

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION X
STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

IN THE MATTER OF:)

Lower Duwamish Waterway)

Port of Seattle, King County,)
City of Seattle, The Boeing Company,)

RESPONDENTS)

Proceeding Under Sections 104, 122(a),)
122(d)(3) of the Comprehensive)
Environmental Response, Compensation,)
and Liability Act (CERCLA), as amended,)
42 U.S.C. §§ 9604, 9622(a), 9622(d)(3) and Under the)
Washington State Model Toxics Control Act)
(MTCA), ch. 70.105D RCW.)

SECOND AMENDMENT

U.S. EPA, Region 10
Docket No. CERCLA-
10-2001-0055

Ecology Docket No.
00TCPNR-1895

This Second Amendment to the Administrative Order on Consent For Remedial Investigation/ Feasibility Study (AOC) for the Lower Duwamish Waterway (LDW), CERCLA Docket No. 10-2001-0055, issued on December 20, 2000, requires performance of the Enhanced Natural Recovery (ENR)/Activated Carbon (AC) pilot study set forth below under the terms and conditions of the AOC by mutual agreement with the Parties in accordance with Section XXVI of the AOC. This statement of work (SOW) for the ENR/AC pilot study for the Lower Duwamish Waterway (LDW) provides a general overview of the work to be performed, a list of study steps/tasks, and a schedule for deliverables.

The goals of the ENR/AC pilot study are to:

- Verify that ENR amended with AC can be successfully applied in the LDW by monitoring physical placement success (uniformity of coverage and percent of carbon in a placed layer);
- Evaluate performance of ENR/AC compared to ENR alone in locations with a range of polychlorinated biphenyl (PCB) concentrations;
- Assess potential impacts to the benthic community in ENR/AC compared to ENR alone; and
- Assess changes in bioavailability in ENR/AC compared to ENR alone.

In addition, LDWG may propose to evaluate whether ENR/AC will remain stable in scour areas (Category 1 areas).

The study is intended to help inform the remedial design for the LDW related to the implementation and effectiveness of remedial technologies. Study results will be used to re-assess and appropriately refine the technology assignment assumptions for ENR, ENR/AC, and (if approved by EPA and Ecology) ENR/AC/scour mitigation applications.

The tasks are briefly described below.

Task 1: Identify Plot Locations (QAPP and Field Collection). First, LDWG will prepare a memorandum which includes tables and figures identifying candidate plot locations for the Pilot Study including a review of existing data and a rationale for selecting plot areas for sampling and send to EPA and Ecology for initial review. Based on initial discussions with EPA and Ecology, LDWG will prepare a Quality Assurance Project Plan (QAPP) for collection of surface sediment samples to be used for confirmation of plot locations. The QAPP will include a Health and Safety Plan for preliminary sampling. After approval of the QAPP, LDWG will collect bulk surface sediment data (e.g., PCB Aroclors, total organic carbon) from proposed plot areas to confirm target sediment concentrations. Validated data from this effort will be provided to EPA/Ecology. Study plot locations and sizes will be finalized in a working meeting with EPA/Ecology.

Task 2: Prepare the Design Package. LDWG will prepare a design package that evaluates sediment data collected under Task 1 and finalizes the design plans for each plot area. The design package will present the selected plot locations, and include existing conditions for each plot, the rationale for the proposed locations, and the proposed size of the test plots. Test plots will be approximately 1/2 acre in size per treatment subplot. The design package will include:

- Contract drawings and technical specifications
- Narrative design report
- QAPP for baseline and post-construction monitoring
- Water quality monitoring plan for construction
- Construction quality assurance plan
- Health and Safety Plan

The design package will also include any evaluations needed for substantive compliance with the Clean Water Act (e.g., Section 404(b)) and the Endangered Species Act.

Technical details regarding the pilot study scope include:

- Evaluate the use of ENR material (e.g., sand) and ENR sand amended with AC. The study will focus on total PCBs as the indicator chemical. Surface sediment and porewater will be analyzed for PCB congeners to assess bioavailability. Information on other contaminants (e.g., polycyclic aromatic hydrocarbons (PAHs)) may be collected for informational purposes, as determined from contaminant concentrations within selected plot locations.
- Use one target carbon dose for all study plots. The proposed carbon dose will be presented in the design package.

- Use one delivery mechanism for all study plots. Material will be placed mechanically. The proposed delivery mechanism will be presented in the design package
- Test two or three paired study plots:
 - ENR and ENR/AC in subtidal area
 - ENR and ENR/AC in intertidal area
 - LDWG may also propose a third paired study plot which includes ENR/AC/scour mitigation and ENR/scour mitigation in areas of limited scour potential.
- The study plots will be selected to include a range of PCB concentrations from the RAL (SQS) up to the CSL.

Task 3: Develop Construction Work Plan. LDWG will develop a Work Plan for construction of the pilot study. This plan will provide the detailed means and methods for conducting the work.

Task 4: Implement Field Pilot Study and Post-Construction Monitoring. LDWG will implement the ENR/AC pilot per the Construction Work Plan. LDWG will collect baseline data prior to placement of the plots and will collect post-construction data. Baseline and post-construction data collection will include, but not be limited to:

- Porewater data (PCBs and potentially other contaminants as determined in the design package);
- Bulk sediment data (additional PCB data if needed), conventional parameters (e.g., total organic carbon), black carbon, and potentially other contaminants as determined in the design package;
- SPI camera surveys for benthic community successional stages and stability (deposition and mixing patterns);
- Benthic infauna surveys (Year 3); and
- Physical conditions of the placed layer (post-construction).

Baseline data will be collected before construction to establish the baseline bioavailability metric. Construction will be conducted during the in-water work window as approved by EPA in consultation with NOAA, USFWS and Tribes, in accordance with the Construction Work Plan. Placement of material will be verified immediately after completion of construction.

Post-construction monitoring will be conducted annually for up to 3 years post-placement (Year 1, Year 2, Year 3). Benthic infauna surveys will be conducted to evaluate community function at the end of the 3-year period. (Another monitoring event may be conducted 5 years post-construction under a separate scope as part of the remedial design effort, to be determined based on results of year 3 monitoring.)

Task 5: Prepare Data Report(s). Validated sampling data will be provided to EPA and Ecology within 75 days after completion of any sampling event (and 90 days after the Year 3 event). Data will be analyzed and reports will be prepared following the Year 1 sampling and at the end of the 3-year monitoring period. The Year 1 report will include the construction completion details, baseline data, and the Year 1 monitoring results.

The Year 3 report will include the Year 2 and Year 3 monitoring results. LDWG will submit draft reports for review by EPA/Ecology. The reports will be revised and finalized and approved per the AOC process.

Table 1 provides a schedule for completing the key deliverables/milestones associated with the LDW Pilot Study. All project deliverables will be submitted by LDWG and revised to address all EPA and Ecology comments in accordance with the schedule in Table 1.

Table 1. Schedule for Task Deliverables/Milestones

Task	Deliverable	Schedule
Task 1: Study Plot Identification (QAPP and Sampling)	Draft Memorandum of candidate plot locations	7 days after issuance of AOC amendment
	Draft QAPP for plot sampling	45 days after submittal of draft memorandum of candidate plot locations to EPA/Ecology
	Final QAPP for plot sampling	20 days after receipt of EPA/Ecology comments
	Validated data to EPA/Ecology	65 days after approval of QAPP
	Finalize Plot Locations	Working meeting with EPA/Ecology to select plots 7 days after submittal of validated data
Task 2: Design Package	Notify EPA and Ecology of design contractor	145 days after issuance of AOC amendment
	Draft Design Report	130 days after selection/approval of plots
	Final Design Report	45 days after receipt of EPA comments
Task 3: Construction Work Plan	Notify EPA and Ecology of Construction Contractor(s)	Within 145 days after approval of the Final Design Report
	Draft Construction Work Plan	60 days after award of construction contractor
	Final Construction Work Plan	25 days from receipt of EPA/Ecology comments
Task 4: Implement Field Pilot Study and Post-Construction Monitoring	Notification for Pilot Study Construction Start	Provide notification to EPA/Ecology 30 days prior to initiation of field construction
	Completion of Construction	Per approved construction schedule
	Completion of Monitoring	3 years after completion of construction
Task 5: Reporting	Sampling data	75 days after completion of any sampling event (90 days after Year 3 event)

	Year 1 Draft Data Report	90 days after completion of Year 1 monitoring event, including data validation
	Year 1 Final Data Report	30 days from the receipt of EPA/Ecology comments
	Year 3 Draft Data Report	90 days after completion of Year 3 monitoring event, including data validation
	Year 3 Final Data Report	30 days from the receipt of EPA/Ecology comments

Note: Progress reports will be submitted monthly for the duration of the pilot study, consistent with the requirements set forth in the AOC.

Ecology – Washington State Department of Ecology

EPA – U.S. Environmental Protection Agency

QAPP –quality assurance project plan

All schedule dates are expressed in calendar days

It is so ORDERED and AGREED this 17 day of July, 2014.

By: Cami Grandinetti
 Cami Grandinetti
 Remedial Program Manager
 Environmental Cleanup Office
 U.S. EPA, Region X

By: _____
 James J. Pendowski
 Program Manager
 Toxics Cleanup Program
 State of Washington Department of Ecology

	Year 1 Draft Data Report	90 days after completion of Year 1 monitoring event, including data validation
	Year 1 Final Data Report	30 days from the receipt of EPA/Ecology comments
	Year 3 Draft Data Report	90 days after completion of Year 3 monitoring event, including data validation
	Year 3 Final Data Report	30 days from the receipt of EPA/Ecology comments

Note: Progress reports will be submitted monthly for the duration of the pilot study, consistent with the requirements set forth in the AOC.

Ecology – Washington State Department of Ecology

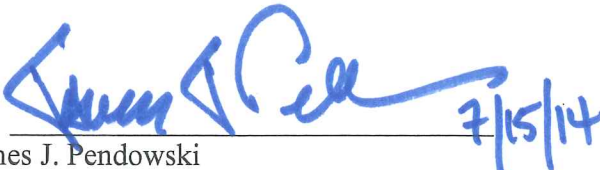
EPA – U.S. Environmental Protection Agency

QAPP –quality assurance project plan

All schedule dates are expressed in calendar days


It is so ORDERED and AGREED this ___ day of _____, 2014.

By: _____
 Cami Grandinetti
 Remedial Program Manager
 Environmental Cleanup Office
 U.S. EPA, Region X

By:  7/15/14
 James J. Pendowski
 Program Manager
 Toxics Cleanup Program
 State of Washington Department of Ecology

Agreed this 23rd day of June, 2014.

For Respondent City of Seattle

By 
Title Mayor

Agreed this 1ST day of JULY, 2014.

For Respondent The Boeing Company

By 

Title URSULA ENGLISH
VICE PRESIDENT
ENVIRONMENT HEALTH AND
SAFETY

Agreed this 3rd day of July, 2014.
For Respondent Port of Seattle

By

Title Subscribed for Tony Yabuta
Deputy CEO

Agreed this 11 day of JULY, 2014.

For Respondent King County

By Dow Constant

Title EXECUTIVE