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DEPARTMENT OF ECOLOGY

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April 9, 2018

Don Wyll
Leidos Engineering LLC
18912 North Creek Parkway, Suite 101
Bothell, WA 98011

Re: Remedial Investigation Work Plan Addendum — Former Union Oil Bulk Terminal No. 306570 Comments

- **Site Name:** Unocal Bulk Plant #0601
- **Site Address:** 738 Marine Drive, Port Angeles, WA 98362
- **Facility/Site No.:** 1006
- **Cleanup Site No.:** 4976

Dear Mr. Wyll:

Thank you for submitting the Remedial Investigation (RI) Work Plan Addendum (Addendum), Former Union Oil Bulk Terminal No. 306570, to the Washington State Department of Ecology (Ecology) for the Unocal Bulk Plant #0601 Site (Site) dated February 3, 2018. Thank you also for meeting with Ecology on February 13, 2018, to discuss the report. Ecology has the following comments on the Addendum:

Addendum Comments

1. **Addendum build on previous work plans:** This Addendum should specify and clearly state that it builds upon previous work plans (June 14, 2007, October 31, 2016, September 25, 2017) and specify that previously approved sampling and analysis plans, cultural monitoring plans, Environmental Information Management (EIM) system submittal requirements, etc., continue to apply.
2. **Contingency Soil Borings:** Ecology encourages the use of plans allowing additional borings or monitoring wells to be installed if field indications of contamination are found in any of the proposed monitoring well or boring locations intended to define the boundary of contamination. Since this Addendum includes multiple boring locations aimed at defining the limits of contamination, adding contingency plans allowing further step-out borings, if field indications of contamination are found and access agreement allow, may prevent remobilization and additional sampling phases.

3. **Health and Safety:** In accordance with Washington Administrative Code (WAC) 173-340-810(2), the Work Plan should state that a health and safety plan be submitted for review before field work begins.
4. **Sampling Methodology:** Ecology continues to be concerned with potential for volatilization when using vacuum trucks, air excavation rigs, and hand augers in characterization work. As stated in the Draft Remedial Investigation Report comments (February 29, 2016), Supplemental Remedial Investigation Work Plan comments (July 21, 2016) and Ecology's April 12, 2017 email (Re: 306570 former Union Oil Terminal – Port Angeles) use of these methods compromise the results for volatiles. This Addendum states that P-1 and P-2 were completed using a vacuum truck and a hand auger. Hand auger results should not be used to delineate extent of contamination. In the July 21, 2016, comments, Ecology requested Chevron propose and use a sampling technique that would collect relatively undisturbed soil core samples from pre-augered boreholes and minimize the loss of volatiles. It is not clear how this is being accomplished. Please clarify this in the Addendum. By email on April 12, 2017, Ecology also disagreed with the use of vacuum truck. There is no way of knowing the depth to which a vacuum truck will affect samples below the depth where it was used.
5. **Fieldwork Schedule:** The schedule must set start and end times for fieldwork, but can allow contingencies if work is delayed. For example: *Chevron will begin the work outlined in this work plan within 30 days of approval and complete the work within 60 days of approval. In the event of delays, Chevron will submit a timely request for an extension providing a justification for the necessary extension.* The schedule should also set dates for submittal of data resulting from this fieldwork. Ecology should be notified and sent a copy of validated lab data within 10 days of being received.
6. **Future vapor intrusion assessment:** This work plan begins the assessment of the vapor intrusion pathway; however, Ecology can't state that this sample alone will be sufficient to assess the vapor intrusion pathway without full characterization of the soil and groundwater contamination.
7. **Add Naphthalene to Groundwater Constituents:** Naphthalene needs to be added to the list of groundwater constituents as part of the vapor intrusion assessment. As stated in Ecology Implementation Memorandum No. 18, *Petroleum Vapor Intrusion (PVI): Updated Screening Levels, Cleanup Levels, and Assessing PVI Threats to Future Buildings* (Ecology, 2018), naphthalene is of particular concern because it is one of four compounds that have groundwater petroleum vapor intrusion (PVI) screening levels that are below MTCA Method A groundwater cleanup levels. The naphthalene PVI screening level is 8.9 µg/L. This screening level is significantly below the MTCA Method A cleanup level of 160 µg/L. Understanding the distribution of naphthalene in groundwater is needed for the PVI conceptual model and for determining soil gas sampling needs. Groundwater laboratory reporting limits for naphthalene shall be below the 8.9 µg/L screening level.
8. **Soil Gas Sampling constituents:** Soil gas sampling shall include the following constituents:
 - a. Petroleum equivalent carbon (EC) fractions:
 - i. EC5-8 (aliphatics)
 - ii. EC9-12 (aliphatics)
 - iii. EC9-10 (aromatics)
 - b. Petroleum volatile organic compounds (VOCs):
 - i. benzene, toluene, ethylbenzene, and total xylenes (BTEX)
 - ii. naphthalene

9. **Soil Gas Sampling Protocols:** The July 2015 California Active Soil Gas Investigations guidance document (http://www.dtsc.ca.gov/SiteCleanup/upload/VI_ActiveSoilGasAdvisory_FINAL.pdf) notes that naphthalene analysis by US EPA Method TO-15 can be affected by contaminant carryover and variability in recovery unless special protocols are followed. Therefore, please revise the plan to state that the recommendations and protocols in Appendix E (Naphthalene Soil Gas Collection) of the California guidance shall be followed.
10. **Soil Vapor Probe Installation:** This section states that either Teflon® or Nylaflow® tubing will be used. Ecology does not recommend the use of Nylaflow® tubing for this project because the July 2015 California Active Soil Gas Investigations guidance document notes that reduced recovery of naphthalene has been observed when using Nylaflow® tubing with small sample sizes.
11. **Characterization around Pipeline 6:** It does not appear that the soil and groundwater along the portion of Pipeline 6 that extends from the northeast corner of the former property to Tumwater Valley Creek has been adequately characterized. A third boring planned in the October 31, 2016, Supplemental Remedial Investigation Work Plan was never completed, leaving a section of Pipeline 6 between P-2 and Tumwater Valley Creek uncharacterized. More than one boring may be needed to adequately characterize the soil along this length of pipe.
12. **Consider four pipes within Pipeline 6:** Historical information about Pipeline 6 indicates the "pipeline" consisted of one 3-inch and three 4-inch lines (Report to the Department of Ecology, Information on Potentially Liable Persons at Port of Port Angeles Marine Terminal/Log Yard Site. Preston, Thorgrimson, Shidler, Gates & Ellis. March 3, 1994). It is not clear whether the sampling done at locations P-1 and P-2 during the October 2017 sampling event located all four lines and properly collected the samples from a location downgradient and below the pipe depths. Please provide information to show this. Consider all four lines in determining if characterization is adequate in this area.

Revised Addendum and Draft RI

Ecology will expect submittal of the revised Addendum for review and approval within 30 calendar days after receipt of Ecology's comments. The revised RI is due for review and comment within 60 calendar days after receipt of the validated data that results from the supplemental work.

Please contact me at (360) 407-6254 or connie.groven@ecy.wa.gov if you have questions about the comments provided.

Sincerely,



Connie G. Groven, P.E.
Toxics Cleanup Program
Southwest Regional Office

CGG: tam

By Certified Mail: 91 7199 9991 7037 7521 2868

cc: Dan Carrier, Chevron
Marian Abbett, Ecology

Date: May 3, 2018

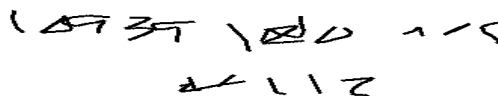
Dept of Ecology:

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