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

February 21, 2025

Joy Leber
JJ Wood Energy
PO Box 7407
Goodyear, AZ 85338
joy@rivermountain.properties

Re: No Further Action at the following Site:

- **Site Name:** JJ Wood Energy
- **Site Address:** 80 and 90 Tennant Way, Longview, Cowlitz County, WA 98632
- **Cleanup Site ID:** 12558
- **Facility/Site ID:** 9170
- **VCP Project ID:** SW1648

Dear Joy Leber:

The Washington State Department of Ecology (Ecology) received your request for an opinion on the November 2024 Groundwater Monitoring Report (Report) regarding the independent cleanup of the former JJ Wood Energy (LC) facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA),[1] chapter 70A.305 Revised Code of Washington (RCW).[2]

Issue Presented and Opinion

With performance of the fourth consecutive quarterly groundwater monitoring event, and completion of Ecology's additional recommendations in the July 2, 2024 opinion (2024 Opinion), 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 70A.305 RCW, and its implementing regulations, Washington Administrative Code (WAC) chapter 173-340 (collectively "substantive requirements of MTCA"). The analysis is provided below.

[1] https://apps.ecology.wa.gov/publications/SummaryPages/9406.html
[2] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305

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:

- Diesel-range (DRO), oil-range (HRO), and mineral oil-range petroleum hydrocarbons, and arsenic into soil and groundwater.

A description of the Site in included in **Enclosure A**.

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

Basis for the Opinion

This opinion is based on the information contained in the documents summarized in **Enclosure B**.

You can request these documents by filing a records request.[3] For help making a request, contact the Public Records Officer at recordsofficer@ecy.wa.gov or call 360-407-6040. Before making a request, check whether the documents are available on Ecology's Cleanup Site Search web page.[4]

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

Analysis of the Cleanup

With performance of Ecology's recommendations in this opinion, 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:

[3] https://ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests
[4] https://apps.ecology.wa.gov/cleanupsearch/site/12558

1. Characterization of the Site.

Ecology has determined your characterization of the Site is sufficient to establish cleanup standards for the Site, and to select a cleanup action for the Property. Historical Site characterization is provided in Ecology's 2024 Opinion for the Site and the documents listed in **Enclosure B.**

To facilitate regulatory closure of the Site, Ecology recommended a framework of additional investigative and remedial tasks to be completed in its 2024 Opinion. These tasks and the analytical results are summarized by the following synopses:

1. January 2024 Well Installation and Groundwater Monitoring Event. Ecology recommended additional groundwater monitoring to confirm the direction of groundwater flow at the site along with the addition of new monitoring well MW07 in January 2024 near the historical ABW-7 soil boring sample location. Three soil samples were collected from the MW07 boring at depths of 3 feet, 7.5 feet, and 12 feet bgs for laboratory analysis. The soil boring analytical results did not indicate the presence of DRO, HRO, benzene, toluene, ethylbenzene and xylenes (collectively, BTEX), or arsenic either at or above the laboratory method reporting limits (MRL) and/or below the MTCA A cleanup levels (CUL). In addition, the February 2024 groundwater analytical results with silica gel cleanup (SGC) did not indicate the presence of DRO/HRO at or above the respective laboratory method reporting limits (MRLs). Dissolved arsenic was also not detected above the MTCA A CULs. Based on the quarterly groundwater monitoring within the well network, the direction of groundwater flow was found to be generally oriented towards the northwest.[5]

2. May 2024 Groundwater Monitoring Event. Ecology recommended collecting additional groundwater data from on-Site monitoring wells to either demonstrate compliance with cleanup levels or to demonstrate a stable or decreasing trend. In addition, groundwater results were also evaluated for the presence of halogenated volatile organic compounds (HVOCs) in the historic and current groundwater sample results. The SGC groundwater analytical results did not indicate the presence of DRO/HRO at or above the respective MRLs. Dissolved arsenic was also not detected above the MTCA A CUL. In addition, HydroCon contacted Apex Laboratory of Portland, Oregon to expand both the historical and more recent groundwater sample data for the full scan EPA Method 8260 groundwater results. As a result, no HVOCs were detected in any of the samples. The direction of groundwater flow during the event was found to be oriented towards the northwest.[6]

3. June 2024 Remedial Excavation. Ecology recommended the removal of petroleum contaminated soil (PCS) at the EX-NCW-8.5 soil boring location. As a result, HydroCon performed two remedial excavations and removed 18.5 tons of PCS from the site. One excavation was done to remove PCS from the sample EX-NCW-8.5' location and the other was to remove PCS in between MW07 and the original 2014 remedial excavation. The results of the aggregate soil confirmation sampling indicated that the non-SGC (with the

[5] HydroCon, Well Installation and Groundwater Monitoring Report – January 2024, March 11, 2024.
[6] HydroCon, Groundwater Monitoring Report – May 2024, June 5, 2024.

exception of EXC-NCW-8.5) and SGC DRO/HRO and mineral oil analytical results from each sidewall and floor sample from both excavations were below MTCA A CULs.[7] While the results of floor sample EXC-NCW-8.5 were slightly above the MTCA A CUL, the results of the deeper soil confirmation sample EXC2-F-9 confirmed non-SGC DRO/HRO and mineral oil as below the respective CULs.

4. August 2024 – Drill Two Borings – HC15 and MW08. Ecology requested groundwater sampling in two other locations of the site including downgradient (north) of the EX-NCW-8.5 sampling location and another near former boring HC13 to assess groundwater concentrations. Both borings were drilled with MW08 being completed as a monitoring well with groundwater being observed in both borings at a depth 7 to 8 feet bgs. Soil samples collected from each boring did not exhibit DRO/DHO, mineral oil, nor BTEX at or above the respective laboratory MRLs. In addition, arsenic occurred below the MTCA A CUL. Although no groundwater was present in the MW08 well after purging, groundwater from temporary well HC15 did not exhibit SCG DRO/HRO/mineral oil nor BTEX at or above the MRLs.[8]

5. EIM. Ecology has verified that all data has been uploaded into Ecology's Environmental Information Management (EIM) database. It was subsequently reviewed and approved by the Site Manager in February 20, 2025.

Ecology Comments:

i. Soil:

Ecology concurs with HydroCon's explanation that petroleum-impacted soil at confirmation sample location EX-NE-8.5 was removed and supplemented by collection of a second confirmation sample EX-NEE-8.5. The result of this sample did not indicate the presence of either DRO/HRO at or above their respective MRLs.[9]

Further, Ecology concurs with HydroCon's completion of two remedial excavations in June 2024 and removal of a total of 18.5 tons of petroleum-contaminated soil (PCS) from the Site. One excavation was completed to remove PCS from i) the EX-NCW-8.5' sample location and ii) in between MW07 and the original September 2014[10] remedial excavation. The results of the 2024 soil confirmation sampling indicated that the final sidewall and floor samples from both excavations were below the MTCA A CULs for DRO, HRO, and mineral oil.[11]

[7] HydroCon, Remedial Excavations – JJ Wood Energy, July 15, 2024.
[8] Hydrocon, Drill Two Borings – HC15 and MW08 – JJ Wood Energy, August 14, 2024.
[9] HydroCon, Site Summary Report – JJ Wood Energy, Figure 8, April 15, 2019.
[10] HydroCon, Site Summary Report – JJ Wood Energy, Section 2.4.1, April 15, 2019.
[11] HydroCon, Tech Memo – Remedial Excavations, July 15, 2024.

ii. Groundwater:

Silica Gel/TPH in groundwater: Ecology's current SGC guidance[12] now supports the use of SGC for analyzing petroleum concentrations in groundwater using the Northwest Method Total Petroleum Hydrocarbons as Diesel Extended (NWTPH-Dx). Based on the current acceptance of the SGC Guidance, Ecology has reviewed the prior DRO/HRO soil and/or groundwater data (AEC; 2-2014[13] and HydroCon May, June, and October 2017; September 2019; August 2023; and February, June, August, and November 2024 sampling events)[14] both with and without SGC. As a result, Ecology has concluded that prior detections of DRO/HRO in groundwater at the Site were and are most likely due to polar metabolites and biogenic compounds as leachate derived from rainwater percolating through woodwaste surrounding the Site. This excludes the heavily TPH-impacted soil in former AEC borings B-10, B-11, and B-12 which was removed during HydroCon's 2017 remedial excavation at the Site[15] and the soil removed from the EX-NCW-8.5 location.[16]

In Ecology's July 2024 opinion[17], we recommended *a)* performance of additional monitoring events to confirm the groundwater flow direction at the site and *b)* installation of an additional monitoring well (MW07) located in the immediate area of historical boring location ABW-7 to provide sufficient data to evaluate groundwater conditions as well as confirm the vertical extent of soil contamination in the remedial excavation area.

Ecology concurred with the installation of well MW07 in January 2024 in a hydrologically downgradient position relative to the former ABW-7 sample location.[18] In addition, during the July 2024 groundwater sampling event, Ecology concurred with *a)* installation of well MW08 adjacent to former boring HC13 to assess groundwater conditions towards Frontage Road and *b)* drilling of temporary boring HC15 to facilitate collection of groundwater downgradient of the former 2024 remedial excavation.

[12] Ecology, Final Guidance for Silica Gel Cleanup in Washington State, Publication Number 22-09-059, November 2023.
[13] HydroCon, Final Site Summary Report, Section 2.3, April 15, 2019
[14] HydroCon, Well Installation and Groundwater Monitoring Report – JJ Wood Energy, March 11, 2024.
[15] HydroCon, Final Site Summary Report – JJ Wood Energy, April 15, 2019.
[16] HydroCon, Well Installation and Groundwater Monitoring Report – JJ Wood Energy, Figure A-2, March 11, 2024.
[17] Ecology, No Further Action Likely Opinion – JJ Wood Energy, July 2, 2024.
[18] HydroCon, Final Site Summary Report – JJ Wood Energy, Figure 5, April 15, 2019.

Historically during June and October 2017, Ecology also concurred with the drilling of borings HC08 and HC09 to assess groundwater downgradient of boring HC01 and boring/well HC06/MW06. In addition, Ecology concurred with the location of borings HC10, HC-11, and HC-12 which assessed groundwater conditions upgradient of the remedial excavation and both borings HC13 and HC14 to further assess groundwater conditions in the downgradient vicinity of said excavation.[19]

Ecology also concurred with HydroCon's implementation of continued groundwater monitoring over four consecutive calendar quarters and of assessing the applicability of a revised CUL where polar compounds may comprise the predominant part of the TPH mixture.

While groundwater data obtained during the first quarterly February 12, 2024 sampling event at the Site exhibited non-SGC DRO above the MTCA A CUL, the corresponding SGC DRO data did not indicate the presence of DRO at or above the MRLs. Further, Ecology concurs that the hydrocarbon pattern of the non-SGC DRO data indicates that a mineral oil instrumental calibration is most appropriate for the method, consistent with the interpretation from the project laboratory, Apex Laboratory of Portland, Oregon.[20]

The last and fourth quarterly groundwater monitoring event was performed in November 2024.[21] The analytical results indicated non-SGC mineral oil above the CUL (500 micrograms per Liter; µg/L) in wells MW04 through MW08 at concentrations ranging from 846 to 2,750 µg/L. Further, the east-southeasterly groundwater gradient during that event indicated the highest concentration in well MW08, located nearest to Frontage Road, and which may indicate that mineral oil-range (and perhaps DRO/HRO) hydrocarbons have/are migrating on to the Site from the west/northwest, consistent with the variable gradients that apparently exist within the Site area. Conversely, the SGC analytical results did not indicate the presence of either mineral oil-range hydrocarbons nor DRO/HRO at or above the MRLs in any of the wells.

However, based on the four consecutive quarters with no detected TPH (<250 µg/L) in groundwater samples analyzed with SGC, the Site qualifies for the polar metabolite (PM) CUL. Under this scenario, groundwater samples analyzed without SGC can have a concentration of up to 700 µg/L to meet the PM CUL. Relative to the PM CUL, despite several exceedances of non-SGC DRO and/or mineral oil during the 2024 quarterly events in all wells except MW05 and MW06, Ecology concludes that no dissolved phase TPH exists in

[19] HydroCon, Final Site Summary Report – JJ wood Energy, Section 2.7.1, April 15, 2019.
[20] Ecology, ISIS file VCP comments, Email concurrence on mineral/hydraulic oil recalibration for JJ Wood Energy groundwater samples, June 17, 2024.
[21] HydroCon, Well Installation and Groundwater Monitoring Report – JJ Wood Energy, November 2024.

groundwater at the Site and that the exceedances are most likely due to a combination xcof polar metabolites and biogenic compounds.

Further, with respect to the Site area being supplied with potable water by the City of Longview and the City's ordinance against using non-potable groundwater throughout the area, Ecology concludes that the exposure pathway from ingestion of shallow groundwater by human receptors is incomplete. Rather, based on the location of the Site adjacent to the Cowlitz River and an overall easterly groundwater gradient, Ecology also acknowledges that protection of freshwater aquatic receptors is an applicable exposure pathway. Given the compounds in Site groundwater elute within and are thereby representative of DRO-range hydrocarbons, Ecology considers that the Freshwater Protective Value (FPV) for weathered DRO of 3,000 µg/L is applicable to protection of aquatic receptors in the adjacent waterway.[22]

Arsenic in Site groundwater: Arsenic has been detected in shallow water-bearing zone groundwater in grab samples collected in 2017 from six of nine locations. However, arsenic was detected below the MTCA A CUL in soil samples collected at the Site. Further, no historical wood treatment operations using either arsenical or other wood preservatives were conducted at the Site. As previously mentioned, potable water throughout the area is supplied by the City of Longview and no shallow water-bearing zone groundwater is currently used for either potable or non-potable applications. Further, WAC 173-160-171 stipulates that a domestic supply well shall not be located within 1,000 feet from the boundary of a permitted or previously permitted solid waste landfill. The Cowlitz County landfill and Gerhart Gardens (former landfill) are located adjacent to the site.

Further, groundwater parameters including dissolved oxygen (DO) and pH data from the site wells provide evidence that reducing conditions are present in the subsurface at the Site. In addition, the higher 200+ millivolt oxidation-reduction potential (ORP) observed in Site groundwater may also indicate the presence of oxic conditions whereby orthophosphate could desorb arsenic from disseminated iron oxide and/or pyrite within the water-bearing zone stratigraphic deposits. Beyond, another geochemical trigger may involve the onset of reducing conditions surrounding the site via degradation of organic carbon associated with the constancy of the surrounding Swanson Bark wood products. It is also important to understand that because arsenic exhibits two common oxidation states as the charged arsenate (+5) specie (in oxic environments) and the more mobile uncharged arsenite (-3) specie (in reduced environments), it can also be mobilized via desorption from minerals to groundwater under either oxidative or reducing conditions.[23] Also, higher turbidity units recorded for groundwater indicates the presence of suspended solids at the

[22] Ecology, Implementation Memorandum No. 23 – Concentrations of Gasoline and Diesel-Range Organics Predicted to be Protective of Aquatic Receptors in Surface Waters - Table 1, August 25, 2021.
[23] USGS, Scientific Investigations Report 2007-5036: The Association of Arsenic with Redox Conditions, Depth, and Ground-Water Age in the Glacial Aquifer system of the Northern United States, pages 1-3, 2007.

Site, something that is not unusual for wells completed in unconsolidated alluvium and that could have contributed to false positive arsenic detections.[24]

Regarding assessing groundwater relative to an on-Site arsenic soil source, it is Ecology's conclusion that no on-Site anthropomorphic arsenic sources exist. Ecology's prior 2019 opinion evaluated arsenic natural background in Clark County soil by first referring to Toxics Cleanup Program Publication No. 94-115, Natural Background Soil Metals Concentrations in Washington State.[25] On Page 7-7 of that publication, the 90th percentile arsenic concentration for Clark County soils is given as 5.81 milligrams per kilogram (mg/Kg), with a median of 3.045 mg/Kg. Clark County soil was referenced as no soil data exists for Cowlitz County in the document, and Clark County is immediately south of Cowlitz County.

To evaluate if this Site's results were/are consistent with published background conditions, Ecology first compared the 95% upper confidence limit on the mean soil concentration obtained at a Site to the 90th percentile of the background data set. At the Site, arsenic was detected in 16 of 18 soil samples reported to EIM for this project. Including censored (non-detect) data in that dataset and using the Kaplan Meier Method, Ecology calculated a 95% upper confidence limit on the mean arsenic concentration obtained in Site soil of 2.57 mg/Kg. This value is less than the 5.81 mg/Kg 90th percentile of the background data set, and also occurs below the median value for naturally-occurring arsenic in Clark County soils.

Given the low arsenic concentration in Site soil, Ecology concurs with HydroCon's assessment that groundwater arsenic concentrations in the Site wells are most likely due to the low-oxygen reducing environment mobilizing arsenic from the adsorbed to the dissolved aqueous phase. This hypothesis is consistent with the low DO field parameter readings of less than 0.5 parts per million from the on-Site wells.

In addition, dissolved arsenic concentrations in the four site monitoring wells MW-4 through MW-7 steadily increased in concentration during the February, May, and August 2024 events, despite those concentrations occurring at less than the MTCA A CUL. While concentrations in the November 2024 event exceeded the MTCA A CUL in wells MW04, MW05, MW07, and MW08, it was relevant that off-Site groundwater impacting well MW08 from the west also exhibited dissolved arsenic above the CUL. This provides further evidence that dissolved arsenic in groundwater throughout the area is likely affected by reducing conditions in the subsurface.

Beyond the aforementioned, arsenic data from 17 monitoring wells in and around the City of Longview's Mint Farm municipal well drilled in 2010 exhibits an average arsenic concentration of 6 µg/L.[26] Given the Mint Farm area is close to the Site, the groundwater

[24] HydroCon, Groundwater Monitoring Report - Appendix A, November 2024.
[25] Ecology Toxics Cleanup Program, Publication No. 94-115, Natural Background Soil Metals Concentrations in Washington State, Section 8.1. https://fortress.wa.gov/ecy/publications/documents/94115.pdf.

[26] City of Longview, https://mylongview.com/FAQ.aspx?QID=161, Water Treatment, 7. What is in the groundwater?

arsenic data provides further evidence that arsenic in on-Site groundwater more likely than not, reflects area background conditions

iii. TEE: Consistent with the prior Ecology VCP Site Manager's concurrence in his September 20, 2021 email and our mutual review of the TEE included in Appendix C of your April 15, 2019 Site Summary Report[27], Ecology concurs with the conclusion that the TEE may be ended for this Site. This concurrence is based on the Site being located within an area that is heavily industrialized and lacks sufficient habitat for use by potential ecological receptors. Further, the Site meets TEE Exclusion #3 because:

1. There is less than 1.5 acres of contiguous undeveloped land on the site, or within 500 feet of any area of the site affected by hazardous substances other than those listed in WAC 173-340-7491(1)(c)(ii), and

2. There is less than 0.25 acres of contiguous undeveloped land on or within 500 feet of any area of the site affected by hazardous substances listed in WAC 173-340-7491(1)(c)(ii).

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.

Cleanup Standards: Under MTCA, cleanup standards consist of three primary components; (a) points of compliance,[28] (b) cleanup levels,[29] and (c) applicable state and federal laws.[30]

(a) Points of Compliance. Points of compliance are anticipated to be proposed after the Site has been defined. Ecology currently understands the points of compliance to be thus at the Site:

[27] HydroCon, Site Summary Report – JJ Wood Energy, LLC, April 15, 2019.
[28] WAC 173-340-200 "Point of Compliance."
[29] WAC 173-340-200 "Cleanup level."
[30] WAC 173-340-200 "Applicable state and federal laws," WAC 173-340-700(3)(c).

Media	Points of Compliance
Soil-Direct Contact	Based on human exposure via direct contact, the standard point of compliance is throughout the Site from ground surface to fifteen feet below the ground surface. *WAC 173-340-740 (6)(d).* **Met based on interim remedial action (IRA) soil confirmation sampling results.**
Soil- Protection of Groundwater	Based on the protection of groundwater, the standard point of compliance is throughout the Site. *WAC 173-340-747.* **Met based on IRA soil confirmation and groundwater sampling results.**
Soil – Protective of Ecological Receptors	Based on the protection of ecological receptors, the proposed conditional point of compliance is to six feet bgs. A standard point of compliance is to 15 feet bgs. WAC 173-340-7490. **Met based on simplified TEE.**
Groundwater	Based on the protection of groundwater quality, the standard point of compliance is throughout the site from the uppermost level of the saturated zone extending vertically to the lowest most depth which could potentially be affected by the Site. *WAC 173-340-720(8)(b).* **Incomplete based on no beneficial use of shallow groundwater.**
Surface Water – Protective of Ecological Receptors	Based on protection of freshwater aquatic ecological receptors, compliance with the requirements of WAC 173-201A and 173-340-730(3)(b)(ii). **Met based on groundwater petroleum concentrations being less than the fresh surface water CUL for weathered diesel and the location of the Site adjacent to Cowlitz River.**

The sediment and soil vapor/indoor air pathways are considered incomplete at the Site.

(b) Cleanup Levels. Cleanup levels are the concentrations of a hazardous substance in soil, water, air, surface water, or sediment that are determined to be protective of human health and the environment.

As a result, based on the soil and groundwater data submitted to date, the applicable MTCA Method A soil and groundwater CULs and MTCA B FPV at the Site include:

Site Hazardous Substance	Soil Cleanup Level (mg/kg)[31]	Groundwater Cleanup Level (µg/L)[32]	PM[33] Groundwater Cleanup Level (µg/L)	Freshwater Protection Value (µg/L)[34]
DRO[35]	2,000	500	700[36]	3,000[37]
Benzene	0.03	5	N/A[38]	10
Arsenic	20	5	N/A	N/A

3. Selection of Cleanup Action

Ecology concurs with the 2024 IRAs performed at the Site to further remove DRO-impacted soil with soil confirmation sampling to delineate the adequacy of the extent of excavation. MTCA provides that an independent IRA under WAC 173-340-430 may constitute a permanent cleanup action for a site, or a property which is part of a site, if the action is subsequently shown to comply with WAC 173-340-350 through WAC 173-340-390.[39]

Ecology also concurs with completion of the additional four consecutive quarterly groundwater monitoring events in 2024, with arsenic and DRO/HRO/mineral oil analyses with and without SGC, and evaluation of the results following the 2023 SGC Guidance.[40] Based on our recommendations under Ecology Comments, ii. Groundwater, above, Ecology concurs with a No Further Action determination for the Site.[41]

[31] Protective of the groundwater pathway in milligrams per kilogram.
[32] MTCA A CUL in micrograms per liter.
[33] Polar metabolites
[34] Ecology, Implementation Memorandum No. 23 – Concentrations of Gasoline and Diesel-Range Organics Predicted to be Protective of Aquatic receptors in Surface Water, August 25, 2021.
[35] Diesel-range organics
[36] Based on groundwater not exhibiting hydrocarbons at or above laboratory MRL under Ecology SGC Guidance section 3.2.2.
[37] DRO "Weathered"
[38] Not applicable.
[39] WAC 173-340-430(1)
[40] Ecology, Guidance for Silica Gel Cleanup in Washington State, Revised November 2023.
[41] Best professional judgement, allowed under WAC 173-340-360.

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 70A.305.040(4).

2. Opinion Does Not Constitute a Determination of Substantial Equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination.
See RCW 70A.305.080 and WAC 173-340-545.

3. 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).

Termination of Agreement

Thank you for choosing to clean up the Site under the VCP. This opinion terminates the VCP Agreement governing VCP Project SW1648.

Questions

If you have any questions about this opinion, please contact me at 360-489-5347 or joe.hunt@ecy.wa.gov.

Sincerely,

Joseph B. Hunt, LHG
Toxics Cleanup Program
Southwest Region Office

JH/at

cc: Craig Hultgren, HydroCon, craigh@hydroconllc.net
Tim Mullin, Ecology, tim.mullin@ecy.wa.gov
Marian Abbett, PE, Ecology, marian.abbett@ecy.wa.gov
Ecology Site File

Enclosure A

Site Description

Site Description

The JJ Wood Energy property is zoned as a heavy industrial property and is surrounded by other industrial properties. Future land use at the Site will continue to be for industrial purposes. The site is located within Section 11 of Township 7 North and Range 2 West of the Willamette Meridian in a heavy industry zoned area of Longview, Washington. The site is surrounded by industrial properties including Swanson Bark and Wood Products, Lakeside Industries, Kellogg Supply Company, Gerhart Gardens (former landfill), and the Cowlitz County Landfill.

The site has been filled with Columbia River dredge sands which were placed over native alluvium consisting primarily of silt and sand. Abundant wood debris from historic mill operations as well as deposits from the river is present in the subsurface. Large stockpiles of bark are present on the Swanson Bark and Wood Products property, located hydraulically upgradient of the site

Prominent surface water bodies near the site include the Cowlitz River (located approximately ¼ mile north of the site) and the Columbia River (located approximately 2 miles southwest of the site). There are no surface water features on the site other than a lined leachate pond that is used for evaporation purposes.

Regional Hydrogeology. The geology of southwestern Cowlitz County is characterized by sedimentary and volcanic deposits laid down or extruded during the Tertiary and Quaternary periods. The oldest formations (Cowlitz Formation and Goble Volcanics) include Eocene basaltic andesite and volcanoclastic deposits which were deposited 45 to 32 million years ago. Lava flows of the Columbia River Basalt Group overlie the older formations. The next youngest rocks exposed in the area are the Upper Miocene to Lower Pleistocene sand, silt, gravel, and conglomerate of the Troutdale Formation. The valley fill material represents deposits of the ancestral Columbia River. The dissected upland that bound the Columbia River valley is composed of these older Formations. The youngest material exposed in the region is the outburst deposits of glacial Lake Missoula, landslide deposits, and recent alluvium. The hydrogeology in the vicinity of the site is characterized by recharge to bedrock in the upland areas and discharge into the Columbia River. Groundwater flows from the regional bedrock through the thick alluvial sequence in the river valley before discharging into the Columbia and Cowlitz rivers. Precipitation also infiltrates the surface of the alluvium, recharging local flow systems in the river's floodplain.

Local Geology and Hydrogeology. Locally, the geology consists of alluvium underlain by Columbia River Basalt. The site has been filled with Cowlitz and/or Columbia River dredge sand that extends approximately 5 or more feet above native alluvium (predominantly comprised of silt, sandy silt, silty sand, and sand). Abundant wood debris is present in the subsurface from historic site use (former log yard and sawmill) as well as deposition of logs and other wood debris from the nearby rivers. Based on review of well logs available on Ecology's website, bedrock is expected to exist at depths greater than 200 feet bgs in the vicinity of the subject site along the Cowlitz River, located approximately ¼ mile north of the site. The Columbia River is located approximately 2 miles southwest of the site.

SHARP: Ecology has completed a site hazard assessment ranking process (SHARP) analysis as a part of this cleanup. The evaluation concluded that the overall rank of the Site is D4 (Low) across all environmental matrices which signifies the risk to human health and the environment is not imminent or immediate.

Enclosure B

List of Documents

Basis for the Opinion: List of Documents

1. EMCON, *Phase II Environmental and Geotechnical Site Assessment, Tennant Way Site, Longview, Washington*, October 24, 1996.

2. Hahn and Associates, Inc., *Phase I Environmental Site Assessment, Approximate 60-Acre Parcel, Pacific Lumber and Shipping Log Yard, 240 Tennant Way, Longview, Washington*, November 11, 1998.

3. Anderson Environmental Consulting, LLC, *Supplemental Site Investigation Report, Former Anderson Property – 250 Tennant Way, Longview, Washington*, February 24, 2014.

4. Anderson Environmental Consulting, LLC., *Follow up Soil and Surface Water Sampling – Former Anderson Property in Longview, Washington*, June 16, 2014.

5. HydroCon, *Remediation and Groundwater Sampling, Former Sawmill – Anderson Property, 90 Tennant Way, Longview, Washington*, November 25, 2014.

6. HydroCon, *Technical Memorandum to Mr. Doug Christophersen, Second Quarterly Groundwater Results – 90 Tennant Way, Longview, Washington*, February 16, 2015.

7. HydroCon, *Technical Memorandum to Mr. Doug Christophersen, Third Quarterly Groundwater Results – 90 Tennant Way, Longview, Washington*, June 18, 2015.

8. HydroCon, *Technical Memorandum to Mr. Doug Christophersen, Fourth Quarterly Groundwater Results – 90 Tennant Way, Longview, Washington*, August 10, 2015.

9. Ecology, *Re: Further Action at the following Site: Swanson Bark Wood Products, Inc.*, October 8, 2015.

10. Ecology, *Re: Further Action at the following Site: JJ Wood Energy*, November 19, 2015 (reissuance of October 8, 2015 opinion).

11. Ecology, *Re: Further Action at the following Site: JJ Wood Energy*, January 22, 2016.

12. HydroCon, *Site Closure Report, Former Sawmill – Former Anderson Property*, October 7, 2016.

13. HydroCon, *Additional Characterization Report, JJ Wood Energy Property – Longview, Washington, VCP Site Number – SW1456*, August 4, 2017.

14. HydroCon, *Monitoring Well Installation - Work Plan, JJ Wood Energy, LLC Site, Longview, Washington, VCP Site Number SW-1456*, September 12, 2017.

15. HydroCon, *Well Installation Report, JJ Wood Energy, LLC Site Longview, Washington, VCP Site Number – SW1456*, November 15, 2017.

16. Ecology, *Re: Review of September 12, 2017 Monitoring Well Installation – Work Plan for the Following Site: JJ Wood Energy*, November 28, 2017.

17. Ecology, *Re: Further Action at the following Site, JJ Wood Energy*, May 2, 2018.

18. HydroCon, *Site Summary Report, JJ Wood Energy, LLC Site*, April 15, 2019.

19. HydroCon, *Response to Ecology Further Action Opinion, July 26, 2019*; March 4, 2020.

20. Ecology, *Re: Technical Assistance at the Following Site: JJ Wood Energy*; November 2, 2020.

21. HydroCon, *Well Installation and Groundwater Monitoring Report*, March 11, 2024.

22. HydroCon, *Groundwater Monitoring Report – May 2024*, June 5, 2024.

23. HydroCon, *Technical Memorandum – Remedial Excavations – JJ Wood Energy*, July 15, 2024.

24. HydroCon, *Technical Memorandum – Drill Two Borings – HC15 and MW08*, August 14, 2024.

25. HydroCon, *Technical Memorandum – Drill Two Borings – HC15 and MW08 - Revised*, August 28, 2024.

26. HydroCon, *Groundwater Monitoring Report – November 2024*, December 16, 2024.