

EPA Comments on Draft Sufficiency Assessment US Moorings Project Area Dated June 2020

Draft Comments dated August 14, 2020

The following are the U.S. Environmental Protection Agency (EPA) comments on the *US Moorings Project Area Sufficiency Assessment* (SA), prepared by Anchor QEA, LLC on behalf of NW Natural and dated June 2020. The SA is a deliverable prepared for the US Moorings Project Area under the Administrative Settlement Agreement and Order on Consent for Removal Action, CERCLA Docket No. 10-2009-0255 (ASAOC), executed between NW Natural and EPA.

General Comments on SA Report:

1. **Recontamination Potential Chemicals Screening:** EPA acknowledges the River Mile 11E Recontamination Assessment Report (RAR) dated November 2018 was the first work product generated for a Portland Harbor project area that evaluated the status of upland source control and in-water pathways. Subsequent to development of the RAR, EPA developed a sufficiency assessment process per Section 3.1(a) of the ASAOC statement of work (SOW). NW Natural may elect to refer to the RAR as a guide for the US Moorings SA; however, EPA does not endorse the surface sediment contaminant of concern (COC) screening process/approach presented in the RAR but recognizes its utility in evaluating the potential for recontamination at a project area from uncontrolled sources. While the surface sediment COC screening process/approach may be utilized, it does not remove the need to screen data from all media (e.g. surface sediment, subsurface sediment, groundwater, stormwater, and riverbanks) against ROD criteria to identify sources that may pose a recontamination threat. In addition, should the COC screening process/approach be used, it only applies to identification of RPCs for evaluating recontamination and not identification of potential driver COCs for remedial design (RD). All contaminants from Table 17 (e.g., for capping effectiveness or dredging leave surface) and Table 21 of the ROD must be considered during RD and future performance monitoring. EPA requests that all available sediment, riverbank, groundwater, and stormwater data be screened against the applicable Table 17 cleanup levels (CULs).
2. **Upland Source Control:** Revise the upland source control portion of the SA to focus on upland sources that are likely to contribute COCs to the US Moorings Project Area. Upland sources identified in Section 5.1 that do not have a complete migration pathway to the US Moorings Project Area should be removed from the SA. Sufficiency assessments will be conducted at all the EPA-identified project areas to evaluate upland and in-water sources of contaminants to determine whether they have been adequately investigated and sufficiently controlled such that remedial action can proceed. If potential sources remain, the sufficiency assessments will identify how those sources will be addressed or integrated into the in-water design.
3. **Conceptual Site Model:** The conceptual site model (CSM) needs to be updated in the SA. Contamination in the US Moorings Project Area must be described, including sediment samples with contaminant concentrations above remedial action levels (RALs), principal threat waste (PTW) thresholds, and CULs from the ROD (EPA 2017). The sources of these contaminants should be identified (if known) and a discussion of fate and transport should be provided. All migration pathways to and from the project area need to be identified, and this

information should be used to support the evaluation of source control and potential for recontamination that is presented in Section 4.

4. **In-Water Recontamination Potential Evaluation:** The discussion in Section 5 should focus on areas with potential to recontaminate the project area based on migration pathways identified in the CSM. Project areas without a direct migration pathway to the US Moorings Project Area should be removed from Section 5 to allow for a more focused and thorough discussion of relevant in-water sources.
5. **Sufficiency Assessment Summary Tables:** As described in the *Remedial Design Guidelines and Considerations* (EPA 2020), “the goal of this table is to serve as the basis for EPA’s sufficiency determination in informing respondents whether cleanup can go forward, and if potential sources remain, how those sources should be integrated into the in-water design.” The project areas identified in Table 6-2 are already being evaluated as part of the in-water design under EPA oversight. Table 6-2 should be revised to identify sources specific to the US Moorings Project Area and evaluate the status of those sources. Similarly, Table 6-1 must be updated to identify the upland sites that potentially contribute contamination to the project area and evaluate the status of source control at those sites based on the evaluation presented in the SA. EPA recommends combining these two tables into a single sufficiency assessment summary table. An example sufficiency assessment summary table is provided as Appendix E of the *Remedial Design Guidelines and Considerations*.
6. **Remedy Sequencing:** EPA recognizes that consideration of remedy sequencing will be a component of remedy implementation, as described in Section 14.2.11 of the ROD. Remedy implementation under EPA oversight will consider appropriate sequencing of remedial actions and operational best management practices such that recontamination potential from upstream sources is minimized during remedy construction. Specific decisions on remedy sequencing are not within the scope of the SA. The text in Section 5.4 and 6 should be revised to focus on discussions relative to evaluation of upland and in-water sources of contaminants and determining whether they have been adequately investigated and controlled.
7. **Newfields Data:** EPA expects NW Natural to review the Newfields data in relation to RALs and PTW thresholds to determine if there are any impacts to sediment management area (SMA) delineation. On page 8, NW Natural describes that the SA does not include the 2014-2015 Newfields data for reasons stated in the Gasco Sediments Site Sufficiency Assessment. After collection of the 2014-2015 Newfields data, EPA reviewed and approved the dataset for use during RD and it was posted on the interim data portal. NW Natural may not entirely agree with the source assessment data quality objectives (DQOs) but use of the data should be considered for making RD decisions in this project area.
8. **Sufficiency Assessment Summary:** For "C" status sites, the Sufficiency Assessment Summary (Tables 6-1 and 6-2) should differentiate between uncontrolled sources and sources where additional assessment is recommended, perhaps using a C(u) for uncontrolled sources and a C(a) for sites for which additional assessment is recommended.
9. **Additional Information Expectations:** The SA states that NW Natural has not yet received certain information relevant to the report because of government office closures due to COVID-19. EPA appreciates the effort to complete the SA to the extent possible and requests that an update is provided on the status of this information in the response to EPA comments. Missing information identified in the SA includes upland groundwater data,

riverbank soils information, the status of stormwater system maintenance actions, and any other upland media with a migration pathway to the river. Missing information is expected to be included in the Final SA.

Specific Comments on SA Report:

1. **Section 1.1 Sufficiency Assessment Objectives and Purpose, page 1:** Revise text to reference the US Moorings Project Area SOW. The SA references a draft generic SOW (USEPA 2019) as providing relevant guidance. The SOW provided as Appendix B of the ASAOC is the appropriate reference for SA objectives.
2. **Section 1.2 Project Area Setting, page 2:** Additional description of surface and subsurface sediment contamination in the US Moorings Project Area is needed in this section or in Section 3. Section 1.2 indicates that there is surface and subsurface sediment with concentrations above RALs for each of the focused COCs that were identified in the ROD. However, there is no description of the spatial distribution of the contaminants, the magnitude and frequency of RAL exceedances, or whether changes in sediment concentrations have been observed during sampling. This information should be the starting point for evaluating potential recontamination (see General Comment 3) and needs to be described thoroughly in the SA.
3. **Section 3 Recontamination Conceptual Site Model and Source Identification, page 10:** The Advanced American Construction property must be included in the SA evaluation. The SA process involves evaluating upland sources and determining whether they are sufficiently investigated and controlled, and there is no reason to exclude the Advanced American Construction property from this evaluation. Discussion in Section 3.2.4 indicates that sampling and analysis of erodible riverbank surface soil samples and subsurface riverbank angle borings are planned at the US Moorings and the Advanced American Construction properties to provide data needed to evaluate the potential for sediment recontamination. This property should be added to the discussion in Section 4 and included in Table 6-1. It is important to document upland sites and pathways that are controlled in Table 6-1 in addition to uncontrolled sources.
4. **Section 3.1 US Moorings Property Description, Land Use, and History, page 10:** Historic activities at nearby properties that could have impacted contamination at the US Moorings Project Area should be described in this section. Include information regarding surrounding properties involved in activities with the potential to cause contamination at the US Moorings Site. For example, the discussion should include the historic operations of the former Gasco manufactured gas plant on the adjoining property to the south.
5. **Section 3.2.2 Geologic Setting, page 13:** The report should clearly state that the geology of the US Moorings Project Area is continuous with the northern portion of the Gasco site. This includes surficial fill deposits, recent alluvium, and the Columbia River Basalt Group. The continuous geology between the Gasco site and the US Moorings Project Area should be discussed in the context of the known groundwater contamination plume at the Gasco site.
6. **Section 3.3 Portland Harbor In-Water Physical Conditions, pages 17-23 and Figures 3-7, 3-8, 3-9, 3-10, 3-11a through 3-11f:** The in-water conditions presented in Section 3.3 need to be updated to include more project-specific information for the US Moorings Project Area. Section 3.3 presents useful information on site-wide in-water physical conditions but needs to also include a focused discussion for the US Moorings Project Area. The physical conditions at the US Moorings Project Area should be described in relation to the CSM to support the evaluation of potential sediment recontamination from upland and in-water sources. EPA

suggests updating Figures 3-7, 3-8, 3-9, 3-10, and 3-11a through 3-11f to focus on the US Moorings Project Area (e.g., add inset maps or provide additional maps showing just the US Moorings Project Area).

7. **Section 3.3.2 Hydrodynamic Conditions, pages 18-19:** The hydrodynamic conditions described in this section must be incorporated into the project area CSM to inform evaluations of potential sources of recontamination. Site-specific hydrodynamics have a major impact on potential sediment transport that could result in recontamination and should be used to support evaluation of whether a complete migration pathway exists from other project areas and upland sources to the US Moorings Project Area.
8. **Section 3.3.3 Fine Sediment Distribution, page 20:** EPA has the following comments on this section and the document should be revised accordingly:
 - a. The non-contiguous fine sediment areas at the Gasco Sediment Site Project Area and US Moorings Project Area described in this section are difficult to discern in the site-wide figure that is referenced (Figure 3-8). Including maps specific to the project area would be helpful to support this evaluation and other evaluations specific to the US Moorings Project Area. The SA should be revised where needed, as described in the Specific Comment on Section 3.3.
 - b. Evidence such as hydraulic data, sediment transport data, or site-specific modeling should be provided to support the claim in this section that US Moorings Docks A and B “hinder nearshore bedload migration of fine sediments downriver from the Gasco Sediments Site Project Area and nearshore flow.”
9. **Section 3.3.4 Wind- and Vessel-Generated Waves, page 20:** A discussion of the impact of wind- and vessel-generated waves on the US Moorings Project Area should be included in this section. As shown on Figure 3-9, wind- and vessel-generated waves occur within the SMAs in the US Moorings Project Area and the impact this has on sediment resuspension and transport within the US Moorings Project area should be described.
10. **Section 3.3.5 Vessel Propeller Wash, pages 20-21:** Evidence should be added to the SA to support the following statements from this section or they should be revised or removed from the report. The statements seem to contradict one another and are not supported by project data or a reference.
 - a. “Similarly, propeller wash forces in the Project Area inhibits the settling of solids containing contamination and decreases the potential for sediment recontamination in those areas.”
 - b. “The Project Area has no modeled propeller wash areas, which increases the potential for sediment recontamination in these areas.”
11. **Section 3.3.6 Riverbed Elevation Changes, pages 22-23:** The discussion in the last paragraph in this section regarding sediment deposition should be revised. While the sediment bed elevation assessment presented does indicate that the sediments in the project area are net neutral or depositional, this alone does not suggest that contaminated sediment from other project areas may accumulate. A complete migration pathway of contaminated sediment from other project areas has not been demonstrated in the CSM (i.e., erosion of contaminated sediment at other project areas and deposition of that sediment at the US Moorings Project Area).

12. **Section 4.1 Stormwater Sources, pages 24-25:** The SA should describe how data gaps in characterization of stormwater sources will be addressed. Section 4.1 of the SA notes that drywells and stormwater outfalls are potential sources of semi-volatile organic compounds, polychlorinated biphenyls (PCBs), pesticides, metals, and total petroleum hydrocarbons (TPH), but that inadequate data is available to assess this pathway because data does not exist for all contaminants at all outfalls. This should be identified as a data gap in the SA and a description of how the data gap will be addressed needs to be added to the SA. The Pre-Design Investigation (PDI) Work Plan (WP) does not include stormwater sampling and alternative approaches to fill this data gap have not been proposed.
13. **Section 4.1.1 Stormwater Drainage Subbasins, page 25, Section 4.1.4 Stormwater Investigations and Data Sources, page 27, and Figure 4-1:** EPA has the following comments on this section and the document should be revised accordingly:
 - a. Revise the descriptions of drainage areas and outfalls provided in this section. The Oregon Department of Transportation (ODOT) only owns outfall WR-510 (on the west side of the St John's Bridge) near the US Moorings site. Highway 30 runoff contributes to three outfalls (WR-205, WR-206, and WR-207) that discharge into the US Moorings site. Outfalls WR-205, WR-206, and WR-207 may correlate to those labeled as 12, 14 and 18 on Figure 4-1. The outfall designations should be included in the descriptions of the outfalls on Figures 4-1. The outfall labeled as 15 on Figure 4-1 is incorrectly attributed to ODOT ownership.
 - b. ODOT monitors highway contributions to outfall WR-205 and WR-206 in this area and these data should be obtained and evaluated.
14. **Section 4.1.4, Stormwater Investigation and Data Sources, pages 27-28:** Additional information is needed on the status of the outfalls that discharge to the US Moorings Project Area. This section indicates that smoke and dye testing was conducted to assess outfall status and that "all but a few of the outfalls were inactive." The specific outfalls that are active should be identified and a discussion should be provided on the available information on each of these outfalls. Information that would be helpful for the SA includes the areas the outfalls drain, the land use within the outfall basins, observations regarding discharge (e.g., frequency, quantity, visual observations), and any stormwater sampling or catch basin solids data from the active outfalls. If data are not available for some outfalls, that should be identified as a data gap and the SA should assess whether additional stormwater sampling data is needed based on the available dataset and outfall status.
15. **Section 4.1.5.2 NPDES Permit Benchmarks, page 29:** EPA has the following comments on this section and the document should be revised accordingly:
 - a. The SA should be revised to include additional discussion of stormwater sampling and results as part of the 1200-Z permit for the US Moorings property. Section 4.1.5.2 indicates that samples collected from Outfalls A and B were compared to 1200-Z permit benchmarks, but many of the analytes with Portland Harbor benchmarks are not provided in Table 4-1 (e.g., total copper, total lead, total zinc, total suspended solids, and oil and grease). Additionally, Section 4.1.2 states that US Moorings was granted a reissued 1200-Z permit on October 22, 2018. Data from stormwater monitoring conducted as part of this permit should be described in the SA to support the evaluation of the stormwater pathway.

- b. The discussion of the interpretation of 1200-Z stormwater monitoring data must be revised in this section. Stormwater monitoring data from 1200-Z permits can be used as a line of evidence to support the evaluation of the stormwater pathway, but compliance with permit criteria is not sufficient to conclude that stormwater is being appropriately controlled and unlikely to pose a sediment recontamination concern. For additional information on evaluation of the stormwater pathway at upland sites, refer to the Joint Source Control Strategy (DEQ and EPA 2005) and DEQ's *Guidance for Evaluating the Stormwater Pathway at Upland Sites* (DEQ 2010).

16. **Section 4.1.5.3 Erodible Soils Entering Stormwater, page 29:** EPA has the following comments on this section and the document should be revised accordingly:

- a. Additional discussion of the erodible soils entering stormwater is needed in the SA. Section 4.1.5.3 notes that several contaminants exceeded CULs in soil samples. Additionally, the sample collected from the North Logistics MU contained PCBs at concentrations above site-wide and navigation channel RALs and the PTW threshold. From the discussion provided, it is unclear if any action was taken to address the contaminated soil or if any additional investigation was performed to identify the source of contamination.
- b. Discuss the vegetated filter installed along a portion of the bank in 2016. The effectiveness of the vegetated filter in preventing direct discharge via overland flow should be considered when evaluating recontamination potential via this pathway. This section does not discuss overland flow from the southern portion of the US Moorings site or the adjacent site (Advanced American Construction).

17. **Section 4.1.7 Stormwater Recontamination Potential Assessment Conclusions, page 30:** EPA has the following comments on this section and the document should be revised accordingly:

- a. The stormwater pathway should be considered on an outfall-by-outfall basis. Based on the outfall-by-outfall analysis of the stormwater pathway additional data gaps should be considered, and conclusions in this section should be revised.
- b. An explanation should be provided as to how drywells could be a recontamination threat via the stormwater pathway, or these statements should be removed.

18. **Section 4.3 Groundwater Sources, page 31:** A description of how to address data gaps in groundwater characterization should be added to the SA. The SA notes that arsenic, cadmium, carcinogenic polycyclic aromatic hydrocarbons, chlordanes, and TPH in nearshore groundwater exceed CULs, and other chemicals had elevated detection limits so could not be compared to CULs. This sampling only covers a portion of the US Moorings property and the SA characterizes groundwater sources as not sufficiently assessed or controlled. However, the PDI WP does not include groundwater sampling and the SA does not identify potential approaches to fill this data gap.

19. **Section 4.3.1 Groundwater Source Control, page 32:** EPA has the following comments on this section and the document should be revised accordingly:

- a. The SA should identify all groundwater plumes that extend into the Willamette River and have the potential to discharge to the US Moorings project area. The SA should describe the sources of contamination, COCs, and pathway(s) contributing to

groundwater contamination for these plumes and evaluate how they could impact the implementation of the remedial action. The SA should also identify potential data gaps associated with the plumes and describe how data gaps will be addressed by future evaluations and/or sampling.

- b. The SA should be revised to include a discussion of contaminated groundwater and source control measures at the adjacent Gasco facility. Figure 8 of the ROD shows a groundwater plume associated with the Gasco site at the upriver area of the US Moorings Project Area (EPA 2017) and Appendix C of the Portland Harbor Remedial Investigation describes contaminated groundwater that discharges from the Gasco site to the Willamette River directly adjacent to the US Moorings Project Area (EPA 2016). Figures 3-6a and 3-6b show the groundwater gradient is generally oriented to the northwest (i.e., from the Gasco site towards the US Moorings upland site), suggesting potential groundwater transport from the adjacent Gasco site. The SA should describe whether the contaminated groundwater plume impacts the US Moorings Project Area and if the groundwater source from the Gasco site has been adequately controlled. This discussion should include a description of source control measures and evaluation of groundwater in the fill water bearing zone (WBZ) and alluvium WBZ.

20. **Section 4.3.2 Groundwater Screening for Recontamination Potential, page 32:** All groundwater sampling results should be screened against groundwater CULs in the SA and not just the eight nearshore temporary standpipe monitoring wells. As shown on Figure 3-5, several additional monitoring wells were sampled as part of the US Moorings remedial investigation and evaluating the results of those samples in the SA will allow for a more thorough assessment of groundwater conditions. The groundwater data from the additional monitoring wells may help address the issue raised throughout Section 4.3.2 of the “limited spatial extents” of groundwater data.
21. **Section 4.5 Existing In-Water Structures and Overwater Operations Sources, page 37:** This section states that “Further information is needed to assess this pathway, including but not limited to building materials for docks, current overwater operations, and activities and BMPs in place for minimizing impacts of leaks or spills.” This information should be obtained and added to future SA revisions before remedy implementation to support evaluation of the overwater (direct discharge) pathway.
22. **Section 4.6 Summary of Recontamination Potential Evaluation Conclusions for the US Moorings Upland Site, page 38:** Recommendations for addressing the data gaps identified for the upland pathways must be provided in the SA. This section concludes that the stormwater, groundwater, riverbanks, and in-water structures and overwater operations pathways are not sufficiently assessed or controlled in part because there is a lack of data to characterize these pathways. However, the approach for addressing these data gaps is not described. A table that summarizes all the data gaps identified in the SA, the relevant pathway, and proposed plan for addressing the data gaps would be helpful.
23. **Section 5 In-Water Recontamination Potential Evaluation, page 39:** The first paragraph states, in part, that “this Sufficiency Assessment assumes that upland sources to other project areas would have the potential to enter the Project Area as suspended sediments in surface water, bedload sediments transported into the Project Area through river flow, or by sediment disturbance associated with remediation or maintenance dredging in other project areas.” This type of statement is not appropriate and must be substantiated by a complete migration pathway identified in the CSM, and preferably with site-specific data that provides evidence of

potential recontamination. If a complete migration pathway is not identified, much of the discussion presented in Section 5.1 could be removed from the SA.

24. **Section 5.1 Upland Sources to Other Project Areas, pages 39-62:** The conclusions derived from the information presented in this section should be provided in the SA. The information provided in this section is a summary of upland pathway status presented in the *Portland Harbor Upland Source Control Summary Report* (DEQ 2016) and supporting data or updates to source control status since 2016 are not provided. The relevance of this information to the US Moorings Project Area is not described and there is no description of a complete migration pathway from these upland sources to the US Moorings Project Area. Upland sources with a complete migration pathway to the project area should be described in Section 4 and not in the in-water pathway evaluation, and relevant upland facilities should be included in the recontamination evaluation summary presented in Table 6-1. If the updated CSM does not identify a complete transport pathway (see General Comment 2 and the Specific Comments on Sections 3 and 4.1.5.2 (sub comment a), then this information is not needed and should be removed from the SA.
25. **Section 5.1.3 B1 Boundary – Gasco Sediments Site Project Area, pages 42-43:** The sufficiency assessment report for the Gasco Sediments Site is currently under EPA review. Owing to the locations of the Gasco Sediments Site directly adjacent to the US Moorings Project Area, the Gasco Sediments Site is likely more relevant for evaluating source control and recontamination potential than the other upland facilities described in the SA. The information presented in this SA should be updated as needed based on the forthcoming EPA comments on the Gasco Sediments Site sufficiency assessment report.
26. **Section 5.1.3.2 Summary of Upland Source Control Status, page 42:** EPA has the following comments on this section and the document should be revised accordingly:
 - a. Revise text to clarify that the hydraulic control and containment system (HC&C system) is achieving design and performance objectives for the upper and lower portions of the Alluvium WBZ by maintaining groundwater elevations below the elevation of the Willamette River along the NW Natural property and northern portion of the adjoining Siltronic property (i.e., maintaining hydraulic gradients from the river towards the uplands). Evaluation of the influence of the HC&C system on groundwater in the deep portion of the Alluvium WBZ is ongoing. The SA currently states that the HC&C system “eliminates discharge” of groundwater in the Alluvium WBZ to the Willamette River.
 - b. Revise text to clarify that the Fill WBZ trench system planned to be installed in 2020 is designed to address groundwater contamination migrating from an uplands source.
27. **Section 5.2 Sediment Bedload Migration, pages 62-66:** Bedload transport refers to sediment transported along or very close to the riverbed, whereas suspended load refers to sediments in the water column. Sediment traps are typically designed to capture suspended sediment. The terminology in this section should be revised as appropriate to describe the sediment transport mechanisms that are evaluated.
28. **Section 5.2.1 Sediment Trap Data Evaluation, pages 62-65:** This section should focus on the sediment trap data from the sediment traps that were deployed in the US Moorings Project Area. Sediment trap data from other portions of Portland Harbor have limited use for evaluating potential sediment recontamination in the US Moorings Project Area. Hydrodynamic and sediment transport conditions and nearby contaminated sediment sources

are variable throughout Portland Harbor, so site-specific evaluation of potential sediment deposition is needed.

29. **Section 5.2.1 Sediment Trap Data Evaluation and Figures 5-2a through 5-2h:** The figures referenced in Section 5.2.1 (i.e., Figures 5-2a through 5-2h) should be revised to focus on the US Moorings Project Area (see above comment). Showing sediment trap data collected from both sides of the river across 15 river miles is not likely relevant to evaluating in-water source control status at the US Moorings Project Area. However, if NW Natural elects to keep these figures, the following changes are needed:
- a. The ROD defines the Downtown Reach as RM 11.8 to RM 16.6 and the Upriver Reach as RM 16.6 to RM 28.4 (EPA 2017). The figures should be revised to show the correct boundaries.
 - b. Symbols should be revised to show which samples were collected on the west side of the river and which were collected on the east side.
 - c. Applicable CULs should be shown for each figure to allow for comparison of sediment trap data to CULs.
 - d. EPA recommends that “Upriver Portland Harbor Superfund Site” be changed to upper or upstream to more clearly differentiate the portion of the Portland Harbor Superfund Site being discussed from the Upriver Reach.
30. **Section 5.2.2 Depositional Sediment Data Evaluation, pages 65-66 and Table 5-2:**
- a. The text in this section should clearly state that the depositional sediment sampling (i.e., surface sediment sampling being discussed) was not conducted at the US Moorings Project Area. The specific hydrodynamic conditions and sediment contamination are different at the US Moorings Project Area and the adjacent Gasco Sediments Site Project Area. Therefore, the depositional sediment samples collected at the Gasco Sediments Site Project Area may not be representative of the sediments that could potentially deposit at the US Moorings Project Area. This uncertainty in the applicability of these data for the US Moorings SA should be described.
 - b. Clarify which data were used in Table 5-2. Section 5.2.2 states that depositional sediment data was collected in 2006-2009 and 2019. It is not clear which data set(s) were used to generate the table.
31. **Section 5.3 Sediment Erosion and Remediation Dredging Impacts, pages 66-77:** The impact of the exceedances of RALs, PTW thresholds, and CULs summarized in this section should be discussed. Without a complete migration pathway that would result in potential sediment recontamination in the US Moorings Project Area, the relevance of these summaries is unclear.
32. **Section 5.4 Recontamination Potential Assessment, page 77-78:** The assessment presented in this section does not accurately reflect the information presented in the SA. Although Section 5.3 presents frequencies of RAL and PTW exceedances, there is no discussion of whether these exceedances occur in erosive areas. Section 5.1 summarizes source control status at upland facilities throughout the site (as of 2016), but the SA does not describe the migration pathway of those sources to the project area. Revise the text as appropriate.

33. **Section 6, Summary of Recontamination Potential Evaluation, page 80:** EPA has the following comments on this section and the document should be revised accordingly:
- a. Per the ASAOC SOW, the SA needs to consider the general magnitude of any potential recontamination effects and discuss implications to the selected remedy for the Project Area. Accordingly, Sections 4, 5, and 6 of the report should be revised to generally describe the magnitude of potential recontamination sources.
 - b. This section should be revised to identify specific data gaps that need to be addressed as part of the in-water work to support remedial design, such as the collection of groundwater flux and pore water contaminant concentrations during the preliminary design work to inform cap design. The SA should also identify data gaps that should be addressed by upland sites before remedy implementation, such as a stormwater source control evaluation. For clarity, EPA recommends adding a table which summarizes the data gaps and the suggested methods to address each data gap.
 - c. The SA concludes that several upland migration pathways (i.e. stormwater and groundwater) from the US Moorings Upland Site present documented sources of contamination that are not sufficiently controlled and contain complete migration pathways that may recontaminate the Project Area. However, the supporting sections and Table 6-1 conclude that there is insufficient information to assess these pathways. Revise the text in Section 6 as appropriate.
34. **Section 6, Summary of Recontamination Potential Evaluation, page 80, and Section 2, Approach for Evaluating Potential for Sediment Remedy Recontamination and Assessment of Long-Term Cleanup Level Exceedances, page 5:** The following statement is out of the scope of the SA and should be removed: “To the extent sediments exceeding CULs migrate into and persist in the Project Area, delay in or failure to meet the CULs does not indicate failure of the Project Area remedy and would not serve as a basis for enhanced monitoring of the Project Area remedy or other potential contingency measures associated with Project Area remedy performance.” The goal of the SA is to evaluate upland and in-water sources of contamination to determine whether they have been adequately investigated and sufficiently controlled or considered such that the remedial action can proceed. As stated in Section 3.1(d) of the ASAOC Statement of Work, post-construction monitoring will be designed to distinguish between recontamination and assessing whether the remedy is functioning as intended to demonstrate long-term performance of the remedy across appropriate temporal and spatial scales.
35. **Table 3-1 Summary of Erosional Areas in Project Areas – Comparison of 2002 and 2018 Bathymetry:** Add the US Moorings Project Area to this table.
36. **Tables 5-1a through 5-1d:** A table showing all the sediment trap sampling results (not just statistical summaries) from the sediment traps deployed in the US Moorings Project area would be helpful for evaluating concentrations of sediments that could potentially deposit in the project area. Tables 5-1a through 5-1d may not be needed and could be removed from the SA (see the Specific Comment on Section 5.2.2).
37. **Table 6-1 Recontamination Evaluation Summary – Upland Pathways Summary:**
- a. The table must be revised to identify other upland sites that potentially contribute contamination to the US Moorings Project Area (e.g., Advanced American Construction Properties) and summarize the status of each relevant pathway from those

sites. An example table is provided in Appendix E of the *Remedial Design Guidelines and Considerations* (EPA 2020). Also see General Comment 5.

- b. The “Remedial Design/Source Control Task” column should be revised to identify tasks that are needed to address the pathway. It currently identifies issues and limitations with the existing data sets but does not include tasks that will be completed during remedial design or under the upland source control program to address the data gaps and limitations.

38. **Table 6-2 Recontamination Evaluation Summary:** The source control status ratings (i.e., A, B, or C) presented in Table 6-2 must be revised based on the comments presented herein. There is insufficient evidence presented in this SA to assign each of the project areas outside of the US Moorings Project Area a “C” rating and it is not within the scope of the SA to comment on the status of other project areas if a direct migration pathway has not been established. The presence of contaminated sediment in other portions of the river does not necessarily suggest these areas represent uncontrolled sources with the potential to impact the US Moorings Project Area. Refer to General Comment 5 for discussion on the intent of this table and General Comment 6 for a discussion on remedy sequencing.

39. **Figures 5-5a through 5-6i:** The sampling locations within the US Moorings Project Area with sediment concentrations that exceed RALs and PTW thresholds should be shown on these figures. It is not appropriate to exclude concentrations from the US Moorings Project Area and state that they will be addressed during RD. Understanding the current distributions and trends in contaminant concentrations within the US Moorings Project Area is important for understanding the site and potential recontamination. For example, if COCs from Table 21 of the ROD were detected at concentrations above RALs and/or PTW thresholds during 2018 pre-RD/baseline sediment sampling but not during previous sampling, this would be a line of evidence for an uncontrolled source and potential recontamination.

40. **Figures 5-4a through 5-4i and Appendix C Figures C-2a through C-2z:** Additional explanation should be provided for the information and symbols presented in the boxplot figures.

- a. The values represented by the white circles should be identified in the legend.
- b. The values represented by the boundaries of the blue box should be defined in the legend.
- c. The values represented by the limits of the “whiskers” on the boxplots should be defined in the legend.
- d. The reasoning for excluding non-detects in the statistical evaluation should be described. When the detection limit is sufficiently low, non-detections are important information for characterization and should not be excluded from the dataset without appropriate statistical reasoning. Excluding non-detects where detection limits are low would bias the dataset high and could lead to an erroneous conclusion that recontamination potential is higher than it is. However, if detection limits are not sufficiently low (e.g., near or above RALs) then non-detects do not provide meaningful data and it is likely appropriate to exclude these data.

Editorial Comments on SA Report:

1. **Section 1.2 Project Area Setting, page 2:** The relationship between the City of Portland datum (COP), the Columbia River Datum (CRD), and the North American Vertical Datum of 1988 (NAVD88) should be provided in Section 1.2. Many figures present elevations in a variety of datums, including “mean sea level,” which is not described in Section 1.2. A description should be provided of relative differences between these datums at the US Moorings Project Area and whether these differences impact the evaluation provided in the SA.
2. **Section 3.3.5 Vessel Propeller Wash, page 21:** The reference in this section to the figure showing propeller wash areas should be updated from Figure 3-4 to Figure 3-10.
3. **Section 4.2 Direct Discharge Sources, page 31:** Note that stormwater is a subset of direct discharges. Retitling this section should be considered and a statement that there are no known permitted wastewater discharges may be included.
4. **Section 5.1 Upland Sources to Other Project Areas, pages 39-62:** The description of project areas throughout this section should be updated to describe that the project areas extend beyond areas identified for active remediation in ROD Figure 3 1a. Project areas include these active remediation areas (i.e., SMAs) and also include areas surrounding the SMAs (as shown on Figures 3-8, 3-9, 3-10, etc.).
5. **Table 4-2:** The samples analyzed for BEHP should be highlighted in this table since they exceed the river bank soil/sediment CUL of 135 µg/kg.
6. **Tables 5-3a through 5-4h:** The data source(s) used in these surface and subsurface sediment summary tables should be referenced in the text or as a footnote in the tables.
7. **Figures 5-5a through 5-6i:** The data source(s) used in these surface and subsurface sediment concentration figures should be referenced in the text or as a footnote in the figures.

References

- DEQ. 2016. *Portland Harbor Upland Source Control Summary Report*. November 21, 2014 – Updated March 25, 2016.
- DEQ. 2010. *Guidance for Evaluating the Stormwater Pathway at Upland Sites*. Prepared January 2009 and updated October 2010.
- DEQ and EPA. 2005. *Portland Harbor Joint Source Control Strategy*.
- EPA. 2020. *Remedial Design Guidelines and Considerations, Portland Harbor Superfund Site, Portland, Oregon*. Prepared by EPA Region 10. Revised February 28, 2020.
- EPA. 2017. *Record of Decision, Portland Harbor Superfund Site, Portland, Oregon*. Prepared by EPA Region 10.
- EPA. 2016. *Final Remedial Investigation Report, Portland Harbor RI/FS*. Prepared by EPA Region 10.