPH-HCID | -- | No |
| BH-12 | BH-12-0-5 | 9/28/2010 | 0 | 5 | TPH-HCID | -- | Yes |
| | BH-12-5-10 | 9/28/2010 | 5 | 10 | TPH-HCID | -- | Partially |
| | BH-12-10-15 | 9/28/2010 | 10 | 15 | TPH-HCID | -- | No |
| | BH-12-15-20 | 9/28/2010 | 15 | 20 | TPH-HCID | -- | No |
| BH-13 | BH-13-0-5 | 9/28/2010 | 0 | 5 | TPH-HCID | TPH-G, TPH-Dx | Yes |
| | BH-13-5-10 | 9/28/2010 | 5 | 10 | TPH-HCID | TPH-G, TPH-Dx, VOCs, total Lead | Partially |
| | BH-13-10-15 | 9/28/2010 | 10 | 15 | TPH-HCID | -- | No |
| | BH-13-15-20 | 9/28/2010 | 15 | 20 | TPH-HCID | -- | No |
| BH-14 | BH-14-0-5 | 9/28/2010 | 0 | 5 | TPH-HCID | -- | Yes |
| | BH-14-5-10 | 9/28/2010 | 5 | 10 | TPH-HCID | -- | Partially |
| | BH-14-10-15 | 9/28/2010 | 10 | 15 | TPH-HCID | -- | No |
| | BH-14-15-20 | 9/28/2010 | 15 | 20 | TPH-HCID | -- | No |
| BH-15 | BH-15-0-5 | 9/28/2010 | 0 | 5 | TPH-HCID | -- | Yes |
| | BH-15-5-10 | 9/28/2010 | 5 | 10 | TPH-HCID | -- | Partially |
| | BH-15-10-15 | 9/28/2010 | 10 | 15 | TPH-HCID | -- | No |
| | BH-15-15-20 | 9/28/2010 | 15 | 20 | TPH-HCID | -- | No |
| BH-22 | BH-22-0-5 | 11/8/2010 | 0 | 5 | TPH-HCID | TPH-Dx | No |
| | BH-22-5-10 | 11/8/2010 | 5 | 10 | TPH-HCID | TPH-Dx | No |
| | BH-22-10-15 | 11/8/2010 | 10 | 15 | TPH-HCID | -- | No |
| | BH-22-15-20 | 11/8/2010 | 15 | 20 | TPH-HCID | -- | No |
| BH-23 | BH-23-0-5 | 11/8/2010 | 0 | 5 | TPH-HCID | -- | No |
| | BH-23-5-10 | 11/8/2010 | 5 | 10 | TPH-HCID | -- | No |
| | BH-23-10-15 | 11/8/2010 | 10 | 15 | TPH-HCID | -- | No |
| | BH-23-15-20 | 11/8/2010 | 15 | 20 | TPH-HCID | -- | No |
| BH-24 | BH-24-0-5 | 11/9/2010 | 0 | 5 | TPH-HCID | -- | No |
| | BH-24-5-10 | 11/9/2010 | 5 | 10 | TPH-HCID | -- | No |
| | BH-24-10-15 | 11/9/2010 | 10 | 15 | TPH-HCID | TPH-G, TPH-Dx, VOCs, total Lead | No |
| | BH-24-15-20 | 11/9/2010 | 15 | 20 | TPH-HCID | -- | No |
| BH-25 | BH-25-0-5 | 11/9/2010 | 0 | 5 | TPH-HCID | -- | No |
| | BH-25-5-10 | 11/9/2010 | 5 | 10 | TPH-HCID | -- | No |
| | BH-25-10-15 | 11/9/2010 | 10 | 15 | TPH-HCID | -- | No |
| | BH-25-15-20 | 11/9/2010 | 15 | 20 | TPH-HCID | -- | No |
| BH-26 | BH-26-0-5 | 11/9/2010 | 0 | 5 | TPH-HCID | -- | No |
| | BH-26-5-10 | 11/9/2010 | 5 | 10 | TPH-HCID | -- | No |
| | BH-26-10-15 | 11/9/2010 | 10 | 15 | TPH-HCID | -- | No |
| | BH-26-15-20 | 11/9/2010 | 15 | 20 | TPH-HCID | -- | No |
| BH-27 | BH-27-0-5 | 11/9/2010 | 0 | 5 | TPH-HCID | -- | No |
| | BH-27-5-10 | 11/9/2010 | 5 | 10 | TPH-HCID | -- | No |
| | BH-27-10-15 | 11/9/2010 | 10 | 15 | TPH-HCID | -- | No |
| | BH-27-15-20 | 11/9/2010 | 15 | 20 | TPH-HCID | -- | No |
| BH-28 | BH-28-0-5 | 11/9/2010 | 0 | 5 | TPH-HCID | -- | Yes |
| | BH-28-5-10 | 11/9/2010 | 5 | 10 | TPH-HCID | TPH-G, TPH-Dx, VOCs, total Lead | Yes |
| | BH-28-10-15 | 11/9/2010 | 10 | 15 | TPH-HCID | -- | Yes |
| | BH-28-15-20 | 11/9/2010 | 15 | 20 | TPH-HCID | -- | No |
| BH-33 | BH-33-GW | 6/17/2011 | 6 | 11 | GW Tests[1] | -- | No |
| | BH-33-SO-0-5 | 6/17/2011 | 0 | 5 | TPH-HCID | -- | No |
| | BH-33-SO-5-10 | 6/17/2011 | 5 | 10 | TPH-HCID | -- | No |
| | BH-33-SO-10-15 | 6/17/2011 | 10 | 15 | TPH-HCID | -- | No |
| | BH-33-SO-15-20 | 6/17/2011 | 15 | 20 | TPH-HCID | -- | No |
| BH-34 | BH-34-GW | 6/17/2011 | 5 | 10 | GW Tests[1] | -- | No |
| | BH-34-SO-0-5 | 6/17/2011 | 0 | 5 | TPH-HCID | -- | No |
| | BH-34-SO-5-10 | 6/17/2011 | 5 | 10 | TPH-HCID | -- | No |
| | BH-34-SO-10-15 | 6/17/2011 | 10 | 15 | TPH-HCID | -- | No |
| | BH-34-SO-15-20 | 6/17/2011 | 15 | 20 | TPH-HCID | -- | No |
| BH-35 | BH-35-SO-0-5 | 6/17/2011 | 0 | 5 | TPH-HCID | -- | No |
| | BH-35-SO-5-10 | 6/17/2011 | 5 | 10 | TPH-HCID | TPH-G, TPH-Dx, VOCs, total Lead, VPH, EPH | No |
| | BH-35-SO-10-15 | 6/17/2011 | 10 | 15 | TPH-HCID | -- | No |
| | BH-35-SO-15-20 | 6/17/2011 | 15 | 20 | TPH-HCID | -- | No |
| BH-36 | BH-36-SO-0-5 | 6/16/2011 | 0 | 5 | TPH-HCID | -- | No |
| | BH-36-SO-5-10 | 6/16/2011 | 5 | 10 | TPH-HCID | TPH-G, TPH-Dx, VOCs, total Lead, VPH, EPH | No |
| | BH-36-SO-10-15 | 6/16/2011 | 10 | 15 | TPH-HCID | -- | No |
| | BH-36-SO-15-20 | 6/16/2011 | 15 | 20 | TPH-HCID | -- | No |
| | BH-36-SV | 6/16/2011 | 4.5 | 4.5 | Air Tests[2] | -- | No |

## Table 1
## Summary of RI Sample Collection and Testing

| Station ID | Sample ID | Sample Date | Start Depth (ft) bgs | End Depth (ft) bgs | Tier 1 Testing | Tier 2 Testing | Excavated Post-Sampling[3] |
|---|---|---|---|---|---|---|---|
| BH-37 | BH-37-GW | 6/16/2011 | 6 | 11 | GW Tests[1] | -- | No |
| | BH-37-SO-0-5 | 6/16/2011 | 0 | 5 | TPH-HCID | -- | No |
| | BH-37-SO-5-10 | 6/16/2011 | 5 | 10 | TPH-HCID | -- | No |
| | BH-37-SO-10-15 | 6/16/2011 | 10 | 15 | TPH-HCID | -- | No |
| | BH-37-SO-15-20 | 6/16/2011 | 15 | 20 | TPH-HCID | -- | No |
| BH-38 | BH-38-GW | 6/16/2011 | 6 | 11 | GW Tests[1] | -- | No |
| | BH-38-SO-0-5 | 6/16/2011 | 0 | 5 | TPH-HCID | -- | No |
| | BH-38-SO-5-10 | 6/16/2011 | 5 | 10 | TPH-HCID | -- | No |
| | BH-38-SO-10-15 | 6/16/2011 | 10 | 15 | TPH-HCID | -- | No |
| | BH-38-SO-15-20 | 6/16/2011 | 15 | 20 | TPH-HCID | -- | No |
| BH-39 | BH-39-SO-0-5 | 6/16/2011 | 0 | 5 | TPH-HCID | -- | No |
| | BH-39-SO-5-10 | 6/16/2011 | 5 | 10 | TPH-HCID | -- | No |
| | BH-39-SO-10-15 | 6/16/2011 | 10 | 15 | TPH-HCID | -- | No |
| | BH-39-SO-15-20 | 6/16/2011 | 15 | 20 | TPH-HCID | -- | No |
| | BH-39-SV | 6/16/2011 | 5 | 5 | Air Tests[2] | -- | No |
| TP-2 | TP-2-4-6E | 9/28/2010 | 4 | 6 | TPH-HCID | -- | Yes |
| | TP-2-4-6W | 9/28/2010 | 4 | 6 | TPH-HCID | -- | Yes |
| | TP-2-6-8W | 9/28/2010 | 6 | 8 | TPH-HCID | TPH-G, TPH-Dx, VOCs, total Lead | Yes |
| | TP-2-8-9E | 9/28/2010 | 8 | 9 | TPH-HCID | -- | Yes |
| TP-5 | TP-5-4-5 | 2/16/2011 | 4 | 5 | -- | TPH-G, TPH-Dx, VOCs, total Lead | No |
| TP-6 | TP-6-1-4 | 10/29/2010 | 1 | 4 | TPH-HCID | -- | No |
| | TP-6-4-10 | 10/29/2010 | 4 | 10 | TPH-HCID | -- | No |
| TP-7 | TP-7-1-5 | 10/28/2010 | 1 | 5 | TPH-HCID | -- | No |
| | TP-7-6-10 | 10/28/2010 | 6 | 10 | TPH-HCID | -- | No |
| TP-8 | TP-8-1-6 | 10/29/2010 | 1 | 6 | TPH-HCID | -- | No |
| | TP-8-6-9 | 10/29/2010 | 6 | 9 | TPH-HCID | -- | No |
| TP-9 | TP-9-1-5 | 10/28/2010 | 1 | 5 | TPH-HCID | -- | No |
| | TP-9-8-10 | 10/28/2010 | 8 | 10 | TPH-HCID | -- | No |
| TP-10 | TP-10 | 6/15/2011 | 4.5 | 5 | TPH-HCID | -- | No |
| TP-11 | TP-11 | 6/15/2011 | 6 | 6.5 | TPH-HCID | TPH-Dx, EPH | No |
| CS-11 | CS-11 | 11/5/2010 | 0 cm | 10 cm | TPH-HCID | TPH-Dx | No |
| CS-12 | CS-12 | 11/4/2010 | 0 cm | 10 cm | TPH-HCID | -- | No |
| CS-13 | CS-13 | 11/4/2010 | 0 cm | 10 cm | TPH-HCID | -- | No |
| CS-14 | CS-14 | 11/2/2010 | 0 cm | 10 cm | TPH-HCID | TPH-G, TPH-Dx, VOCs | No |
| CS-15 | CS-15 | 11/2/2010 | 0 cm | 10 cm | TPH-HCID | TPH-Dx | No |
| CS-20 | CS-20 | 1/26/2011 | 0 cm | 10 cm | -- | TPH-G, TPH-Dx, VOCs, total Lead | No |
| CS-21 | CS-21 | 1/28/2011 | 0 cm | 10 cm | -- | TPH-G, TPH-Dx, VOCs, total Lead | No |
| CS-22 | CS-22 | 4/18/2011 | 10 | 12 | TPH-HCID | -- | No |
| CS-23 | CS-23 | 4/19/2011 | 10 | 12 | TPH-HCID | -- | No |
| CS-24 | CS-24 | 4/19/2011 | 10 | 12 | TPH-HCID | -- | No |
| CS-25 | CS-25 | 4/19/2011 | 10 | 12 | TPH-HCID | -- | No |
| CS-26 | CS-26 | 4/19/2011 | 10 | 12 | TPH-HCID | -- | No |
| CS-27 | CS-27 | 4/26/2011 | 10 | 12 | TPH-HCID | TPH-G, TPH-Dx, VOCs | No |
| CS-28 | CS-28 | 4/26/2011 | 10 | 12 | TPH-HCID | TPH-G, TPH-Dx, VOCs, total Lead | Yes |
| CS-29 | CS-29 | 7/13/2011 | 10 | 12 | TPH-HCID | TPH-G, TPH-Dx, VOCs, total Lead | Yes |
| CS-30 | CS-30 | 7/20/2011 | 10 | 12 | TPH-HCID | -- | No |

Notes:

| | |
|---|---|
| 1 | Groundwater (GW) tests included TPH-G, TPH-DX, VOCs, and total and dissolved lead |
| 2 | Air tests included VOCs and VPH/APH |
| 3 | Soil in this sample location was excavated after sample collection and no longer represents current site conditions |
| bgs | below ground surface |
| TPH-HCID | Total Petroleum Hydrocarbon Identification for Gasoline, Diesel, and Oil |
| TPH-G | Total Petroleum Hydrocarbons- Gasoline Range |
| TPH-Dx | Total Petroleum Hydrocarbons- Diesel and Oil Range |
| VOCs | Volatile Organic Compounds |
| PAHs | Polycyclic Aromatic Hydrocarbons |
| Total Metals | Arsenic, Barium, Cadmium Chromium, Lead, Mercury, Selenium, and Silver |
| VPH | Volatile Petroleum Hydrocarbons |
| APH | Aliphatic/Aromatic Petroleum Hydrocarbons |
| EPH | Extractable Petroleum Hydrocarbons |
| -- | Not available or applicable |

Table 2a

RI Soil Sampling Results - Petroleum Hydrocarbons

| Station ID | Sample ID | Sample Date | Sample Depth | HCID GRO mg/kg | HCID DRO mg/kg | HCID ORO mg/kg | NW-TPH GRO mg/kg | NW-TPH DRO mg/kg | NW-TPH ORO mg/kg | Sum of DRO/ORO mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cleanup Level[1] | 100[a] | 2,000 | 2,000 | 100[a] | 2,000 | 2,000 | 2000[b] |
| BH-11 | BH-11-0-5 | 9/27/2010 | 0 - 5 ft | 13.8 U | 34.4 U | 68.9 U | -- | -- | -- | 68.9 U |
| | BH-11-5-10 | | 5 - 10 ft | DETECT | DETECT | DETECT | 6.51 U | 5,320 | 543 J | 5,863 J |
| | BH-11-10-15 | | 10 - 15 ft | 17.8 U | 44.5 U | 89 U | -- | -- | -- | 89 U |
| | BH-11-15-20 | | 15 - 20 ft | 18 U | 44.9 U | 89.8 U | -- | -- | -- | 89.8 U |
| BH-12 | BH-12-0-5 | 9/28/2010 | 0 - 5 ft | 14.2 U | 35.5 U | 71.1 U | -- | -- | -- | 71.1 U |
| | BH-12-5-10 | | 5 - 10 ft | 17.9 U | 44.7 U | 89.5 U | -- | -- | -- | 89.5 U |
| | BH-12-10-15 | | 10 - 15 ft | 18.4 U | 46.1 U | 92.2 U | -- | -- | -- | 92.2 U |
| | BH-12-15-20 | | 15 - 20 ft | 15 U | 37.5 U | 75 U | -- | -- | -- | 75 U |
| BH-13 | BH-13-0-5 | 9/28/2010 | 0 - 5 ft | 14.1 U | 35.3 U | DETECT | 5.27 U | 38.4 | 230 | 268 J |
| | BH-13-5-10 | | 5 - 10 ft | DETECT | DETECT | DETECT | 9.21 | 1,130 | 134 J | 1,264 J |
| | BH-13-10-15 | | 10 - 15 ft | 17.3 U | 43.2 U | 86.5 U | -- | -- | -- | 86.5 U |
| | BH-13-15-20 | | 15 - 20 ft | 14.7 U | 36.8 U | 73.7 U | -- | -- | -- | 73.7 U |
| BH-14 | BH-14-0-5 | 9/28/2010 | 0 - 5 ft | 14.6 U | 36.5 U | 72.9 U | -- | -- | -- | 72.9 U |
| | BH-14-5-10 | | 5 - 10 ft | 14.1 U | 35.4 U | 70.7 U | -- | -- | -- | 70.7 U |
| | BH-14-10-15 | | 10 - 15 ft | 18.1 U | 45.3 U | 90.6 U | -- | -- | -- | 90.6 U |
| | BH-14-15-20 | | 15 - 20 ft | 22 U | 55 U | 110 U | -- | -- | -- | 110 U |
| BH-15 | BH-15-0-5 | 9/28/2010 | 0 - 5 ft | 14.1 U | 35.3 U | 70.7 U | -- | -- | -- | 70.7 U |
| | BH-15-5-10 | | 5 - 10 ft | 19.2 U | 47.9 U | 95.9 U | -- | -- | -- | 95.9 U |
| | BH-15-10-15 | | 10 - 15 ft | 23.3 U | 58.3 U | 117 U | -- | -- | -- | 117 U |
| | BH-15-15-20 | | 15 - 20 ft | 20.3 U | 50.7 U | 101 U | -- | -- | -- | 101 U |
| BH-22 | BH-22-0-5 | 11/8/2010 | 0 - 5 ft | 19.3 U | 48.2 U | DETECT | -- | 5.23 J | 72.5 | 77.7 J |
| | BH-22-5-10 | | 5 - 10 ft | 20.5 U | 51.3 U | DETECT | -- | 15.7 J | 96.4 | 112 J |
| | BH-22-10-15 | | 10 - 15 ft | 23.7 U | 59.3 U | 119 U | -- | -- | -- | 119 U |
| | BH-22-15-20 | | 15 - 20 ft | 23.4 U | 58.6 U | 117 U | -- | -- | -- | 117 U |
| BH-23 | BH-23-0-5 | 11/8/2010 | 0 - 5 ft | 19.4 U | 48.5 U | 97 U | -- | -- | -- | 97 U |
| | BH-23-5-10 | | 5 - 10 ft | 21.4 U | 53.6 U | 107 U | -- | -- | -- | 107 U |
| | BH-23-10-15 | | 10 - 15 ft | 22 U | 54.9 U | 110 U | -- | -- | -- | 110 U |
| | BH-23-15-20 | | 15 - 20 ft | 25.7 U | 64.2 U | 128 U | -- | -- | -- | 128 U |
| BH-24 | BH-24-0-5 | 11/9/2010 | 0 - 5 ft | 17.9 U | 44.8 U | 89.7 U | -- | -- | -- | 89.7 U |
| | BH-24-5-10 | | 5 - 10 ft | 15 U | 37.4 U | 74.8 U | -- | -- | -- | 74.8 U |
| | BH-24-10-15 | | 10 - 15 ft | DETECT | DETECT | DETECT | 7.42 U | 1,950 | 209 J | 2,159 J |
| | BH-24-15-20 | | 15 - 20 ft | 18.4 U | 46 U | 92 U | -- | -- | -- | 92 U |
| BH-25 | BH-25-0-5 | 11/9/2010 | 0 - 5 ft | 16.1 U | 40.2 U | 80.4 U | -- | -- | -- | 80.4 U |
| | BH-25-5-10 | | 5 - 10 ft | 17.7 U | 44.4 U | 88.7 U | -- | -- | -- | 88.7 U |
| | BH-25-10-15 | | 10 - 15 ft | 20.2 U | 50.5 U | 101 U | -- | -- | -- | 101 U |
| | BH-25-15-20 | | 15 - 20 ft | 25.9 U | 64.7 U | 129 U | -- | -- | -- | 129 U |
| BH-26 | BH-26-0-5 | 11/9/2010 | 0 - 5 ft | 16.8 U | 42 U | 84 U | -- | -- | -- | 84 U |
| | BH-26-5-10 | | 5 - 10 ft | 15 U | 37.6 U | 75.2 U | -- | -- | -- | 75.2 U |
| | BH-26-10-15 | | 10 - 15 ft | 22.3 U | 55.8 U | 112 U | -- | -- | -- | 112 U |
| | BH-26-15-20 | | 15 - 20 ft | 18.4 U | 46 U | 92 U | -- | -- | -- | 92 U |
| BH-27 | BH-27-0-5 | 11/9/2010 | 0 - 5 ft | 15.1 U | 37.7 U | 75.3 U | -- | -- | -- | 75.3 U |
| | BH-27-5-10 | | 5 - 10 ft | 16.8 U | 42 U | 84 U | -- | -- | -- | 84 U |
| | BH-27-10-15 | | 10 - 15 ft | 20.3 U | 50.9 U | 102 U | -- | -- | -- | 102 U |
| | BH-27-15-20 | | 15 - 20 ft | 24.8 U | 61.9 U | 124 U | -- | -- | -- | 124 U |
| BH-28 | BH-28-0-5 | 11/9/2010 | 0 - 5 ft | 14.5 U | 36.3 U | 72.6 U | -- | -- | -- | 72.6 U |
| | BH-28-5-10 | | 5 - 10 ft | DETECT | DETECT | 77.1 U | 1,230 | 615 | 32.9 J | 648 J |
| | BH-28-10-15 | | 10 - 15 ft | 18.5 U | 46.3 U | 92.7 U | -- | -- | -- | 92.7 U |
| | BH-28-15-20 | | 15 - 20 ft | 26.5 U | 66.3 U | 133 U | -- | -- | -- | 133 U |
| BH-33 | BH-33-SO-0-5 | 6/16/2011 | 0 - 5 ft | 20.1 U | 50.2 U | 100 U | -- | -- | -- | 100 U |
| | BH-33-SO-5-10 | | 5 - 10 ft | 22.8 U | 57 U | 114 U | -- | -- | -- | 114 U |
| | BH-33-SO-10-15 | | 10 - 15 ft | 24 U | 59.9 U | 120 U | -- | -- | -- | 120 U |
| | BH-33-SO-15-20 | | 15 - 20 ft | 23.8 U | 59.4 U | 119 U | -- | -- | -- | 119 U |
| BH-34 | BH-34-SO-0-5 | 6/17/2011 | 0 - 5 ft | 20 U | 50.1 U | 100 U | -- | -- | -- | 100 U |
| | BH-34-SO-5-10 | | 5 - 10 ft | 21.8 U | 54.4 U | 109 U | -- | -- | -- | 109 U |
| | BH-34-SO-10-15 | | 10 - 15 ft | 24.6 U | 61.5 U | 123 U | -- | -- | -- | 123 U |
| | BH-34-SO-15-20 | | 15 - 20 ft | 29 U | 72.5 U | 145 U | -- | -- | -- | 145 U |

Table 2a
RI Soil Sampling Results - Petroleum Hydrocarbons

| Station ID | Sample ID | Sample Date | Sample Depth | HCID GRO mg/kg | HCID DRO mg/kg | HCID ORO mg/kg | NW-TPH GRO mg/kg | NW-TPH DRO mg/kg | NW-TPH ORO mg/kg | Sum of DRO/ORO mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cleanup Level[1] | 100[a] | 2,000 | 2,000 | 100[a] | 2,000 | 2,000 | 2000[b] |
| BH-35 | BH-35-SO-0-5 | 6/16/2011 | 0 - 5 ft | 20.3 U | 50.8 U | 102 U | -- | -- | -- | 102 U |
| | BH-35-SO-5-10 | | 5 - 10 ft | DETECT | DETECT | DETECT | 80.8 | 121 | 137 | 258 |
| | BH-35-SO-10-15 | | 10 - 15 ft | 25.4 U | 63.6 U | 127 U | -- | -- | -- | 127 U |
| | BH-35-SO-15-20 | | 15 - 20 ft | 24.1 U | 60.3 U | 121 U | -- | -- | -- | 121 U |
| BH-36 | BH-36-SO-0-5 | 6/16/2011 | 0 - 5 ft | 21.2 U | 52.9 U | 106 U | -- | -- | -- | 106 U |
| | BH-36-SO-5-10 | | 5 - 10 ft | DETECT | DETECT | 106 U | 120 | 837 | 92.1 | 929 |
| | BH-36-SO-10-15 | | 10 - 15 ft | 25 U | 62.4 U | 125 U | -- | -- | -- | 125 U |
| | BH-36-SO-15-20 | | 15 - 20 ft | 25.5 U | 63.7 U | 127 U | -- | -- | -- | 127 U |
| BH-37 | BH-37-SO-0-5 | 6/16/2011 | 0 - 5 ft | 19.2 U | 48.1 U | 96.1 U | -- | -- | -- | 96.1 U |
| | BH-37-SO-5-10 | | 5 - 10 ft | 20.5 U | 51.1 U | 102 U | -- | -- | -- | 102 U |
| | BH-37-SO-10-15 | | 10 - 15 ft | 25.4 U | 63.5 U | 127 U | -- | -- | -- | 127 U |
| | BH-37-SO-15-20 | | 15 - 20 ft | 24 U | 60 U | 120 U | -- | -- | -- | 120 U |
| BH-38 | BH-38-SO-0-5 | 6/16/2011 | 0 - 5 ft | 19.7 U | 49.2 U | 98.5 U | -- | -- | -- | 98.5 U |
| | BH-38-SO-5-10 | | 5 - 10 ft | 22 U | 54.9 U | 110 U | -- | 25 U | 50 U | 110 U |
| | BH-38-SO-10-15 | | 10 - 15 ft | 23.9 U | 59.7 U | 119 U | -- | -- | -- | 119 U |
| | BH-38-SO-15-20 | | 15 - 20 ft | 22.8 U | 56.9 U | 114 U | -- | -- | -- | 114 U |
| BH-39 | BH-39-SO-0-5 | 6/16/2011 | 0 - 5 ft | 21.1 U | 52.7 U | 105 U | -- | -- | -- | 105 U |
| | BH-39-SO-5-10 | | 5 - 10 ft | 21.8 U | 54.5 U | 109 U | -- | -- | -- | 109 U |
| | BH-39-SO-10-15 | | 10 - 15 ft | 24.6 U | 61.4 U | 123 U | -- | -- | -- | 123 U |
| | BH-39-SO-15-20 | | 15 - 20 ft | 25.6 U | 64 U | 128 U | -- | -- | -- | 128 U |
| TP-2 | TP-2-4-6E | 9/28/2010 | 4 - 6 ft | 14.8 U | 37.1 U | 74.1 U | -- | -- | -- | 74.1 U |
| | TP-2-4-6W | | 4 - 6 ft | 16.4 U | 40.9 U | 81.9 U | -- | -- | -- | 81.9 U |
| | TP-2-6-8W | | 6 - 8 ft | DETECT | DETECT | DETECT | 783 | 2,840 | 312 J | 3,152 J |
| | TP-2-8-9E | | 8 - 9 ft | 15.3 U | 38.3 U | 76.7 U | -- | -- | -- | 76.7 U |
| TP-5 | TP-5-4-5 | 2/16/2011 | 4 - 5 ft | -- | -- | -- | 116 | 898 | 57.4 J | 955.4 J |
| TP-6 | TP-6-1-4 | 10/29/2010 | 1 - 4 ft | 17.8 U | 44.5 U | 88.9 U | -- | -- | -- | 88.9 U |
| | TP-6-4-10 | | 4 - 10 ft | 26 U | 64.9 U | 130 U | -- | -- | -- | 130 U |
| TP-7 | TP-7-1-5 | 10/28/2010 | 1 - 5 ft | 22.9 U | 57.4 U | 115 U | -- | -- | -- | 115 U |
| | TP-7-6-10 | | 6 - 10 ft | 25 U | 62.6 U | 125 U | -- | -- | -- | 125 U |
| TP-8 | TP-8-1-6 | 10/29/2010 | 1 - 6 ft | 16.8 U | 42.1 U | 84.2 U | -- | -- | -- | 84.2 U |
| | TP-8-6-9 | | 6 - 9 ft | 21.5 U | 53.6 U | 107 U | -- | -- | -- | 107 U |
| TP-9 | TP-9-1-5 | 10/28/2010 | 1 - 5 ft | 22.7 U | 56.7 U | 113 U | -- | -- | -- | 113 U |
| | TP-9-8-10 | | 8 - 10 ft | 23.5 U | 58.7 U | 117 U | -- | -- | -- | 117 U |
| TP-10 | TP-10 | 6/15/2011 | 4.5 - 5 ft | 20.5 U | 51.3 U | 103 U | -- | -- | -- | 103 U |
| TP-11 | TP-11 | 6/15/2011 | 6 - 6.5 ft | 20.8 U | DETECT | 104 U | -- | 90.8 | 59 | 59 |
| CS-11 | CS-11 | 11/5/2010 | 0 - 10 cm | 19.4 U | 48.4 U | DETECT | -- | 23.4 J | 232 | 255 J |
| CS-12 | CS-12 | 11/4/2010 | 0 - 10 cm | 20.8 U | 51.9 U | 104 U | -- | -- | -- | 104 U |
| CS-13 | CS-13 | 11/4/2010 | 0 - 10 cm | 20.6 U | 51.6 U | 103 U | -- | -- | -- | 103 U |
| CS-14 | CS-14 | 11/2/2010 | 0 - 10 cm | DETECT | DETECT | 105 U | 10.3 | 159 | 38.1 J | 197 J |
| CS-15 | CS-15 | 11/2/2010 | 0 - 10 cm | 22 U | 54.9 U | DETECT | -- | 11.2 J | 59.9 J | 71.1 J |
| CS-20 | CS-20 | 1/26/2011 | 0 - 10 cm | -- | -- | -- | 11.6 U | 8.24 J | 26.3 J | 34.54 J |
| CS-21 | CS-21 | 1/28/2011 | 0 - 10 cm | -- | -- | -- | 10.7 U | 7.22 J | 18.3 J | 25.52 J |
| CS-22 | CS-22 | 4/18/2011 | 10 - 12 ft | 27.1 U | 67.8 U | 136 U | -- | -- | -- | 136 U |
| CS-23 | CS-23 | 4/19/2011 | 10 - 12 ft | 26.3 U | 65.7 U | 131 U | -- | -- | -- | 131 U |
| CS-24 | CS-24 | 4/19/2011 | 10 - 12 ft | 26.7 U | 66.7 U | 133 U | -- | -- | -- | 133 U |
| CS-25 | CS-25 | 4/19/2011 | 10 - 12 ft | 26.1 U | 65.1 U | 130 U | -- | -- | -- | 130 U |
| CS-26 | CS-26 | 4/19/2011 | 10 - 12 ft | 23.8 U | 59.5 U | 119 U | -- | -- | -- | 119 U |
| CS-27 | CS-27 | 4/26/2011 | 10 - 12 ft | 23.3 U | 58.2 U | 116 U | 7.36 U | 23.9 | 23.5 U | 23.9 |
| CS-28 | CS-28 | 4/26/2011 | 10 - 12 ft | DETECT | DETECT | DETECT | 1,480 J | 8,260 | 430 U | 8,260 |
| CS-29 | CS-29 | 7/13/2011 | 10 - 12 ft | DETECT | DETECT | 95.4 U | 1,980 | 525 | 114 | 639 |
| CS-30 | CS-30 | 7/20/2011 | 10 - 12 ft | 23.4 U | 58.5 U | 117 U | -- | -- | -- | 117 U |

## Table 2a
## RI Soil Sampling Results - Petroleum Hydrocarbons

Notes:

| | | | |
|---|---|---|---|
| MTCA | Model Toxics Control Act | -- | Not analyzed |
| ft | feet | Bold | Detected |
| cm | centimeters | J | Estimated |
| mg | milligram | U | Compound analyzed, but not detected above detection limit |
| kg | kilogram | UJ | Compound analyzed, but not detected above estimated detection limit |

1. Cleanup levels presented for petroleum based on MTCA Method A cleanup levels for screening purposes. Petroleum factionation testing was used along with Ecology's TPH Workbook to develop a site-specific cleanup level (Appendix B). A site-specific TPH soil cleanup level of 2,724 mg/kg was developed based on protection of direct contact for unrestricted land use, and for protection of groundwater quality.

a Gasoline mixtures without benzene and total of ethylbenzene, toluene, and xylenes less than 1% of the gasoline mixture have a screening level of 100 mg/kg. Mixtures with benzene, etc. have a screening level of 30 mg/kg.

b If the sum of TPH-diesel and oil exceed the MTCA cleanup criteria, the result is considered an exceedance.

Detected concentration is greater than MTCA Method A screening level.

Soil at this sample location was excavated after sample collection and no longer represents current site conditions unless otherwise stated.

QA1 validation applied.

Totals are calculated as the sum of all detected results and 1/2 the undetected reporting limit. If all are undetected results, the highest reporting limit value is reported as the sum.

## Table 2b
## RI Soil Sampling Results - VOCs and Lead

| Analyte | Station ID | BH-11 | BH-13 | BH-24 | BH-28 | BH-35 | BH-36 | TP-2 | TP-5 | CS-14 | CS-20 | CS-21 | CS-27 | CS-28 | CS-29 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sample Name | BH-11-5-10 | BH-13-5-10 | BH-24-10-15 | BH-28-5-10 | BH-35-SO-5-10 | BH-36-SO-5-10 | TP-2-6-8W | TP-5-4-5 | CS-14 | CS-20 | CS-21 | CS-27 | CS-28 | CS-29 |
| | Sample Date | 9/27/2010 | 9/28/2010 | 11/9/2010 | 11/9/2010 | 6/16/2011 | 6/16/2011 | 9/28/2010 | 2/16/2011 | 11/2/2010 | 1/26/2011 | 1/28/2011 | 4/26/2011 | 4/26/2011 | 7/13/2011 |
| | Depth | 5 - 10 ft | 5 - 10 ft | 10 - 15 ft | 5 - 10 ft | 5 - 10 ft | 5 - 10 ft | 6 - 8 ft | 4 - 5 ft | 0 - 10 cm | 0 - 10 cm | 0 - 10 cm | 10 - 12 ft | 10 - 12 ft | 10 - 12 ft |
| **Conventional Parameters (percent)** | Cleanup Level | | | | | | | | | | | | | | |
| Total solids | -- | 80.1 | 83 | 76.8 | 89.4 | 88.1 | 87.9 | 81.1 | 77.2 | 81.6 | 59.9 | 60.1 | 79.6 | 85.7 | 85.7 |
| **Volatile Organics (mg/kg)** | | | | | | | | | | | | | | | |
| Benzene | 0.03 | 0.0163 U | 0.0153 U | 0.0185 U | 0.0257 U | 0.0153 U | 0.0097 J | 0.0653 U | 0.0164 U | 0.00871 U | 0.0289 U | 0.0268 U | 0.0184 U | 0.0647 | 0.0172 U |
| Ethylbenzene | 6.0 | 0.0325 U | 0.0183 J | 0.0371 U | 0.0515 U | 0.0305 U | 0.0267 U | 0.0783 J | 0.0347 | 0.0174 U | 0.0578 U | 0.0537 U | 0.0368 U | 0.154 U | 0.0686 U |
| Toluene | 7.0 | 0.0651 U | 0.0611 U | 0.0742 U | 0.103 U | 0.0611 U | 0.0533 U | 0.261 U | 0.0654 U | 0.0348 U | 0.116 U | 0.107 U | 0.0736 U | 0.308 U | 0.0343 U |
| m,p-Xylene | -- | 0.0651 U | 0.0611 U | 0.0742 U | 0.103 U | 0.0611 U | 0.0533 U | 0.159 J | 0.0654 U | 0.0522 U | 0.116 U | 0.107 U | 0.0736 U | 0.157 | 0.174 |
| o-Xylene | -- | 0.0325 U | 0.0306 U | 0.0371 U | 0.0669 U | 0.0305 U | 0.0192 J | 0.123 J | 0.0327 U | 0.0209 U | 0.0578 U | 0.107 U | 0.0368 U | 0.123 | 0.0686 U |
| Total Xylene (U = 1/2) | 9.0 | 0.0651 U | 0.0611 U | 0.0742 U | 0.103 U | 0.0611 U | 0.04585 | 0.282 J | 0.0654 U | 0.0522 U | 0.116 U | 0.107 U | 0.0736 U | 0.28 | 0.208 |
| 1,2-Dibromoethane (EDB) | 0.005 | 0.0325 U | 0.0306 U | 0.0371 U | 0.0515 U | 0.00277 U | 0.0267 U | 0.131 U | 0.0327 U | 0.0174 U | 0.0578 U | 0.0537 U | 0.0368 U | 0.154 U | 0.0343 U |
| 1,2-Dichloroethane | -- | 0.0202 J | 0.022 J | 0.0371 U | 0.0515 U | 0.0305 U | 0.0267 U | 0.131 U | 0.0327 U | 0.0174 U | 0.0578 U | 0.0537 U | 0.0368 U | 0.154 U | 0.0343 UJ |
| Methyl tert-butyl ether (MTBE) | 0.1 | 0.0651 U | 0.0611 U | 0.0742 U | 0.103 U | 0.0611 U | 0.0533 U | 0.261 U | 0.0327 U | 0.0348 U | 0.116 U | 0.107 U | 0.0736 U | 0.308 U | 0.0686 U |
| **Metals (mg/kg)** | | | | | | | | | | | | | | | |
| Lead | 250 | 6.41 | 1.16 J | 5.36 | 4.46 | 5.29 | 5.66 | 13.2 | 12.6 | -- | 9.45 | 11.9 | -- | 8.42 | 4.92 |

Notes:

MTCA - Model Toxics Control Act
ft - feet
cm - centimeters
mg - milligram
kg - kilogram

-- - Not analyzed
**Bold** - Detected result
J - Estimated value
U - Compound analyzed, but not detected above detection limit
UJ - Compound analyzed, but not detected above estimated detection limit

Detected concentration is greater than MTCA Method A screening level
Non-detected concentration is above one or more identified screening levels
Soil at this sample location was excavated after sample collection and no longer represents current site conditions unless otherwise stated

QA1 validation applied.

Total 17 LPAH (Low PAH) are the total of 2-Methylnapthalene, Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene and Anthracene.

Total 17 HPAH (High PAH) are the total of Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(x)fluoranthenes, Benzo(a)pyrene, Indeno(1,2,3-c,d)pyrene, Dibenzo(a,h)anthracene and Benzo(g,h,i)perylene.

Totals are calculated as the sum of all detected results and 1/2 the undetected reporting limit. If all are undetected results, the highest reporting limit value is reported as the sum.

Table 2c

RI Soil Sampling Results - PAHs, Metals, and Petroleum Fractionation

| Analyte | Station ID | BH-11 | BH-35 | BH-36 | TP-11 |
|---|---|---|---|---|---|
| | Sample Name | BH-11-5-10 | BH-35-SO-5-10 | BH-36-SO-5-10 | TP-11 |
| | Sample Date | 9/27/2010 | 6/16/2011 | 6/16/2011 | 6/15/2011 |
| | Depth | 5 - 10 ft | 5 - 10 ft | 5 - 10 ft | 6 - 6.5 ft |
| Conventional Parameters (percent) | Cleanup Level | | | | |
| Total solids | -- | 80.1 | 88.1 | 87.9 | 93.1 |
| Polycyclic Aromatic Hydrocarbons (mg/kg) | | | | | |
| 1-Methylnaphthalene | -- | 0.118 U | -- | -- | -- |
| 2-Methylnaphthalene | -- | 0.119 U | -- | -- | -- |
| Benzo(a)anthracene | -- | 0.0592 U | -- | -- | -- |
| Benzo(a)pyrene | 0.1 | 0.0592 U | -- | -- | -- |
| Benzo(b)fluoranthene | -- | 0.0592 U | -- | -- | -- |
| Benzo(k)fluoranthene | -- | 0.0592 U | -- | -- | -- |
| Benzo(b+k)fluoranthene | -- | 0.0592 U | -- | -- | -- |
| Chrysene | -- | 0.0592 U | -- | -- | -- |
| Dibenzo(a,h)anthracene | -- | 0.0592 U | -- | -- | -- |
| Indeno(1,2,3-c,d)pyrene | -- | 0.0592 U | -- | -- | -- |
| Naphthalene | -- | 0.118 U | -- | -- | -- |
| Total cPAH TEQ (U = 1/2) | 0.1 | 0.0592 U | -- | -- | -- |
| Total Naphthalenes (U = 1/2) | 5.0 | 0.119 U | -- | -- | -- |
| Metals (mg/kg) | | | | | |
| Arsenic | 20 | 6.54 | -- | -- | -- |
| Barium | -- | 16.3 | -- | -- | -- |
| Cadmium | 2.0 | 0.432 J | -- | -- | -- |
| Chromium | 2,000 | 22.6 | -- | -- | -- |
| Lead | 250 | 6.41 | -- | -- | -- |
| Mercury | 2.0 | 0.0381 J | -- | -- | -- |
| Selenium | -- | 2.4 U | -- | -- | -- |
| Silver | -- | 1.2 U | -- | -- | -- |
| Extractable Petroleum Hydrocarbons (mg/kg) | | | | | |
| C8-C10 Aliphatic | -- | -- | 2.3 U | 4.8 | 2 U |
| C10-C12 Aliphatic | -- | -- | 3.4 | 31 | 2 U |
| C12-C16 Aliphatic | -- | -- | 20 | 180 | 5.4 |
| C16-C21 Aliphatic | -- | -- | 33 | 140 | 36 |
| C21-C34 Aliphatic | -- | -- | 56 | 39 | 21 |
| C8-C10 Aromatic | -- | -- | 2.3 U | 2.3 U | 2 U |
| C10-C12 Aromatic | -- | -- | 2.3 U | 2.5 | 2 U |
| C12-C16 Aromatic | -- | -- | 3.6 | 28 | 2 U |
| C16-C21 Aromatic | -- | -- | 15 | 87 | 2.7 |
| C21-C34 Aromatic | -- | -- | 16 | 26 | 4.9 |
| Volatile Petroleum Hydrocarbons (mg/kg) | | | | | |
| C5-C6 Aliphatic | -- | -- | 12 U | 9.7 U | -- |
| C6-C8 Aliphatic | -- | -- | 12 U | 9.7 U | -- |
| C12-C13 Aromatic | -- | -- | 40 | 9.7 U | -- |
| Benzene | -- | -- | 1.2 U | 0.970 U | -- |
| Ethylbenzene | -- | -- | 1.2 U | 0.970 U | -- |
| Toluene | -- | -- | 1.2 U | 0.970 U | -- |
| m,p-Xylene | -- | -- | 2.4 U | 1.9 U | -- |
| o-Xylene | -- | -- | 1.2 U | 0.970 U | -- |
| n-Pentane (C5) | -- | -- | 1.2 U | 0.970 U | -- |
| n-Hexane | -- | -- | 1.2 U | 0.970 U | -- |
| n-Octane (C8) | -- | -- | 1.2 U | 0.970 U | -- |
| n-Decane (C10) | -- | -- | 2.2 | 0.970 U | -- |
| n-Dodecane (C12) | -- | -- | 3.7 | 0.970 U | -- |
| Methyl tert-butyl ether (MTBE) | -- | -- | 1.2 U | 0.970 U | -- |

Notes:

MTCA - Model Toxics Control Act

ft - feet

mg - milligram

kg - kilogram

PAH - Polycyclic Aromatic Hydrocarbon

-- - Not analyzed

**Bold** - Detected result

J - Estimated value

U - Compound analyzed, but not detected above detection limit

UJ - Compound analyzed, but not detected above estimated detection limit

Detected concentration is greater than MTCA Method A screening level

Non-detected concentration is above one or more identified screening levels

Soil at this sample location was excavated after sample collection and no longer represents current site conditions unless otherwise stated

QA1 validation applied.

Totals are calculated as the sum of all detected results and 1/2 the undetected reporting limit. If all are undetected results, the highest reporting limit value is reported as the sum.

Total Naphthalenes includes Naphthalene, 1-Methylnaphthalene, 2-Methylnaphthalene.

cPAH minimum 7 analytes calculation includes Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene and Indeno(1,2,3-c,d)pyrene. Per MTCA cleanup Regulation, Table 708-2 "Toxicity Equivalency Factors for Minimum Required Carcinogenic Polyaromatic Hydrocarbons (cPAHs) under WAC 173-340-708(e).

## Table 3a
## Historical Compliance Groundwater Sampling Results

| Analyte | Sample Number | MW-13A | | | | MW-15 | |
|---|---|---|---|---|---|---|---|
| | Sample Date | 2/18/2002 | 5/23/2002 | 8/7/2002 | 11/1/2002 | 8/7/2002 | 11/1/2002 |
| **Total Petroleum Hydrocarbons (µg/l)** | **Cleanup Level** | | | | | | |
| Gasoline Range Hydrocarbons | 800 | 50 U | 50 U | 50 U | 50 U | **163** | **149** |
| Diesel Range Hydrocarbons | 500 | 250 U | 250 U | 250 U | 250 U | 250 U | 250 U |
| Residual Range Hydrocarbons | 500 | 750 U | 750 U | 750 U | 750 U | 750 U | 700 U |
| **Volatile Organics (µg/l)** | | | | | | | |
| Benzene | 23 | 0.20 U | 0.20 U | 0.20 U | 0.20 U | 0.20 U | 0.20 U |
| Ethylbenzene | 2,100 | 0.20 U | 0.20 U | 0.20 U | 0.20 U | 0.20 U | 0.20 U |
| Toluene | 15,000 | 0.20 U | 0.20 U | 0.20 U | 0.20 U | **0.871** | 0.20 U |
| Total Xylene (U = 1/2) | 1,000 | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U |

**Notes:**

A summary of the development of groundwater cleanup levels is presented in Table 6 and are based on the protection of marine surface water.

**Bold** Detected result

J Estimated value

U Compound analyzed, but not detected above detection limit

Data is from the GeoEngineers November 2002 Quarterly Groundwater Monitoring Reports (December 5, 2002)

## Table 3b
### RI Groundwater Sampling Results

| Analyte | Station ID | BH-33 | BH-34 | BH-37 | BH-38 | Field QC | Field QC |
|---|---|---|---|---|---|---|---|
| | Sample Name | BH-33-GW | BH-34-GW | BH-37-GW | BH-38-GW | EB-06172011 | TRIP BLANK |
| | Sample Date | 6/16/2011 | 6/17/2011 | 6/16/2011 | 6/16/2011 | 6/17/2011 | 6/17/2011 |
| | Screen Depth | 6 - 11 ft | 5 - 10 ft | 6 - 11 ft | 6 - 11 ft | -- | -- |
| **Total Petroleum Hydrocarbons (µg/l)** | MTCA A Cleanup Level | | | | | | |
| Gasoline Range Hydrocarbons | 800 | 100 U | 100 U | 100 U | **392** | 100 U | 100 U |
| Diesel Range Hydrocarbons | 500 | 189 U | 189 U | **110 J** | **471** | 198 U | -- |
| Residual Range Hydrocarbons | 500 | 377 U | 377 U | 377 U | **340 J** | 396 U | -- |
| **Volatile Organics (µg/l)** | | | | | | | |
| Benzene | 23 | **0.15 J** | 0.25 U | 0.25 U | **0.15 J** | 0.25 U | 0.25 U |
| Ethylbenzene | 2,100 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Toluene | 15,000 | **0.63 J** | **0.51 J** | 1 U | **3.89** | 1 U | 1 U |
| m,p-Xylene | -- | 1 U | 1 U | 1 U | **1.68** | 1 U | 1 U |
| o-Xylene | -- | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Total Xylene (U = 1/2) | 1,000 | 1 U | 1 U | 1 U | **1.93** | 1 U | 1 U |
| 1,2-Dibromoethane (EDB) | 0.01 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,2-Dichloroethane | 37 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Methyl tert-butyl ether (MTBE) | 20 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| **Dissolved Metals (µg/l)** | | | | | | | |
| Lead | 8.1 | 1 U | 1 U | 1 U | 1 U | -- | -- |
| **Total Metals (µg/l)** | | | | | | | |
| Lead | -- | **1.18** | **1.14** | **1.59** | 1 U | 1 U | -- |

**Notes:**

A summary of the development of groundwater cleanup levels is presented in Table 6 and are based on the protection of marine surface water.

**Bold** Detected result

J Estimated value

U Compound analyzed, but not detected above detection limit

## Table 4 Revision 1
## RI Soil Vapor Sampling Results

| Analyte | Location ID | BH-36 | BH-39 |
|---|---|---|---|
| | Sample Name | BH-36-SV | BH-39-SV |
| | Sample Date | 6/17/2011 | 6/16/2011 |
| | Sample Depth | 4.5 - 4.5 ft | 5 - 5 ft |
| **Total Petroleum Hydrocarbons (µg/m3)** | **Screening Level[1]** | | |
| APH (C5-C8 Aliphatic) | 27,000 | **8,000** | **184** |
| APH (C8-C12 Aliphatic) | 1,400[2] | **6,480** | 135 U |
| APH (C8-C10 Aromatic) | 1,800[3] | **2,800** | **160** |
| APH (C10-C12 Aromatic) | -- | 130 U | 120 U |
| **Volatile Organics (µg/m3)** | | | |
| 1,2-Dibromoethane (Ethylene dibromide) | 0.04 | 8.9 U | 8.3 U |
| 1,2-Dichloroethane | 0.96 | 4.7 U | 4.4 U |
| Benzene | 3.2 | **93** | **11** |
| Ethylbenzene | 4,600 | **300** | **25** |
| m,p-Xylene | 460 | **1,300** | **110** |
| Methyl tert-butyl ether (MTBE) | 96 | 4.2 U | 3.9 U |
| o-Xylene | 460 | **410** | **30** |
| Toluene | 22,000 | **1,400** | **150** |
| Total Xylene (U = 1/2) | -- | **1,710** | **140** |

**Notes:**

Totals are calculated as the sum of all detected results and 1/2 the undetected reporting limit. If all are undetected results, the highest reporting limit value is reported as the sum.

1 Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State, Table B-1

2 Criteria is for C9-C12 fraction but analytical data included C8 range therefore the concentration is a conservative value

3 Criteria is for C9-C10 fraction but analytical data included C8 range therefore the concentration is a conservative value

**Bold** Detected result

N Normal Field Sample

U Compound analyzed, but not detected above detection limit

Detected concentration is greater than screening level

Non-detected concentration is above screening level

# Enclosure B

# Environmental Covenants for Institutional Controls

After Recording Return to:
Scott Rose
Department of Ecology
P.O. Box 47775
Lacey, WA 98504

# Environmental Covenant

**Grantor:** City of Olympia
**Grantee:** State of Washington, Department of Ecology
**Legal:** All of Block 71 of Sylvester's Plat of the Town of Olympia, recorded February 28, 1870, in Volume 1 of Plats at Page 14, records of Thurston County, Washington. Together with the north half of Olympia Avenue contiguous with said Block 71
**Tax Parcel Nos.:** 78507100100, 78507100200
**Cross Reference:**

Grantor, City of Olympia, hereby binds Grantor, its successors and assigns to the land use restrictions identified herein and grants such other rights under this environmental covenant (hereafter "Covenant") made this 23 day of September, 2014, in favor of the State of Washington, Department of Ecology. The Department of Ecology shall have full right of enforcement of the rights conveyed under this Covenant pursuant to the Model Toxics Control Act ("MTCA"), RCW 70.105D.030(1)(g), and the Uniform Environmental Covenants Act, RCW 64.70.110.

This Declaration of Covenant is made pursuant to RCW 70.105D.030(1)(f) and (g), and WAC 173-340-440 by City of Olympia, its successors and assigns, and the State of Washington, Department of Ecology, its successors and assigns (hereafter "Ecology").

A remedial action (hereafter "Remedial Action") occurred at the property that is

4411275 Pages: 7
10/01/2014 11:58 AM Covenant
Thurston County Washington
CITY OF OLYMPIA, PARKS & RECREATION

the subject of this Covenant. The Remedial Action conducted at the property is described in the following documents:

*Remedial Investigation and Feasibility Study Report*, Former Unocal Bulk Plant 0828 and Hulco Property, dated August 2012 by Anchor QEA, LLC

*Upland Investigation Data Report*, Percival Landing, dated August 2011 by Anchor QEA, LLC.

These documents are on file at Ecology's Southwest Regional Office.

This Covenant is required because the Remedial Action resulted in:

- Residual concentrations of total petroleum hydrocarbons, specifically diesel, which exceed the MTCA site-specific cleanup levels for soils, as established under WAC 173-340-7493.
- Groundwater has been designated as non-potable due to proximity to marine waters of Budd Inlet.
- Benzene soil gas value exceeds the soil vapor value in Ecology's draft guidance on vapor intrusion.

The undersigned, City of Olympia, is the fee owner of real property in the County of Thurston, State of Washington, that is subject to this Covenant. The adjacent right-of-way to the east of the City of Olympia's fee property was created by plat dedication to the City of Olympia. The property covered by this Covenant, (hereafter "Property") includes the City's fee property and the adjacent right-of-way to the south of the fee property, all of which is legally described above and shown in Exhibit A.

The City of Olympia makes the following declarations as to limitations, restrictions, and uses to which the Property may be put and specifies that such

declarations shall constitute covenants to run with the land, as provided by law and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property (hereafter "Owner").

Section 1.

A. No groundwater may be taken for any use, except for monitoring if required under the Cleanup Action, from the Property.

B. Soil in a portion of the Property contains total petroleum hydrocarbons at concentrations that exceed MTCA site-specific cleanup levels. The location of this contaminated soil is at a depth of more than 6 feet in the area illustrated in the diagram on Exhibit B. The Owner shall not alter, modify, or remove the existing concrete and wooden walkway above this soil in any manner that may result in the release or exposure to the environment of that contaminated soil or create a new exposure pathway without prior written approval from Ecology.

C. Building of any structure on the Property shall provide vapor intrusion protection.

D. Any activity on the Property that may result in the release or exposure to the environment of a hazardous substance that remains on the Property as part of the Remedial Action, or create a new exposure pathway, is prohibited without prior written approval from Ecology. Some examples of activities that are prohibited in the capped areas include: drilling, digging, placement of any objects or use of any equipment which deforms or stresses the surface beyond its load bearing capability, piercing the surface with a rod, spike or similar item, bulldozing or earthwork.

Section 2. Any activity on the Property that may interfere with the integrity of the Remedial Action and continued protection of human health and the environment is prohibited.

Section 3. The Owner of the property must give thirty (30) day advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Remedial Action.

Section 4. The Owner must restrict leases to uses and activities consistent with the Covenant and notify all lessees of the restrictions on the use of the Property.

Section 5. The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Covenant. Ecology may approve any inconsistent use only after public notice and comment.

Section 6. The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Remedial Action, to take samples, to inspect remedial actions conducted at the property, to determine compliance with this Covenant, and to inspect records that are related to the Remedial Action.

Section 7. The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Covenant shall no longer limit use of the Property or be of any further force or effect. However, such an instrument may be recorded only if Ecology, after public notice and opportunity for comment, concurs.

CITY OF OLYMPIA

Steven R. Hall
City Manager
601 4th Avenue East
Olympia, WA

Dated: 8/20/2014

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Rebecca S. Lawson, P.E, LHG
Regional Section Manager
Toxics Cleanup Program
Southwest Regional Office
Dated: 9/23/2014

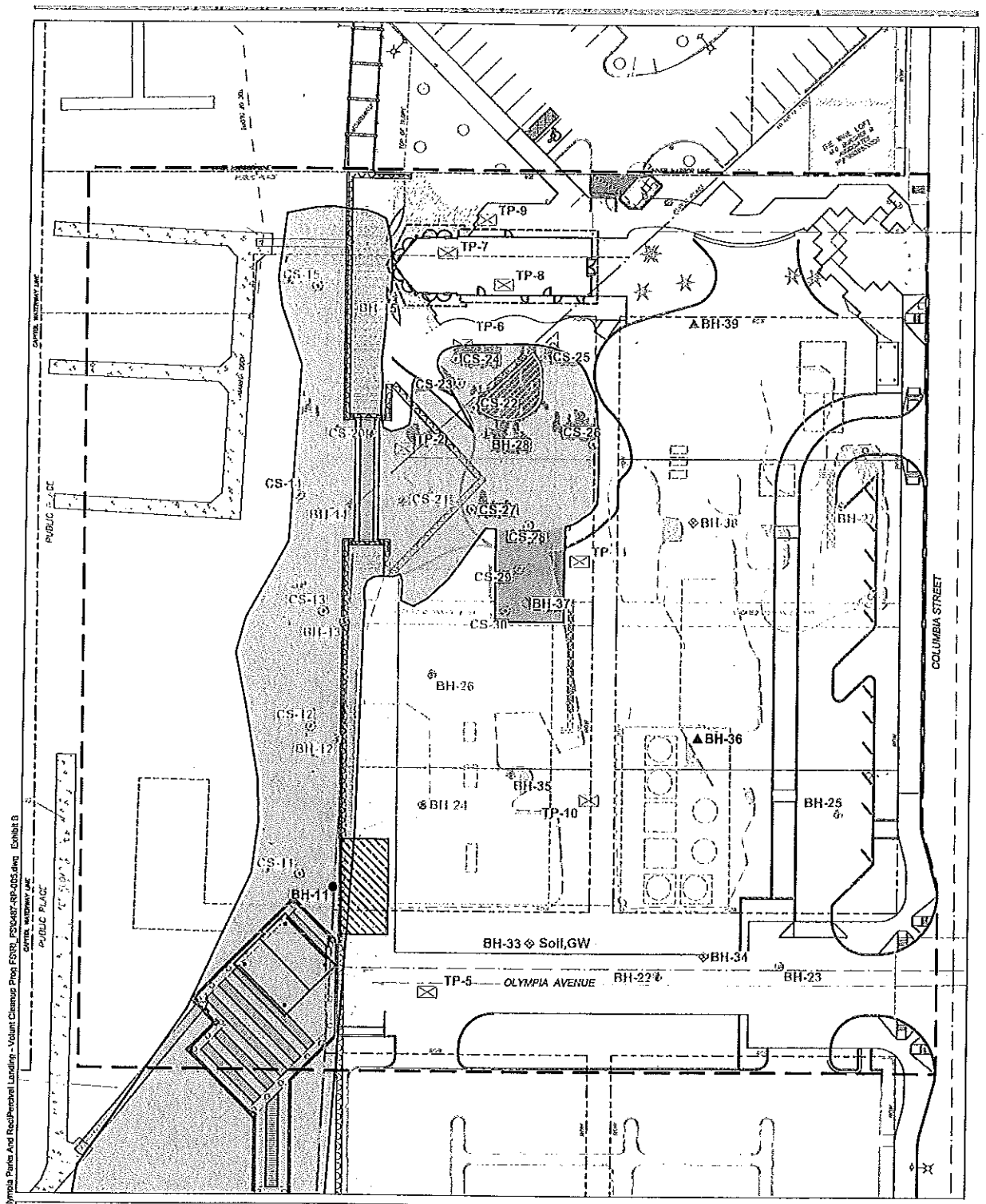
STATE OF WASHINGTON
COUNTY OF THURSTON

On this 20TH day of AUGUST, 2014, I certify that Steven R. Hall personally appeared before me, acknowledged that he signed this instrument, on oath stated that he was authorized to execute this instrument, and acknowledged it as the City Manager of the City of Olympia to be the free and voluntary act and deed of such party for the uses and purposes mentioned in the instrument.

Connie J. Cobb
Notary Public in and for the State of Washington, residing at Olympia.
My commission expires 10/29/14.

CONNIE J. COBB
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
OCTOBER 29, 2014


| | | | |
|---|---|---|---|
| | PROJECT NO. | CITY OF OLYMPIA | DRAWING NAME |
| DRAWN BAM | | EXHIBIT "A" | PERS LAND COV |
| QC REVIEW LFC | DATE | ENVIRONMENTAL COVENENT AREA | |
| SCALE N.T.S. | MAY 2013 | BLOCK 71, SYLVESTER'S PLAT, VOL 1, PG. 14 | SHEET 1 OF 1 |




**SOURCE:** Percival Landing Major Rehabilitation OA26, Section A, Phase 1, Construction Drawings, dated 8/02/10.
**HORIZONTAL DATUM:** Washington State Plane, South, NAD 83/96 CORS.
**VERTICAL DATUM:** National Ocean Service Mean Lower Low Water (MLLW), 1983-2001 Epoch.

**LEGEND:**

- BH-12 Geoprobe (Soil)
- BH-34 Geoprobe (Soil and Groundwater)
- BH-36 Geoprobe (Soil and Soil Vapor)
- TP-2 Test Pit
- CS-11 Confirmation Sample Location
- Former Unocal and Hulco Property RI-FS Study Area
- Approximate Location of Historical Features
- Approximate Location of 1995 Excavation Areas
- Approximate Location of 2001 Excavation Areas
- 2011 Excavation Area
- TPH Exceedance in Soil
- Benzene above soil vapor from Draft Guidance for Evaluating Soil Vapor Intrusion (Ecology 2009)

0 40
Scale in Feet

May 07, 2013 3:05pm tyrsa K:\Projects\0427-City Of Olympia Parks And Rec\Percival Landing - Volunt Cleanup Prog FS\RI_FS\0427-RP-005.dwg Exhibit B

ANCHOR QEA

**Exhibit B**
Soil Requiring Restrictive Covenant
Remedial Investigation / Feasibility Study
Former Unocal Bulk Plant 0828 and Hulco Property