

MEMORANDUM

Project No.: 120061

June 20, 2016

To:

From:

Jennifer Lind, Department of Ecology

K. Mgley

Kirsi Longley

Willia V. foodha to

William Goodhue, LHG Principal Hydrogeologist

Re: Responses to Washington State Department of Ecology's (Ecology) Opinion on Ken's Texaco Supplemental RI Work Plan

Aspect has prepared responses to Ecology's opinion on the Ken's Texaco Supplemental RI Work Plan. Ecology's comments and questions are presented below in *italic black font* and Aspect's responses are presented below in red font. Appended to this memorandum is the full text of Ecology's opinion.

I have the following comments that may affect your proposed work plan:

Senior Project Environmental Scientist

1. What are the COCs?

COPCs for the Site are TPH as gasoline, TPH as diesel, BTEX, and EDC. These are the constituents that have been detected in soil and groundwater above MTCA Method A cleanup levels for unrestricted land use.

It is unclear to me, in the information provided, if sufficient investigation for chlorinated solvents and other contaminants potentially associated with waste oil and hydraulic oil releases has been performed (refer to MTCA Table 830-1). All of the MTCA Table 830-1 contaminants were analyzed during the remediation for samples collected in the vicinity of the waste-oil and hydraulic-oil releases. This included metals, PCBs, HVOCs, and cPAHs.

Particularly, I noticed chloroform and chlorobenzene were both detected in MW-3 in 2008.

Chloroform and several other nonBTEX VOC compounds were detected in MW-3 in 2008; however, all of the detections were well below MTCA Method B formula values.

The nonBTEX VOCs were VOC compounds that are all related to petroleum hydrocarbon mixtures. The detection of chloroform was likely associated with an on-property or nearby septic drainfield as chloroform is a common disinfectant byproduct associated with municipal drinking water supplies. Chlorobenzene was not detected in MW-3. MW-3 was subsequently removed during the remediation as it was within the area of the site that was excavated.

During the remediation, confirmation soil samples collected from the vicinity of the waste-oil tank and MW-3 were analyzed for the full VOC list. None of the nonBTEX VOCs were detected above laboratory PQLs in any confirmation samples collected from the vicinity of the former waste-oil tank or MW-3.

a. Why has heavy oil been dropped from the analytical?

Heavy oil is still included in the analytical suite. It is still routinely analyzed as part of the NWTPH-DX "diesel extended" analytical method. MW-11 is the only monitoring well where motor oil has been detected above the laboratory PQL, and those detections were qualified as likely not being motor oil, rather being other weathered petroleum products (e.g., gasoline and diesel) as the detections did not match the standard for motor oil that was used for calibration. Specifically, the laboratory reports from the December 2014 and March 2015 sampling events qualified the heavy oil-range hydrocarbon detections with an "X" qualifier and noted that: "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

b. I consider manganese a COC.

Manganese is not a primary constituent associated with the petroleum releases. MTCA Method A does not contain a cleanup level for manganese, but a noncancer MTCA Method B formula value of 2,240 ug/L exists. A federal EPA secondary standard of 50 ug/L also exists, and is based solely on aesthetic effects (odor and taste). The presence of manganese in groundwater at the Site is a secondary effect of the petroleum constituents in groundwater. The biodegradation of petroleum constituents occurs through redox reactions with electron acceptors as: aerobic respiration, denitrification, iron reduction, manganese reduction, and sulfate reduction. The reduced species of naturally occurring iron and manganese are soluble. Thus, the presence of dissolved iron and manganese in groundwater at sites with petroleum releases is an indicator that biodegradation of the primary constituents (petroleum constituents) is ongoing (ASTM, 1998).

Further, as the redox conditions recover downgradient of the petroleum presence in groundwater, the reduced iron and manganese will return to an insoluble form and concentration in groundwater will attenuate. Monitoring of manganese concentrations at MW-11, MW-12, MW-15, and MW-16 will continue to demonstrate the attenuation of this secondary effect. Further, the proposed remediation will restore that aquifer to its native redox conditions and accelerate the attenuation of dissolved manganese. Based on this, we don't view manganese as a COC; however, it will be evaluated further in the RI/FS report.

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- c. Why were PCBs not analyzed for in soil?
 PCBs were analyzed in impacted soil collected during the removal of the waste-oil tank by Sage Environmental. PCBs were not detected in waste oil-affected soils and are not reasonably suspected to be present anywhere else at the site. This former waste oil-tank area was further remediated after the UST removal, so PCBs are no longer a COPC, and thus not included as an analyte for subsequent soil samples.
- 2. VI Sub-slab sampling may yield inconclusive results. Results must be thoroughly substantiated in the RI report. FYI you need to update your SOP references section. Will do.
- *3.* Why is PCS extending onto the north adjoining property not included in the proposed investigation?

We are investigating PCS extending onto the north-adjoining property. We will bound the PCS on to the north by conducting the VI subslab sampling, and by installing a monitoring well on the north side of the residence. It is not feasible to install a monitoring well on the south side of the residence because of limited access due to the proximity to the house, vegetation, and a retaining wall. The combination of subslab soil gas results and groundwater results to the north of the residence should be adequate information to bound the PCS-impacted area to the north.

I have the following comments for consideration:

- 1. Cleanup levels General
 - a. Method A or B CULs should be determined based on the complexity of the Site. If chlorinated solvents were released from the waste oil tank, Method B may be more appropriate.

No chlorinated solvents were released from the waste-oil tank, so MTCA Method A is sufficient for screening purposes at this time. It is anticipated that MTCA Method A Cleanup levels will be proposed in the RI/FS report.

b. Mixing methods (e.g., Method A and B) for cleanup levels within a specific media is generally not permitted. Mixing methods between media (e.g., soil and GW) may be appropriate depending on the scenario.
 The tables presented in the VCP application are draft, and the MTCA Methods.

The tables presented in the VCP application are draft, and the MTCA Methods presented therein are for preliminary screening purposes only. Preliminarily, we will focus our usage to Method A for unrestricted land use for both soil and groundwater as this is a simple petroleum-contaminated site with few COPCs. As noted above, it is anticipated that MTCA Method A Cleanup levels will be proposed in the RI/FS report.

c. Additional explanation and discussion on the appropriateness of the cleanup levels selected and compliance within each affected media will be necessary prior to a request for NFA.

This discussion will be contained in the RI Report.

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- 2. Selection of cleanup levels for Soil.
 - a. MTCA Method A for <u>Industrial</u> Land Use is not appropriate for Soil at this Site. This was actually a mistake in the table. We did not intend to use Industrial levels. We intend to use unrestricted land use levels as a screening tool for this investigation. Final cleanup levels for unrestricted land use will be selected and justified in the RI/FS report.
 - b. The report and tables should include a description of the pathway/receptor used to calculate the Method B values. For example, human direct contact or saturated soil protective of GW.
 Preliminarily, we will be using MTCA Method A values. However, pathway/receptors will be discussed in the RI/FS report, regardless of the methods used.
 - *c. Consider other ARARs as appropriate for Method B values.* Other ARARS will be considered, as appropriate, in the RI/FS Report.
- 3. Selection of cleanup levels for GW
 - a. Consider other ARARs as appropriate for Method B values. Other ARARS will be considered, as appropriate, in the RI/FS Report.
 - b. The report and tables should discuss the ARAR used to derive the Method B values, and adjustments for HQ or cancer risk if necessary.
 We will evaluate the need for this during the RI/FS reporting.
- 4. Tables Please include a summary table with detections and exceedances with the RI Report. The summary table should include results reported by others. The RI Report will focus on summarizing existing (post remediation) conditions We will present in the text of the RI/FS report the justification and documentation for ruling out the other Table 830-1 parameters that were eliminated from consideration during early interim actions prior to remediation.
- 5. Figures Please include the following with the RI Report:
 - a. Figure(s) showing the location of the historic and proposed sampling locations, currently known exceedances, and Site features.
 For example, I would like to be able to tell where MW-11 is in reference to the former waste oil tank <u>and</u> the soil and GW concentrations at this location. I do find the figures provided useful, but need additional information to visualize the location of contamination.
 Will do.

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b. Figures similar to Figures 9 & 10 showing the area impacted by gas and B in soil, but including the actual concentration at each location. Provide for both soil and GW.
Will do.

Reference

ASTM, 1998, Standard Guide for Remediation of Groundwater by Natural Attenuation at Petroleum Release Sites, E1943-98.

Attachment

Ken's Texaco-Opinion on Supplemental RI Work Plan

W:\120061 Ken's Texaco\Deliverables\Ecology Communication\Response to Ecology Comments Memo_062016.docx

Kirsi Longley

| From: | Lind, Jennifer (ECY) <jeli461@ecy.wa.gov></jeli461@ecy.wa.gov> |
|-----------------|--|
| Sent: | Monday, May 16, 2016 3:55 PM |
| То: | Kirsi Longley |
| Cc: | Smith, Frosti K. (ECY) |
| Subject: | Kens Texaco - Opinion on Supplemental RI Work Plan |
| Follow Up Flag: | Follow up |

Flag Status: Flagged

Kirsi,

The stated objective of the Supplemental RI Work Plan is to further define impacts do to historic petroleum releases from the former Ken's Texaco through additional assessment of potential residual off-property petroleum impacts to soil, soil gas, and groundwater.

I generally concur with your approach to:

- 1. Investigate the lateral extent petroleum impacted groundwater by installing off-property monitoring wells down- and cross-gradient of the Site.
- 2. Investigate petroleum impacted soil remaining at Site by collecting soil samples during the installation of the proposed groundwater monitoring wells.
- 3. Investigate the potential for vapor intrusion at the north adjoining residence by conducting a sub-slab soil vapor assessment.

I have the following comments that may affect your proposed work plan:

- 1. What are the COCs?
 - a. It is unclear to me, in the information provided, if sufficient investigation for chlorinated solvents and other contaminants potentially associated with waste oil and hydraulic oil releases has been performed (refer to MTCA Table 830-1). Particularly, I noticed chloroform and chlorobenzene were both detected in MW-3 in 2008.
 - b. Why has heavy oil been dropped from the analytical?
 - c. I consider manganese a COC.
 - d. Why were PCBs not analyzed for in soil?
- 2. VI Sub-slab sampling may yield inconclusive results. Results must be thoroughly substantiated in the RI report. FYI you need to update your SOP references section.
- 3. Why is PCS extending onto the north adjoining property not included in the proposed investigation?

I have the following comments for consideration:

- 1. Cleanup levels General
 - a. Method A or B CULs should be determined based on the complexity of the Site. If chlorinated solvents were released from the waste oil tank, Method B may be more appropriate.
 - b. Mixing methods (e.g., Method A and B) for cleanup levels within a specific media is generally not permitted. Mixing methods between media (e.g., soil and GW) may be appropriate depending on the scenario.
 - c. Additional explanation and discussion on the appropriateness of the cleanup levels selected and compliance within each affected media will be necessary prior to a request for NFA.
- 2. Selection of cleanup levels for Soil.
 - a. MTCA Method A for Industrial Land Use is not appropriate for Soil at this Site.

- b. The report and tables should include a description of the pathway/receptor used to calculate the Method B values. For example, human direct contact or saturated soil protective of GW.
- c. Consider other ARARs as appropriate for Method B values.
- 3. Selection of cleanup levels for GW
 - a. Consider other ARARs as appropriate for Method B values.
 - b. The report and tables should discuss the ARAR used to derive the Method B values, and adjustments for HQ or cancer risk if necessary.
- 4. Tables Please include a summary table with detections and exceedances with the RI Report. The summary table should include results reported by others.
- 5. Figures Please include the following with the RI Report:
 - a. Figure(s) showing the location of the historic and proposed sampling locations, currently known exceedances, and Site features.

For example, I would like to be able to tell where MW-11 is in reference to the former waste oil tank <u>and</u> the soil and GW concentrations at this location. I do find the figures provided useful, but need additional information to visualize the location of contamination.

b. Figures similar to Figures 9 & 10 showing the area impacted by gas and B in soil, but including the actual concentration at each location. Provide for both soil and GW.

I am open to dialog. Please let me know if you would like to discuss further. - J

Jennifer Lind

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