Ecopy

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Southwest Region Office
PO Box 47775 ■ Olympia, Washington 98504-7775 ■ 360-407-6300

February 24, 2025

John Harkness
Toll Brothers, Inc.
8815 122nd Avenue Northeast, Suite 200
Kirkland, WA 98033-5828
jharkness@tollbrothers.com

Re: No Further Action Likely at the following Property associated with the Asarco Tacoma Smelter Site

Property name: Watchtower Heights
Property address: 5920 Browns Point Boulevard, Tacoma, Washington
Facility/Site ID: 100002884
Cleanup Site ID: 17104
VCP Project No.: SW1849

Dear John Harkness:

The Washington State Department of Ecology (Ecology) received your request on November 12, 2024 for an opinion regarding the sufficiency of your independent cleanup of a Property associated with the Asarco Tacoma Smelter Site (Asarco Site) under the Voluntary Cleanup Program (VCP).[1] Acceptance of any new electronic Site data into Ecology's Environmental Information Management (EIM) database remains pending. This letter provides our opinion and analysis. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), chapter 70A.305 RCW.[2]

[1] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Voluntary-Cleanup-Program
[2] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305

Opinion

Ecology has determined that no further action is likely necessary at the Property to clean up contamination associated with the Asarco Site, pending successful completion of the requests in this letter.

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

Ecology bases this opinion on an analysis of whether the remedial action meets the substantive requirements of MTCA and its implementing regulations, which are specified in chapter 70A.305 RCW and chapter 173-340 WAC[3] (collectively called "MTCA").

Property and Asarco Site Description

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

1. Property Description

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

- 0321161056 (16.32 acres)
- 0321165018 (1.87 acres)

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

2. Asarco Site Description

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.

[3] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-340

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

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

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.

Basis for the Opinion

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

- Terra Associates, Inc., *Updated Tacoma Smelter Plume Impact Assessment/Cleanup Action Plan*, October 19, 2024.
- Terra Associates, Inc., *Tacoma Smelter Plume Impact Assessment/Cleanup Action Plan,* February 21, 2022.

Those documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. Information on obtaining those records can be found on Ecology's public records requests web page.[4] Some site documents may be available on Ecology's Cleanup Site Search web page.[5]

[4] https://ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests
[5] https://apps.ecology.wa.gov/gsp/CleanupSiteDocuments.aspx?csid=17104

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

Analysis of the Cleanup

Cleanup of the Property located within the Asarco Site

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

Characterizing the Site

The Watchtower Heights property (Property) is located west of Interstate 5, within a residential area of North Tacoma, Washington, known as Brown's Point (Figure 1). The Property is situated on two Pierce County Tax parcels totaling approximately 18.19 acres. Residential properties border the Property on all sides.

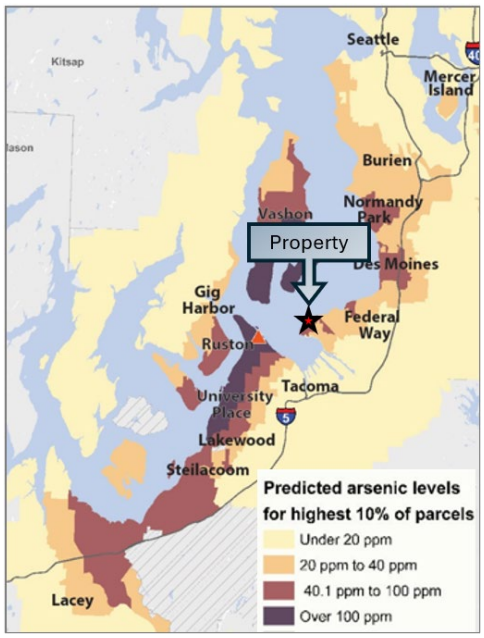


Figure 1. Vicinity Map

Both parcels are currently forested and have a thick understory of brush and berry vines. Except for Watchtower Road NE, no significant trails or roads cross the site. The topography generally slopes mildly to moderately, with a prominent north-south trending ridge bisecting the site through the central portion of the larger eastern parcel. A steep slope is present along the west margin of the property, adjacent to Watchtower Road.

For more information about the Property, refer to Enclosure A.

The Property is planned for development into residential homes. Toll Brothers, Inc. (Toll Brothers) contracted Terra Associates, Inc. (Terra) to characterize the Tacoma Smelter Plume (TSP) contamination on the Property. Prior to Terra collecting samples for this project, earlier sampling events have occurred on the Property. In 2002, Tacoma Pierce County Health Department (TPCHD) collected samples, and in 2007, ADAPT collected additional samples. Both of these sampling events occurred prior to Ecology's development of the Tacoma Smelter Plume Model Remedies Guidance (TSPMRG)[6], and were not included as part of the more recent site characterization completed by Terra.

[6] https://apps.ecology.wa.gov/publications/SummaryPages/1909101.html

Prior Sampling Events by TPCHD in 2002 and ADAPT in 2007

A small sample grid located in the center of the parcel was sampled by the Tacoma Pierce County Public Health Department (TPCHD) as part of their TSP studies in 2002. A total of nine samples were collected from three locations. The results of the prior sampling by TPCHD showed arsenic up to 45 milligrams per kilogram (mg/kg) and lead up to 130 mg/kg. The average arsenic concentrations were 27.32 mg/kg for arsenic and 63.39 mg/kg for lead.

A soil sampling report was prepared by ADAPT dated September 17, 2007. This 2007 sampling event included a total of 51 soil samples from 47 locations, analyzed for arsenic. The average concentration of arsenic in the 0 to 6-inch depth was 23.91 mg/kg. The average arsenic concentration in the four samples from the 6 to 12-inch depth was 19.85 mg/kg.

Current sampling by Terra in 2021 and 2024

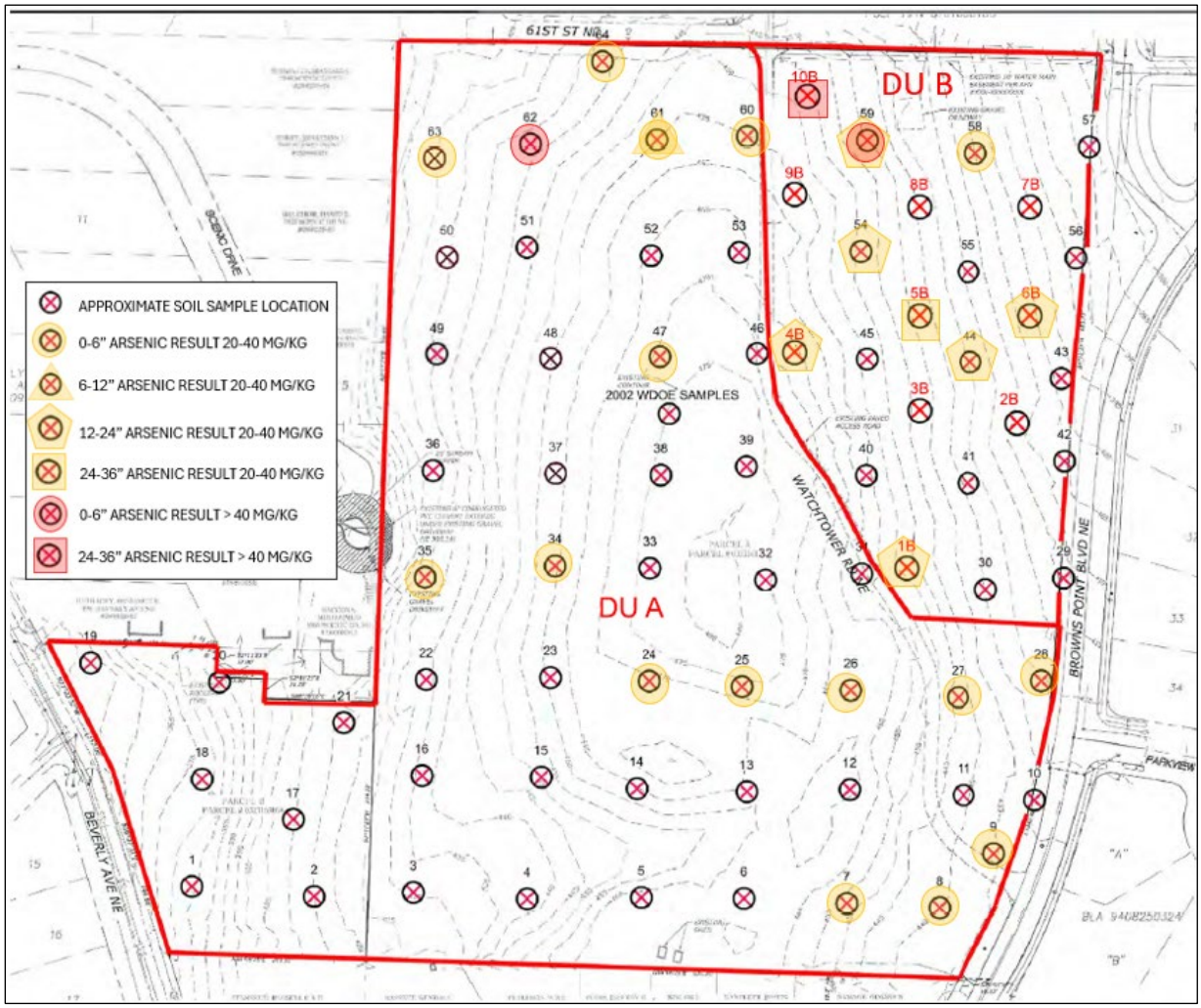
Current development plans called for a Tacoma Smelter Plume (TSP) assessment for the Property to be completed according to the TSPMRG. Terra conducted soil sampling on the property in 2021. Development plans at that time called for the entire site to be cleared and graded, so the Property was sampled as one decision unit (DU). In August and September 2021, a total of 80 samples were collected from 64 locations on the property. Additionally, 12 duff samples were collected from throughout the Property.

Since the 2021 sampling event, development plans have changed. As of 2024, most of the Property east of Watchtower Road NE will be retained as a native growth/tree tract. Toll Brothers Plan to use a Net Environmental Benefit Analysis (NEBA) in lieu of active remediation. For areas using the NEBA process in lieu of remediation, Ecology's TSPMRG recommends collecting additional soil samples at additional depths and frequencies than for areas to be remediated during development.

In 2024, the Property was split into two DU's based on future use. DU A consists of all portions of the Property where clearing and grading will occur as part of the Property development. DU B is approximately 4.3-acres located east of Watchtower Road and planned to be retained as a native growth/tree tract. In October 2024, an additional 59 soil samples were collected from 24 locations within DU B. Fourteen of the 2021 sample locations now fall within DU B. In 2024, an additional 10 locations were added to DU B (Figure 2). Samples in DU B include the 0- to 6-inch depth, 6- to 12-inch depth, 12- to 24-inch depth, and 24- to 36-inch depth intervals, adhering to the TSPMRG.

Terra submitted the soil samples to OnSite Environmental Inc., in Redmond, Washington, for an analysis of arsenic and lead concentrations using Environmental Protection Agency (EPA) Method 6020B.

Figure 2. Soil Sample Locations by Terra in 2021 and 2024



Results of 2021 and 2024 Soil Sampling

A total of 139 samples were collected from 74 locations throughout the Property. Table 1 provides a summary of the characterization sampling on the Property. Enclosure C contains the comprehensive results of the characterization sampling on the Property.

Samples collected by Terra from 0 to 6 inches below ground surface (bgs) in DU A: Arsenic exceeded the MTCA Method A cleanup level of 20 milligrams per kilogram (mg/kg) in 16 of the 50 locations sampled. One sample also 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 2.2 mg/kg to 55 mg/kg. The average arsenic concentration was 16.01 mg/kg. None of the samples exceeded the MTCA Method A cleanup level of 250 mg/kg for lead. Lead concentrations ranged from 3.2 mg/kg to 110 mg/kg. The average lead concentration was 25.72 mg/kg.

Samples collected by Terra from 6 to 12 inches bgs in DU A: Arsenic exceeded the MTCA Method A cleanup level of 20 milligrams per kilogram (mg/kg) in one of the 12 samples collected at this depth. No samples 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 2.7 mg/kg to 21 mg/kg. The average arsenic concentration was 10.81 mg/kg. None of the samples exceeded the MTCA Method A cleanup level of 250 mg/kg for lead. Lead concentrations ranged from 3.3 mg/kg to 74 mg/kg. The average lead concentration was 21.1 mg/kg.

Samples collected by Terra from 0 to 6 inches bgs in DU B: Arsenic exceeded the MTCA Method A cleanup level of 20 milligrams per kilogram (mg/kg) in two of the 24 samples collected at this depth. One sample also 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 5.2 mg/kg to 42 mg/kg. The average arsenic concentration was 13.49 mg/kg. None of the samples exceeded the MTCA Method A cleanup level of 250 mg/kg for lead. Lead concentrations ranged from 5.8 mg/kg to 80 mg/kg. The average lead concentration was 26.06 mg/kg.

Samples collected by Terra from 6 to 12 inches bgs in DU B: Arsenic did not exceed the MTCA Method A cleanup level of 20 mg/kg in any of the 24 samples collected at this depth. The arsenic concentrations ranged from 2.0 mg/kg to 19 mg/kg. The average arsenic concentration was 10.55 mg/kg. None of the samples exceeded the MTCA Method A cleanup level of 250 mg/kg for lead. Lead concentrations ranged from 5.7 mg/kg to 17 mg/kg. The average lead concentration was 10.63 mg/kg.

Samples collected by Terra from 12 to 24 inches bgs in DU B: Seven of the 24 samples collected at this depth exceeded the MTCA Method A cleanup level of 20 mg/kg for arsenic. None of these samples exceeded twice the cleanup level for arsenic (40 mg/kg). The arsenic concentrations ranged from 1.6 mg/kg to 37 mg/kg. The average arsenic concentration was 15 mg/kg. Lead was not analyzed at this depth because no previous or shallower samples on the property showed elevated lead results.

Samples collected by Terra from 24 to 36 inches bgs in DU B: Two of the five samples exceeded the MTCA Method A cleanup level of 20 mg/kg for arsenic. One of these samples also

exceeded twice the cleanup level for arsenic (40 mg/kg). The arsenic concentrations ranged from 4 mg/kg to 45 mg/kg. The average arsenic concentration was 20.68 mg/kg. Lead was not analyzed at this depth because no previous or shallower samples on the property showed elevated lead results.

Composite forest duff samples collected by Terra for entire Property: None of the samples exceeded MTCA Method A cleanup level of 20 mg/kg for arsenic. Arsenic concentrations ranged from 1.5 mg/kg to 11 mg/kg. None of the samples exceeded the MTCA Method A cleanup level of 250 mg/kg for lead. Lead concentrations ranged from 5.0 mg/kg to 23 mg/kg.

Table 1. Summary of 2021 and 2024 Characterization Sampling on the Property, by Decision Unit

Matrix	DU	Depth (inches)	Arsenic Minimum (mg/kg)	Arsenic Maximum (mg/kg)	Arsenic Average (mg/kg)	Lead Minimum (mg/kg)	Lead Maximum (mg/kg)	Lead Average (mg/kg)
Soil	DU A	0-6	2.2	**55**	16.01	3.2	110	25.72
		6-12	2.7	**21**	10.81	3.3	74	21.1
	DU B	0-6	5.2	**42**	13.49	5.8	80	26.06
		6-12	2.0	19	10.55	5.7	17	10.63
		12-24	1.6	**37**	15.00	--	--	--
		24-36	4	**45**	**20.68**	--	--	--
Duff	DU A/ DU B	subsurface	1.5	11	4.61	5.0	23	10.43
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 for unrestricted land use.

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.

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.

Toll Brothers decided to use mixing on the Property.

Property Cleanup: Toll Brothers will conduct the soil cleanup on the Property in conjunction with development. On October 19, 2024, on behalf of Toll Brothers, Terra developed an Updated Cleanup Action Plan (CAP) for the Property. The CAP describes the use of soil mixing to remediate the TSP contamination on the Property. Ecology bases this opinion letter on the information provided in this CAP.

The Property cleanup will proceed as follows:

DU A: This area is planned for clearing and grading to prepare for development. Soil will be mixed in stockpiles to blend the upper 12 inches of soils to dilute the arsenic that exceeds 20 mg/kg.

The process will consist of removal of stumps, large roots, and vegetation. Soil that may adhere to the root balls will be shaken off in a manner that does not create dust. Following the removal of the vegetation, in areas where arsenic exceeds 20 mg/kg, the upper 12 inches will be stripped, and mixed in stockpiles.

Additional deeper sampling will be performed to confirm whether elevated levels of arsenic is present at depths deeper than 12 inches bgs in DU A. Elevated arsenic has been identified in DU B deeper than 12 inches bgs. If contamination is identified at deeper depths in DU A, additional soil excavation and mixing will be necessary to remediate contamination during Property cleanup. Following stripping, the resulting subgrade will be sampled at the base of excavation in areas where results exceed 40 mg/kg for arsenic. Confirmational samples will be collected in accordance with the TSPMRG, to verify the average arsenic concentrations are below 20 mg/kg, and no single sample is above 40 mg/kg.

Stockpiled soil will be blended and sampled in accordance with the TSPMRG to confirm results are below cleanup levels.

Mixed soil will be set aside in stockpiles for sampling and to allow the export of the underlying clean soils. The stockpiled soil can then be redistributed on the Property after confirming results are below cleanup levels.

DU B: This area consists of steep slopes and mature, native vegetation. It will be retained as a native growth/tree tract and remain undeveloped. Ecology conducted a Net Environmental Benefit Analysis (NEBA) in this area (Enclosure D).

For the protection of the habitat, wildlife and plants, Ecology conducted a Preliminary Habitat Assessment in DU B. Following a visit to the Property, Ecology has designated this area as especially valuable habitat (EVH). This area has been designated as EVH because of steep slopes, and the presence of healthy and mature native vegetation. Designated as EVH, Toll Brothers decided to use a NEBA to weigh the benefits of active cleanup versus leaving it un-remediated. Active cleanup typically involves disturbance to soil and removal of vegetation. Removing valuable habitat is likely to cause significant ecological damage that could take decades to recover.

For the protection of the EVH in DU B, and for the protection of human health, the Toll Brothers will implement institutional and engineering controls in DU B:

- They will install a fence along the entire boundary of DU B. The fence will act as a physical barrier to deter access to the non-remediated portions of DU B. Ecology will inspect the installed fence prior to the issuance of an NFA determination.
- Install Dirt Alert signs along the fence, according to Ecology's specifications. Ecology will inspect the installed signs prior to the issuance of an NFA determination.
- Draft an environmental covenant for Ecology's approval. The covenant will include restriction on the intrusive activities in areas where arsenic concentrations remain above their respective MTCA cleanup levels. Ecology will not approve the covenant unless the local jurisdiction has been consulted.
- Upon Ecology's approval, obtain signatures of all grantors of the covenant.
- Submit the signed covenant to Ecology for signatures as the grantee.
- The final, signed environmental covenant should be filed with the appropriate local jurisdiction. For detailed recording instructions, please refer to chapter 65.04 RCW[7].
- Return the original signed and recorded covenant to Ecology, prior to receiving a NFA determination.

Confirmational Sampling

Soil sampling will be performed within DU A to confirm that arsenic concentrations at the base of the excavations near location A/L-62 are below cleanup levels. This is the only sample location in DU A that exceeded the maximum allowable concentration for a single soil sample of 40 mg/kg. After excavating elevated arsenic concentrations within the vicinity of A/L-62, three confirmational soil samples will be collected and analyzed to confirm that remaining soil has an average arsenic concentration less than the MTCA Method A cleanup level of 20 mg/kg. All confirmational soil samples will be analyzed at a lab.

Soil will be mixed in stockpiles to blend the upper 12 inches of soils to dilute the arsenic that exceeds 20 mg/kg. After mixing, stockpiles will be sampled according to the TSPMRG, before offsite disposal, or reuse onsite as clean soil.

[7] https://app.leg.wa.gov/rcw/default.aspx?cite=65.04

If any of the samples exceeds twice the cleanup level (40 mg/kg) for arsenic, or if the average concentration exceeds the cleanup level (20 mg/kg) for arsenic, the contractor will excavate at least six inches deeper and resample the excavated areas as described above.

Environmental Information Management Database

In accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840[8] (Data Submittal Requirements), data generated for Independent Remedial Actions will need to be confirmed as uploaded, accepted, and approved in Ecology's Environmental Information Management (EIM) database prior to issuing a no further action (NFA) determination. This data. For additional information regarding electronic format requirements, see the website 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 an NFA determination. Please be sure to submit all soil data collected to date, as well as any future data, in this format.

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

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.

[8] https://apps.ecology.wa.gov/publications/SummaryPages/1609050.html

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).[9]

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[10] and WAC 173-340-545.[11]

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).

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).[12]

Questions

If you have any questions about this opinion, please contact me at 360-999-9593 or diana.ison@ecy.wa.gov.

Sincerely,

Diana Ison

Diana Ison
Toxics Cleanup Program
Southwest Region Office

DI/kw

[9] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305.040
[10] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305.080
[11] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-340-545
[12] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305.170

Enclosures (4): A – Legal Description and General Description of the Property
B – Asarco Tacoma Smelter Site Description
C – Terra's 2021 and 2024 Soil Characterization Results
D – Net Environmental Benefit Analysis

cc by email: David Litowitz, Allito Properties, LLC, litowitzdavid@gmail.com
Nick Hoffman, SoundEarth Strategies, nhoffman@soundearthinc.com
Marian Abbett, PE, Ecology, marian.abbett@ecy.wa.gov
Tim Mullin, LHG, Ecology, tim.mullin@ecy.wa.gov
Ecology Site file

Enclosure A

Legal Description and General Description of the Property

This page intentionally left blank.

Legal Property Description

Parcel 0321161056: Section 16 Township 21 Range 03 Quarter 14 : THAT POR OF N 30 AC OF SE OF NE LY WLY OF BROWNS PT BLVD SUBJ TO EASE SEG F 1345

Parcel 0321165018: Section 16 Township 21 Range 03 Quarter 13 PARCEL B OF ROS FOR BLA 2013-03-21-5002 PER RCW 58.04.007 AMEND 1996 DESC AS L 4 OF SP 75-253 EXC THAT POR DESC AS FOLL COM AT NW COR OF SD L 4 TH S 88 DEG 18 MIN 10 SEC E 181.21 FT TO POB TH S 02 DEG 11 MIN 23 SEC W 32 FT TH S 88 DEG 18 MIN 10 SEC E 83.8 FT TH N 02 DEG 11 MIN 23 SEC E 32 FT TH N 88 DEG 18 MIN 10 SEC W 83.8 FT TO POB ALSO EXC THAT POR DESC AS FOLL COM AT NW COR OF SD L 4 TH S 88 DEG 18 MIN 10 SEC E 181.21 FT TH S 02 DEG 11 MIN 23 SEC W 32 FT TH S 88 DEG 18 MIN 10 SEC E 53.8 FT TO POB TH CONT S 88 DEG 18 MIN 10 SEC E 30 FT TH N 02 DEG 11 MIN 23 SEC E 32 FT TH S 88 DEG 18 MIN 10 SEC E 28.2 FT TH S 02 DEG 11 MIN 23 SEC W 50 FT TH S 88 DEG 18 MIN 10 SEC E 60 FT TH S 02 DEG 11 MIN 23 SEC W 3.2 FT TH N 88 DEG 18 MIN 10 SEC W 118.2 FT TH N 02 DEG 11 MIN 23 SEC E 21.2 FT TO POB SEG I-1624 MN (DCWJEMS5-28-82) DC00297803 01/15/13 JP DC00335634 7/18/13 JP

General Property Description

The site consists of two tax parcels that cover 18.19 acres, located at Watchtower and Browns Point Road in Tacoma, Washington. The site is roughly defined as being within the northeast quarter of Section 16, Township 21 North, and Range 3 East of the Willamette Meridian of the Public Land Survey System.

Site topography generally slopes mildly to moderately. A prominent north-south trending ridge bisects the site through the central portion of the larger eastern parcel. The top of the ridge is relatively flat. The site slopes mildly to the north and south from the center of the ridge and moderately to the east and west. Overall topographic relief is on the order of 150 feet. Besides Watchtower Road NE crossing the site, there is no observed evidence of prior grading or structures on the site. The only prior land use on the site appears to have been logging.

The Surface Geology of Northeast Tacoma, Washington (1976), by Mackey Smith shows the site is underlain primarily by Vashon recessional outwash (Qvr). The outwash soils consist of stratified sand and gravel. Vashon till (Qvt) is also mapped immediately adjacent to the site. The till soils consist of an unsorted mixture of well consolidated silt, sand, gravel, and cobbles.

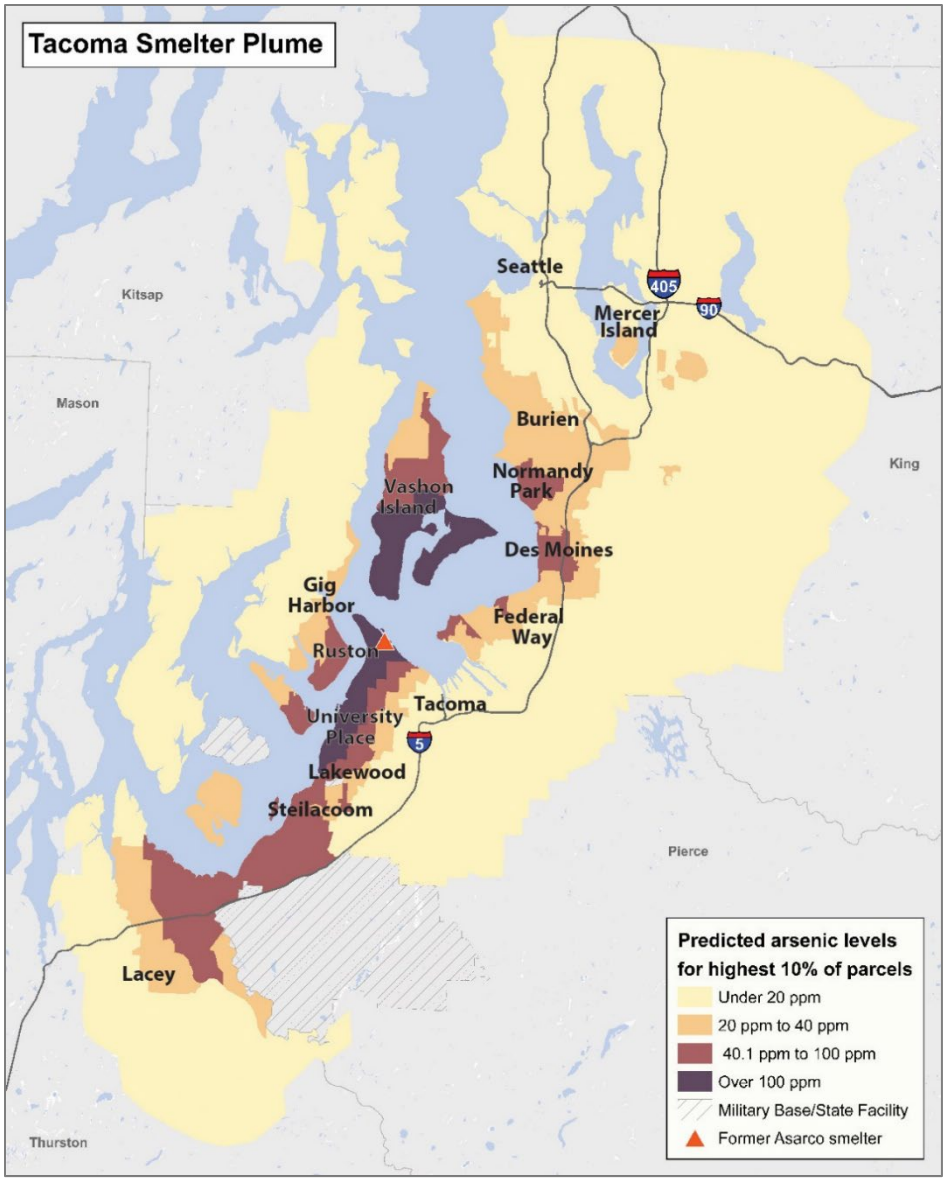
Near-surface groundwater gradients are likely controlled by the till topography and/or surface features. Groundwater has a general flow direction towards the west and east from the central ridge. Local variations in groundwater gradients may occur as a result of human-built features, such as drainage ditches, sewers, and roads.

Enclosure B

Asarco Tacoma Smelter Site Description

This page intentionally left blank.

Asarco Tacoma Smelter Site Description



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.

Enclosure C

Soil Characterization Results

This page intentionally left blank.

Characterization Sampling Results

Sample ID	Sample Date	Sample Depth (inches)	Arsenic (mg/kg)	Lead (mg/kg)
A/L-1a	8/31/2021	0-6	16	26
A/L-1b	8/31/2021	6-12	6.2	9.3
A/L-2	8/31/2021	0-6	2.2	3.2
A/L-3	8/31/2021	0-6	2.6	3.4
A/L-4	8/31/2021	0-6	12	18
A/L-5a	8/31/2021	0-6	12	20
A/L-5b	8/31/2021	6-12	17	25
A/L-6	8/31/2021	0-6	12	18
A/L-7	8/31/2021	0-6	**23**	38
A/L-8	8/31/2021	0-6	**22**	36
A/L-9a	8/31/2021	0-6	**22**	37
A/L-9b	8/31/2021	6-12	5.3	9.6
A/L-10	8/31/2021	0-6	9	13
A/L-11	8/31/2021	0-6	9.8	15
A/L-12	8/31/2021	0-6	10	16
A/L-13a	8/31/2021	0-6	8.6	16
A/L-13b	8/31/2021	6-12	10	34
A/L-14	8/31/2021	0-6	9.2	16
A/L-15	8/31/2021	0-6	5.5	8.6
A/L-16	8/31/2021	0-6	6.2	8.3
A/L-17a	8/31/2021	0-6	6.5	9.3
A/L-17b	8/31/2021	6-12	7.5	10
A/L-18	8/31/2021	0-6	9.4	13
A/L-19	8/31/2021	0-6	5.6	8.6
A/L-20	8/31/2021	0-6	20	22
A/L-21a	9/1/2021	0-6	15	20
A/L-21b	9/1/2021	6-12	18	18
A/L-22	9/1/2021	0-6	10	18
A/L-23	9/1/2021	0-6	8	13
A/L-24	9/1/2021	0-6	25	39
A/L-25a	9/1/2021	0-6	24	37
A/L-25b	9/1/2021	6-12	19	74
A/L-26	9/1/2021	0-6	**28**	59
A/L-27	9/1/2021	0-6	**29**	62
A/L-28	9/1/2021	0-6	**27**	53
A/L-31	9/1/2021	0-6	16	23
A/L-32	9/1/2021	0-6	18	26
A/L-33a	9/1/2021	0-6	20	26
A/L-33b	9/1/2021	6-12	2.7	3.3
A/L-34	9/1/2021	0-6	21	24

Sample ID	Sample Date	Sample Depth (inches)	Arsenic (mg/kg)	Lead (mg/kg)
A/L-35	9/1/2021	0-6	**23**	28
A/L-36	9/1/2021	0-6	18	20
A/L-37a	9/1/2021	0-6	18	18
A/L-37b	9/1/2021	6-12	10	10
A/L-38	9/1/2021	0-6	19	18
A/L-39	9/1/2021	0-6	9.6	13
A/L-46	9/1/2021	0-6	19	28
A/L-47	9/1/2021	0-6	**21**	32
A/L-48	9/1/2021	0-6	11	17
A/L-49a	9/1/2021	0-6	9.3	15
A/L-49b	9/1/2021	6-12	7	11
A/L-50	9/1/2021	0-6	3.5	4.9
A/L-51	9/1/2021	0-6	3.4	4.9
A/L-52	9/1/2021	0-6	8.8	12
A/L-53a	9/1/2021	0-6	9.2	15
A/L-53b	9/1/2021	6-12	6	9
A/L-60	9/1/2021	0-6	**23**	40
A/L-61a	9/1/2021	0-6	**22**	39
A/L-61b	9/1/2021	6-12	**21**	40
A/L-62	9/1/2021	0-6	**55**	110
A/L-63	9/1/2021	0-6	**38**	74
A/L-64	9/1/2021	0-6	**25**	52
1B	10/9/2024	0-6	15	--
1B	10/9/2024	6-12	17	--
1B	10/9/2024	12-24	**21**	--
1B	10/9/2024	24-36	16	--
2B	10/9/2024	0-6	13	--
2B	10/9/2024	6-12	12	--
2B	10/9/2024	12-24	3.7	--
2B	10/9/2024	24-36	4	--
3B	10/9/2024	0-6	9.1	--
3B	10/9/2024	6-12	7.3	--
3B	10/9/2024	12-24	4.5	--
4B	10/9/2024	0-6	15	--
4B	10/9/2024	6-12	17	--
4B	10/9/2024	12-24	**22**	--
5B	10/9/2024	0-6	6.1	--
5B	10/9/2024	6-12	11	--
5B	10/9/2024	12-24	7.8	--
5B	10/9/2024	24-36	**34**	--
6B	10/9/2024	0-6	9	--
6B	10/9/2024	6-12	8.7	--
6B	10/9/2024	12-24	**37**	--

Sample ID	Sample Date	Sample Depth (inches)	Arsenic (mg/kg)	Lead (mg/kg)
7B	10/9/2024	0-6	17	--
7B	10/9/2024	6-12	16	--
7B	10/9/2024	12-24	7.5	--
7B	10/9/2024	24-36	4.4	--
8B	10/9/2024	0-6	6	--
8B	10/9/2024	6-12	5.5	--
8B	10/9/2024	12-24	18	--
9B	10/9/2024	0-6	6.4	--
9B	10/9/2024	6-12	5.2	--
9B	10/9/2024	12-24	17	--
10B	10/9/2024	0-6	14	--
10B	10/9/2024	6-12	10	--
10B	10/9/2024	12-24	8.1	--
10B	10/9/2024	24-36	**45**	--
A/L-29 / 29B	9/1/2021	0-6	11	16
29B	10/9/2024	6-12	6.7	5.7
29B	10/9/2024	12-24	7.6	--
A/L-30 / 30B	9/1/2021	0-6	13	22
30B	10/9/2024	6-12	2	--
30B	10/9/2024	12-24	1.6	--
A/L-40 / 40B	9/1/2021	0-6	14	20
40B	10/9/2024	6-12	13	--
40B	10/9/2024	12-24	14	--
A/L-41a / 41B	9/1/2021	0-6	13	18
A/L-41b	9/1/2021	6-12	5.2	7.8
41B	10/9/2024	6-12	9.7	--
41B	10/9/2024	12-24	4.4	--
A/L-42 / 42B	9/1/2021	0-6	13	18
42B	10/9/2024	6-12	19	--
42B	10/9/2024	12-24	11	--
A/L-43 / 43B	9/1/2021	0-6	18	25
43B	10/9/2024	6-12	12	--
43B	10/9/2024	12-24	2.2	--
A/L-44 / 44B	9/1/2021	0-6	5.2	5.8
44B	10/9/2024	6-12	13	--
44B	10/9/2024	12-24	**29**	--
A/L-45a / 45B	9/1/2021	0-6	18	26
A/L-45b	9/1/2021	6-12	7.9	12
45B	10/9/2024	6-12	5.8	--
45B	10/9/2024	12-24	2.7	--
A/L-54 / 54B	9/1/2021	0-6	16	41
54B	10/9/2024	6-12	4	--
54B	10/9/2024	12-24	**37**	--

Sample ID	Sample Date	Sample Depth (inches)	Arsenic (mg/kg)	Lead (mg/kg)
A/L-55 / 55B	9/1/2021	0-6	8.7	10
55B	10/9/2024	6-12	12	--
55B	10/9/2024	12-24	20	--
A/L- 56 / 56B	9/1/2021	0-6	8.3	23
56B	10/9/2024	6-12	5.3	--
56B	10/9/2024	12-24	14	--
A/L-57a / 57B	9/1/2021	0-6	11	23
A/L-57b	9/1/2021	6-12	7	17
57B	10/9/2024	6-12	15	--
57B	10/9/2024	12-24	12	--
A/L-58 / 58B	9/1/2021	0-6	**22**	37
58B	10/9/2024	6-12	14	--
58B	10/9/2024	12-24	27	--
A/L-59 / 59B	9/1/2021	0-6	**42**	80
59B	10/9/2024	6-12	12	--
59B	10/9/2024	12-24	**31**	--
A/L-Duff1	8/31/2021	surface	7.3	14
A/L-Duff2	8/31/2021	surface	11	23
A/L-Duff3	8/31/2021	surface	8.1	21
A/L-Duff4	8/31/2021	surface	4.1	15
A/L-Duff5	8/31/2021	surface	7	11
A/L-Duff6	9/1/2021	surface	3.9	7.2
A/L-Duff7	9/1/2021	surface	3.1	5.6
A/L-Duff8	9/1/2021	surface	2.9	5.1
A/L-Duff9	9/1/2021	surface	2.3	6.6
A/L-Duff10	9/1/2021	surface	1.5	6.3
A/L-Duff11	9/1/2021	surface	1.7	5.3
A/L-Duff12	9/1/2021	surface	2.4	5

Bold values represent concentrations above the MTCA Method A Cleanup level; **bold red** values represent concentrations twice the MTCA Method A cleanup level for unrestricted land use.

This page intentionally left blank.

Enclosure D

Net Environmental Benefit Analysis

This page intentionally left blank.

DEPARTMENT OF ECOLOGY
State of Washington

Results of Watchtower Heights Net Environmental Benefit Analysis

To: Diana Ison, Site Manager
TSP and Site Management Unit
Toxics Cleanup Program
Southwest Regional Office

From: Jeff Wirtz, Toxicologist
Policy and Technical Support Unit
Toxics Cleanup Program

Date: January 23, 2025

This memorandum represents a Department of Ecology recommendation for the Net Environmental Benefit Analysis (NEBA) specific to the Watchtower Heights Site, located at 5920 Browns Point Boulevard, Tacoma, WA.

Determination:

It is recommended that the entire proposed non-developed area (decision unit [DU] B) should be designated as "especially valuable habitat (EVH)," and that any additional remediation for this proposed non-developed area is not required following the provisions of this memorandum.

This memorandum specifically pertains to Ecological Risk Assessment and the Terrestrial Ecological Evaluation (TEE) under MTCA (WAC 173-340-7490 through 7494).

For questions regarding this memorandum, please contact:

Jeff Wirtz
Phone: (360) 819-0160
Email: jwir461@ecy.wa.gov

Background

Net environmental benefits are the gains in environmental services or other ecological properties attained by remediation or ecological restoration, minus the environmental injuries caused by those actions (Efroymson et al., 2003). Ecosystems and natural resources (including wild animal and plant populations) can be thought of as environmental assets which provide people with a range of "services" which directly or indirectly contribute to our well-being. Decisions where there may be ecological tradeoffs, for example, clearing a vegetated site to access contaminated soil, needs to be balanced with the potential damage caused to the habitat, or "ecosystem" and the wider services that it provides (Deacon et al., 2010). Therefore, a Net Environmental Benefit Analysis (NEBA) would be the procedure of weighing the advantages of active cleanup (remediation) versus the impact that cleanup might have on potentially valuable ecological receptor habitat. Terrestrial ecological evaluation procedures should not create an incentive to cause harm through the destruction of habitat. As a result, WAC 173-340-7490(5) applies, in that under:

"Additional measures. The department may require additional measures to evaluate potential threats to terrestrial ecological receptors notwithstanding the provisions in this and the following sections (when based upon a site-specific review), the department determines that such measures are necessary to protect the environment." (Ecology, 2007).

NEBA Steps

Step 1: The proposed non-remediated area needs to be defined as "especially valuable habitat." "Especially valuable habitat" can be designated through the use of one of the below proposed methods (Method 1 or Method 2):

Method 1: Site can be designated "especially valuable habitat" if:

- The site is used by a threatened or endangered species protected under the Federal Endangered Species Act, or;
- The site is used by a "priority species" or "species of concern" designated under Title 77 RCW, or;
- The site is used by a plant species classified as "endangered," "threatened," or "sensitive" under Title 79 RCW, or;
- Wetlands and Fish and Wildlife habitat conservation areas designated as critical area under Chapter 36.70A.170 RCW. Other critical areas that might be found on the property, such as recharge areas, frequently flooded areas, geologically hazardous areas, steep slopes, and aquatic areas, are not immediately designated as "especially valuable habitat" unless they meet one of the previous criteria. These other types of critical areas must follow the Method 2 process.

Note: For animals, "used" means that individuals of a species have been observed to live, feed or breed at the site. For plants, "used" means that a plant species grows at the site or has been found growing at the site (Ecology, 2007).

Method 2: Site can be designated "especially valuable habitat" if:

- An experienced field biologist must visit the site and document that:
    - The site can be potentially used by a threatened or endangered species protected under the Federal Endangered Species Act, or;
    - The site can be potentially used by a "priority species" or "species of concern" designated under Title 77 RCW, or;
    - The site can be potentially used by a plant species classified as "endangered," "threatened," or "sensitive" under Title 79 RCW.

Results:

It is recommended that the requirements of Step 1 (Method 2) have been met:

Based on the vigorous vegetation growth and healthy plant community, the potential for providing habitat to protected species, and the lack of any other indicators of contaminant uptake, DU B should be designated as [especially valuable habitat – under method 2] and retained for elevated ecological benefit provided onsite (Ecology, 2025).

Step 2: A field biologist (or other department approved individual) must document types of flora and fauna and any signs of excessive uptake of the specific contaminants. This will help establish sustainability and whether or not native species occupy the habitat.

- Document the species of plant, soil biota, and wildlife found at the specific site.
    - Differentiate between those that are native and those that are invasive.
- Document if native plant life is well-established (i.e., primary or secondary growth)
- Document if plant life shows signs of contaminant uptake including (but not limited to) signs of:
    - Wilting
    - Chlorosis (pale, yellow or white plant tissue)
    - Browning
    - Excess mortality
    - Reduced growth, photosynthesis, mitosis, or water absorption (dehydration)
- Document any signs of contaminant uptake in soil biota including (but not limited to):
    - Limited numbers
- Document any signs of contaminant uptake in wildlife including (but not limited to):
    - Muscular incoordination
    - Debility
    - Slowness
    - Jerkiness
    - Falling
    - Hyperactivity
    - Fluffed feathers
    - Drooped eyelids
    - Seizures

Results:

It is recommended that the requirements of Step 2 have been met for DU B. This is based on the observations regarding species found within the site of interest (SoundEarth Strategies, 2025).

Document the species of plant, soil biota, and wildlife found at the specific site and differentiate between those that are native and those that are invasive.

Vegetation:

Site habitat conditions have been assessed and documented during a Site visit with Ecology and separate field surveys by Facet Northwest biologists. As described by Facet Northwest in their technical memorandum (SoundEarth Strategies, 2025), the forest consists of native vegetation with multiple overlapping canopy layers. Tree species include a mix of red alder (*Alnus rubra*), Scouler's willow (*Salix scouleriana*), Pacific madrone (*Arbutus menziesii*), Douglas-fir (*Pseudotsuga menziesii*), and bitter cherry (*Prunus emarginata*). The canopy is mostly closed, but has variable heights, crown arrangements, and layers, unlike the rest of the site. Beaked hazelnut (*Corylus cornuta*), salmonberry (*Rubus spectabilis*), salal (*Gaultheria shallon*), and sword fern (*Polystichum munitum*) are commonly present in the understory. Non-native plants – mainly Himalayan blackberry (*Rubus bifrons*) – are also present, but not dominant in DU B.

One wetland, Wetland A, is located in the northeast corner of the project site (in DU B), extending offsite to the east (see Figure 1). Wetland A is supported by groundwater seeps that begin on the slope. Surface water flows east where it is generally captured in a shallow, poorly defined swale at the edge of Browns Point Boulevard NE and/or disperses as sheet flow across the road. Vegetation in Wetland A includes red alder, Scouler's willow, salmonberry, Himalayan blackberry, giant horsetail (*Equisetum telmateia*), and bittercress (*Cardamine* sp.).

Additionally, the City of Tacoma requires a Biodiversity Corridor between the Biodiversity Area and Wetland A in the northeast corner of the property. A Biodiversity Corridor is a relatively undisturbed and unbroken tract of vegetation that allows for wildlife movement.

In general, habitat outside of the Biodiversity Area in DU B is lower quality when compared with habitat within the Biodiversity Area, because non-native plant coverage increases and forest structural diversity decreases.

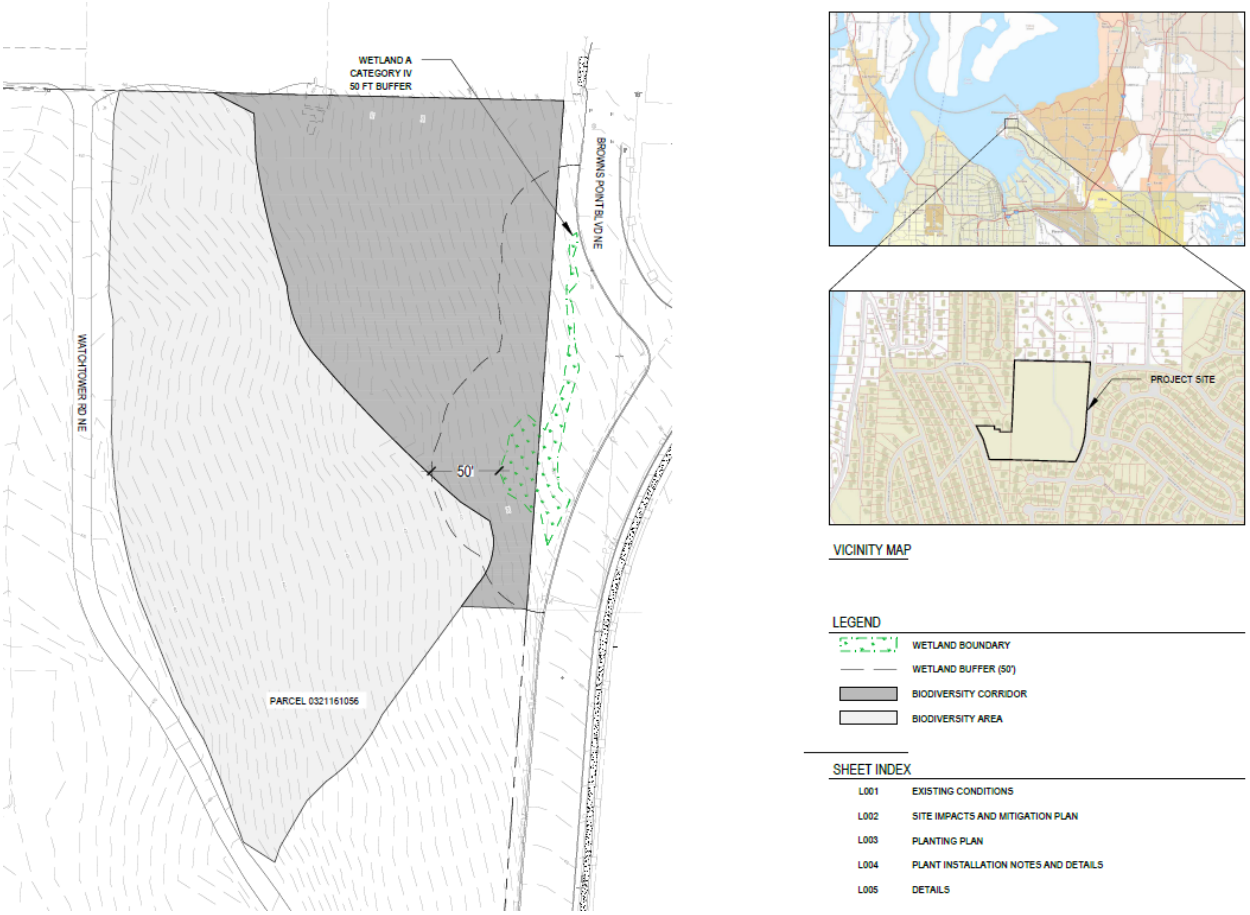


Figure 1. Excerpt from Sheet L001 (Existing Conditions) of the wetland buffer enhancement plan prepared for the project by Facet Northwest in December 2024, showing the northeast portion of the site, east of Watchtower Road NE, characterized as DU B.

Wildlife

Wildlife observations made during site visits by Facet Northwest biologists included evidence of mountain beavers (burrows), coyote (scat), and sapsuckers (holes in trees). Direct observations of the following birds were also made:

- American Robin
- American Crow
- Anna's Hummingbird
- Song Sparrow
- Golden-crowned Kinglet
- Ruby-crowned Kinglet
- Dark-eyed Junco
- Black-capped Chickadee
- Northern Flicker
- Varied Thrush

- Unknown gull
- Unknown small raptor

The wildlife species observed and expected to potentially utilize habitat on the property are relatively common, mobile, urban species that are present in other residential areas of Tacoma. No state or federally threatened or endangered plants or animals are known to use the habitat on the project site, but the habitat could potentially be used by them in the future.

Document if native plant life is well-established (i.e., primary or secondary growth)

The forest communities of the Site are well established, and the forest consists of native vegetation with multiple overlapping canopy layers. The diverse plant community has the potential to provide habitat for protected species.

Document if plant life, soil biota, and wildlife show signs of contaminant uptake

No signs of contaminant uptake (e.g., wilting, chlorosis, or excess mortality in plants and debility, slowness, or falling in wildlife) were observed by Facet Northwest staff during the numerous site visits to the property. Similarly, no signs of distressed vegetation or wildlife were encountered during Terra's prior site visits (N. Hoffman, personal communication, December 20, 2024).

Step 3: The Ecology Site Manager (or designee) should then visit the site to make a final determination as to whether or not the proposed non-remediated area appears to be established, sustainable, and native habitat. In granting the request of non-remediation, the Ecology Site Manager (or designee) should consider the following factors prior to making a final decision:

- The rarity of the habitat for the geographic area in which the site is located.
- The size of the habitat.
- Whether the habitat functions as a wildlife corridor.
- Whether the habitat functions as a refuge or feeding area for migratory species.
- The structural diversity of the habitat.
- Surrounding habitat and land uses.
- Whether the habitat is manmade or natural.
- Whether the cleanup would significantly disturb the ecological functions of the habitat.
- The level of human activity in the area.
- The length of time for recovery of the habitat after cleanup.

Results:

It is recommended that the final determination for the proposed non-remediated area is that it is established, sustainable, and predominantly native habitat. This is based on the observations regarding the following factors (SoundEarth Strategies, 2025).

- The rarity of the habitat for the geographic area in which the site is located: The site is a parcel of secondary forest in a residential area of Tacoma, WA. The forest is well-established and consists of native vegetation with multiple overlapping canopy layers. It also supports a range of plants and invertebrates for birds and small mammals to forage. There is habitat available for rearing and refuge of birds in snags and trees. The habitat features may also provide refuge and feeding areas for migratory birds.
- The size of the habitat: The entire site is 18.19 acres and the EVH is approximately 4 acres in size.
- Whether the habitat functions as a wildlife corridor: Part of the EVH is a Biodiversity Corridor. A Biodiversity Corridor is a relatively undisturbed and unbroken tract of vegetation that allows for wildlife movement.
- Whether the habitat functions as a refuge or feeding area for migratory species: The proposed area of retention is likely large enough to be utilized as refuge or feeding habitat for terrestrial migrating species in the vicinity of the subject property. Additionally, the subject property is located within the Pacific Flyway and as such has an increased potential to be utilized as refuge by any migratory species utilizing the migration route.
- The structural diversity of this habitat: The subject property is vegetated with healthy and diverse plant communities. The diverse plant community has the potential to provide habitat for protected species and provide refuge and feeding areas for migratory birds.
- Surrounding habitat and land uses: The property is located within a residential area and contains a second-growth conifer and hardwood forest in the Puget Lowlands Ecoregion.
- Whether the habitat is man-made or natural: The EVH will remain undeveloped and consists of the forested habitat described above.
- Whether the cleanup would significantly disturb the ecological functions of the habitat: A full cleanup of DU B to achieve arsenic cleanup levels would (1) remove herbs, shrubs, small trees, and some large trees, and (2) result in the direct loss of plant habitat and indirect loss of ecological services provided by terrestrial invertebrates. The secondary forest in the EVH has not been disturbed for decades.
- The level of human activity in the area: Institutional controls will be applied to prevent human exposure to contaminated soil remaining in place in no-action areas justified by the NEBA. Human exposure to contaminated soil in natural areas can be addressed via institutional controls such as fencing and signs that eliminate direct contact without disturbing soil.
- The length of time for recovery of the habitat after cleanup: If full soil cleanup were conducted in DU B, the recovery of the habitat to the current level of services would take more than 50 years. Conducting soil cleanup activities in DU B would result in a net loss of habitat and ecological services and potentially harm protected species in a suburban setting where habitat quality and quantity are already very limited. Conducting active soil remediation in DU B would result in substantial habitat loss with very little benefit to human health.

Step 4: Institutional controls should be required to help enhance and protect the area of interest. The purpose of institutional controls would be to demonstrably limit any future development or

land use activities and reduce the risk of present or future releases or migration of the hazardous substance(s) located at the site (e.g., erosion from land clearing).

- To prevent people from accessing the EVH, signage will be posted about hazards from arsenic in the soil on or near all property fences that border the entire EVH area.
- Hazardous substances are currently sequestered within the soils onsite. The presence of a dense root structure associated with the mature forest vegetation supports soil stabilization and aids in reducing overall erosion potential throughout the property. The risk of migration of such substances is minimized through retention of the forested habitat.
- The intent of the institutional controls would be to preserve the EVH by restricting future development and human activities in the designated area. If those institutional controls are proposed to be lifted, then the original cleanup levels assigned to the site would apply.
- To ensure that such man-made barriers are maintained, an environmental covenant shall be filed with the appropriate local jurisdiction. The covenant will include restrictions on intrusive activities in the EVH and an annual monitoring and maintenance plan for fencing and signage. Additionally, the monitoring and maintenance plan will include annual sweeps of the entire EVH area to remove debris and invasive plant species.

Additional Depth-Weighted Exposure Adjustment

Table 1 presents the depth-weighted exposure adjustment (DWEA) concentrations at each location in DU B. Of the 24 sample locations in DU B, only sample location 59B exceeds the MTCA Method A arsenic cleanup value of 20 milligrams per kilogram (mg/kg) after applying the DWEA. Based on the conclusion that there is no impact on plants, soil invertebrates, and wildlife at sample location 59B with the greatest arsenic concentrations (Ecology, 2025; SoundEarth Strategies, 2025) in the EVH, it is assumed that there are no impacts to plants, soil invertebrates, and wildlife at site locations with arsenic concentrations of a similar or lesser magnitude.

Table 1
Calculation of Depth-Weighted Exposure Adjusted Arsenic Concentrations in DU B

Sample ID	DWEA (mg/kg)	Sample ID	DWEA (mg/kg)
1B	16.75	40B	12.75
2B	11.07	41B	9.68
3B	7.20	42B	15.45
4B	16.05	43B	12.22
5B	10.36	44B	11.61
6B	11.19	45B	8.86
7B	14.87	54B	10.70
8B	6.63	55B	11.21
9B	6.48	56B	6.81
10B	12.76	57B	12.75
29B	7.74	58B	17
30B	5.16	59B	22.3

NOTES:

Cells highlighted in blue exceed MTCA Method A cleanup level.

Adjustment factors of 0.3, 0.55, 0.1, and 0.05 applied to 0-to-6-inch, 6-to-12-inch, 12-to-24-inch, and 24-to-36-inch sample intervals, respectively.

References

Deacon, S., A. Goddard, N. Eury, and J. Bicolette. (2010). Assessing *Risks to Ecosystems and Using a Net Environmental Benefit Analysis Framework to Assist with Environmental Decision Making.* Found in; Restoration and Recovery: Regenerating Land and Communities. pg. 164 – 175.
Retrieved from:
http://www.environcorp.com/Environcorp/media/environ/Files/NEBA_Deacon.pdf

Ecology. (2007). *Model Toxics Control Act Statute and Regulation*. Olympia, WA: Washington State Department of Ecology. Publication No. 94-06.

Ecology. (2025). *Watchtower Heights Property Preliminary Habitat Assessment*. Olympia, WA: Washington State Department of Ecology.

Efroymson, R.A., J.P. Nicolette, and G.W. Suter II. (2003). *A Framework for Net Environmental Benefit Analysis for Remediation or Restoration of Petroleum – Contaminated Sites.* Prepared for U.S. Department of Energy, National Petroleum Technology Office.
Retrieved from:
https://www.esd.ornl.gov/programs/ecorisk/documents/NEBA-petrol-s-reort-RE.pdf

SoundEarth Strategies. (2025). Memorandum to file: *RE: Updated Tacoma Smelter Plume Impact Assessment/Cleanup Action Plan, Watchtower.* Prepared by SoundEarth Strategies, Seattle, WA.