

Agreed Order DE-5477
Exhibit B

SCOPE OF WORK

This Scope of Work provides the tasks that will be conducted pursuant to Section VII of the Agreed Order.

Task 1: Focused Feasibility Study.

The Focused Feasibility Study (FFS) shall develop and evaluate cleanup action alternatives to enable a cleanup action to be selected for the site. The FFS shall include an evaluation of alternatives to address COC contaminated groundwater within the GE Site, as that term is defined in the Agreed Order, Section IV.E. The FFS shall include an initial screening of potential cleanup action alternatives, including at a minimum: Additional Soil Excavation, Hydraulic Containment, Chemical Oxidation, Enhanced Biodegradation, Monitored Natural Attenuation (MNA), Institutional Controls, Groundwater Pumping and Treatment, Air Sparging, Soil Vapor Extraction, In-Well Stripping, and subsurface depressurization. The FFS shall be prepared in accordance with the requirements found in WAC 173-340-350(8), -350(9), -355, -360, and -370. The FFS shall include, at a minimum, the following information:

1. An initial, limited screening of potential cleanup alternatives in accordance with WAC 173-340-350(8)(b).
2. A revised conceptual site model as defined in WAC 173-340-200 including identification of potentially and known impacted natural resources and ecological/human receptors and an updated source to receptor conceptual model.
3. Proposed cleanup levels applicable for the facility, and the technical and regulatory justification for these proposals in accordance with WAC 173-340-350(9)(a). The proposed cleanup levels for soil and groundwater must also be protective of indoor air vapor intrusion cleanup levels under MTCA Method C. These proposed cleanup levels will be presented in a table for evaluative purposes.
4. Applicable state and federal laws as required by WAC 173-340-710 and WAC 173-340-350(9)(b). The FFS will also include information for Ecology's review regarding, for example, the applicability of non-potable water standards and drinking water standards as part of the groundwater beneficial analysis noted in subsection 6 below.
5. A listing of all the assumptions being made in the FFS.
6. An updated groundwater beneficial use analysis per WAC 173-340-720(2).
7. For the remedial action alternatives that remain after the initial screening of alternatives, an evaluation of whether the cleanup actions alternatives are protective of human health and the environment. The evaluation shall include an analysis of COC fate and transport based on observed data and chemical transport mechanisms, including exposure pathways. The fate and transport evaluation shall also include estimates of remediation time frames of the alternatives. The existing Site conditions, current contamination levels, and expected short-term and long-term trends of the contamination after implementation of the final remedial option remedies shall be evaluated. The evaluation shall include the vapor intrusion pathway. The fate and transport analysis conducted for the Site shall be done consistently across source areas and downgradient plumes and for the purpose of comparing remedial alternatives, and will include simulation and estimation of the likely future nature and extent of COCs in media at the source area (220 S. Dawson Street property) and downgradient of the facility.

8. General assumptions or site-specific information applied to the fate and transport analysis shall be clearly presented. Those assumptions and site-specific information may include but are not limited to: expected residual COCs in the source area, chemical degradation rates, sorption coefficients, inorganics distribution coefficients, vadose zone soil and aquifer matrix total organic contents, vadose zone moisture content, soil bulk density, dispersion coefficients, aquifer total and effective porosity, aquifer horizontal and vertical hydraulic conductivity, and groundwater flowrates. It will include a sensitivity analysis and a discussion on the uncertainty associated with the COC fate and transport analysis. This discussion shall include assessment of existing data quality, the conservativeness of all critical assumptions, and conclusions about i) how the assumptions are justified in representing Site conditions, and ii) how hypotheses have been developed using conservative input parameters to represent site physical and chemical characteristics.
9. GE shall include at a minimum the following five remedial action alternatives for full analysis in the FFS. These five remedial action alternatives are assumed to meet the initial screening criteria found in WAC 173-340-350(8)(b):
 - A. Optimized hydraulic control such as pump and discharge; soil vapor extraction/air sparging and vapor intrusion mitigation system.
 - B. Optimized hydraulic control such as pump and discharge; in-situ chemical oxidation; and vapor intrusion mitigation system.
 - C. Optimized hydraulic control such as pump and discharge; enhanced bioremediation and vapor intrusion mitigation system.
 - D. Soil vapor extraction/air sparging; and
 - E. In-situ chemical oxidation; and vapor intrusion mitigation system.
10. Remedial action objectives, including those addressing the risks to human health and the environment and the exposure pathways, all in accordance with WAC 173-340-350(8)(c)(i)(A).
11. A description and discussion of both the standard and any proposed conditional soil, air, and groundwater points of compliance. Where GE intends to propose a conditional point of compliance (CPOC), under WAC 173-340-720(8)(c), GE must demonstrate that all practicable methods of treatment at the groundwater source area (including dissolved and adsorbed constituents in the saturated and vadose zone as well as soil vapors) and areas between the proposed CPOC and source area are undertaken. The FFS shall determine what cleanup action alternatives exist for groundwater treatment of COCs and daughter products to reduce the timeframe required to meet the groundwater cleanup levels at the GE proposed CPOC.
12. GE may propose, or Ecology may require, that pilot study(ies) and/or treatability study(ies) be performed during the FFS per WAC 173-340-350(9)(c). In some cases this is necessary to provide sufficient information to develop and evaluate cleanup action alternatives for the site. If such a study is conducted during the FFS, Ecology requires that GE prepare and submit a work plan for Ecology approval prior to performing the work.
13. The expected cost and performance aspects of each of the remedial action alternatives that remain after the initial screening of alternatives must be fully evaluated in conjunction with the site specifics of the contaminated environmental media all in accordance with Ecology regulations.
14. In the event that GE or Ecology propose any Monitored Natural Attenuation (MNA) as a component of the final remedy, an MNA proposal evaluation shall follow appropriate EPA guidance^[1] and Ecology requirements (WAC 173-340-370(7)) and

^[1] For example, Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water, EPA/600R/R-98/128.

include multiple independent data sets and the interpretation of such data sets that technically support natural attenuation of COCs in the groundwater. Evidence, supported by data, required to support natural attenuation of COCs in groundwater is currently happening and will continue in the future at the similar acceptable rate, including at a minimum.^[2]

- a. Loss of contaminants demonstrated by historical groundwater and/or soil chemistry data. A clear and meaningful trend of decreasing contaminant mass and/or concentration over time at appropriate monitoring or sampling points is required.
- b. Changes in concentrations of geochemical and biochemical indicator parameters that are related to specific natural attenuation processes. Such parameters may include but are not limited to: dissolved oxygen/ORP spatial distributions over time, electron acceptors such as nitrate, sulfate, sulfide, ferric iron, and ferrous iron vs. time trends, and final degradation product (ethane) concentration trend.

GE shall submit the FFS Report to Ecology in accordance with the due date established in Exhibit C.

Task 2: Groundwater Monitoring.

GE shall sample groundwater in accordance with the Schedule in Exhibit D, and in accordance with the procedures and reporting requirements found in the Ecology-approved Groundwater Monitoring Plan in Exhibit E and with the quality assurance procedures found in the Ecology-approved Quality Assurance Project Plan (QAPP) in Exhibit F.

In addition, GE shall analyze groundwater from all of its sampled monitoring wells for total and dissolved arsenic and 1,4-dioxane during the May 2008 and August 2008 sampling events. Future arsenic and 1,4-dioxane analysis will be determined based on the results of these two sampling events.

In accordance with WAC 173-340-810, and where required by Chapter 296-62 WAC, GE shall submit its health and safety plan for Ecology review and comment.

In addition, GE shall include a short summary of the data validation results from both its contractor laboratory and ENSR. This summary shall be included in the main discussion section of each quarterly groundwater monitoring report and include at a minimum: a discussion of any discrepancies, unusual results, data rejected, and reasons for the data being rejected, and a discussion of any data qualified and the reason for the data qualification.

Task 3: Progress Reports.

This requirement supercedes and replaces the progress reporting requirements of Agreed Order DE02HWTRNR-4686. GE shall submit progress reports to the Ecology project coordinator in accordance with Exhibit C. The purpose of the progress reports is to provide summaries of recent work conducted under the Agreed Order. GE shall, at a minimum, describe the following in each progress report.

1. All work conducted pursuant to this Agreed Order during the last three month period and since the last progress report not already addressed in correspondence

^[2] GE may also at its discretion, use microbiological evidence demonstrated through laboratory microcosm studies conducted with actual contaminated site media.

- to Ecology. If work has already been addressed in correspondence to Ecology, the progress report shall reference that correspondence.
2. Occurrence of any problems, how problems were rectified, deviations from the work plans and an explanation for all deviations.
 3. Projected work to occur in the upcoming three months.
 4. Summaries of significant findings, changes in personnel, summaries of contacts with all federal, state, and local community, public interest groups, and to the extent significant and relevant to the remediation, brief summaries of communications related to the cleanup with 220 S. Dawson property owner representatives and tenants.
 5. All laboratory data not already submitted to Ecology (as copies of the original laboratory reporting data sheets and in tabulated format) for which quality assurance procedures were completed during the three month period.
 6. Groundwater extraction rates from each operating recovery well as recorded during weekly inspections.

If Ecology and GE agree that a change in frequency or content of the progress reports is necessary, this would be a minor modification confirmed in writing by Ecology without public comment.

Task 4: Ground Water Extraction System.

The facility ground water extraction system will remain operational until a final cleanup action plan approved by Ecology or other Ecology directive, requires or provides for modification or shut down of the ground water extraction system and/or the implementation of other appropriate final ground water remedies. GE will use best efforts to maintain the design groundwater and extraction rate of 10 gallons per minute (gpm) at RW-3 and 6 gallons per minute at RW-2, and GE will operate the groundwater extraction system in accordance with the Operation & Maintenance Plan attached as Exhibit G. GE will not abandon ground water extraction well RW-1 in case Ecology decides it should be operational in the future based on the effectiveness of the overall ground water extraction system or if required as part of the final remedy. In the event that construction activities or other requirements of the current owner at the Site preclude the operation of all or a part of the ground water extraction system, GE will provide written notice of the construction impacts or requirements to Ecology within 15-calendar days of first being aware of this change.

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Exhibit C

SCHEDULE OF DELIVERABLES

The Parties agree to move forward with the work under this Order in a timely manner.

Task Number	Deliverable	Due Date
1	Submittal of Focused Feasibility Study (FFS)	Submit to Ecology within 45 calendar days of the effective date of the Agreed Order.
	Submit Revised FFS (if required by Ecology)	Submit to Ecology within 45 calendar days after receiving Ecology written comments.
2	Submit Quarterly Groundwater Monitoring Reports to Ecology	Submit to Ecology within 60 calendar days after sampling event.
3	Submit Progress Reports to Ecology	Submit to Ecology by the last calendar day of January, April, July, and October.

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Exhibit D

GROUNDWATER MONITORING SCHEDULE

Well	Depth (bgs)	Sampling Frequency
MW-1	6-16	S
MW-2	6.5-16.5	A
MW-3	6-16	S
MW-4	7-17	Q
MW-5	5-20	S
MW-6	5-20	S
MW-7	5-20	S
MW-8S	5-20	Q
MW-8M	20-30	Q
MW-9	5-20	A
MW-10	4-19	S
MW-11	5-20	Q
MW-12	5-20	S
MW-13	4-19	S
MW-14D	45-55	Q
MW-14M	20-30	Q
MW-15D	45-55	Q
MW-15M	20-30	Q
MW-16D	45-55	Q
MW-16M	20-30	Q
EPI-MW-1S	5-15	None
EPI-MW-1D	25-30	None
EPI-MW-2S	5-15	None (Damaged)
EPI-MW-2D	25-30	S
EPI-MW-3S	5-15	S
EPI-MW-3D	25-30	S
EPI-MW-4S	5-15	S
EPI-MW-4D	25-30	S
MW-17M	M (20-30)	Q
MW-17D	D (45-55)	Q
MW-18M	M (20-30)	Q
MW-18D	D (45-55)	Q
MW-19M	M (20-30)	S
MW-20M	M (20-30)	S
MW-21S	S(6-16)	Q