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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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April 27, 2022

Matt Chantry
Shelter Resources Inc.
2223 112th Ave NE Suite 102
Bellevue, WA 98004
MattC@ShelterResources.com

Re: Opinion on the Proposed Cleanup of a Property associated with the Asarco Tacoma Smelter Site

- **Property Name:** Redondo Heights
- **Property Address:** South 276th St., 600 feet east of Pacific Hwy S, Federal Way, WA 98003
- **Facility/Site ID:** 96556
- **Cleanup Site ID:** 15499
- **VCP Project No.:** NW3331

Dear Matt Chantry:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your proposed independent cleanup of a Property associated with the Asarco Tacoma Smelter Site (Asarco Site). This letter provides our opinion. We are providing this opinion under the authority of the [Model Toxics Control Act \(MTCA\)](#),¹ chapter 70A.305 Revised Code of Washington (RCW).

Issues Presented and Opinion

Ecology has determined that no further remedial action will likely be necessary at the Property to clean up contamination associated with the Asarco Site.

Ecology has determined that further remedial action will likely still be necessary elsewhere at the Asarco Site, but no further remediation will be necessary for the Property.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, chapter 70A.305 RCW, and its implementing regulations, Washington Administrative Code ([WAC](#)) [chapter 173-340](#)² (collectively “substantive requirements of MTCA”). The analysis is provided below.

¹ <https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305>

² <https://apps.leg.wa.gov/WAC/default.aspx?cite=173-340>

Basis for the Opinion

This opinion is based on the information in the documents listed in **Enclosure A**. You can request these documents by filing a [records request](#).³ For help making a request, contact the [Public Records Officer](#)⁴ at or call (360) 407-6040. Before making a request, check whether the documents are available on [Ecology's Cleanup Site Search web page](#).⁵

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

Description of the Property and the Asarco Site

This opinion applies only to the Property described below within Asarco Site. This opinion does not apply to any other sites that may affect the Property. Any such sites, if known, are identified separately below.

1. Description of the Property

The Property includes the following tax parcels in King County, which were affected by the Asarco Site and will be addressed by your cleanup:

- 7204800172 (3.45 acres).
- 7204800174 (1.56 acres).

Enclosure B includes a legal description of the Property and details of the Property as currently known to Ecology.

2. Description of the Asarco Site

The Asarco Site is defined by the nature and extent of contamination associated with the following releases:

- Arsenic into the Soil.
- Lead into the Soil.

Those releases have affected more than one parcel of real property, including the parcels identified above.

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

³ <https://ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests>

⁴ publicrecordsofficer@ecy.wa.gov

⁵ <https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=15499>

3. Identification of Other Sites that may affect the Property

A parcel of real property can be affected by multiple sites. At this time, we have no information that the Property is affected by other sites.

Analysis of the Cleanup

1. Cleanup of the Property located within the Asarco Site.

Ecology has concluded that, upon completion of your proposed cleanup, **no further remedial action** will likely be necessary at the Property to clean up contamination associated with the Asarco Site. That conclusion is based on the following analysis:

a. Characterization of the Asarco Site.

The Asarco Site is described in **Enclosure C**.

Redondo Heights property (Property) is located west of Interstate 5 in a mixed use (residential and light industrial) area of Federal Way, Washington (Figure 1). The Property is situated on two King County parcels that add up to 5.01 acres of land. The Property is bordered to the north by South 276th Street and the King County Transit Redondo Park and Ride, residential properties to the east, Silver Shadows Housing to the west, and undeveloped land to the south. Most of the Property is currently undeveloped and forested. For more information about the Property refer to **Enclosure B**.

Shelter Resources Inc. (Shelter) plans to develop this Property into six apartment buildings with associated parking, landscaping, and utilities.

As part of the planned development, Shelter contracted GeoEngineers to characterize the Tacoma Smelter Plume (TSP) contamination on the Property. On February 2021, GeoEngineers collected 40 discrete soil samples from 32 sampling locations on the Property (Figure 2). They collected 32 soil samples from 0 to 6 inches below ground surface (bgs) and 8 soil samples from 6 to 12 inches bgs. GeoEngineers also collected 8, six-point composite duff samples.

GeoEngineers submitted the samples to OnSite Environmental Inc. laboratory in Redmond, Washington for arsenic and lead analysis with Environmental Protection Agency (EPA) Method 6010D.

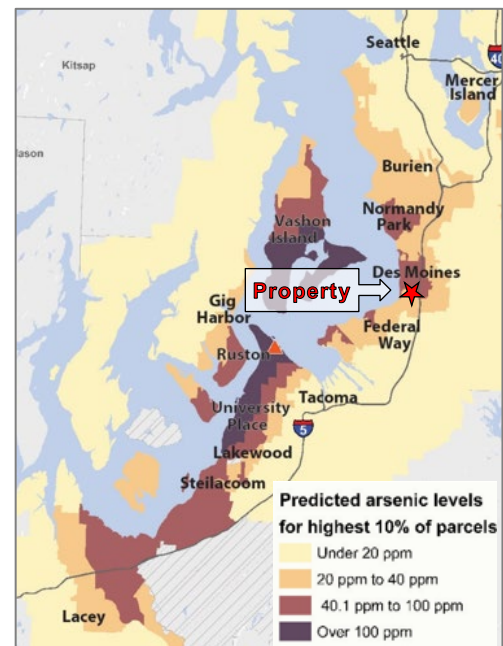


Figure 1. Vicinity Map

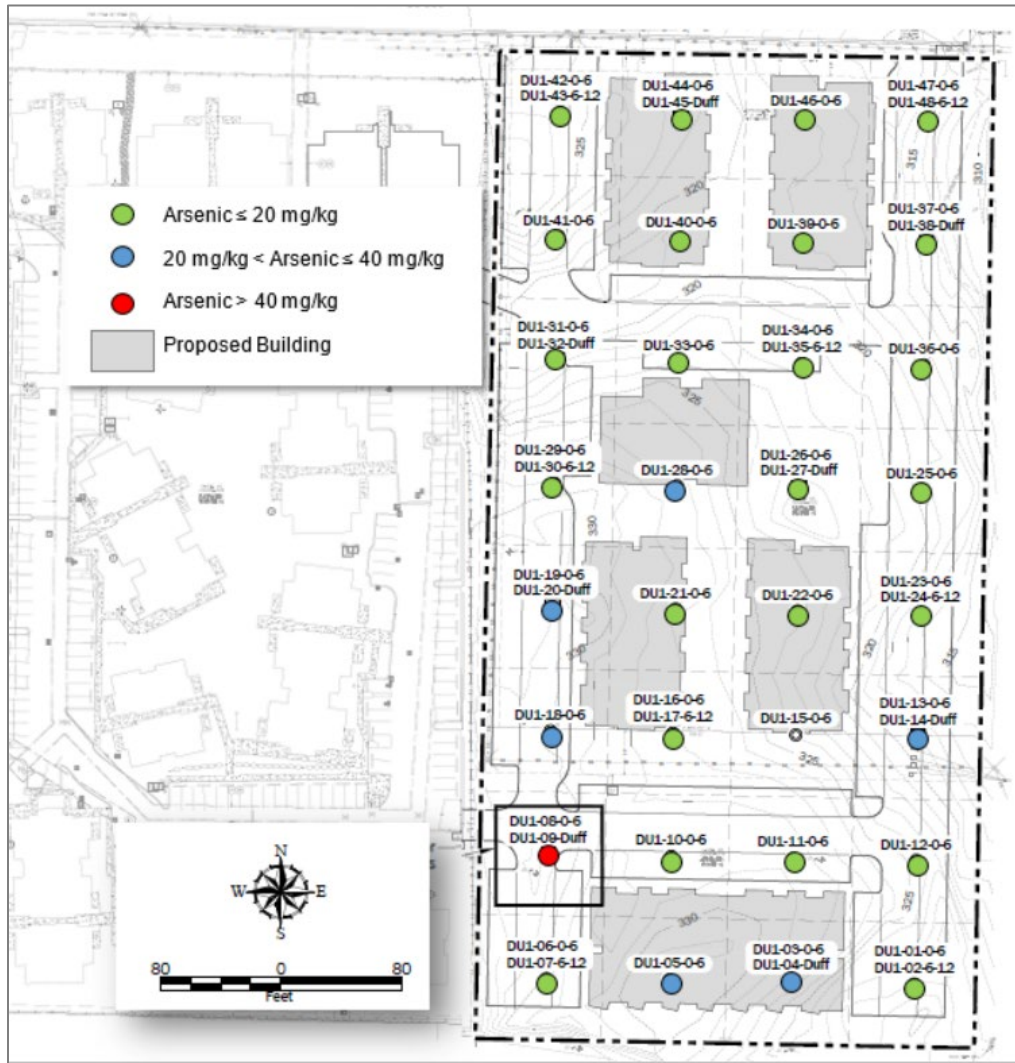


Figure 2. Approximate Locations of Characterization Samples

Results of Soil Sampling

Table 1 displays the summary of the characterization sampling on the Property. **Enclosure D** contains the comprehensive results of the characterization sampling on the Property.

Samples collected from 0 to 6 inches bgs: Arsenic exceeded the MTCA Method A cleanup level of 20 milligrams per kilogram (mg/kg) in 7 samples. One sample exceeded the maximum allowable concentration for a single soil sample or twice the cleanup level for arsenic (40 mg/kg). The arsenic concentrations ranged from 2.9 mg/kg to 57 mg/kg. The average arsenic concentration was 16 mg/kg. None of the samples exceeded the MTCA Method A cleanup level of 250 mg/kg for lead. Lead concentrations ranged from 6 mg/kg to 180 mg/kg. The average lead concentration was 38 mg/kg.

Samples collected from 6 to 12 inches bgs: None of the soil samples exceeded the cleanup level of 20 mg/kg for arsenic. The arsenic concentrations ranged from 3 mg/kg to 17 mg/kg. The average arsenic concentration was 9 mg/kg. None of the lead concentrations exceeded the cleanup level of 250 mg/kg. Lead concentrations ranged from 6.4 mg/kg to 30 mg/kg. The average lead concentration was 19.4 mg/kg.

Duff: One of the samples exceeded the cleanup level of 20 mg/kg for arsenic. The arsenic concentrations ranged from 5.2 mg/kg to 36 mg/kg. None of the lead concentrations exceeded the cleanup level of 250 mg/kg. Lead concentrations ranged from 23 mg/kg to 78 mg/kg.

Table 1. Summary of the Characterization Sampling on the Property

Matrix	Depth (inches)	Arsenic (mg/kg)			Lead (mg/kg)		
		Minimum	Maximum	Average	Minimum	Maximum	Average
Soil	0-6	2.9	57	16	6	180	38
	6-12	3	17	9	6.4	30	19.4
Duff	Surface	5.2	36	12.7	23	78	41
MTCA Cleanup Level			40	20		500	250

Bold values represent concentrations above the MTCA Method A cleanup level.

Bold red values represent concentrations twice the MTCA Method A cleanup level.

GeoEngineers conducted additional soil sampling to delineate the vertical and horizontal extent of the contamination. They conducted the sampling in the area where arsenic exceeded twice the MTCA Method A cleanup level of 20 mg/kg for arsenic (sample location DU1-08-0-6). On March 12, 2021, GeoEngineers collected seven discrete soil samples from 0 to 6 inches bgs and two samples from 6 to 12 inches bgs (Figure 3).

ECI submitted the soil and duff samples to OnSite Environmental Inc. laboratory in Redmond, Washington for arsenic analysis with EPA Method 6010D. GeoEngineers did not analyze any of the additional samples for lead because all the lead concentrations were below the cleanup level of 250 mg/kg for lead. For a summary of additional sampling results, refer to Table 2. For the comprehensive results of the additional sampling on the Property, refer to Enclosure D.

Table 2. Summary of Additional Sampling

Depth (inches)	Arsenic (mg/kg)		
	Minimum	Maximum	Average
0-6	6.1	50	24
6-12	10	20	15

Bold values represent concentrations above the MTCA Method A cleanup level.

Bold red values represent concentrations twice the MTCA Method A cleanup level.

Results of the additional sampling

Samples collected at 0 to 6 inches bgs: Two of the samples exceeded the MTCA Method A cleanup level for arsenic. One sample exceeded the maximum allowable concentration for a single sample (40 mg/kg). Arsenic concentrations ranged from 6.1 mg/kg to 50 mg/kg. The average arsenic concentration was 24 mg/kg.

Samples collected at 6 to 12 inches bgs: None of the samples exceeded the cleanup level of 20 mg/kg for arsenic. The arsenic concentrations ranged from 10 mg/kg to 20 mg/kg. The average arsenic concentration was 15 mg/kg.

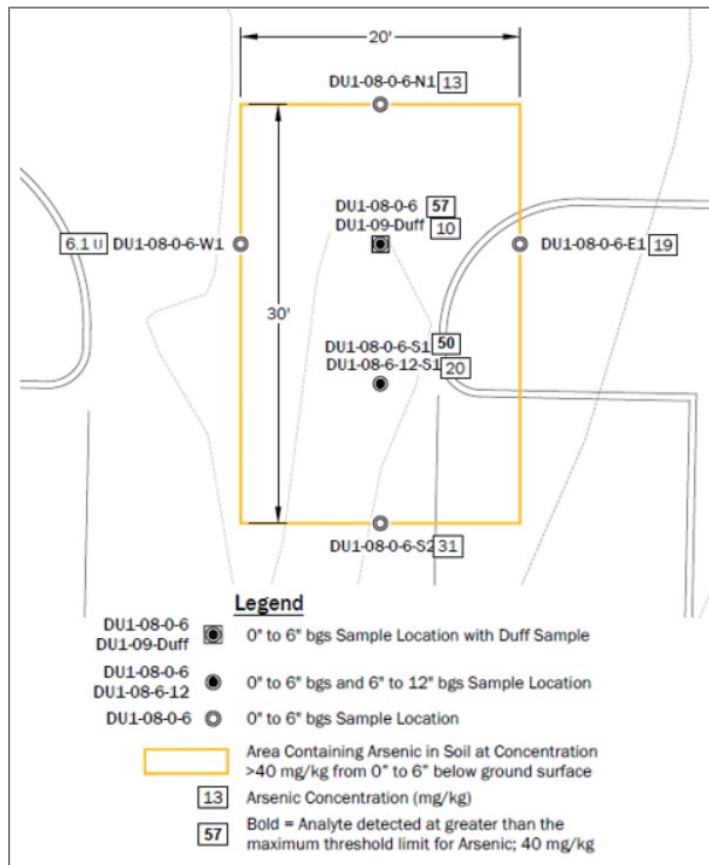


Figure 3. Approximate Locations of Additional Samples

b. Establishment of Cleanup Standards for the Asarco Site.

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

As part of the Interim Action Plan for the Asarco Tacoma Smelter Site (June 2012) (IAP), Ecology completed a terrestrial ecological evaluation for properties with only Tacoma Smelter Plume contamination. Ecology determined the MTCA Method A cleanup levels for both arsenic and lead were protective of both human health and the environment. The MTCA Method A cleanup levels for soil are as follows:

- Arsenic is 20 mg/kg.
- Lead is 250 mg/kg.

The IAP determined that the soil and duff cleanup levels are protective of human health and the environment for properties within the Asarco Tacoma Smelter Site are the following:

- Average arsenic detected in the soil is less than 20 mg/kg.
- Average lead detected in the soil is less than 250 mg/kg.
- Duff composite sample is less than 20 mg/kg for arsenic.
- Duff composite sample is less than 250 mg/kg for lead.
- No single soil sample has arsenic above 40 mg/kg.
- No single soil sample has lead above 500 mg/kg.

c. Selection of Cleanup for the Property.

Ecology has determined the cleanup you proposed for the Property will likely meet the substantive requirements of MTCA and the IAP. Your proposed cleanup meets the minimum cleanup requirements and will not exacerbate conditions or preclude reasonable cleanup alternatives elsewhere at the Asarco Site.

Ecology proposed four model remedies in the IAP:

- Excavation and removal.
- Mixing.
- Capping in place.
- Consolidation and capping.

Shelter decided to use mixing and excavation and removal at the Property.

Property Cleanup: Shelter will conduct the soil cleanup on the Property in conjunction with its development. On August 19, 2021, on behalf of Shelter, GeoEngineers developed a Cleanup Action Plan (CAP) for the Property. The CAP described the use of the selected model remedies: soil mixing and excavation and removal of duff as a way to remediate the TSP contamination on the Property. Ecology based this opinion letter on the information provided in this CAP.

Based on the results of the characterization soil sampling, GeoEngineers identified one remedial area where arsenic exceeded twice the cleanup level of 20 mg/kg in the soil (sample location DU1-08-06). They also identified two locations, where the composite duff samples were at or above the cleanup level of 20 mg/kg for arsenic (DU1-32-Duff and DU1-14-Duff).

The approximate size of the soil remedial area based on the characterization and additional sampling is 20 feet wide by 30 feet long (Figure 4). The contractor will import approximately 11 cubic yards of clean soil and place it in a 5-inch layer over the remedial area. The contractor will mix the clean imported soil with 12 inches of the original soil to a combined depth of 18 inches bgs. The approximate volume of mixed soil will be 33 cubic yards.

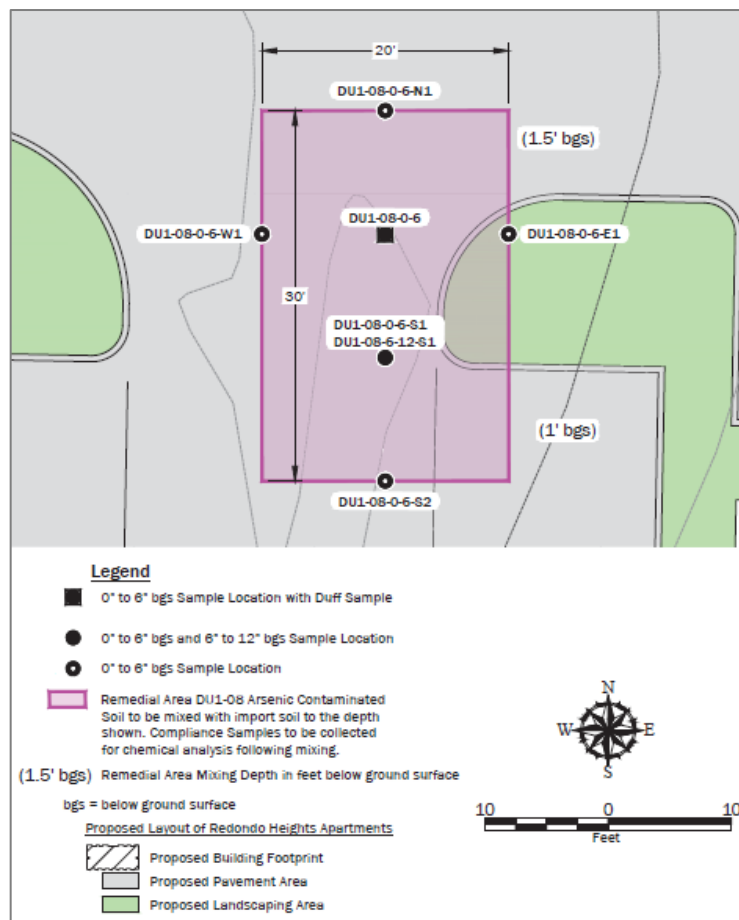


Figure 4. Remedial Area in the Sample Location DU1-08-06

The contractor will scrape the duff from the two areas where arsenic was at or exceeded 20 mg/kg and dispose it off to a qualified disposal facility. The approximate dimensions of the two areas are 80 feet by 80 feet, each (Figure 5). Shelter will provide the receipt of the disposal with the cleanup report and a request for a No Further Action determination.

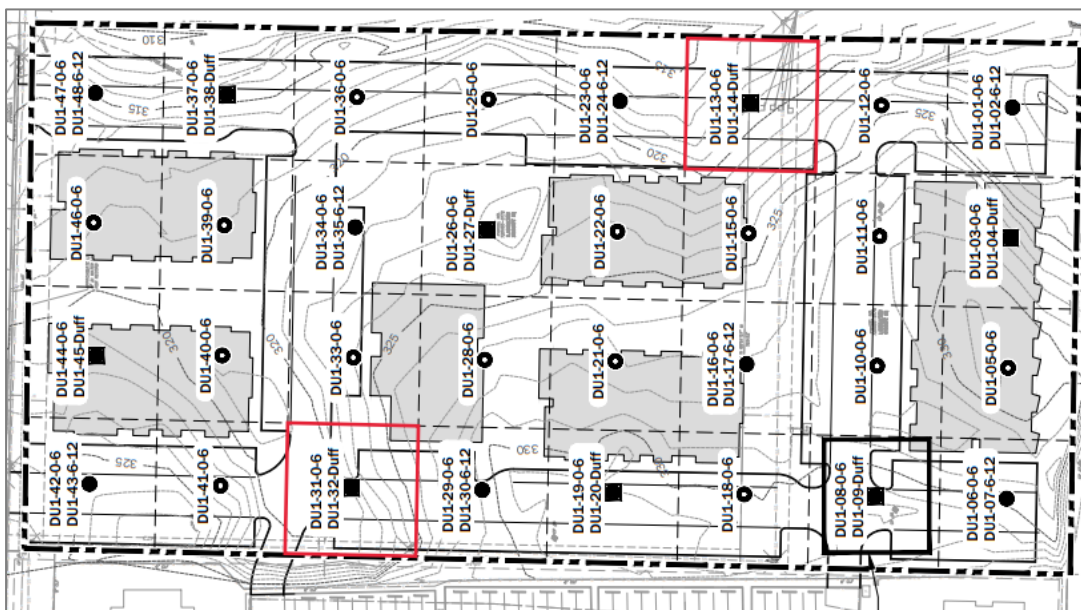


Figure 5. Approximate Locations of the Two Areas with Elevated Arsenic in Duff (in red)

Confirmational Sampling

GeoEngineers will collect confirmational samples following soil mixing in the soil remedial area. They will collect soil samples in 6-inch depth intervals throughout the mixing depth. They will submit the samples to an analytical laboratory for arsenic analysis. They will not analyze the soil for lead, since all the lead samples were below the cleanup level of 250 mg/kg for lead.

If any of the samples exceeds twice the cleanup level of 20 mg/kg for arsenic or if the average concentration exceeds 20 mg/kg for arsenic, the contractor will conduct additional round of mixing. GeoEngineers will resample the mixed areas as described above.

As a reminder, in accordance with WAC 173-340-840(5) and [Ecology Toxics Cleanup Program Policy 840](#)⁶ (Data Submittal Requirements), data generated for Independent Remedial Actions shall be submitted simultaneously in both a written and electronic format. For additional information regarding electronic format requirements, visit Ecology's [Environmental Information Management database webpage](#).⁷

⁶ <https://apps.ecology.wa.gov/publications/SummaryPages/1609050.html>

⁷ <http://www.ecy.wa.gov/eim>

Be advised that according to the policy, any reports containing sampling data that are submitted for Ecology review are considered incomplete until the electronic data has been entered. Please ensure that data generated during on-site activities is submitted pursuant to this policy.

Data must be submitted to Ecology in this format for Ecology to issue a no further action (NFA) determination. Please be sure to submit all soil data collected to date, as well as any future data, in this format.

2. Cleanup of the Asarco Site as a Whole.

Ecology has concluded that **further remedial action** will still be necessary elsewhere within the ASARCO Site (Asarco Tacoma Smelter Site) upon completion of your proposed cleanup. In other words, while your proposed cleanup may constitute the final action for the Property, it will constitute only an **“interim action”** for the Asarco Site as a whole.

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 Property. This opinion **does not**:

- Change the boundaries of the Asarco Site.
- 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 70A.305.040(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 70A.305.080 and WAC 173-340-545.

3. Opinion is Limited to Proposed Cleanup.

This letter does not provide an opinion on whether further remedial action will actually be necessary at the Property upon completion of your proposed cleanup. To obtain such an opinion, you must submit a report to Ecology upon completion of your cleanup and request an opinion under the Voluntary Cleanup Program (VCP).

4. 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 70A.305.170(6).

Contact Information

Thank you for choosing to clean up your Property under the VCP. As you conduct your cleanup, please do not hesitate to request additional services. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our [Voluntary Cleanup Program website](#).⁸ If you have any questions about this opinion, please contact me by phone at (360) 999-9593 or by e-mail at eva.barber@ecy.wa.gov.

Sincerely,



Eva Barber
Technical Assistance Coordinator
Toxics Cleanup Program
Southwest Regional Office

EB/tm

Enclosures: A – Basis for the Opinion: List of Documents
B – Legal Description and General Description of the Property
C – Site Description of the Asarco Tacoma Smelter Site
D – Results of the Soil Characterization on the Property

cc by email: Becky Chapin, City of Federal Way, becky.chapin@cityoffederalway.com
Aaron Waggoner, GeoEngineers, awaggoner@geoengineers.com
Marian Abbett, Ecology, marian.abbett@ecy.wa.gov
Amy Jankowiak, WQ-NWRO, Ecology, amy.jankowiak@ecy.wa.gov
Tim Mullin, Ecology, tim.mullin@ecy.wa.gov
Ecology Site File

⁸ <http://www.ecy.wa.gov/vcp>.

Enclosure A

Basis for the Opinion: List of Documents

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Document List

1. GeoEngineers, *Cleanup Action Plan Redondo Heights Apartments Project, Washington*. August 19, 2021.
2. City of Federal Way, *State Environmental Policy Act (SEPA) Determination of Nonsignificance Redondo Heights TOD, File No: 20-104353-00-SE*. November 9, 2021.
3. GeoEngineers, *Soil Sampling and Analytical Results Summary, Tacoma Smelter Plume Sampling, Redondo Heights Apartments, Federal Way, Washington*. June 16, 2021.

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Enclosure B

Legal Description and General Description of the Property

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Legal Description

Parcel 7204800172: REDONDO HEIGHTS UNREC VALUE OF UNDEEDED STS & ALLEYS INCL IN ADJ LOT VAL POR LOT 24 & ADJ UNDEEDED ST DAF- E 1/2 OF NE 1/4 OF SW 1/4 OF NW 1/4 LESS POR SLY OF LN RNG W FR E LN 207 FT N FR SE COR TAP ON W LN 205 FT N OF SW COR STR 33-22-04

Parcel 7204800174: REDONDO HEIGHTS UNREC POR E 1/2 OF NE 1/4 OF SE 1/4 OF NW 1/4 STR 33-22-04 DAF: BEG SE COR THOF TH N ALG E LN 207 FT TH W TO PT 205 FT N OF SW COR TH S 205 FT TH E TO POB

General Description of the Property

The Property is located south of South 276th Street and the King County Transit Redondo Park and Ride to the north, a vacant tract of land to the east, the Silver Shadow Apartment complex to the west, and undeveloped private land to the south.

The topography is generally level with a low area crossing from west to east approximately in the middle of the northern half of the Property. The City of Federal Way zoning for the Property and the surrounding area to the south and east is designated as residential with single-family dwellings (Federal Way Zoning Designation RS7.2); the area to the west is designated as residential with multi-family dwellings (Federal Way Zoning Designation RM2400), and the area to the north is designated as community business (Federal Way Zoning Designation BC).

The Property consists of 5.01 acres and has never been developed. It will be developed into multi-family housing consisting of six buildings. The development plans include approximately 2.1 acres of paved parking and roadways and approximately 1.7 acres of landscaping.

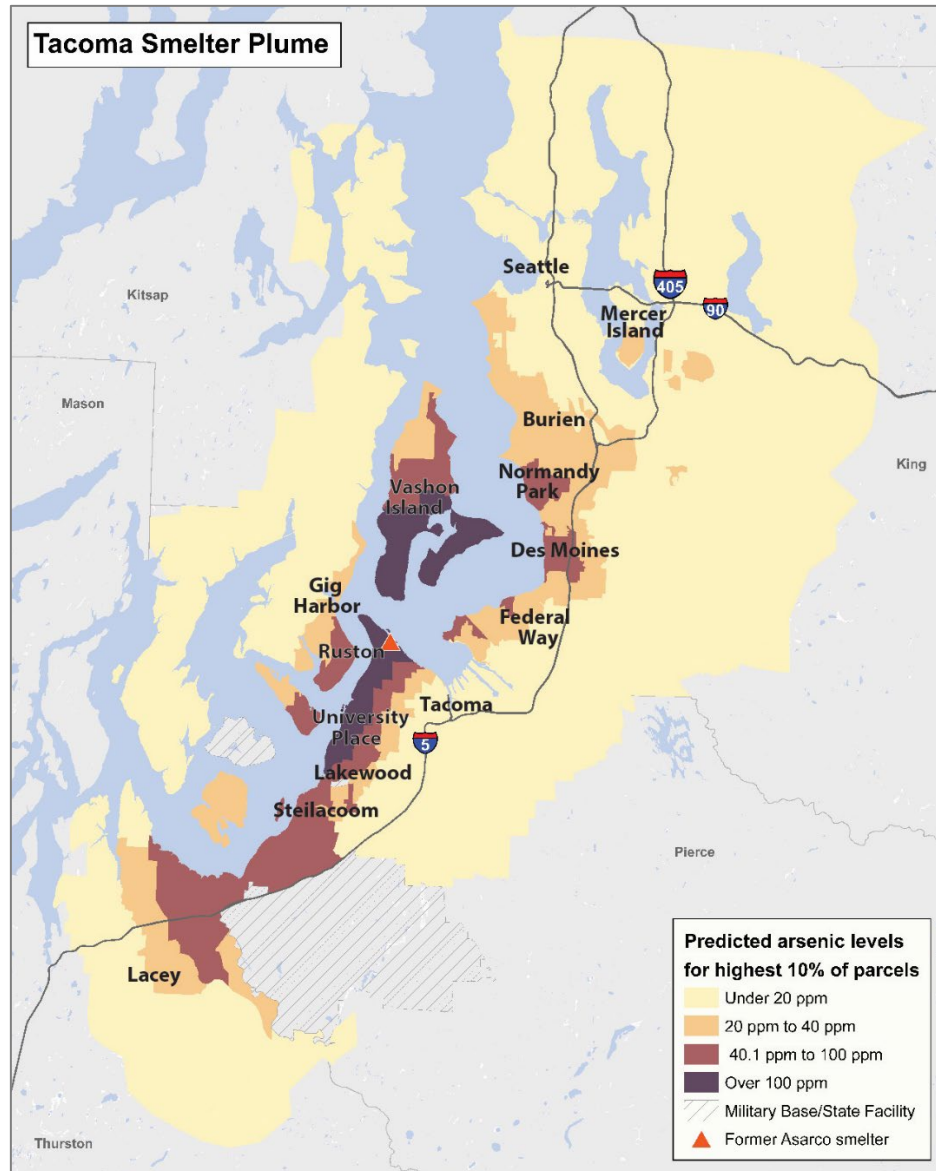
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Enclosure C

Site Description of the Asarco Tacoma Smelter Site

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Asarco Tacoma Smelter Site



An interactive color map can be found at: <https://dirtalert.info/>

For almost 100 years, the Asarco Company operated a copper smelter in Tacoma. Air pollution from the smelter settled on the surface soil over a vast region—more than 1,000 square miles of the Puget Sound basin. Elevated levels of contamination are found as far south as the Nisqually Ridge and as far north as Seattle (West Seattle). Additionally, elevated levels of contamination are found as far west as the Kitsap Peninsula and as far east as Kent and Bellevue. Arsenic, lead, cadmium, and other heavy metals are still in the soil as a result of this pollution. The area has elevated levels of arsenic, lead, and cadmium in the soil due to air emissions from the Asarco smelter.

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Enclosure D

Results of the Soil Characterization on the Property

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Results of the Characterization Sampling

Sample ID	Sample Date	Sample Depth (inches)	Arsenic (mg/kg)	Lead (mg/kg)
DU1-44-0-6	2/24/2021	0-6	2.9	11
DU1-42-0-6	2/24/2021	0-6	3	6
DU1-10-0-6	2/24/2021	0-6	3.1	7.7
DU1-41-0-6	2/24/2021	0-6	3.5	7
DU1-29-0-6	2/24/2021	0-6	5.8	13
DU1-12-0-6	2/24/2021	0-6	6.2	16
DU1-25-0-6	2/24/2021	0-6	6.7	15
DU1-11-0-6	2/24/2021	0-6	9.1	27
DU1-22-0-6	2/24/2021	0-6	9.4	19
DU1-46-0-6	2/24/2021	0-6	9.7	28
DU1-23-0-6	2/24/2021	0-6	10	22
DU1-01-0-6	2/24/2021	0-6	11	27
DU1-36-0-6	2/24/2021	0-6	11	28
DU1-47-0-6	2/24/2021	0-6	12	24
DU1-31-0-6	2/24/2021	0-6	13	24
DU1-40-0-6	2/24/2021	0-6	13	24
DU1-16-0-6	2/24/2021	0-6	13	29
DU1-15-0-6	2/24/2021	0-6	13	32
DU1-21-0-6	2/24/2021	0-6	16	37
DU1-34-0-6	2/24/2021	0-6	16	40
DU1-06-0-6	2/24/2021	0-6	18	27
DU1-33-0-6	2/24/2021	0-6	18	40
DU1-37-0-6	2/24/2021	0-6	18	42
DU1-26-0-6	2/24/2021	0-6	18	53
DU1-39-0-6	2/24/2021	0-6	19	38
DU1-13-0-6	2/24/2021	0-6	22	33
DU1-18-0-6	2/24/2021	0-6	22	53
DU1-28-0-6	2/24/2021	0-6	26	75
DU1-19-0-6	2/24/2021	0-6	34	59
DU1-03-0-6	2/24/2021	0-6	36	86
DU1-05-0-6	2/24/2021	0-6	37	100
DU1-08-0-6	2/24/2021	0-6	57	180

Sample ID	Sample Date	Sample Depth (inches)	Arsenic (mg/kg)	Lead (mg/kg)
DU1-43-6-12	2/24/2021	6-12	3	6.4
DU1-30-6-12	2/24/2021	6-12	3.2	9.0
DU1-02-6-12	2/24/2021	6-12	7.6	17
DU1-07-6-12	2/24/2021	6-12	8.4	19
DU1-35-6-12	2/24/2021	6-12	9.1	22
DU1-17-6-12	2/24/2021	6-12	11	24
DU1-24-6-12	2/24/2021	6-12	12	28
DU1-45-6-12	2/24/2021	6-12	17	30
DU1-09-DUFF	2/24/2021	Duff	5.2	23
DU1-45-DUFF	2/24/2021	Duff	6.1	23
DU1-27-DUFF	2/24/2021	Duff	7.5	24
DU1-04-DUFF	2/24/2021	Duff	4.8	25
DU1-38-DUFF	2/24/2021	Duff	9.2	27
DU1-14-DUFF	2/24/2021	Duff	20	55
DU1-32-DUFF	2/24/2021	Duff	36	74
DU1-20-DUFF	2/24/2021	Duff	13	78
Additional Sampling				
DU1-08-0-6-W1	3/12/2021	0-6	6.1	NA
DU1-08-0-6-N1	3/12/2021	0-6	13	
DU1-08-0-6-E1	3/12/2021	0-6	19	
DU1-08-0-6-S2	3/12/2021	0-6	31	
DU1-08-0-6-S1	3/12/2021	0-6	50	
DU1-08-6-12-S1	3/12/2021	6-12	20	
DU1-08-6-12	3/12/2021	6-12	10	

Bold values represent concentrations above the MTCA Method A cleanup level.

Bold red values represent concentrations twice the MTCA Method A cleanup level.

NA – not analyzed