



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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SIP

October 9, 2014

Mr. Richard Rodriguez
Arcadis U.S., Inc.
111 Southwest Columbia Street, Suite 725
Portland, Oregon 97201-5856

Re: No Further Action at the following Site:

- **Site Name:** ARCO 6008 (aka KT Kansa AM/PM)
- **Site Address:** 212 Fifteenth Street, Washougal, Washington 98671
- **Facility/Site No.:** 46212644
- **Cleanup Site ID:** 9311
- **VCP Project No.:** SW1182

Dear Mr. Rodriguez:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the ARCO 6008 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 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 releases:

- Total petroleum hydrocarbons (TPH) in the gasoline-range (TPH-G) into the Soil and Groundwater.
- TPH in the diesel-range (TPH-D) and TPH in the heavy oil range (TPH-O) into the Groundwater.
- TPH-D into the Soil.
- Volatile Organic Compounds (VOCs) into the Soil 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. ARCADIS U. S., Inc. (ARCADIS), **Site Investigation Report and No Further Action Request**, dated July 29, 2013.
2. Ecology, **Further Action at the Site Opinion Letter**, dated August 12, 2012.
3. ARCADIS, **Closure Report, BP Facility No. 6008**, dated June 30, 2011.
4. ARCADIS, **Site Assessment Work Plan, ARCO Facility No. 6008**, dated July 26, 2010.
5. Delta Environmental Consultants, Inc. (Delta), **Environmental Oversight during Retail Facility Upgrade Activities**, dated October 25, 2007.
6. Sweet-Edwards/EMCON, Inc. (SE/E), **UST Decommissioning and Vapor Treatment Gallery Construction: ARCO Service Station 6008, Washougal, Washington**, dated September 10, 1991.

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.

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 is located at 212 Fifteenth Street, Washougal, Washington. The Site is operated as a convenience store and retail automotive refueling station. The business currently operates four 10,000-gallon fiberglass unleaded gasoline underground storage tanks (USTs) at the Site. In January 1990, SE/E decommissioned and removed from the Site four USTs: two 6,000-gallon USTs and two 4,000-gallon steel USTs. SE/E collected eight soil samples from the former UST excavation and analyzed them for TPH-G, TPH-D, and benzene, toluene, ethylbenzene, and total xylenes (BTEX). These samples, collected in February 1990, appeared to have been confirmation samples as the laboratory analytical results indicated no constituents of concern (COCs) were above their applicable MTCA Method A Soil Cleanup Levels (CULs) for unrestricted land uses.

SE/E installed a soil vapor extraction (SVE) system within an on-Site treatment gallery, treating the petroleum-contaminated soil (PCS) from the UST excavation and dispenser islands. Starting in January 1994, the SVE system operated for eight months. SE/E also analyzed soil samples collected from the treatment gallery in January 1994 for lead in addition to the above-mentioned COCs. Analytical results indicated none of the COCs were above their applicable MTCA Method A CULs.

In 1998, Pinnacle Environmental Solutions oversaw upgrades to the fuel delivery system. They collected two soil samples from just below the pavement-soil interface, Sample-1 and Sample-2, from the westernmost fuel dispenser island. Analytical results indicated PCS above the applicable MTCA CULs was present in both samples. Ecology's review of the submitted information did not indicate that the PCS had been excavated or treated.

In April 2007, Delta completed facility upgrades to the fuel dispenser pumps. Delta collected soil samples from beneath the dispenser pumps at six locations. Analytical results from both westernmost dispenser island sample locations indicated PCS above the applicable MTCA CUL was still present at those locations. A second LUST report was received by Ecology in October 2007. Ecology's review of the submitted information did not indicate that the PCS had been excavated or treated.

In January 2011, ARCADIS advanced three borings around the westernmost dispenser island to further delineate the PCS. The maximum depth investigated was 40 feet below ground surface (bgs). Nine soil samples were collected and analyzed for TPH-G, BTEX, methyl tertiary-butyl ether (MTBE), and lead (see Figure 3). The COCs were either not detected at the laboratory reporting limit or were below their applicable MTCA CULs. ARCADIS reported that groundwater was encountered at 32 feet to 35 feet bgs. ARCADIS collected a grab groundwater sample and analyzed the groundwater for TPH-G, TPH-D, TPH-O, BTEX, MTBE, and total lead. Analytical results indicated TPH-O and total lead exceeded their applicable MTCA Method A Groundwater CULs.

In September 2011, ARCADIS entered the Site into the Voluntary Cleanup Program. In August 2012, Ecology provided a Further Action at the Site Opinion Letter. Ecology determined PCS characterization activities around the former UST excavation, PCS remediation gallery, and western pump island were insufficient to fully characterize the Site (Figure 3 Historical). Ecology requested additional samples be collected at those locations. Ecology also requested groundwater monitoring wells be installed at the Site to evaluate TPH-G, TPH-D, TPH-O, VOCs, and total lead impacts to groundwater.

In April 2013, ARCADIS advanced four borings at locations within the soil remediation gallery, next to the building, and around the western fuel dispenser islands. Three of the borings were finished as groundwater monitoring wells, with one well being situated next to the former temporary well where TPH-O had been identified above its MTCA CUL (see Table 3 and Figure 3 Historical).

Ecology evaluated the April 2013 soil and groundwater analytical data and determined the Site had been fully delineated for all affected media. The laboratory analytical results indicated there were no residual PCS impacts within the soil treatment gallery and the former UST excavation above the applicable MTCA Method A CULs; however, the subsurface soil around the western fuel dispenser islands was fully delineated and found to contain residual PCS above applicable MTCA Method A Soil CULs. While residual PCS remained around the dispenser islands in small isolated pockets above the MTCA Method A CULs, the area was capped by concrete and not accessible via direct contact.

Due to the depth to groundwater, Ecology determined it unlikely that future surface water infiltration would be a driver for impacts to groundwater. Groundwater analytical results from the three monitoring wells indicated there were no impacts to groundwater due to PCS; however, one well

(MW-3, formerly SB-3-W) had a total metals concentration slightly above the MTCA Method A CUL for total lead (see Table 2 and Figure 3). Ecology further evaluated the analytical results (dissolved metals) and the groundwater sampling logs for all wells. Ecology determined the total lead result indicated turbidity in the sample was the most likely cause of the exceedance and not an indication of a total metals groundwater issue. Turbidity values in MW-3 were double the other two well values. The soil vapor pathway was also evaluated and ARCADIS concluded that pathway was not complete.

After conversations with the Ecology Site Manager, ARCADIS decided to conduct a focused confirmation sampling event for impacted locations (D-3-3.5 and D-4-3.5) that were above the MTCA Benzene and MTBE Method A Soil CULs under the fuel island canopy. In March 2014, ARCADIS collected three soil samples from the D-3-3.5 and D-4-3.5 and analyzed them for TPH-G, TPH-D, TPH-O, BTEX, MTBE, and total lead. Analytical results indicated that all the COCs were not detected at the laboratory reporting limit except for lead, which was detected at concentrations below its MTCA CUL (see Figure 3).

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.

Applicable MTCA Method A CULs for soil and groundwater were used to characterize and determine compliance for the Site. 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.

3. Selection of cleanup action.

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

The method selected to remediate the PCS involved source removal, excavation of contaminated material and decommissioning of USTs, and placing soil into a treatment gallery. The cleanup actions meet the minimum requirements of WAC 173-340-360(2). The cleanup actions supported by the analytical data indicate the soil and groundwater on the Site are protective of human health and the environment, and meet the state cleanup standards.

4. Cleanup.

Ecology has determined the cleanup you performed meets the cleanup standards established for the Site.

Four USTs were decommissioned and removed from the Site. Approximately 60 cubic yards of PCS was excavated from the Site and placed in an on-Site soil treatment gallery using SVE; the SVE system was operated for eight months. Confirmation soil analytical results indicated the soil from the treatment gallery and from the UST excavation were remediated to below the applicable MTCA Soil CULs. Isolated pockets of residual low-concentration PCS above the applicable MTCA CUL remained in place around the western pump islands. Additional laboratory analytical results in May 2014 indicated the residual PCS under the western dispenser canopy had mostly likely naturally attenuated since 2007, when they were first identified, and were no longer above the applicable MTCA CULs. The reports indicated the extent of PCS was fully defined and groundwater analytical results indicated the PCS had not impacted groundwater; however, total lead did exceed its MTCA CUL in one well. Dissolved lead analytical results indicated the exceedance of total lead was most likely due to groundwater turbidity. As leaded gas had never been sold at the service station; Ecology determined the total lead was not a contamination issue in the Site groundwater. A soil vapor pathway evaluation had indicated there were no apparent impacts to the soil vapor pathway at the Site.

Based on their Site characterization and cleanup actions, ARCADIS recommended a *No Further Action Opinion* for the Site from Ecology. Ecology concurs with that recommendation.

Listing of the Site

Based on this opinion, Ecology will remove the Site from our Confirmed and Suspected Contaminated Sites List.

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 (#SW1182).

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, please contact me by phone at (360) 407-7404 or e-mail at erad461@ecy.wa.gov.

Sincerely,



Eugene Radcliff, L.G.
Site Manager
SWRO Toxics Cleanup Program

GER/ksc:SW1182 VCP ARCO 6008 Site NFA

Enclosures (5):

A – Description and Diagrams of the Site	
Figure 1	Site Location Map
Figure 3 Historical	Site Plan with Historical Soil Boring and Soil Sample Locations
Figure 3	Site Plan with Historical Soil Boring and Confirmation Soil Sample Locations and Analytical Results
Table 2	Groundwater Analytical Results – January 2011 and April 2013
Table 3	Soil Analytical Results – April 2013

cc: Mr. Kamel Kanso, KTK Kanso LLC
Mr. Bryan DeDoncker, Clark County Health
Mr. Scott Rose – Ecology
Mr. Paul Turner – Ecology
Ms. Dolores Mitchell – Ecology (without enclosures)

by cert mail :l

91 7199 9991 7031 7906 8610

Enclosure A

Description and Diagrams of the Site

Site Description

Media of Concern: Soil and Groundwater

The ARCO 6008 (Site) is located at 212 Fifteenth Street, Washougal, Clark County, Washington (see Figure 1). The convenience store and automotive refueling operation is situated on four parcels. The Site and surrounding parcels are both commercial and residential. C Street borders the Site to the north, a vacant lot and two residential parcels borders to the east, B Street borders the Site to the south, and the Washougal River Road borders the Site to the west. Residential and commercial parcels are down gradient (south) of the identified soil and groundwater contamination source areas. The Columbia River is approximately 1000 feet to the south of the Site. The 0.25-acre Site is covered by a building and the rest of the Site is covered by concrete and asphalt pavement. The Clark County Geographic Information System webpage¹ (CCGIS) notes the Site operations as being comprised of five parcels with the affected parcels having an assigned tax parcel numbers of 73611000, 73620000, and 73625000.

The CCGIS notes the abbreviated legal description for the parcels as:

- 73611000 - WASHOUGAL #2 OF LOT 3, BLK 7
- 73620000 - WASHOUGAL LOT 5 BLK 7
- 73625000 - WASHOUGAL LOT 6 BLK 7

Use District Codes for the Site are:

- TC-C – town center core

The CCGIS rates the Site *very low* for liquefaction potential. The site is in a Category 2 Aquifer Recharge Area and is in the Washougal River watershed.

Previous investigations have attributed the Site soil and groundwater contamination to historic discharge(s) of gasoline into the surrounding soil from a leaking underground storage tank and associated fuel distribution piping. The Site is approximately 46 feet above sea level. A review of boring log SB-3 indicated that core samples became saturated around 32 feet to 35 feet bgs and the groundwater table was reported to be in that range. The Columbia River surface elevation is around 10 feet above sea level. No water supply wells were reported to be within 0.25 miles of the Site.

The United States Department of Agriculture, Natural Resources Conservation Service (NRCS) website² identifies the Site soil as Hillsboro silt loam. The Hillsboro is described as being terraces structures with one to three percent slopes. The Hillsboro is reported to be derived from alluvium parent material and being well drained. The typical profile for the Hillsboro is 0 to 7 inches - silt loam, 7 to 17 silt loam, 17 to 55 inches – silt loam, and 55 to 60 inches – silt loam. Boring logs from the Site investigations indicate interbedded fine sands and fine gravels down to a depth of 40 feet bgs (Boring log SB-3) locally underlie the Site.

¹ http://maps.clark.wa.gov/imfmol/imf.jsp?site=pub_mapsonline

² <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

LEGEND

- B-2 + SOIL BORING LOCATION (BROWN & CALDWELL, 1988)
- PR-1 • SOIL SAMPLE LOCATION (SWEET EDWARDS/EMCON, 1980)
- B2 X SOIL BORING LOCATION (EMCON, 1994)
- Sample 2 ⊗ SOIL SAMPLING LOCATION (PINNACLE, 1998)
- D-1-6.0 ⊕ SOIL SAMPLING LOCATION (DELTA, 2007)
- SB-1 ▲ SOIL SAMPLING LOCATION (ARCADIS, 2011)
- CANOPY LOCATION
- ▨ CONCRETE
- ▤ FORMER UST LOCATIONS
- ▥ CURRENT UST COMPLEX
- ▧ APPROXIMATE LOCATION OF TREATMENT GALLERY

NOTE: THIS MAP WAS PREPARED FROM A FIELD SURVEY PERFORMED BY OTAK ON MAY 20, 2010
 SOIL SAMPLE LOCATIONS ARE APPROXIMATE



ARCO FACILITY No. 8008
 2115 15TH STREET
 WASHINGTON, DC 20003
 SITE INVESTIGATION REPORT AND NO FURTHER ACTION REQUEST

ARCADIS

FIGURE 3

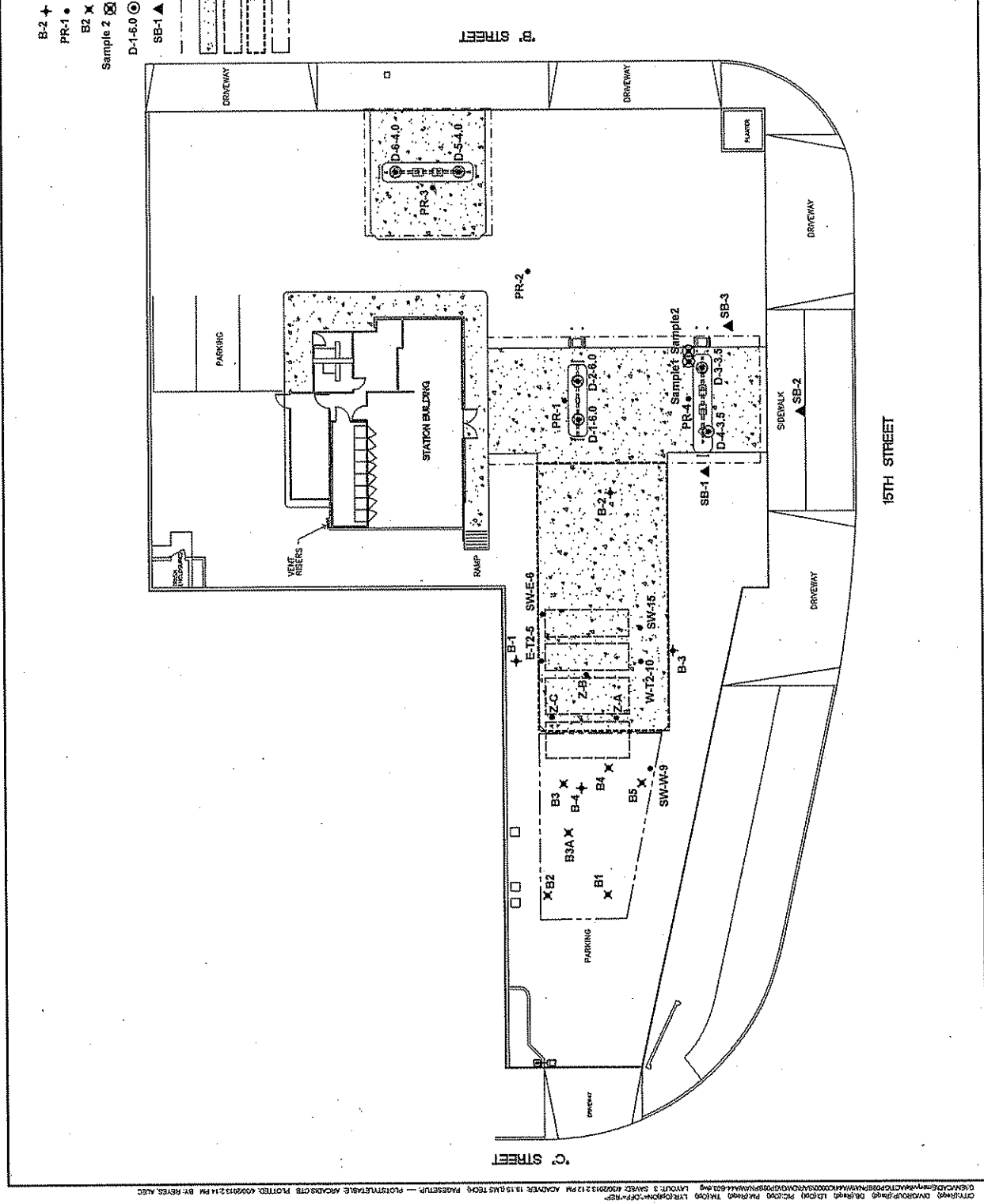


Table 2

Groundwater Analytical Results - January 2011 and April 2013
Site Investigation Report and
No Further Action Request
 ARCO Facility No. 6008
 212 15th Street
 Washougal, Washington

All analytical results are presented in micrograms per liter (µg/L)

Analyte	MTCA Cleanup Levels (µg/L)	Sample Location			
		SB-3-W	MW-1	MW-2	MW-3
		1/28/2011	4/17/2013	4/17/2013	4/17/2013
Select VOCs, TPH and Lead					
Benzene	5	<0.20	< 1.0	< 1.0	< 1.0
Toluene	1,000	<1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	700	<1.0	< 1.0	< 1.0	< 1.0
Total Xylenes	1,000	<3.0	< 3.0	< 3.0	< 3.0
MTBE	20	<1.0	< 1.0	< 1.0	< 1.0
GRO	1000/800	<50.0	< 100	< 100	< 100
DRO	500	110	< 430	< 430	< 430
HO	500	550	< 430	< 430	< 430
Total Lead	15	108	< 10.0	11.3	22.5
Dissolved Lead	15	<10.0	< 10.0	< 10.0	< 10.0
Other VOCs					
1,1,1,2-Tetrachloroethane	--	--	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	200	--	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	--	--	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	--	--	< 1.0	< 1.0	< 1.0
1,1,2-Trichlorotrifluoroethane	--	--	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	--	--	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	--	--	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	--	--	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	--	--	< 4.0	< 4.0	< 4.0
1,2,3-Trichloropropane	--	--	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	--	--	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	--	--	< 4.0	< 4.0	< 4.0
1,2-Dibromo-3-chloropropane	--	--	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	--	--	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	5	--	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	--	--	< 4.0	< 4.0	< 4.0
1,3,5-Trimethylbenzene	--	--	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	--	--	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	--	--	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	--	--	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	--	--	< 4.0	< 4.0	< 4.0
2-Butanone	--	--	< 5.0	< 5.0	< 5.0
2-Chlorotoluene	--	--	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	--	--	< 1.0	< 1.0	< 1.0
Acetone	--	--	< 20.0	< 20.0	< 20.0
Allyl chloride	--	--	< 4.0	< 4.0	< 4.0
Bromobenzene	--	--	< 1.0	< 1.0	< 1.0

Table 1

**Historical Soil Analytical Results
Site Investigation Report and
No Further Action Request
ARCO Facility No. 6008
212 15th Street
Washougal, Washington**

Notes

< = Concentration is below specified laboratory reporting limit

presented in Table 740-1 of Chapter 173-340 of the Washington Administrative Code (WAC)

^a = Result presented was for total petroleum hydrocarbons.

^b = The specific depth of this sample was not reported; however, Figure 2 and Photograph 3 of Pinnacle's 1998 letter report illustrate the sample location below the concrete surface.

bgs = below ground surface

Concentrations compared to the Model Toxics Control Act (MTCA) Method A soil cleanup levels for unrestricted land uses

DRO = Total petroleum hydrocarbons - diesel range organics analyzed via Northwest Method NWTPH-Dx

GRO = Total petroleum hydrocarbons - gasoline range organics analyzed via Northwest Method NWTPH-Gx, Washington Department of Ecology Method WTPH-G

mg/kg = milligrams per kilogram

MTBE = Methyl tertiary butyl ether

TPH = Total petroleum hydrocarbons

Benzene, toluene, ethylbenzene, total xylenes and MTBE analyzed via United States Environmental Protection Agency (USEPA) Method 8260B or 5030/8020.

MTCA Method A Cleanup level for GRO is 100 mg/kg for gasoline mixture without benzene and with the total of ethylbenzene, toluene and total xylenes are less than 1% of gasoline. MTCA Method A Cleanup level for GRO is and 30 mg/kg for all other gasoline mixtures.

Total lead analyzed by USEPA Method 6020 or 7420.

Bold = Chemical detected at a concentration above the LRL but below MTCA Method A cleanup level

Background = Results are above the MTCA Method A cleanup level

Table 2

Groundwater Analytical Results - January 2011 and April 2013
Site Investigation Report and
No Further Action Request
 ARCO Facility No. 6008
 212 15th Street
 Washougal, Washington

All analytical results are presented in micrograms per liter (µg/L)

Analyte	MTCA Cleanup Levels (µg/L)	Sample Location			
		SB-3-W	MW-1	MW-2	MW-3
		1/28/2011	4/17/2013	4/17/2013	4/17/2013
Bromochloromethane	--	--	< 1.0	< 1.0	< 1.0
Bromoform	--	--	< 4.0	< 4.0	< 4.0
Bromomethane	--	--	< 4.0	< 4.0	< 4.0
Carbon tetrachloride	--	--	< 1.0	< 1.0	< 1.0
CFC-11	--	--	< 1.0	< 1.0	< 1.0
CFC-12	--	--	< 1.0	< 1.0	< 1.0
Chlorobenzene	--	--	< 1.0	< 1.0	< 1.0
Chloroethane	--	--	< 1.0	< 1.0	< 1.0
Chloroform	--	--	< 4.0	< 4.0	< 4.0
Chloromethane	--	--	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	--	--	< 4.0	< 4.0	< 4.0
cis-1,3-Dichloropropene	--	--	< 1.0	< 1.0	< 1.0
Cumene	--	--	< 1.0	< 1.0	< 1.0
Dibromochloromethane	--	--	< 4.0	< 4.0	< 4.0
Dibromomethane	--	--	< 1.0	< 1.0	< 1.0
Dichlorobromomethane	--	--	< 1.0	< 1.0	< 1.0
Dichlorofluoromethane	--	--	< 4.0	< 4.0	< 4.0
Diethyl ether (Ethyl ether)	--	--	< 1.0	< 1.0	< 1.0
Ethylene dibromide	0.01	--	< 5.0	< 5.0	< 5.0
Hexachlorobutadiene	--	--	< 5.0	< 5.0	< 5.0
Methyl isobutyl ketone	--	--	< 4.0	< 4.0	< 4.0
Methylene Chloride	--	--	< 4.0	< 4.0	< 4.0
Naphthalene	160	--	< 1.0	< 1.0	< 1.0
n-Butylbenzene	--	--	< 1.0	< 1.0	< 1.0
n-Propylbenzene	--	--	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	--	--	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	--	--	< 1.0	< 1.0	< 1.0
Styrene	--	--	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	--	--	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	--	< 10.0	< 10.0	< 10.0
Tetrahydrofuran	--	--	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	--	--	< 4.0	< 4.0	< 4.0
trans-1,3-Dichloropropene	--	--	< 1.0	< 1.0	< 1.0
Trichloroethene	5	--	< 0.2	< 0.2	< 0.2
Vinyl chloride	0.2	--	< 0.2	< 0.2	< 0.2

Table 2

Groundwater Analytical Results - January 2011 and April 2013
Site Investigation Report and
No Further Action Request
ARCO Facility No. 6008
212 15th Street
Washougal, Washington

Notes

-- = Cleanup level not established

< = Concentration is below laboratory reporting limit

µg/L = micrograms per liter

MTBE = Methyl tertiary butyl ether

DRO = Total petroleum hydrocarbons - diesel range organics analyzed by Northwest Method NWTPH-Dx

GRO = Total petroleum hydrocarbons - gasoline range organics analyzed by Northwest Method NWTPH-Gx

HO = Total petroleum hydrocarbons - heavy-oil range organics analyzed by Northwest Method NWTPH-Dx

USEPA = United States Environmental Protection Agency

TPH = Total petroleum hydrocarbons

VOC = Volatile organic compound

Concentrations compared to the Model Toxics Control Act (MTCA) Method A cleanup levels for groundwater presented in Table 720-1 of Chapter 173-340 of the Washington Administrative Code (WAC)

MTCA Method A Cleanup level for GRO is 1000 µg/kg for groundwater without benzene and 800 µg/kg for groundwater with benzene.

SB-3-W is a grab sample collected during installation of soil borin SB-3

Total and Dissolved lead analyzed by USEPA Method 6010

VOCs analyzed via USEPA Method 8260

Bold = Chemical detected at a concentration above the laboratory reporting limit

Bold Highlighted = Results are above the MTCA Method A cleanup level

Table 3

Soil Analytical Results - April 2013
 Site Investigation Report and
 No Further Action Request
 ARCO Facility No. 6008
 212 15th Street
 Washougal, Washington

All analytical results are presented in milligrams per kilogram (mg/kg)

Analyte	MTCA Method A Cleanup Levels (mg/kg)	Boring Location (Sample Depth in Feet)									
		SB-4 (4.5-5.0)	SB-4 (29.5-31)	SB-4 (40-41)	SB-5 (6.5-7)	SB-5 (9-10)	MW-2 (5.5-6)	MW-2 (30-31)	MW-3 (5-5.5)	MW-3 (32-33)	
1,2-Dichloropropane	--	4/8/2013 < 0.0036	4/8/2013 < 0.0035	4/8/2013 < 0.003	4/10/2013 < 0.0038	4/10/2013 < 0.0037	4/11/2013 < 0.0033	4/11/2013 < 0.0031	4/8/2013 < 0.0044	4/9/2013 < 0.003	
1,3,5-Trimethylbenzene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
1,3-Dichlorobenzene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
1,3-Dichloropropane	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
1,4-Dichlorobenzene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
2,2-Dichloropropane	--	< 0.009	< 0.0089	< 0.0074	< 0.0095	< 0.0092	< 0.0082	< 0.0077	< 0.0109	< 0.0151	
2-Butanone	--	< 0.018	< 0.0177	< 0.0149	< 0.019	< 0.0183	< 0.0165	< 0.0155	< 0.0218	< 0.003	
2-Chlorotoluene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
4-Chlorotoluene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.0151	
Acetone	--	0.487	< 0.0177	< 0.0149	< 0.019	< 0.0183	< 0.0165	< 0.0155	< 0.0218	< 0.0076	
Allyl chloride	--	< 0.009	< 0.0089	< 0.0074	< 0.0095	< 0.0092	< 0.0082	< 0.0077	< 0.0109	< 0.003	
Bromobenzene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
Bromochloromethane	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.0151	
Bromoform	--	< 0.018	< 0.0177	< 0.0149	< 0.019	< 0.0183	< 0.0165	< 0.0155	< 0.0218	< 0.0151	
Bromomethane	--	< 0.018	< 0.0177	< 0.0149	< 0.019	< 0.0183	< 0.0165	< 0.0155	< 0.0218	< 0.003	
Carbon tetrachloride	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.0076	
CFC-11	--	< 0.009	< 0.0089	< 0.0074	< 0.0095	< 0.0092	< 0.0082	< 0.0077	< 0.0109	< 0.0076	
CFC-12	--	< 0.009	< 0.0089	< 0.0074	< 0.0095	< 0.0092	< 0.0082	< 0.0077	< 0.0109	< 0.003	
Chlorobenzene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.0076	
Chloroethane	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
Chloroform	--	< 0.009	< 0.0089	< 0.0074	< 0.0095	< 0.0092	< 0.0082	< 0.0077	< 0.0109	< 0.0076	
Chloromethane	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
cis-1,2-Dichloroethane	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
cis-1,3-Dichloropropene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
Cumene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
Dibromochloromethane	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	

Table 3

Soil Analytical Results - April 2013
 Site Investigation Report and
 No Further Action Request
 ARCO Facility No. 6008
 212 15th Street
 Washougal, Washington

All analytical results are presented in milligrams per kilogram (mg/kg)

Analyte	MTCA Method A Cleanup Levels (mg/kg)	Boring Location (Sample Depth in Feet)									
		SB-4 (4.5-5.0)	SB-4 (29.5-31)	SB-4 (40-41)	SB-5 (6.5-7)	SB-5 (9-10)	MW-2 (5.5-6)	MW-2 (30-31)	MW-3 (5-5.5)	MW-3 (32-33)	
Dibromomethane	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
Dichlorobromomethane	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
Dichlorofluoromethane	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
Diethyl ether (Ethyl ether)	--	< 0.009	< 0.0089	< 0.0074	< 0.0095	< 0.0092	< 0.0082	< 0.0077	< 0.0109	< 0.0076	
Ethylene dibromide	0.005	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
Hexachlorobutadiene	--	< 0.009	< 0.0089	< 0.0074	< 0.0095	< 0.0092	< 0.0082	< 0.0077	< 0.0109	< 0.0076	
Methyl isobutyl ketone	--	< 0.018	< 0.0177	< 0.0149	< 0.019	< 0.0183	< 0.0165	< 0.0155	< 0.0218	< 0.0151	
Methylene Chloride	--	< 0.018	< 0.0177	< 0.0149	< 0.019	< 0.0183	< 0.0165	< 0.0155	< 0.0218	< 0.0151	
Naphthalene	5	< 0.009	< 0.0089	< 0.0074	< 0.0095	< 0.0092	< 0.0082	< 0.0077	< 0.0109	< 0.0076	
n-Butylbenzene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
n-Propylbenzene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
p-Isopropyltoluene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
sec-Butylbenzene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
Styrene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
tert-Butylbenzene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
Tetrachloroethene	0.05	< 0.0359	< 0.0354	< 0.0297	< 0.0379	< 0.0367	< 0.033	< 0.0309	< 0.0436	< 0.0303	
Tetrahydrofuran	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
trans-1,2-Dichloroethene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
trans-1,3-Dichloropropene	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
Trichloroethene	0.03	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	
Vinyl chloride	--	< 0.0036	< 0.0035	< 0.003	< 0.0038	< 0.0037	< 0.0033	< 0.0031	< 0.0044	< 0.003	

Table 3

**Soil Analytical Results - April 2013
Site Investigation Report and
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ARCO Facility No. 6008
212 15th Street
Washougal, Washington

Notes

- = Cleanup level not established
- < = Concentration is below laboratory reporting limit (LRL)
- mg/kg = milligrams per kilogram
- bgs = below ground surface
- MTBE = Methyl tertiary butyl ether
- GRO = Total petroleum hydrocarbons - gasoline range organics analyzed via Northwest Method NWTPH-Gx/8021
- DRO = Total petroleum hydrocarbons - diesel range organics analyzed via Northwest Method NWTPH-Dx
- HO = Total petroleum hydrocarbons - heavy-oil range organics analyzed via Northwest Method NWTPH-Dx
- VOC = Volatile organic compound
- Concentrations compared to the Model Toxics Control Act (MTCOA) Method A soil cleanup levels for unrestricted land uses presented in Table 740-1 of Chapter 173-340 of the Washington Administrative Code (WAC)
- VOCs analyzed via United States Environmental Protection Agency (USEPA) Method 8260
- Total lead analyzed by USEPA Method 6010
- Bold** = Chemical detected at a concentration above the Laboratory Reporting Limit but below MTCOA Method A cleanup level

