

**STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY**

In the Matter of Remedial Action by:

Grant County & The City of Ephrata

**AMENDMENT NO. 3 TO
AGREED ORDER**

No. DE 3810

TO:
Grant County
PO Box 37
Ephrata, WA 98823

I. AMENDMENT

Agreed Order (Order) No. DE 3810 dated January 30, 2007, as amended on November 26, 2012 and January 19, 2016, is hereby amended to incorporate the information and requirements contained in this Amendment. This Amendment is issued pursuant to the Model Toxics Control Act (MTCA), RCW 70A.305.050 (1) and, except as indicated below, does not replace or change any of the existing requirements of the Order, which shall remain in effect. This amendment only applies to the County. The City has not agreed to comply with the requirements for remedial actions within this amendment to the Order. However, the City remains a PLP and is a signatory to the Order and the first two amendments.

V. FINDINGS OF FACT

Section V (Findings of Fact) is amended by adding the following facts:

(12) Amended Agreed Order No. DE 3810 entered into by Ecology, Grant County, and the City of Ephrata on January 19, 2016, required the potentially liable persons (PLPs), Grant County and the City of Ephrata, to complete an interim remedial action at the Site, which included a pilot study of multiphase extraction (MPE) in the P1 zone, which was saturated and was first dewatered; a pretreatment facility and evaporation pond to manage the discharges associated with

dewatering and MPE; and installation of new groundwater monitoring wells along the parcel boundary north of the original landfill. The findings from the interim remedial action completed in 2017 were detailed in the report:

Parametrix, 2018 (February), *Multi-Phase Extraction Pilot Test, Interim Remedial Action, Ephrata Landfill*.

(13) The Remedial Investigation was supplemented with installation of additional monitoring wells between 2019 and 2021 to further characterize the hydraulic properties and contaminant distribution in the P1, P2, and Roza water-bearing units. Seventy-six (76) new monitoring wells were installed. Additional hydraulic slug testing and groundwater monitoring was performed to inform the Site conceptual model. The monitoring well network now includes 143 wells. The data from the supplemental investigation is detailed in the report:

Pacific Groundwater Group, 2022, *Results of Phase I North End Supplemental Investigation, Ephrata Landfill RI/FS*.

(15) Evaluation of cleanup technologies in the updated Feasibility Study prepared for the Site identified multiphase extraction (MPE) in the P1 and P2 water-bearing zones at the location where the 2,350 drums were formerly buried on the Site. The evaluation of cleanup alternatives was updated to reflect the additional Remedial Investigation data and presented in the report:

Parametrix Inc., 2022, *Ephrata Landfill Remedial Investigation and Feasibility Study Completion*, October 31, 2022.

VI. ECOLOGY DETERMINATIONS

Section VI (Ecology Determinations) is amended by adding the following:

17. Ecology has determined that the pilot test of the MPE system in the P1 water-bearing zone was successful at removing contaminant mass in groundwater and vapor in the vicinity of the drum source area. However, Ecology has not been able to determine whether

expansion of the MPE system into the P2 water-bearing zone would be effective as an aspect of the final remedy, because MPE pilot testing was previously completed only within the P1 water-bearing zone.

18. Based on results of the MPE interim action and supplemental groundwater investigation as specified above, Ecology is requiring Grant County to perform the interim actions described in the Scope of Work and the Schedule of Deliverables and Actions, attached as Exhibits A and B.

19. Based on all information known to Ecology, Ecology has determined that the interim actions required herein are necessary to reduce a threat to human health or the environment by substantially reducing one or more pathways for exposure; to correct a problem that may become substantially worse or cost substantially more to address if the remedial action is delayed; or are needed to provide for completion of the remedial investigation/feasibility study or design of the cleanup action in accordance with the Washington Administrative Code (WAC) Chapter 173-340-430(1). Performing the interim action will result in a partial cleanup of the Site and is consistent with WAC 173-340-430.

20. Ecology believes that the additional work to be performed as an interim action is in the public interest.

VII. WORK TO BE PERFORMED

Section VII (Work to Be Performed) is amended by adding the following actions:

E. Grant County shall furnish all personnel, materials, and services necessary for, or incidental to, the planning, initiation, completion, and reporting of the interim actions summarized below and further detailed in the Scope of Work (Exhibit A) and Schedule of Deliverables and Actions (Exhibit B).

- Prepare and submit for Ecology's review and approval draft and final versions of an Interim Action Work Plan that outlines the planned restart operation of the

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existing pilot system in the P1 water-bearing zone after making necessary repairs and updates, and continue seasonal operation until MPE system expansion begins.

- With Ecology approval, implement the final approved Interim Action Work Plan for the existing P1 water-bearing zone.
- Prepare and submit for Ecology's review and approval draft and final versions of an Interim Action Work Plan that outlines the planned operation of an expanded MPE system in the P1, P2, and Roza water-bearing zones.
- With Ecology approval, implement the final approved Interim Action Work Plan for the expanded MPE system.
- Evaluate and identify, as appropriate, groundwater monitoring to evaluate MPE system performance and impacts on groundwater quality in the P1, P2, and Roza water-bearing zones.
- Complete an assessment of natural attenuation of the Site contaminants of concern (COCs) in groundwater, including geochemical parameters, for evaluation of downgradient biotic and abiotic attenuation of contaminants.

Exhibits A and B are incorporated by reference and are an integral and enforceable part of the Order. The work to be performed is to conduct additional interim actions. Grant County shall commence work and thereafter complete all tasks in Exhibit A in the time frames and framework provided in Exhibit B unless Ecology grants an extension in accordance with Section VIII.K, or unless provided otherwise in the Order. Each Element of Exhibit A shall be implemented and completed in accordance with MTCA (Chapter 70A.305 RCW) and its implementing regulation (Chapter 173-340 WAC) as amended, and all applicable federal, state, and local laws and regulations.

VIII. TERMS AND CONDITIONS OF ORDER

Section VIII (Terms and Conditions of Order) is amended by replacing the applicable language in the identified sub-sections as follows:

A. Public Notices (replace in whole)

Agreed Order No. DE 3810, Amendment Nos. 1, 2, and 3 to the Order have been the subject of public notice and comment pursuant to WAC 173-340-600.

D. Designated Project Coordinators

The project coordinator for Ecology is:

Kristin Beck
Department of Ecology
Eastern Regional Office
4601 N Monroe
Spokane, WA 99205-1295

The project coordinator for Grant County is:

Sam Castro, C.P.O
Public Works Director
124 Enterprise Street SE
Ephrata, WA 98823

Effective date of this Amendment: _____

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GRANT COUNTY

**STATE OF WASHINGTON,
DEPARTMENT OF ECOLOGY**

Chair Commissioner, Cindy Carter

Nicholas M. Acklam
Section Manager
Toxics Cleanup Program
Eastern Region Office
Telephone: (509)818-7457

Vice Commissioner, Danny Stone

Commissioner, Rob Jones

EXHIBIT A SCOPE OF WORK

PURPOSE

The work under this Amendment No. 3 to Agreed Order No. DE 3810 (AO) involves conducting Interim Actions at the Grant County Ephrata Landfill site (Site) for the treatment of groundwater and soil gas contaminated with volatile organic compounds (VOCs) and non-aqueous phase liquid (NAPL).

A remedial action implemented prior to completing the Cleanup Action Plan is an interim action and must be implemented in accordance with WAC 173-340-430, the AO, and its amendments. Interim actions:

1. are technically necessary to reduce a threat to human health or the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance;
2. correct a problem that may become substantially worse or cost substantially more to address if the remedial action is delayed; or
3. are needed to provide for completion of the remedial investigation/feasibility study or design of the cleanup action.

The Washington State Department of Ecology (Ecology) has determined that these interim actions can be designed and implemented in a manner that does not foreclose any other reasonable alternatives for the final cleanup action that may be required for the Site.

The Grant County shall coordinate with Ecology and provide progress updates and draft deliverable review to Ecology during the development of the deliverables associated with this work and during implementation of the interim actions. Grant County shall keep Ecology informed of any significant changes and of any issues or problems as they develop during the performance of the interim actions.

Grant County shall prepare electronic copies of the agency-review draft deliverables and submit them to Ecology for review. After incorporating Ecology's comments on the agency-review draft deliverable and after Ecology approval, Grant County shall prepare and submit an electronic copy and one hard copy of the final deliverable. Electronic files shall be submitted in their native file format and, for files that can be saved as such, Adobe (.pdf) format. Schedule compliance will be based on submittal of electronic files, with transmittal of hard copies within 2 weeks following electronic submittal. Once approved by Ecology, Grant County will implement the work according to the SCHEDULE OF DELIVERABLES AND ACTIONS (Schedule) (Exhibit B).

Exhibit A Scope of Work

TASKS AND DELIVERABLES

The Scope of Work (SOW) is divided into seven major tasks:

- Task 1. Operation of Existing P1 Infrastructure
- Task 2. Interim Action Work Plan (IAWP)
- Task 3. Multi-phase Extraction (MPE) System Expansion
- Task 4. Pilot Testing
- Task 5. Interim Action Progress and/or Completion Report (IAPR, IACR)
- Task 6. Interim Action Monthly Performance Reports
- Task 7. Groundwater Monitoring Reports

Task 1. Operation of Existing P1 MPE System

Grant County shall begin operation of the existing P1 MPE system to implement MPE while the IAWP is developed. The following subtasks shall comprise this task:

1. Development of an existing P1 system work plan for the repairs and replacements, monitoring and sampling, and health and safety requirements needed to restart and operate the existing MPE system. This work plan should be commensurate with the amount of work occurring, and should reference the original work plan, operation and maintenance (O&M) manual, and other documentation related to the 2017 pilot testing as necessary to outline the planned operation of the system and any changes that will be made.
2. Reinstall well pumps, repair pipes, and restart the existing MPE system. Commence ongoing system operation, maintenance, monitoring, and sampling during the months of April through October until the system needs to be shut down to allow for construction of the expanded MPE system, as outlined in Task 3 below.

Task 2. Interim Action Work Plan

Grant County shall prepare an IAWP prior to implementation of the pilot tests. An agency-review draft IAWP will be submitted for Ecology review and approval. The IAWP will be prepared with detail commensurate with the work to be performed and in accordance with WAC 173-340-430 and will include, as appropriate:

- Description of the interim actions including their purpose, general requirements, and relationship to the proposed (final) cleanup action;
- Summary of relevant information from site investigations or previous interim actions that are relied upon in the IAWP, such as existing MPE system construction records and O&M manuals, well installation data, groundwater elevations, contaminant concentrations, and groundwater screening levels applicable to the interim action;

Exhibit A Scope of Work

- Preliminary engineering design and construction information, as applicable, in accordance with WAC 173-340-400;
- An O&M plan developed in accordance with WAC 173-340-400(4)(c), to the extent feasible using the existing O&M manual, and representative operation and control strategies for planned new facilities and equipment;
- Identification of potential treatment waste streams, including consideration of any reagents that might be used, their potential concentrations, applicable waste management regulations, and waste management procedures;
- Health and Safety Plan (HASP) that meets WAC 173-340-810 requirements;
- Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) that meets WAC 173-340-820 requirements. The SAP/QAPP should include sampling components for protection and performance monitoring that would be included in a Compliance Monitoring Plan (CMP) in accordance with WAC 173-340-410, including any additional groundwater sampling needed to fully inform a natural attenuation analysis for the dissolved phase plume;
- Identification of any necessary permits required prior to MPE system expansion, and substantive requirements of law or regulation for which MTCA creates a permit exemption.

The IAWP shall detail the following:

1. Proposed Well Layout for Extraction and Soil Vapor Extraction (SVE) and/or Venting

Outline the expansion area of the MPE system, including a description of the wells used for extraction, the process for determining the effects of SVE or venting on radius of influence, and planned steps for optimization after MPE system expansion. Describe the steps for identifying wells to be tested for venting (admitting air into the extraction zone to increase the subsurface gas flow toward extraction wells).

2. Expansion and/or Replacement of MPE Infrastructure

Summarize preliminary plans to expand the existing MPE infrastructure, such as piping, fittings, pumps, transducers, building size, electrical power supply capacity, and any other ancillary systems so that the system can accommodate the estimated needs for additional pilot tests. The MPE system shall be designed for at least 5 years of annual seasonal operation from approximately April through October in the P1, P2, and Roza aquifers.

Exhibit A Scope of Work

3. Assessment of Prior Pilot Test Recommendations

Outline how the recommendations in the previous pilot test report (Parametrix and Pacific Groundwater Group 2018) will be implemented, including any changes resulting from well network expansion and/or additional monitoring since the previous test. The prior recommendations included:

- Above ground design considerations;
- Equipment upgrades;
- Operation processes to enhance MPE operation and SVE effectiveness; and
- Updates to liquid and vapor treatment trains.

4. Outline of Expected Pilot Study Sequencing

Present an outline of the pilot study test sequence. The following pilot test sequence may include:

- Sampling and gauging P1 water-bearing zone wells prior to any dewatering;
- P1 zone dewatering without vacuum;
- Water level monitoring;
- Periodic liquid treatment train sampling;
- Application of vacuum to P1 wells;
- Periodic vapor treatment train sampling at the start of P1 zone vacuum application;
- Evaluation of MPE system vacuum influence;
- Startup and testing of the P2 zone system concurrent with ongoing operation of the P1 zone system;
- Evaluation and subsequent application of MPE to the Roza water-bearing zone by following the general sequence outlined above, concurrent with ongoing operation of the P1 and P2 zone systems.

5. Assessment of Treatment Train Capacity and Cost

Assess the capacity of the treatment system components to ensure that the system is capable of treating the full MPE system flow; and propose modifications to the system if needed to ensure reliable seasonal operation for at least 5 years.

6. Preliminary MPE System Expansion Design Information

Describe preliminary engineering design updates to the existing system plans and specifications, including:

Exhibit A Scope of Work

- Treatment system description;
- Outline of the process for adjusting vacuum pressure used in the system;
- Estimate of groundwater and vapor extraction rates;
- System inlet and outlet concentrations and estimated treatment efficiency;
- Identification of generated waste streams and waste management processes;
- Identification of treatment byproducts, their concentrations, any regulatory requirements applicable to the byproducts, and any necessary management requirements.

7. Groundwater Monitoring Plan

Outline planned groundwater monitoring to be completed during the interim actions to assess system impacts to groundwater. The groundwater monitoring plan shall reference the SAP and QAPP whenever possible to reduce redundancy.

Task 3. Multiphase Extraction System Expansion

Grant County shall develop plans, specifications, and estimates (PS&E) for expansion of the MPE system consistent with the approved IAWP and state law. PS&E shall include applicable engineering design and construction information, as specified in WAC 173-340-400, including a construction schedule and personnel roles and responsibilities.

Grant County shall provide the draft PS&E at the thirty (30), sixty (60), and ninety (90) percent design completion levels for Ecology review and comment. Grant County shall obtain Ecology's approval of the final PS&E prior to advertisement for bids. Grant County shall notify Ecology of the notice to proceed, substantial completion, and beneficial occupancy dates. The required construction schedule shall be consistent with the Schedule (Exhibit B).

Grant County shall solicit bids and administer the construction contract consistent with the applicable requirements of the Revised Code of Washington (RCW) and Washington Administrative Code (WAC).

Grant County shall submit construction documentation to Ecology following substantial completion in accordance with the Schedule. Construction documentation shall include O&M manuals provided by the contractor, record drawings, and an updated O&M Plan developed in accordance with WAC 173-340-400(4)(c).

Task 4. Pilot Testing

Grant County shall conduct pilot tests consistent with the approved IAWP for the duration of the

Exhibit A Scope of Work

interim actions. Grant County shall conduct full system pilot testing for at least 2 years, or longer if required by Ecology, ending the pilot testing when approved by Ecology. Full system pilot testing means dewatering and vapor extraction from all extraction wells, monitoring, and sampling from approximately April through October (extraction season) and monitoring and sampling only from approximately November through March (off season) in accordance with the IAWP.

Task 5. Interim Action Progress and/or Completion Report

Grant County and its technical consultant will develop an Interim Action Progress Report (IAPR) following completion of Tasks 1-3 and after the first two years of full system pilot testing (Task 4). The IAPR shall include, but not be limited to:

- A summary of the work completed, any deviations from the work plan(s), vapor monitoring results, and relevant groundwater monitoring results;
- A summary of MPE system performance, mass recovery and treatment system efficiency for the first two years of full system pilot testing; and
- Assessment of the MPE system performance, including any recommendations to improve system performance.

Grant County will develop an Interim Action Completion Report (IACR) following completion of Tasks 1-3 and after Ecology determines that pilot testing (Task 4) is complete. Should Ecology determine that the pilot testing is complete after the first two years of full system operation, the IACR will replace the IAPR. Should pilot testing continue for more than two years, the IAPR will be developed as described above and the IACR will address additional data and analysis starting with the third year of full system operation until the pilot testing ends. The IACR shall include, but not be limited to:

- A summary of the work completed, any deviations from the work plan(s), vapor monitoring results, and relevant groundwater monitoring results;
- A summary of MPE system performance, mass recovery and treatment system efficiency for two or more years (through the end of testing) of full system pilot testing; and
- Assessment of the MPE system performance, including any recommendations to improve system performance.

Task 6. Interim Action Monthly Performance Reports

By the 15th of the month following the effective date of this Agreed Order Amendment and

Exhibit A Scope of Work

thereafter through the end of the interim actions, Grant County shall submit a Monthly Performance Report to Ecology that details:

1. Site-related activities that have taken place during the reporting period, including progress on upcoming deliverables;
2. Detailed description of any deviations from required tasks not otherwise documented in project plans or amendment requests;
3. Any proposed changes to the tests described in the Existing P1 System Work Plan or IAWP, along with rationale;
4. Detailed description of any deviations from the Scope of Work (this exhibit) and Schedule (Exhibit B) during the reporting period, and any planned deviations in the upcoming reporting period;
5. For any deviations in schedule, a plan for recovering lost time and maintaining compliance with the Schedule (Exhibit B);
6. All raw data (including laboratory analyses) received during the previous month together with a detailed description of the underlying samples collected;
7. Summary results of field measurements and monitoring, including:
 - Cumulative records of liquid and vapor flow through the treatment system;
 - Calculated liquid and vapor phase treatment efficiencies where treatment system inlet and discharge concentrations are available;
 - Volume of phase-separate NAPL in the oil-water separator;
 - System operating parameters including vacuum, well vapor train valve positions, and well pump cycle counts;
8. Summaries of system performance metrics and statistics;
9. Summaries of extraction network metrics and statistics;
10. Estimates of VOC/NAPL mass removed from groundwater and vapor; and
11. A list of deliverables for the upcoming reporting period, if different from the Schedule (Exhibit B).

Task 7. Groundwater Monitoring Reports

Grant County will produce semiannual groundwater monitoring reports that incorporate, but are not limited to, the following:

- Summary tables of all groundwater monitoring data for the sampling period;
- A brief summary of statistical results and/or any statistical trends for the monitoring period and since 2017;

Exhibit A Scope of Work

- A copy of potentiometric surface maps for each groundwater monitoring event that occurred during the monitoring period;
- A summary of groundwater flow rate and direction, including analysis of any changes in flow rates or direction due to recent MPE system operation;
- A summary of geochemical parameters, including cation-anion balances and trilinear diagrams, as appropriate; and,
- An updated evaluation of system operation with respect to groundwater monitoring data; contaminant fate and transport; contaminant mass removal rates in groundwater; natural attenuation of indicator hazardous substances in groundwater; and/or exposure pathways, if applicable.

Grant County or its contractors shall submit all sampling data generated under this AO to Ecology for entry into Ecology's electronic data management system in accordance with WAC 173-340-840 and Ecology's Toxics Cleanup Program relevant policies. Validated data is required to be in Ecology's electronic database within 30 days of submittal of the associated semiannual groundwater monitoring report.

Exhibit A Scope of Work

REFERENCES

Parametrix and Pacific Groundwater Group. 2018. Multi-Phase Extraction Pilot Test Interim Remedial Action Ephrata Landfill. Prepared by Parametrix, Seattle, WA. February 2018.

EXHIBIT B SCHEDULE OF DELIVERABLES AND ACTIONS

The schedule for deliverables and actions described in Amendment No. 3 to the Agreed Order (AO) and Scope of Work (SOW) is presented below. References to days in the schedule are calendar days. If the submission date of any item or notification required by this schedule occurs on a weekend, state, or federal holiday, the date for submission of that item or notification is extended to the next business day following the weekend or holiday. When the start date of dewatering (i.e., for restart of the existing multiphase extraction [MPE] system or startup of the expanded system) would be after September 1 based on the sequence and time intervals in the table below, the start date will be postponed to the following April 1.

Where a deliverable due date is triggered by Ecology notification, comments, or approval, the starting date for the period shown is the date the potentially liable persons (PLPs) receive such notification, comments, or approval. Where triggered by Ecology receipt of a deliverable, the starting date for the period shown is the date Ecology receives the deliverable. Modifications to this schedule will be granted in accordance with the process described in Section VIII.K of the original Agreed Order, dated January 30, 2007.

Task	Deliverables/Actions	Completion Times
1	Submittal of Ecology-review draft of Existing P1 System Work Plan	30 days following the effective date of Amendment No. 3 to AO No. DE 3810
	Begin operation of Existing P1 System	45 days after Ecology approves the Existing P1 System Work Plan; restart the system and continue seasonally as described in the SOW until shutdown is required at the time of MPE expansion.
2	Submit Ecology-review draft Interim Action Work Plan (IAWP) for MPE expansion	120 days following the effective date of Amendment No. 3 to AO No. DE 3810
	Submit the proposed final draft IAWP and comment response summary	30 days following receipt of Ecology comments on Ecology-review draft IAWP
	Submittal of the final IAWP to Ecology	7 days after receipt of any final Ecology comments and/or approval of the proposed final IAWP
3	Submit Ecology-review draft 30% plans, specifications, and estimates (PS&E) for MPE	120 days after Ecology approval of the IAWP

Exhibit B Schedule of Deliverables and Actions

Task	Deliverables/Actions	Completion Times
	expansion	
	Submit Ecology-review draft 60% PS&E	90 days after receipt of Ecology comments on the 30% PS&E
	Submit Ecology-review draft 90% PS&E	60 days after receipt of Ecology comments on the 60% PS&E
	Start MPE expansion construction (notice to proceed date)	4 months after receipt of Ecology comments on the 90% PS&E
	Substantially complete MPE Expansion construction (substantial completion)	6 months after notice to proceed date.
	Submit contractor-provided operation and maintenance (O&M) Manuals, Construction Record Drawings, and Updated O&M Plan to Ecology	60 days after substantial completion
4	Start the expanded pilot tests	30 days after substantial completion
	End the pilot tests	After at least 2 years of full system pilot testing, and with Ecology approval
5	Submit Ecology draft Interim Action Progress Report (IAPR)	90 days after 2 years of full system operation (replaced by completion report if Ecology notifies the PLPs that pilot testing can end)
	Submit proposed final IAPR to Ecology	30 days after receipt of Ecology comments on the draft IAPR
	Submit final IAPR to Ecology	7 days after receipt of any final Ecology comments and/or approval of the proposed final IACR
	Submit Ecology-draft IACR	90 days after Ecology notifies the PLPs that the pilot testing can end
	Submit proposed final IACR to Ecology	30 days after receipt of Ecology comments on the draft IACR
	Submit final IACR to Ecology	7 days after receipt of any final Ecology comments and/or approval of the proposed final IACR
6	Interim Action Monthly Performance Reports	Due to Ecology on the 15 th of month following the effective date of Amendment No. 3 to AO No. DE 3810
7	Groundwater Monitoring Reports	Semi-annual reports submitted within 60 days of the end of each extraction season and each off season
	Electronic data submittal to Ecology	30 days following submittal of the associated semi-annual groundwater monitoring report