TECHNICAL MEMORANDUM

DATE: February 12, 2019

ENVIRONMENTAL

PARTNERS INC

TO:Ms. Jing Song, VCP Site Manager, WA Dept. of Ecology, NWROMr. Mike Warfel, VCP Site Manager, WA Dept. of Ecology, NWRO

CC: Mr. Mike Raskin, MJR Development

- **FROM:** Mr. Eric Koltes, L.G., Senior Geologist Ms. Tena Seeds, P.E., Senior Engineer
- RE: Response to Comments on Proposed Cleanup Meeker Former Gas Station Site 105 Washington Ave N., Kent, WA Cleanup Site ID: 2782 Facility/Site ID: 44681713 VCP Project ID: NW3167

EPI Project Number: 65112.5

This Technical Memorandum has been prepared in response to the Washington State Department of Ecology (Ecology) advisory opinion letter dated September 7, 2018 regarding proposed cleanup of the above-referenced Site. The advisory opinion letter was issued based on Ecology's review of the *Remedial Investigation, Focused Feasibility Study, and Cleanup Action Plan* (RI/FFS/CAP) prepared by Environmental Partners, Inc. (EPI) on behalf of MJR Development. The RI/FS/CAP, dated September 1, 2017, was submitted to Ecology concurrent with enrollment of the Site into Ecology's Voluntary Cleanup Program (VCP).

Ecology's opinion letter provided comments indicating that characterization of the Site is not sufficient to establish cleanup standards and select a cleanup action at this time. Following review of Ecology's comments, Mr. Eric Koltes and Ms. Tena Seeds of EPI and Mr. Christian LaRocco of MJR met with Ms. Jing Song and Mr. Mike Warfel of Ecology on November 15, 2018 to discuss the comments in the September 7 opinion letter and clarify appropriate responses to those comments. Provided below are Ecology's verbatim comments followed by EPI's technical responses as discussed during the November 15 meeting, and agreed upon by Ecology.

Characterization of the Site – Bullet #1, Sub-bullet #1 Comment (page 2):

The horizontal extent of the residual soil contamination to the south and east of the Property boundaries are not defined. Additional soil sampling is required in the sidewalks and/or streets adjacent to the southern and eastern Property boundaries.

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The southern extent of residual soil contamination is defined by 2002 sampling locations SP4, SP5, and SP6, and by 2015 sampling location B-10. All concentrations from those borings, which were collected from depths ranging from 3 feet to 9.5 feet below ground surface (bgs), were either not detectable (i.e., less than the laboratory reporting limits) or were detected at concentrations that do not exceed the applicable Model Toxics Control Act (MTCA) Method A cleanup levels. EPI will revise the RI/FFS/CAP to include a more detailed discussion of this information.

Characterization of soil to the east is limited by the presence of several utilities that are located within the adjacent sidewalk and street, including traffic loops that are buried under several layers of pavement and cannot be accurately located. These utilities, along with heavy vehicle traffic within Washington Avenue N. (State Route 181), would present significant health and safety risks during drilling and sampling in the right-of-way east of the Property boundary. Therefore, further characterization of soil impacts to the east is not practicable.

Characterization of the Site – Bullet #1, Sub-bullet #2 Comment (page 3):

A bottom confirmation soil sample collected at 8 feet below ground surface (bgs) from a 2002 remedial excavation (sample C3-8') contained a TPHg concentration above the MTCA Method A soil cleanup level. Continued excavation to a deeper depth was not performed due to the presence of ground water. Oxygen-release compounds (ORC) were placed at the bottom of the excavation at the time. Additional soil sampling is required to confirm and/or delineate the residual soil contamination at the bottom depth of the former excavation.

EPI concurs with this comment and plans to perform additional soil sampling in the area of sample C3-8' to confirm current conditions at the bottom depth of the former excavation. The sample will be analyzed for gasoline-range organics (GRO) and associated compounds including benzene, toluene, ethylbenzene, and total xylenes (BTEX). The results of the additional sampling will be presented in the revised RI/FFS/CAP.

Characterization of the Site – Bullet #2, Sub-bullet #1 Comment (page 3):

The downgradient extent of the petroleum hydrocarbon-contaminated ground water plume has not been determined, and has likely migrated beyond the southern and eastern Property boundaries. Additional permanent or temporary ground water monitoring wells in the sidewalks and/or streets adjacent to the southern and eastern Property boundaries are needed to fully delineate the extent of the ground water plume.

For the health and safety reasons noted above with respect to utilities and traffic, the installation of additional groundwater monitoring wells within the adjacent sidewalks and streets is not practicable. Alternatively, modeling will be used to evaluate the extents of the groundwater plume. Groundwater modeling will be performed using the first order decay formulas found in Ecology's *Guidance on Remediation of Petroleum-Contaminated Ground Water by Natural Attenuation* (Publication No. 05-09-091; July 2005) for analyzing temporal and spatial characteristics. The data used for modeling will include groundwater monitoring data previously collected at the Site as well as new data to be collected from existing Site wells and from additional proposed locations for reconnaissance groundwater sampling. At least two of the proposed locations will be very near to historical sampling locations SP4 and SP5, which

are believed to be outside of the utility corridor as they were advanced immediately following the roadway widening and utility installation activities in 2002. The modeling results will be presented in the revised RI/FFS/CAP.

Characterization of the Site – Bullet #2, Sub-bullet #2 Comment (page 3):

A periodic ground water monitoring program should be established for existing and newly installed ground water monitoring wells.

As discussed, a modeling approach will be used *in lieu* of establishing a periodic groundwater monitoring program. However, at least one comprehensive groundwater monitoring event will be performed to obtain current data for modeling. The event will include measuring groundwater depths and elevations at all sampling locations (wells and reconnaissance locations) and collecting groundwater samples from each location for laboratory analysis. The groundwater data will be included with the modeling results in the revised RI/FFS/CAP. EPI anticipates that groundwater may be monitored again in the future as part of a 5-year review for the Environmental Covenant to be implemented for the Property.

Characterization of the Site – Bullet #3 Comment (page 3):

At least one waste oil underground storage tank (UST) was reportedly present at the Property. Please provide the estimated locations(s) of the former waste oil UST(s) on a Site map. Soil and ground water samples collected in the vicinity of the former waste oil UST(s) should be analyzed for the full suite of the required analysis for waste oil per Table 830-1 of the MTCA regulation.

Based on a review of available documents for the Site, and as discussed during the November 15 meeting, the presence of a former waste oil UST on the Property appears to be based on anecdotal evidence, and its previous location cannot be identified. Soil and groundwater samples were analyzed for diesel-range organics (DRO) and oil-range organics (ORO) during assessments in 1998 and 2002, and groundwater samples were analyzed for DRO and ORO during a well monitoring event in 2014. None of the samples contained detectable concentrations of DRO and ORO. The apparent absence of these compounds at the Site suggests that a waste oil release has not occurred on the Property. Therefore, additional testing for compounds related to a waste oil release is not necessary. Additional details regarding this conclusion will be added to the revised RI/FFS/CAP.

Characterization of the Site – Bullet #4 Comment (page 3):

The vapor intrusion pathway needs to be evaluated based on the existing and newly collected soil and ground water characterization data. The vapor intrusion pathway evaluation should be based on the following Ecology guidance documents:

- Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, Publication No. 09-09-047, *Revised April 2018.*
- Updated Process for Initially Assessing the Potential for Petroleum Vapor Intrusion, Implementation Memorandum No. 14, *March 31, 2016.*

- Petroleum Vapor Intrusion: Updated Screening Levels, Cleanup Levels, and Assessing PVI Threats to Future Buildings, Implementation Memorandum No. 18, *January 10, 2018.*
- An Excel spreadsheet with revised groundwater, sub-slab soil gas, and deep soil gas screening levels available at: <u>https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Vapor-intrusion-overview/Vapor-intrusion-2015-changes-to-the-2009-toxicit</u>.

The potential for vapor intrusion (VI) was initially assessed in accordance with Ecology's *Implementation Memorandum No. 14*. That evaluation determined that there are no existing buildings present within the lateral inclusion zone for residual petroleum impacts, and therefore, no additional VI assessment is necessary. Per "Step 6" described on page 7 of *Implementation Memorandum No. 14*, 30 feet is an adequate and widely accepted horizontal separation distance between existing buildings and the edge of the contamination. Buildings or other occupied structures that are more than 30 feet from the edge of the contaminated zone do not require further evaluation for potential VI risks. At the Site, there is a separation distance of approximately 65 feet between the closest existing building (i.e., the Rite Aid building) and the residual contamination. In addition, impacted groundwater is hydraulically downgradient from the Rite Aid building, so the potential for vapor migration from impacted groundwater is significantly minimized. EPI will include this information in the revised RI/FFS/CAP.

Characterization of the Site – Bullet #5, Sub-bullet #1 Comment (page 4):

Please include the ground water monitoring and sampling results for the periodic ground water sampling events between June 2002 and March 2005 in Table 2 of the 2017 RI/FS/CAP, or in a separate table.

EPI was not aware of the groundwater sampling events performed between June 2002 and March 2005 until after reviewing Ecology's September 7 opinion letter. EPI has since requested and received copies of groundwater reports from Ecology that contain the data from those historical sampling events. EPI will update Table 2 of the RI/FFS/CAP to include the data from the events performed between June 2002 and March 2005. EPI appreciates the prompt response from Ecology in providing copies of those reports.

Characterization of the Site - Bullet #5, Sub-bullet #2 Comment (page 4):

Please provide a rose diagram presenting all current and historical ground water flow directions, based on the data from the periodic ground water monitoring events between 2002 and 2005, and newly collected ground water monitoring data.

EPI will prepare the requested rose diagram using all available data, including the recently obtained data from the events performed between June 2002 and March 2005 and any new data to be collected. The rose diagram will be presented in the revised RI/FFS/CAP.

Characterization of the Site – Bullet #5, Sub-bullet #3 Comment (page 4):

Please revise the maps for residual petroleum hydrocarbons in soil and ground water, which are designated as Figure 6 and Figure 8 in the 2017 RI/FS/CAP.

- Figure 6 should include the bottom excavation sample C3-8'.
- Figure 6 should include all historical soil sample locations, including the sample locations that have been excavated. The historical soil samples that were collected before the 2002 remedial excavation and were removed during the excavation should be marked with a different symbol or color coding.
- Figure 8 should include the historical ground water sampling location and analytical results from soil borings that were not confirmed by a permanent monitoring well, such as SP3 and SP4.

EPI's revisions to the RI/FFS/CAP will include these requested revisions to Figures 6 and 8.

Characterization of the Site – Bullet #5, Sub-bullet #4 Comment (page 4/5):

Please revise the existing cross section and provide additional cross section(s) passing the residual soil and ground water contamination along the southern Property boundary and the utility corridor. Cross sections should include the remedial excavation limits, the utility corridor limits, the Property boundaries, soil and ground water sampling locations, depths, and analytical results. Vertical scale on cross sections should reference mean sea level datum.

EPI's revisions to the RI/FFS/CAP will include a revised version of the existing cross-section and an additional cross-section showing the requested elements.

Characterization of the Site - Bullet #5, Sub-bullet #5 Comment (page 5):

Please provide the monitoring well construction details for ground water monitoring wells MW1 through MW4 and OW1 through OW3.

The previous consultants' well logs for MW1 through MW4 and OW1 through OW3 have not been made available to EPI and were not included in any of the available reports. However, EPI will perform a search of Ecology well logs in an attempt to identify driller logs of these wells and will provide copies of any logs that appear to correspond to MW1 through MW4 and OW1 through OW3 as an attachment to the revised RI/FFS/CAP.

Characterization of the Site – Bullet #5, Sub-bullet #6 Comment (page 5):

Please provide the monitoring well decommissioning reports for the ground water monitoring wells MW1, MW2, and MW4, which were decommissioned in 2001 and 2002 due to a street widening project and prior to a remedial excavation.

The well decommissioning reports for MW1, MW2, and MW4 have not been made available to EPI and were not included in any of the available reports. EPI will perform a search of Ecology well logs in an attempt to identify drillers' logs documenting decommissioning of these wells. Copies of any decommissioning logs that appear to correspond to MW1, MW2, and MW4 will be included as an attachment to the revised RI/FFS/CAP.