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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
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APR 30 2010

OFFICE OF
AIR, WASTE AND
TOXICS

Mr. Peter Jewitt
Farallon Consulting, LLC
975 5th Avenue Northwest
Issaquah, Washington 98027

Mr. Gil Leon
Earle M. Jorgensen Company
10650 South Alameda
Lynwood, California 90262

Re: Comments on *Draft Engineering Evaluation/Cost Analysis, Jorgensen Forge Facility*, March 2009
Comprehensive Environmental Response, Compensation, and Liability Act Administrative Order on Consent, U.S. EPA Docket No. CERCLA 10-2003-0111

Dear Mr. Jewitt and Mr. Leon:

The U.S. Environmental Protection Agency Region 10 (EPA) has completed its review of the *Draft Engineering Evaluation/Cost Analysis, Jorgensen Forge Facility* (Draft EE/CA) dated March 2009. The Draft EE/CA has been prepared for a removal action of contaminated sediments and associated bank soils within the removal action boundary in the Lower Duwamish Waterway Superfund site adjacent to a portion of the Jorgensen Forge Facility.

EPA's comments regarding the Draft EE/CA are enclosed. In accordance with Section VIII of the Order, the Respondents must revise the EE/CA responsive to all of these comments. The Respondents must submit the revised EE/CA to EPA within sixty (60) calendar days of receipt of this letter.

Should you have questions or comments, please contact me by phone at 206-553-8506 or by email at brown.christy@epa.gov.

Sincerely,

Christy Brown

Christy Brown
Project Coordinator
Office of Air, Waste and Toxics

USEPA SF
1367614

Enclosure

Cc w/enc: Glen St. Amant, Muckleshoot Tribe
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General Comments

1. The Jorgensen Forge sediment cleanup is an Early Action Area (EAA) of the Lower Duwamish Waterway (LDW) Superfund Site in close proximity to the adjoining Boeing Plant 2 EAA and the Terminal-117 (T-117) EAA located directly across the LDW. As EPA has emphasized from the beginning of this project, sediment remedies for these EAAs must be carefully coordinated. The *Draft Engineering Evaluation/Cost Analysis, Jorgensen Forge Facility* (EE/CA) refers to the *Memorandum of Understanding, Coordination at the Lower Duwamish Waterway Transition Zone Boundary* (MOU), executed by Earle M. Jorgensen Company (EMJ) and Jorgensen Forge Corporation (Jorgensen) with The Boeing Company (Boeing) in August, 2007, for implementation of this non-time critical-removal action (NTCRA). This MOU requires close coordination and cooperation between EMJ/Jorgensen and Boeing for all phases of their abutting sediment cleanup actions.

   It is not evident from the draft EE/CA, however, that coordination has been or is occurring, as the alternatives chosen for evaluation are very different than those being evaluated for Boeing Plant 2. The EE/CA must *demonstrate* that these efforts are being coordinated. This coordination should be evident in the discussion of the conceptual site model(s), choices of alternatives for evaluation, commonalities among cost estimates, etc. Where different alternatives are being evaluated for site-specific reasons, the rationale with supporting documentation must be clearly presented. This EE/CA will be subject to public comment, and reviewed by many interested parties in addition to the U.S. Environmental Protection Agency, Region 10 (EPA). It is critical that it be clear how the pieces, particularly coordination between the Jorgensen and Boeing Plant 2 projects, will fit together.

   Please recall that treating the Jorgensen and Boeing EAAs as separate projects subject to a coordination and cooperation MOU was EMJ/Jorgensen and Boeing's much favored alternative to EPA's strong preference to treat the adjoining contaminated sediments of these two facilities as a single, jointly-implemented project. EPA expects and will demand that EMJ/Jorgensen and Boeing live up to both the letter and spirit of the MOU.

2. EPA agrees that the Washington State Sediment Quality Standard (SQS) for PCBs [12 parts per million organic carbon normalized (12 ppm OC)] is an appropriate delineating criterion and an appropriate Removal Action Level (RvAL) for sediment removal and/or capping for this EAA. The EE/CA must be revised to state that all PCBs which exceed the SQS/RvAL will be removed or permanently capped. Use of the term RvAL will conform this EE/CA to the ongoing T-117 EE/CA and the ongoing LDW Site feasibility study (FS). The Boeing Plant 2 sediment cleanup will be a RCRA Interim Measure under a RCRA Order pre-dating the LDW Site, and will necessarily use RCRA rather than CERCLA terminology which will be substantively equivalent.

3. The draft EE/CA states in a number of places that this removal action will be protective of aquatic organisms as well as the people who consume fish and shellfish harvested from the LDW. This statement is inconsistent with establishment of the RvALs at the SQS level and could be confusing to reviewers. Include the following information regarding the long-term cleanup goals for the LDW in the EE/CA in order to clarify this apparent inconsistency:

   Protection of higher seafood consuming human populations, specifically tribes but also Asian-Pacific Islanders, will require sediment risk based concentrations (RBCs) that will be more stringent than background. Current MTCA regulations require final cleanups to achieve natural background levels, and interim cleanups (including CERCLA removal actions) to at least achieve anthropogenic background levels, all of which are substantially more stringent than the RvALs which are based on SQS numerical criteria developed for the protection of benthic organisms. The SQS/RvALs are unrelated to protective human seafood consumption levels. Based on current technology, final LDW sediment constituent of concern (COC) concentrations will be limited by the extent of lateral loading upon completion of all source control efforts, and loading from the upstream Green-Duwamish River system. The likelihood is that 1) LDW sediment will reach equilibrium based on this lateral and upstream loading at levels which will exceed both natural and any reasonable calculated anthropogenic background levels, and 2) some combination of active sediment remediation and monitored natural recovery based on LDW sediment transport modeling will be employed to address LDW sediment and water quality. Any ARARs, including the current MTCA rules referenced in this paragraph and Aquatic Water Quality Criteria (AWQC) based on risks to human seafood consumers, which prove impracticable to meet could be formally waived pursuant to Section 121(d)(4) of CERCLA. Further, fish advisories, as robust and protective as we can design them, could be relied upon for any delta between protective RBCs for the seafood consumption pathway and the equilibrium levels we are able to achieve to complete remedial action, subject to CERCLA-mandated five-year reviews for hazardous substances left on-site above protective levels (RBCs).

4. It is not apparent from the summary of environmental data that adequate characterization has been completed. The figures show several areas where PCB concentrations greater than the SQS are unbounded horizontally or at depth relative to the EAA's western boundary. The EE/CA must be revised to include a clear discussion of the horizontal and vertical extent of contamination, and must present a compelling argument that sufficient information is available to evaluate appropriate remedial alternatives.

5. The draft EE/CA must be revised to include all property within the Cleanup Boundary established by the MOU and agreed to by EMJ and Jorgensen (shown on Figure 1 of the MOU). The MOU states:

   > "For the purposes of this MOU, the shoreline bank is defined as the material residing above the toe of the slope. The Parties shall each properly handle, dispose, and replace any shoreline bank materials at the sediment-bank interface incidentally affected by their respective

sediment remedies. The parties shall coordinate detailed features and requirements (e.g. slope stability and dredge depths) at the sediment and shoreline bank interfaces)."

EPA does not interpret this language to mean that cleanup of Jorgensen's shoreline bank is automatically Boeing's responsibility because it is located landward of sediments which must be remediated by Boeing. The EE/CA must be revised to include *all* of Jorgensen's shoreline bank. EMJ/Jorgensen's cleanup proposals for the northern section of the shoreline bank must be coordinated with Boeing, but remediation of this section of contaminated shoreline is required on its own merits and must be given precedence over the secondary issues of coordination.

6. The draft EE/CA includes very little substantive justification for decisions to include or exclude potential removal alternatives. The EE/CA must be revised to present much more detailed information justifying why potentially viable alternatives were included or excluded. For example, there is no substantive justification for not dredging contaminated sediments along the sheetpile wall. If there are stability issues, state them and their effect on the alternatives. What limitations do they pose on the location and depth to which dredging *can* occur?

7. The EE/CA must be revised to look more broadly at removal alternatives. The goal of this document is to provide a credible evaluation of several different viable alternatives and their associated costs which will allow reasoned selection of the best one in light of CERCLA's response action selection criteria. Given the magnitude and extent of contamination in this EAA, it is unlikely that EPA will select a remedy that does not involve extensive dredging. In its current form, the draft EE/CA only includes two highly-similar options, neither of which proposes to remove all contamination. The revised EE/CA should include at least the following four alternatives: no action, draft Alternative #2 [mixed dredging and/or cap/backfill and enhanced natural recovery (ENR)], fixed-depth dredging, and variable-depth dredging. Dredging alternatives should propose removing as much contaminated sediment as can practicably be removed. Ultimately, as stated in previous correspondence, EMJ/Jorgensen must remove all sediments contaminated with PCBs above 12 ppm OC or propose controls that ensure that contaminants left at depth do not migrate. Further, EMJ/Jorgensen must remove all contaminated sediments to a minimum depth of 45 centimeters (cm) to meet the SQS/RvAL. As at the T-117 and Boeing Plant 2 EAAs, the goal is to achieve the SQS/RvAL upon completion of the NTCRA.

8. Use of the terms "habitat", "monitored natural attenuation" (MNA), "monitored natural recovery" (MNR), and "enhanced natural recovery" in the draft EE/CA are imprecise and confusing. In some cases it appears that the draft EE/CA is proposing to use MNA and/or habitat layers in areas where a cap would be required, such as by addition of gravel on top of contamination which exceeds the SQS without any dredging. It is also not clear what species the habitat is intended for, as the draft EE/CA proposes to use the same material throughout the Jorgensen EAA regardless of location (upland slopes as well as in-water). The EE/CA must be revised to clearly identify and

justify each of the proposed remedies as well as all associated long-term maintenance and monitoring.

9. The draft EE/CA briefly discusses sediment transport work performed as part of the LDW Remedial Investigation. This work has concluded that the Jorgensen EAA includes areas of potential scour and sediment erosion. These conclusions must be considered and evaluated in the alternatives analysis and preliminary design work in the revised EE/CA.

10. The EE/CA must be revised to include an assessment of the residual risk anticipated after Removal Action implementation, as required by the First Amendment to the Administrative Order on Consent. The Streamlined Risk Evaluation included in the draft EE/CA addresses only potential risk from exposure to contaminated sediments within the Removal Action Boundary *in the absence of* a removal action.

11. The EE/CA must be revised to assess the costs associated with each alternative over a period of 30 years. The cost analysis must be sufficiently transparent to allow reviewers to readily compare costs between alternatives and between neighboring projects.

12. The data presentation in the draft EE/CA is difficult to follow. Revise the Figures so that comparable figures are drawn to the same scale (e.g., Figures 5-1, 2-8 and 2-9). Add the sediment management area (SMA) boundaries to all figures presenting data, and present cross sections for each SMA.

13. It is EPA policy to enhance the environmental benefits of federal cleanup programs by promoting technologies and practices that are sustainable. Expectations for green cleanup and the policy itself are posted at: http://yosemite.epa.gov/R10/extaff.nsf/programs/greencleanups. The remedial alternatives should be revised to incorporate green remediation technologies. EPA intends to measure cost differentials and environmental benefits associated with implementing this policy. The EE/CA should also be revised to include green remediation factors for each alternative, including such factors as reporting and tracking specific quantities of materials reduced, reused, or recycled; carbon or greenhouse gas reductions; and water conserved or replenished. Use of these and other green remediation technologies are the "point of departure" for cleanups, and will be standard unless a site-specific evaluation demonstrates impracticability or favors an alternative green approach. This policy does not fundamentally change how and why cleanup decisions are made, but calls for more sustainable methods of implementing cleanups. A comprehensive set of greener approaches to site cleanup may be found at www.clu-in.org/greenremediation and www.epa.gov/region09/cleanup-clean-air. Please note that this policy is not intended to trade off environmental protectiveness for other benefits such as fewer carbon emissions. The EE/CA should include an analysis of how efficiently each alternative can be implemented or how "green" it can be.

Specific Comments

1. *Executive Summary*, page 1, second paragraph. As written, the second sentence could be construed to exclude the possibility of removal of all contaminated sediments in a "removal action." Remove this sentence entirely or revise it as follows: "As defined in CERCLA, the term "removal action" denotes cleanup or removal (USEPA 1993) and may include technologies such as capping ...."

2. *Executive Summary*, page 1, second paragraph. The fourth sentence of this paragraph states that the removal action alternative will be selected by EMJ and Jorgensen Forge, in consultation with EPA and the Washington State Department of Ecology (Ecology). Revise this sentence as follows: "Following public review and comment of this EE/CA, USEPA will select the removal action alternative for cleanup of the sediments and associated shoreline bank soils within the RAB in an Action Memorandum in accordance with CERCLA."

3. *Executive Summary*, page 2, first full paragraph. The second sentence contains an error, as "target cleanup media levels" are not "promulgated" rulemakings and this term is not used in the CERCLA process. Revise the EE/CA to state that this removal will be based on meeting RvALs at the completion of the work. See General Comment 7 above, and Specific Comment 4, below.

4. *Executive Summary*, page 2, first full paragraph. Add a new last sentence to this paragraph as follows: "At a minimum, all sediments and soils which contain PCBs exceeding the Washington State Sediment Quality Standard (SQS) will be removed or capped."

5. *Executive Summary*, page 2, second paragraph. The last bullet item indicates that implementation of the selected removal action is dependent on execution of a legal agreement that is acceptable to all parties. Since EPA may issue a unilateral order if agreement among the parties cannot be reached, revise this bullet item as follows: "Issuance of an Administrative Order, preferably on Consent, for implementation of the non-time critical removal action selected in the Action Memorandum."

6. *Executive Summary*, *Removal Action Boundary Description*, page 3. This section defines the Removal Action Boundary (RAB) as a geographically-defined boundary (top of bank to navigation channel). Page 10 of the draft EE/CA, however, states that the RAB is defined by the area where sediment chemical concentrations exceed the SQS. Revise the EE/CA to consistently define the RAB as set forth in the MOU.

7. *Executive Summary*, *Removal Action Boundary Description*, page 3. Delete the last sentence of the first paragraph of this section, which states "There are no existing aquatic land uses within the RAB and access is limited from the water side." This statement is not relevant to defining the removal action boundary.

8. *Executive Summary, Identification of Removal Action Goals, Objective, and Scope*, page 4. The following Removal Action Objectives (RAOs) currently required by EPA for the Lower Duwamish Waterway Superfund site shall also be used for this removal project. Revise this section to include the following RAOs:

   RAO 1 – Human Health – seafood consumption. Reduce human health risks associated with the consumption of resident LDW seafood by reducing sediment and surface water concentrations of COCs to protective levels.

   RAO 2 – Human Health – direct contact. Reduce human health risks associated with exposure to COCs through direct contact with sediments and incidental sediment ingestion by reducing sediment concentrations of COCs to protective levels.

   RAO 3 – Ecological Health – benthic. Reduce risks [could use toxicity instead of risks] to benthic invertebrates by reducing sediment concentrations of COCs to comply with the Washington State SMS.

   RAO 4 – Ecological Health – seafood consumption. Reduce risks to crabs, fish, birds, and mammals from exposure to COCs by reducing concentrations of COCs in sediment and surface water to protective levels.

9. *Executive Summary, Identification of Removal Action Technologies and Alternatives*, page 5. Alternative 1 includes proposed placement of in-water substrate to enhance natural recovery of low-level surface sediment contaminants. This removal action must succeed in reducing contaminant concentrations in the upper 45 cm of sediments to levels protective of aquatic species and consumers of fish and shellfish. The EE/CA must evaluate how and when each remedial alternative will achieve the final cleanup levels, not just the SQS/RvALs. See General Comments 3 and 7.

10. *Executive Summary, Identification of Removal Action Technologies and Alternatives*, page 5. The last two sentences of the second full paragraph indicate that "Complete Removal" was not evaluated in this EE/CA as it "was not considered technically feasible." Complete removal has not been shown to be infeasible; in fact, as PCB contamination in the Jorgensen RAB is relatively shallow, it is more feasible here than in most areas of the LDW. The EE/CA must be revised to evaluate the Complete Removal alternative, or provide a substantive justification for its exclusion.

11. *Executive Summary, Identification of Removal Action Technologies and Alternatives*, page 5. The last paragraph of this section indicates that the "No Action" alternative was not considered because it would not satisfy the RAO. EPA agrees, although it would be better to state that it would not meet the RvALs. This alternative must be carried through the evaluation in order to provide a transparent basis for comparisons.

12. *Analysis and Recommended Removal Action Alternative*, page 5. As noted in General Comment 13, the alternatives should also be evaluated and compared based on green remediation factors.

13. *Introduction*, page 8. See Specific Comment 5 to address language in the last bullet indicating that implementation of the selected removal action is dependent on execution of a legal agreement that is acceptable to all parties.

14. *Introduction*, page 9, second paragraph. See Specific Comment 1 to address language in this paragraph that could be construed to exclude the possibility of removal of all contaminated sediments in a removal action.

15. Section 2.1, *RAB Description*, page 12, last paragraph. The last sentence on this page states that there are no aquatic land uses along the RAB shoreline. Delete this sentence and revise this section to include the following statements: The Muckleshoot Indian Tribe and Suquamish Tribe are both federally-recognized Tribes that are Natural Resource Trustees in the Duwamish River. As Natural Resource Trustees, their resources are impacted by degradation within the Lower Duwamish Waterway study area. The Muckleshoot Indian Tribe currently conducts seasonal netfishing operations in the LDW. The Suquamish Tribe actively manages resources up to the Spokane Street Bridge. Tribal fishers may be exposed to contamination in the sediment. The LDW is also used as a recreational resource for boating and fishing. Recreational activities on the LDW are increasing in no small part due to the attention associated with the cleanup efforts underway and planned. With the change in some shoreline and adjacent areas, the recreational uses can be anticipated to increase further.

16. Section 2.2, *Facility History and Development*, page 14. Revise the first complete sentence on this page as follows: "No information was gathered regarding the source of fill." This sentence is being modified to delete speculation regarding the source of fill materials.

17. Section 2.3.4, *Navigation,* page 17. See Specific Comment 15 to address language in the last sentence on this page stating that there are no aquatic land uses within the Jorgensen EAA or the upstream Boeing-Isaacson property.

18. Section 2.4.9, *Sediment Transport and Deposition*, page 26. The discussion of the hydrodynamic model (that there was greater potential erosion near the navigation channel and less near the shoreline) is at some variance with Figures 5-4 and F-25 of the LDW Draft FS. As shown in Figure 5-4, the area is mixed erosive and depositional, but in the opposite pattern. The square on the figure is the radioisotope core displayed in Figure F-25. This section of the EE/CA must be revised to reconcile this inconsistency, and to evaluate whether the erosive area overlays the proposed cap and/or proposed habitat layer.

19. Section 2.4.9, *Sediment Transport and Deposition*, page 26. The last paragraph of this section states that the approximate upper bound estimates of average bed scour along the eastern bench adjacent to the RAB is 0.7 cm with an average range in bed scours of less than 1 to 2.9 cm. Clarify whether this

average range is over the entire LDW, and the length of time over which this amount of scour is anticipated to occur.

20. Section 2.4.10, *Summary of Dredging Activities*, page 27. Delete the two sentences in the middle of the first paragraph regarding filling of the embayment in the central portion of the facility shoreline, beginning: "The USACE records show the embayment was filled between July 1945 and August 1946. No direct evidence was found regarding the fill design or source material ...." These sentences are not relevant to the summary of historical dredging activities offshore of the facility.

21. Section 2.4.11.2, *Biota*, page 29. The last two sentences of the second paragraph are contradictory and confusing. These sentences indicate that benthic meiofauna would be expected in "the finer sand/mud substrates in the intertidal zone" within the RAB, and then goes on to state that much of the shallow water area adjacent to the RAB contains mostly riprap rock armoring. The last paragraph on page 30, however, states that shallow, sloping, relative soft mud beaches are present along the southern portion of the RAB. Reconcile whether the RAB includes areas of shallow water mudflats, and provide a figure which clearly indicates the different habitat types present within the RAB.

22. Section 2.4.11.4, *Salmonids*, page 30. The latter part of the third paragraph indicates that the in-water construction work window in the LDW extends from October 1 to February 15. The work windows are considerably more complex than stated in the draft EE/CA. Although it is understood that this action does not require a USACE permit under either Section 404(b)(1) of the Clean Water Act or the Rivers and Harbors Act 10, the work window conditions must be evaluated and all substantive conditions must be strictly followed. The discussion of in-water work windows must be substantially expanded in the draft EE/CA, and the ability to complete this action in a single work season must be evaluated. See http://www.nws.usace.army.mil/PublicMenu/Menu.cfm?sitename=REG&pagename=work_windows for full work window information from USACE.

23. Section 2.4.11.4, *Salmonids*, page 31. Delete the fifth and sixth sentences of the first full paragraph, beginning "Limited data are available concerning the abundance of coastal cutthroat ...", and replace with a new sentence as follows: "Coastal cutthroat are consistently found in the Duwamish/Green River basin but are not as abundant as Chinook, coho, chum, and steelhead." Include a citation to the May 2004 report from King County, *Juvenile Chinook Migration, Growth and Habitat Use in the Lower Green River, Duwamish River and Nearshore of Elliott Bay 2001-2003.*

    Also delete the last sentence of this paragraph, beginning "Information and data on bull trout presence, abundance, and distribution ... is lacking ...", and replace with a new sentence as follows: "The Duwamish/Green Watershed is listed as critical habitat under the Endangered Species Act for bull trout."

24. Section 2.5.1, *Sediment Quality*, page 34. The third sentence of the first full paragraph contains an error, as the "2LAET" value is not two times the lowest

apparent effects threshold. Revise the third sentence of the first full paragraph as follows: "... and compared to the dry-weight lowest apparent effects threshold (LAET) and the second lowest apparent effects threshold (2LAET) values ...."

25. Section 2.5.1, *Sediment Quality*, page 34. The last sentence in the last paragraph on the page indicates that two subsurface depth intervals from a single station had detected SQS exceedences for arsenic (this is also stated at the top of page 37). However this is not consistent with information provided in Table 2-3. Reconcile the table/text for consistency and accuracy.

26. Section 2.5.1.2, *Total Polychlorinated Biphenyls*, page 35 and 36, and Figure 2-9. Revise the first sentence of the first paragraph to read, "A total of 86 subsurface sediment samples from 37 core locations were collected and sampled...." Revise the third sentence of the first paragraph to read, "Of the 17 stations located just east of the federal navigation channel, approximately 9 have total PCB concentrations below or just above the SQS criterion." Revise the second to last sentence in this section to read, "Stations further downstream within the RAB showed heterogeneous PCB concentrations at depth with unbounded SQS and CSL exceedances documented down to 4 feet below the current mudline."

27. Section 2.5.1.2, *Total Polychlorinated Biphenyls*, page 35 and 36, and Figure 2-9. The last sentence of this section states that, for purposes of this EE/CA, the most recent sampling stations were considered more representative of existing sediment quality conditions during evaluation of the remedial alternatives. These data need to be presented more clearly, as it is not obvious which sample location(s) are being preferentially considered and which are considered "less representative" of current conditions. Note that the general protocol for LDW sampling is that if a sampling station is located within 10 feet of the previous sample, it can be considered "co-located." Data obtained from sampling locations which are greater than 10 feet apart must be retained and considered separately.

28. Section 2.5.1.4, *Other Chemical Compounds*, page 37, Figure 2-13, and Table 2-5. This section indicates that the "majority" of the 14 surface sediment stations sampled for semivolatile organic compounds (SVOCs) were below the SQS criteria. Figure 2-13 is confusing, as it depicts 18 (rather than 14) sample locations within the RAB. Reconcile this discrepancy.

    This section also states that SVOC data is shown on Table 2-5, and discusses a number of analytes detected above the SQS criteria. The following constituents are discussed but not included in Table 2-5: benzo(a)anthracene, bis(2-ethylhexyl)phthalate, chrysene, fluoranthene, phenanthrene, total benzofluoranthenes, total LPAHs, and total HPAHs. Revise Table 2-5 to include all SVOC analysis.

    Finally, revise this section to discuss sub-surface samples analyzed for SVOCs, or state that sub-surface samples were not analyzed for other constituents if this is the case.

29. Section 2.5.2, *Shoreline Debris Pile*, page 37. The total PCB concentrations given in the fourth sentence of this section are different than those provided in Table 2-4 (0.234 ppm dry weight for the north debris pile and 0.206 ppm dry weight for the south debris pile). The discrepancy appears to be the result of an error in converting the units between the table (ug/kg dry) and the text (mg/kg dry). Correct this discrepancy and revise the subsequent text in this paragraph to reflect these revisions.

30. Section 2.5.3, *Shoreline Bank-Face Fill*, page 38. The total PCB concentrations given for the fill samples are not consistent with those provided in Table 2-4. Again, the discrepancy appears to be the result of an error in converting the units between the table (ug/kg dry) and the text (mg/kg dry). Revise the text (and particularly the discussion of the data relative to the LAET and 2LAET) to resolve this discrepancy.

31. Section 2.5.4, *Sediment Seep Water*, page 39, and Table 2-6. The first full paragraph on this page indicates that the analytical results from sampling station LDW-SP-20 are summarized with the upland groundwater results on Table 2-6. Table 2-6 does not include these analytical results. Revise Table 2-6 to include all analytical results from seep monitoring.

32. Section 2.5.4, *Sediment Seep Water*, page 39. The last sentence of this section states that the lack of screening level exceedances indicates that groundwater flux was not a source of contamination to sediments and/or pore water. The text of this section, however, does not discuss analytical results for PCBs. This conclusion must be revised to include a discussion of PCB data, or revised to clearly state that the data indicates groundwater flux was not a source of the constituents for which analysis was performed.

33. Section 2.5.5, *Sediment Porewater,* page 39. Revise the draft EE/CA to include a table and figure presenting the data obtained from the porewater sampling.

34. Section 2.5.6.1, *Soil*, page 40. The second paragraph indicates that investigations have only detected PCBs in soil on the western portion of the facility. Examination of Table 2-7 and Figure 5 show that this statement is incorrect. PCBs have been detected at depth in borings SB-2 and SB-4 located on the eastern side of the facility. Revise the EE/CA to fully and correctly identify the location, extent, and possible sources of PCB contamination.

35. Section 2.5.6.1, *Soil*, page 40. The second paragraph of this section states that the fill material placed at the facility between 1945 and 1946 is the suspected source of PCBs, and that the source of fill "may have been" historical hydraulic dredging conducted in the LDW. This statement is unsupported and must be deleted.

36. Section 2.5.6.2, *Catch Basin Solids*, page 40, and Figure 2-5. Add CB-4 to Figure 2.5. Revise the discussion to note that CB-3 is located outside of the historic embayment area. The source of PCBs in CB-3 may be relevant to the source control discussion.

37. Section 2.5.6.3, *Groundwater Quality*, page 41. Delete the statement indicating that the June 2003 detection of PCBs in groundwater is "likely a false detection." This is a very limited data set, groundwater samples for monitoring well MW-6 have not been obtained and analyzed since the sampling event where PCBs were detected, and PCBs are not typically detected where they are not present.

38. Section 2.5.6.4, *Facility Stormwater Outfall Discharges*, page 41, and Table 2-8. Revise Table 2-8 to include all stormwater outfall samples collected, not just those from the May 2005 sampling event. Revise the last sentence of the discussion to clarify whether PCBs have ever been detected in the stormwater outfalls, and discuss the results if PCBs have been detected in monitoring events other than the May 2005 sampling event.

39. Section 2.6.2, *Potential Ongoing Sources to Sediments Adjacent to the RAB*, pages 46 through 49. This section should be significantly shortened. The EE/CA should note the existence of potential ongoing sources to sediments, but the level of detail provided should be based on the sources' impact on the evaluation of potential remedies. In this case, as construction of the sediment remedy is not anticipated to begin before control of the upland sources is achieved, these sections are not relevant to the EE/CA. The EE/CA must be revised to delete the last sentence of the first paragraph on page 48 (beginning "The identified distribution of PCB concentrations within the 12-inch line provides evidence that ...). The source of PCBs found in the 12- and 24-inch property line outfalls has not been proven and is not relevant to this EE/CA.

40. Section 2.6.3, *Criteria for Evaluating Effectiveness of Implemented Source Control*, page 50. Delete this section. Criteria for evaluating effectiveness of source control are not relevant to the EE/CA's evaluation of potential remedies.

41. Section 2.7, *Streamlined Risk Evaluation*, page 51. See Specific Comment 3 to address language in the second sentence on this page stating that the LDW risk assessment and FS process is expected to include promulgation of target cleanup media levels.

42. Section 2.7, *Streamlined Risk Evaluation*, pages 51, 53, and *References*. The citation to USEPA 1997 is incorrect. This is a Department of Energy citation (http://homer.ornl.gov/nuclearsafety/env/guidance/cercla/critic.pdf). There may be a missing reference for ecological risk. More recent and relevant EPA guidance includes USEPA's (2005) Contaminated Sediment Remediation Guidance for Hazardous Waste Sites, which includes guidance about balancing risks that can assist with subsequent decisions regarding technology choices (http://www.epa.gov/superfund.health/conmedia/sediment/guidance.htm).

43. Section 2.7.2.2, *Human Health Risk*, page 58. The second-to-last sentence of the first paragraph on this page contains a typographical error: "As discussed in the baseline HHRA ... arsenic the direct contact RBTC ....." Correct this sentence.

44. Section 3.1, *Removal Action Goals*, page 59. Incorporate new language found in Specific Comment 8 regarding RAOs for the Lower Duwamish Waterway Superfund site which shall also be used for this removal project.

45. Section 3.1, *Removal Action Goals*, page 59. While EPA has not selected a final PCB sediment cleanup level for the LDW Site, the SQS is the RvAL sediment removal/capping criteria consistent with the other LDW EAAs. See General Comment 2 above and revise the draft EE/CA accordingly.

46. Section 3.2.2, *Removal Action Boundary*, page 61. Revise the first paragraph to include a note that arsenic in sample AJF-07 was not bounded with depth, and was 4.5 times higher than the SQS at the deepest sample location.

47. Section 3.2.2, *Removal Action Boundary*, page 61. The fourth bullet in the second paragraph on this page must be deleted, as it implies that the U.S. Army Corps of Engineers (USACE) maintenance of the navigation channel to the west of Jorgensen somehow has bearing on the determination of the RAB. While USACE's dredging activities will influence the depth and design of dredging/capping at Jorgensen, they will not influence the location of the RAB.

48. Section 3.2.2, *Removal Action Boundary*, page 61. The last paragraph includes a discussion of the sediment management units (SMUs) which is not entirely accurate. This paragraph indicates that SMU-1, among others, was identified based on low SQS PCB exceedances in the top several feet. SMU-1, however, includes two samples which exceed two times the Washington State Cleanup Screening Level for PCBs (2xCSL) (see Figures 2-8 and 2-9). These samples also contained SVOCs which exceed the SQS. This discussion must be revised to clearly state the nature and extent of all contaminants (PCBs, metals, and SVOCs) identified in each SMU.

49. Section 3.2.2, *Removal Action Boundary*, page 62. The end of the first line contains this document's first use of the abbreviation "ENR." Also note that later in the document, the abbreviation "MNR" is used. Revise both the text and the definition section of the EE/CA to provide clear definitions of what is meant by enhanced natural recovery and monitored natural recovery.

50. Section 3.2.3.2, *Specific Removal Action Area Elements*, page 64. The last bullet on this page states that "any potential dredging of sediments adjacent to [the sheetpile and concrete panel walls] may impact the structural stability and would therefore require a structural evaluation. The proposed cleanup alternatives do not include dredging adjacent to these structures and therefore will not adversely impact the structural stability." The alternatives evaluation in the revised EE/CA must include dredging in these areas. Any proposal which is predicated on avoiding these fixed structures must be supported by a detailed engineering evaluation of these areas.

51. Section 3.3, *Determination of Removal Action Schedule*, page 66. The third bullet indicates that the in-water construction work window in the LDW extends from October 1 to February 15. The work windows are considerably

more complex than stated in the draft EE/CA. This bullet must be revised in accordance with Specific Comment 22 above.

52. Section 3.3, *Determination of Removal Action Schedule*, page 66. See Specific Comment 5 to address language in the last bullet which indicates that implementation of the selected removal action is dependent on execution of a legal agreement that is acceptable to all parties.

53. Section 3.4, *Applicable or Relevant or Appropriate Requirements*, page 66, and Table 6-1. Replace Table 6-1 with the attached Table of applicable or relevant and appropriate requirements (ARARs) for the LDW Site, and revise this section consistent with this Table negotiated by the Lower Duwamish Waterway Group (LDWG) with EPA and Ecology. Note the last page of the Table contains laws that will be implicated by the NTCRA but are not ARARs. Whether federal and state laws are ARARs or not, they must be complied with. ARAR status gives EPA the authority to decide if laws are met by response activities instead of the regulator agency who normally administers the ARAR. For example, the Endangered Species Act (ESA) is not an ARAR (it is an animal welfare law for listed species). The purpose of Section 7 of ESA is to ensure that action agencies (like EPA) consult with and gain the expertise of species listing agency(s) (the National Marine Fisheries Service and the Fish and Wildlife Service). Another ESA function drawing on species-listing-agency expertise is the production of Biological Opinions (BOs) with respect to response activities. If ESA were an ARAR, EPA would not need to consult and would write its own BOs, which would fundamentally defeat the purpose of ESA (the benefit of species-listing-agency expertise). The National Historic Preservation Act (NHPA) and other laws on this portion of the Table are not ARARs for similar reasons; they are not environmental laws except in a broad sense of the term "environmental." Note also that Clean Water Act Sections 401 and 404(b)(1) were not listed in your table, but Section 6.1.3.2 calls them out as substantive requirements. In addition, Clean Air Act provisions may be ARARs for some of the construction activities.

54. Section 4, *Identification and Evaluation of Removal Action Technologies*, page 68. The sixth bullet indicates that in-situ treatment technologies were evaluated in this draft EE/CA. This section does not include any discussion of this evaluation. Revise the draft EE/CA to include an appropriate discussion, or delete this bullet.

55. Section 4.3.1, *Capping - Description and Applicability*, page 72. ENR is not a type of "conventional sand cap." Revise the first sentence of the second paragraph to read, "There are two types of remediation involving placement of clean sand that are applicable to the removal action, as discussed below:..." Revise the bullet describing ENR to remove language identifying it as a type of cap and include language describing the monitoring required to assure that remedial goals are met. Also revise the fourth sentence in this bullet and delete the fifth sentence, so that the end of the paragraph reads as follows: "Materials added comingle with the surface sediments resulting in reduced concentrations; over time, additional materials may also accumulate."

56. Section 4.3.1, *Capping - Description and Applicability*, page 73. As discussed in General Comment 6, the section on applicability of various remedial approaches to different areas in the RAB needs substantial restructuring and explanation. More than simply indicating that ENR or capping are "applicable" to any given SMU, this section must provide justification and discussion of why that is the case. Dredging or genuine capping separating contamination from potential receptors is preferred over ENR because it removes or isolates contamination and meets the cleanup goals much sooner.

57. Section 4.4, *Removal*, page 75. Delete the third bullet stating "Future dredging by USACE within the navigation channel will result in the removal of sediments in SMU-2, SMU-4, SMU-7, and SMU-10." See also text on pages 98-99. The suggestion that EMJ/Jorgensen might avoid addressing some contaminated areas that might eventually be subject to navigation dredging, or might not design its response action to accommodate minimal speculative disruption from future navigation dredging at some unspecified future time, is unacceptable. While future channel dredging could cause some minor migration of nearby capping or habitat materials as the draft EE/CA describes them, these effects on potential ENR areas would likely be minor and could be managed by the placement of additional material up-slope. If this is subject to doubt, more robust removal action in these projected ENR areas would be more appropriate. Revise the EE/CA to remove statements inconsistent with this comment.

58. Section 4.4, *Removal*, page 75. Potential remedies that leave contamination in place above SQS must account for and incorporate a buffer, beginning at a point 10 ft east of the Federal channel and extending to depth described below. This horizontal buffer is intended to permit USACE to dredge the channel in light of a) maximum imprecision of bucket placement, and b) because "box cutting" aka "advance dredging" occurs at the channel boundary according to contract conditions. The box cutting allows materials from upslope to slough into the channel boundary, and could be a stability issue for upslope remedies, which must be suitably designed to prevent remedy failure. USACE dredges the federal navigation channel to -17 feet MLLW (-15 feet authorized depth plus 2 feet of allowable overdredge depth), and recent Corps' Lower Duwamish post-dredge hydrosurveys show areas where the post-dredge elevations were up to 3.5 feet below the authorized depth. Even greater excess dredging has been noted in other dredging projects. The EE/CA should allow for a minimum 3 to 5 foot clearance below the authorized depth. Should materials be proposed for capping and/or ENR in the federal channel, a 3 to 5 foot buffer must be provided above the hardening or isolation layer. Specific clearances should be determined in the design phase.

59. Section 4.4.1, *Land-Based Excavation*, page 76. Revise the last paragraph, which discusses in-water work windows, in accordance with Specific Comment 22 above.

60. Sections 4.4.2.1, *Mechanical Dredging*, and 4.4.2.2, *Hydraulic Dredging*, pages 77 – 79. An important part of the engineering evaluation is to determine which technologies cause less impact during remediation. A discussion of dredging impacts must be included in the EE/CA. The benefits and challenges of mechanical and hydraulic dredging must be incorporated into the alternatives evaluation. The size and economics of this project are also affected by integration with the Boeing Plant 2 project. These factors must be discussed with respect to inclusion or exclusion of hydraulic dredging. It appears that the debris mentioned in this section as an objection to dredging is largely associated with the SMUs that would be excavated in the dry from the bank. Revise the EE/CA to clarify these points.

61. Section 4.6.2, *Evaluation*, page 84. The first line of the second full paragraph contains a typographical error. Revise "... for further consideration as a treatment alternative ..." to read as follows: "... for further consideration as a removal alternative ...."

62. Section 4.7, *Disposal*, page 84. The first line of this section contains a typographical error. Revise "... material could potentially be exposed at permitted off-site facilities ..." to read as follows: "... material could potentially be disposed at permitted off-site facilities ...."

63. Section 4.7.1.1, *Off-Site Disposal Description and Applicability*, page 87. The first subsection on this page contains a confusing regulatory citation. This subsection is titled "TSCA Subtitle C Landfills (Hazardous Waste)," and then discusses the possibility of disposal of removed sediments in a hazardous waste landfill permitted under TSCA to receive PCB materials. Revise the EE/CA to state that, depending on analysis of removed sediments, disposal in a RCRA Subtitle C landfill (for hazardous wastes) and/or TSCA landfill (for PCBs) may be required.

64. Section 5, *Identification and Evaluation of Removal Action Alternatives*, page 91. This section requires extensive revision to identify and evaluate removal action alternatives as discussed in General Comment 6, above.

65. Section 5, *Identification and Evaluation of Removal Action Alternatives*, pages 91 – 92. This section briefly discusses the rationale for excluding "Complete Removal" as a removal option. The text in this section states that this alternative was not carried through the evaluation as "extensive" sampling, contingency measures, and backfilling would be required at substantial additional cost. Exclusion of the "Complete Removal" option is not sufficiently justified. Revise the EE/CA to include an evaluation of Complete Removal of all and/or sections of the RAB.

66. Section 5.1.1.1, *Bank Excavation and Slope Capping*, page 94. The soil borings data summary in the first paragraph has a typographical error for the units associated with data from SB-3; correct the units from micrograms per

kilogram to milligrams per kilogram. In addition, this section must explain why a deeper excavation depth (greater than 4 feet) is not being considered near SB-4 and SB-7 given the elevated concentrations of PCBs (11 mg/kg dry and 1.6 mg/kg dry) observed in the 4 to 6 foot interval at these locations.

67. Section 5.1.1.1, *Bank Excavation and Slope Capping*, page 94. Although it appears this section is intended to discuss excavation of the riverbank above the 0 to +2 ft MLLW elevation, the description of the slope cap discusses a habitat layer which "will provide the appropriate substrate for benthic and salmonid habitat." Benthic and salmonid habitat does not exist above MLLW. Revise the EE/CA to clearly discuss what is being proposed, and what species are intended to benefit from the habitat layer.

68. Section 5.1.1.3.1, *Sediment Dredging – Description*, page 98. Statements made in the first paragraph about sediment removal and its effects need further substantiation. For example, the portion of SMU-4 that will be dredged is not indicated in Figure 5-1. Likewise, the extent of remediation of co-occurring contaminants that will be effectuated by the proposed removal of PCBs is not apparent from the figures given that the highest surface concentrations appear to be located within SMUs 4 and 1, neither of which are slated for dredging under Alternative 1. Similar issues need to be addressed in the discussion of Alternative 2 in Section 5.2.1.2.1 (page 104).

69. Section 5.1.1.3.2, *Construction Methods*, page 101. Delete the last sentence of the first paragraph, which states that the disposal site would be "evaluated and approved" by EPA before it is selected to receive materials originating from the RAB. Add new sentences as follows: "Pursuant to the Order, the Respondent shall, prior to any off-site shipment of hazardous substances from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving State and to EPA's designated Project Coordinator of such shipment of hazardous substances. The notification of shipments shall not apply to any off-site shipments when the total volume of such shipments will not exceed 10 cubic yards."

70. Section 5.1.1.3.3, *Conservation Measures*, page 101. The EE/CA must be revised to include evaluation of the following additional conservation measures: use of "environmental bucket" technology if appropriate to the sediment conditions; placement of a "buffer" barge between the dredging site and the material conveying barge to capture any material fall-back during bucket swings; turbidity curtains if conditions indicate the need for them due to resuspension during dredging; and/or temporary sheet-pile enclosures/coffer dams at the point of dredging.

71. Section 5.1.1.4.1, *Habitat Layer Placement (ENR) Description*, page 102. This section indicates that placement of a habitat layer is proposed in areas showing only "slight exceedances" of the SQS criteria. SMU-1, however, includes at least two samples which exceed 2xCSL, and one sample with 2xCSL exceedances which is unbounded for depth. The SQS/RvAL for PCBs is a *minimum* threshold removal criterion. Ultimately this removal action must succeed in reducing contaminant concentrations in the upper 45 cm of

sediments to levels protective of aquatic species and consumers of fish and shellfish. Revise the EE/CA to provide better justification of this proposal, or revise or eliminate it.

72. Section 5.2.1.2.1, *Sediment Dredging Description*, page 104. It is difficult to determine from Figures 5-1, 2-8 and 2-9 which sediment data fall within which SMUs. It appears that the statement that a 6-ft dredge cut in SMU-4 will remove all contamination may be accurate with two exceptions; it does not consider cores SD-DUW-311 and -320, which still have exceedances at 4 feet, and there is no deeper data to confirm that SQS in these locations will be achieved at 6 feet. Note that SD-DUW-311 may be located in SMU-6, in which case the same concern holds with a 5-foot dredge cut. Revise the EE/CA to clearly indicate where these sample locations are located relative to the proposed alternatives and to demonstrate that the alternatives meet the RvALs.

73. Section 5.3, *Management of Residual Contamination*, page 106. The second full paragraph on this page states that capping without dredging involves minimal disturbance to bottom sediments and therefore minimal residual generation. Revise this paragraph to state that residual generation is dependent upon the capping procedure and the consistency of the material in place.

74. Section 5.4, *Institutional Controls*, page 106. Revise the EE/CA to clearly state that institutional controls for the upland will be implemented by, or at least that implementation will be arranged by (e.g., rights purchased or bargained for) the owner/operator(s). The EE/CA must also be revised to clearly specify who owns and/or controls any area of the Waterway for which you are considering institutional controls, including the Port of Seattle and state or federal agencies. Notifications should additionally include USACE's Regulatory and Navigation Branches. Provide an explicit, detailed list of institutional controls that would be used so EPA can evaluate their potential effectiveness for this NTCRA. State how the institutional controls would be imposed, maintained or enforced, including who would maintain or enforce them and under what authority or by what means.

    Delete the last paragraph of this section, as implementation of institutional controls could result in significant conflicts with tribal treaty rights which may or may not be consensually avoided. This EAA is within the Muckleshoot Tribes usual and accustomed fishing areas (U&A) and must accommodate tribal use of their treaty-protected resources. If proposed institutional controls are not implementable, or effective, EPA will not consider them as part of a selected removal action.

75. Section 5.5, *Evaluation of Effectiveness*, pages 108, 109. Revise the EE/CA to state that the removal design will provide supporting documentation to demonstrate that any engineered sediment cap shall be sufficient for resisting prop-wash scour and anticipated discharge of the Lower Duwamish/Green Rivers within the 100-year return period.

76. Section 5.5.1.1, *Alternative 1, Effectiveness*, page 108. Delete the last portion of the third sentence of the first full paragraph, beginning: "... approved by USEPA." The revised sentence shall state: "The removed materials will be disposed in a permitted upland landfill."

77. Section 5.5.1.3, *Evaluation of Effectiveness, Cost*, page 109 and Section 5.5.2.3, *Cost*, page 111. Cost analyses shall be based on 30 years duration, rather than 10 years, and net present value. Because of the potential for leaving hazardous substances in place, cost analyses must also include CERCLA five-year reviews which will be required into the foreseeable future. Revise the EE/CA accordingly.

78. Section 6, *Comparative Analysis of Removal Action Alternatives*, pages 112 through 120. An analysis of green remediation factors should be added for each alternative in this section.

79. Section 6.1.3.2, page 114. Delete the last sentence on this page. Natural sediment deposition in the RAB will not trigger further response action dredging and the RAB is not used as a berth.

Table of ARARs for the Lower Duwamish Waterway

Topic	Standard or Requirement	Regulatory Citation		Comment
		Federal	State	
Sediment Quality	Sediment quality standards; cleanup screening levels		Sediment Management Standards(WAC 173-204)	The SMS is a statutory requirement under MTCA and an ARAR under CERCLA. Numerical standards for the protection of benthic marine invertebrates.
Fish Tissue Quality	Concentrations of chemicals in fish tissues	Food and Drug Administration Maximum Concentrations of Contaminants in Fish Tissue (49 CFR 10372-10442)		The Washington State Department of Health assesses the need for fish consumption advisories.
Surface Water Quality	Surface Water Quality Standards	Ambient Water Quality Criteria established under Section 304(a) of the Clean Water Act (33 USC 1251 et seq) http://www.epa.gov/ost/criteria/wqctable/	Surface Water Quality Standards (RCW 90-48; WAC 173-201A)	State surface water quality standards apply where the State has adopted, and EPA has approved, Water Quality Standards Federal recommended Water Quality Criteria established under Section 304(a) of the Clean Water Act that are more stringent than State criteria and that are relevant and appropriate also apply. Both chronic and acute standards, and marine and freshwater are used as appropriate.
Land Disposal of Waste	Disposal of materials containing PCBs	Toxic Substances Control Act (15 USC 2605; 40 CFR Part 761)		
	Hazardous waste	Resource Conservation and Recovery Act Land Disposal Restrictions (42 USC 7401-7642; 40 CFR 268)	Dangerous Waste Regulations Land Disposal Restrictions (RCW 70.105; WAC 173-303, -140, -141)	
Waste Treatment Storage and Disposal		Resource Conservation and Recovery Act (42 USC 7401-7642;40 CFR 264 and 265)	Dangerous Waste Regulations (RCW 70.105; WAC 173-303)	

Table of ARARs for the Lower Duwamish Waterway

Topic	Standard or Requirement	Regulatory Citation		Comment
		Federal	State	
Noise	Maximum noise levels		Noise Control Act of 1974 (RCW 80.107; WAC 173-60)	
Groundwater		Safe Drinking Water Act MCLs and non-zero MCLGs (40 CFR 141)	RCW 43.20A.165 and WAC 173-290-310	For on-site potable water, if any.
Dredge/Fill and Other In-water Construction Work	Discharge of dredged/fill material into navigable waters or wetlands	Clean Water Act (33 USC 401 et seq; 33 USC 141; 33 USC 1251-1316; 40 CFR 230, 231, 404; 33 CFR 320-330)Rivers and Harbors Act (33 USC 401 et seq	Hydraulic Code Rules (RCW 75.20; WAC 220-110)	For in-water dredging, filling or other construction.
	Open-water disposal of dredged sediments	Marine Protection, Research and Sanctuaries Act (33 USC 1401-1445) 40 CFR 227	DMMP (RCW 79.90; WAC 332-30-166)	
Solid Waste Disposal	Requirements for solid waste handling management and disposal	Solid Waste Disposal Act (42 USC 215103259-6901-6991; 40 CFR 257, -258)	Solid Waste Handling Standards (RCW 70.95; WAC 173-350)	
Discharge to Surface Water	Point source standards for new discharges to surface water	National Pollutant Discharge Elimination System (40 CFR 122, 125)	Discharge Permit Program (RCW 90.48; WAC 173-216, -222)	
Shoreline	Construction and development		Shoreline Management Act (RCW 90.58; WAC 173-16); King County and City of Seattle Shoreline Master Plans (KCC Title 25; SMC 23.60)	For construction within 200 feet of the shoreline.
Floodplain Protection	Avoid adverse impacts, minimize potential harm,	Executive Order 11988, Protection of flood plains (40 CFR 6, Appendix A) ; FEMA National Flood Insurance Program Regulations (44 CFR 60.3Ld)(3)).		For in-water construction activities, including any dredge or fill operations. Includes local ordinances: KCC Title 9 and SMC 25.09.

Table of ARARs for the Lower Duwamish Waterway

Topic	Standard or Requirement	Regulatory Citation		Comment
		Federal	State	
Critical (or Sensitive) Area ARAR			Growth Management Act (RCW 37.70a); King County Critical Area Ordinance (KCC Title 21A.24); City of Seattle (SMC 25.09)	
Habitat for Fish, Plants, or Birds ARAR	Evaluate and mitigate habitat impacts	Clean Water Act (Section 404 (b)(1)); U.S. Fish and Wildlife Mitigation Policy (44 FR 7644); U.S. Fish and Wildlife Coordination Act (16 USC 661 et seq); Migratory Bird Treaty Act (16 USC 703-712)		
Pretreatment Standards	National Pretreatment Standards		40 CFR Part 403; Metro District Wastewater Discharge Ordinance (KCC) To be considered (as is local requirement)	
Environmental Impact Review	SEPA		State Environmental Policy Act RCW 43.21C; WAC 197-11-790)	Applicable to MTCA cleanups.

Region 10 Routing and Concurrence

Author:	Christy Brown	Date:	4-28-10
Addressee:	Peter Jewitt, Farallon Consulting; Gil Leon, Earle M. Jorgensen Company		
Subject:	Comments on Draft EE/CA		
File Location/Name:	Superfund Records Center; LDWG 4.1/Jorgensen Forge		

PROGRAM ADMIN REVIEW:

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Initials/Date:		CAB 4/28/10	CO 4/28/10			

PROGRAM OFFICE CONCURRENCE:

Name:	ARRIGONI	BLOCKER	CASTRILLI	FISHER	HEDEEN	PALUMBO	MEYER
Initials/Date:	4/28/10	4/28/10			4/28/10		

RA OFFICE CONCURRENCE/SIGNATURE:

Name:						
Initials/Date:						

cc(s) (include name, title, organization, mailing address, and email if PDF is required—attach a list if necessary)

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bcc(s) (include name, title, organization, mailing address, and email if PDF is required—attach a list if necessary)

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