



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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April 19, 2017

Electronic Copy

Sarah Weeks
Port of Tacoma
PO Box 1837
Tacoma, WA 98401-1837

Re: No Further Action at the following Site:

- **Site Name:** Naval Reserve Center
- **Site Address:** 1001 Alexander Ave., Tacoma, WA 98421, Pierce
- **Cleanup Site ID:** 3017
- **Facility/Site No.:** 93581722
- **VCP Project No.:** SW1507

Dear Ms. Weeks:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the Naval Reserve Center Tacoma 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:

- Petroleum Hydrocarbons and related constituents into the Soil.

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

Please note the Tacoma Smelter Plume facility (FSID #62855481), Port of Tacoma 721 Alexander facility (FSID #1377), and the Hylebos Waterway – Commencement Bay Nearshore Tidelands (FSID #42) also affects parcel(s) of real property associated with this Site. This opinion does not apply to any contamination associated with these facilities.

Basis for the Opinion

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

1. GeoEngineers, *Soil and Groundwater Data Summary – Limited Environmental Site Assessment*, PSE Tacoma LNG Project, dated September 2014.
2. Ecology, *Site Hazard Assessment*, Naval Reserve Center Tacoma, dated April 2011.
3. Department of the Navy, *UST Decommissioning Report – Site Assessment Report*, November 1993.

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

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

Analysis of the Cleanup

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

1. **Characterization of the Site.**

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

The Site is located at the Navy Reserve Center, Port of Tacoma (Port) Parcel 119, 1001 Alexander Avenue, Tacoma, WA. (*Attachment No.1*). The Site is defined by two tax parcels (APNs, 2275200532 and 2275200502), approximately ten acres (0.71 and 9.9 acres, respectively) in size.

The Naval Reserve Center Tacoma Site is designated with a land use of "Military Bases" in an area of the City of Tacoma known as the Tideflats, zoned as "Port-Maritime Industrial" and "Combined Shoreline". It has been described as "Z-Shaped and flat"; it rests at approximately eighteen feet (18') above mean sea level.

In 1993, the Naval and Marine Corps Reserve Center decommissioned and removed six underground storage tanks (USTs) that contained fuel oil for the facility's boilers. The USTs included four adjacent to Building No. 51 (UST Nos. 1, 1x, 2, and 3), one adjacent to Building No. 57 (UST No. 4), and one adjacent to Building No. 5 (UST No. 5) (*Enclosure A – Attachment No. 2*).

Soil samples collected from the UST excavation pits following removal indicated that UST Nos. 2 and 4 had leaked. Excavation of the petroleum contaminated soil (PCS) was followed by additional soil sampling that concluded the PCS had been adequately removed. Tide influenced groundwater only infiltrated into the excavation pit associated with UST Nos. 1, 1x, 2, and 3, and an initial groundwater sample indicated petroleum contamination below cleanup levels. A subsequent groundwater sample was below laboratory detection levels (*Enclosure A – Attachment No. 3*).

Two above ground storage tanks (ASTs) were removed from the property in 1996. During the AST removal, PCS was observed in the surrounding surface soils. Soil sampling and over excavation proceeded until the PCS had been removed and analytical results indicated levels below laboratory detection levels (*Enclosure A – Attachment No. 3*).

Due the releases discovered in 1993 and 1996 as described in the previous paragraphs, the Site was placed on Ecology's Confirmed and Suspected Contaminated Sites List (CSCSL) in 1997. A Site Hazard Assessment was performed in April 2011 and given an overall ranking of 3 for moderate risk.

In 2014, as part of a limited environmental site assessment soil and groundwater samples were collected in the vicinity of the USTs that were removed in 1993 and included soil borings B-3, B-5, B-10 and B-25. Soil and groundwater samples were analyzed for gasoline, diesel and oil range hydrocarbons, BTEX, and Semi-Volatile Organic Compounds. Analytical results for these compounds were all below laboratory detection levels (*Enclosure A – Attachment No. 4*).

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.

MTCA Method A cleanup levels for soil and groundwater for unrestricted land uses 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.

Cleanup actions conducted at the Site have included the removal of six USTs and the excavation and off Site disposal of petroleum-contaminated soil and groundwater.

4. Cleanup.

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

Beginning on September 22, 1993 and ending on November 4, 1993, six USTs were removed from three separate locations at the Naval Reserve Center – Tacoma facility (*Enclosure A – Attachment No.2*). Approximately 166 tons of PCS were removed from the UST excavation pits and disposed off Site.

In December 1996, two Above Ground Storage Tanks located adjacent to Building No. 51 and approximately 70 tons of PCS were removed and disposed off Site.

Listing of the Site

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

- Hazardous Sites List.
- Confirmed and Suspected Contaminated Sites List.
- Leaking Underground Storage Tank List.

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

Limitations of the Opinion

1. Opinion does not settle liability with the state.

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

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

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

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

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

3. State is immune from liability.

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

Ms. Sarah Weeks
April 19, 2017
Page 6

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 (#SW1507).

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

Sincerely,



Nicholas M. Acklam
SWRO Toxics Cleanup Program

NMA: kb

Enclosure (A): Description and Diagrams of the Site

Certified by Mail: [91 7199 9991 7037 0279 7765]

cc: Carol Johnston, Ecology
Matt Alexander, Ecology

Enclosure A

Description and Diagrams of the Site

Site Description

The Site is located at the Navy Reserve Center, Port of Tacoma (Port) Parcel 119, 1001 Alexander Avenue, Tacoma, WA. (*Attachment No. 1*). The Site is listed on Ecology's Confirmed and Suspected Contaminated Sites List (FSID 93581722) and the Hazardous Sites List (Cleanup Site ID 3017) with a ranking of 3.

The Site is defined by two tax parcels (APNs, 2275200532 and 2275200502), approximately ten acres (0.71 and 9.9 acres, respectively) in size. The Naval Reserve Center Tacoma site is designated with a landuse of "Military Bases" in an area of the City of Tacoma known as the Tideflats, zoned as "Port-Maritime Industrial" and "Combined Shoreline". It has been described as "Z-Shaped and flat"; it rests at approximately eighteen feet (18') above mean sea level.

The Naval Reserve Center Tacoma site is legally known as the Naval Marine Corp Reserve Center Tacoma (NMCRC Tacoma) property and was last used as a drill facility for approximately four hundred fifty (450) Navy reservists. The *Hylebos Waterway* is the property's northern border. *East 11th Street* and a ten (10) acre parcel of vacant land owned by the Port of Tacoma, used as storage, borders the property to the southeast. *Alexander Avenue* and an approximately fifteen acre (specifically 14.86 acre) parcel owned by the Port of Tacoma, used as General Warehouse Storage, provide the site's southwestern border.

Currently the site has five buildings, an asphalt parking lot, and two piers on the Hylebos Waterway. Most of the property is "capped" with various types of impervious surfaces; approximately ten percent (10%) of property is landscaped.

Subsurface conditions at the property were investigated from soil borings in 2004. During the site investigation it was discovered that much of the site was covered with concrete or pavement. Below that "cap" was a layer of sporadic fill material and below that was a layer of weathered till. The till was comprised of silty, clayey, sand and gravel. Perched water was encountered below the till, at about twenty five to thirty feet below ground surface (25' -30' bgs). Groundwater is assumed to flow easterly, down gradient, towards the Hylebos Waterway. The closest active groundwater drinking well is a "Group A Water System" (City of Tacoma Municipal Well) that is approximately one thousand eight hundred feet (1,800') to the southeast and has a depth of approximately seven hundred seventy nine feet (779' bgs).

Recent Site History

Six underground storage tanks (USTs) were decommissioned at the NMCRC Tacoma property during 1993. All six USTs previously contained fuel for the facility's boilers. The USTs and their decommissioning are the cause of the Site's Confirmed and Suspected Contaminated Sites List (CSCSL) data base listing, the focus of this Site Hazard Assessment (SHA) and are described as:

<u>Tank ID</u>	<u>Size (Gallons)</u>	<u>Contents</u>
1	12,000	Diesel
1X	300	Diesel
2	12,000	Diesel
3	24,000	Diesel
4	4,000	Diesel
5	3,500	Diesel

USTs 1, 1X, 2, 3 were located within one excavation. USTs 4 and 5 were located in separate excavations. Two samples were collected from the tank beds of USTs 1, 1X, 2, and 3. Three samples were collected from the excavations of USTs 4 and 5. The samples were analyzed for total petroleum hydrocarbons identification using WTPH-HCID and follow up analysis with WTPH-Gas, Diesel, and/or Oil as needed to confirm that all the PCS had been successfully removed. Significant Petroleum Contaminated Soil (PCS) was observed in two UST excavations: UST 2 and UST 4. Further excavation was conducted in these locations and two additional samples were collected from the tank basins to confirm the vertical extent of the contamination had been reached. Approximately 166 tons of PCS were removed from the Site and transported off-property.

Two above ground storage tanks (ASTs) were removed from the property in 1996. The ASTs were associated with the oil/water separator system used to treat oily bilge water from marine vessels. Bilge water was initially pumped into a fifteen hundred to two thousand (1,500 – 2,000) gallon AST and then pumped into the oil/water separator system. Separated oil was stored in a seven hundred (700) gallon AST and then disposed by a contractor. During the AST removal, PCS was observed in the surrounding surface soils. Approximately 70 tons of PCS was ultimately disposed.

Severson Construction (Severson) initially collected five surface soil samples for WTPH-HCID analysis. These results indicated PCS diesel and oil contamination above current Model Toxics Control Act Method A Cleanup Levels (MTCA Method A – Soil) in one sample, T-4, at 2,900 mg/kg. Severson proceeded with over excavation and collected an additional five (5) confirmation samples. Two of the five (Ox-2 and Ox-4) still indicated detectable concentrations and additional over excavation was completed. A final two samples were collected, in addition to two stockpile samples. The stockpile samples were analyzed for waste disposal purposes using Toxicity Characteristic Leaching Procedure (TCLP) for metals. These samples were non-detect. The twelve soil samples were collected from the bottom of the excavation.

The October 2009 Draft finding of Suitability to Transfer (FOST) document states that, "The decommissioning and removal of USTs and ASTs, and cleanup of petroleum contaminated soil was conducted by the Navy in accordance with Ecology's Independent Cleanup Program. As such, no official concurrence of No Further Action required has been received by Ecology. Ecology states that the site will remain on its Confirmed and Suspected Contaminated Sites List until a No Further Action determination is made through Ecology's Voluntary Cleanup Program."

Groundwater and sediment samples on and adjacent to the subject site have concentrations of several hazardous substances including carcinogenic polycyclic aromatic hydrocarbons (cPAHs), and benzene. It is believed that these concentrations are historical in nature and have been attributed to the Occidental Chemical site and the overall Commencement Bay Nearshore/Tideflats (CB/NT) Superfund site.

Site History

The Hylebos waterway is a listed United States Environmental Protection Agency (EPA) Superfund site. The Commencement Bay Nearshore/Tideflats (CB/NT) Superfund site is located in Tacoma, Washington at the southern end of Puget Sound. EPA placed the site on the Superfund National Priorities List (NPL) in 1983 after discovering widespread contamination. The Hylebos waterway contains a "toxic blanket" of sediment contaminated with PCBs, PAHs, arsenic, hexachlorobenzene, hexachlorobutadiene, and other organics and metals. The contamination is from several industries established in the late 1800s, including chemical manufacturing plants, scrap metal recycling, log transfer facilities, and shipbuilding. The Port of Tacoma worked to extend the Hylebos waterway in the 1960s to a three mile-long waterway, 200 feet wide. Today, 167 acres of the 285 acre area that makes up the Hylebos Waterway requires cleanup.

Although the Naval Reserve has been active in Tacoma since 1911, the Naval Reserve did not occupy the current NMCRC Tacoma property until 1947. During the early 1900s the site of the current NMCRC Tacoma was part of a larger shipyard owned and operated by Todd-Pacific (Turner, Collie, & Braden 1988). The shipyard constructed naval ships during World War I and closed immediately following the war. Woodworking plants then occupied the former shipyard area during the 1920s and 1930s (URS 1996). In 1939, the Seattle-Tacoma Shipbuilding Corporation began construction of a new shipyard on the former Todd-Pacific property to support production of naval ships for World War II (Turner, Collie, & Braden 1998). At the end of the war, the shipyard closed, and the NMCRC Tacoma parcel was turned over to the War Assets Administration.

Following the war, the Naval Reserve reorganized and established a peacetime reserve force. As a result of the reorganization, the Navy established the current location as a joint-use facility for the Naval and Marine Corps Reserve in 1947 (Turner, Collie, & Braden 1998). The Navy renovated 15 existing buildings and structures on the property originally constructed for the shipbuilding industry (Turner, Collie, & Braden 1998). In 1961, the Navy acquired a fueling pier operated by Fletcher Oil Company (URS 1996). Little information is available pertaining to the facility's operations between 1948 and the early 1960s.

To support a growing drilling population utilizing the facility, the Navy received federal appropriations to build a permanent facility in 1963. Most of the original buildings were demolished during the construction of three new buildings. Upon completion, the reserve center was dedicated in 1964 as a facility to support Army, Navy, Marine Corps, and Coast Guard Reserves. In 1995, the Army and Coast Guard Reserves relocated to other facilities (Turner, Collie, & Braden 1998).

According to the Historical Survey of the Naval and Marine Corps Reserve Center, Tacoma Washington dated January 1996 (URS 1996), the Naval Reserve Maintenance Training Facility (NRMTF), Puget Sound, became a tenant of the Reserve Center from 1982 to 1988 and operated a repair and oily waste barge moored on the northern section of Pier 40. In 1988, the NRMTF repair barge was moved to the Puget Sound Naval Shipyard, Bremerton, Washington. The oily waste barge was also removed from the NMCRC Tacoma by early January 1995 after the oily waste contents were properly disposed and the barge was steam cleaned (URS 1996).

Site Diagrams

Attachments:

1. Parcel 119 Site Location, Port of Tacoma Figure No. 1 (dated October 21, 2015)
2. Parcel 119 Former Underground Storage Tank (UST) and Soil Boring Locations, Port of Tacoma Figure No. 2 (dated October 21, 2015)
3. 1993 Soil and Groundwater Data Summary Table, Port of Tacoma Table No. 1
4. 2014 Soil and Groundwater Data Summary Table, Port of Tacoma Table No. 2



NOTE(S):

- 1. Projection: NAD 1983 HARN StatePlane Washington South FIPS 4602 Feet
- 2. Accuracy Level: +/- 20 feet

**PARCEL 119 (FIGURE 1)
SITE LOCATION**
SCALE BAR: 1:20,000

A scale bar showing distances from 0 to 1 mile, with markings at 0, 0.25, 0.5, and 1. Below the scale bar is a north arrow with 'N', 'S', 'E', and 'W' labels.

Environmental Planning
Created By: Zachary J. Roy
Date: 10/21/2015
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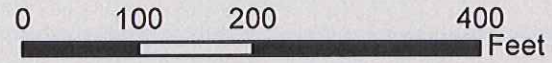
The logo for the Port of Tacoma, featuring a stylized 'W' with red and blue horizontal lines above it, and the text "Port of Tacoma" below.

Disclaimer: The information included on this map has been compiled by Port of Tacoma staff from a variety of sources and is subject to change without notice. The data is intended for informational purposes and should not be considered authoritative for engineering, navigational, legal, and other site specific uses. The Port of Tacoma makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information.



**PARCEL 119 (Figure 2)
FORMER UNDERGROUND STORAGE TANK (UST)
AND SOIL BORING LOCATIONS**

SCALE BAR: 1:2,000



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LEGEND

1993 Sampling Locations

⊕ Previous Soil and/or Groundwater Grab Sample Locations (represents one or more samples collected at locations shown)

2014 Sampling Locations

⊙ Soil Boring
⊕ Soil Boring and Ground Water Sample

□ Former UST

▭ Parcel 119 Boundary

▭ Other Parcel Boundary

→ Ground Water Flow Direction

Table 1
Port of Tacoma Parcel 119
1993 Soil and Groundwater Data Summary Table

Location Sample ID Sample Date Sample Description	UST-1		UST-1x		UST-2				
	T1-N	T1-S	T1-XN	T1-XS	T2-N	T2-S	T2-N Resample	T2-S Resample	
	10/1/1993	10/1/1993	10/1/1993	10/1/1993	10/1/1993	10/1/1993	10/15/1993	10/15/1993	
	Confirmation Samples		Confirmation Samples		Initial Base Samples ^a		Confirmation - Post-Excavation		
Soil	MTCA Method A Cleanup Levels (mg/kg)								
TPH-gas	30	ND	ND	ND	ND	--	--	<20 U	<20 U
TPH -diesel	2,000	ND	ND	ND	ND	--	--	<50 U	<50 U
TPH-oil	2,000	--	--	--	--	--	--	<100 U	<100 U
Total TPH	2,000	--	--	--	--	350.7	1980.3	--	--

Location Sample ID Sample Date Sample Description	UST 3		UST-4			UST-5			
	T3-N	T3-S	T4-Soil	T4-W	T4-E	T5-pile	T5-N	T5-S	
	10/1/1993	10/1/1993	10/15/1993	10/15/1993	10/15/1993	10/1/1993	10/1/1993	10/1/1993	
	Confirmation Samples		Stockpiled Soil ^a	Confirmation Samples		Stockpiled Soil ^a	Confirmation Samples		
Soil	MTCA Method A Cleanup Levels (mg/kg)								
TPH-gas	30	ND	ND	<20 U	<20 U	<20 U	ND	--	--
TPH -diesel	2,000	ND	ND	<50 U	<50 U	<50 U	ND	--	--
TPH-oil	2,000	--	--	250	<100 U	<100 U	--	--	--
Total TPH	2,000	--	--	250	--	--	--	43.3	83.9

Location Sample ID Sample Date Sample Description	UST-1, 1x, 2, 3	
	WS-9	
	10/15/1993	
	Confirmation - Water	
Water	MTCA Method A Cleanup Levels (mg/l)	
TPH-gas	0.8	--
TPH -diesel	0.5	<5.6 U
Total TPH	0.5	--

a: Analytical data for these samples represent soil that was excavated, removed from the Site and disposed. These data are presented in *italics*.
 ND: TPH was not detected. Reporting limits were not provided in the associated laboratory analytical data packages for TPH-HCID analysis. Typical reporting limits for TPH-HCID are less than MTCA Method A cleanup levels. The Department of Navy 1993 Closure Report (Attachment B) concluded that all samples collected from the excavation areas following any required soil removal were "below action levels".

--: Not analyzed.
 U: TPH was not detected at the reporting limit shown.
 mg/kg: milligrams per kilogram
 mg/l: milligrams per liter

Table 2
Port of Tacoma Parcel 119
2014 Soil and Groundwater Data Summary Table

Soil

		UST-4			UST-5
<i>Sample ID</i>		B-5-8.0	B-10-7.0	B-10-13.0	B-3-8.0
<i>Depth Interval</i>		7.5-8.5 ft	6.5-7.5 ft	12-13.5 ft	(7-8.5 ft)
Analyte	MTCA Method A Cleanup Levels (mg/kg)				
TPH-diesel	2,000	<32 U	<26 U	<36 U	<32 U
TPH - oil	2,000	<64 U	<52 U	<72 U	<65 U
Benzene	0.03	--	<0.0012 U	<0.0015 U	<0.00099 U
Ethylbenzene	6	--	<0.0012 U	<0.0012 U	<0.00099 U
Toluene	7	--	<0.0058 U	<0.0075 U	<0.0050 U
Xylene, m-, p-	9	--	<0.0023 U	<0.0030 U	<0.0020 U
Xylene, o-	9	--	<0.0012 U	<0.0015 U	<0.00099 U

Groundwater

		USTs-1,1x,2,3	UST-4	UST-5
<i>Sample ID</i>		B-25-11.0-WATER	B-10-11.0-WATER	B-3-11.0-WATER
<i>Depth Interval</i>		8-12 ft	10-13 ft	6-11 ft
Analyte	MTCA Method A Cleanup Levels (mg/l)			
TPH-diesel	0.50	<0.27 U	<0.26 U	<0.26 U
TPH - oil	0.50	<0.43 U	<0.41 U	<0.41 U
Benzene	0.005	<0.0010 U	<0.00020 U	<0.00020 U
Ethylbenzene	0.7	<0.0010 U	<0.00020 U	<0.00020 U
Toluene	1	<0.0010 U	<0.0010 U	<0.0010 U
Xylene, m-, p-	1	<0.0010 U	<0.00040 U	<0.00040 U
Xylene, o-	1	<0.0010 U	<0.00020 U	<0.00020 U

--: Not analyzed.

U: TPH was not detected at the reporting limit shown.

mg/kg: milligrams per kilogram

mg/l: milligrams per liter