

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

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October 7, 2019

Eric Koltes Environmental Partners, Inc. 1180 NW Maple St, Suite 310 Issaguah, WA 98027

Re: Further Action at the following Site:

• Site Name: Northwest Pipeline GP Mt Vernon C/S

• Site Address: 15498 Lange Road, Mount Vernon, WA 98273

Facility/Site No.: 2684
Cleanup Site ID: 4766
VCP Project No.: NW2008

Dear Eric Koltes:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the Northwest Pipeline GP Mt Vernon Compressor Station 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

Does the Site characterization and cleanup options evaluation described in the Remedial Investigation and Cleanup Action Plan (RI/CAP) meet MTCA

NO. Ecology has determined that supplemental information and analysis is necessary to meet MTCA requirements and establish a path forward towards cleanup of contamination and a No Further Action opinion for 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.

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Description of the Site

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

- Total petroleum hydrocarbons in the gasoline, diesel and oil range (TPH-G, TPH-D and TPH-O) into the Soil.
- Arsenic, cadmium chromium, copper, lead, mercury, nickel and zinc into the Soil.
- Benzene, toluene, ethylbenzene and xylenes (BTEX) to the Soil.
- Polychlorinated biphenyls (PCBs) to the Soil.
- Volatile organic compounds (VOCs) into the Soil.
- Arsenic and lead into the ground water

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

Basis for the Opinion

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

- 1. Environmental Partners Inc. (EPI), 2017 Annual Groundwater Monitoring Report, October 18, 2018.
- 2. EPI, Chromium Assessment Report, September 13, 2018.
- 3. EPI, Interim Remedial Action Report, January 5, 2017.
- 4. EPI, 2016 Annual Groundwater Monitoring Report, April 30, 2017.
- 5. Ecology, VCP Opinion on Remedial Investigation, November 5, 2013.
- 6. EPI, Environmental Covenant Checklist, June 3, 2013.
- 7. Ecology, VCP Opinion on Remedial Investigation, February 11, 2013.
- 8. EPI, Remedial Investigation and Cleanup Action Plan (RI-CAP), November 16, 2012.

Those documents are kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. You can make an appointment by completing a Request for Public Record form (https://www.ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests) and emailing it to PublicRecordsOfficer@ecy.wa.gov, or contacting the Public Records Officer at 360-407-6040. A number of these documents are accessible in electronic form from the Site web page https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=4766.

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

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Analysis and Opinion

Ecology appreciates the efforts taken toward cleanup of this Site. Ecology has evaluated the January 2017 *Interim Remedial Action Report* and *Chromium Assessment Report*, as well as the Site documents listed above and provides the following comments regarding the Site cleanup to date and path forward:

Site Characterization

Areas of Potential Concern (AOPCs) were developed and assessed as part of the RI/CAP. The goal of the January 2017 interim remedial action was to conduct hot spot excavations and a larger excavation for Remedial Area 1. The Hot Spot Excavations were intended to address contamination that exceeded site specific TEE values established for the Northwest Pipeline compressor station facilities located in the northwest part of Washington State. The Remedial Excavations were intended to address contamination that was greater than proposed remediation levels (presented in the RI/CAP). Ecology has the following comments regarding the AOPC assessment and remedial excavations:

- Indicate on a map the areas where spills previously occurred (the 1991 and 1992 glycol spills, 1993 lube oil spill). Include the 1991 glycol spill that reportedly entered a nearby creek via a drainage ditch.
- Indicate on a map where the historic lube oil burn pit for waste compressor engine oil was located.
- An earthen pit was historically located approximately 100 feet north of the northern fence line. Information is not provided regarding the content of the pit other than to say that liquid sludge was removed. Additional information regarding the cleanup of the earthen pit and selection of potential contaminants of concern is needed.
- The RI/CAP discusses the presence of a wet pond, a storm water retention pond and associated forebay, and dry storm water retention pond and associated outlet control structures. Further detail is needed regarding storm water management.
- It is unclear from the limited information provided in the RI/CAP for AOPC1 whether or not sample locations were appropriately sited. Three soil samples were collected from a depth of 4 feet below ground surface. TPH-G was detected at a maximum concentration of 0.93 milligram per kilogram (mg/kg), which is far below the MTCA Method A cleanup level. However, Figure MVCS-6 does not indicate where the former dispenser and UST were located or what the dimensions and depth of the former UST were. Therefore, Ecology

cannot determine if sample locations were appropriate to demonstrate compliance with cleanup levels.

- TPH-G was detected in Area of Potential Concern (AOPC) 1 at low concentrations (0.38 and 0.024 mg/kg). A release to soil was confirmed. Ground water needs to be collected from as close to the source as practicable and analyzed for appropriate contaminants of concern to assess whether or not the release has impacted ground water.
- Soil and ground water samples should be analyzed according to Table 830-1 of the MTCA regulation and Table 7.2, page 95, in the *Guidance for the Remediation of Petroleum Contaminated Sites*, Ecology Publication No. 10-09-057, Revised June 2016. MTBE analytical results should be included in Table MVCS-10, Summary of Soil Analytical Results.

Ground Water Characterization

- Boring logs indicate saturated soil was encountered at depths between 10 to 14 feet, where a sandy deposit underlies an approximately 9 foot clay layer. Depth to ground water measured in monitoring wells MW-1 through MW-13, was encountered at depths between approximately 0.5 and 8 feet below ground surface. Ground water has not been sufficiently characterized. During remedial investigation activities, ground water samples from select monitoring wells were analyzed for PCBs and total and dissolved cadmium, lead and arsenic. Analysis for all contaminants that were found in soil needs to be completed to demonstrate that ground water has not been impacted by the releases at this Site.
- It must also be demonstrated that ground water monitoring wells were placed as close to the source as practicable to demonstrate impacts to ground water have not occurred for each confirmed release area. Monitoring well locations need to be included in figures that illustrate the soil analytical results so that it is clear where the wells are located relative to identified soil contamination.

Cleanup Levels

- Table MVCS-12 Summary of Soil Cleanup Levels, presented in the RI/CAP, includes maximum contaminant detections, site specific Terrestrial Ecological Evaluation values and proposed cleanup and remediation levels. Table MVCS-12 does not include values for all pathways for numerous contaminants. The attached Table A Human Health and Ecological Risk for Upland Soil, presents Ecology's identification of Site contaminants of concern and applicable cleanup levels, based on the maximum concentrations provided in Table MVCS-12. An electronic copy of this table, which includes comments and source information, will be provided via e-mail. Ecology generated this table to clarify expectations on the presentation of the development of cleanup levels that should be included in a Remedial Investigation (RI) report for sites of this complexity.
- The soil to ground water pathway is not evaluated for compounds with a footnote "g", stating that "Soil concentrations detected are less than the Method B ground water cleanup level (in

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ppm); since soil cannot leach more mass than is available, it is not possible for impacts at the Subject Property to adversely impact ground water". Empirical demonstrations could be used to document that the measured soil concentrations have not and will not cause an exceedance of the applicable ground water cleanup level, thereby eliminating the soil to ground water pathway for some of the contaminants listed in Table A. However, as mentioned above, analysis of ground water samples are needed to demonstrate that releases have not impacted. The requirements for performing an empirical demonstration are found in WAC 173-340-747(9). Additional resources and guidance can be found on Ecology's website at https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Empirical-demonstrations-MTCA.

- Total cPAH TEQ concentrations and total PCB concentrations should be used for "maximum concentration" presented in Table MVCS-12. The total cPAH values should be compared to the cleanup level for benzo(a)pyrene, which is driven by human direct contact. For ecological risk, cPAHs should be evaluated individually.
- Cleanup levels were not established for compounds flagged with "f" on Table MVCS-12. The reason stated is that these compounds are included in the TPH-G cleanup level. These compounds should be screened individually. As an alternative, VPH data can be collected to calculate a site-specific Method B soil cleanup level protective of ground water.
- The MTCA Method A values were derived using the entire range of TPH fractions present in each type of product, not based on splitting the test results. The sample diesel and oil fractions should be added together and compared against either the diesel or heavy fuel oil Method A value.
- The footnote "h" is used to indicate where the TEE pathway is not a concern because of planned removal during hot spot removal. Although excavation to a protective value is appropriate, the protective value for this pathway needs to be included in the "Summary of Soil Cleanup Levels" to illustrate that protective values were selected.

Feasibility Study

• MTCA requires that at least one of the alternatives presented in the feasibility study be the most permanent solution. Although Alternative 1 in the RI/CAP was "Excavation of all Impacted Soil Exceeding Cleanup Levels", the contaminants of concern and cleanup levels need to be revised to include consideration of all contaminants and pathways. Using the protective values presented in Table A would be the most permanent solution. Additional columns may be added for adjusted cleanup levels based on proposed alternatives. For example, if Alternative 2 includes an institutional control, such as fencing around the Property, human health direct contact values could be recalculated and included in a separate

column. Ecology recommends adding a post-remediation maximum soil concentration for each contaminant so that is clear what remains at the Site.

• Monitored Natural Attenuation (MNA) is proposed to address arsenic contamination in ground water. An evaluation of the potential efficacy of MNA as a remedial alternative has not been conducted. Collection of site specific data to estimate both the rate of attenuation and anticipated timeframe to achieve remediation objectives is needed. Ecology would expect to see multiple lines of evidence to demonstrate MNA would be effective at this Site such as ground water data that demonstrates a meaningful trend of decreasing contaminant mass and/or concentration over time and geochemical data that demonstrates indirectly the type of natural attenuation processes active at the Site. For guidance on MNA for groundwater cleanups please see https://semspub.epa.gov/work/HQ/177087.pdf and www.cluin.org/techfocus/default.focus/sec/Natural_Attenuation/cat/Guidance.

Interim Actions and Confirmation Sampling

- Hot spot excavations were conducted for chromium and mercury contaminated soil where concentrations were greater than 42 milligrams per kilogram (mg/kg) and 0.1 mg/kg respectively. Nine hot spot excavations were completed. Widespread chromium contamination was encountered and so this goal was not achieved for chromium. Ecology concurs with EPI's conclusions presented in the *Chromium Assessment Report*. Specifically, Ecology agrees the proposed natural background value of 103.4 mg/kg is appropriate for this Site.
- Figures should clearly show the horizontal and vertical extent of soil contamination pre- and post-remediation. Figures illustrating hot spot excavations should include pre-remediation contaminant concentrations, including the concentration detected for the "original sample location".
- A figure illustrating where remaining soil contamination that exceeds the most restrictive cleanup levels (post-remedial excavations) is needed.
- Figures illustrating Remedial Area 1 should clearly show horizontal and lateral extent of soil contamination pre- and post-remediation. The vertical excavation limits also need clarification. Cross sections should include geology and hydrogeology. Ecology recommends splitting Remedial Area 1 into multiple figures so that pre-remediation sample locations (including "original sample" locations and concentrations) intended to be superseded by post-remediation (confirmation) soil samples can be clearly illustrated.

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**:

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- 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).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion, please contact me by phone at (425) 649-7097 or e-mail at Diane. Escobedo@ecy.wa.gov.

Sincerely,

cc:

Diane Escobedo

NWRO Toxics Cleanup Program

Aaron Galer, Williams Gas Pipeline, Northwest Pipeline LLC

Chromium VI was deleted from the table since it had no positive detects. You can compare Total Cr results to Cr III.

					Human Health Direct Contact Levels			Sail Dreatastive Cravedurates Seventing Levels (d)				Torrostrial Ecological Laurela					Most Stringent Soil Screening Lovel					Contaminants of Potential Concern			
					numan nearth birect contact Levels			Soil Protective Groundwater Screening Levels (d)				Terrestrial Ecological Levels				Most Stringent Soil Screening Level					Containinants of Potential Concern				
				MTCA Soil	Method B Direct																				
			Maximum Soil	Method A -	Contact	1	Selected Human	Target Potable		Soil Protective of	Soil Protective of	TEE Value	TEE Value	TEE Value	TEE Value	Soil									
			Concentration	Unrestricted	(noncancer)	Contact (cancer)	Health Screening	Groundwater Level		Groundwater Unsat	Groundwater Sat	(mg/kg)	(mg/kg) (soil	(mg/kg)	(mg/kg)	Background				Exceeds Unsat			_		
Data Group	Analyte (a)	CAS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	Level (mg/kg)	(ug/L)	Basis	(mg/kg)	(mg/kg)	(plants)	biota)	(wildlife)	(final)	(e)	Unsat Soil		Sat Soil (mg/kg)	Soil?	Exceeds Sat Soil?	НН	Eco	GWP (Unsat)	GWP (Sat)
Petroleum	Gasoline Range		0.93	100								120	120	1000	120		120	есо	120 eco	+	N				
Petroleum	Diesel Range		180	2000								1600	260	2000	260		260	есо	260 eco		N				
Petroleum	Heavy Oil		1000	2000								1600	260	2000	260		260	есо	260 eco		Y		Y		
BTEX	Benzene	71-43-2	<0.0010	0.03	320	18	18	5	MCL	0.027	0.0017	80		579	80		0.027	gwp	0.0017 gw		N		.,		
BTEX	Ethylbenzene	100-41-4	0.17	6	8000		8000	700	MCL	5.9	0.34	0.1		1363	0.1		0.1	eco	0.1 ecc		Y		Υ		
BTEX	Toluene	108-88-3	0.047	7	6400		6400	640	N	4.5	0.27	200	20	797	20		4.5	gwp	0.27 gw		N		.,		—
BTEX	Total Xylenes	1330-20-7	14	9	16000		16000	1600	N	14	0.83	0.1		10.6	0.1		0.1	есо	0.1 eco		Y		Υ		Y
VOCs	1,1,1-Trichloroethane	71-55-6	0.0045	2	160000		160000	200	MCL	1.5	0.084	0.1		1799	0.1		0.1	есо	0.084 gw		N				
VOCs	1,1-Dichloroethane	75-34-3	0.0015		16000	180	180	7.7	С	0.041	0.0026						0.041	gwp	0.0026 gw		N				
VOCs	1,2,3-Trimethylbenzene	526-73-8	2.5		800		800										800	hh	800 hh	1	N				
VOCs	1,2,4-Trimethylbenzene	95-63-6	6.6		800		800										800	hh	800 hh	+	N				
VOCs	1,3,5-Trimethylbenzene	108-67-8	3		800		800										800	hh	800 hh	+	N				
VOCs	2-Butanone	78-93-3	0.28		48000		48000							3484	3484		3484	есо	3484 eco		N				
VOCs	4-methyl-2-Pentanone	108-10-1	0.11		6400		6400							1365	1365		1365	eco	1365 ecc		N				\longrightarrow
VOCs	Acetone	67-64-1	0.35		72000		72000	7200	N	29	2.1	3.5		28	3.5		3.5	есо	2.1 gw		N				
VOCs	cis-1,2-dichloroethene	156-59-2	0.0015		160		160	16	N	0.078	0.0052	0.1		84.7	0.1		0.078	gwp	0.0052 gw		N				\longrightarrow
VOCs	Isopropylbenzene (cumene)	98-82-8	0.081		8000		8000										8000	hh	8000 hh		N				\longrightarrow
VOCs	MTBE	1634-04-4		0.1		560	560	24	С	0.1	0.0072	5.7			5.7		0.1	gwp	0.0072 gw		no data				\longrightarrow
VOCs	n-Butylbenzene	104-51-8	0.85		4000		4000										4000	hh	4000 hh	+	N				
VOCs	n-propylbenzene	103-65-1	1.1		8000		8000										8000	hh	8000 hh		N				
VOCs	p-Isopropyltoluene	99-87-6	1.4									140			140		140	есо	140 ecc		N				
VOCs	sec-Butylbenzene	135-98-8	1.2		8000		8000										8000	hh	8000 hh		N				v
VOCs	Trichloroethene	79-01-6	0.0025	0.03	40	12	12	4	N	0.025	0.0015	0.15	30	20.1	0.15		0.025	gwp ,	0.0015 gw		Y	V	v	Υ	Y
Metals	Arsenic	7440-38-2	1700	20	24	0.67	0.67	5	Background	2.9	0.15	58.9	270	47	47	20	20	bg ,	20 bg		Y	T	Y	Y Y	Y
Metals	Cadmium	7440-43-9	5.4	2	80		80	5	MCL	0.69	0.035	4	20	14	4	0.8	0.8	bg ,	0.8 bg		Y		Y	Y	Y
Metals	Chromium III	16065-83-1	140	2000	120000		120000	24000	N	480000	24000	42	42	67	42	48	48	bg	48 bg		Y		Y	٧	γ
Metals	Copper	7440-50-8	680		3200		3200	640	N	280	14	100	50	217	50	36	50	есо	36 bg		Y	γ	Y	Y	Y
Metals	Lead	7439-92-1	1300	250			250	15	MCL	3000	150	130	232	350	130	24	130	есо	130 eco		Y	T	Y		Y
Metals Metals	Mercury (inorganic) Nickel	7439-97-6 7440-02-0	0.77	2	24 1600		1600	2	MCL MCL	2.1	0.1	0.3	14	5.5	0.3	0.07	0.3	eco	0.1 gw _l 48 ba		Y		T V		Y
Metals		7440-02-0	75 3900		24000		24000	100 4800	MCL N	130 6000	6.5 300	30 86	200	980 360	30 86	48	48	bg			Y		v		Y
	Zinc		3900		1600				N N				200		0.1	85	86	есо							
PAHs cPAHs	Naphthalene Benzo(a)anthracene	91-20-3 56-55-3	0.016	5	1000		1600	160	N	4.5	0.24	0.1		639	0.1		0.1	eco eco	0.1 ecc		no data N				
cPAHs		50-32-8	0.016	0.1	24	0.19	0.19 (b)	0.2	MCL	3.9	0.19	0.1	40	12	0.1		0.1				N N				
cPAHs cPAHs	Benzo(a)pyrene Benzo(b)fluoranthene	205-99-2	0.029	0.1		0.19	U.19 (b)	0.2	MCL	3.9	0.19	0.1	40	12	0.1		0.1	eco			N N				
		205-99-2	0.034									0.1			0.1		0.1	eco	0.1 eco		N N				
cPAHs cPAHs	Benzo(k)fluoranthene	207-08-9	0.013									12		310	12		12	eco	0.1 ecc		N N				
	Chrysene	193-39-5	0.023									0.1		310	0.1		0.1	eco		+	N N				
cPAHs PCBs	Indeno(1,2,3-cd)pyrene PCB 1242	193-39-5 53469-21-9	96									0.1			0.1		0.1	есо	0.1 eco	N	N				
PCBs	PCB 1242 PCB 1248	12672-29-6	34																						
PCBs	PCB 1248	11097-69-1	3.6																						
				-																					
PCBs PCBs	PCB 1260 Total PCBs	11096-82-5 1336-36-3	110	1		0.5	1 (c)			-		40		0.65	0.65		0.65	есо	0.65 ecc			v	v		
PUBS	Total PCDS	1550-50-5		1		0.5	1 (C)					40		0.05	0.05		0.05	eco	0.65 eco	T	T	•	•		

Notes:

(a) Maximum concentrations of cPAH TEQs and total PCBs should be included for screening. Also, diesel and oil range petroleum concentrations should be combined and compared screening levels.

(c) The screening level for total PCBs is based on federal law (Toxics Substance Control Act; 40 CFR Part 761.61). This federal level is sufficiently protective of human health (i.e., <1E-05 cancer risk).

(d) Only available soil to groundwater protection values published in CLARC were identified. Evaluation of the groundwater data will inform the potential need to evaluate other analytes lacking published values in CLARC. Some analytes may be eliminated from this pathway based on an empirical demonstration.

(e) Metals background values with the exception of arsenic (Puget Sound Region 90th percentile values) are from Natural Background Soil Metals Concentrations in Washington State (Ecology Publication #94-115, 1994). Background for arsenic is based on the MTCA A Table 745-1 value (WAC 173-340-900).

⁽b) cPAHs are evaluated as a mixture using Toxicity Equivalence Factors (TEFs) as described in Ecology Implementation Memo #10.