



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Northwest Regional Office • 3190 160th Avenue SE • Bellevue, Washington 98008-5452 • (425) 649-7000

January 19, 2010

Mr. Stephen L. Anderson
Deputy City Manager
City of Bothell
18305 101st Avenue NE
Bothell, WA 98011

Re: Site Recommendations and Review of Report of Investigation, Feasibility Study, and Draft Cleanup Action Plan under WAC 173-340-350 and -355 for the following Hazardous Waste Site:

- Site Name: BOTHELL RIVERSIDE
- Site Address: Woodinville Drive (SR 522) and NE 180th Street, Bothell 98011
- County Assessor's Parcel Numbers 082605-9120, 082605-9284, and 082605-9031
- Facility/Site No.: 53578168
- Agreed Order No.: 6295

Dear Mr. Anderson:

Thank you for submitting your draft Report of Investigation/Feasibility Study (RI/FS) and Draft Cleanup Action Plan (DCAP) for the above mentioned site. Ecology appreciates your initiative under the Model Toxics Control Act.

The Washington State Department of Ecology's Toxics Cleanup Program has reviewed the following information regarding the BOTHELL RIVERSIDE site, Woodinville Drive (SR 522) and NE 180th Street, Bothell, WA:

1. Bothell Riverside Remedial Investigation/Feasibility Study, Revision No. 1, prepared by Parametrix, dated December 2009.
2. Bothell Riverside Draft Cleanup Action Plan Revision No. 1, prepared by Parametrix, dated December 2009.

The report listed above will be kept in the Central Files of the Northwest Regional Office (NWRO) of Ecology for review by appointment only. Appointments can be made by calling Sally Perkins at the NWRO at (425) 649-7190.



The Department of Ecology has reviewed the documents and is providing the following technical, regulatory, and administrative comments:

Regulatory and Administrative Comments

1. Based on review of the Report of Investigation/Feasibility Study (RI/FS) report, Draft Cleanup Action Plan (DCAP), and supporting environmental reports, the remedial approach for soil remediation specified in the DCAP should be implemented as an interim remedial action to take advantage of the construction schedule for demolition and redevelopment of the property. Ecology will work with you to amend Agreed Order DE 6295 for the interim action and remedial action grant reimbursement. Ecology will assist to carry out the public comment requirements required by the Model Toxics Control Act for the amendment combined with SEPA requirements for the interim action. This will be implemented before or during the Crossroads Development construction scheduled for the first quarter of 2010.
2. Insufficient information on extent and nature of groundwater contamination in soil, including contaminant plume interactions (possibly commingling) with known nearby HVOC contaminated properties with the arsenic exceedances in site groundwater. This is a data gap in the RI. It was not established if the arsenic contamination is from upgradient source or from the site (possibly from leached imported fill or peat deposits, leaching from the buried waste area, or remobilized arsenic from petroleum biodegradation).
3. Work plans for the interim action(s) will be integrated as deliverables or supporting documents in the agreed order amendment. The work plans should be submitted for Ecology approval as soon as possible in order to meet the requirements for public involvement and to be in time for the cleanup (interim action) within the construction schedule for the City's Crossroads redevelopment project.
4. The original Agreed Order requirements, deliverables, and Scope of Work will remain in effect (as is the case for the Bothell Landing and Bothell Paint and Decorating sites).

Technical Comments

Remedial Investigation/Feasibility Study Report

1. Page 2-1, under 2.1 Site Description and History: The "Flying A" gasoline station was identified as a former gas station on the site. Some previous reports and maps identify another unnamed feature which may be another gasoline station or UST (See the November 28, 2007 Updated Phase I Environmental Site Assessment by the Riley Group for Bothell landing). Identify all former facilities, expected underground pipes, dry wells, and related utilities that might be a source of contamination in the site. If this other facility is a potential source for contamination, please evaluate if the proposed interim action will be able to address remediation and compliance issues that may arise from this facility if it exists.

2. Extractable Petroleum Hydrocarbons/Volatile Aromatic Petroleum Fraction (EPH/VPH) analysis is recommended for use in the three phase model (TCP workbook tools) to determine cleanup levels for oil range hydrocarbons that are protective of groundwater. Evaluate if the proposed extent of excavation will meet cleanup levels and revise the excavation extents accordingly.
3. Page 3-3, 3.1.1.2 HVOCs: Although data presented indicates that HVOC hits within 15 feet of the ground surface appear related to HVOC contamination in groundwater, it should be noted that exceedances of PCE and DCE are within the soil point of compliance for direct contact.
4. Page 3-3, under 3.1.1.4 carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs): Show the calculations done for total cPAHs using the toxicity equivalency methodology. No assessment was provided of individual cPAH data to their cleanup levels.
5. Page 3-4, under 3.1.1.5 Metals: Chromium species were not determined. Method A Soil Cleanup Levels for Unrestricted Land Use for Chromium VI is 19 mg/kg and 2,000 mg/kg for Chromium III. This will determine exceedances and levels to which soil must be remediated.
6. Page 3-6, under 3.2 Summary of Contaminants of Potential Concern: HVOC concentrations in groundwater plumes from upgradient solvent sites does not constitute area background.
7. Page 3-7, under 3.3.2 Secondary Sources and Release Mechanisms: Identify the three "known current and former dry cleaning businesses located upgradient" from the property.
8. Page 3-8: Potential exposure routes did not include groundwater to surface water wherein contaminated groundwater discharges to Sammamish River at the site.
9. Page 3-9, second paragraph: The RI states that "if future Site development should include the construction of buildings, vapor intrusion and associated risks should be evaluated." The soil vapor intrusion evaluation should be part of the RI and not left open ended.
10. Page 3-10, fourth paragraph: arsenic in groundwater needs further evaluation. Four quarters of groundwater monitoring including other historical contaminants (benzene, lead, TPH, SVOCs, and VOCs) should be carried out as part of the analytical suite to determine groundwater quality impacts at the site.
11. Page 3-10, under 3.5.1 Soil to Groundwater Pathway: Ecology recommends using EPH/VPH analysis combined with the three phase model to evaluate the potential for contaminant leaching to groundwater.
12. Page 3-10, under 3.5.2 Terrestrial Ecological Evaluation: Redevelopment plans appear to include uncovered pedestrian or park areas. The DCAP does not provide detail on the proposed institutional controls, or a detailed plan and schedule for completion. Therefore, Ecology cannot qualify this site for an exclusion.
13. Page 3-11 under 3.6 Cleanup Standards Selection: HVOC contamination in groundwater plumes from upgradient solvent sites does not constitute area background.
14. Page 3-11, second paragraph under 3.7 Summary of Results: see comment 2.

15. Page 3-11, last paragraph of page: Demonstration of reductive dechlorination should follow standard protocol and data supportive of the lines of evidence for natural attenuation through this mechanism. For example, see EPA 600/R-98/128 "Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water" (September 1998). More evidence and clearly stated protocols and methods are needed following regulatory accepted guidelines if this will be considered as a component of site cleanup.
16. Page 4-1, third paragraph: HVOC contamination in groundwater plumes from upgradient solvent sites does not constitute area background. Further work is needed to characterize groundwater impacts at the site, therefore, remediation on petroleum hydrocarbon contaminated soil (and potential buried wastes) during the summer of 2010 at the northern part of the property should be considered as an interim action at this point.
17. Page 4-1, under Remedial Action Objectives: Include risks from vapor intrusion (HVOCs from groundwater). Design an investigation to assess vapor intrusion risk and migration.
18. Page 4-2, last paragraph under 4.4 Relevant Technology Categories: HVOC plume mixing with the arsenic in groundwater will likely require additional PLPs and revised site boundaries.
19. Page 4-2, under 4.5.1 Screening Criteria: Surface soil should extend to the point of compliance of 15 feet.
20. Page 4-, first bullet at top of page: minimum threshold for permanency is not being met unless a Disproportionate Cost Analysis (DCA) is presented.
21. Page 4-4, under Institutional Control: minimum threshold for permanency is not being met unless a Disproportionate Cost Analysis (DCA) is presented.
22. Page 4-5, under 4.6.2.2 Soil Alternative 2 Description: Treatability test should be part of the FS.
23. Page 4-5, under 4.6.2.2 Soil Alternative 2 Description: Confirmation sampling should include the treated soil within the excavation.
24. Page 4-6, first paragraph: State depth of excavation.
25. Page 4-9, under Protectiveness: none of the remedial alternatives addresses vapor intrusion risk.
26. Page 4-10, under management of Short-Term Risks: Section should recognize risks from HVOC contaminated water extracted during construction related dewatering
27. Page 4-11, 7th bullet: Statement does not take into account HVOC contamination in groundwater and its exposure pathways (including groundwater to surface water).
28. Figure 3-4: Include possible indoor air vapor intrusion risk due to redevelopment.
29. Table 3-2: Does not include ND results for TPH in R-24. Please report all analytical results in the appropriate tables and figures, including nondetects. This will allow for better depiction of areas of contamination or non-contamination.
30. Due to the Crossroads redevelopment schedule, if additional field investigations are necessary to address data gaps in the RI/FS, Ecology believes that the best time would be before the redevelopment and highway alignments/reconstruction. This characterization work and possibly additional cleanup actions are best included in the work plans for the interim action(s).

31. Horse Creek: Motor oil in soil samples in the site near the banks of the creek range from 410 ppm to 1000 ppm (Bothell Landing RI/FS version 1 draft). Depending on final cleanup level, this may require further delineation and remediation. In this regard, the results of EPH/VPH analysis and the three phase model can be used to determine the most protective cleanup level and subsequently guide remediation planning at this segment of Horse Creek. However, evaluation of appropriate cleanup levels should also consider relevant exposure pathways such as direct contact, ingestion, and protection of the environmental receptors (soil biota, wildlife), given the end use for the property.

Draft Cleanup Action Plan

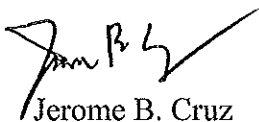
1. Ecology at this time recommends implementing the soil remediation in Alternative 3 (excavation and safe disposal of contaminated soil, confirmation sampling, and backfilling with clean material) as an interim action to be carried out in summer 2010.
2. Data gaps in the RI/FS will need to be addressed, and then the RI/FS and DCAP will be revised accordingly.

Please note that this opinion is based solely on the information contained in the documents listed above. Therefore, if any of the information contained in those documents is materially false or misleading, then this opinion will automatically be rendered null and void.

The state, Ecology, and its officers and employees make no guarantees or assurances by providing this opinion, and no cause of action against the state, Ecology, its officers or employees may arise from any act or omission in providing this opinion.

Again, Ecology appreciates your initiative in conducting remedial action under an Agreed Order. If you have any questions you may reach me at 425-648-7094.

Sincerely,



Jerome B. Cruz
Hydrogeologist 4
NWRO - Toxic Cleanup Program

jc/kp

cc: Steven Morikawa, City of Bothell Capital Program Manager
Ndata Mbuthia, City of Bothell, Project Engineer