Table 1 – 60% Design Analysis Report (DAR) Comments

Comment No.	Page No.	Section No.	Directed Comment (Yes/No)	Comment
1.		General		Provide cross-reference table in 100% design indicating location of comment response. Specific response to comments on directed comments.
2.		General		The following comments from the 30% Submittal appear not to have been addressed: 9, 16, 24, 27c, 29, 31, 32b, 33, 35c, 35d, 35e, 35g, 36, 37, 38, 46, 49a, 50b, 55, 56, 58a, 60b, 63, 70, 71, 72, 75, 81a.
3.		General		Any comments specifically referenced to either the design analysis document or a particular appendix also pertains to any other place in the design document or any appendices where that issue is discussed. To fully address a comment on any issue, the Port needs to conform the design analysis and, if applicable, any relevant appendix addressing the same topic.
4.		General		Has the Port acquired ownership of DSL lands needed to implement the action? If not, what outstanding process steps must the Port undertake and when does it project the acquisition will occur?
5.		General		Confined disposal facility design – the Port often refers to other CDFs, particularly those in Puget Sound, to provide support for decisions relating to the design of the CDF at T4. For example, Table 5 on page 47 (Section 5 Confined Disposal Facility Design) summarizes a number of characteristics of various CDFs, which is useful. However, no information is presented that indicates the performance of these CDFs. Please include such information or delete references to these projects as the basis for design decisions.
6.		General		Please make a global change to references in all documents regarding Port partnership with EPA to include all Government partners, including the Tribes, Oregon DEQ and NOAA. Please define abbreviations and acronyms as they appear in the text, and particularly please define them in each table. The Port has embarked on additional sampling along the sheet pile wall at Berths 410 and 411 because of a concern that removal of sediment near the wall may jeopardize its structural integrity. There is no indication that the Port has investigated and evaluated alternative methods of removal if contamination is deep, close to the wall. Given that the Port was aware that sediment removal was likely when the wall was installed, the Port should have taken precautions at that time. Additional comments below provide some suggested alternative means of removing this sediment.
7.			Yes	Long term cap performance standards shall be added to the performance standards section. Unless otherwise approved, language shall read, “Caps will meet ROD designated clean cap levels or SQGs, whichever is higher, which will be monitored over time.”
8.	1	1.1		The “Prefinal 60% Design Documents” are listed among deliverables that are yet to be provided. Please indicate that this is the document the reader is currently reading.
9.	8	2.2.2	Yes	Add the following: Dredge and dispose of sediments in a manner than minimizes dredging residuals and prevents recontamination of adjacent sediments.
10.	8	2.2.2		Item 2. Introduction: Clarify that these performance standards also apply to the upland banks that are to be pulled back.

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11.	8	2.2.2		First Bullet: Revise goal for sediment cap to not recontaminate versus TEC values rather than PEC values.
12.	8	2.2.2		Third Bullet: Provide specific chemical contaminant acceptance concentrations rather than just specifying the cap material be “clean”. Add the following: Place cap materials in a manner that minimizes mixing of cap material with underlying contaminated sediments.
13.	8	2.2.2		Item 3. Add the following: Design CDF berm face to resist erosion from 100-year flood event flow velocities, 100-year waves, vessel-induced waves from typical passing vessels, and anticipated propeller wash from vessels that operate in the area.
14.	8	2.2.2	Yes	Establish performance standards for stormwater flow reroute, at a minimum in terms of flow volume and line tightness to prevent inflow/outfall with respect to draining or recharging CDF groundwater. Suggest establishing stormwater contaminant goals to prevent recontamination or at least providing reference to the Recontamination Report and on-going source control process.
15.	8	Editorial comments		Fourth bullet, third sentence: “Total Effects Concentrations” should be “Threshold Effects Concentrations.”
16.	8	2.2.2		Please insure that any other reference and/or discussion in the design analysis or any appendices related to this performance standard for the CDF and the long-term monitoring is consistent with this comment.
17.	8	2.2.2		Please reference the Sediment Acceptance Criteria is part of the T4 design and demonstrate that T4 sediments meet these criteria.
18.	8	2.2.2		Please change action bullet to read “additional dredging to achieve targeted sediment chemistry levels” – “additional dredge pass” seems to indicate that if PEC levels persist, there will be 1 additional pass and then the action will be complete. Clarify how “other potential” actions will be triggered. Please be clear that the additional actions will be only triggered once sediment chemistry below PEC levels is achieved by dredging or if additional dredging is not technically feasible.
19.		2.2.2 and 4.1.1	Yes	For dredging performance criteria, anything above TEC levels will be, at a minimum, designated MNR. That is consistent with what we discussed with the Port. For capping, establish chemical specific acceptance criteria for cap materials that are below TEC levels. For chemical without TEC values, establish criteria based on reasonable alternate criteria. The design currently says cap materials only need to be below PECs. It would be inconsistent with the dredging standard to allow cap material to have levels above TEC levels.
20.	8	2.2.2		Please define TEC at first use; in addition, please define “high risk” and “low risk” sediment.
21.	8	2.2.2		Capping Performance Standards- The capping performance standards for the chemical isolation layer of the caps should also be protective of the drinking water pathway (MCL & tap water PRGs) & the bioaccumulation pathway (fish consumption AWQC).
22.	8	2.2.2		Capping - Please include a statement that indicates that all sediment caps will fully conform to USACE capping guidance.

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23.	8	2.2.2		CDF – Please clarify, are the static safety factor (1.5) and seismic safety factor (1.1) related to any specific standards or are they project specific, and have they been approved by EPA and the government partners?
24.		2.2.2 and 5.1.1	Yes	CDF, third bullet. This bullet does not accurately reflect the ARARs selected for the T4 action. See the Action Memorandum. The Port should insert the following statement: Design the CDF to achieve confinement of all hazardous substances disposed of in the facility through the groundwater pathway so that the CDF does not contribute any discharge and/or release of contaminants above applicable and relevant and appropriate requirements under federal or state law for surface water in the lower Willamette River. To meet this design criteria, the CDF shall be designed such that the quality of groundwater exiting the CDF will meet USEPA's national recommended chronic water quality criteria for both aquatic organisms and fish consumption by humans (17.5 g/day), Oregon water quality criteria, Region 9 PRGs, and relevant, promulgated drinking water criteria (otherwise known as Maximum Contaminant Levels). The LTMRP shall include monitoring for this design standard. If the existing design cannot meet performance standards in pore water of the exterior of the berm, the Port shall evaluate design changes that would meet the performance standards for the CDF at the compliance point. The Port shall report conceptual design and cost information of at least two approaches that would meet the performance standards that have been approved by EPA for complete analysis. Design changes could include reactive barrier technologies. Examples of barrier technologies could include an organoclay mat on the inside of the berm, an appetite layer, or some combination of these or other treatment material.
25.	10	2.2.3		Please make the bullets more specific as to how SQOs were used to determine the actionable areas.
26.	10	2.2.3		Please use a consistent format – all tables should either be included as part of the document text or separately at the end.
27.	11	2.2.4		Please clarify if the same cap design will be utilized at each site, or if the caps are designed for each area specifically. Are the design criteria for each cap the same?
28.	11-12			The first sentence refers to Berths 410 and 411 and references Figure 2. This Figure does not include identification tags for these berths, which would be helpful.
29.	2.2.4.2			North of Berth 414 – Did the June 2006 sampling effort define the extent of the elevated PAH concentrations? The area doesn't seem to be bounded based on the maps included here.
30.	2.2.4.4 2.2.4.5			Berth 401 – PCBs are mentioned here as the reason for requiring a cap in this area. However, a look at Table 4 shows that PCBs are below a PEC value that is used here for a trigger (Berth 401 at 250 ug/kg & PEC at 676 ug/kg). If a bioaccumulation trigger was used to determine the cap area then it should be clearly stated in the text & tables. In addition to PCBs, this area had significantly elevated phthalate concentrations. The objectives for capping should include phthalates as COCs. A review of the data should ensure that the capping effort adequately covers the nature & extent of phthalates in the area.
31.	23	3.6.1, Table 4		The use of "enrichment ratios" seems misleading and I suggest that something like "multiples of criteria" or "exceedances ratios" are a more realistic title for tables and description in text. Please revise the wording.

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32.	23	3.6.1		Reword the second to last paragraph to either list COCs in report or just reference table.
33.	23	3.6.1.		Existing Sediment Chemistry Data- Why were COCs only based on exceedances of PEC & values? There are some COCs that do not have PEC values, but should be included. Most notably for T-4, phthalates should be included. They are the highest mostly in the tip of Slip 1 & Berth 401, although concentrations are elevated throughout the T-4 site. Although PEC values do not exist for all COCs, Washington state has developed AETs & CSLs sediment management standards for many COCs. Samples at T-4 exceed these values, & given the high fish tissue concentrations in this area, phthalates should be considered COCs for the site. If these are not considered as COCs, they will not be factored into cap design & monitoring plans (e.g. cap designs at Berth 401).
34.	24	3.7		This section seems to be out of place. Please provide the results of the Hypack study in an appendix and indicate how the analysis was utilized in the cap design.
35.	24	3.7 General		Please specify that the contractor shall produce a spill response plan that must be reviewed and approved by ODEQ and EPA.
36.	26	3.8.3		Please elaborate on the current state of the BEBRA action and why additional organoclay may be necessary to provide additional source control. Is there a continuing diesel seep at Slip 3 below the BEBRA action site?
37.	26	3.8.3		Please provide additional detail on stormwater improvements, including an explanation of the past and future stormwater analyses.
38.	26	3.8.3		Will potential upstream sources, if found to be of concern, be addressed as part of the removal action? Please explain where this analysis will be reported to the public – perhaps in a recontamination report? When will this be issued? Please provide a summary section for source control activities and schedule.
39.	4			Residual Sediment Concentrations- During review of the EE/CA, DEQ commented on an attachment to Appendix M regarding the calculation of residual sediment concentrations for post-removal surfaces. The agreed on resolution was for revised modeling efforts to be included in the remediation design phase, & incorporation of post-remediation sampling to confirm the effectiveness of the early action. Post-remediation sampling is included in the 60% design document, & this will provide the definitive determination that sufficient excavation of sediment has occurred. However, for planning purposes, it would be useful to see the modeling conducted to decide on the areas & depths of excavation. We did not see documentation of the modeling in the report. If modeling was used to support the plan for over-excavation (which will likely address residual concentrations as a result of sediment suspension & settling), this should be explained.
40.	29	4.1.1		It is not appropriate to assume that PEC criteria are relevant for human health. Reference to protection of human health in this section and throughout the document (when discussing PECs) should be deleted.
41.	29	4.1.1		Please indicate the extra volume of material that would need to be removed to meet TEC or other standards.

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42.	29	4.1.1	Yes	See comments from Section 2.2.2 about dredging performance standards. Please be more explicit on how the decision-making tree will be utilized; i.e. it should be explicit that additional removal will be utilized for areas of with contamination exceeding PEC levels, and that additional verification sampling will be completed after each subsequent round of dredging until the surface is shown to be below PEC levels.
43.	29	4.1.1 and 4.1.2		Much of these Sections are redundant with discussion in Section 2. Make sure that any changes required due to these comments get reflected in all places that the issue is discussed.
44.	30	4.1.2		Please add the bracketed sentence after the sentence copied below: The removal of material in Slip 3 and Berth 414 must meet, to the extent practicable, the water quality criteria defined in the Water Quality Monitoring Plan and the USEPA-issued Water Quality Monitoring and Compliance Conditions Plan (WQMCCP). [The final USEPA-issued WQMCCP will take precedence if an inconsistency is found between the Water Quality Monitoring Plan and the final USEPA-issued WQMCCP in the future.]
45.	30	4.1.2		"The sediment quality objectives will ultimately comply with the ROD…" – This sentence is poorly worded. Please re-write to indicate that future site remedial measures will be used to comply with the ultimate ROD sediment quality objectives.
46.	32	4.2.1 and 4.2.3.1.2		Cores will be taken during the December sampling event to determine contaminant concentrations in the sediments near the sheet pile wall. In addition, an engineering analysis should be included in the determination of how close to the wall and how deep into the sediments the dredging can or should occur. Please provide this engineering analysis prior to the 100% design for the government team review. Please provide sheet pile wall study that analyzes potential deflection due to dredging. There is no discussion of how close dredging can occur to the wall, and no data to support claims of deflection due to sediment removal. Temporary [in-water or land-based] structural supports for the wall during dredging, or other alternative means of dredging around the sheet pile wall, such as staging dredging and backfilling to maintain structural support.
47.	32	4.2.1.1		The second sentence states "The US EPA Action Memorandum (USEPA 2006a) defines the sediment selected for dredging at Slip 3 as "that sediment with prevalent PEC exceedances." For purposes of clarification, it would be helpful to include here a very brief discussion of the criteria used to delineate those sediment extents with prevalent PEC exceedances, vs. those without prevalent PEC exceedances.
48.	32	4.2.1.1		The fourth sentence refers to Figure 5, which shows the bulk sediment concentrations for cores located within the Slip 3 dredge prism. It follows that "A statistical interpolation model has been used to create an elevation contour surface of the DOC." Unless I am mistaken, surface-only samples (e.g., HC and SD stations) were excluded from the model. I am not entirely clear on why this would be the case. A brief explanatory sentence would be helpful.
49.	33	4.2.1.2		Please describe how the historical maintenance dredging affected the determination of the dredge prism.
50.	33	4.2.1.2		Is there any analytical data from historical dredging efforts that may indicate the extent of TSS or turbidity during these dredging events?

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51.	34	4.2.2		Please remove statement about TEC values in native materials if there is no concrete data to support this assertion.
52.	35, 41	4.2.3 and 4.2.8	Yes	The proposed dredging design is inadequate because it does not actually provide a dredging design other than stating the neat line dredge prism. Please articulate the dredging approach articulating dredge cut depths, dredging approach by location (highest concentration areas first, etc.), multiple passes, etc., EPA previously made this comment on the 30% DAR, and it appears not to be addressed in the 60% design submittal.
53.	39	4.2.5		Please provide units on dredging volumes (assumed CY).
54.	41	4.2.8		This section should make it more clear that post-dredge sampling is required and that PEC exceedances are required to be removed.
55.	41	4.2.8		Please remove statement that residuals are not a concern for Berth 414 dredging. Please clarify the performance standards for dredging and capping at Berth 414. Is dredging to achieve PEC levels? If so, what is the purpose of the cap – is it designed to be protective if PEC level sediments remain underneath? What concentrations are assumed to remain? What is the groundwater flow in this area? Will post-dredge confirmation sampling be completed? Will the cap be monitoring during placement?
56.	41	4.2.8	Yes	Please clarify the logistics of post-dredge sampling with respect to when samples will be performed (after dredging each area, or the entire Slip 3, or other), turnaround times.
57.	42	4.2.9	Yes	If PEC exceedances in post-dredge sampling are indicated, additional dredging shall occur unless otherwise approved by EPA. Factors that may be considered in approving capping instead of additional dredging may include adjacent structural issues and depth of contamination.
58.	42	4.2.9	Yes	The section on off-site tracking of sediments needs further clarification. Please provide information on which sediments will be hauled offsite, and how this will happen (truck staging, hydraulic transport?). This can be part of the CQAP but should be referenced here. Off-site tracking data shall be made available to EPA within two weeks after removal actions are complete to ensure timely remediation of any noted statistically significant differences between the pre- and post-project samples.
59.	42	4.2.9	Yes	The goal to minimize short term water quality impacts should be rewritten to reference the full set of water quality monitoring parameters, specifically chemical parameters.
60.	42	4.2.9		If a cap is proposed for areas that remain over (PEC? TEC?) criteria after several dredging passes, it should be a designed cap. Please provide a design specification for the residual cap so it is protective and can be applied to any such area in the dredge prism.

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61.	4.2.9			Dredge Elevations- Evaluations to determine the completeness of dredging compared to design elevations are critical to the success of this Early Action in that disturbed & undisturbed residuals can result in unacceptable risk. The document discusses general approaches and objectives, but details are left to future documents and are dependent on contractor input. The document should specify that evaluations are conducted both during and after dredging and that surveys and sampling will provide sufficient detail (e.g., multi-beam) to evaluate dredge elevations & residuals. It is not clear if confirmation samples will be discrete or composites.
62.	5			Return Water- DEQ continues to be concerned that both particulate & dissolved contaminants will be discharged directly to the Willamette by implementing the proposed CDF design which relies on dilution in a mixing zone to meet water quality standards. DEQ continues to recommend that the elutriate from the barge and CDF be tested during construction and contingency measures be established for effluent treatment in an upland area adjacent to the CDF for further settling, evaporation, infiltration, or other treatment. These options should be considered in lieu of potential direct discharge of return water to the Willamette.
63.	47	5		The CDF offloading station and diffuser barge should be designed for the lifetime of the CDF to be used during all filling operations for this project and in the future.
64.	47	5		The offloading system should contain shutdown and isolation valves in order to isolate any portion of the pipeline to prevent leaks and be able to address pipeline clogging. Even if the system is contractor designed, the Port design documents should indicate the minimum standards for the system.
65.	47	5		Please clarify the water within the CDF during filling will be monitored for chemistry prior to and periodically during any releases over the weir. Indicate potential contingency actions that will be available in the event chemistry results exceed levels suitable for direct discharge to the river.
66.	48	5.1.1		Change throughout the document the monitoring reference to “outside of construction zone” to the terminology used in the EPA WQMCCP; i.e., compliance point.
67.	48	5.1.1	Yes	Language in this section makes it unclear what the performance standards for CDF performance are – the language only refers to “CDF design performance standards are...” Language shall be changed to reflect that the performance standards are for design and facility monitoring purposes as well. Include the following, “The CDF will be designed and will be required to meet performance standards outlined here throughout its life, except as updated/replaced through the Harbor wide ROD process.”
68.	48	5.1.1		Third bullet. Change consistent with Comment on Section 2.2.2. CDF, third bullet.

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69.	48	5.1.1 and 5.1.2	Yes	Section 2.2.2, 5.1.1, and 5.1.2 identify ambient background conditions as ARARs. Please separate discussion of background from ARARs. Background values are not promulgated standards. In discussing background concentrations, please clarify how background concentrations will be evaluated and considering in the water quality monitoring, both for T4 COCs and other regulated contaminants. EPA understands that WQC apply but higher concentrations could be allowed in accordance with results of an approved background sampling event. If a WQC exceedance occurs during monitoring, background concentrations will be considering in evaluating the response the exceedance. The Port shall submit a sampling program to document background conditions. The program SAP must be approved by EPA and incorporated in the WQMCCP.
70.	50	5.1.3		Additional considerations should include the number and type of institutional controls required.
71.	51	5.2		Given that groundwater releasing to the river is predicted to not meet WQS within the berm, please estimate how much additional clean fill or organic material would be required to be placed on the inside of the CDF berm to provide additional attenuation of contaminants so that groundwater discharging from the CDF would meet WQS.
72.	60	5.2.5.1		Please re-write the last paragraph for clarify. The paragraph appears to be saying that contaminated sediment placed in the CDF will consolidate, allowing additional contaminated sediment to be placed. The last paragraph states “As can be seen on Figure 15, if 670,000 cy of in situ contaminated sediment were placed within the CDF, the top of this layer would be between 0 to – 9 feet (should this say elevation 0 to +9 ft?) NGVD after the import fill and cover layers were placed. This indicates that an additional 9 to 18 feet of contaminated sediment could be placed within the CDF and still be below elevation 9.5 feet NGVD.” The figure is somewhat confusing in that it provides no specific information on relative volumes of sediment. Is it possible to incorporate this information? Additionally, please be specific regarding the monitoring and decision making process for placing the additional contaminated sediment. The text appears to imply that the CDF will be filled to elevation 9.5 ft, then an additional 9 to 18 feet of sediment will be placed in anticipation that it will consolidate down to elevation 9.5 feet at some future time. Please be specific regarding how much the Port is proposing to “overfill” the CDF in anticipation that future consolidation due to placement of the clean cover layers will compress contaminated sediment to achieve the elevation 9.5 ft performance standard. Please describe the timing for these events how indicate if substantial drying of sediments will occur in the interim period such that the contaminated sediments will not longer be kept saturated, and what effects this will have on contaminant migration from sediments.
73.	60	5.2.5.3		The issue of settlement should be discussed also as a potential to release additional dissolved material from the sediment, by the increase in pressure, into the other formations. Note that this may force much of the contaminant mass out of the low permeability sediments, where it is presently being modeled with a long travel path, along the axis of the assumed flow path through fine sediments. It is unclear how this would impact the results of the modeling and flow through the long axis of the contaminated fill formation, rather than out of fill and into the other formations within the CDF (Appendix I), which are more transmissive to water.

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74.	65	5.2.6		4th paragraph: Figure 16, referenced in this paragraph, depicts a depression in the cap. As stated in the final sentence of the paragraph, the "current surface of the CDF is being designed to be pervious and minimize stormwater discharge to the Willamette River." NOAA recognizes and appreciates the importance of minimizing stormwater discharges to the river. However, the design as currently presented will undoubtedly result in rainwater moving down and through the cap, with some portion of that volume ultimately discharging through the face of the berm. This has implications for the transport of contaminants through the face of the berm. What has been done to determine the impact of pooled rainwater moving through the CDF and out the berm relative to stormwater discharge options? Given that it is likely that CDF site will be paved at some point in the future, please confirm that the contaminated sediment saturation elevation in the modeling was completed with no recharge, and that the contaminant migration modeling considered recharge. The Port might benefit from planning to pave the CDF site and maintaining institutional controls for a site cap, because then groundwater modeling for contaminant migration could assume no recharge.
75.	65	5.3		Fish Removal: This section describes efforts that will be undertaken to remove fish from within the bermed area once construction has isolated the slip from the river. What, if anything, will be done to encourage fish to leave the slip prior to initiation of construction? Please consider and discuss practicable alternatives or provide a brief explanation if no feasible options exist for chasing fish out of the slip prior to construction. The effort seems to focus on the removal of salmonid species from Slip 1, and would likely leave many other species in the CDF.
76.	68	5.4.1	Yes	Please be more specific in the estimate of water to be discharged over the weir during CDF filling. Why will the CDF water level be near 0 ft elevation at the time that filling starts? Appendix I Figure 4-2 provides figures of the mean daily stage of the river and the minimum value is well above zero. Appendix I Section 4.1.2 indicates a mean monthly low elevation in September of 4.5 ft. Therefore, with weir elevation at 15 ft, the net storage volume for hydraulic dredge slurry is about 250,000 CY. The berm seepage is indicated to be 10,000 CY per day (head unspecified). Given that the hydraulic dredging will produce 880,000 CY to 1,800,000 CY (at 5% solids) of slurry, and over 14 days 140,000 CY of water may seep out with 250,000 CY to seep out later (for total of 390,000), then as much as 500,000 to 1,400,000 CY of water will leave the CDF by flowing over the weir. Given the possible high TSS and contaminant concentrations in the discharge (see comment on Page 114, Section 7.3.4), a substantial mass of contaminants will be discharged to the river during CDF filling. Additional BMPs shall be provided to minimize contaminant discharges.
77.	67	5.4.1		The estimated volumes of sediment and water which will be placed into the CDF should be used in the modeling to estimate how much water has to be released through the berm before the CDF reaches hydraulic equilibrium with the river. The stated total range of slurry volumes of 400,000 to 800,000 cubic yards, and the estimated daily 50,000 to 100,000 cubic yards should be used to calculate the flux out of the CDF.
78.	69	5.4.1		A weir discharge TSS concentration of 15 mg/L does not agree with the Appendix N or Section 7.3.3. Please clarify.

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79.		5.4.1		Hydraulic Filling of CDF- The hydraulic dredge pipeline should not be located on top of the BEBRA to protect its Integrity. Earlier project discussions described placement of more highly contaminated sediment at the head of the CDF to increase potential migration pathways/times, such strategy appears to be absent in this document.
80.	76	5.9.9		Reference appropriate permit application/status for the construction of new facilities not directly related to the CERCLA activity, or outside the scope of the CERCLA permit exemption (e.g. facility construction siting, electrical, structural review of plans, city inspections, etc. must still occur as they would for any new facility construction. A list of permits that will be obtained from the city and others should be explicitly listed in the next design deliverable to highlight that electrical, structural construction of IRM appurtenances are reviewed and approved by the appropriate regulatory body, such as the city. For example, CERCLA project oversight will not ensure proper electrical wiring of the new berthing facility for IRM).
81.	77	5.10		What type of public process is the Port doing on the sediment acceptance criteria? The Port previously indicated that that some process for community discussion would be undertaken.
82.	77	5.10.1		Paragraph after list of criteria. The Port should add this sentence to the beginning of the paragraph. “If EPA has determined that the CDF is an acceptable disposal option for dredged sediment from another cleanup project through an Action Memorandum or Record of Decision, then the following design process at a minimum would be required prior to dredged sediment being disposed of in the CDF.”
83.	77	5.10.1		Please elaborate on the potential for conflict/involvement with the Corps of Engineers if maintenance dredge material were accepted for filling the CDF (either as part of contaminated sediment layer or cover layer). For maintenance dredging under a Corps permit, it appears the Corps would need to permit the disposal in the CDF.
84.	79	5.10.2	Yes	Reference the depth above which temporary CDF closure covers will be employed. This depth needs to be reviewed by an appropriate biologist during the design process. Address in groundwater modeling if the interim cover layers will create preferential flow pathways that need to be addressed in the modeling.
85.	81	6.		General Comment. a. Please clarify the use of Base Cap Type 1, 2, and 3 materials. What is the purpose for each material and how was its grain size determined? b. All of the caps at the site consist of a base layer of sand with various types of heavy armor riprap. Only the Berth 401 Cap and head of Slip 3 cap have gravel armor surfaces. All of the Wheeler Bay cap is armored. This seems inconsistent with the characteristics of existing sediments and detrimental to fish habitat. Consider that some instability in cap material is tolerable or place habitat mix over the entire capped area.

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86.	87			Last bullet: Please elaborate on likelihood of substantial biological degradation of contaminants under capped sediments. Numerous studies, including several by Anchor Environmental, have demonstrated that temperatures of sediments under sediment caps are sufficiently low to reduce and/or eliminate biological activity that might cause biodegradation. The use of generic biodegradation factors in this environmental setting are likely overestimates the biodegradation that will occur.
87.	81	6	Yes	It needs to be made clear that cap pore water monitoring needs to meet chronic water quality criteria, at a minimum, pending promulgation of the Harborwide ROD requirements that may supersede these requirements for monitoring long-term cap effectiveness both in terms of sediment concentration and pore water.
88.	81	6		Typo- The reference to “Section 2.4.4” should actually be Section 3.6.2.
89.	82	6.1.1		Second criteria. This says that sediment quality at surface needs to be below PEC. All cap material must have chemical concentrations below TEC levels.
90.	89	6.2.1		Please be clear where organoclay will be used or how field decisions will be made during construction. The texts states that the contractor will be required to have enough organoclay present at the site to supplement caps as needed. EPA suggests that due to the small volumes and cap areas involved, the Port plan in advance to place organoclay amended caps in potentially affected areas.
91.	95	6.2.3		Please review Portland Harbor CERCLA site studies to date to provide a site specific bioturbation depth value. Note comment 42a on 30% DAR.
92.	96	6.2.4		Consolidation should be monitored after construction and during future cap monitoring events, especially in areas with organoclay, to ensure that modeling correctly predicted final cap elevations.
93.		Section 7. General Comments		Monitoring – Monitoring for leachate quality should be performed in the berm and below the fill. Modeling water quality - Consolidation of the fill material and resulting water quantity and quality should be considered in the modeling. Sensitivity analyses should be performed on selected parameters using the model. The Kds and DAFs appear to be incorrectly calculated and not appropriately used in the models (see specific comments below). The model uses Kd values from the fill material and attenuates chemicals in the fill. However, the fill material is the source and actual leachate concentrations from the fill material should be used in the model and directly transported into the berm material. Because of the problems associated with the modeling, the conclusions concerning predicted concentrations may not be correct. More detail concerning the calculations, modeling procedures and results could be provided to enable a better understanding and review.
94.		7 – General		Include a discussion to summarize (consider a table) monitoring activities and objectives.
95.		7 – General		Please include a subsection to define what DAR documents/appendices specify various BMPs and monitoring requirements associated with the various RA activities in compliance with the WQMCCP Section 4.1.7, etc.

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96.		7 – General	Yes	WQ conditions defined in this section are not consistent with conditions defined in the WQMCCP (as clarified in Table 1, attached). Review the entire section for compliance with the WQMCCP, and include specific references to sections of the WQMCCP. Please be specific regarding any deviations from the WQMCCP to identify specific issues that remain to be resolved. EPA has prepared a summary (see attached Table 1) to clarify the monitoring to be performed for the CDF (berm and weir). EPA will update the WQMCCP to reflect the requirements in Table 1 (attached). Reference elsewhere in these comments to the WQMCCP shall be understood to include Table 1 requirements.
97.		7 – General		Please develop a table that depicts specific RA activities and the associated monitoring proposed (intensity, parameters, etc.).
98.		7 – General		Please verify that water quality monitoring locations, depth intervals, and frequency are compliant with the WQMCCP and Table 1 (attached).
99.		7 – General		Ultimately, this section should include Tables 4-1 and 4-2 from the Final WQMCCP.
100.		7 – General		Section 7.8, which is referenced w/in the text, does not exist. Please fix this discrepancy.
101.		7 – General		Please discuss the on-site lab, the scope of lab services to be provided in the field, and demonstrate that it will have the capacity to perform the planned analyses and to achieve necessary turn-around times (location, staffing, hours of operation, equipment, etc.).
102.	106	7 – General		Modeling at a point “10 meters from the berm” is not consistent with the draft WQMCCP. Also, see attached Table 1. Modeling should indicate the expected concentrations in the berm close to the inside of the CDF to understand the expected concentrations and fluxes prior to the berm dilution, and then the compliance monitoring should be done inside the berm from wells or in the berm from transition zone pore water (per Table 1 requirements), not in the water column away from the berm as proposed.
103.	99	7.1		Table 6, referenced in the last sentence in this section, includes no acute AWQ value for total PCBs. Please note that recently updated NOAA SQuiRT Cards include an acute AWQ value for total PCBs of 2.0 ppb (See http://response.restoration.noaa.gov/).
104.	99	7.1		The last sentence should be modified by ending after the word exposure. Previous projects in the state of Washington are irrelevant as there are different regulatory standards applicable or relevant and appropriate to this action, and the receiving water is different and listed as impaired for different things.
105.	99	7.1		Water quality criteria used to regulate these various activities will be consistent with the scale and duration of exposure.
106.	99	7.1		1st PP, last sentence: “Water quality criteria… will be… consistent with, but not limited to, the regulatory conditions imposed at other recent Region 10 Superfund projects…” This removal action should incorporate the lessons learned from previous projects and not be constrained by these previous actions.

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107.	99	7.1		Last PP: This paragraph should summarize the WQ standards defined in the WQMCCP Section 4.2.2 (as clarified by comments of the 60% Design), and Table 6 should also reflect these conditions. Also, please reference OAR 340:041, as defined in the WQMCCP.
108.	99	7.1.1		Please revise the first paragraph to clarify short-term, dormant periods between fillings, and long-term consistent with Table 1 (attached).
109.	99	7.1.1	Yes	Exceedance of chronic levels will be used to trigger some BMPs (such as verification of dredge operator procedure) for all construction activities, not acute only as described here.
110.	99	7.1.1		Although turbidity can be an appropriate surrogate for TSS, TSS should still be measured along with turbidity to corroborate the CST regression instead of estimating first and then measuring periodically. Analysis of both TSS and turbidity should still be conducted throughout the project. Use of TSS as a surrogate for turbidity may be a reasonable approach, but it does not address the issue that ARARs for water quality are based on turbidity, not TSS. Please elaborate. Oregon has a turbidity standard that does not allow more than a 10% increase above the turbidity already occurring at a location upstream of the source. This turbidity standard is not the same as total suspended solids. Please provide an interim submittal prior to the 100% Design Submittal assessing the impacts of TSS to fish, considering at a minimum the following evaluation. Literature is available that allows prediction of TSS effects on fish. Adverse effects from TSS is based on a combination of TSS concentration and exposure duration. Most fish can tolerate a short duration exposure to very high TSS concentrations with no adverse effects, but exposure to lower TSS concentrations over a long period of time can adversely affect fish. Newcombe (2003) and Newcombe and Jensen (1996) have developed regression equations relating the severity of effect to the combination of TSS concentration and exposure duration. Newcombe and Jensen's 1996 regression for TSS effects on sensitive juvenile and adult salmonids predict the following estimates of lethal TSS concentrations for the following exposure durations: 1 hour - 22,026 mg/L TSS 3 hours - 2981 mg/L TSS 7 hours - 1097 mg/L TSS 24 hours - 148 mg/L TSS 144 hours (6 days) - 55 mg/L TSS The regressions are of the form SEV = b + m1(ln ED) - m2(ln TSS) In the regressions, SEV is the severity of the effect concentration of TSS, ED is the exposure duration in hours, TSS is the concentration of TSS in water (mg/L), and b, m1 and m2 are taxa specific slope and intercept values for the regression. Newcombe's work has a whole series of adverse effects on salmonids, ranging from low levels of behavioral changes, through various levels of effects on feeding, physiology and condition factor, up through reproductive effects and various levels of mortality.

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				The citations are: Newcombe, C.P. 2003. Impact assessment for clear water fishes exposed to excessively cloudy water. J. Amer. Water Resources Assn. 39:529-544. Newcombe, C.P. and J.O.T. Jensen. 1996. Channel suspended sediment and fisheries: A synthesis for quantitative assessment of risk and impact. J. N. Amer. Fish. Manage. 16:693-727. Review of Figure 28 indicates that TSS and turbidity have some correlation, but the correlation primarily exists in the turbidity range of 500 to 10,000 NTU, which is well above the turbidity levels of interest in the river. The Figure indicates no data is available for turbidities less than 600 NTU. On what basis is the Port proposing to establish a correlation between TSS and turbidity for turbidities in the 10 to 500 NTU range?
111.	99	7.1.1		Please clarify the expected discharge volumes and water quality of discharges for 1) through the berm, and 2) over the weir. Section 5.4.1 the text indicates that during the dredging of Slip 3 and filling of the CDF there is no expected discharge through the weir, which conflicts with statements elsewhere that large volumes of water will flow over the weir.
112.	99	7.1.1	Yes	The intensity of monitoring will not depend only construction activity, but also the degree of detection in actual samples, as modified by EPA during the project.
113.	100	7.1.1		Please include references to the applicable sections of the WQMCCP.
114.	100	7.1.1		If continuous dredging is proposed such that work will occur continuously for 4+ days, then chronic criteria will apply.
115.	100	7.1.1		Please define “discharges occur continuously”. Does this apply to brief interruptions in CDF discharge if work stops for the night, equipment maintenance, or weekends?
116.	100	7.1.1.1		The WQMCCP specifies that turbidity should not exceed 3 NTUs above background if background is less than 50 NTUs. Please make sure that the DAR is consistent with the WQMCCP.
117.	101	7.1.1.1		Please specify what constitutes a “fast turnaround” to verify initial regression-based estimates for TSS-turbidity correlation.
118.	102	7.1.1.1		Please include more detail under DO, and define parameters for pH and temperature. All conventional parameters should be consistent with conditions defined in the WQMCCP.
119.	102	7.1.1.1		Text inaccurately cites 5 NTUs as the threshold not to be exceeded. Although this may be acceptable as it is the proposed unit in the revised turbidity standard, that standard has not been approved by EPA (or the IMST) & the current standard (10% above background) should be used, or the site to the current standard should be removed.
120.	102	7.1.1.2		Ambient Background Concentrations – The last paragraph states “Two background reference stations will be established upstream and across the river from the RAA. Both stations will be monitored during the pre-construction background survey, and one or both of these stations will continue to be monitored during construction to detect any excursions of ambient river conditions … that are not caused by the Removal Action, but which may nevertheless affect water quality in the vicinity of the construction activities.” [Emphasis added.] NOAA recommends that both stations be monitored during construction. In addition, please include a reference in this paragraph to the appropriate background monitoring station location figure.

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121.	102	7.1.1.2	Yes	In discussing background concentrations, please clarify how background concentrations will be evaluated and considered in the water quality monitoring, both for T4 COCs and other regulated contaminants. EPA understands that WQC apply but higher concentrations could be allowed in accordance with results of an approved background sampling event. If a WQC exceedance occurs during monitoring, background concentrations will be considering in evaluating the response the exceedance. The Port shall submit a sampling program to document background conditions. The program SAP must be approved by EPA and incorporated in the WQMCCP.
122.	102	7.1.1.2		The WQMCCP specifies that background conditions will be represented by the 95th percentile upper confidence limit. Please make sure that this section is consistent with the WQMCCP.
123.	102	7.1.1.2		Please specify the interval, number of studies, flow events, etc. that are being proposed for the “pre-construction background survey.”
124.	102	7.1.1.2		Please provide more specific information regarding monitoring proposed at the “two background reference stations.”
125.	103	7.1.1.3 – General		Please include Table 4-1 from the Final WQMCCP, and make sure that all criteria/guidance values are explicitly stated and consistent with the Final WQMCCP.
126.	103	7.1.1.3		PAH Guidance Values- The referenced text states that “Aquatic life criteria for PAHs are not available in either federal or state standards”. DEQ's Table 20 AWQC lists both freshwater acute & chronic AWQC for several of the PAH species. Until EPA accepts DEQ's new Table 33 AWQC, Table 20 values are appropriate to use.
127.	103	7.1.1.3		Please re-write this section so it does not say that TSS and turbidity may be reliable surrogates for chemical analysis. This has not been shown to be true at other sites along the river. The chemical analysis should be conducted separately from the physical parameters. The EPA and government partners have indicated that a tiered approach to sampling may be administered once it has been shown that construction activities are not having a negative water quality affect outside the compliance zone. Chemical sampling should continue throughout construction, but may be scaled back as the construction methods are shown to be protective. If the Port wishes to conduct a study to correlate physical and chemical water quality parameters to aid future projects at Portland Harbor, it may do so, but in no way should physical parameters be used as surrogates for chemical parameters during water quality sampling on this project.

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128.	103	7.1.1.3		Chemical Parameters, PAH Guidance Values – This paragraph states "Aquatic life criteria for PAHs are not available in either federal or state standards. However, acute and chronic guidance values for PAHs have been developed by USEPA for use in deriving sediment quality benchmarks (USEPA 2003a). These PAH values, listed in Table 8, may be used as guidance values during the monitoring program to assess the effectiveness of construction BMPs for controlling releases of PAHs." The EPA PAH values referred to here are first presented in Table 6, "Water Quality Criteria Guidelines", along with acute and chronic values for other PAHs, and the source, USEPA 2003a, is referenced in the footnotes to this table. These values are apparently then carried forward to Table 8, where they appear in the bioaccumulative chemicals of concerns portion of the table. Though these chronic values for benzo(a)pyrene and chrysene are presented here, they are not referenced to USEPA 2003a. This is confusing and hard to follow. Please include the reference in the footnotes to Table 8. I also suggest revising the language for the third paragraph as follows: "These PAH values, listed in the bioaccumulative chemicals of concerns portion of Table 8, shall be used as compliance values during the monitoring program to assess the effectiveness of construction BMPs for controlling releases of PAHs."
129.	104	7.1.2 – General		Please include a discussion of individual RA activities' cumulative effects on the river water quality.
130.	104	7.1.2.1	Yes	Water quality criteria should be consistent with criteria defined in the WQMCCP as clarified by comments herein and Table 1 (attached), and the text should provide specific references (section/subsection) to the WQMCCP.
131.	104	7.1.2.1		Water Quality Criteria Applicable to CDFs – The last sentence states: "Applicable chronic criteria include National Recommended Water Quality Criteria for metals (USEPA 2006b) and PAH guidance values (USEPA 2003a) as presented in Section 7.1.1.3 and Table 8." Please see comments on Section 7.1.1.3. PAH values are compliance values not guidance values.
132.	104	7.1.2.1		Bioaccumulation- The ambient water quality criteria, with a few exceptions, do not address bioaccumulation for aquatic receptors. The chronic data are based on 96 hour direct toxicity endpoints. Bioaccumulation to fish to unacceptable levels (to fish or wildlife) is also possible in addition to fish consumption numbers. These numbers can be developed using BAFs / BCFs for fish & wild life receptors & acceptable fish tissue residue concentrations (for protection of fish themselves & wildlife consumption). In addition to water monitoring, the Port should consider sediment (at key locations) or biota tissue monitoring. This will ensure there is not accumulation in sediment in the vicinity of the berm that may also be contributing to fish tissue concentrations through the diet. We would be missing this by only looking at water concentrations. SPMDs could also be deployed to quantify accumulation over time in a fish surrogate.
133.	105	7.1.2.2	Yes	The compliance point will not be out in the river, rather in pore water to limit the dilution/mixing of the river itself. EPA will provide specific text to the Port for inclusion in the 100% DAR regarding this issue. See also attached Table 1.
134.	105	7.1.2.2		For NPDES permits, fish consumption WQS are monitored at end of pipe, and bioaccumulative standards are not treated differently than other water quality criteria. Table 1 (attached) provides requirements for the weir discharge.

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135.	105	7.1.2.2		Table 1 (attached) indicates applicable requirements. The 4-day discharge period for applying either acute or chronic criteria no longer applies.
136.	2, 7	7.1.2.3	Yes	The first paragraph and first two bulleted items should be deleted as inaccurate and irrelevant to the T4 project. EPA identified the Safe Drinking Water Act and national drinking water standards as relevant and appropriate, chemical-specific ARARs for performance criteria for the confined disposal facility's containment of hazardous substances. See page 2 of 10 of the ARARs table attached to the Action Memorandum. Drinking water supply is a designated beneficial use of the Willamette River. The CDF is a disposal facility of contaminated sediment, are permanent, and the groundwater moving through the disposal facility and releasing to the Willamette River cannot contribute to exceeding of chemical-specific ARARs. No ARAR waiver has been justified.
137.	106	7.1.2.3		EPA supports that institutional controls and use restrictions should be placed on groundwater running through the CDF to be protective of human health. However, this bullet and topic is not relevant in this discussion of water quality criteria.
138.	106	7.1.2.3	Yes	The compliance point for performance standards will be in the face of the berm, to minimize dilution related effects of sampling in the river. For Superfund cleanups and as a relevant and appropriate requirement for groundwater or surface water protection, MCLs are applied in ground/surface water. ICs do not regulate the beneficial use of the aquifer/surface water. MCLs do not rely on tap water treatment as written. See also Table 1 (attached). Sampling shall be completed using the appropriate methodology (i.e., bottle sampling at the face for short term [no setback], or porewater of one-foot depth for dormant/long term.) EPA will provide specific text to the Port for inclusion in the 100% DAR regarding this issue.
139.	107	7.1.2.4	Yes	EPA required that 303d listed chemicals and their discharge be related to the design to show that the design took all reasonable/practicable steps to minimize discharge of these chemicals to the river. The Port shall provide an interim deliverable which addresses this issue, and include the information in the 100% DAR. Please include a table of 303(d) list parameters and the associated CDF berm/groundwater model output. In the future, groundwater modeling analyses must be completed for 303d listed chemicals in sediments from other sites are that proposed to be disposed of in the CDF.
140.	107	7.1.2.4		Per the WQMCCP, mercury is a COC that must be analyzed within T4. Please correct this statement.
141.	107	7.1.2.4		Dioxin TMDL- A 4th TMDL for the Willamette River, dioxin, was established in 1991. 303(d) List- The 303(d) listed parameters should be presented to avoid confusion & add clarity.
142.	108	7.2	Yes	This section evidently addresses short-term compliance boundaries, rather than also long-term performance standard boundaries. This should be made clear. Please revise requirements consistent with Table 1 (attached). In addition, the compliance boundaries for the construction activities (other than the CDF berm and weir discharges) need to be related to a distance from the construction activity rather than a static boundary, to ensure protectiveness. The specific disturbance location associated with the various construction activities needs to be identified. Verify and indicate with specific references that these are consistent with the WQMCCP.

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				Separate the compliance boundaries into two sets, one for the dredging of Slip 3, and another for the CDF weir/berm discharge. Note that for both short-term and long-term, the compliance point for the berm discharge is at the berm face. See also Table 1 (attached).
143.	109	7.2.2		Please articulate that this “trade-off” does not excuse requirements to employ BMPs to reduce short-term impacts.
144.	110	7.2.4		The concept of measuring turbidity may make some sense when used near the dredging equipment in Slip 3; however, it does not make sense in the berm effluent from the CDF, where the compliance should be based on actual contaminant concentrations. Only if there is discharge from the weir, would turbidity be a potentially useful parameter. Even in the case where turbidity is used for compliance, it should have been correlated with water quality parameters based on contaminants.
145.	111	7.2.6		Minimal Salmonid Exposures – This section provides information on juvenile salmonid travel rates and suggests that, if they are present at all, individuals are not expected to remain in the area for more than one day. While this may be true, NOAA notes that juvenile Chinook salmon collected by the Lower Willamette Group in 2005 showed tissue concentrations of various contaminants that were clearly associated with sites in the vicinity of the areas where these fish were captured. This suggests that these fish were remaining in these areas for at least enough time to accumulate site-related contaminants. Hence, it is possible that fish in the area of construction could be subject to increased and potentially significant exposures to contaminants mobilized as a result of construction activities.
146.	112-113	7.3.1 and 7.3.2		Dredging and Modified Elutriate Tests – Please ensure that tables are correctly referenced. It appears the relevant tables for these two sections are Table 9 and Table 10 for DRET and MET results, respectively. However, section 7.3.1 (DRET) refers the reader to Table 8 and section 7.3.2 (MET) refers the reader to Table 9.
147.	112	7.3.2		Dilution within the compliance zone is not appropriate for the elutriate flowing over the weir. Water quality should be analyzed prior to and periodically during release of effluent during CDF filling. Water from the CDF should not be discharged without analysis. See Table 1 for weir discharge requirements.
148.	114	7.3.3		Per Figure 28, at 2000 NTU the measured TSS was 50% greater than predicted by the power function. Please articulate how the proposed correlation between TSS and turbidity described in this section will be applied to monitoring weir overflow water quality. Please also see related comment on Section 7.1.1.
149.	114	7.3.4	Yes	A weir discharge having 1900 mg/L TSS and 94,000 ug/kg benzo(a)pyrene (per Table 4, for Slip 3) would be expected to have a benzo(a)pyrene concentration of 1900 mg TSS/L x 94 mg BaP/kg TSS x 1 kg TSS/106 mg TSS x 1000 ug/mg = 180 ug/L BaP vs. acute water quality criteria of 4.0 ug/L per Table 6. Therefore, it appears that discharges over the weir would cause substantial releases of contaminants to the river. Please quantify the magnitude of contaminant releases. See Table 1 (attached).
150.	115	7.4	Yes	ENTIRE SECTION – Specified sampling frequency and constituents are unclear. Berm construction/key deposition activities need explicit mention. Demolition activities are not adequately discussed. Rapid turnaround sampling is not adequately discussed. Please see Table 1 (attached).

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151.	115	7.4		Please include additional sections (7.4.7, etc.) to address additional removal action elements (stormwater outfall decommissioning and construction, CDF berm construction, ship traffic during construction/dredging, etc.).
152.	116	7.4.1		Given all the input DREDGE input parameters that may be significantly different from actual field conditions (water depth, bucket size, cycle time, etc.), please discuss which input will have the greatest impact to model results, and articulate how the model results will be applied to this project. Please provide specific references where dredging BMPs will be found within the water quality monitoring plan and construction specifications.
153.	116	7.4.2		Please provide more information regarding the results from the two examples cited (how far did resuspended material travel, how do example characteristics compare to T4 setting, etc.), and describe what is meant by a “run”.
154.	116	7.4.2		Please provide specific references where dredging BMPs will be found within the water quality monitoring plan and construction specifications.
155.	117	7.4.3		Please clarify this section. Please discuss in detail monitoring of the discharges over the weir and through the CDF berm. Please include specifics on the proposed sampling approach, well design, monitoring methods and frequencies, and analytes. Paragraph three implies that diluting TSS in the CDF discharge to background is all that is required. It does not appear that TSS is the determining parameter as the text indicates. A weir discharge having 1900 mg/L TSS and 94,000 ug/kg benzo(a)pyrene (per Table 4, for Slip 3) would be expected to have a benzo(a)pyrene concentration of 1900 mg TSS/L x 94 mg BaP/kg TSS x 1 kg TSS/106 mg TSS x 1000 ug/mg = 180 ug/L BaP vs. acute water quality criteria of 4.0 ug/L per Table 6. Therefore, required dilution ratios are 180/4 = 45 for acute WQ criteria and 180/0.96 = 188 for chronic WQ values. Please explain how this is acceptable based on a proposed dilution ratio of 37:1 to 39:1. It appears some type of additional water quality treatment is needed prior to discharge of water over the weir. Discuss the “active water treatment system” to treat excess water in the CDF. Identify potential treatment processes (filters, settling, flocculation, etc.) and flow rates. Discuss potential schedule impacts for implementing these contingency measures. Water treatment will likely be required if water quality parameters are not met at the compliance boundary; this should be noted in the project design and contractor implementation documents.
156.	118	7.4.3.1		Please define “MGD”. Table 1 (attached) does not allow a mixing zone.
157.	118	7.4.3.1		Please define the parameters in Table 15.

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158.	118	7.4.3.1		CST results are cited for the “mean retention time”, however consideration should be also given to the worst case scenario. Please discuss conditions for the shortest realistic retention time, such as well the diffuser is located near the weir overflow structure. Note the construction specifications indicate the contractor is to place the sediment uniformly throughout the CDF.
159.	118	7.4.3.1		Please clarify the “accelerated settling caused by large-scale flocculation and density stratification.” Lacking specifics based on published design guidance or literature, EPA cannot agree that this effect will be substantially beneficial to the project.
160.	119	7.4.4		Please include a direct reference to a specific section of the WQMCCP to demonstrate that the monitoring proposed is consistent with EPA requirements. Please provide specific references where dredging BMPs will be found within the water quality monitoring plan and construction specifications.
161.	120	7.4.5		Please clarify the statement “collection of field parameters every 6 hours and one laboratory sample to be analyzed for COCs.”
162.	120	7.4.5		Please provide specific references where dredging BMPs will be found within the water quality monitoring plan and construction specifications.
163.	120	7.4.5		Please summarize the anticipated water quality impacts (debris, dust, sediment disturbances, etc.)
164.	120	7.4.6		Please clarify the statement “collection of field parameters every 6 hours and one laboratory sample to be analyzed for COCs.”
165.	120	7.4.6		Please provide specific references where dredging BMPs will be found within the water quality monitoring plan and construction specifications.
166.	120	7.4.6		Please summarize the anticipated water quality impacts (debris, dust, sediment disturbances, etc.)
167.	120	7.5	Yes	See comments on Appendix I and SACTM regarding water quality impacts from CDF. Please make this section consistent with related supporting documents.
168.	120	7.5.1		Please summarize the model and describe how is has been applied/verified previously. How confidently can model output be expected to predict field conditions?
169.	121	7.5.1		A material type of the CDF is described as a model input parameter. Please articulate how these input will be compared to actual construction materials (once they are selected), and how great a discrepancy must exist between model input and actual materials before the model will be re-run. Specific examples include height of training dikes, berm fill TOC concentration, and berm fill grain size and hydraulic conductivity and filtration properties (d10, d15, etc.). TOC and hydraulic conductivity and other relevant parameters of several candidate berm fill materials should be tested and results included in the 100% DAR with corresponding material procurement requirements added to the specifications.
170.	122	7.5.1 Figure 32		Please define all parameters and abbreviations (“FYI: JSCS BAC SLV) cited in the figures, and please maintain consistency among figures (parameters, legends, etc.).

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171.	122	7.5.2		Please revise the modeling as necessary to reflect the final berm section (i.e., without the habitat bench if applicable).
172.	125	8		Habitat Mitigation. The first paragraph needs to be revised to be consistent with the Action Memorandum and preliminary 404(b)(1) analysis. Particularly, it should briefly discuss that dredging and capping, along with filling of the CDF, will result in loss of habitat for which compensatory mitigation is required.
173.	125	8		Will the final approved Habitat Mitigation Plan be added as an appendix to the final design? Either the design analysis or a separate Mitigation Plan needs to contain the analysis done for how it is determined how much mitigation is sufficient compensation.
174.	125	8		Since the analysis for valuing how much loss will occur and how much habitat of varying function types has not been completed, it is not possible to provide comments on Section 8 at this time.
175.	126	8.2		If a component of the mitigation plan will be performed by a third party, the agreement for how the Port, City, and EPA will coordinate, cooperate, and who takes the long-term responsibility for O &M, and/or failure needs to be in place by the time the final design is approved.
176.	127	9 - General		Basic information about regional hydrogeology, groundwater flow, and the major aquifers should be summarized in this section so as to provide support that the CDF location is suitable for this type of facility.
177.	127	9.1 and 9.2	Yes	Most of the text in these sections are general paraphrasing of the statute and/or NCP and substantively irrelevant to the T4 design analysis. The EE/CA and/or the Action Memorandum discusses the general concepts of ARARs. Only project-specific ARAR discussion should be in the design analysis. Delete all of Section 9.1, and a portion of 9.2 starting at the beginning until the paragraph that begins: “EPA identified location-, chemical-, and action-specific ARARs…”
178.	131	10 – General		Please provide references (section, page) where details are provided about the various construction activities (pier demo/construction, CDF construction, dredging, debris sweeping, capping, etc.).
179.	131	10 – General		Please discuss the likelihood that construction activities will occur 24 hrs/day and/or 7 days/week.
180.	131	10 – General		Please organize the construction components chronologically.
181.	131	10.1		Please provide a brief explanation why capping will occur before dredging to relieve concerns that dredging residuals may contaminate capped surfaces.
182.	132	10.1		Please provide Figure 35 as an interim deliverable.
183.	132	10.1.1		Over water activities may or may not need to take place during the fish window. The Port should discuss this issue with NMFS to ensure consistency between the design and the BiOp. Short term impact monitoring will occur regardless of when activities occur, though water quality impacts outside of a work window may require project shutdown until appropriate BMPs are in place and/or an appropriate construction window.
184.	132	10.1.1		In water work associated with stormwater line that actually occurs in water will require short term impact monitoring (real time and lab field parameters).

Comment No.	Page No.	Section No.	Directed Comment (Yes/No)	Comment
185.	132	10.1.1		1st PP: Please be more specific so that “The work” is clearly understood to be the relocation of the IRM berthing facility (as opposed to demolition/construction of other structures).
186.	133	10.1.1		The stormwater outfalls must be rerouted prior to disposal of contaminated dredged material from the berm key, or please discuss capping of the berm key deposits to provide erosion protection. At a minimum, stormwater outfalls must be rerouted prior to dredging of Slip 3. GW modeling and hydraulic discussions for the weir do not appear to address continued discharge of stormwater into the CDF.
187.	133	10.1.2		The design decision regarding terrace height must be finalized for the 100% Design, and applicable analyses (seismic, groundwater modeling, etc.) updated to reflect the final design conditions.
188.	135	10.1.3		Please elaborate on the schedule and sequencing of dredging, sampling for residuals, re-dredging, re-sampling, etc.
189.	135	10.1.4		The capping sub-section is located after the dredging section; however, capping is scheduled before dredging. Please organize the sub-sections chronologically (see Section 10 General comments). In general, EPA believes all capping except the Wheeler Bay bank cap should be performed after completion of the dredging.
190.				Containment Berm- What are the contaminant concentrations in the 25,000cy of proposed over-excavated sediment for the berm footprint? Where will this material be placed?
191.	136 10.2.2	10.3		Please discuss potential sources of clean dredged material to be used as the import fill layer. Discuss placement of this material in additional detail and possible effects on the CDF. At some point, make up water for pumping sediments into the CDF will not be able to be drawn from within the CDF.
192.	139	11		Before the removal action work begins, the Port needs to provide to EPA copies of all access agreements with other landowners or lessees for conduct of work on their properties and that access is provided to the regulatory agencies and other stakeholders as provided in the AOC. Also, when the Port acquires the land currently owned by DSL, EPA would like copies of the document(s) that evidence the Port’s ownership.
193.	141	12		Property Record Notice. Why is just a notice proposed? Why not a real property easement that is enforceable by the Port and the easement holder if violated? EPA prefers property restrictions that run with land and are enforceable against future property owners. Property easements are appropriate to ensure in a legally enforceable manner that ICs take place. Changes to these notices must require EPA notification and approval. Also, “call before you dig” registration should be accomplished, or explanation included on why this cannot be accomplished, and how alternate measures will be as or more protective; review the EPA Action Memo for a full list of ICs required for evaluation. Property record notices are like fact sheets and can be removed or changed without EPA notice, and as such are not a significant or binding IC.
194.	141	12	Yes	List of IC objectives. Given the CDF is a waste disposal facility, it is assumed groundwater in the CDF that is in contact with the contaminated sediment may not meet drinking water standards or be protective for dermal contact. Therefore, another institutional control objective is needed, e.g., Prohibit ingestion or dermal contact with groundwater in or adjacent to the CDF that is in contact with contaminated sediment.

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195.	141	12		Institutional Controls- In Section 7.1.2.3, the text describes institutional controls the Port plans on putting in-place to preclude water intake in the RAA. There is no mention of these institutional controls in Section 12 "Institutional Controls".
196.	141	12.1		Regarding notice to tenants about the capped areas. How frequently will this notice be provided? If just once, is that considered sufficient for long-term purposes? Can existing leases be amended or supplemented to provide more affirmative notices and commitments by the lessees that their use and their ship traffic will not affect the caps? If not, then annual notice to existing tenants should be considered.
197.	141	12.1 and 12.2		The design should provide more detail as to how the T4 Base map is implemented, who is responsible for approving activities under it, how is it assured personnel follow it, and generally how it can be relied on as an effective institutional control.
198.	143	12.2		Review by Marine Environmental. Is this part of the T4 Base-map process? Please provide more details about how this review will be an effective institutional control in the long-term. What consequences may occur if not followed?
199.	143	12.2		EPA expects that leases with tenants occupying property on or adjacent to the CDF will have affirmative commitments and agreements by the tenants that for all below grade excavation, construction, or any activity that may disturb the containment must be approved by the Port's Marine Environmental, and if necessary, EPA prior to any such work. Also, a groundwater use prohibition must be placed in the leases as well. Such restriction must prohibit extraction of groundwater from the CDF for ingestion and dermal contact.
200.	143	12.2		All use of groundwater within 1000 feet of the CDF should be restricted by institutional controls. Verify Port land ownership within this distance or identify adjacent land uses. Provide figure showing locations of all groundwater wells within 1 mile of CDF, and specifically identify any major wells such as municipal water supply wells.
201.	143	12.2	Yes	A restrictive covenant or easement that runs with the land and is enforceable against future landowners must be recorded on the title of the property containing the CDF that places the land use and excavation restrictions and groundwater use restrictions discussed above on the property.
202.	143	12.2		Future Construction on CDF Berm- While this section discusses restriction of future construction on the CDF, the document shows (Figures 14 and 16) planned or future grain elevator towers on the CDF berm. It is not clear how those structures would impact the berm's integrity.
203.		Figure 17		The cross-section showing the weir discharge pipe is not consistent with the corresponding plan sheet. Please make consistent. EPA suggests that the discharge pipe be run through the berm above the saturated zone to avoid providing a preferential flow pathway for contaminants at pipe joints or in pipe bedding.
204.		Figure 25		BEBRA Cap- The BEBRA cap detail should be enlarged so that the interface between the BEBRA toe & cap are clearly defined. It appears that a portion of the BEBRA toe will be removed & it is not clear what the new replacement cap material is (rip-rap only?). Contaminated sediments immediately riverward of the BEBRA toe should be capped to prevent migration of petroleum contaminants. Berth 411 under pier detail: Clarify if existing sheet pile wall is fully submerged.
205.		Figure 31		Please provide a descriptive header on the top graph, and define Kd.

Comment No.	Page No.	Section No.	Directed Comment (Yes/No)	Comment
206.		Figure 33		Please define the solid line on the figure.
207.		Figure 33		Figure 33 shows grain size (not permeability as the title cites). Please correct the title or articulate how permeability is related to grain size.
208.		Table 3		Terminal 4 Sediment Quality Guidelines, Draft Portland Harbor Screening (Level 2). Please note that ultimately the lower of either PEC or the Portland Harbor values will apply in the ROD. For the record, NOAA does not currently concur with all of the draft Portland Harbor sediment quality guidelines. In particular, NOAA rejects the proposed value for total PAHs (1,270 ppm) as not protective of aquatic resources. Additionally, as an example, the 1400 ppb value for PCBs is not applicable to this project because it is substantially higher than the PEC value. Please add a footnote indicating the Portland Harbor values are based on (date and reference) and subject to change.
209.		Table 9		Please add a column to list Chronic Water Quality criteria.
210.		Table 13		Please correct typo (“Tupical”) in column heading.
211.		Table 17		Please correct all references cited within the table (for example, Section 7 of the DAR is incorrectly referred to as Section 6). The following changes should be made to the chart and any text in the DAR or appendices that conflicts with the ARAR’s table as revised should be revised to conform to the Table. 1. ESA. Add back to Criteria/Standard and Applicability column that it is an “action-specific” ARAR. 2. Executive Order for Wetlands Protection – The Compliance Reference column states that no wetlands will be affected by the removal action. Is this true for all of the mitigation sites? 3. Oregon Hazardous Substance Remediation Action Law and Regulations. Revise Citations and Criterion/Standard and Applicability columns to be consistent with the Action Memo for accuracy. 4. State Removal Fill Law and Regulations. Delete following citation: OAR 141-85-0004, et. seq. The remainders of the specific citations to this regulation are the identified ARARs.
212.		Appendix A, General		a. In general, there are no critical flaws in the geotechnical evaluation of the CDF berm. Some minor technical issues as addressed below herein should be considered prior to issuing a final design. b. It is likely that material placed below the water level that is not compacted would have a lower friction angle than the compacted material placed above the water level (actually water level plus 5 feet per the specifications). Either the specification should be amended to ensure proper compaction of materials below water, or the slope stability analysis should consider the effect of a lower strength material in the lower portion of the berm. Currently, the berm analysis appears to indicate that both uncompacted and compacted portions of the berm will have similar strength properties. c. Please revise final analysis consistent with final CDF berm configuration and material selection, including presence/absence of habitat bench and final training dike height. The final training dike height must be specified in the 100% DAR.

Comment No.	Page No.	Section No.	Directed Comment (Yes/No)	Comment
213.		Appendix A, Section 2.0		This section references Appendix E for post-earthquake inspection and repair issues. At this time, Appendix E is not complete and cannot be addressed until a future release of the document.
214.		Appendix A, Table 4.0a		It is not clear if the Peak Horizontal Ground Acceleration (PGA) values presented in this table have been adjusted for Topographic Amplification. Please clarify.
215.		Appendix A, Section 4.0, and 6.4,4.0		Appendix A, Section 4.0 and Section 6.4: Section 4.0 of the report indicates that a topographic amplification factor (TAF) of 1.25 should be applied at the crest of the berm, and a TAF of 1.1 should be applied at the bench. Section 6.4 indicates that the PGA values computed using the 1-D site response analysis were increased by 15 percent and applied uniformly throughout the model. It appears that uniform application of the TAF may be conservative for deeper slip circles and less so for shallow circles. Further discussion should be considered to evaluate the relative impacts of this analysis method on the final design. In addition, for the sake of clarity, the PGA value used in the analysis should be explicitly stated.
216.		Appendix A, Table 6.1, Figures 2 – 5		Table 6.1 indicates that a cohesion value of 9 psf was used for the quarry spalls. Figures 2 through 5 indicate that a value of 0 psf was used. The correct cohesion value should be reported in both places.
217.		Appendix A, Section 6.0, Appendix F, Sheet C-26		The Berm Cross Section presented on Sheet C-26 indicates that the berm crest will be used as a roadway and that a future grain conveyor is to be built on the face of the berm. The impact of surcharge loads should be evaluated to determine if additional long-term slope stability analyses is required for the final design. In addition, if the future use of the remainder of the CDF is known, appropriate surcharges should be added to the entire CDF.
218.		Appendix A, Section 6.0, Appendix F, Sheet C-26		The note accompanying the Berm Cross Section on Sheet C-26 indicates that the training terraces used to construct the berm can range from 3 to 20 feet in height at the contractor's discretion. In the slope stability analysis, the training terraces are assumed to be 20 feet high. Since the training terraces are to be constructed of a stronger material, smaller training terraces would result in lower factors of safety for berm stability and should be considered in the analysis or the specifications modified.
219.	1	Appendix B, Section 1		This plan should apply to filling the CDF with T4 sediments as well as future filling events with sediments from other sites. What is the logic behind having two separate plans for the same activity (i.e., filling the CDF)?
220.		Appendix B, Section 2.1	Yes	CDF Management Plan – Survey, using standard land survey techniques, the berm annually for the first 5 years, and after seismic events, to assess any long-term settlement or failure. The survey should include the berm crest and other key points accessible above water. Complete an evaluation based on the results of each survey to determine if repairs are required to maintain berm integrity. Visual only post-seismic surveys are unacceptable, as would gps surveys, etc. The surveys must be accurate to 0.01 feet for X, Y, and Z axes.
221.		Appendix B, Section 2.1	Yes	CDF Management Plan – After 100 year flooding events, side scan surveys shall occur to evaluate damage to the berm below ordinary low water/berm toe, in addition to the "visual" surveys specified in the current draft.
222.		Appendix B, Section 2.3	Yes	Diving depths of piscivorous birds are well known. A tech. memo shall be delivered to specify the nominal closure depth of sediments above which a temporary cover will be required for EPA review (as well as USFW).

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223.	9	Appendix B, Section 3.3		a. Monitoring of ponded water release through the berm will be required at some frequency regardless of head difference between the CDF and River, due to the presence of tidal water exchange that will move water into, and contaminants out of the ponded water stage of the CDF. See Table 1 (attached). b. Filling the CDF will occur during a relatively short time frame. Monitoring should be completed at all times, not just when the height of the water in the berm is 10 feet above river levels. See Table 1 (attached).
224.		Appendix B, Section 3.3	Yes	As directed by EPA, monitoring may only be reduced with EPA approval, after monitoring results have been appropriately reviewed. Language shall be revised throughout the design to indicate that reducing monitoring will be "proposed" to EPA at the timeframes noted.
225.	10	Appendix B, Section 3.3.1.1	Yes	TSS vs. turbidity. Coordinate this text with comments on Section 7 DAR.
226.	11	Appendix B, Section 3.3.1.4	Yes	The 4-day period should apply as after 4 days for the duration of the project. Otherwise, this requirement will cause an incentive for short-duration high volume discharges to avoid triggering chronic criteria.
227.	12	Appendix B, Section 3.3.2.1		The compliance boundaries for this project remain to be negotiated. See comments on Section 7 DAR.
228.		Appendix C		Construction Quality Assurance Plan – Document should include role of non-EPA government partners, and procedures for site visits for government team members.
229.	3	Appendix C, Section 2	Yes	Please re-write the project roles and responsibilities. Per the AOC signed by the Port of Portland, the Port of Portland is ultimately responsible for all aspects of implementing the early action, including conducting all construction activities and monitoring and reporting, and achieving all RAOs, performance standards, compliance with ARARs and other goals, objectives and legal requirements. Currently, the Port's responsibilities are passively phrased, i.e., "the construction project will be managed by the Port….", whereas the Project Engineer is actively "responsible" and the CM/GC will have "total authority and responsibility… …to ensure that the work complies with" virtually everything. As written, the Port seems to have little responsibility and other entities have great responsibility. This is not an accurate portrayal of project responsibilities. Specifically, the Port is responsible for the CM/GC's work and actions, and is also responsible for checking and auditing all lower tier CQA activities to ensure that these activities are being performed satisfactorily. It is NOT up to EPA to "identify unforeseen issues or problems", that is the Port's responsibility along with notifying EPA of these issues or problems. EPA may make the final decision on certain issues, but it is the Port's responsibility to identify, investigate, report, and make recommendations to EPA. The Port is responsible to ensure that the early action is implemented in a manner consistent with applicable state and federal laws and regulations. It is EPA's responsibility to oversee the Port's activities in implementing the early action.

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230.		Appendix C, Section 3		Please explain the qualifications for Port-held positions.
231.		Appendix C, Section 4		Please explain the Port's responsibilities in the QA program. The responsibility for these activities ultimately resides with the Port.
232.		Appendix C, Section 4	Yes	Please expand the QA program to reflect the additional performance measures required per comments on the 60% DAR (i.e., minimize dredging residuals, prevent mixing of cap material with contaminated sediments, etc.).
233.	15	Appendix C, Section 4.2.3.1		Please clarify the requirement for adding fill to the berm is for correcting berm settlement during the early action T4 construction phase. At the completion of the early action T4 construction, and again at completion of CDF filling, the Berm should be restored to its full elevation per the design.
234.	16	Appendix C, Section 4.2.3.3	Yes	Please provide a table listing chemical specific acceptance concentrations for berm fill material. Please revise this section to require that import material be tested for gradation, chemistry, and TOC at least every 5000 CY. One sample per 20 percent of the import volume is inadequate.
235.	17	Appendix C, Section 4.3.2	Yes	Second Bullet. Please revise the dredging objective to achieve the desired final substrate quality for chemical contaminants. Achievement of sediment removal to the design dredge prism is merely a useful guideline as to when the Port might find it useful to begin testing of exposed sediment surface, but it is not an objective in its own right.
236.	26	Appendix C, Section 4.4.3.1	Yes	Please provide a table listing chemical acceptance criteria for cap material. Please revise this section to require that import material be tested for gradation, chemistry, and TOC at least every 5000 CY for sandy materials (not riprap). One sample per 20 percent of the import volume is inadequate.
237.	42	Appendix C, Section 5.1.1 and 5.1.2	Yes	The Work Plan and CQC plan should address each individual performance standard and objective and indicate specifically how it is to be achieved.
238.	47	Appendix C, Section 5.3		Please revise this section to be consistent with EPA Guidance for Close-Out Procedures for National Priorities List Sites, EPA 540-R-98-016.
239.		Appendix C, Table 1		Please revise the CDF Construction Element to discuss verification of removal of soft sediment for berm key dredging, berm fill placement, weir/outfall structure, survey of training dikes and berm crest (initial, incremental for settlement, and final), etc. Please elaborate on Item 3.4.K for cap monitoring, particularly methods and frequencies. Provide criteria for disposal of berm key dredge material.
240.		Appendix C, Figure 2		Clarify the sequence and schedule for post-dredge monitoring of individual dredging units vs. overall dredging.
241.		Appendix C, Figure 3		Suggest showing sample locations on this Figure, including sampling locations in area 18 and 19 and additional area south of 19 to assess for dispersal of dredging residuals.

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242.		Appendix D	Yes	WQMP – Directed change; Monitoring only at a point 100m beyond the mouth of the slip is not reasonable. This shall be changed to some distance riverward of the activity (e.g. 300 feet), or similar such distance if it can be appropriately supported by the Port. Monitoring only at the head does not protect sufficiently for short term impacts within the slips. Consideration will be given to making this a compliance point only for DO, temperature, TSS and chemicals of concern (rather than including turbidity). In water work that is involved with stormwater line work will also require field and chemical monitoring.
243.		Appendix D		It has been noted several times that the proposed monitoring is more protective than at other sites. The relevance of this statement is not clear. The monitoring itself cannot be more protective. The monitoring is an indicator of a lack of protection, but does not itself provide ANY protection against recontamination.
244.		Appendix D, Section 2.1	Yes	Directed change; Tier 1 monitoring activities will continue until EPA approves a change to Tier 2. The change to tier 2 will not be automatic.
245.		Appendix D, Section 2.2		Have true background values been established upstream of the Superfund site? Is background sampling to take place during the same time of year as anticipated construction activities?
246.	6-7	Appendix D, Section 2.2		Background Survey – In the sub-section on the “Pre-Construction Survey”, it is stated that the “Background survey will consists of four sampling events” and that “five monitoring stations will be sampled during each of the background events.” The next paragraph goes on to state that “three of the five stations will be monitored only during the background survey.” The following paragraph states “the other two stations will be monitored during the background survey and, in addition, one or both of these stations will continue to be monitored during over-water and in-water work.” My understanding of these statements is that all five stations will be used to collect data during the background survey and that one or two of these stations (upstream and/or opposite river bank) will also be used to monitor construction activity. I suggest modifying the wording in these paragraphs to clarify the proposed approach and clearly present how the stations will be used. Also, is there a reason why no downstream station has been identified for the background survey? Please provide a brief explanation.
247.		Appendix D, Section 2.3		Discharges from long-term operation of the CDF will need to meet chronic water quality standards in pore water at the face of the berm. The point of compliance for all post-construction activity should be at the face of the CDF, as described multiple times in the DAR. See Table 1 (attached).
248.		Appendix D, Section 2.5	Yes	Tier 1 monitoring shall resume if a (one) detection above chronic levels is detected, or if otherwise required by EPA.
249.	12-13	Appendix D, Section 2.6.1		Turbidity and TSS – The Port proposes using turbidity and total suspended solids, or TSS, for evaluating water quality at the compliance boundary. Page 13 lists several reasons as justification for why TSS is an acceptable surrogate for turbidity. Can the use of TSS be supported by regulatory requirements? Is there precedent for using TSS in the lower Willamette River to evaluate water quality during in-water construction? If so, how well did it perform as a surrogate for water quality?
250.		Appendix D, Section 2.6.5	Yes	Rather than as indicated, chemical monitoring will be required throughout all project aspects, though at a “maintenance level” if no detections occur initially, as approved by EPA.

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251.		Appendix D, Section 3		This has not been shown to be true at other sites along the river. The chemical analysis should be conducted separately from the physical parameters. The EPA and government partners have indicated that a tiered approach to sampling may be administered once it has been shown that construction activities are not having a negative water quality affect outside the compliance zone. Chemical sampling should continue throughout construction, but may be scaled back as the construction methods are shown to be protective against recontamination. If the Port wishes to conduct a study to correlate physical and chemical water quality parameters to aid future projects at Portland Harbor, it may do so, but in no way should physical parameters be used as surrogates for chemical parameters during water quality sampling on this project.
252.	20	Appendix D, Section 3.2		Pile and Structure Demolition – The second to last bullet states "Most piles will be cut at the mudline or broken off at the mudline, which causes less disturbance than pile pulling." Can this statement be supported with a reference? If not, can it be supported with anecdotal evidence?
253.		Appendix D, Section 3.2/3.3	Yes	Monitoring for COCs will occur daily during the first 3 days, at a minimum for demolition and berm key activity. EPA will review and evaluate this data to determine if once per week monitoring is acceptable. COC monitoring on some basis will be required throughout all site over and in water activities. Monitoring will continue if CHRONIC values are exceeded (not acute) at the tier one level for all site activities. It should also be noted that the PRP has not complied with a directed comment in this case, i.e. maintenance monitoring was clearly articulated as a minimum requirement for all project activities, including COC monitoring once per week for over and in water demolition activity, berm key work, and other activities. EPA expects that comments will be complied with, rather than ignored, if the project is to remain on schedule.
254.		Appendix D, Section 3.3		Monitoring shall be specified in accordance with the comment above for berm key placement at the head of Slip 1.
255.		Appendix D, Section 3.7		Monitoring shall occur at all times and be evaluated by EPA for whether tier 1 or tier 2 sampling is appropriate. Unless approved by EPA, tier 1 sampling applies to all activities. See Table 1 (attached).
256.		Appendix D, Section 3.8	Yes	Tier 1 sampling shall continue for any chronic exceedance, regardless of whether the chronic trigger applies. Detection at or above chronic is an early warning for higher detections, should operator error occur, etc. See Table 1 (attached).
257.	20	Appendix D, Section 3.8		CDF Effluent Discharge – In the subsection on the monitoring schedule for CDF effluent discharge, it is stated that "If no exceedances occur [for three days], chemical monitoring will be scaled back to once per week (Tier II)." NOAA is concerned that effluent discharges from the CDF, if they occur, carry with them a relatively high probability of chemical exceedances. Considering that any such effluent discharge will be originating from an enclosed facility containing contaminated sediments, NOAA believes the Tier I monitoring regime should be maintained at all times in the event of effluent discharge.
258.	20	Appendix D, Section 3.8		CDF Effluent Discharge – Last paragraph, the first sentence states "Additionally, a monitoring station within the CDF will be sampled when the CDF is operational … and the ponded water elevation is such that overtopping of the weir is expected. Monitoring should occur regularly during CDF filling and draining, both over the weir and through the berm. See Table 1 (attached).

Comment No.	Page No.	Section No.	Directed Comment (Yes/No)	Comment
259.		Appendix E		Appendix E, Long Term Monitoring and Reporting Plan, has not been completed. This is an important appendix and should be completed and submitted for review as soon as possible.
260.		Appendix E, Section 1.1		Please include monitoring of dredged area for recontamination.
261.		Appendix E, Section 4		Physical monitoring of the upland CDF area should be included as well.
262.	C-1	Appendix F		Show outfalls to be plugged and/or demolished.
263.	C-9	Appendix F		What is the purpose of this sheet? No information other than the photo is apparent.
264.	C-10	Appendix F		Please correct this sheet: A. Irrigation line at STA 11+04 appears on profile but not plan. B. Show CDF berm fill where applicable at outfall. C. MH C1: Verify 72″ dia MH is structurally capable of accepting three 36-inch dia pipes. D. MH C1 shows an inflowing pipe from the north on the profile but not the plan. E. Provide reference to outfall structure details.
265.	C-12	Appendix F		Indicate connection to existing pipe. Show existing pipe on plan with note indicating size, invert, etc. Show pipe to be plugged and abandoned.
266.	C-13	Appendix F		Plan: Show existing pipes to be plugged and abandoned. Verify 10-foot separation between parallel SD lines A & B is constructible; consider spacing lines either closer together or farther apart to aid constructibility.
267.	C-13	Appendix F		Profile: Provide reference to outfall structure details, indicate incoming 24″ SD at MH A1, label SD lines A and B, show CDF berm fill, and verify MH spacing (Section 5-8 of the DAR indicates 400 LF maximum).
268.	C-14	Appendix F		Label SD lines A and B and verify MH spacing (Section 5-8 of the DAR indicates 400 LF maximum).
269.	C-15	Appendix F		Label SD lines A and B and verify MH spacing (Section 5-8 of the DAR indicates 400 LF maximum). Add a note to define “firewall”.
270.	C-16	Appendix F		Indicate existing pipes to be plugged and abandoned.
271.	C-17	Appendix F		MH B5 appears to have 3 pipes in the plan vs. 2 pipes in the profile. Indicate existing pipes to be plugged and abandoned.
272.	C-18	Appendix F		Please add a note requiring design of outfall structure by professional engineer registered in Oregon and requiring submittal and approval of shop drawings, or note referring to such requirements in the specifications.
273.	C-18	Appendix F		Detail 2: Reference to COE Class I riprap adds another material to the project; can one of the cap materials be used?
274.	C-19	Appendix F		Please clarify where this detail is applicable.

Comment No.	Page No.	Section No.	Directed Comment (Yes/No)	Comment
275.	C-23	Appendix F		Placement of outfall structures on CDF berm complicates construction and schedule coordination. Suggest moving outfalls off CDF berm. Additionally, location of southern outfall conflicts with replacement berth piling for access ramp.
276.	C-24	Appendix F		Provide rationale in DAR for not dredging side slopes for berm footprint. Have all portions of side slopes been verify to be suitable material? Please discuss in DAR.
277.	C-25	Appendix F		Suggest re-considering the location of the weir overflow pipe. What is a "drop inlet spillway drain" at the pipe outlet? Please provide a detail for it. If the habitat bench is deleted, please revise this plan accordingly.
278.	C-26	Appendix F	Yes	Provide cross section of the weir overflow structure, discharge pipe, and outlet structure. Use consistent terminology: CDF Berm vs. Containment Berm. Section 1, Note: The height of the training dikes must be finalized for the 100% design and coordinated in the plans, seismic analyses, and GW modeling. This important design decision should not be made by the contractor.
279.	C-29	Appendix F	Yes	a. Dredging shall occur to the daylight boundary on the south side, digging and sloughing is not allowed. b. The no dredging area along the south side of Slip 3 is a substantial deviation from the 30% DAR and what has been discussed at working meetings leading up to the 60% design. Please justify exclusion of this area from the dredge plan. c. Please accurately depict the limits of dredging, specifically indicating the limits of both the dredging target elevation and the dredging target elevation plus overdredge allowance. For instance, the dredge unit AT-AU-BK-BL has virtually no dredging because the target elevation is above the actual sediment surface elevation over about 75% of the unit. Similarly, dredging appears to be limited to about 50% of unit AT-AS-BF-BG. d. Please indicate sample/core locations and names on plan sheet for future reference during construction to aid in understanding the design basis when making field decisions about additional dredging. e. Please indicate the southern slope to daylight (2:1, 3:1, etc.).
280.	C-30	Appendix F		Please indicate the side slope along the south side along the southern dredging boundary on the sections.
281.	C-34	Appendix F	Yes	Please indicate sample/core locations and names of plan sheet for future reference during construction to aid in understanding the design basis when making field decisions about additional dredging. Please indicate the proposed confirmation sampling locations.
282.	C-35	Appendix F		Please explain in the DAR the limits of the Berth 401 cap area. The cap area appears arbitrary as it is shorter N-S than shown in the EE/CA and longer E-W than in the 30% design. Similarly, please expand the Wheeler Bay cap to the end of the peninsula as shown in the 30% DAR, and enlarge the south side of the western leg to approximately elevation 5 ft as shown in the 30% DAR. Also, the Berth 411 cap appears to shrink from AK-AL-AM vs. the 30% DAR. Please justify the smaller cap or restore cap to prior dimensions. The cap for Pier 5 should extend to the remediation boundary along AA-AQ. Please add a general note describing feathering cap edges at a 5H:1V slope or similar and add dotted line to the plan sheet showing the pay limit for capping, as the pay limit should be outside the minimum neat line boundary to create a feathered transition zone to minimize future erosion of the cap edges.

Comment No.	Page No.	Section No.	Directed Comment (Yes/No)	Comment
283.	C-36	Appendix F		(Supplemental): Please insert a new sheet with plans/sections for earthwork associated with construction of the riparian buffer. Sheet L-6 indicates the buffer will have 1 foot of topsoil for plantings, which is marginal considering the low quality subsoils in the area and the large trees proposed. Suggest excavating 2 feet of soil in the riparian area, scarifying or tilling to a 12-inch depth, and backfilling with 2 feet of high-quality topsoil (developed based on a professional mix design).
284.	C-37	Appendix F		Per comments on the cap modeling, Appendix J, please increase the cap thickness in the Berth 411 area to 15 inches. Please clarify Section 4, what are the two parallelogram areas on the rightmost side of the section (one with diagonal line hatch, one blank)? Section 4: The extent of the Base Cap Type 3 is insufficient. It should provide continuous coverage upgradient from the bulkhead. Please justify the top elevation of the cap in the 100% DAR. How is Base Cap Type 3 material to be placed under existing materials?
285.	C-39	Appendix F		Suggest that Sections 1 and 3 have armoring up to the ordinary high water mark of 16.6 feet elevation. Please coordinate these sections with the landscape sections on Sheet L-2 as there are some discrepancies. Section 4: Indicate fill in upper portion of bank.
286.	L-1	Appendix F		Please add section callouts for Sheet L-2. Coordinate plan with Sheet C-39 as the plan area boundaries are different. Please provide habitat log anchor details.
287.	L-2	Appendix F		Sections: Mulch placed below OHWM (16.6 ft) will float likely away. What is the basis for mulching to elevation 15 feet? Please extend the cross-sections to show the soils preparations/earthwork for the adjacent riparian area. Provide erosion protection measures such as coir log or other material to reduce erosion over the bank lip. The note to amend existing soils with compost should refer to Specification Sections 329113 and 329119. Plantings would benefit from using a high-quality natural imported topsoil or a professionally designed topsoil mix rather than a recipe blend of materials of unknown quality. Mixing materials on the bank is poor practice. Topsoil based on a professional mix design could be blended off site or on-site, but should not be blended on the bank.
288.	L-4	Appendix F		The 11/6/06 letter from USFW requires the riparian habitat include cottonwood trees. These trees are shown on this sheet; however, please correct the legend/symbol for cottonwood trees for consistency. Additionally, please provide discussion in the DAR regarding rooting needs and structural stability needs vs. topsoil and subsoil preparation requirements to ensure that soils are capable of sustaining and supporting large trees such as Cottonwoods and Douglas Fir. Placing 6″ of topsoil is insufficient for ensuring successful growth and health of mature large trees. Revise the landscape plans and specifications accordingly.
289.		Appendix G, General		Numerous references and descriptions conflict with the DAR. Please review and correct the entire Specifications document for these inconsistencies. The specifications should be reviewed for grammar and typos. Please provide specific references for all drawings discussed in the Specifications.
290.	3	Appendix G, Sect. 011100		Paragraph 1.5A and 1.5B. The Port shall include copies of all specifications that are incorporated by reference to EPA as part of the 100% Design Submittal.

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291.	1	Appendix G, 013100	Yes	Please add the following: "The United States Environmental Protection Agency has legal authority over the project work and the Contractor shall allow unrestricted access to United States Environmental Protection Agency employees and its contractor staff (collectively referred to in the remainder of this paragraph as EPA) to observe the work. The Contractor shall coordinate and cooperate with EPA to the maximum extent possible. The Contractor shall neither temporarily nor permanently withhold any relevant data, observations, or information from EPA. EPA shall not provide, nor shall the Contractor accept, verbal direction regarding the means and methods of the work, except that the Contractor shall immediately heed EPA upon EPA's direction to the Contractor to shut down the work and standby until further notice. Other than shutting down the work, EPA shall communicate all direction regarding means and methods and other contractual issues relevant to the Contractor through the Port of Portland.
292.		Appendix G, 013100, General	Yes	1. The Port shall ensure that final early action contract construction documents are stamped by appropriate professionals. 2. The Port shall issue conformed contract construction documents after the bid period that incorporate all addenda issued during bidding. 3. Changes to the contract documents during construction shall be documented using standard construction documentation methods (field orders, change orders, etc.) to provide a complete record of final construction requirements. Undocumented field changes shall be not allowed. 4. For all surveys that require comparisons to design boundaries and grades and thicknesses (cap limits and thicknesses, dredge limits, berm heights, etc.), the Port shall provide to EPA, in a timely manner, coordinated drawings showing both the survey results and the design requirements in the same datum, units, and scales to allow for a direct visual assessment of the quality and completeness of construction. 5. The Port shall provide one complete final conformed set of post-construction contract documents to EPA at the end of the project.
293.	3	Appendix G, 013200	Yes	Paragraph 3.2. Please add the following: The Contractor shall provide the Port 6 hard copy schedules, initially and monthly, in color and on oversize sheets as applicable.
294.	1	Appendix G, 013300	Yes	Paragraph 1.2A. Provide EPA with 3 original copies of each submittal for review. Please include EPA and EPA's consultant on the General Submittal Transmittal Review Form.
295.	1	Appendix G, 014500	Yes	Paragraph 1.1. Please verify that all elements of the project performance standards for capping, dredging, etc. are accurately called out in this section as an element to be addressed in the Contractor's CQC plan.
296.	4	Appendix G, 024113		Paragraph 3.4C (5). Dry brushing tires will likely be inadequate to remove wet sediments from tires. Add requirement for street sweeping using non-compressed air type sweeper. Additionally, provide a disposable pad for any material loadout areas in order to keep the driving surface clean, as decontamination of truck tires is very difficult.

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297.	3	Appendix G, 312319		3.2A (1) (b,c). Please provide justification/discussion of this issue, at a minimum, compare groundwater concentrations to water quality criteria. Please discuss this issue in the DAR, providing an estimate of areas to be dewatered, dewatering depths, durations, flow rates, volumes, and water quality.
298.	4	Appendix G, 312319		3.2B (2). All discharges of dewatering effluent to the stormwater system require chemical monitoring. Discharges under 2 weeks duration must be monitored, not allowed based on visual observations that "look clean."
299.	2	Appendix G, 329113		Paragraph 3.1F. Adding 4 inches of additional imported fill soil per 329119 (i.e., Columbia river sand) will make a poor topsoil that is highly erodible. Use a high quality professionally designed topsoil mix rather than a recipe blend of material of uncertain quality. Placing, blending, tilling, and smoothing all these materials (subsoils, 2 compost layers, sand, and fertilizer) on a 3:1 slope directly adjacent to the river seems like a poor approach.
300.		Appendix G, General 352023		Overdredging at the base of a slope in anticipation of sloughing shall not occur. The contractor will not be allowed to drag dredged areas to even out high or low spots.
301.		Appendix G, 352023	Yes	General. This section is incomplete because it fails to identify the purpose of dredging (i.e., achieve cleanup levels rather than dredge a predefined prism). Please include a new section identifying the project goals, confirmation sampling approach, schedule, likely need for iterative sampling and dredging, and dredging standby measurement and payment. Inclusion of Figure 11 from the DAR will greatly aid the Contractor in understanding the true nature of the work.
302.	2	Appendix G, 352023, 1.3B5		The text refers to "subsequent remedial actions" that can occur outside the 10-day window, however the referenced section does not clearly articulate these. Please include more specific information about activities that may take longer than the specified 10 days.
303.	2	Appendix G, 352023, 1.3C		Part 1.2.B does not define time frames. Please correct this reference.
304.	2	Appendix G, 352023, 1.3C3		The description of scheduling is in conflict with the DAR. Please correct this reference.
305.	3	Appendix G, 352023, 1.3F		Please provide more information regarding how debris will be located and handled.
306.	3	Appendix G, 352023, 1.4		Please specify when soundings will be measured with respect to initial dredging, post-residual dredging, dredging to remove high spots, etc. Please articulate how soundings will be measured in the event that construction equipment or other obstructions prevent immediate access to any area within the project site.
307.	6	Appendix G, 352023, 1.6G2a	Yes	Add the following "specifically including the horizontal and vertical approach to performing the work in a manner that will minimize the dispersal of contaminated sediment/dredging residuals."

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308.	3	Appendix G, 352025, 1.4C1		Clarify that Phase 1 capping in Wheeler Bay and Berth 401 is allowed prior to Slip 3 dredging, but that Wheeler Bay Phase 2 capping, and all other capping, is not allowed until after Slip 3 dredging is complete. Coordinate terms with the Drawings (i.e., Phase 1, Phase 2, etc.).
309.		Appendix G, 352025, 2.2	Yes	Add that all cap material shall be igneous or metamorphic type rock, sedimentary rock shall not be allowed. Provide chemical specific acceptance concentrations for cap materials. Please revise this section to require that import material be tested for gradation, chemistry, and TOC at least every 5000 CY. One sample per 20 percent of the import volume is inadequate.
310.		Appendix G, 352025, 2.6-2.10		Please clarify where Armor Types 2 and 5 are used. They do not appear on the plans or in Section 6.5 of the DAR.
311.		Appendix G, 352025, 2.11		Please provide a specification for the percent passing the No. 200 sieve.
312.	11	Appendix G, 352025, .2C2	Yes	Can cores likely be driven through Base Cap Type 2 material containing up to 4-inch diameter stones? Please clarify. Please also clarify the sequencing, as this paragraph begins with the Contractor notifying the Port when capping is complete, yet then reverts to discussing coring the base cap. Coring of base caps will not be able to be completed once armoring is placed.
313.	10	Appendix G, 352025 3.2G		Please include specifications for cycle times or bucket velocities as part of WQ BMPs, and articulate that barges shall not be overfilled. Dredging for quality rather than production should be emphasized.
314.	12	Appendix G, 352025, 3.4		Please specify that barge draft should be verified as sufficient to place dredged material within the designated area.
315.	12	Appendix G, 352025, 3.4.A		Please verify that “GPS” as opposed to “EPS” will be used to confirm the positioning of dredged material.
316.	12	Appendix G, 352025, 3.4 I	Yes	A capping tolerance of +/-0.5 ft is unacceptable. The Base Cap is only 0.5-foot thick in some places, which would imply a cap thickness of 0.0 ft (none) is acceptable. Please clarify that the cap thicknesses on the drawings are minimums to be achieved in all areas, subject to a specified overplacement allowance.
317.	12	Appendix G, 352025, 3.4 O		This requirement is unreasonable, as cap material will spread somewhat beyond the neat line cap areas. As written, this requirement creates a strong incentive for the contractor to place minimal material at the cap boundaries resulting in thinner than desired cap. Additionally, the cap edges should be feathered somewhat in a transition zone beyond the neat line cap boundaries in order to minimize future erosion of the cap edges.
318.	12	Appendix G, 352025, 3.6		Please specify the method proposed to screen debris from the dredged sediment and indicate applicable BMPs for sediment and water management and housekeeping.

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319.	13	Appendix G, 352025, 3.6.D		Please provide specifics to ensure that the sampling should be consistent with objectives described in the DAR and other sampling plans.
320.		Appendix G, 352025, 3.8C		The contractor shall maintain records of the number of bucket cycles per hour during the first week of operation to track cycle times for subsequent correlation with water quality monitoring results.
321.	10	Appendix G, 352025, 3.2C	Yes	Revise cap thickness requirements to clarify that cap thicknesses on the Drawings are minimums and any areas of the cap thinner than the minimum thicknesses shall be corrected to achieve the minimum thickness.
322.	2	Appendix G, 352027, 1.4.E		Please include potential conflicts associated with construction of the replacement berth.
323.	5	Appendix G, 352027, 1.6.H.2		Please verify that “EPS” rather than “GPS” was intended, and correct if appropriate.
324.	6	Appendix G, 352027	Yes	Paragraph 2.2. Add that all cap material shall be igneous or metamorphic type rock, sedimentary rock shall not be allowed. Provide chemical specific acceptance concentrations for cap materials. Please revise this section to require that import material be tested for gradation, chemistry, and TOC at least every 5000 CY. One sample per 20 percent of the import volume is inadequate.
325.	6	Appendix G, 352027	Yes	Paragraph 2.3. Add a requirement for minimum 0.1% TOC in select fill for containment berm to provide consistency with groundwater modeling analyses. Establish a maximum TOC concentration as well.
326.	9	Appendix G, 352027	Yes	Paragraph 2.6. Revise this section to require import fill to meet the same chemical specific acceptance concentrations as established for cap material and berm select fill. EPA and the Port have specifically agreed that contaminated material cannot be placed above the saturated zone (now established at elevation 9.5 ft) and this specification negates this agreement.
327.	10	Appendix G, 352027	Yes	Paragraph 3.1A. Revise to establish requirements that contractor designed facilities must be designed by a qualified professional engineer registered in Oregon to meet established code requirements. A submittal with stamped drawings and calculations shall be required.
328.	10	Appendix G, 322027	Yes	Paragraph 3.2A. The height of the training dikes must be finalized for the 100% design and coordinated in the plans, seismic analyses, and GW modeling. This important design decision should not be made by the contractor.
329.	10	Appendix G, 322027	Yes	Paragraph 3.2C. Compaction of fill should begin at soon as practical, which may be lower than 5 feet above water level. The specification indicates the construction method to use on the berm when the berm is more then five feet above the river level (i.e., placed in lifts, compacted, etc.). However, no direction is given for construction methods below this point. Please coordinate the design with the geotechnical analysis in Appendix A. The height of the training dikes must be finalized for the 100% design and coordinated in the plans, seismic analyses, and GW modeling.

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330.	10	Appendix G, 322027		Paragraph 3.2E, 3.2F. These requirements conflict with each other, please revise for clarity.
331.	10	Appendix G, 322027		Paragraph 3.2. Suggest overbuilding the berm initially to have it settle to the desired elevation. Elaborate on the process for periodically surveying the berm after initial construction and adding additional fill to correct for settlement. Consider that the berm crest should initially be built wider than desired to accommodate narrowing during subsequent fill placement to correct settlement. For example, if the berm settles 4 feet, at 2:1 side slopes, adding more will to restore the original elevation will narrow the berm crest by 8 feet. Immediately prior to completing the project and demobilizing, the contractor should complete a final survey and top off the berm crest to the final elevation.
332.	10	Appendix G, 353200		Paragraph 2.1. Please use consistent terminology: large woody debris vs. habitat logs vs. rood wads. Drawing L-1 indicates habitat logs.
333.		356216 General		Steel Pipe Piles: All debris shall be removed and a spill response plan shall be prepared for materials falling into the water. Spills shall be reported immediately to the Port. Pile driving and other construction procedures shall be consistent with all water quality standards imposed on the project.
334.	Section	Appendix H-5		Column Settling Test for T4-Comp-2. This test appears to confirm that TSS concentrations in the CDF at 132 hours will be about 2000 mg/L.
335.		Appendix I, General Comments		Please clarify the origin and use of the Dilution Attenuation Factors (DAFs), including the range of DAFs that might occur based on the sensitivity analyses.
336.		Appendix I, General Comments		Please clarify the general assumptions about the hydraulic conductivities and the discharge of contaminants from the finer sediments. As presented the flow appears to be all along the least permeable contaminated fill material, which is probably unrealistic. If some gradients were to allow contaminants to migrate into the more permeable zones above or below these sediments (such as in interim capping layers), rather than to assume perfect flow along the least permeable zone, the contaminant flux getting to the river would probably be much greater, and the time of travel to the berm shorter than now predicted. The main report should provide a summary of the main assumptions used in the modeling to highlight what went into reaching some of the key report conclusions on travel time and concentration, rather than leave that type of information in the appendix which many readers may not read.
337.		Appendix I, General Comments		Please address these issues based on the January 11, 2007, conference call regarding the groundwater modeling: 1. Provide more detail and discussion of input parameters, sensitivities, and results. 2. For short-term modeling, the analysis should be run out longer, results reported for more locations within the berm, and results put into context with information on transport pathways and velocities. Discuss if the berm “fills up” with a highly contaminated first flush that is then ignored in restarting the long-term model with a clean berm. 3. Provide additional discussion of berm input parameters such as TOC in sand/gravel. The modeling for metals used TOC as a surrogate for removal of metals by clays, iron, etc., which needs to be

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				discussed and justified with actual and/or literature data, and confirmed by testing in actual berm fill soils. Additional riprap quarry spalls for training dikes will likely have zero TOC or clay. 4. The issue of conservation of contaminant mass in sediments in CDF is unclear. Please double-check. How are bulk sediment concentrations included/used in this analysis? Please discuss in the text. 5. For long-term modeling, the assumption of using only T4 sediments is not reasonable. Provide a review of other Portland Harbor sites and use available PCLT data or estimate PCLT results from literature. The concern is the T4 sediment PCLT data indicate very "clean" leachate. Other sites likely won't be so clean. Based on a review of other PH sites, PCBs, PAHs, DDT, and TPH are of major concern. Metals appear to be less of a concern. EPA's concern is that the Port is building a regional disposal facility and, as such, only establishing a process for making determinations for sediment acceptance is insufficient, the design needs to anticipate sediments that are likely to be accepted and demonstrate that accepting these sediments will be feasible. However, it is acknowledged that use of "maximum" concentrations from other sites will unreasonably bias the analysis. Instead, representative data should be used. 6. See Table 1 (attached) for applicable COCs, standards, etc. The modeling should be consistent with Table 1. 7. Define critical flow path. Rerun model with final training dike height and inform design engineers if smaller training dikes would aid WQ compliance. 8. Provide additional discussion of biodegradation parameters, temperature effects, etc. based on literature and discuss sensitivities in model. Include limiting case of non-degraded chemical tracer for comparison. Include evaluation of contaminant degradation daughter products.
338.		Appendix I, Section 2.0		Please revise discussion of short-term discharge consistent with Appendix I General Comments.
339.		Appendix I, Section 2.0		The groundwater flow model (MODFLOW-2000) and contaminant transport model (MT3DMS) do not account for the fact that the fill material will be undergoing consolidation. This process may release additional contaminant load from dissolved and total material into the other formations and into the water column during filling process for CDM. Please discuss the significance of sediment consolidation.
340.		Appendix I Section 4.1.2		The use of wells MW-09 and MW-10 may be fine, but there should be a discussion as to how these wells and their respective water elevations related to other wells further inland. It may be that the inland wells would provide indications of a higher gradient once the facility is filled to capacity and the system becomes a relatively steady state ground water system in the long term.
341.		Appendix I, Table 4-1		It is good to have this table of parameters, but there should be more explanation for key parameters. Some of these include the hydraulic conductivity of the aquifer, berm, and sediment fill layers. What is the uncertainty of any of those values, and how would that affect the results of the model? As presented the value for the fill 0.0013e-3 ft/day seems too small (even if that is the value for the long term after settling), and the value for the berm 280 ft/day seems a bit too optimistic for the berm. Since these values will control much of the flow and contaminant transport, they need to be tested for the level of uncertainty that they will create in the modeling. It is not clear why there are two different berm material sections, or which one is considered in the model.

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342.		Appendix I, Section 4.1.4		The list of COPs seems too limited. The model should consider any of the contaminants which are detected in the DRET or MET, and to include potential contaminants expected from other areas in the Portland Harbor sites. It seems that large areas of Portland Harbor sediments have much higher levels of PCBs, TPH, ΣDDTs, PAHs, and to a lesser extent metals than what has been modeled as expected in the CDF. Imported sediments may also contain or further affect the CDF sediment geochemistry and cause changes which release iron or manganese, which already appear to be a likely problem in the river. Many of those issues would make likely that those sediments unacceptable for the CDF unless the modeling and design are done to include them now. It would be better to do some estimate of those now, or to over-design the CDF with some safety factors, than to allow those concerns to become apparent after the CDF is constructed. Please update the modeling based on data from other PH sites likely to dispose of sediments in the CDF, using literature values for leachability, if actual PCLT data are not available.
343.		Appendix I, Section 4.1.4		While use of column leaching results is appropriate, the specific results of the PCLT tests should be reviewed in more detail. The results provided in Table 12 of the main text of the DAR do not follow typical results observed in column studies and in the field. That is, large decreases in concentrations during the initial pore volumes followed by leveling off in later pore volumes should be observed. Actual results are extremely variable. Results may indicate that the tests were not performed correctly or under incorrect conditions. In addition, only one sample was tested. More tests should be performed to adequately characterize the leachate concentrations or results should be compared to literature values to assess whether they are reasonable. In addition, see comments on the 30% design concerning use of the PCLT method (Comment #57 on 30% DAR, and Comment #15 on the 30% Sediment Acceptance Criteria Tech Memo). More PAHs should have been selected for evaluation. The use of MET is not appropriate for evaluation of water quality through the berm. See previous comments on the 30% design. In particular, the use of a 4:1 liquid to solids ratio dilutes the leachate concentrations. If the porosity is 33 %, then a concentration measured in a 4:1 leachate represents the average concentration in the first 12 pore volumes of leachate. This concentration will be much less than that in the first pore volume. Please discuss this in the text and apply a correction factor as appropriate.
344.		Appendix I, Section 4.1.5		The fill material is the source material. The concentrations from column tests on the source material should be used directly in the model as the source concentrations. These concentrations leach directly into the berm. Retardation in the source material should not be used in the model to decrease the concentrations before the chemicals reach the berm. This does not represent actual conditions. The source term concentrations can be decreased with pore volumes by using direct results from the column leach tests. However, the column leach tests do not show uniform decrease in concentrations with pore volumes (see previous comments); therefore, constant source term concentrations should be used. More appropriately, the column tests should be run again to obtain more representative results. Only the Kd values of organic compounds are controlled by the foc. Therefore, adjustment of Kd values for metals based on foc is not appropriate.
345.		Appendix I, Section 4.1.5.3		Justification of the use of one value for the half life should be provided. Complete literature review and provide sensitivity analysis. An infinite half-life should be used as an upper limit in the sensitivity analysis.

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346.		Appendix I, Section 4.1.5.1		The discussion of Kd should discuss the fact that this calculated parameter is very difficult to define accurately, and that it can range over many orders of magnitude. As such it is very important to allow sufficient margins of safety since an underestimate can alter the resulting calculations significantly. Also, as in previous comments, the use of the Kd has to be framed in levels of uncertainty (probably of factors of 10 or 100 rather than 2 or 3 times). Furthermore, the Kd values that have been calculated are for the ground water flow system of the Slip 3 sediments, which are only a subset of the expected sediments in the CDF. As such, the modeling has to provide potential ranges which go beyond what was measured calculated for those sediments to provide an understanding of the uncertainties from the model calculations which are presented. The report should also discuss how bringing other sediments, with other contaminants and geochemical characteristics could affect any the calculations presented, and how contaminant discharges from different disposal units could alter the calculated Kd rates presented in Table 4-4.
347.		Appendix I, Section 4.1.5.1		I suggest that the report also consider other EPA publications related to Kds, such as Understanding Variation In Partition Coefficient, Kd Values, Volume I: The Kd Model, Methods of Measurement, and Application of Chemical Reaction Codes, EPA402-R-99-004A, August 1999. This report has much valuable information, and includes Table 3.3 which lists advantages, disadvantages, and assumptions of the methods which are used to determine Kd values. The 100% design should include some of those limitations in the selection of the modeling parameters, and use the concepts to provide some description of the expected uncertainty in this critical parameter which then becomes a major driver in the modeling solutions.
348.		Appendix I, Section 4.1.5.2		Dispersion. The concept of dispersion should again be separated into its two distinct phases. First there is the short term filling and how dispersion will occur inside of the berm when there is a surface water impoundment with turbid water, and then there is the long term ground water flow regime that will exist when the CDF is filled. In the long term ground water regime, there is very limited practical ways to get dispersion, as can be observed by the many skinny contaminant plumes that have been documented. The other issue of the dispersion, within the berm area is that it is just an indication of the mixing that will be occurring from the pumping action of tides and river stages, which are simply diluting the overall plume concentrations, not the flux to the river. The modeling should attempt to model to the inside of the berm face, to fully inform everyone what can be expected to be discharging to the river. The present modeling with the dispersion within the berm is simply confusing the issue of what concentrations can be expected and what contaminant loading is moving to the river. It is unclear how the dispersion calibration at the river/berm interface was done, what the impact of different model parameters are, and whether the proposed results can be trusted for the long term concentrations leaving the CDF. It may be that the issue is just not having enough detail, but most likely the problem is that more supporting work would be required to fully document the validity of those results.

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349.		Appendix I, Section 4.1.5.2		"Simulating the seasonal and daily tidal influences on the Willamette River for long periods is not practical, however. Thus, a steady-state flow field with dispersion characteristics that approximates peak concentrations and mass flux through the berm is the desired solution." – Disagree that this modeling is not practical. Considering the potentially complex oscillatory flow field in the CDF that might be established through the proposed permeable berm, I think that it is essential that dynamic modeling be performed. The approximations made to account for this introduce too much uncertainty into the model results, and as such, should not be used.
350.		Appendix I, Section 4.1.5.3		The use of degradation half-life values are not clear. When the sediments are placed in the CDF there will be major aeration of the materials for the short term, and when the CDF is filled, there will probably be aerated ground water flowing through the material from the uplands. Please revise the modeling to omit the half-life degradation rate, to be conservative, and add this result to the graphs as the most conservative case. Please discuss the appropriateness of the selected half-life values for the CDF and give expected temperature, redox potential, pH, etc. based on available literature data. Complete a sensitivity analysis.
351.		Appendix I, Section 4.2.2		It is assumed that only dissolved contaminants will pass through the CDF; therefore, only dissolved contaminant levels were modeled. EPA agrees that the berm fill material will provide some filtration, but is not convinced the berm will provide complete removal of all particulate-borne contaminants. Please clarify the flow time through the berm. Please also complete a sensitivity analysis for a case where a fraction of fine sediment passes the berm, such as 1% of material passing the #200 sieve.
352.		Appendix I, Figure 4-6		The figure seems misleading or incorrect. Note that the flow lines (vectors?) inside the CDF (right side from berm) are much longer and flow upward at the berm face. Since the berm is also saturated and of much higher hydraulic conductivity (orders of magnitude?) than the fill it is unclear why the flow vectors do not continue parallel across the berm. Please explain in detail or correct the figure. A related issue is the hydraulic conductivity for the training dike material (riprap or quarry spalls) appears to be substantially underestimated. A value of 10 times the selected value appears more reasonable. It appears reasonable to conclude that the training dikes provide no flow restriction or contaminant attenuation/reduction at all. The modeling would appear to be more accurate if the point of discharge to the river was taken to be after the flow leaves the bulk berm fill, as if the training dikes do not exist.
353.		Appendix I, Figures 4-14 to 4-17		The figures should be redone when some of the comments on the modeling and conceptual assumptions have been reconsidered and rerun.
354.		Appendix J, General		The analysis appears to be based on the assumption that groundwater exiting through the cap is completely free of contaminants. Please provide a table summarizing shoreline groundwater concentration data.
355.	6	Appendix J		Revise cap thicknesses to be based on zero biodegradation. Biodegradation rates are not reasonable for capped sediment which little biological activity is to be expected, due to temperature and lack of food sources. Section 5 notes that biodegradation rates are one of the most sensitive parameters in the model.

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356.	9	Appendix J		Please double check the last section of bullets regarding biodegradation. Previously in the document, for Berth 411, the text stated the assuming zero biodegradation changed the cap thickness from 12 to 15 inches. The last bullet appears to discuss partitioning instead of biodegradation.
357.		Appendix J, Table 2		Please clarify the thickness of the bioturbation layer in the analysis. Consider this factor in the sensitivity analysis. Please note comment 42a on the 30% DAR.
358.		Appendix L, Figures		The notations of the figures appear behind the aerial photos, making them impossible to read. Please correct.
359.		Appendix L		Prop-Wash, Wind and Vessel Wave Analysis – Please include a justification for using average prop horsepower in the evaluation (25% of max for one tug, 50% for another). This does not seem to be a conservative assumption – the modeled conditions should include assumptions that reflect high-end prop-wash forces.
360.		Appendix L		Prop-Wash, Wind and Vessel Wave Analysis – Please include an analysis that presents potential cumulative effects of wind, vessel waves and prop-wash, as all three are likely to work on the cap area at the same time.
361.		Appendix L		Prop-Wash, Wind and Vessel Wave Analysis – Please include a table that presents the potential forces on the various cap components and the proposed cap geotechnical properties for each site.
362.		Appendix M	General	FEMA usually likes to see a copy of their FIRM included in the report with the project location shown and associated cross sections identified. FEMA will also want to see the modeling data, surveyed base map, and the proposed project design.
363.	2	Appendix M		The report notes state minor floodway encroachments from capping at Berth 401. It would be helpful to show this on a figure and/or quantified this a little more.
364.	3	Appendix M		FEMA will probably want to see a table that compares the 1979 HEC-2 model results with the HEC-RAS model, this is called a duplicate effective model, and generally shows any difference between water surface elevations between the two models - These are rarely the same (but that is ok). FEMA will want a comparison of the HEC-RAS model (duplicate effective model) and the existing conditions model with the new cross sections to show and changes in WSE from the new cross sections. Then existing conditions should be compared to proposed conditions.
365.	4	Appendix M		Table 1 - Suggest adding the appropriate FEMA cross section label to the corresponding sections - FEMA generally only regulates changes in WSE at these cross sections.
366.	5	Appendix M		Add a brief methods section explaining development of the floodway boundary at the new cross sections.
367.	5	Appendix M		Same comment as Table 1
368.		Attachment K-2		Please rename as this is part of Appendix M. Suggest reorganizing to put the Portland PCC 24.50.060.F.8 regulations up front to explain the context of this analysis - The Port is requesting an exemption from the compensatory storage requirement, but, as written, that is not clear until the very end of the report

Comment No.	Page No.	Section No.	Directed Comment (Yes/No)	Comment
369.		Appendix N	Yes	Please revise Appendix N to address chemical contaminant discharges over the weir, and discuss available BMPs to minimize contaminant discharges. The memorandum is incomplete is addressing only TSS. Hydraulic dredging can have solids contents of 5% or lower, please justify the stated solids content of 10 to 25% which seems optimist. Please reconcile the various dredge slurry volumes to provide a more accurate estimate of the amount of water that may go over the weir. At 10% solids, the volume would be about 900,000 CY. At 5% solids, the volume would be about 1,800,000 CY. Based on running the dredge for the specified duration, pipe size, and velocity, the volume would be about 1,400,00 CY. Please see related comment on DAR Page 68, Section 5.4.1.
370.		Appendix O, General Comments	Yes	The QAPP is too generic and does not adequately address project specific issues. Please revise the QAPP to specifically address quick turnaround requirements for laboratory analyses, use of any on-site labs, initial data QA/QC procedures, rapid reporting of data to EPA and final data QA/QC and reporting procedures. Rapid TAT analyses may be used for water quality analyses, post-dredge sampling, and perhaps even cap material characterization. Please indicate how many samples of various matrices and analytes might be generated per day and the expected TATs required. The QAPP should clarify the proposed project requirements (e.g., evening/weekend work?), the approaches to the used to meeting these requirements, and contingency actions to be implemented in the event of problems. How will the Port deal with final results that differ from initial results? What instructions will be given to the lab(s) regarding initial data QA/QC before release of draft data, approach for re-extractions/re-analyses, etc. relative to meeting analysis TATs? The labs should be specifically instructed to report problems encountered in a timely manner.
371.		Appendix O, General Comment		For sediments, the methods, detection limits, and QA review should be those used for the PH RI risk assessment, as the sampling results will ultimately be used for assessing risk for the RI. For the water samples, the methods used and detection limits will depend on the criteria that the water sample results are being compared to (i.e., aquatic acute or chronic or human health), so these need criteria (as well as the list of COCs) need to be determined before a final QAPP/FSP can be developed and approved.
372.	7	Appendix O, Section 3.1.1		Please add data use bullets for characterization of CDF berm fill material and sediment cap material.
373.		Appendix O, Section 3	Yes	The decontamination plan shall be modified to include steps to decontaminate divers at a minimum with potable water to remove sediment containing COCs and bacterial contamination present in the Willamette River.
374.		Appendix P		For sediments, the methods, detection limits, and QA review should be those used for the PH RI risk assessment, as the sampling results will ultimately be used for assessing risk for the RI. For the water samples, the methods used and detection limits will depend on the criteria that the water sample results are being compared to (i.e., aquatic acute or chronic or human health), so these need criteria (as well as the list of COCs) need to be determined before a final QAPP/FSP can be developed and approved.
375.		Appendix P, HASP 3.3.1.3		Language should explicitly include properly zipping or securing the flotation device; simply wearing a PFD is inadequate (i.e. if unzipped). USCG fatality reports cite improperly secured PFD's as a contributing factor in safety incidents. Vessel operators should be appropriately licensed in the State of Oregon/this should be noted in the text as a vessel operation requirement.

Comment No.	Page No.	Section No.	Directed Comment (Yes/No)	Comment
376.		Appendix P, 3.3.2.1	Yes	The diving safety manual shall be made available to the EPA project manager for review, as well as project specific dive plans, at least 2 weeks before initiation of diving operations.
377.		Appendix P, 3.3.2.2		This section is incomplete and should address the number of divers in a given crew (e.g. Dive master, Tender/standby diver, line tended diver or two divers in the water, a standby diver, a dive master tender, etc.). Procedures should be outlined to specify the minimum crew for line or surface supplied solo diving (3 recommended) versus buddy diving (4 recommended). All solo diving activities should entail use of a pony bottle ("bailout bottle") and constant surface communications.
378.		Appendix P, 3.3.2.3		Divers should possess training beyond recreational training (i.e. professional, commercial, or military dive training) and experience appropriate for the dives at the site. NAUI, PADI, YMCA training is "recreational" training.
379.		Appendix P, 3.3.2.3		Divers should also possess training in oxygen administration.
380.		Appendix P, 3.3.2.4	Yes	Minimum diver dress. Divers shall be completely separate from the river environment. At a minimum, divers shall utilize a full face mask that seats to a dry suit, a slick (rubber) dry suit suitable for decontamination (rather than crushed neoprene), and dry gloves. Procedures should be in place for decontamination of a diver with a glove or suit leak and specified in the HASP. A decontamination procedure shall be added consisting of, at a minimum, potable water rinse of the diver before removing mask and gloves.
381.		Appendix P, 3.3.2.7		A submerged pressure gauge should be employed also for all reserve cylinders, in addition to the SPG for the primary gas supply.
382.		Appendix P, 3.3.2.7		A 30-minute supply of oxygen for two divers should be carried aboard the diving platform at all times, in addition to a first aid kit stocked specifically for dive operations.
383.		Appendix P, 3.3.2.9	Yes	A J valve reserve air supply is not acceptable. Divers shall have a true reserve breathing supply available on their person. Additional dive specific safety information and recommended minimum procedures are posted on the Portland Harbor Technical Documents page.
384.		Appendix P, 5.2	Yes	Lab turn around times. As specified by EPA in the draft WQMCCP, lab turnaround times are from the time of sample collection to delivery to EPA. Samples that take longer than 72 hours from collection to verbal or electronic delivery to EPA will be considered out of compliance with this requirement.
385.		Appendix P, 6.1	Yes	Notification of the EPA RPM and WQS are required. Not "either" as specified. In all cases, the design needs to be consistent with the final WQMCCP. On the same day, the same message shall be communicated in writing via email to confirm all verbal communications.
386.		Appendix P, 6.2.3		It remains to be proven that TSS and turbidity will adequately predict for chemical constituents. This theory will be evaluated on the basis of data collected during the project.
387.		Appendix P, 6.3	Yes	BMPs. Overwater conventional bucket dewatering will not be allowed. The bucket should be quickly moved once out of the water to the barge, and not drained over-water. This BMP shall be listed as mandatory for dredge operations.

Comment No.	Page No.	Section No.	Directed Comment (Yes/No)	Comment
388.		Appendix P, Table 1, 2, 3, 4	Yes	Please replace these tables with the tables attached to the Action Memo. Numerous changes are apparent, but not justified. Please cite any deviations from the Action Memo requirements.
389.		Appendix Q, Section 3.3		The description of chemical hazards appears to be incomplete as it does not address all chemicals of concern in sediments nor does it indicate concentrations that are likely to be encountered.

Table 1. Summary of T4 CDF Water Quality Monitoring Requirements

Parameter	CDF Weir Discharge Pipe for T4 Early Action	Berm – Short-Term for T4 Early Action	Berm –Dormant Periods Between Sediment Disposal Events (See Note 2)	CDF Weir Discharge Pipe for Future Fillings	Berm – Short-Term for Future Fillings	Berm – Long-term OMMP (See Note 4)
Point of Compliance	End of Pipe	Ambient water column as close as practical to berm face	Berm porewater (1 ft into berm face)	End of Pipe	Ambient water column as close as practical to berm face	Berm porewater (1 ft into berm face)
Monitoring Method	Sampling in CDF at weir	Bottle type whole water sample	Diver sampling with probes or monitoring wells or other method as approved by EPA.	Sampling in CDF at weir	Bottle type whole water sample	Diver sampling with probes or monitoring wells or other method as approved by EPA.
COCs	All applicable T4 COCs>PEC including phthalates, plus PCBs, DDT, and copper (see Note 1)	All applicable T4 COCs>PEC including phthalates, plus PCBs, DDT, and copper (see Note 1)	All applicable COCs>PEC including phthalates. Also, copper and additional soluble and bioaccumulative chemicals as approved by EPA (see Note 3).	All applicable COCs>PEC including phthalates. Also, copper and additional soluble and bioaccumulative chemicals as approved by EPA (see Note 3).	All applicable COCs>PEC including phthalates. Also, copper and additional soluble and bioaccumulative chemicals as approved by EPA (see Note 3).	All applicable COCs>PEC including phthalates. Also, copper and additional soluble and bioaccumulative chemicals as approved by EPA (see Note 3).
Standards	Acute Water Quality Criteria & Water Quality Standards. Chronic Water Quality Criteria, Water Quality Standards to be used as action levels for additional BMPs.	Acute Water Quality Criteria & Water Quality Standards. Chronic Water Quality Criteria, Water Quality Standards to be used as action levels for additional BMPs.	EPA National Recommended Chronic Water Quality Criteria for both aquatic organism and human health, Oregon Chronic WQS, Region 9 PRGs, MCLs, and PH site ROD requirements.	Acute Water Quality Criteria, Water Quality Standards. Chronic Water Quality Criteria, Water Quality Standards to be used as action levels for additional BMPs.	Acute Water Quality Criteria, Water Quality Standards. Chronic Water Quality Criteria, Water Quality Standards to be used as action levels for additional BMPs.	EPA National Recommended Chronic Water Quality Criteria for both aquatic organism and human health, Oregon Chronic WQS, Region 9 PRGs, MCLs, and PH site ROD requirements.

Notes:
1. All COCs present above PEC levels in Slip 1 berm key dredged material and Slip 3 dredged material, plus PCBs, DDT, and copper.
2. Dormant period monitoring will begin when water level in CDF equilibrates with river water level within 1 foot.
3. All COCs present above PEC levels in any dredged material placed into the CDF, plus PCBs, DDT, and copper, plus other bioaccumulatives and solubles (e.g., perchlorate, cyanide, volatiles, etc.) as approved by EPA.
4. OMMP period to begin after final disposal of contaminated sediment to CDF.

Prepared by: Parametrix, Inc. 1/8/07