

**ATTACHMENT 1**

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CWA Section 401 Water Quality Memorandum

## **Memorandum**

### **CLEAN WATER ACT §401 SUBSTANTIVE WATER QUALITY REQUIREMENTS FOR THE LOWER DUWAMISH WATERWAY ENHANCED NATURAL RECOVERY/ACTIVATED CARBON PILOT PROJECT**

October 5, 2016

#### **I. Introduction**

This final Clean Water Act §401 Substantive Water Quality Requirements Memorandum (401 Memo) documents the United States Environmental Protection Agency's (EPA's) determination that in-water activities associated with the enhanced natural recovery/activated carbon pilot study on the Lower Duwamish Waterway meets the substantive requirements of Clean Water Act §401 (CWA § 401).

This pilot study was specified under the Second Amendment (July 2014) to the Administrative Order on Consent for Remedial Investigation/Feasibility Study (AOC) for the Lower Duwamish Waterway, CERCLA Docket No. 10-2001-0055, issued on December 20, 2000. The overall goal of this study is to evaluate whether enhanced natural recovery (ENR) amended with activated carbon (AC) can be successfully used to decrease bioavailability of contaminants in sediment in the LDW. The study will compare the effectiveness of ENR amended with AC (ENR+AC) against that of ENR without added AC. This will be tested in three habitat types: the subtidal, the intertidal, and an area where vessel scour is possible. A detailed description of the Pilot study background and design can be found in the Narrative Design Report prepared by AMEC Foster Wheeler Environment & Infrastructure, dated December 7, 2015.

A copy of this 401 Memo and any future amendments shall be included as Attachment 1 to the Water Quality Monitoring Plan (Appendix F of the December 7, 2015 Narrative Design Report). Copies of this original and any future amendments shall also be kept on the job site and made readily available for reference by the EPA, the contractor, and any other appropriate federal, tribal, state, and local inspectors.

The in-water activities covered in this evaluation of substantive compliance with CWA § 401 include: demonstration placement, water discharge from the barges used for the presoaking of the ENR + AC, pilot study plot construction, and relocation of AC + ENR material (if needed).

The EPA is responsible for review of this project to ensure compliance with the substantive requirements of the CWA §401. We have drawn heavily on the State of Washington Water Quality Standards (Chapter 173-201A WAC) in our evaluation, these standards being normally applicable and used by the State of Washington for CWA § 401 certification in the absence of a CERCLA action. The requirements of EPA's November 21, 2014 Lower

Duwamish Waterway Record of Decision, the anti-degradation policy of the State of Washington, in addition to preservation of beneficial uses, are factors in our analysis.

This finding of substantive compliance with CWA §401 is based on our review of the following documents:

- December 7, 2015 Narrative Design Report and associated appendices including the Water Quality Monitoring Plan (WQMP) and the Quality Assurance Project Plan;
- August 2016 Draft Contractor Work Plan;
- August 2016 Draft Contractor Quality Control Plan
- August 2016 Draft Environmental Mitigation Plan

The WQMP serves as the overall water quality monitoring plan for the project, though conditions of this 401 Memo shall supersede the WQMP when specifications conflict among those documents. Should new or more specific information become available during implementation of the project, an amended 401 Memo will be prepared by the EPA, if necessary.

## **II. Removal Action**

Details of this pilot study are described in the Narrative Design Report. The following is a brief summary of the study's components that are relevant to water quality.

Demonstration Placement - Prior to construction of the pilot study plots, a test of the placement methods (bucket and sieve box) will be conducted to calibrate and verify bucket volume, placement area, and thickness of the material in designated demonstration areas. There will be two demonstration placements conducted; one with sand+AC and one with gravelly sand+AC. The two areas will be approximately 40 by 60 feet in size. The demonstration placements is expected to take 2 days.

Discharge of Pre-soaking water– During both the demonstration placement and construction of the pilot study plots the ENR+AC material will be pre-soaked within a flooded, water tight barge for a minimum of 12 hours prior to placement. This presoaking step is designed to help minimize the loss of AC as the ENR+AC descends through the water column during placement. As the ENR+AC material is removed from the barge, the overlying water will be pumped to the Duwamish Waterway through a bag filtration system consisting of approximately two to eight 7" x 30" bag filters capable of filtering to 1 micron and able to handle flows up to 800 GPM.

Construction of Pilot– A barge-mounted, fixed-arm excavator with a 4 or 5-yard clamshell bucket and/or a sieve box will be used for the submerged placement of ENR and ENR+AC. The ENR and ENR+AC will be released under water approximately 2 feet above the

river bed. The bucket will not contact the river bed during placement operation in order to minimize turbidity.

Relocation of over-placed material - In the event that material is over placed and it is determined that it must be relocated, excess material will be moved using the excavator and clamshell bucket. This material will be relocated to a pre-arranged location at the perimeter of the subplot using the same placement approach as used for construction of the construction of the pilot.

### **III. Conditions of Substantive Compliance**

As documented in this 401 Memo, EPA finds that it has reasonable assurance that the discharges associated with the Lower Duwamish Waterway Enhanced Natural Recovery/Activated Carbon Pilot Study as proposed and conditioned will be in substantive compliance with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, as amended and other appropriate requirements of Washington State Law. This finding of compliance with the substantive requirements of the CWA §401 Water Quality Certification is subject to the following terms and conditions:

#### **A. General Conditions**

##### **1. Expiration and Amendment**

- a. This 401 Memo shall become effective on the date it is signed and shall remain valid for one construction season, expiring February 15, 2017 unless specifically extended by EPA through amendment, in consultation with the Services, and the Muckleshoot Tribe. In-water construction activities, including: demonstration placement, discharge of pre-soak water, and construction of the pilot will be prohibited after February 15, 2017, unless timing extensions are specifically coordinated and approved by the appropriate resource agencies.
- b. Prior to expiration, this 401 Memo may be amended if there are significant additions, changes, modifications, and revisions to the Contractor Work Plan, the WQMP, the Environmental Mitigation Plan or other EPA-approved contractor submittals.
- c. The EPA contact person for amendments, modifications, approvals, or any other changes to this 401 Memo is Erika Hoffman (hoffman.erika@epa.gov), Environmental Review & Sediment Management Unit, Washington Operations Office (360)753-9540.

##### **2. Reporting**

- a. The EPA must be notified as soon as possible and within 6 hours of any water quality criteria exceedance or failure to comply with conditions of this 401 Memo. Typically,

the EPA Project Manager (PM) will be notified first and she will then immediately notify the EPA Water Quality Specialist (WQS); however, the reverse may occur.

EPA Project Manager: Allison Hiltner (206) 553-2140; hiltner.allison@epa.gov

EPA Water Quality Specialist (WQS): Erika Hoffman, (360) 753-9540;  
hoffman.erika@epa.gov

- b. Pre-project: The EPA's project manager shall be notified at least 2 weeks prior to the commencement of placement activities.
- c. Daily reporting: The LDWG consultant team will prepare a daily water quality monitoring report for submission to the field engineer (FE) and the EPA. The daily report will include a description of the water quality monitoring and in-water activities conducted and the field measurements collected. It will be submitted to the EPA within 24 hours if a confirmed turbidity exceedance has been observed and within 48 hours if no confirmed water quality exceedances have occurred.
- d. Final project report: Once all construction is complete, results for the entire construction period will be compiled and reported to the EPA along with supporting documentation in the Construction Report (submitted to the EPA and Ecology as part of the Year 1 monitoring report). At a minimum, this report must include, but not be limited to, the following information:
  - A description of field sampling activities and a plan view of monitoring locations relative to the location pilot project activities;
  - Any deviations from the 401 Memo and reasons for the deviations;
  - A list of all of the BMPs related to water quality that were employed during the project implementation, when and why those were used, and an assessment of the effectiveness of those BMPs.
  - A summary of field observations, including sampling times, weather conditions, water conditions, silt plumes, distressed/dying fish, and any relevant anecdotal or unusual observations;
  - Narrative and tabular text presenting results of water quality monitoring related to each operation;
  - Discussion of water quality exceedances and any additional monitoring that may have resulted, including rationale for selection/location of additional stations and/or discretionary samples;
  - Data quality review results based on calibration and precision/accuracy information, including any data qualifiers and reasons for those qualifiers;
  - An appendix containing all completed water quality monitoring sample forms;
  - An appendix containing all calibration information

### **3. Incorporation of Other Documents by Reference:**

The Narrative Design Report (December 7, 2015) includes project details and identifies BMPs to be applied to the site. The final Water Quality Monitoring Plan (WQMP) is an appendix to this report. Other construction contractor-authored documents that are pending or have been submitted to EPA for review and approval but are not yet final include: the draft Contractor Work Plan, the draft Environmental Mitigation Plan, and the draft Contractor Quality Control Plans (August 2016). The final versions of these documents are incorporated by reference here.

Additions, changes, modifications, and revisions to the WQMP, the Contractor Work Plan or any other Contractor deliverables by the LDWG or the contractors selected to do the work on its behalf, shall require prior notification to and approval by the EPA. If significant, the change will be documented and if necessary, an amended 401 Memo will be prepared by the EPA Water Quality Specialist.

### **4. Fish Timing Window**

Out-migrating juvenile salmonids listed under the Endangered Species Act utilize the nearshore environment of the Lower Duwamish Waterway for migration and feeding. In order to minimize potential physical impacts from suspended sediments associated with this project, in-water construction activities will occur during October 1 – February 15 which is within the in-water work window established for this area by U.S. Fish and Wildlife Services and the National Oceanic and Atmospheric Administration. In the event additional time is needed to complete construction, EPA will coordinate with the U.S. Fish and Wildlife Services and the National Oceanic and Atmospheric Administration, as well as the Muckleshoot and Suquamish Tribes, to see if work can be completed without impacts to salmonids or other threatened or endangered species or their designated critical habitat.

## **B. Water Quality and Water Quality Monitoring**

### **1. Compliance Standards**

The State of Washington Water Quality Standards (WQS) shall apply for all construction activities and discharges that may affect water quality (WAC Chapter 173-201A-240). The monitored parameter will be turbidity which will comply with the water quality performance criteria for the “excellent quality” marine waters of the Duwamish River (WAC 173-201A-210) at the 150-ft point of compliance.

## 2. Turbidity

At the 150-foot point of compliance, turbidity shall not exceed 5 NTU over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU. If turbidity is exceeded at 150-ft, the steps outlined in the WQMP must be followed.

## 3. Water Quality Monitoring

EPA has approved the Narrative Design Report and associated appendices including the Water Quality Monitoring Plan (WQMP) and the Quality Assurance Project Plan and these documents are incorporated by reference as a condition of this 401 Memo. Any additions, changes, modifications, and revisions to the Pilot Project Design by the contractor shall require prior notification to and approval by EPA.

Water quality monitoring will be conducted during the demonstration placement and construction of the pilot study plots and will be conducted both downstream and upstream of the activity. Conditions which may require water quality monitoring (subject to coordination with EPA) are: Excessive turbidity associated with execution of the demonstration and/or pilot project; Discharge of pre-soaking water (if bag filtration is bypassed or ineffective); and relocation of over-placed material.

During each round of monitoring, stations will be established 75 feet (early warning station) and 150 feet (compliance station) from the in-water work. Compliance with the performance standards will be demonstrated with the use of data from the compliance stations and a corresponding ambient station for each monitoring event. The ambient station will be located outside the area of influence of the construction activities and have a depth range similar to the monitoring stations. During ebb tide, the ambient station will be located upstream of the construction activities. During flood tide, surface water flows at the scour and subtidal plots will be predominantly downstream (freshwater surface flow) and bottom flows will be upstream (in the salt wedge).

The duration and frequency of monitoring are keyed to the particular placement event.

- Demonstration placement - The demonstration placement will take 2 days to complete. For the duration of the demonstration placement, monitoring will be conducted twice daily with at least 2 hours between monitoring events.
- Pilot Study construction - During the first 2 days of the construction of each of the pilot study plots (i.e., intertidal, subtidal, and subtidal potential scour plots) water quality monitoring will be conducted twice daily with at least 2 hours between monitoring events. The first 2 days of plot construction will be during the time that the ENR+AC material is being placed which would have the greatest potential for turbidity exceedances. If during the first 2 days of monitoring there are no exceedances of the turbidity criterion, then water quality monitoring will not be conducted for the duration of that plot's

construction. If there is a turbidity criterion exceedance, then monitoring will be conducted until there are two consecutive days without a turbidity exceedance or for the remainder of the plot construction. If there are exceedances on 2 consecutive days during placement of the ENR+AC material within a plot, then EPA may direct monitoring of the ENR only subplots to provide information about the relative difference in turbidity generated with placement of the different material types. EPA may require additional monitoring if any changes in placement techniques (e.g., faster placement and/or a change in equipment) are observed.

The timing of monitoring is intended to be representative of conditions during a given work day (limited to daylight hours) and, to the extent practicable, to capture potential worst-case conditions for suspended sediments. The person directing field sampling must use discretion when determining timing of sampling on any given day. The activity being monitored must be actively ongoing for at least 1 hour prior to the commencement of monitoring.

#### **4. Water Quality Exceedance**

- a. In the event that a turbidity exceedance at a 150-ft compliance monitoring station is observed, the LDWG sampling team will immediately notify the project engineer (PE) and the King County Project Representative (Project Representative), and EPA will be notified within 6 hours. The PE, Project Representative, and contractor will assess the exceedance and determine appropriate modifications to operations and/or best management practices (BMPs).
- Compliance boundary data should be compared to that from the corresponding ambient station to evaluate whether concentrations may be elevated because of the pilot project, or may reflect area-wide water quality conditions.
- Review the documented operations at the time of the exceedance; specifically determine whether the in-water placement of ENR or ENR+AC or a non-project-related activity was occurring at the time of the exceedance.
- In response to an exceedance of the turbidity criterion at any depth interval at the 150 foot compliance stations, discretionary sampling will be performed to determine the areal extent of elevated turbidities. In the direction of the exceedance (either upstream or downstream depending on the direction of the water flow), turbidity readings (with measurements made at 2-foot depth intervals) will be collected at approximately 150-foot intervals from the construction. Every 150 feet, paired profiles (inshore and offshore) of the water column will be collected to determine the width of the “plume”. Stations will be occupied every 150 feet in the direction of the exceedance until turbidities are below the water quality criterion. The rationale for taking discretionary stations should be clearly indicated in field notes.

## **5. Effects on Fish**

If during in-water activities, distressed and/or dying fish are observed in the construction vicinity, EPA must be immediately notified of the condition. The operator shall collect fish specimens and water samples in the affected area and, within the first hour of such conditions, have the water samples analyzed for dissolved oxygen and total sulfides. Fish should be archived for potential analysis at the direction of EPA. For distressed or dying fish the following, at a minimum, will be noted:

- Condition of fish (dead, dying, decaying, erratic or unusual behavior)
- Number, species, and size of fish in each condition
- Location of fish relative to operations
- Presence of any apparently healthy fish in the area at the same time
- Whether the species is a listed species

Additional water quality measurements may need to be taken at the discretion of the PE, the Project Representative, and the EPA. The cause of any water quality problem will be assessed and appropriate measures (e.g., change production rates, modify work schedule, perform work on a slack tide, etc.) will be taken to correct an identified problem.

## **6. Observable Turbidity Plume**

If routine water quality monitoring is not being performed during an ENR or ENR+AC placement and a silt plume that appears to be larger than 100-ft is observed in the vicinity of construction operations or associated with discharge of pre-soaking water, EPA must be immediately notified and decisions regarding additional water quality monitoring coordinated. Any additional water quality measurements will be taken at the discretion of the PE, Project Representative and EPA, and are intended to define the area of impact and assess the situation to allow informed decisions. The cause of any water quality problem will be assessed and appropriate measures (e.g., change production rates, modify work schedule, perform work on a slack tide, etc.) will be taken to correct an identified problem if project operations are determined to be the source.

### **C. Summary of Best Management Practices (BMPs)**

Descriptions of the procedural BMPs that will be implemented during this pilot project are in the Contractor Workplan (draft August 2016) as well as in the approved WQCP. EPA-approved versions of these documents are incorporated by reference as condition of this 401 Memo. BMPS specifically associated with maintaining water quality during construction include the following

- Pre-soaked material shall be kept saturated during placement to the extent practicable.
- Water-tight barges shall be used to contain all material, water or sediment.

- Material shall be placed using 2 lifts of approximately 4.5-inches each, with lifts offset in X & Y direction by ½ bucket dimension in each direction.
- To achieve the target 4.5-inch lift thickness, approximately 1.17 cubic yards of material will need to fill each bucket. The buckets will be modified with steel plates to reconstruct their internal geometry to restrict their handling capacity to 1.17 cubic yards. This will eliminate any subjective measurements by the operator.
- Contractor will avoid the use of spuds over the areas where material has been placed
- In areas of steeper slopes, material shall be placed starting from toe of slope and proceeding upslope to extent practicable, without setting spuds in areas where ENR material has already been placed.
- Bucket will be held in position and not moved or swung during placement.
- The bucket will not contact the river bed during placement operations. Once the bucket is approximately 2-feet above the river bed and properly positioned horizontally, the bucket will be opened to produce as uniform of a layer of material as possible.
- During active placement operations bucket cycle times of 50 to 90 seconds are to be targeted, pending water quality impacts or other issues.
- Plots shall not be disturbed once material has been placed.

BMPs that may be implemented in response to a turbidity exceedence include the following:

- Decreasing the velocity of the bucket through the water column.
- Stopping work temporarily or increasing cycle time.
- Monitoring and management of prop wash to avoid disturbance and/or resuspension of the ENR material or existing contaminated sediment.
- Modifying the position of barges to reduce potential grounding.
- Inspection of the material barge to determine whether there are significant leaks that could contribute to the exceedence of the turbidity criterion.

Reasonable precautions and controls must be used to prevent incidental and accidental discharges of petroleum products or other deleterious or toxic materials from entering the water as a result of any in-water activities. Materials such as sorbent pads and booms must be available on-site and must be used to contain and clean up petroleum product spilled as a result of the in-water activities. If significant oil sheen is observed, immediate corrective actions must be taken to modify the operation to prevent further degradation, or the activity must cease. The EPA must be notified of the situation (see Section D below).

#### **D. Emergency/Contingency Measures:**

1. The contractor will follow the Spill Prevention, Control procedures described in the *draft* Contractor Work Plan (Section 5.0) and *draft* Environmental Mitigation Plan (Section 5.4.5) and include this in the CQAP for this project. The contractor shall have spill cleanup materials and an emergency call list available on site.
2. Any work that is out of compliance with the provisions of this CWA § 401 Memorandum, or conditions causing distressed or dying fish, or any discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, is prohibited. If these occur, the contractor shall immediately take the following actions:
  - a. Cease operations that are causing the compliance problem.
  - b. Assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further environmental damage.
  - c. In the event of finding distressed or dying fish, the contractor shall collect fish specimens and water samples in the affected area within the first hour of the event. These samples shall be held in refrigeration or on ice until the contractor is instructed by EPA on what to do with them. EPA may require analyses of these samples before allowing the work to resume.
  - d. In the event of a discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, containment and cleanup efforts shall begin immediately and be completed as soon as possible, taking precedence over normal work. Cleanup shall include proper disposal of any spilled material and used cleanup materials.
  - e. Immediately notify EPA's PM Allison Hiltner (206) 553-2140; Hiltner.allison@epa.gov.
  - f. Submit a detailed written report to EPA within five (5) days that describes the nature of the event, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.
3. Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills.

PREPARED AND APPROVED BY:

A handwritten signature in black ink that reads "Erika Hoffman". The signature is written in a cursive style with a large initial "E".

10/5/16

Date

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Erika Hoffman  
Environmental Review & Sediment Management Unit

cc:  
Allison Hiltner (EPA)  
Teena Littleton (EPA)  
Laura Inouye (Ecology)