U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10

IN THE MATTER OF:

Portland Harbor Superfund Site
Portland, Multnomah County, Oregon

SCHNITZER STEEL INDUSTRIES, INC., an Oregon Corporation, and MMGL, LLC, a Delaware Corporation

RESPONDENTS

Proceeding under Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9606(a).

U.S. EPA Region 10
CERCLA Docket No. 10-2020-0052

UNILATERAL ADMINISTRATIVE ORDER FOR REMEDIAL DESIGN

TABLE OF CONTENTS

I. JURISDICTION AND GENERAL PROVISIONS 3
II. PARTIES BOUND 3
III. DEFINITIONS 4
IV. FINDINGS OF FACT 7
V. CONCLUSIONS OF LAW AND DETERMINATIONS 16
VI. ORDER 18
VII. OPPORTUNITY TO CONFER 18
VIII. EFFECTIVE DATE 19
IX. NOTICE OF INTENT TO COMPLY 19
X. PERFORMANCE OF THE WORK 19
XI. PROPERTY REQUIREMENTS 22
XII. FINANCIAL ASSURANCE 24
XIII. INSURANCE 28
XIV. DELAY IN PERFORMANCE 29
XV. PAYMENT OF RESPONSE COSTS 29
XVI. ACCESS TO INFORMATION 30
XVII. RETENTION OF RECORDS 32
XVIII. ENFORCEMENT/WORK TAKEOVER 32
XIX. RESERVATIONS OF RIGHTS BY EPA 33
XX. OTHER CLAIMS 33
XXI. ADMINISTRATIVE RECORD 34
XXII. INTEGRATION/APPENDICES 34
XXIII. SEVERABILITY 34

I. JURISDICTION AND GENERAL PROVISIONS

1. This Unilateral Administrative Order ("Order") is issued under the authority vested in the President of the United States by Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9606(a). This authority was delegated to the EPA Administrator on January 23, 1987, by Executive Order 12580, 52 Fed. Reg. 2923 (Jan. 29, 1987), and further delegated to the EPA Regional Administrators by EPA Delegations Nos. 14-14-A (Determination of Imminent and Substantial Endangerment, Jan. 31, 2017) and 14-14-B (Administrative Actions Through Unilateral Orders, Jan. 18, 2017). This authority has been re-delegated by the Region 10 Regional Administrator (Regional Administrator) to the Region 10 Director, Superfund and Emergency Management Division, and Branch Chiefs thereunder by EPA Delegations R10 14-14-A, 14-14-B (April 15, 2019).

2. This Order pertains to the Portland Harbor Superfund Site (Site) in Portland, Multnomah County, Oregon, which extends along, adjacent to, and within the Willamette River from approximately River Mile (RM) 1.9 to 11.8. This Order directs Respondents to perform Remedial Design (RD) as described in the Record of Decision (ROD) for the Portland Harbor Superfund Site at the River Mile 3.5 East Project Area (Project Area) within the Site to abate an imminent and substantial endangerment to the public health or welfare or the environment that may be presented by the actual or threatened release of hazardous substances at or from the Site.

3. EPA has notified the State of Oregon of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

II. PARTIES BOUND

4. This Order applies to and is binding upon Respondents and their successors and assigns. Any change in ownership or control of the Site or change in the corporate status of Respondents, including, but not limited to, any transfer of assets or real or personal property, shall not alter Respondents' responsibilities under this Order.

5. Respondents are jointly and severally liable for implementing all activities required by this Order. Compliance or noncompliance by any Respondent with any provision of this Order shall not excuse or justify noncompliance by any other Respondent. No Respondent shall interfere in any way with performance of the Work in accordance with this Order by any other Respondent. In the event of the insolvency or other failure of any Respondent to implement the requirements of this Order, the remaining Respondents shall complete all such requirements.

6. Respondents shall provide a copy of this Order to each contractor hired to perform the Work required by this Order and to each person representing Respondents with respect to the Site or the Work under this Order and shall condition all contracts entered into hereunder upon performance of the Work in conformity with the terms of this Order. Respondents or their contractors shall provide written notice of the Order to all subcontractors

hired to perform any portion of the Work required by this Order. Respondents shall nonetheless be responsible for ensuring that their contractors and subcontractors perform the Work in accordance with the terms of this Order.

III. DEFINITIONS

7. Unless otherwise expressly provided in this Order, terms used in this Order that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Order or in appendices to or documents incorporated by reference into this Order, the following definitions shall apply:

"Affected Property" shall mean all real property at the Project Area and any other real property within the Site where EPA determines, at any time, that access or land, water, or other resource use restrictions are needed to implement the Work under this Order.

"CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601-9675.

"Day" or "day" shall mean a calendar day. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or federal or State holiday, the period shall run until the close of business of the next working day.

"Effective Date" shall mean the effective date of this Order as provided in Section VIII.

"EPA" shall mean the United States Environmental Protection Agency and its successor departments, agencies, or instrumentalities.

"EPA Hazardous Substance Superfund" shall mean the Hazardous Substance Superfund established by the Internal Revenue Code, 26 U.S.C. § 9507.

"Institutional Controls" or "ICs" shall mean Proprietary Controls and state or local laws, regulations, ordinances, zoning restrictions, or other governmental controls or notices that: (a) limit land, water, or other resource use to minimize the potential for human exposure to Waste Material at or in connection with the Site; (b) limit land, water, or other resource use to implement, ensure non-interference with, or ensure the protectiveness of the remedial action; and/or (c) provide information intended to modify or guide human behavior at or in connection with the Site.

"Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest

is subject to change on October 1 of each year. Rates are available online at *https://www.epa.gov/superfund/superfund-interest-rates*.

"National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

"Non-Respondent Owner" shall mean any person, other than a Respondent, that owns or controls any Affected Property. The phrase "Non-Respondent Owner's Affected Property" means Affected Property owned or controlled by Non-Respondent Owner.

"ODEQ" shall mean the Oregon Department of Environmental Quality and any successor departments or agencies of the State.

"Order" shall mean this Unilateral Administrative Order and all appendices attached hereto and all documents incorporated by reference into the Order. In the event of conflict between this Order and any appendix, this Order shall control.

"Owner Respondent" shall mean a Respondent who owns or controls some of the Affected Property. The phrase "Owner Respondent's Affected Property" means Affected Property owned or controlled by Owner Respondent.

"Paragraph" shall mean a portion of this Order identified by an Arabic numeral or an upper or lower case letter.

"Parties" shall mean EPA and Respondents.

"Performance Standards" shall mean the cleanup standards and other measures of achievement of the goals of the remedial action objectives, as set forth in the ROD.

"Proprietary Controls" shall mean easements or covenants running with the land that: (a) limit land, water, or other resource use and/or provide access rights; and (b) are created pursuant to common law or statutory law by an instrument that is recorded in the appropriate land records office.

"RCRA" shall mean the Resource Conservation and Recovery Act, also known as the Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992.

"Record of Decision" or "ROD" shall mean the EPA Record of Decision relating to the Site, signed on January 3, 2017, by the Administrator of EPA, all attachments thereto and any subsequent ROD amendment or Explanation of Significant Differences. A copy of the ROD can be found at https://semspub.epa.gov/work/10/100036257.pdf and is incorporated by reference hereto.

"Remedial Design" or "RD" shall mean those remedial design activities to be undertaken to develop the final plans and specifications for the remedial action for the Portland Harbor Superfund Site and the River Mile 3.5 East Project Area.

"Respondents" shall mean Schnitzer Steel Industries, Inc., an Oregon Corporation, and MMGL, LLC, a Delaware Corporation.

"Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs in monitoring and supervising Respondents' performance of the Work to determine whether such performance is consistent with the requirements of this Order, including costs incurred in reviewing deliverables submitted pursuant to this Order, as well as costs incurred in overseeing implementation of this Order, including, but not limited to, payroll costs, contractor costs, travel costs, and laboratory costs.

"River Mile 3.5 East Project Area" or "Project Area" shall mean for purposes of this Order the active cleanup areas designated on Figure 30 of the ROD as refined through the remedial design process between approximately River Mile 3.2 and River Mile 4.2 on the east side of the Willamette River, and more specifically depicted on the map attached as Appendix B. River Mile 3.5 East Project Area includes all river banks from the top of the bank to the river.

"Section" shall mean a portion of this Order identified by a Roman numeral.

"Site" or "Portland Harbor Superfund Site" shall mean the Site in Portland, Multnomah County, Oregon listed on the National Priorities List (NPL) on December 1, 2000. 65 Fed. Reg. 75179-01, which includes the in-river portion for which a final remedy was selected in the January 2017 Record of Decision and all upland source areas thereto. As described in the Record of Decision, the in-river portion of the Site extends in-river from approximately RM 1.9 to 11.8.

"State" shall mean the State of Oregon.

"Statement of Work" or "SOW" shall mean the document describing the activities Respondents must perform, which is attached as Appendix A.

"Supervising Contractor" shall mean the principal contractor retained by Respondents to supervise and direct the implementation of the Work under this Order.

"Transfer" shall mean to sell, assign, convey, lease, mortgage, or grant a security interest in, or where used as a noun, a sale, assignment, conveyance, or other disposition of any interest by operation of law or otherwise.

"Tribal Governments" shall mean the Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Grand Ronde Community of Oregon, the Confederated Tribes of Siletz Indians, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Nez Perce Tribe. References to "Tribal Governments" in this Order may be a reference to an individual tribe, the tribes collectively, or some combination thereof.

"United States" shall mean the United States of America and each department, agency, and instrumentality of the United States, including EPA.

"Waste Material" shall mean any "hazardous substance" as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and/or any "pollutant or contaminant" as defined in Section 101(33) of CERCLA, 42 U.S.C. § 9601(33).

"Work" shall mean all activities Respondents are required to perform under this Order, except those required by Section XVII (Retention of Records).

IV. FINDINGS OF FACT

8. The Portland Harbor Superfund Site is generally located along and within the lower 12 miles of the Willamette River where the commercial harbor is located within the boundaries of the City of Portland, Multnomah County, Oregon. While the harbor area is heavily industrialized, it is located within a region characterized by commercial, residential, recreational, and agricultural uses. Land use along the lower Willamette River in the harbor includes marine terminals, manufacturing, and other commercial operations as well as public facilities, parks, and open spaces. In addition to industrial activities, the Willamette River and surrounding watershed historically offered access to abundant natural resources in the river and on land. Many of these resources are still present such as fish, marine mammals, waterfowl, land mammals, and native plants.

9. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on the National Priorities List (NPL), set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on December 1, 2000, 65 Fed. Reg. 75179-01.

10. Historical industrial practices and releases of contaminants dating back to the early 1900s contributed to the majority of the observed chemical distribution in sediments within the Site. Contaminants from upland source areas have entered the river system as direct discharges through stormwater and waste water outfalls; from releases and spills from commercial operations, occurring over the water, such as commodity transloading; and indirectly through overland flow, bank erosion, groundwater, and other nonpoint sources.

11. Historical sources responsible for the existing contamination include, but are not limited to: ship building, repair and dismantling; wood treatment and lumber milling; storage of bulk fuels and disposal of waste oil and manufactured gas plant (MGP) waste; chemical

manufacturing and storage; metal recycling, production and fabrication; steel mills, smelters and foundries; electrical production and distribution; municipal combined sewer overflows; and stormwater from industrial, commercial, transportation, residential and agricultural land uses. Operations that continue to exist today include: bulk fuel storage; barge building; ship repair; automobile and metal scrapping and recycling; steel manufacturing; cement manufacturing; operation and repair of electrical transformers; and many smaller industrial operations.

12. In 2001, EPA entered into a Memorandum of Understanding for the Portland Harbor Superfund Site (the MOU) with the Oregon Department of Environmental Quality (ODEQ), National Oceanic and Atmospheric Administration within the Department of Commerce, the United States Fish and Wildlife Service within the Department of the Interior, the Oregon Department of Fish and Wildlife and the Tribal Governments. The MOU, among other things, established the roles and responsibilities between EPA and ODEQ on managing the upland and in-river portions of the Site. ODEQ is the lead agency using state law authorities for investigating, identifying, and controlling upland sources to the Willamette River. EPA is the lead agency for investigating and implementing response actions in the in-river portion of the Site. The MOU also set up a framework for technical and legal coordination among EPA, ODEQ, and the Natural Resource Trustees. Relative to the Tribal Governments, the MOU sought to acknowledge the federal government's consultation requirements and to ensure the Tribal Governments' participation in the response actions at the Portland Harbor Superfund Site.

13. In response to a release or a substantial threat of a release of hazardous substance at or from the Site, potentially responsible parties (PRPs) at the Site commenced a Remedial Investigation and Feasibility Study (RI/FS) for the in-river portion of the Site in September 2001 pursuant to 40 C.F.R. § 300.430.

14. A baseline human health risk assessment (BHHRA) conducted during the RI/FS estimated cancer risks and noncancer Hazard Indices (HI) from various exposures (such as direct dermal contact, ingestion of fish or river water) to a set of chemicals in sediments (both beach and in-river), surface water, groundwater seeps, and fish tissue from samples collected at the Site. These estimates were developed for different potentially exposed populations including dockside workers, in-river workers, transients, recreational beach users, tribal fishers, recreational and subsistence fishers, divers, domestic water users, and infants consuming human breast milk. Unacceptable risk was defined as an excess lifetime cancer risk greater than 10^{-6} to 10^{-4} (1 in 1,000,000 to 1 in 10,000) or a noncancer HI greater than 1, consistent with the NCP and EPA guidance.

15. A baseline ecological risk assessment (BERA) estimated risks to aquatic and aquatic-dependent species exposed to hazardous substances detected in sediment, surface water, and groundwater seeps at the Site. The ecological receptors selected in the BERA include aquatic plants, benthic invertebrates, fish, birds, amphibians, and mammals and represent species that are present at Portland Harbor, susceptible to contaminants, and have ecological, cultural, and/or economic significance. Ecological risk was assessed under multiple scenarios (i.e., direct toxicity, decrease in reproductive success, dietary uptake, etc.) with risk estimates stated as

hazard quotients (HQs), which were calculated as the concentration at the point of exposure divided by the adverse effects threshold. Contaminants with an HQ greater than or equal to 1 were identified as posing a potentially unacceptable risk to one or more ecological receptors.

16. The BHHRA concluded that contamination in sediment, surface water, groundwater, and resident fish within the Site poses unacceptable risks to human health from dermal contact and eating resident fish and to breastfeeding infants whose mothers are eating resident fish. The highest risks for fish consumption were associated with polychlorinated biphenyls (PCBs) in tissue with subsistence fishers (1×10^{-2}; HI = 1,000), tribal fishers (2×10^{-2}; HI = 800), and breastfeeding infants (HI = 10,000). When evaluated on a river mile scale, polychlorinated dibenzo-*p*-dioxins and furans (dioxins/furans) were a secondary contributor to the overall risk and hazard estimates. The BERA concluded that aquatic species that live in the sediment and water, such as benthic invertebrates, fish, and shellfish and species that feed on fish are exposed to unacceptable risks from 93 CERCLA contaminants of potential concern (COPCs) in surface water, groundwater, sediment, and fish tissue. The Selected Remedy reduced the COPCs to 64 contaminants of concern (COCs) that contribute the most significant amount of risk to the human and ecological receptors. See ROD, Appendix II, Tables 1–5.

17. Although metals, phthalates, semi-volatile, and volatile organic compounds at the Site pose unacceptable risks to human health and/or the environment, a subset of the COCs, called focused COCs, was designated in order to simplify analysis and develop and evaluate remedial alternatives for the Site. The focused COCs include polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), dioxins/furans, and the pesticide dichlorodiphenyltrichloroethane (DDT) and its breakdown products. Most of the human health and ecological dietary risks at the Site can be attributed to the focused COCs.

a. PCBs are classified as probable human carcinogens. Children exposed to PCBs may develop learning and behavioral problems later in life. PCBs are known to impact the human immune system and skin, especially in child receptors, and may cause cancer in people. Nursing infants can be exposed to PCBs in breast milk. PCBs can also bioaccumulate in fish, shellfish, and mammals. In birds and mammals, PCBs can cause adverse effects such as anemia and injuries to the liver, stomach, and thyroid gland. PCBs also can cause problems with the immune system, behavioral problems, and impaired reproduction.

b. PAHs are human health and ecological COCs. PAHs represent a family of chemicals, some of which are probable and known human carcinogens. Epidemiologic studies report increased incidences of lung, skin, and bladder cancers in humans with occupational exposure to PAHs. However, due to the fact that most exposure is comprised of PAH mixtures, it is difficult to correlate health effects to specific PAHs in epidemiological studies. According to EPA classification, benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene are probable human carcinogens; while acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, phenanthrene, and pyrene are not classifiable as to human carcinogenicity. Benzo(a)pyrene is classified as a human carcinogen. Animal studies have established that certain PAHs affect the hematopoietic,

immune, reproductive, and neurologic systems and cause developmental effects. Some PAHs can cause inhibited reproduction, delayed emergence, sediment avoidance, and mortality. In fish, certain PAHs cause liver abnormalities and impairment of the immune system.

c. Dioxins and furans are human health and ecological COCs. Toxic effects in humans include reproductive problems, problems in fetal or early childhood development, immune system damage, and cancer. Nursing infants can be exposed to dioxins and furans in breast milk. Dioxins and furans can bioaccumulate in fish, shellfish, and mammals. Animal effects include developmental and reproductive problems, hemorrhaging, and immune system problems.

d. DDx, which represents collectively DDT and its primary breakdown products dichlorodiphenyldichloroethane (DDD) and dichlorodiphenyldichloroethene (DDE), are human health and ecological COCs. DDT is considered a possible human carcinogen. DDT and DDE are stored in the body's fatty tissues. In pregnant women, DDT and DDE can be passed to the fetus. Nursing infants can be exposed to DDx in breast milk. Laboratory animal studies showed effects on the liver and reproduction. These compounds can accumulate in fish, shellfish and mammals and can cause adverse reproductive effects such as eggshell thinning in birds.

18. PRPs at the Site completed a Remedial Investigation (RI) Report on February 8, 2016, and EPA completed a Feasibility Study (FS) Report on June 8, 2016.

19. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the completion of the FS and of the proposed plan for remedial action on June 8, 2016, in a major local newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the proposed plan for remedial action. A copy of the transcript of the public meeting is available to the public as part of the administrative record upon which the EPA Administrator based the selection of the response action.

20. The decision by EPA on the remedial action to be implemented at the Site is embodied in a final ROD, executed on January 3, 2017, on which the State has given its concurrence. The ROD includes EPA's explanation for any significant differences between the final plan and the proposed plan as well as a responsiveness summary to the public comments. Notice of the final plan was published in accordance with Section 117(b) of CERCLA, 42 U.S.C. § 9617(b).

21. The ROD requires active remediation (dredging and/or capping) at areas exceeding the remedial action levels (RALs) for the focused COCs and contaminated river banks adjacent to those areas, referred to as Sediment Management Areas (SMAs). The ROD provides that areas with sediment contamination below the RALs but above final cleanup levels (approximately 1,774 acres) may naturally recover within a reasonable timeframe while areas within Swan Island Lagoon will require enhanced natural recovery (approximately 28 acres). The ROD estimated the remedy would take 13 years to construct. See ROD, Appendix II, Tables 17 and 21. On December 9, 2019, EPA issued an Explanation of Significant differences (ESD) to

document changes to: the sediment cleanup levels (CULs), target tissue level for shellfish, and principal threat waste threshold for carcinogenic polycyclic aromatic hydrocarbons (cPAHs) measured as benzo(a)pyrene equivalents (BaP Eq); and the remedial action level (RAL) for total polycyclic aromatic hydrocarbons (PAHs). These changes were made pursuant to a toxicological update prepared under the EPA's Integrated Risk Information System (IRIS) program that resulted in a revised oral cancer slope factor.

22. On July 30, 1946, Respondent Schnitzer Steel Industries, Inc. (SSI), then known as Schnitzer Steel Products, Inc. (SSP), was incorporated in the State of Oregon. On August 29, 1988, SSP changed the name of the corporation to Schnitzer Steel Industries, Inc. and, in 1993, Schnitzer Steel Industries, Inc., became a publicly traded company. American Ship Dismantlers, Inc. (ASD) was a wholly-owned subsidiary of Schnitzer Steel Industries until it was dissolved in 1985.

23. On September 19, 1961, Schnitzer Investment Corporation (SIC) was incorporated in the State of Oregon. From 1961, until September 1, 1988, SIC was a wholly-owned subsidiary of Schnitzer Steel Industries, Inc. On or about October 1, 2012, SIC merged with MMGL Corp., a Washington corporation. MMGL Corp. was the surviving company. On or about September 7, 2016, MMGL Corp. merged into Respondent MMGL, LLC., a Delaware corporation. For purposes of these findings of fact, references to SIC will mean Respondent MMGL, LLC.

24. Starting with its incorporation in 1961, SIC was the real estate investment and property management arm for SSI. SIC purchased and then leased back to SSI or its affiliated companies many properties along the Willamette River on which they operated ship dismantling and/or metal scrapping, recycling, or storage related businesses.

25. In September 1972, SIC bought parcels R971350710 and R118300200 (also known as Lots 2 and 17), located at 12005 North Burgard Road and 9300 North Burgard Way, respectively, Portland, Multnomah County, Oregon (hereinafter referred to as the Burgard Facility). SSI, then known as SSP, had been leasing Lots 2 and 17 from the prior owner several months prior to SIC's purchase. SIC continued leasing Lots 2 and 17 to SSI until May 2005, when SSI acquired them. The Burgard Facility is located on the eastern bank of the Willamette River between River Miles 3.6 and 4.0 and consists of approximately 88.49 acres. The International Terminals (IT) Slip is located on the north side of the facility.

26. For approximately 10 years between 1972 and the early 1980s, SSI and ASD dismantled ships at the Burgard Facility. Many of the ships were surplus U.S. marine vessels purchased from the United States Maritime Administration. The hull dismantling operation was centered adjacent to the dock on the south side of the IT Slip and the floating dry dock. In the mid-1970s, SSI began metal scrapping and recycling operations at the Burgard Facility using other metal sources, including but not limited to, railroad cars, railroad ties, piping, and appliances. In 1980, SSI installed an auto shredder on Lot 17. SSI focused on ferrous metals, but also accepted a small amount of non-ferrous metals until it sold its non-ferrous metals businesses

in 1995 to Calbag Metals Company. SSI leased and continues to lease to Calbag at least two acres in the southeast corner of Lot 17 for its non-ferrous metals business. The main processing facility is located on Lot 17 and current operations conducted by SSI include torch cutting, shearing, and shredding of metal, as well as clerical, receiving storage, and shipping activities. Lot 2 is currently used by SSI as an outdoor storage and loading area for recycled metal, steel and railroad cars. In addition, Northwest Pipe Company uses this area for the storage of metal pipes.

27. The ship dismantling and metal scrapping operations at the Burgard Facility have resulted in releases of hazardous substances to the environment that have migrated to the IT Slip and Willamette River or were disposed of directly into the slip and the river. Such operations and disposal practices include but are not limited to: (1) large quantities of Automobile Shredder Residue (ASR), known to have contained significantly high levels of PCBs and metals, as well as PAHs, stored outside in close proximity to the IT Slip and Willamette River, along with other bulk metal scrap materials and exposed to rain and weathering; (2) ship dismantling, known to involve handling and disposal of asbestos, PCBs found in cable insulation, rubber and felt gaskets, adhesives and tapes, oil-based paint, light ballasts, oils, and bilge and ballast water containing metals, oils, and potentially solvents and PCBs, and cutting metals that generate particulates that can include manganese, nickel, chromium, iron, aluminum, asbestos, and lead, and petroleum products such as hydraulic oils, lubricants, diesel, and Bunker C; (3) use of many large transformers for running heavy equipment such as the shear and auto shredder; (4) spills and leaks of hydraulic oils used in large quantities in the shear and shredding equipment; and (5) spills of metals and debris directly into the IT Slip or Willamette River during shore to ship transloading.

28. PCBs, metals (arsenic, cadmium, copper, lead, mercury, and zinc), and other COCs were detected in upland and river bank soils/sediment at concentrations exceeding cleanup levels. At the IT Slip south shore area, PCBs were detected ranging from 100 µg/kg to 5,180 µg/kg. These samples were all situated in the area directly north or just off to the northeast of the shear and torch cutting area.

Upland/River Bank Soil/Sediment Contaminant Concentrations (in mg/kg unless otherwise noted)		
Contaminant	Cleanup Level	Sample Result
TPH-D	91	289
PAHs	23,000	28,000
cPAHs (BaP eq)	774	2,460

Arsenic	3	11.8
Cadmium	0.51	3.19
Copper	359	660
Lead	196	529
Mercury	0.085	0.769
Zinc	459	995
PCBs	9 µg/kg	5,180 µg/kg

29. The surface and subsurface sediment in the IT Slip and the Willamette River adjacent to the Burgard Facility exceeds RALs for PCBs, PAHs, DDx, and dioxins/furans.

Surface and Subsurface Sediment Contaminant Concentrations (in µg/kg)		
Contaminant	RALs	Sample Result(s)
PCBs	75	1,530; 26,000
PAH	30,000	91,200
DDx	160	613; 1,540
PeCDD	0.0008	0.00081; 0.013

Additionally, surface and subsurface sediment in the IT Slip exceed cleanup levels for aldrin, arsenic, bis(2-ethylhexyl) phthalate (BEHP), cadmium, chlordanes, dieldrin, dioxins/furans, lead, lindane, mercury, TPH-D, tributyltin, and zinc. Cleanup level exceedances in surface and subsurface sediment adjacent to the Burgard Facility include PAHs, dioxins/furans, aldrin, arsenic, BEHP, cadmium, chlordanes, dieldrin, lindane, mercury, TPH-D, and zinc. A smallmouth bass fish tissue sample taken in 2018 directly offshore of the Burgard Facility had a total PCBs tissue concentration of 1,218 µg/kg, which is nearly 5,000 times greater than the ROD risk-based tissue target level for safe human consumption.

30. SIC has owned the former Premier Edible Oils Terminal (PEO Terminal) located at 10400 North Burgard Way and 125 North Burgard Street since 1972. The property was leased to Premier Edible Oils (PEO), which occupied the property from 1973 to January 1997. PEO's

operation at the property largely ceased by 1996. The PEO Terminal received unrefined edible oils such as palm and cottonseed oils via ship which were then transferred by pipeline from the dock for processing into refined edible oils. Operations likely included laboratory testing of refined edible oil products, hydrogenation of the unrefined oils, treatment of refining process wastewater, repair of equipment, and shipping/transportation. Prior to SIC ownership, the property was used for bulk storage and transport of oil (1941-1943, Northwest Oil Company), shipbuilding (1943-1947, Oregon Shipbuilding Corporation), and electrolytic manganese dioxide production (1950-1956, American Metallic Chemical Company).

31. River bank soil samples adjacent to the PEO Terminal exceed cleanup levels for metals and other COCs.

River Bank Soil/Sediment Contaminant Concentrations (in mg/kg unless otherwise noted)		
Contaminant	CULs	Sample Result
Arsenic	3	6.70
Lead	196	819
Mercury	0.085	0.109
PAHs	23,000 µg/kg	54,000 µg/kg
TPH-D	91	4,300
Zinc	459	672

Upland groundwater exceeds ROD groundwater cleanup levels for volatile and semi-volatile organic compounds, PAHs, and metals.

32. Surface and subsurface sediment in the Willamette River adjacent to the PEO Terminal show RAL exceedances for PCBs and PeCDD.

Surface and Subsurface Sediment Contaminant Concentrations (in µg/kg)		
Contaminant	RALs	Sample Result
PCBs	75	220
PeCDD	0.0008	0.0011

Additionally, DDx, dioxins/furans, cPAHs, arsenic, BEHP, cadmium, chlordanes, dieldrin, mercury, and TPH-D exceed cleanup levels in surface and subsurface sediment adjacent to the PEO Terminal.

33. On or about May 1964, SIC purchased parcel R941200570, located at the address known at the time as 4250 NW Front Avenue in Portland, Oregon, which was approximately 20 acres (hereinafter the Front Avenue Facility). From 1964 until approximately 1980, SSI leased the property from SIC and operated ship dismantling, metal scrapping and automobile shredding businesses at the Front Avenue Facility. The Front Avenue Facility was situated on the west bank of the Willamette River between RM 8.9 – 9.1. In 1963, ASD entered into an agreement with SSI under which ASD would dismantle marine vessels procured by SSI. Metal scrapping, primarily automobile shredding, started in the early 1970s and the ship dismantling business was phased out around that time. The automobile scrap yard was in operation at the facility until about 1979.

34. Various operations and disposal practices by SSI at the Front Avenue Facility have resulted in releases of hazardous substances to the environment that have migrated to the Willamette River or were disposed directly in the river. Such operations and practices include but are not limited to: (1) using scrap metal as fill both on the upland and on the river bank to increase the size of the property; (2) storing and handling ASR containing high levels of PCBs, PAHs, and metals outside and uncovered; (3) ship dismantling known to involve handling and disposal of asbestos, PCBs found in cable insulation, rubber and felt gaskets, adhesives and tapes, oil-based paint, light ballasts, and oils, and bilge and ballast water that contains metals, oils, and potentially solvents and PCBs; (4) spills and leaks of hydraulic oils used in large quantities in the shear and shredding equipment; (5) leaking and spills of fuels, lubricants, and solvents from scrapped automobiles; and (6) leaks from transformers.

35. Contamination of soils with PCBs, PAHs, and metals has been found on the parcel that was the Front Avenue Facility. Heavy-end petroleum hydrocarbons were found to be relatively ubiquitous across the Facility; however, the areas around the former crusher and shredder at the south end of the site were where the greatest concentrations were found, well exceeding their respective ROD cleanup levels. Most of the PCB detections occurred in the southern portion of the site with the greatest concentration of PCBs (82,800 µg/kg) found in a surface soil sample between transformer Vaults 13 and 14 (area of the shredder and shear). PCB-contaminated soil (up to 59,870 µg/kg) was found in the vicinity of the crusher foundation. Copper was detected as high as 24,000 mg/kg at the surface. Lead was found up to 7,430 mg/kg at surface and up to 13,500 mg/kg in samples collected between 1 and 3 feet below surface. Zinc was found up to 17,400 mg/kg at surface and 21,600 mg/kg at between 1 and 3 feet below surface. Investigations of an area where ASD and SSI used an access gully for ship dismantling indicated the presence of soil contaminated with: TPH-D (up to 5,020 mg/kg), PCBs (up to 11,670 µg/kg), lead (up to 4,400 mg/kg), cadmium (up to 29.6 mg/kg), and zinc (up to 430,000 mg/kg). An investigation of the river bank soils identified similarly high concentrations of PCBs and metals, as well as PAHs and BEHP, particularly just upstream of the Schnitzer Gantry.

During this investigation PCB concentrations ranged as high as 31,180 µg/kg, benzo(a)pyrene ranged as high as 3,970 µg/kg, and BEHP as high as 10,800 µg/kg.

36. Surface and subsurface sediment samples adjacent to the Front Avenue Facility show RAL exceedances for PCBs and PeCDD.

Surface and Subsurface Sediment Contaminant Concentrations (in µg/kg)		
Contaminant	RALs	Sample Result
PCBs	75	31,000
PeCDD	0.0008	0.00091

Additionally, arsenic, BEHP, carcinogenic PAHs (cPAHs), chlordanes, copper, DDx, dieldrin, zinc, and dioxins/furans exceed cleanup levels in surface and subsurface sediment adjacent to the Front Avenue Facility. A smallmouth bass fish tissue sample taken in 2018 directly offshore of the Front Avenue Facility had a total PCBs tissue concentration of 1,219 µg/kg, which is nearly 5,000 times greater than the ROD risk-based tissue target level for safe human consumption.

37. From approximately 1969 to 1971, SIC placed fill on portions of the northern parcel of a property at 6529 NW Front Avenue in Portland, Oregon ("Air Liquide Property"), which it owned at the time and continues to be owned by SIC. In 1982, shredded automobile parts were disposed of on the northwestern portion of the Air Liquide Property, which is a part of the Gould/NL Superfund Site. Remediation conducted at the Gould/NL Superfund Site identified various wastes disposed on SIC's parcel adjacent to the Gould/NL Superfund Site that was in or adjacent to Doane Lake that at the time was connected to the Willamette River by ditches and/or pipes.

38. Respondent SSI or its affiliated companies owns or leases or has owned and leased other properties within the Site on which it has conducted metal recycling, manufacturing, or storage. Respondent MMGL owns or has owned other properties within the Site on which industrial activities have occurred.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

39. Based on the Findings of Fact set forth above, and the administrative record, EPA has determined that:

a. The Portland Harbor Superfund Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

b. Each Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

c. Each Respondent is a liable party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a); specifically,

(1) Respondents Schnitzer Steel Industries, Inc. and MMGL, LLC are the "owner(s)" and/or "operator(s)" of the facility, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a)(1).

(2) Respondents Schnitzer Steel Industries, Inc. and MMGL, LLC were the "owners" and/or "operators" of the facility at the time of disposal of hazardous substances at the facility, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2).

d. The contamination found at the Site, as identified in the Findings of Fact above, includes a "hazardous substance" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

e. The Findings of Fact above constitute an actual and/or threatened "release" of a hazardous substance from the facility as defined by Section 101(22) of CERCLA, 42 U.S.C.§ 9601(22).

f. The conditions at the Site may constitute a threat to public health or welfare or the environment, based on the factors set forth in the ROD. These factors include, but are not limited to, the following: (1) the BHHRA concluded that contamination in sediment, surface water, groundwater, and resident fish within the Site poses unacceptable risks to human health from dermal contact and eating resident fish and to breastfeeding infants whose mothers are eating resident fish; (2) PCBs are the primary contaminant presenting human health risk and dioxins/furans are a secondary contributor to the overall risk and hazard estimates; and (3) the BERA concluded that aquatic species that live in the sediment and water, such as benthic invertebrates, fish, and shellfish and species that feed on fish are exposed to unacceptable risks from multiple contaminants found at the Site in surface water, groundwater, sediment, and fish tissue.

g. Solely for purposes of Section 113(j) of CERCLA, 42 U.S.C. § 9613(j), the remedy set forth in the ROD and the Work to be performed by Respondents shall constitute a response action taken or ordered by the President for which judicial review shall be limited to the administrative record.

h. The conditions described in Paragraphs 16 and 17 of the Findings of Fact above may constitute an imminent and substantial endangerment to the public health or welfare

or the environment because of an actual or threatened release of a hazardous substance from the facility within the meaning of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

i. The actions required by this Order are necessary to protect the public health, welfare, or the environment.

VI. ORDER

40. Based on the Findings of Fact, Conclusions of Law, and Determinations set forth above, and the administrative record, Respondents are hereby ordered to comply with this Order and any modifications to this Order, including, but not limited to, all appendices and all documents incorporated by reference into this Order.

VII. OPPORTUNITY TO CONFER

41. No later than 10 days after the Order is signed by the Director or Acting Director, Superfund and Emergency Management Division, Region 10, Respondents may, in writing: (a) request a conference with EPA to discuss this Order, including its applicability, the factual findings and the determinations upon which it is based, the appropriateness of any actions Respondents are ordered to take, or any other relevant and material issues or contentions that Respondents may have regarding this Order; or (b) notify EPA that they intend to submit written comments or a statement of position in lieu of requesting a conference.

42. If a conference is requested, Respondents may appear in person or by an attorney or other representative. Any such conference shall be held no later than 5 days after the conference is requested. Any written comments or statements of position on any matter pertinent to this Order must be submitted no later than 5 days after the conference or 15 days after this Order is signed if Respondents do not request a conference. This conference is not an evidentiary hearing, does not constitute a proceeding to challenge this Order, and does not give Respondents a right to seek review of this Order. Any request for a conference or written comments or statements should be submitted to the Regional Attorney and Project Coordinator:

Regional Attorney:

Stephanie Ebright
Assistant Regional Counsel
Office of Regional Counsel
U.S. Environmental Protection Agency
1200 Sixth Avenue, Ste. 155, M/S 11-C07
Seattle, WA 98101
(206) 553-0774
ebright.stephanie@epa.gov

Project Coordinator:

Eva DeMaria
Remedial Project Manager
Superfund and Emergency Management Division
U.S. Environmental Protection Agency
1200 Sixth Avenue, Ste. 155, M/S 12-D12-1
Seattle, WA 98101
(206) 553-1970
demaria.eva@epa.gov

VIII. EFFECTIVE DATE

43. This Order shall be effective 10 days after the Order is signed by the Director or Acting Director unless a conference is requested or notice is given that written materials will be submitted in lieu of a conference in accordance with Section VII (Opportunity to Confer). If a conference is requested or such notice is submitted, this Order shall be effective on the 10th day after the day of the conference, or if no conference is requested, on the 10th day after written materials, if any, are submitted, unless EPA determines that the Order should be modified based on the conference or written materials. In such event, EPA shall notify Respondents, within the applicable 10-day period, that EPA intends to modify the Order. The modified Order shall be effective 5 days after it is signed by the Director or Acting Director.

IX. NOTICE OF INTENT TO COMPLY

44. On or before the Effective Date, each Respondent shall notify EPA in writing of Respondent's irrevocable intent to comply with this Order. Such written notice shall be sent to EPA as provided in Paragraph 42.

45. Each Respondent's written notice shall describe, using facts that exist on or prior to the Effective Date, any "sufficient cause" defense[s] asserted by such Respondent under Sections 106(b) and 107(c)(3) of CERCLA, 42 U.S.C. §§ 9606(a) and 9607(c)(3). The absence of a response by EPA to the notice required by this Section shall not be deemed to be acceptance of any Respondent's assertions. Failure of any Respondent to provide such notice of intent to comply within this time period shall, as of the Effective Date, be treated as a violation of this Order by such Respondent.

X. PERFORMANCE OF THE WORK

46. **Compliance with Applicable Law**. Nothing in this Order limits Respondents' obligations to comply with the requirements of all applicable federal and state laws and regulations. Respondents must also comply with all applicable or relevant and appropriate requirements of all federal and state environmental laws as set forth in the ROD and the SOW.

47. **Permits**

a. As provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and Section 300.400(e) of the NCP, no permit shall be required for any portion of the Work conducted entirely on-site (i.e., within the areal extent of contamination at the Site or in very close proximity to the contamination and necessary for implementation of the Work). Where any portion of the Work that is not on-site requires a federal or state permit or approval, Respondents shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

b. This Order is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

48. **Coordination and Supervision**

a. **Project Coordinators**

(1) Respondents' Project Coordinator must have sufficient technical expertise to coordinate the Work. Respondents' Project Coordinator may not be an attorney representing any Respondent in this matter and may not act as the Supervising Contractor. Respondents' Project Coordinator may assign other representatives, including other contractors, to assist in coordinating the Work.

(2) EPA's designated Project Coordinator is Eva DeMaria, Remedial Project Manager in Region 10's Superfund and Emergency Management Division. EPA may designate other representatives, which may include its employees, contractors and/or consultants, to oversee the Work. EPA's Project Coordinator will have the same authority as a remedial project manager and/or an on-scene coordinator, as described in the NCP. This includes the authority to halt the Work and/or to conduct or direct any necessary response action when he or she determines that conditions at the Site constitute an emergency or may present an immediate threat to public health or welfare or the environment due to a release or threatened release of Waste Material.

(3) Respondents' Project Coordinators shall meet with EPA's Project Coordinators at least monthly.

b. **Supervising Contractor**. Respondents' proposed Supervising Contractor must have sufficient technical expertise to supervise the Work and a quality assurance system that complies with ASQ/ANSI E4:2014, "Quality management systems for environmental information and technology programs - Requirements with guidance for use" (American Society for Quality, February 2014).

c. **Procedures for Disapproval/Notice to Proceed**

(1) Respondents shall designate, and notify EPA, within 10 days after the Effective Date, of the names, titles, contact information, and qualifications of the Respondents' proposed Project Coordinator and Supervising Contractor, whose qualifications shall be subject to EPA's review for verification based on objective assessment criteria (e.g., experience, capacity, technical expertise) and that they do not have a conflict of interest with respect to the Work.

(2) EPA shall issue notices of disapproval and/or authorizations to proceed regarding the proposed Project Coordinator and Supervising Contractor, as applicable. If EPA issues a notice of disapproval, Respondents shall, within 30 days, submit to EPA a list of supplemental proposed Project Coordinators and/or Supervising Contractors, as applicable, including a description of the qualifications of each. EPA shall issue a notice of disapproval or authorization to proceed regarding each supplemental proposed coordinator and/or contractor. Respondents may select any coordinator/contractor covered by an authorization to proceed and shall, within 21 days, notify EPA of Respondents' selection.

(3) Respondents may change their Project Coordinator and/or Supervising Contractor, as applicable, by following the procedures of subparagraphs 48.c(1) and 48.c(2) above.

49. **Performance of Work in Accordance with SOW**. Respondents shall develop the RD in accordance with the SOW and all EPA-approved, conditionally-approved, or modified deliverables as required by the SOW. All deliverables required to be submitted for approval under the Order or SOW shall be subject to approval by EPA in accordance with Paragraph 5.5 (Approval of Deliverables) of the SOW.

50. **Emergencies and Releases**. Respondents shall comply with the emergency response and reporting requirements under Paragraph 3.12 (Emergency Response and Reporting) of the SOW.

51. **Community Involvement**. If requested by EPA, Respondents shall conduct community involvement activities under EPA's oversight as provided for in, and in accordance with, Section 2 (Community Involvement) of the SOW. Such activities may include, but are not limited to, designation of a Community Involvement Coordinator.

52. **Modification**

a. EPA may, by written notice from the EPA Project Coordinator to Respondents, modify, or direct Respondents to modify, the SOW and/or any deliverable developed under the SOW, if such modification is necessary to carry out RD, and such modification is consistent with the Scope of the Remedy set forth in Paragraph 1.3 of the SOW.

Any other requirements of this Order may be modified in writing by signature of the Director or Acting Director, Superfund and Emergency Management Division, Region 10.

b. Respondents may submit written requests to modify the SOW and/or any deliverable developed under the SOW. If EPA approves the request in writing, the modification shall be effective upon the date of such approval or as otherwise specified in the approval. Respondents shall modify the SOW and/or related deliverables in accordance with EPA's approval.

c. No informal advice, guidance, suggestion, or comment by the EPA Project Coordinator or other EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondents shall relieve Respondents of their obligation to obtain any formal approval required by this Order, or to comply with all requirements of this Order, unless it is formally modified.

d. Nothing in this Order, the attached SOW, any deliverable required under the SOW, or any approval by EPA constitutes a warranty or representation of any kind by EPA that compliance with the work requirements set forth in the SOW or related deliverable will achieve the Performance Standards.

XI. PROPERTY REQUIREMENTS

53. **Agreements Regarding Access and Non-Interference.** Respondents shall, with respect to any Non-Respondent Owner's Affected Property, use best efforts to secure from such Non-Respondent Owner an agreement, enforceable by Respondents and by EPA, providing that such Non-Respondent Owner, and Owner Respondent shall, with respect to Owner Respondent's Affected Property: (i) provide EPA and the other Respondents, and their representatives, contractors, and subcontractors with access at all reasonable times to such Affected Property to conduct any activity regarding the Order; and (ii) refrain from using such Affected Property in any manner that EPA determines will pose an unacceptable risk to human health or to the environment due to exposure to Waste Material, or interfere with or adversely affect the implementation, integrity, or protectiveness of the remedy as set forth in the ROD. Respondents shall provide a copy of such access and any use restriction agreement(s) to EPA and the State.

a. **Access Requirements**. The following is a list of activities for which access is required regarding the Affected Property:

(1) Monitoring the Work;

(2) Verifying any data or information submitted to the United States;

(3) Conducting investigations regarding contamination at or near the Project Area;

(4) Obtaining samples;

(5) Assessing the need for, planning, implementing, or monitoring response actions;

(6) Assessing implementation of data management and institutional controls defined in the approved data management work plan and ICIAP as provided in the SOW;

(7) Implementing the Work pursuant to the conditions set forth in Paragraph 81 (Work Takeover);

(8) Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Respondent(s) or its agents, consistent with Section XVI. (Access to Information);

(9) Assessing Respondents' compliance with the Order;

(10) Determining whether the Affected Property is being used in a manner that is prohibited or restricted, or that may need to be prohibited or restricted under the Order; and

(11) Implementing, monitoring, maintaining, reporting on, and enforcing any land, water, or other resource use restrictions regarding the Affected Property.

54. **Best Efforts**. As used in this Section, "best efforts" means the efforts that a reasonable person in the position of Respondents would use so as to achieve the goal in a timely manner, including the cost of employing professional assistance and the payment of reasonable sums of money to secure access and/or use restriction agreements. If, within 60 days after the Effective Date, Respondents are unable to accomplish what is required through "best efforts," they shall notify EPA, and include a description of the steps taken to comply with the requirements. If EPA deems it appropriate, it may assist Respondents, or take independent action, in obtaining such access and/or use restrictions. EPA reserves the right to pursue cost recovery regarding all costs incurred by the United States in providing such assistance or taking such action, including the cost of attorney time and the amount of monetary consideration or just compensation paid.

55. If EPA determines in a decision document prepared in accordance with the NCP that institutional controls in the form of state or local laws, regulations, ordinances, zoning restrictions, or other governmental controls or notices are needed, Respondents shall cooperate with EPA's efforts to secure and ensure compliance with such institutional controls.

56. In the event of any Transfer of the Affected Property, unless EPA otherwise consents in writing, Respondents shall continue to comply with their obligations under the Order, including their obligation to secure access.

57. **Notice to Successors-in-Title.** Owner Respondent shall, prior to entering into a contract to Transfer its Affected Property, or 60 days prior to Transferring its Affected Property, whichever is earlier: (a) Notify the proposed transferee that EPA has determined that an RD must be performed at the Project Area, that EPA has issued this Order requiring implementation of such RD, (identifying the name, docket number, and the effective date of this Order); and (b) Notify EPA of the name and address of the proposed transferee and provide EPA with a copy of the above notice that it provided to the proposed transferee.

58. Notwithstanding any provision of this Order, EPA retains all of its access authorities and rights, as well as all of its rights to require land, water, or other resource use restrictions, including enforcement authorities related thereto under CERCLA, RCRA, and any other applicable statute or regulations.

XII. FINANCIAL ASSURANCE

59. In order to ensure completion of the Work, Respondents shall secure financial assurance, initially in the amount of $4,354,200 ("Estimated Cost of the Work"). The financial assurance must be one or more of the mechanisms listed below, in a form substantially identical to the relevant sample documents available from EPA or under the "Financial Assurance - Orders" category on the Cleanup Enforcement Model Language and Sample Documents Database at https://cfpub.epa.gov/compliance/models/, and satisfactory to EPA. Respondents may use multiple mechanisms if they are limited to surety bonds guaranteeing payment, letters of credit, and/or trust funds.

a. A surety bond guaranteeing payment and/or performance of the Work that is issued by a surety company among those listed as acceptable sureties on federal bonds as set forth in Circular 570 of the U.S. Department of the Treasury and is in accordance with Paragraph 65 (Access to Financial Assurance);

b. An irrevocable letter of credit issued by an entity that has the authority to issue letters of credit and whose letter-of-credit operations are regulated and examined by a federal or state agency and is in accordance with Paragraph 65 (Access to Financial Assurance);

c. A trust fund: (1) established to ensure that funds will be available as and when needed for performance of the Work; (2) administered by a trustee that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency; and (3) governed by an agreement that requires the trustee to make payments from the fund only when the Director or Acting Director, Superfund and Emergency Management Division advises the trustee in writing that: (i) payments are necessary to fulfill the affected

Respondents' obligations under the Order; or (ii) funds held in trust are in excess of the funds that are necessary to complete the performance of Work in accordance with this Order;

d. A demonstration by a Respondent that it meets the financial test criteria of Paragraph 62; or

e. A guarantee to fund or perform the Work executed by a company: (1) that is a direct or indirect parent company of a Respondent or has a "substantial business relationship" (as defined in 40 C.F.R. § 264.141(h)) with a Respondent; and (2) can demonstrate to EPA's satisfaction that it meets the financial test criteria of Paragraph 62.

60. **Standby Trust**. If Respondents seek to establish financial assurance by using a surety bond, a letter of credit, the financial test, or a corporate guarantee, Respondents shall at the same time establish and thereafter maintain a standby trust fund, which must meet the requirements specified in Paragraph 59.c, and into which payments from the other financial assurance mechanism can be deposited if the financial assurance provider is directed to do so by EPA pursuant to Paragraph 65 (Access to Financial Assurance). An originally signed duplicate of the standby trust agreement must be submitted, with the other financial mechanism, to EPA in accordance with Paragraph 61. Until the standby trust fund is funded pursuant to Paragraph 65 (Access to Financial Assurance), neither payments into the standby trust fund nor annual valuations are required.

61. Within 30 days after the Effective Date, Respondents shall submit to EPA proposed financial assurance mechanisms in draft form in accordance with Paragraph 59 for EPA's review. Within 60 days after the Effective Date, or 30 days after EPA's approval of the form and substance of Respondents' financial assurance, whichever is later, Respondents shall secure all executed and/or otherwise finalized mechanisms or other documents consistent with the EPA-approved form of financial assurance and shall submit such mechanisms and documents to the EPA Project Coordinator and EPA Attorney listed in Paragraph 42.

62. Respondents seeking to provide financial assurance by means of a demonstration or guarantee under Paragraph 59.d or 59.e, above must, within 30 days of the Effective Date:

a. Demonstrate that:

(1) the affected Respondent or guarantor has:

i. Two of the following three ratios: a ratio of total liabilities to net worth less than 2.0; a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; and a ratio of current assets to current liabilities greater than 1.5; and

ii. Net working capital and tangible net worth each at least six times the sum of the Estimated Cost of the Work and the

amounts, if any, of other federal, state, or tribal environmental obligations financially assured through the use of a financial test or guarantee; and

iii. Tangible net worth of at least $10 million; and

iv. Assets located in the United States amounting to at least 90 percent of total assets or at least six times the sum of the Estimated Cost of the Work and the amounts, if any, of other federal, state, or tribal environmental obligations financially assured through the use of a financial test or guarantee; or

(2) The affected Respondent or guarantor has:

i. A current rating for its senior unsecured debt of AAA, AA, A, or BBB as issued by Standard and Poor's or Aaa, Aa, A or Baa as issued by Moody's; and

ii. Tangible net worth at least six times the sum of the Estimated Cost of the Work and the amounts, if any, of other federal, state, or tribal environmental obligations financially assured through the use of a financial test or guarantee; and

iii. Tangible net worth of at least $10 million; and

iv. Assets located in the United States amounting to at least 90 percent of total assets or at least six times the sum of the Estimated Cost of the Work and the amounts, if any, of other federal, state, or tribal environmental obligations financially assured through the use of a financial test or guarantee; and

b. Submit to EPA for the affected Respondent or guarantor: (1) a copy of an independent certified public accountant's report of the entity's financial statements for the latest completed fiscal year, which must not express an adverse opinion or disclaimer of opinion; and (2) a letter from its chief financial officer and a report from an independent certified public accountant substantially identical to the sample letter and reports available from EPA or under the "Financial Assurance – Orders" subject list category on the Cleanup Enforcement Model Language and Sample Documents Database at https://cfpub.epa.gov/compliance/models/.

63. Respondents shall diligently monitor the adequacy of the financial assurance. If any Respondent becomes aware of any information indicating that the financial assurance provided under this Section is inadequate or otherwise no longer satisfies the requirements of this Section, such Respondent shall notify EPA of such information within 30 days. If EPA

determines that the financial assurance provided under this Section is inadequate or otherwise no longer satisfies the requirements of this Section, EPA will notify the affected Respondent of such determination. Respondents shall, within 30 days after notifying EPA or receiving notice from EPA under this Paragraph, secure and submit to EPA for approval a proposal for a revised or alternative financial assurance mechanism that satisfies the requirements of this Section. Respondents shall follow the procedures of Paragraph 66 (Modification of Amount, Form, or Terms of Financial Assurance) in seeking approval of, and submitting documentation for, the revised or alternative financial assurance mechanism. Respondents' inability to secure financial assurance in accordance with this Section does not excuse performance of any other obligation under this Order.

64. Respondents providing financial assurance by means of a demonstration or guarantee under Paragraph 59.d or 59.e must also:

a. Annually resubmit the documents described in Paragraph 62.b within 90 days after the close of the affected Respondent's or guarantor's fiscal year;

b. Notify EPA within 30 days after the affected Respondent or guarantor determines that it no longer satisfies the relevant financial test criteria and requirements set forth in this Section; and

c. Provide to EPA, within 30 days of EPA's request, reports of the financial condition of the affected Respondent or guarantor in addition to those specified in Paragraph 62.b; EPA may make such a request at any time based on a belief that the affected Respondent or guarantor may no longer meet the financial test requirements of this Section.

65. **Access to Financial Assurance**

a. If EPA determines that Respondents: (1) have ceased implementation of any portion of the Work; (2) are seriously or repeatedly deficient or late in their performance of the Work; or (3) are implementing the Work in a manner that may cause an endangerment to human health or the environment, EPA may issue a written notice ("Performance Failure Notice") to both Respondents and the financial assurance provider regarding the affected Respondents' failure to perform. Any Performance Failure Notice issued by EPA will specify the grounds upon which such notice was issued and will provide Respondents a period of 10 days within which to remedy the circumstances giving rise to EPA's issuance of such notice. If, after expiration of the 10-day period specified in this Paragraph, Respondents have not remedied to EPA's satisfaction the circumstances giving rise to EPA's issuance of the relevant Performance Failure Notice, then, in accordance with any applicable financial assurance mechanism, EPA may at any time thereafter direct the financial assurance provider to immediately: (i) deposit any funds assured pursuant to this Section into the standby trust fund; or (ii) arrange for performance of the Work in accordance with this Order.

b. If EPA is notified by the provider of a financial assurance mechanism that it intends to cancel the mechanism, and the affected Respondent fails to provide an alternative financial assurance mechanism in accordance with this Section at least 30 days prior to the cancellation date, EPA may, prior to cancellation, direct the financial assurance provider to deposit any funds guaranteed under such mechanism into the standby trust fund for use consistent with this Section.

66. **Modification of Amount, Form, or Terms of Financial Assurance**. Respondents may submit, on any anniversary of the Effective Date or following Respondents' request for, and EPA's approval of, another date, a request to reduce the amount, or change the form or terms, of the financial assurance mechanism. Any such request must be submitted to the EPA individual(s) referenced in Paragraph 61, and must include an estimate of the cost of the remaining Work, an explanation of the bases for the cost calculation, a description of the proposed changes, if any, to the form or terms of the financial assurance, and any newly proposed financial assurance documentation in accordance with the requirements of Paragraphs 59 and 60 (Standby Trust). EPA will notify Respondents of its decision to approve or disapprove a requested reduction or change. Respondents may reduce the amount or change the form or terms of the financial assurance only in accordance with EPA's approval. Within 30 days after receipt of EPA's approval of the requested modifications pursuant to this Paragraph, Respondents shall submit to the EPA individual(s) referenced in Paragraph 61 all executed and/or otherwise finalized documentation relating to the amended, reduced, or alternative financial assurance mechanism. Upon EPA's approval, the Estimated Cost of the Work shall be deemed to be the estimate of the cost of the remaining Work in the approved proposal.

67. **Release, Cancellation, or Discontinuation of Financial Assurance**. Respondents may release, cancel, or discontinue any financial assurance provided under this Section only: (a) if EPA issues a Notice of Work Completion under Paragraph 3.14 of the SOW; or (b) in accordance with EPA's written approval of such release, cancellation, or discontinuation.

XIII. INSURANCE

68. Not later than 15 days before commencing any on-site Work, Respondents shall secure, and shall maintain until the first anniversary after the Notice of Work Completion pursuant to Paragraph 3.14 of the SOW, commercial general liability insurance with limits of liability of $1 million per occurrence, and automobile insurance with limits of liability of $1 million per accident, and umbrella liability insurance with limits of liability of $5 million in excess of the required commercial general liability and automobile liability limits, naming the United States as an additional insured with respect to all liability arising out of the activities performed by or on behalf of Respondents pursuant to this Order. In addition, for the duration of the Order, Respondents shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing Work on behalf of Respondents in furtherance of this Order. Within the same time period, Respondents shall provide EPA with certificates of such insurance

and a copy of each insurance policy. Respondents shall submit such certificate and copies of policies each year on the anniversary of the Effective Date. If Respondents demonstrate by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Respondents need provide only that portion of the insurance described above that is not maintained by the contractor or subcontractor. Respondents shall ensure that all submittals to EPA under this Paragraph identify the Portland Harbor Superfund Site, Portland, Oregon and the EPA docket number for this action.

XIV. DELAY IN PERFORMANCE

69. Respondents shall notify EPA of any delay or anticipated delay in performing any requirement of this Order. Such notification shall be made by telephone and email to EPA's Project Coordinator within 48 hours after Respondents first knew or should have known that a delay might occur. Respondents shall adopt all reasonable measures to avoid or minimize any such delay. Within 7 days after notifying EPA by telephone and email, Respondents shall provide to EPA written notification fully describing the nature of the delay, the anticipated duration of the delay, any justification for the delay, all actions taken or to be taken to prevent or minimize the delay or the effect of the delay, a schedule for implementation of any measures to be taken to mitigate the effect of the delay, and any reason why Respondents should not be held strictly accountable for failing to comply with any relevant requirements of this Order. Increased costs or expenses associated with implementation of the activities called for in this Order is not a justification for any delay in performance.

70. Any delay in performance of this Order that, in EPA's judgment, is not properly justified by Respondents under the terms of Paragraph 69 shall be considered a violation of this Order. Any delay in performance of this Order shall not affect Respondents' obligations to fully perform all obligations under the terms and conditions of this Order.

XV. PAYMENT OF RESPONSE COSTS

71. **Response Cost Payments:**

a. **Periodic Bills**. On a periodic basis, EPA will send Respondents a bill requiring payment that includes a SCORPIOS Report or similar EPA-prepared cost summary report. Respondents shall make all payments within 30 days after Respondents receipt of each bill requiring payment.

b. **Payments.** Payments made pursuant to this Paragraph 71 shall be made by EFT in accordance with EFT instructions provided by EPA, or by submitting a certified or cashier's check or checks made payable to "EPA Hazardous Substance Superfund," referencing the name and address of the party making the payment, the Site and Project Area name, EPA

Region 10, the account number 10SB, and EPA docket number for this action. Respondents shall send the check to:

U.S. Environmental Protection Agency
Superfund Payments
Cincinnati Finance Center
P.O. Box 979076
St. Louis, MO 63197-9000

Respondents shall use the following address for payments made by overnight mail:

U.S. Environmental Protection Agency
Government Lockbox 979076
1005 Convention Plaza
SL-MO-C2GL
St. Louis, MO 63101-1229

72. At the time of payment, Respondents shall send notice that payment has been made to EPA's Project Coordinator, and to the EPA Cincinnati Finance Office by email at *cinwd_acctsreceivable@epa.gov*, or by mail to:

EPA Cincinnati Finance Office
26 W. Martin Luther King Drive
Cincinnati, OH 45268

Such notice shall reference EPA Region 10, the account number 10SB and the EPA docket number for this action.

73. **Interest**. In the event that the payments for Response Costs are not made within 30 days after Respondents' receipt of a written demand requiring payment, Respondents shall pay Interest on the unpaid balance. The Interest on Response Costs shall begin to accrue on the date of the written demand and shall continue to accrue until the date of payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondents' failure to make timely payments under this Section. Respondents shall make all payments required by this Paragraph in the manner described in Paragraphs 71 and 72.

XVI. ACCESS TO INFORMATION

74. Respondents shall provide to EPA, upon request, copies of all records, reports, documents, and other information (including records, reports, documents, and other information in electronic form) (hereinafter referred to as "Records") within Respondents' possession or control or that of their contractors or agents relating to activities at the Site or to the implementation of this Order, including, but not limited to, sampling, analysis, chain of custody

records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information regarding the Work. Respondents shall also make available to EPA, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

75. **Privileged and Protected Claims**.

a. Respondents may assert that all or part of a Record requested by EPA is privileged or protected as provided under federal law, in lieu of providing the Record, provided Respondents comply with subparagraph b below, and except as provided in subparagraph c below.

b. If Respondents assert a claim of privilege or protection, they shall provide EPA with the following information regarding such Record: its title; its date; the name, title, affiliation (e.g., company or firm), and address of the author, of each addressee, and of each recipient; a description of the Record's contents; and the privilege or protection asserted. If a claim of privilege or protection applies only to a portion of a Record, Respondents shall provide the Record to EPA in redacted form to mask the privileged or protected portion only. Respondents shall retain all Records that it claims to be privileged or protected until EPA or a court determines that such Record is privileged or protected.

c. Respondents may make no claim of privilege or protection regarding: (1) any data regarding the Site, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, radiological, or engineering data, or the portion of any other Record that evidences conditions at or around the Site; or (2) the portion of any Record that Respondents are required to create or generate pursuant to this Order.

76. **Business Confidential Claims**. Respondents may assert that all or part of a Record provided to EPA under this Section or Section XVII (Retention of Records) is business confidential to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Respondents shall segregate and clearly identify all Records or parts thereof submitted under this Order for which Respondents assert business confidentiality claims. Records that Respondents claim to be confidential business information will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies Records when they are submitted to EPA, or if EPA has notified Respondents that the Records are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such Records without further notice to Respondents.

77. Notwithstanding any provision of this Order, EPA retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

XVII. RETENTION OF RECORDS

78. During the pendency of this Order and for a minimum of 10 years after Respondents' receipt of EPA's Notice of Work Completion under the SOW, Respondents shall preserve and retain all non-identical copies of Records (including Records in electronic form) now in their possession or control, or that come into their possession or control, that relate in any manner to their liability under CERCLA with respect to the Site, provided, however, that Respondents who are potentially liable as owners or operators of the Site must retain, in addition, all Records that relate to the liability of any other person under CERCLA with respect to the Site. Respondents must also retain, and instruct their contractors and agents to preserve, for the same period of time specified above, all non-identical copies of the last draft or final version of any Records (including Records in electronic form) now in their possession or control or that come into their possession or control that relate in any manner to the performance of the Work, provided, however, that Respondents (and their contractors and agents) must retain, in addition, copies of all data generated during performance of the Work and not contained in the aforementioned Records required to be retained. Each of the above record retention requirements shall apply regardless of any corporate retention policy to the contrary.

79. At the conclusion of this document retention period, Respondents shall notify EPA at least 90 days prior to the destruction of any such Records, and, upon request by EPA, and except as provided in Paragraphs 75 and 76, Respondents shall deliver any such Records to EPA.

80. Within 10 days after the Effective Date, Respondents shall submit a written certification to EPA's Project Coordinator that, to the best of their knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed, or otherwise disposed of any Records (other than identical copies) relating to their potential liability regarding the Site since notification of their potential liability by the United States, and that it has fully complied with any and all EPA requests for information regarding the Site pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927. Any Respondents unable to so certify shall submit a modified certification that explains in detail why it is unable to certify in full with regard to all Records.

XVIII. ENFORCEMENT/WORK TAKEOVER

81. Any willful violation, or failure or refusal to comply with any provision of this Order may subject Respondents to civil penalties of up to $57,317 per violation per day, as provided in Section 106(b)(1) of CERCLA, 42 U.S.C. § 9606(b)(1), and the Civil Monetary Penalty Inflation Adjustment Rule, 81 Fed. Reg. 43,091, 40 C.F.R. Part 19.4. In the event of such willful violation, or failure or refusal to comply, EPA may carry out the required actions unilaterally, pursuant to Section 104 of CERCLA, 42 U.S.C. § 9604, and/or may seek judicial enforcement of this Order pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606. In addition, nothing in this Order shall limit EPA's authority under Section XII (Financial Assurance). Respondents may also be subject to punitive damages in an amount up to three times the amount

of any cost incurred by the United States as a result of such failure to comply, as provided in Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3).

XIX. RESERVATIONS OF RIGHTS BY EPA

82. Nothing in this Order limits the rights and authorities of EPA and the United States:

a. To take, direct, or order all actions necessary, including to seek a court order, to protect public health, welfare, or the environment or to respond to an actual or threatened release of Waste Material on, at, or from the Site;

b. To select further response actions for the Site, including the Project Area, in accordance with CERCLA and the NCP;

c. To seek legal or equitable relief to enforce the terms of this Order;

d. To take other legal or equitable action as they deem appropriate and necessary, or to require Respondents in the future to perform additional activities pursuant to CERCLA or any other applicable law;

e. To bring an action against Respondents under Section 107 of CERCLA, 42 U.S.C.§ 9607, for recovery of any costs incurred by EPA or the United States regarding this Order or the Site and not paid by Respondents;

f. Regarding access to, and to require land, water, or other resource use restrictions and/or Institutional Controls regarding the Site under CERCLA, RCRA, or other applicable statutes and regulations; or

g. To obtain information and perform inspections in accordance with CERCLA, RCRA, and any other applicable statutes or regulations.

XX. OTHER CLAIMS

83. By issuance of this Order, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondents. The United States or EPA shall not be deemed a party to any contract entered into by Respondents or their directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Order.

84. Nothing in this Order constitutes a satisfaction of or release from any claim or cause of action against Respondents or any person not a party to this Order, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

85. Nothing in this Order shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611(a)(2), or 40 C.F.R. § 300.700(d).

86. No action or decision by EPA pursuant to this Order shall give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXI. ADMINISTRATIVE RECORD

87. EPA has established an administrative record that contains the documents that form the basis for the issuance of this Order, including, but not limited to, the documents upon which EPA based the selection of the Remedial Action selected in the ROD. A copy of the administrative record is available for viewing at EPA Region 10's offices at 1200 Sixth Avenue, Seattle, WA 98101.

XXII. INTEGRATION/APPENDICES

88. The following appendices are attached to and incorporated into this Order:

a. Appendix A is the SOW; and

b. Appendix B is a map of the River Mile 3.5 East Project Area.

XXIII. SEVERABILITY

89. If a court issues an order that invalidates any provision of this Order or finds that Respondents have sufficient cause not to comply with one or more provisions of this Order, Respondents shall remain bound to comply with all provisions of this Order not invalidated or determined to be subject to a sufficient cause defense by the court's order.

It is so ORDERED.

BY: SHEILA FLEMING Digitally signed by SHEILA FLEMING Date: 2020.03.26 16:47:21 -07'00' DATE: March 26, 2020

Sheila Fleming, Acting Director
Superfund and Emergency Management Division
Region 10
U.S. Environmental Protection Agency

Appendix A

UAO Statement of Work

REMEDIAL DESIGN STATEMENT OF WORK

PORTLAND HARBOR SUPERFUND SITE

River Mile 3.5 East Project Area

Portland, Multnomah County, State of Oregon

EPA Region 10

TABLE OF CONTENTS

1. INTRODUCTION 1
2. COMMUNITY INVOLVEMENT 4
3. REMEDIAL DESIGN 4
4. REPORTING 16
5. DELIVERABLES 17
6. SCHEDULES 26
7. STATE AND TRIBAL PARTICIPATION 28
8. REFERENCES 29

Attachments

Figure 1. Optimized Remedial Design Timeline

Attachment 1. Template Sufficiency Assessment Summary Table

Attachment 2. Program Data Management Plan for Portland Harbor

1. INTRODUCTION

1.1 Purpose of the Statement of Work. The U.S. Environmental Protection Agency (EPA) signed a Record of Decision for the Portland Harbor Superfund Site (Site) on January 3, 2017 (ROD) that selected Remedial Actions (RA) for the in-river portion of the Site from approximately river miles (RMs) 1.9 to 11.8. The ROD provides information about how Site data will influence Remedial Design (RD), remedial construction, and future maintenance of remediated areas. The ROD states that the actual technologies assigned during RD will be dependent on a number of characteristics and environmental conditions to ensure that the final constructed remedy is appropriate for area-specific conditions, e.g., Sediment Management Areas (SMAs). The ROD also identifies post-ROD / RD sampling activities that will support and refine the Site's Conceptual Site Model (CSM) to implement RD and remedial action. Any reference to the ROD in this SOW also includes any future ROD amendments or Explanations of Significance Differences EPA may issue.

This Statement of Work (SOW) sets forth the procedures and requirements for implementing the RD Work at the River Mile 3.5 East Project Area (hereinafter identified as the Project Area), as defined in the Unilateral Administrative Order (Order) as "the active cleanup area designated on Figure 30 of the ROD between approximately River Mile 3.2 and River Mile 4.2 on the east side of the Willamette River, and more specifically depicted on the map attached as Appendix B. The Project Area includes all river banks from top of the bank to the river."

As specified in Part 1: Declaration for the ROD (EPA, 2017), contaminated river banks will be addressed using the same remedial technologies that will be used for the adjacent contaminated sediment, if it is determined that those river banks should be remediated in conjunction with the sediment action. River bank soils/sediment will be evaluated to determine if there are recontamination concerns and design considerations associated with the river bank areas. Further upland source control assessments, if needed, will be addressed as upland source issues by the Oregon Department of Environmental Quality (ODEQ) and individual property owners or as necessary through EPA's authorities.

1.2 Structure of the SOW

- Section 2 (Community Involvement) sets forth EPA's and Respondents' responsibilities for community involvement.
- Section 3 (Remedial Design) sets forth the process for developing the RD, which includes the submission of specified primary deliverables.
- Section 4 (Reporting) sets forth Respondents' reporting obligations.

- Section 5 (Deliverables) describes the content of the supporting deliverables and the general requirements regarding Respondents' submission of, and EPA's review of, approval of, comment on, and/or modification of, the deliverables.
- Section 6 (Schedules) sets forth the schedule for submitting the primary deliverables, specifies the supporting deliverables that must accompany each primary deliverable, and sets forth the schedule of milestones regarding the completion of the RD.
- Section 7 (State and Tribal Participation) addresses State and Tribal participation.
- Section 8 (References) provides a list of references, including Uniform Resource Locations (URLs).

The terms used in this SOW that are defined in CERCLA, in regulations promulgated under CERCLA, or in the Order, have the meanings assigned to them in CERCLA, in such regulations, or in the Order, except that the term "Paragraph" or "¶" means a paragraph of the SOW, and the term "Section" means a section of the SOW, unless otherwise stated.

1.3 Scope of Remedy. The ROD selected a remedy for the in-river portion of the Site which extends from RM 1.9 to 11.8. The Selected Remedy addresses all areas where contaminant concentrations exceed the cleanup levels (CULs) through a combination of dredging, capping, enhanced natural recovery, monitored natural recovery, and institutional controls. ROD Table 17 identifies the CULs for the contaminants of concern (COC). ROD Table 21 identifies the remedial action levels (RALs) and principal threat waste (PTW) thresholds which delineate sediment management areas (SMAs) where containment or removal technologies will be applied, consistent with the ROD, to immediately reduce risks upon implementation. Remediation of contaminated river banks is included in the Selected Remedy where it is determined that it should be conducted in conjunction with the in-river actions and to protect the remedy. Other river banks may be included in the remedial action if contamination contiguous with contaminated river sediment is found during remedial design sampling. Final SMA footprints will be determined considering all existing data, including post-ROD sampling, and data gathered in remedial design.

A Remedial Design Guidelines and Considerations (RD Guide) document has been developed, consistent with the ROD, to facilitate efficient and timely design work throughout the Site. The RD Guide was developed in coordination and collaboration with designers already performing RD and the Portland Harbor Technical Coordinating Team (TCT). The RD Guide will be updated as needed through collaborative meetings and discussion with designers and the TCT. EPA-approved design deliverables will be developed consistent with the RD Guide to the extent possible. Section 1.4 of the RD Guide provides clarification on determination of SMAs, how buried contamination is considered in design, where data replacement might be considered during design,

technology assignment, equivalence analysis, and how pentachlorodibenzo-*p*-dioxin (PeCDD) RALs will be addressed in design.

Based on the polychlorinated dibenzo-*p*-dioxins and furans (dioxins/furans) results from the 2018 Upriver Reach (RMs 16.6 to 28.4) surface sediment sampling conducted by the Pre-Remedial Design Group (Pre-RD Group), there is uncertainty as to whether the background-based ROD Table 17 river bank soil/sediment CULs for dioxins/furans are representative of background conditions. In the 2018 Pre-RD Group data, the 95% confidence intervals on the Upriver Reach surface area weighted average concentrations (SWACs) for dioxins/furans are greater than or overlap the ROD Table 17 river bank soil/sediment CULs, which are a 95% upper confidence limit on the Remedial Investigation/Feasibility Study (RI/FS) data detection limits. Based on the 2018 Upriver Reach data alone, it is uncertain as to whether the 95% confidence intervals on the SWACs are statistically different from the background-based ROD Table 17 river bank soil/sediment CULs for dioxins/furans. To reduce the uncertainty in the dioxins/furans background dataset and to differentiate between Site releases, upstream source areas, and upstream concentrations not associated with localized upstream source areas, additional surface sediment sampling will be performed in the Upriver Reach. EPA will fund the investigation of dioxin/furan background levels and intends to coordinate implementation with ODEQ. The results of this investigation, along with the 2018 Pre-RD Group Upriver Reach data, will be used to update the Site-wide background-based CULs for dioxins/furans, if appropriate.

Section 14.2 of the ROD states that the pre-design elevation will be maintained in shallow and intermediate regions. EPA recognizes that based on robust remedial design evaluations of flood rise and habitat considerations, the placement of a cap without dredging may be allowed and desirable in order to minimize disruption or improve habitat while maintaining remedy effectiveness. The impacts to the floodway will be evaluated for each project area during remedial design and HEC-RAS modeling will be used to show that there will be no net rise due to the implementation of the Selected Remedy. If remedial design evaluations determine that there are no adverse impacts to habitat and the floodway due to capping in the shallow and intermediate regions, or if encroachments due to capping can be mitigated, then the elevation of the top of a cap may not need to be the same as the pre-design elevation. The responsiveness summary of the ROD and Feasibility Study Appendix L provide further discussion on habitat considerations and the ROD Updated Appendix P describes flood rise evaluations.

2. COMMUNITY INVOLVEMENT

2.1 Community Involvement (CI) Responsibilities

(a) EPA has the lead responsibility for developing and implementing CI activities at the Site. Previously (during the Remedial Investigation/Feasibility Study (RI/FS) phase), EPA developed a Community Involvement Plan (CIP) for the Site. Pursuant to 40 C.F.R. § 300.435(c), EPA shall review the existing CIP and determine whether it should be revised to describe further public involvement activities specific to the RD Work or the Project Area that are not already addressed or provided for in the existing CIP, including, if applicable, any Technical Assistance Grant (TAG), any use of the Technical Assistance Services for Communities (TASC) contract, and/or any Technical Assistance Plan (TAP).

(b) If requested by EPA, Respondents shall participate in CI activities, including participation in: (1) the preparation of information regarding the RD Work for dissemination to the public, with consideration given to including mass media and/or Internet notification; and (2) public meetings that may be held or sponsored by EPA to explain activities at or relating to the Site. Respondents' support of EPA's CI activities may include providing online access to initial submissions and updates of deliverables to: (1) any Community Advisory Groups; (2) any TAG recipients and their advisors; and (3) other entities to provide them with a reasonable opportunity for review and comment. EPA may describe in its CIP Respondents' responsibilities for CI activities. All CI activities conducted by Respondents at EPA's request are subject to EPA's oversight. Upon EPA's request, Respondents shall make Project Area-related data and information available to the public. EPA plans to coordinate its community outreach efforts with ODEQ.

(c) **Respondents' CI Coordinator**. Respondents shall, within 30 days of the effective date of the Order, designate and notify EPA of Respondents' CI Coordinator. Respondents may hire a contractor for this purpose. Respondents' notice must include the name, title, and qualifications of the Respondents' CI Coordinator. Respondents' CI Coordinator is responsible for providing support regarding EPA's CI activities, including coordinating with EPA's CI Coordinator regarding responses to the public's inquiries about the RD Work or the Project Area.

3. REMEDIAL DESIGN

3.1 Sufficiency Assessment.

(a) The Portland Harbor ROD Section 14.2.11 states that implementation of the Selected Remedy may need to be conducted in phases and/or work sequenced

based on consideration of a range of factors including source control actions and recontamination potential. To evaluate source control actions and recontamination potential, a Sufficiency Assessment Report shall be submitted to EPA for comment and approval.

The objective of the Sufficiency Assessment is to evaluate upland (direct discharges, groundwater, river bank, overwater) and in-water sources of contaminants to determine whether they have been adequately investigated and sufficiently controlled or considered such that the remedial action can proceed. The Sufficiency Assessment will consider whether upland (direct discharges, groundwater, river bank, overwater) and in-water sources will adversely impact the short- or long-term effectiveness of the proposed remedial action. The Sufficiency Assessment shall be completed following the schedule deadlines in ¶ 6.2.

(b) The Sufficiency Assessment shall consider potential impacts from a range of potential sources, including but not limited to:

(1) Upland pathways (direct discharges, groundwater, river bank, and overwater);

(2) In-water sources of recontamination;

(3) Resuspension of sediments from natural and anthropogenic activities;

(4) Factors that may impact sediment cap effectiveness;

(5) Potential future use for near shore land and in-water uses; and

(6) Other future conditions (e.g., climate change impacts) that may impact recontamination potential.

(c) The components of the Sufficiency Assessment Report shall include:

(1) Description of the Project Area setting, the upland and in-water source areas being evaluated and an overview of the remainder of the report.

(2) A Conceptual Site Model (CSM) that describes the geographically relevant upland (direct discharges, groundwater, river bank, and overwater) and in-water sources of contamination, contaminants of concern (COCs), and migration pathways into the Project Area.

(3) A summary of available information regarding the source control status of direct discharges, groundwater, river bank, and overwater sources of COCs into the Project Area that may affect achieving any of the remedial

action objectives by comparing to ROD Table 17 cleanup levels and Table 21 RALs and PTW thresholds as one line of evidence; identification of any sources, COCs and pathways that have not been effectively addressed and could impact the remedial action; and identification of data gaps.

(4) A summary of in-water sources of COCs to the Project Area that may affect achieving any of the remedial action objectives. One line of evidence in this evaluation will be comparing to ROD Table 17 cleanup levels and Table 21 RALs and PTW thresholds including a description of any proposed measures to address in-water sources including the timing and expected effectiveness of these measures.

(5) An assessment of the degree to which the proposed remedy will address upland (direct discharges, groundwater, river bank, and overwater) and in-water sources of COCs to the Project Area.

(6) An assessment of the degree to which changed future conditions (e.g., changes in land and waterway use and climate change) may affect recontamination potential at the Project Area.

(7) The results of the Sufficiency Assessment that includes evaluation of the sufficiency of upland and in-water source controls to reduce the potential for recontaminating the selected remedy following implementation. The assessment will consider the general magnitude of any potential recontamination effects and discuss implications to the selected remedy for the Project Area. The discussion will also present the limitations of the assessment approaches and any remaining data gaps.

(8) A sufficiency assessment summary table of upland sources (direct discharges, groundwater, river bank, and overwater) that explicitly identifies the potential sources and pathways at the Project Area and categorizes the status of each source using the outcome categories: (A) sources are sufficiently controlled; (B) sources are conditionally controlled; and (C) sources are not sufficiently assessed or controlled. A template is provided in **Attachment 1** of the SOW. Completing the sufficiency assessment summary table is a valuable exercise to ensure that there is consensus on the status of potential sources at the Project Area. 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 sufficiency assessment summary table shall be updated and included in the Pre-Final (95%) RD as a final check to ensure remedial construction can commence.

(9) Description of how data gaps, if any, will be addressed.

(10) Conclusions and Recommendations. The Sufficiency Assessment Report shall present conclusions and recommendations. Recommendations will be expressed as one of three potential outcomes:

(i) Sources are sufficiently controlled: the report recommends the specified area of sediment cleanup proceed based on reasonable confidence that the relevant recontamination potential is as minimal as possible.

(ii) Sources are conditionally controlled: the report recommends the specified area of sediment cleanup proceed so long as certain additional controls or oversight are implemented in a reasonable timeframe or that any area information gaps are considered.

(iii) Sources are not sufficiently assessed or controlled: the report recommends that specified area of sediment cleanup not proceed until additional controls have been implemented and assessed for effectiveness.

(11) References section listing each document cited in the report

(d) The Sufficiency Assessment does not itself satisfy the requirements of the federal Clean Water Act, CERCLA, or other authorities. For example, a site or area that has been evaluated for source control sufficiency for the in-water remedy may still be required to take additional measures to meet water quality permit or upland cleanup requirements.

Following remedy implementation, post-construction monitoring will be performed to evaluate remedy effectiveness. 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.

3.2 Pre-Design Investigation. The purpose of the Pre-Design Investigation (PDI) is to identify and address data gaps by conducting field investigations to develop the Basis of Design Report and RD Work Plan.

(a) **PDI Work Plan**. Respondents shall submit a PDI Work Plan (PDIWP) for EPA comment and approval. The PDIWP must include:

(1) An evaluation and summary of all available existing data, including baseline data within/near the RM3.5E Project Area, and description of

data gaps for: preliminary SMA delineation consistent with EPA's June 6, 2017 *Portland Harbor Superfund Site, Sampling Plan for Pre-Remedial Design, Baseline and Long-Term Monitoring;* CSM refinement consistent with Section 14.2 (*Post-ROD Data Gathering and Other Information Verification*) of the ROD; and application of ROD Figure 28 (*Technology Application Decision Tree*). This includes additional field investigations, that must be completed to support RD and to refine the CSM. Data gap analysis will include:

(i) Surface and subsurface contaminant concentrations;

(ii) Surface water, sediment pore water and groundwater data;

(iii) Bathymetry;

(iv) Flood-rise analysis; and

(v) NAPL delineation, if applicable.

(2) A Project Area Field Sampling Plan, as described in ¶ 5.6(c) (Supporting Deliverables) of this SOW. The plan includes the details of the media to be sampled, contaminants or parameters for which sampling will be conducted, location (areal extent and depths), number of samples, and a project schedule;

(3) A Project Area Quality Assurance Project Plan (QAPP) as described in ¶ 5.6(d) (Supporting Deliverables) of this SOW;

(4) A Project Area Health and Safety Plan (HASP), as described in ¶ 5.6(a) (Supporting Deliverables) of this SOW;

(5) A Project Area Emergency Response Plan as described in ¶ 5.6(b) (Supporting Deliverables) of this SOW; and

(6) A description of all necessary actions to ensure compliance with ¶ 3.13 (Off-Site Shipments) of this SOW.

(b) **PDI Evaluation Report.** Following implementation of the PDI scope in the approved PDIWP, Respondents shall submit a PDI Evaluation Report for EPA comment and approval. This report must include:

(1) Summary of the investigations performed;

(2) Summary of investigation results;

(3) Summary of validated data (i.e., tables and graphics);

(4) Data validation reports and laboratory data reports;

(5) Narrative interpretation of data and results;

(6) Results of statistical and modeling analyses, if applicable;

(7) Photographs documenting the work conducted; and

(8) Conclusions and recommendations on whether the data are sufficient to complete the BODR.

3.3 Basis of Design Report (BODR). The purpose of the BODR is to refine the SMA, update the CSM and refine the technology assignments to the SMA consistent with the Decision Tree in Figure 28 of the ROD. Respondents shall submit a BODR for EPA comment and approval. The BODR will:

(a) Summarize the results of the sufficiency assessment and whether potential sources of recontamination have been adequately investigated and controlled or considered such that the remedial action can proceed.

(b) Summarize existing site conditions and site factors which affect technology assignments including detailed reasonably anticipated future navigation and land use information and other data, as depicted in the Decision Tree, and refinement of the CSM pertaining to the Project Area;

(c) Summarize design criteria applicable to the Project Area as described in the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995) and consistent with Section 14.2.9 (*Design Requirements*) and Section 14.2.10 (*Performance Standards*) of the ROD;

(d) Describe Decision Tree analysis and identify a preferred remedial approach, including technology assignments and Project Area-specific institutional controls, based on consistency with applicable Remedial Action Objectives and ROD elements for the Project Area;

(e) Identify long-term monitoring and maintenance considerations for the Project Area;

(f) Identify design studies for RD, if any, such as subsurface and surface sediment sampling and benthic toxicity testing, that may be needed to evaluate attainment

of applicable RAOs and address proposed remedial technology means and methods, and gather other information necessary for RD for the Project Area; and

(g) Describe a sequencing plan as well as an overall schedule to complete the design studies, RD and remedial action for the Project Area.

3.4 RD Work Plan (RDWP). Respondents shall submit a RDWP for EPA comment and approval. The RDWP must include:

(a) Plans for implementing all RD activities identified in this SOW, in the BODR, in the RDWP, or as required by EPA to be conducted to develop the RD for the Project Area;

(b) A description of the overall management strategy for performing the RD, including a proposal for phasing of design and construction, if applicable;

(c) Detailed reasonably anticipated future navigation and land use information and other data to inform the Decision Tree in Figure 28 of the ROD;

(d) A description of the proposed general approach to contracting, construction, operation, maintenance, and monitoring of the remedial action as necessary to implement the Work;

(e) A description of the responsibility and authority of all organizations and key personnel involved with the development of the RD;

(f) Descriptions of any areas requiring clarification and/or anticipated problems, if any (e.g., data gaps);

(g) Description of studies and design phases for any on-site transload facility to be used to transload dredged materials from the Project Area or any other area of the Site;

(h) Description of any proposed supplemental PDI;

(i) Description of any proposed treatability study;

(j) Descriptions of any applicable permitting requirements and other regulatory requirements, if any;

(k) Description of plans for obtaining access in connection with the Work, such as access agreements, property acquisition, property leases, and/or easements; and

(l) Updates of all supporting deliverables required to accompany the PDIWP or supplemental PDIWP.

3.5 Meetings. Respondents shall meet regularly with EPA to discuss design issues as necessary, as directed or determined by EPA.

3.6 Supplemental PDI. The purpose of the Supplemental PDI is to address data gaps identified in the RDWP by conducting additional field investigations in the Project Area.

(a) **Supplemental PDI Work Plan**. If EPA requests, Respondents shall submit a Supplemental PDI Work Plan (SPDIWP) for EPA comment and approval. The SPDIWP must include all elements as described in ¶ 3.2(a).

(b) **Supplemental PDI Evaluation Report**. Following the SPDIWP, Respondents shall submit a Supplemental PDI Evaluation Report for EPA comment and approval. This report must include the same elements as described in ¶ 3.2(b).

3.7 Treatability Study. If determined necessary by EPA, Respondents shall perform a Treatability Study (TS) to evaluate the effectiveness of a remedial technology (e.g., reactive cap).

(a) Respondents shall submit a TS Work Plan (TSWP) for EPA comment and approval. Respondents shall prepare the TSWP in accordance with *EPA's Guide for Conducting Treatability Studies under CERCLA, Final* (Oct. 1992), as supplemented for RD by the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995).

(b) Following completion of the TS, Respondents shall submit a TS Evaluation Report for EPA comment and approval.

(c) EPA may require Respondents to supplement the TS Evaluation Report and/or to perform additional treatability studies.

3.8 Preliminary (30%) RD. Respondents shall submit a Preliminary (30%) RD for the Project Area for EPA's comment. All information and activities to be performed under the Preliminary (30%) RD shall be included and updated, as needed, in subsequent RD submittals (i.e., 60%, 95%, and 100%). The Preliminary RD must include:

(a) A design criteria report, as described in the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995);

(b) Preliminary drawings and specifications;

(c) Descriptions of permit requirements, if applicable;

(d) A description of how the remedial action will be implemented in a manner that minimizes environmental impacts in accordance with EPA's *Principles for Greener Cleanups* (Aug. 2009), and the information described in Appendix M of the Portland Harbor Feasibility Study (June 2016);

(e) A description of monitoring and control measures to protect human health and the environment, such as air monitoring and dust suppression, during the remedial action;

(f) Updates of all supporting deliverables required to accompany the RDWP and the following additional supporting deliverables described in ¶ 5.6 (Supporting Deliverables): Institutional Controls Implementation and Assurance Plan; Waste Designation Memo; Biological Assessment; Clean Water Act Analysis; Project Area Monitoring Plan; Construction Quality Assurance/Quality Control Plan; Transportation and Off-Site Disposal Plan; O&M Plan; and O&M Manual;

(g) Respondents must demonstrate that any transload facility it intends to use is appropriate for handling and transloading contaminated sediments and other materials that might be dredged by Respondent. In the event Respondents wish to use a transload facility within the Site for transferring dredged materials from the Project Area, Respondents will provide the design specifications for that transload facility, whether prepared by Respondents or another owner or operator. If necessary, EPA shall assist Respondents in obtaining the required design specifications from the transload facility owner or operator. Such specifications shall include information for any transload-specific Applicable or Relevant and Appropriate Requirements that must be complied with to build and operate the transload facility. In addition, the transload facility's design specifications must address the following: (1) location of transload operations; (2) identification of contaminated groundwater and soil within the foot print of the transload operations; and (3) plans to remove or remediate these contaminated media during construction of the transload facility, or an analysis of how the presence and operation of the transload facility will not inhibit or prevent implementation of ongoing source control measures and potential remedial measures identified in ODEQ's pending upland Record of Decision for the upland property, if applicable. If Respondents intend to use a transload facility outside of the Portland Harbor Superfund Site (see NCP definition of "on-site") for dredged materials from the Project Area, the design specifications provided by Respondents (which may be prepared by another owner or operator) must include Clean Water Act (CWA) Sections 404 and 401 permit application design information to minimize spillage, offsite tracking, worker exposure and ensure

stormwater management for approval before submittal to the United States Army Corps of Engineers and ODEQ, respectively; and

(h) Respondents shall coordinate with and obtain necessary information from owners of river banks and/or submerged lands that are within the Project Area. Such information shall include, but not be limited to, the owner's future anticipated river use that should be considered in the decision tree process and design, shipping schedules, and known buried infrastructure. The RD shall document in writing the landowners that were contacted and the information received for all properties in the Project Area.

3.9 Intermediate (60%) RD. Respondents shall submit the Intermediate (60%) RD for EPA's comment. The Intermediate (60%) RD must: (a) be a continuation and expansion of the Preliminary (30%) RD; (b) address EPA's comments regarding the Preliminary (30%) RD; and (c) include the same elements as are required for the Preliminary (30%) RD.

3.10 Pre-Final (95%) RD. Respondents shall submit the Pre-final (95%) RD for EPA's comment. The Pre-final (95%) RD must be a continuation and expansion of the previous design submittal and must address EPA's comments regarding the Intermediate (60%) RD. The Pre-final (95%) RD will serve as the approved Final (100%) RD if EPA approves the Pre-final (95%) RD without comments. The Pre-final (95%) RD must include:

(a) A complete set of construction drawings and specifications that are: (1) certified by a registered professional engineer; (2) suitable for procurement; and (3) follow the Construction Specifications Institute's MasterFormat 2016;

(b) Survey and engineering drawings showing existing Project Area features, such as elements, property borders, easements, and Project Area conditions;

(c) Pre-final versions of the same elements and deliverables as are required for the Intermediate (60%) RD;

(d) A specification for photographic documentation of the remedial action; and

(e) Updates of all supporting deliverables required to accompany the Preliminary (30%) RD, including an updated sufficiency assessment summary table per ¶ 3.1(c)(8) as a final check to ensure remedial construction can commence.

3.11 Final (100%) RD. Respondents shall submit the Final (100%) RD for EPA approval. The Final (100%) RD must address EPA's comments on the Pre-final (95%) RD and must include final versions of all Pre-final deliverables.

3.12 Emergency Response and Reporting

(a) **Emergency Response and Reporting**. If any event occurs during performance of the RD Work that causes or threatens to cause a release of Waste Material on, at, or from the Site and that either constitutes an emergency situation or that may present an immediate threat to public health or welfare or the environment, Respondents shall: (1) immediately take all appropriate action to prevent, abate, or minimize such release or threat of release; (2) immediately notify the authorized EPA officer (as specified in ¶ 3.12(c)) orally; and (3) take such actions in consultation with the authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plan, the Emergency Response Plan, and any other deliverable approved by EPA under the SOW.

(b) **Release Reporting**. Upon the occurrence of any event during performance of the RD Work that Respondents are required to report pursuant to Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004, Respondents shall immediately notify the National Response Center (phone 1-800-424-8802) and authorized EPA officer orally.

(c) The "authorized EPA officer" for purposes of immediate oral notifications and consultations under ¶ 3.12(a) and ¶ 3.12(b) is the EPA Project Coordinator, the EPA Alternate Project Coordinator (if the EPA Project Coordinator is unavailable), or the EPA Emergency Response Unit, Region 10 (if neither EPA Project Coordinator is available).

(d) For any event covered by ¶ 3.12(a) and ¶ 3.12(b), Respondents shall: (1) within 14 days after the onset of such event, submit a report to EPA describing the actions or events that occurred and the measures taken, and to be taken, in response thereto; and (2) within 30 days after the conclusion of such event, submit a report to EPA describing all actions taken in response to such event.

(e) The reporting requirements under ¶ 3.12 are in addition to the reporting required by CERCLA § 103 or EPCRA § 304.

3.13 Off-Site Shipments

(a) Respondents may ship hazardous substances, pollutants, and contaminants from the Site to an off-Site facility only if they comply with Section 121(d)(3) of

CERCLA, 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondents will be deemed to be in compliance with CERCLA § 121(d)(3) and 40 C.F.R. § 300.440 regarding a shipment if Respondents obtain a prior determination from EPA that the proposed receiving facility for such shipment is acceptable under the criteria of 40 C.F.R. § 300.440(b).

(b) Respondents may ship Waste Material from the Site to an out-of-state waste management facility only if, prior to any shipment, they provide notice to the appropriate state environmental official in the receiving facility's state and to the EPA Project Coordinator. This notice requirement will not apply to any off-Site shipments when the total quantity of all such shipments does not exceed 10 cubic yards. The notice must include the following information, if available: (1) the name and location of the receiving facility; (2) the type and quantity of Waste Material to be shipped; (3) the schedule for the shipment; and (4) the method of transportation. Respondents also shall notify the state environmental official referenced above and the EPA Project Coordinator of any major changes in the shipment plan, such as a decision to ship the Waste Material to a different out-of-state facility. Respondents shall provide the notice as soon as practicable after the award of the contract and before the Waste Material is shipped.

(c) Respondents may ship Investigation Derived Waste (IDW) from the Site to an off-Site facility only if they comply with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), 40 C.F.R. § 300.440, EPA's *Guide to Management of Investigation Derived Waste*, OSWER 9345.3-03FS (Jan. 1992), and any IDW-specific requirements contained in the ROD. Wastes shipped off-Site to a laboratory for characterization, and RCRA hazardous wastes that meet the requirements for an exemption from RCRA under 40 CFR § 261.4(e) shipped off-Site for treatability studies, are not subject to 40 C.F.R. § 300.440.

3.14 Notice of Work Completion

(a) When EPA determines, after EPA's review of the Final 100% RD under ¶ 3.11 (Final (100%) RD), that all Work has been fully performed in accordance with this Order, with the exception of any continuing obligations as provided in ¶ 3.14(c), EPA will provide written notice to Respondents. If EPA determines that any such Work has not been completed in accordance with this Order, EPA will notify Respondents, provide a list of the deficiencies, and require that Respondents modify the RD Work Plan if appropriate or otherwise correct such deficiencies.

(b) Respondents shall implement the modified and approved RD Work Plan or other Work and shall submit a modified Final (100%) Report for EPA approval in

accordance with the EPA notice. If approved, EPA will issue the Notice of Work Completion.

(c) Issuance of the Notice of Work Completion does not affect the following continuing obligations: (1) obligations under Sections XI. (Property Requirements); XVI. (Access to Information); XVII. (Retention of Records); and (3) reimbursement of EPA's Response Costs under Section XV. (Payment of Response Costs) in the Order.

4. REPORTING

4.1 Progress Reports. Commencing with the quarter following the Effective Date of the Order, Respondents shall submit progress reports to EPA on a quarterly basis, or as otherwise requested by EPA. The reports must cover all activities that took place during the prior reporting period, including:

(a) The actions that have been taken toward achieving compliance with the Order;

(b) A summary of all results of validated sampling, tests, and all other data received or generated by Respondents;

(c) A list of all deliverables that Respondents submitted to EPA;

(d) A list of all activities scheduled for the next quarter;

(e) Information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of the RD Work, and a description of efforts made to mitigate those delays or anticipated delays;

(f) A list of any modifications to the work plans or other schedules that Respondents have proposed or that have been approved by EPA; and

(g) A list of all activities undertaken in support of the CIP during the reporting period and those to be undertaken in the next quarter.

4.2 Notice of Progress Report Schedule Changes. If the schedule for any activity described in the Progress Reports, including activities required to be described under ¶ 4.1(d), changes, Respondents shall notify EPA of such change at least seven days before performance of the activity.

5. DELIVERABLES

5.1 Applicability. Respondents shall submit all deliverables for EPA approval or for EPA comment as specified in the SOW. If neither is specified, the deliverable does not require EPA's approval or comment. ¶ 5.2 (In Writing) through 5.4 (Formatting Specifications) apply to all deliverables. ¶ 5.5 (Approval of Deliverables) applies to any deliverable that is required to be submitted for EPA approval.

5.2 In Writing. All deliverables under this SOW must be in writing unless otherwise specified.

5.3 General Requirements for Deliverables

(a) Except as otherwise provided in this SOW, Respondents shall direct all deliverables required by this SOW to the EPA Project Coordinator: Eva DeMaria, Remedial Project Manager, Superfund and Emergency Management Division, U.S. Environmental Protection Agency, 1200 6th Ave., Ste. 155, M/S 12-D12-1, Seattle, WA 98101, phone (206) 553-1970, email demaria.eva@epa.gov.

(b) All deliverables provided to the State and Tribal representatives in accordance with Section 7 (State and Tribal Participation) shall be directed to:

- David Lacey and Sarah Greenfield, Department of Environmental Quality, Northwest Region Portland Office, 700 NE Multnomah St., Ste 600, Portland, OR 97232-4100, (503) 229-5354 (David Lacey), david.j.lacey@state.or.us, (503) 229-5445 (Sarah Greenfield), sarah.greenfield@state.or.us.

- The Five Tribes (individual Tribal contacts may be updated as necessary):

  - c/o Gail French Fricano, IEc, Industrial Economics, Incorporated, 2067 Massachusetts Ave., Cambridge, MA 02140, (617) 354-0074, GFricano@indecon.com.

  - c/o Courtney Johnson (for Nez Perce Tribe), Crag Law Center, 3141 E. Burnside St., Portland, OR 97214, (503) 525-2728, courtney@crag.org.

  - Laura Shira, Yakama Nation Fisheries, Post Office Box 151, Toppenish, WA 98948, (509) 985-3561, shil@yakamafish-nsn.gov.

(c) All deliverables must be submitted by the deadlines in the RD Schedule and RDWP, as applicable. Respondents shall submit all deliverables to EPA in electronic form, e.g., email pdfs and/or maintain file transfer protocol (ftp) sites as

requested by EPA. Technical specifications for sampling and monitoring data and spatial data are addressed in ¶ 5.4. All other deliverables shall be submitted to EPA in the electronic form specified by the EPA Project Coordinator. If any deliverable includes maps, drawings, or other exhibits that are larger than 11" by 17", Respondents shall also provide EPA with paper copies of such exhibits.

5.4 Formatting Specifications

(a) Sampling and monitoring data should be submitted in standard regional Electronic Data Deliverable (EDD) format (**Attachment 2** of the SOW) or as specified by EPA. Other delivery methods may be allowed if electronic direct submission presents a significant burden or as technology changes. All data must be formatted such that they can be easily uploaded to the Portland Harbor Superfund Site database (e.g., Scribe). Reports shall be submitted in a format approved by EPA, such as in pdf format with all metadata inserted, 508 tagging done to the extent practicable, in one file per deliverable (versus many), and include bookmarks to the extent practicable to enhance readability.

(b) Spatial data, including spatially-referenced data and geospatial data, shall be submitted: (1) in the ESRI File Geodatabase format; and (2) as unprojected geographic coordinates in decimal degree format using North American Datum 1983 (NAD83) or World Geodetic System 1984 (WGS84) as the datum, consistent with the format used for such submissions in the RI/FS for the Portland Harbor Superfund Site or as approved by EPA. If applicable, submissions shall include the collection method(s). Projected coordinates may optionally be included but must be documented (four aspects include projection, zone, datum, and units). Spatial data shall be accompanied by metadata, and such metadata shall be compliant with the Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata and its EPA profile, the EPA Geospatial Metadata Technical Specification. An add-on metadata editor for ESRI software, the EPA Metadata Editor (EME), complies with these FGDC and EPA metadata requirements and is available at https://www.epa.gov/geospatial/epa-metadata-editor. Respondents are required to upload data collected to EPA's Scribe environmental data management tool or other tool as prescribed by EPA.

(c) Each file must include an attribute name for each Project Area unit or sub-unit submitted. Consult https://www.epa.gov/geospatial/geospatial-policies-and-standards for any further available guidance on attribute identification and naming.

(d) Spatial data submitted by Respondents does not, and is not intended to, define the boundaries of the Project Area.

5.5 Approval of Deliverables

(a) **Initial Submissions**

(1) After review of any deliverable that is required to be submitted for EPA approval under the SOW, EPA shall: (i) approve, in whole or in part, the submission; (ii) approve the submission upon specified conditions; (iii) disapprove, in whole or in part, the submission; or (iv) any combination of the foregoing.

(2) EPA also may modify the initial submission to cure deficiencies in the submission. Respondents shall implement the submission as modified by EPA.

(b) **Resubmissions**. Upon receipt of a notice of disapproval under ¶ 5.5(a) (Initial Submissions), or if required by a notice of approval upon specified conditions under ¶ 5.5(a) Respondents shall, within 30 days or as specified by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. After review of the resubmitted deliverable, EPA may: (1) approve, in whole or in part, the resubmission; (2) approve the resubmission upon specified conditions; (3) modify the resubmission; (4) disapprove, in whole or in part, the resubmission, requiring Respondents to correct the deficiencies; or (5) any combination of the foregoing.

(c) **Implementation**. Upon approval, approval upon conditions, or modification by EPA under ¶ 5.5(a) (Initial Submissions) or ¶ 5.5(b) (Resubmissions), of any deliverable, or any portion thereof: (1) such deliverable, or portion thereof, will be incorporated into and enforceable under the Order; and (2) Respondents shall take any action required by such deliverable, or portion thereof.

5.6 Supporting Deliverables. Respondents shall submit each of the following supporting deliverables for EPA comment and approval, except as specifically approved by EPA. Respondents shall develop the deliverables in accordance with all applicable regulations, guidance, and policies (see Section 8 (References)). Respondents shall update each of these supporting deliverables as necessary or appropriate during the RD Work, and/or as requested by EPA. Supporting deliverables to each deliverable are specified in the schedule of ¶ 6.2.

(a) **Health and Safety Plan**. The Health and Safety Plan (HASP) describes all activities to be performed to protect on-site personnel and area residents from physical, chemical, and all other hazards posed by implementing the RD Work. Respondents shall develop the HASP in accordance with EPA's Emergency

Responder Health and Safety and Occupational Safety and Health Administration (OSHA) requirements under 29 C.F.R. §§ 1910 and 1926. The HASP required by this RD SOW should cover RD activities and should be, as appropriate, updated to cover activities during the remedial action and updated to cover activities after remedial action completion. (Updates may be needed for remedial action activities and after remedial action completion.) EPA does not approve the HASP but will review it to ensure that all necessary elements are included and that the plan provides for the protection of human health and the environment.

(b) **Emergency Response Plan**. The Emergency Response Plan (ERP) must describe procedures to be used in the event of an accident or emergency at the Project Area (for example, power outages, water impoundment failure, treatment plant failure, slope failure, etc.). The ERP must include:

(1) Name of the person or entity responsible for responding in the event of an emergency incident;

(2) Plan and date(s) for meeting(s) with the local community, including local, State, and federal agencies involved in the cleanup, as well as local emergency squads and hospitals;

(3) Spill Prevention, Control, and Countermeasures (SPCC) Plan (if applicable), consistent with the regulations under 40 C.F.R. Part 112, describing measures to prevent, and contingency plans for, spills and discharges;

(4) Notification activities in accordance with ¶ 3.12(b) (Release Reporting) in the event of a release of hazardous substances requiring reporting under Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004; and

(5) A description of all necessary actions to ensure compliance with ¶ 3.12(a) (Emergency Response and Reporting) of the SOW in the event of an occurrence during the performance of the RD Work that causes or threatens a release of Waste Material from the Site that constitutes an emergency or may present an immediate threat to public health or welfare or the environment.

(c) **Field Sampling Plan**. The Field Sampling Plan (FSP) addresses all sample collection activities. The FSP must be written so that a field sampling team unfamiliar with the project would be able to gather the samples and field information required. Respondents shall develop the FSP in accordance with *Guidance for Conducting Remedial Investigations and Feasibility Studies*,

EPA/540/G 89/004 (Oct. 1988). The description of data gaps as required in ¶ 3.2(a)(1) will serve as the basis for the sample collection activities in the FSP. The lateral and vertical extent of contamination exceeding RALs and PTW thresholds will be delineated to the Project Area boundaries both upstream and downstream based on 150 by 150-foot core spacing density and will start from the SMAs identified in the evaluation and summary of all existing data set forth in ¶ 3.2(a)(1). The lateral and vertical extent of contamination into the navigation channel is not bound by the Project Area boundary on that side, but rather must be delineated also based on 150 by 150-foot core spacing density but to no more than half the distance across the channel, and will start from the SMAs identified in the evaluation and summary of all existing data set forth in ¶ 3.2(a)(1).

(d) **Quality Assurance Project Plan**. The Quality Assurance Project Plan (QAPP) augments the FSP and addresses sample analysis and data handling regarding the RD Work. The QAPP must include a detailed explanation of Respondents' quality assurance, quality control, and chain of custody procedures for all investigations, treatability, design, compliance, and monitoring samples. Respondents shall develop the QAPP in accordance with *EPA Requirements for Quality Assurance Project Plans*, QA/R- 5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006); *Guidance for Quality Assurance Project Plans*, QA/G-5, EPA/240/R-02/009 (Dec. 2002); and *Uniform Federal Policy for Quality Assurance Project Plans*, Parts 1-3, EPA/505/B- 04/900A through 900C (Mar. 2005). The QAPP also must include procedures:

(1) To ensure that EPA and its authorized representative have reasonable access to laboratories used by Respondents in implementing the Order (Respondents' Labs);

(2) To ensure that Respondents' Labs analyze all samples submitted by EPA pursuant to the QAPP for quality assurance monitoring;

(3) To ensure that Respondents' Labs perform all analyses using EPA-accepted methods (i.e., the methods documented in *USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis*, ILM05.4 (Dec. 2006); *USEPA Contract Laboratory Program Statement of Work for Organic Analysis*, SOM01.2 (amended Apr. 2007); and *USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration)*, ISM01.2 (Jan. 2010) or other methods acceptable to EPA;

(4) To ensure that Respondents' Labs participate in an EPA-accepted QA/QC program or other QA/QC program acceptable to EPA;

(5) For Respondents to provide EPA with notice at least 28 days prior to any sample collection activity;

(6) For Respondents to provide split samples and/or duplicate samples to EPA upon request;

(7) For EPA to take any additional samples that it deems necessary;

(8) For EPA to provide to Respondents, upon request, split samples and/or duplicate samples in connection with EPA's oversight sampling; and

(9) For Respondents to submit to EPA all sampling and tests results and other data in connection with the implementation of the Order.

(e) **Institutional Controls Implementation and Assurance Plan.** Institutional controls (ICs) at the Site will be implemented to: (1) protect human health and the environment by limiting exposure to contamination left in place; and (2) protect the long-term integrity of the engineered components of the Selected Remedy. The City of Portland and State of Oregon will develop a Site-wide Institutional Control Implementation and Assurance Plan (ICIAP). In coordination with EPA and Respondents for other Project Areas, Respondents will develop a Project Area-specific ICIAP during RD which will, at a minimum, identify the specific and necessary Project Area ICs that will be implemented; plans to implement, maintain, and enforce the ICs; and the parties responsible for implementing and monitoring each IC necessary at the Project Area, consistent with Section 14.2.6. (*Institutional Controls*) of the ROD. Upon approval by EPA, Respondents will provide its Project Area ICIAP to the City and State for incorporation into the Site-wide ICIAP. The ICIAP shall be developed in accordance with *Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites,* OSWER 9355.0-89, and EPA/540/R-09/001 (Dec. 2012) and *Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites*, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012) or as amended or superseded. The ICIAP must include the following additional requirements:

(1) Locations of recorded real property interests (e.g., easements, liens) and resource interests in the property that may affect ICs (e.g., surface, mineral, and water rights) including accurate mapping and geographic information system (GIS) coordinates of such interests; and

(2) Legal descriptions and survey maps that are prepared according to current American Land Title Association (ALTA) Survey guidelines and certified by a licensed surveyor.

Among others, three types of ICs have been proposed for the Site that may

be used at the Site: (1) Fish Advisories and Educational Outreach; (2) Waterway Use Restrictions or Regulated Navigation Areas (RNAs); and (3) Land Use/Access Restrictions.

(f) **Waste Designation Memo**. The waste designation memo, if appropriate, will describe the characterization of any RCRA wastes (evaluated as part of the RD) and present the data needs necessary to arrange for the off-site disposal of the wastes at an appropriate facility.

(g) **Biological Assessment (BA)**. The Respondents shall include a Project Area BA or a supplement to EPA's programmatic Site-wide BA for the preferred alternative as needed to help facilitate National Oceanic and Atmospheric Administration (NOAA) consultation on substantive requirements for the Project Area, as well as a CWA memorandum, to include time for EPA reviews and any necessary revision. The BA shall identify the presence of threatened, endangered, and proposed or candidate species, or their habitat, within the vicinity of the Project Area and shall comply with the substantive requirements of the Endangered Species Act. The BA shall characterize baseline conditions of existing habitat; address potential project impacts that the remedy may have on these species, their habitat, and their food stocks; and describe best management practices and conservation measures designed to avoid or minimize any negative impacts.

(h) **Clean Water Act Analysis**. Respondents shall submit a memorandum that provides sufficient information to demonstrate compliance of the proposed remedial action at the Project Area with the substantive requirements of Section 404(b)(1) and other applicable sections of the CWA. The memorandum shall supplement the information gathered from the Feasibility Study regarding, long- and short-term impacts from the remedial action at the Project Area, minimization of adverse effects, compliance with the ROD, and an analysis of the need for any mitigation.

(i) **Project Area Monitoring Plan**. The purpose of the Project Area Monitoring Plan (PAMP) is to obtain baseline information regarding the extent of contamination in affected media at the Project Area; to obtain information, through short- and long-term monitoring, about the movement of and changes in contamination throughout the Project Area, before and during implementation of the remedial action; to obtain information regarding contamination levels to determine whether Performance Standards (PS) are achieved; and to obtain information to determine whether to perform additional actions, including further Project Area monitoring. As appropriate, approved data from Project Area Pre-RD and RD sampling and Site-wide baseline data may be used in the PAMP. The PAMP must include:

(1) Description of the environmental media to be monitored;

(2) Description of the data collection parameters, including existing and proposed monitoring devices and locations, schedule and frequency of monitoring, analytical parameters to be monitored, and analytical methods employed;

(3) Description of how performance data will be analyzed, interpreted, and reported, and/or other Project Area-related requirements;

(4) Description of verification sampling procedures;

(5) Description of deliverables that will be generated in connection with monitoring, including sampling schedules, laboratory records, monitoring reports, and monthly and annual reports to EPA and State agencies; and

(6) Description of proposed additional monitoring and data collection actions (such as increases in frequency of monitoring, and/or installation of additional monitoring devices in the affected areas) in the event that results from monitoring devices indicate changed conditions (such as higher than expected concentrations of the contaminants of concern or groundwater contaminant plume movement).

(j) **Construction Quality Assurance/Quality Control Plan (CQA/QCP)**. The purpose of the Construction Quality Assurance/Quality Control Plan (CQA/QCP) is to describe planned and systemic activities that provide confidence and that verify that the remedial action construction will and do satisfy all plans, specifications, and related requirements, including quality objectives. The CQA/QCP must:

(1) Identify, and describe the responsibilities of, the organizations and personnel implementing the CQA/QCP;

(2) Describe the PS required to be met to achieve Completion of the remedial action;

(3) Describe the activities to be performed: (i) to provide confidence that PS will be met; and (ii) to determine whether PS have been met;

(4) Describe verification activities, such as inspections, sampling, testing, monitoring, and production controls, under the CQA/QCP;

(5) Describe industry standards and technical specifications used in implementing the CQA/QCP;

(6) Describe procedures for tracking construction deficiencies from identification through corrective action;

(7) Describe procedures for documenting all CQA/QCP activities; and

(8) Describe procedures for retention of documents and for final storage of documents.

(k) **Transportation and Off-Site Disposal Plan.** The Transportation and Off-Site Disposal Plan (TODP) describes plans to ensure compliance with ¶ 3.13 (Off-Site Shipments). The TODP must include:

(1) Proposed routes for off-Site shipment of Waste Material;

(2) Identification of communities affected by shipment of Waste Material; and

(3) Description of plans to minimize impacts on affected communities.

(l) **O&M Plan**. The O&M Plan describes the requirements for inspecting, operating, and maintaining the remedial action. Respondents shall develop the O&M Plan in accordance with *Guidance for Management of Superfund Remedies in Post Construction*, OLEM 9200.3-105 (Feb. 2017). The O&M Plan must include the following additional requirements:

(1) Description of PS required to be met to implement the ROD;

(2) Description of activities to be performed: (i) to provide confidence that PS will be met; and (ii) to determine whether PS have been met;

(3) **O&M Reporting**. Description of records and reports that will be generated during O&M, such as daily operating logs, laboratory records, records of operating costs, reports regarding emergencies, personnel and maintenance records, monitoring reports, and monthly and annual reports to EPA and State agencies;

(4) Description of corrective action in case of systems failure, including: (i) alternative procedures to prevent the release or threatened release of Waste Material which may endanger public health and the environment or may cause a failure to achieve PS; (ii) analysis of vulnerability and additional resource requirements should a failure occur; (iii) notification and reporting requirements should O&M systems fail or be in danger of imminent failure; and (iv) community notification requirements; and

(5) Description of corrective action to be implemented in the event that PS are not achieved; and a schedule for implementing these corrective actions.

(m) **O&M Manual**. The O&M Manual serves as a guide to the purpose and function of the equipment and systems that make up the remedy. Respondents shall develop the O&M Manual in accordance with *Guidance for Management of Superfund Remedies in Post Construction*, OLEM 9200.3-105 (Feb. 2017).

6. SCHEDULES

6.1 Applicability and Revisions. The following schedule provides an RD timeline under which all deliverables and tasks required under this SOW must be submitted or completed by the deadlines or within the time durations listed in the schedule set forth below. The schedule identifies deliverables that can be developed concurrently for efficiency. The overall required remedial design schedule for completion of all SOW deliverables is 3.5 years (see **Figure 1)**. Respondents may submit proposed revised schedules for EPA approval. Upon EPA's approval, the revised schedules supersede the schedule set forth below, and any previously-approved schedule.

6.2 Schedule

	Description of Deliverable	**Included Supporting Deliverable**	**¶ Ref.**	**Deadline**[1]
	Notification of Respondents' CI Coordinator		2.1(d)	30 days after Effective Date of the Order
1a	Draft Sufficiency Assessment Report		3.1	90 days after Effective Date of the Order
1b	Final Sufficiency Assessment Report		3.1	30 days after EPA's comments on the Draft Sufficiency Assessment Report
2a	Draft PDI Work Plan	FSP, QAPP, HASP, ERP	3.2(a)	90 days after Effective Date of the Order
2b	Final PDI Work Plan	Same as above	3.2(a)	30 days after EPA's comments on the Draft PDI Work Plan
3a	Draft PDI Evaluation Report		3.2(b)	180 days after EPA approves Final PDI Work Plan
3b	Final PDI Evaluation Report		3.2(b)	30 days after EPA's comments on the Draft PDI Evaluation Report
4a	Draft BODR		3.3	60 days after EPA approves the Final PDI Evaluation Report
4b	Final BODR		3.3	30 days after EPA's comments on the Draft BODR

	Description of Deliverable	Included Supporting Deliverable	¶ Ref.	Deadline[1]
5a	Draft RDWP	Updates to FSP, QAPP, HASP, ERP	3.4	90 days after EPA approves the Final BODR
5b	Final RDWP	Same as above	3.4	30 days after EPA's comments on the Draft RDWP
6a	Draft Supplemental PDI Work Plan (if needed)	Updates to FSP, QAPP, HASP, ERP	3.6(a)	30 days after EPA approves the Final RDWP
6b	Final Supplemental PDI Work Plan (if needed)	Same as above	3.6(a)	15 days after EPA's comments on the Draft Supplemental PDI Work Plan
7a	Draft Supplemental PDI Evaluation Report (if needed)		3.6(b)	90 days after EPA approves the Final Supplemental PDI Work Plan
7b	Final Supplemental PDI Evaluation Report (if needed)		3.6(b)	15 days after EPA's comments on the Draft Supplemental PDI Evaluation Report
8a	Draft Treatability Study Work Plan (if required)		3.7(a)	60 days after EPA approves the Final BODR
8b	Final Treatability Study Work Plan (if required)		3.7(a)	30 days after EPA's comments on the Draft Treatability Study Work Plan
9a	Draft Treatability Study Evaluation Report (if required)		3.7(b)	As set forth in the approved Final Treatability Study Work Plan
9b	Final Treatability Study Evaluation Report (if required)		3.7(b)	As set forth in the approved Final Treatability Study Work Plan
10	Preliminary (30%) RD	All supporting deliverables described in ¶ 5.6	3.8	270 days after EPA approves the Final Remedial Design Work Plan. The 30% design will begin prior to finalization of the PDI Reports but will not be completed until after the PDI Reports are completed.
11	Intermediate (60%) RD	Same as above	3.9	90 days after EPA's comments on the Preliminary (30%) RD
12	Pre-final (95%) RD	Same as above and updated	3.10	90 days after EPA's comments on the Intermediate (60%) RD

	Description of Deliverable	Included Supporting Deliverable	¶ Ref.	Deadline[1]
		sufficiency assessment summary table		
13	Final (100%) RD	Same as above	3.11	30 days after EPA's comments on the Pre-Final (95%) Design
14	Progress Reports		4.1	Quarterly

Notes:
[1] Preparation of many of these deliverables must occur concurrently for an efficient RD schedule. **Figure 1** outlines EPA's expectations for this optimized remedial design timeline.

7. STATE AND TRIBAL PARTICIPATION

7.1 **Copies.** Respondents shall, at any time they send a deliverable to EPA, send a copy of such deliverable to ODEQ and Tribal Governments identified in the Order. EPA shall be responsible for coordinating comments with the State and Tribes to meet the review schedule. Written comments on the deliverables provided to EPA from the State or Tribes shall be provided to the Respondents when EPA provides comments to Respondents. Respondents shall copy other agency Memorandum of Understanding partners (Oregon Department of Fish and Wildlife, NOAA, and U.S. Department of the Interior). EPA shall, at any time it sends a notice, authorization, approval, disapproval, or certification to Respondents, send a copy of such document to the State and Tribes and the agency partners.

7.2 **Review and Comment.** The State and Tribes will have a reasonable opportunity for review and comment prior to:

(a) Any EPA approval or disapproval under ¶ 5.5 (Approval of Deliverables) of any deliverables that are required to be submitted for EPA approval; and

(b) Any modifications of this SOW or related deliverables under ¶ 52 and Section X of the Order.

8. REFERENCES

8.1 The following regulations and guidance documents, among others, apply to the Work. Any item for which a specific URL is not provided below is available on one of the two EPA Web pages listed in ¶ 8.2:

(a) Guidance for Conducting Remedial Investigations and Feasibility Studies, OSWER 9355.3-01, EPA/540/G 89/004 (Oct. 1988).

(b) A Compendium of Superfund Field Operations Methods, OSWER 9355.0-14, EPA/540/P-87/001a (Aug. 1987).

(c) CERCLA Compliance with Other Laws Manual, Part I: Interim Final, OSWER 9234.1-01, EPA/540/G-89/006 (Aug. 1988).

(d) CERCLA Compliance with Other Laws Manual, Part II, OSWER 9234.1-02, EPA/540/G-89/009 (Aug. 1989).

(e) Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, OSWER 9355.5-01, EPA/540/G-90/001 (Apr. 1990).

(f) Guidance on Expediting Remedial Design and Remedial Actions, OSWER 9355.5-02, EPA/540/G-90/006 (Aug. 1990).

(g) Guide to Management of Investigation-Derived Wastes, OSWER 9345.3-03FS (Jan. 1992).

(h) Permits and Permit "Equivalency" Processes for CERCLA On-Site Response Actions, OSWER 9355.7-03 (Feb. 1992).

(i) Guidance for Conducting Treatability Studies under CERCLA, OSWER 9380.3-10, EPA/540/R 92/071A (Nov. 1992).

(j) National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, 40 C.F.R. Part 300 (Oct. 1994).

(k) Guidance for Scoping the Remedial Design, OSWER 9355.0-43, EPA/540/R-95/025 (Mar. 1995). Remedial Design/Remedial Action Handbook, OSWER 9355.0-04B, EPA/540/R-95/059 (June 1995).

(l) EPA Guidance for Data Quality Assessment, Practical Methods for Data Analysis, QA/G-9, EPA/600/R-96/084 (July 2000).

(m) Operation and Maintenance in the Superfund Program, OSWER 9200.1-37FS, EPA/540/F-01/004 (May 2001).

(n) Guidance for Quality Assurance Project Plans, QA/G-5, EPA/240/R-02/009 (Dec. 2002).

(o) Institutional Controls: Third Party Beneficiary Rights in Proprietary Controls (Apr. 2004).

(p) Quality Systems for Environmental Data and Technology Programs -- Requirements with Guidance for Use, ANSI/ASQ E4-2004 (2004).

(q) Uniform Federal Policy for Quality Assurance Project Plans, Parts 1-3, EPA/505/B-04/900A though 900C (Mar. 2005).

(r) Superfund Community Involvement Handbook, EPA/540/K-05/003 (Apr. 2005).

(s) EPA Guidance on Systematic Planning Using the Data Quality Objectives Process, QA/G-4, EPA/240/B-06/001 (Feb. 2006).

(t) EPA Requirements for Quality Assurance Project Plans, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006).

(u) EPA Requirements for Quality Management Plans, QA/R-2, EPA/240/B-01/002 (Mar. 2001, reissued May 2006).

(v) USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, ILM05.4 (Dec. 2006).

(w) USEPA Contract Laboratory Program Statement of Work for Organic Analysis, SOM01.2 (amended Apr. 2007).

(x) EPA National Geospatial Data Policy, CIO Policy Transmittal 05-002 (Aug. 2008), available at https://www.epa.gov/geospatial/geospatial-policies-and-standards and https://www.epa.gov/geospatial/epa-national-geospatial-data-policy.

(y) Principles for Greener Cleanups (Aug. 2009), available at https://www.epa.gov/greenercleanups/epa-principles-greener-cleanups.

(z) USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration), ISM01.2 (Jan. 2010).

(aa) Clean Water Act Section 404(b)(1) Guidelines (40 CFR 230), (July 2010), https://www.epa.gov/cwa-404/section-404b1-guidelines-40-cfr-230.

(bb) Recommended Evaluation of Institutional Controls: Supplement to the "Comprehensive Five-Year Review Guidance," OSWER 9355.7-18 (Sep. 2011).

(cc) Construction Specifications Institute's MasterFormat 2016, available from the Construction Specifications Institute, https://www.csiresources.org/practice/standards/masterformat.

(dd) Updated Superfund Response and Settlement Approach for Sites Using the Superfund Alternative Approach, OSWER 9200.2-125 (Sep. 2012)

(ee) Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites, OSWER 9355.0-89, EPA/540/R-09/001 (Dec. 2012).

(ff) Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012).

(gg) EPA's Emergency Responder Health and Safety Manual, OSWER 9285.3-12 (July 2005 and updates), http://www.epaosc.org/_HealthSafetyManual/manual-index.htm

(hh) Broader Application of Remedial Design and Remedial Action Pilot Project Lessons Learned, OSWER 9200.2-129 (Feb. 2013).

(ii) Guidance for Management of Superfund Remedies in Post Construction, OLEM 9200.3-105 (Feb. 2017).

(jj) USEPA Portland Harbor Superfund Site, Sampling Plan for Pre-Remedial Design, Baseline and Long-Term Monitoring (June. 2017).

8.2 A more complete list may be found on the following EPA Web pages:

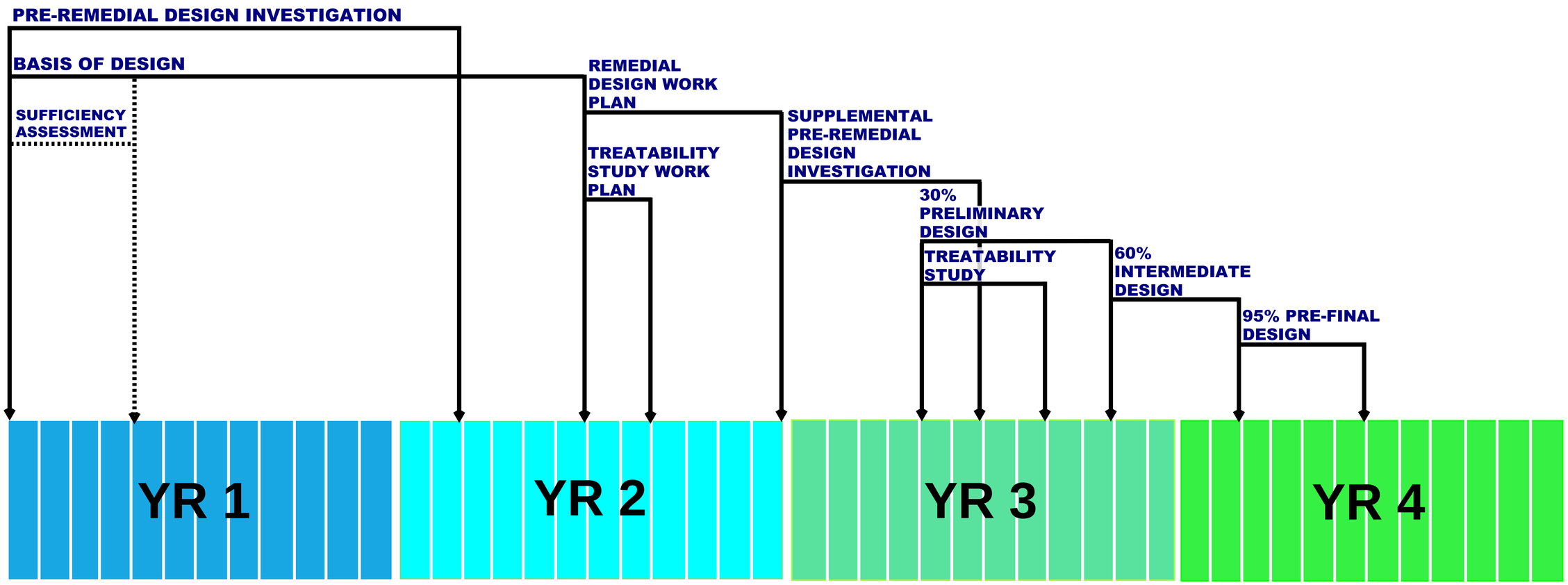
Laws, Policy, and Guidance https://www.epa.gov/superfund/superfund-policy-guidance-and-laws

Test Methods Collections https://www.epa.gov/measurements/collection-methods

8.3 For any regulation or guidance referenced in the Order or SOW, the reference will be read to include any subsequent modification, amendment, or replacement of such regulation or guidance.

Figure 1

Optimized Remedial Design Timeline



* Current schedule allows 2.5 months for PRPs to create initial draft of RDWP and 30% RD along with 3.5 months for EPA/partner review and comments.
The 3.5 months includes a review/comment cycle of the initial draft document by EPA and TCT, development of the draft final document by PRP, and a final review by EPA. This review process will be shortened for the 60% RD and 95% RD as EPA expects the PRPs to have incorporated EPA comments from the 30% RD.

FIGURE 1. OPTIMIZED REMEDIAL DESIGN TIMELINE

Attachment 1

Template Sufficiency Assessment Summary Table

[Name] Project Area Sufficiency Assessment Summary
[date]

Site	ECSI#	Pathway(s)	Status	Sufficiency Assessment Contaminants	Milestone Document	Remedial Design/Source Control Task

Attachment 2

Program Data Management Plan for Portland Harbor Including Electronic Data Deliverable Format

Program Data Management Plan

Portland Harbor Remedial Design Investigation
Portland Harbor Superfund Site

Prepared by
U.S. Environmental Protection Agency Region 10
August 2018

TABLE OF CONTENTS

1.0 Introduction **2**
1.1 Site Background 2
1.2 Objective and Scope 2
1.2.1 Data Categories *3*
1.2.2 Major Stakeholder Groups, Performing Parties, and Community Groups *3*
1.2.3 Major Data Collection Activities *4*
2.0 Data Management **4**
2.1 Data Management Platform 5
2.2 Roles and Responsibilities 5
2.2.1 Performing Parties *6*
2.2.2 Data Manager *6*
2.2.3 EPA Remedial Project Managers *7*
2.2.4 EPA Regional Scribe.NET Data Coordinator *7*
2.3 Data Elements 8
2.3.1 Project Identification Information *8*
2.3.2 Environmental Monitoring Data *8*
2.3.3 Locational Data *8*
2.4 Data Repository 9
3.0 Data Verification **9**
4.0 Data Reporting Procedures **9**
5.0 Data Access **9**

Figures

Figure 1. Data Consolidation and Archiving **5**
Figure 2. Process Workflow **6**

Appendices

Appendix A – Required Data Elements
Appendix B – Data Element Valid Values
Appendix C – Data Management Conceptual Model

Definitions and Acronyms

ASASOC	Administrative Settlement Agreement and Order on Consent
DMP	data management plan
EDD	electronic data deliverables
EPA	U.S. Environmental Protection Agency
ERT	EPA Emergency Response Team located in Edison, NJ
HUC	hydrologic unit code
ID	identification
ODEQ	Oregon Department of Environmental Quality
PHSS	Portland Harbor Superfund Site
RPM	Remedial Project Manager (EPA Region 10)
Scribe	data management application (created for ERT)
Scribe.NET	web-based portal for archiving Scribe project files and data

1.0 Introduction

To ensure that environmental data collected at the Portland Harbor Superfund Site (PHSS) adhere to specific standards and practices, a programmatic level data management plan (DMP) was developed that provides guidance and data requirements for the various parties involved with the pre-design and design related data collection activities. While this DMP is a standalone document, it is to be used in concert with the Administrative Settlement Agreement and Order on Consent (ASAOC) statement of work, Region 10 data management plan, and the respective quality management plans developed for each performing party sampling effort.

1.1 Site Background

The site is located along the lower reach of the Willamette River in Portland, Oregon, and extends from approximately river mile 1.9 to 11.8. While the site is extensively industrialized, it is within a region characterized by commercial, residential, recreational, and agricultural uses. Land use along the lower Willamette River in the site includes marine terminals, manufacturing, other commercial operations, public facilities, parks, and open spaces. The State of Oregon owns certain submerged and submersible lands underlying navigable and tidally influenced waters. The ownership of submerged and submersible lands is complicated and has changed over time.

This lower reach was once a shallow, meandering portion of the Willamette River but has been redirected and channelized via filling and dredging. A federally maintained navigation channel, extending nearly bank-to-bank in some areas, doubles the natural depth of the river and allows transit of large ships into the active harbor. Much of the river bank contains overwater piers and berths, port terminals and slips, and other engineered features. While a series of dams in the upper Willamette River watershed moderate's fluctuations of flow in the lower portions of the river, flooding still occurs approximately every 20 years, with the last occurring in 1996.

Armoring to stabilize banks covers approximately half of the harbor shoreline, which is integral to the operation of activities that characterize Portland Harbor. Riprap is the most common bank-stabilization measure. However, upland bulkheads and rubble piles are also used to stabilize the banks. Seawalls are used to control periodic flooding as most of the original wetlands bordering the Willamette in the Portland Harbor area have been filled. Some river bank areas and adjacent parcels have been abandoned and allowed to revegetate, and beaches have formed along some modified shorelines due to relatively natural processes.

Development of the river has resulted in major modifications to the ecological function of the lower Willamette River. However, several species of invertebrates, fishes, birds, amphibians, and mammals, including some protected by the Endangered Species Act, use habitats that occur within and along the river. The river is also an important rearing site and pathway for migration of anadromous fishes, such as salmon and lamprey. Various recreational fisheries, including salmon, bass, sturgeon, crayfish, and others, are active within the lower Willamette River.

1.2 Objective and Scope

The objective of this DMP is to ensure that environmental data and supporting information are collected and managed in a manner that preserves, protects, and makes the information available to all stakeholders, performing parties, and other affected groups. This DMP applies to data and

information collected in support of the PHSS by the performing party's activities as related to the remedial design effort and per the individual ASAOC. While it does not cover all information (e.g., photos, field logs) that is managed for specific projects, it is intended to address those types of data deemed critical to decision making for the site. Appendix C provides a conceptual model depicting the comprehensive approach to the management of data derived from previous and future studies at the PHSS. The subsections below identify the general data categories, performing parties collecting environmental data, and major sampling activities.

1.2.1 Data Categories

This plan identifies standard data elements and data management processes for the following data categories:

- Project identification information
- Environmental sampling data
- Locational data

The individual data elements for each of these categories represent the minimal amount of information that is needed for project specific decision making and data sharing among stakeholders and performing parties. These are further identified in the Data Management section.

1.2.2 Major Stakeholder Groups

The major stakeholder groups have been identified as those groups who are actively involved in site-wide planning and environmental data collection and sharing for this site. The major stakeholders include signatories to the 2001 Memorandum of Understanding, performing parties, and community groups:

- Memorandum of understanding members
  - U.S. Environmental Protection Agency (EPA) Region 10
  - Oregon Department of Environmental Quality
  - Confederated Tribes and Bands of the Yakama Nation
  - Confederated Tribes of the Grand Ronde Community of Oregon
  - Confederated Tribes of Siletz Indians
  - Confederated Tribes of the Umatilla Indian Reservation
  - Confederated Tribes of the Warm Springs Reservation of Oregon
  - Nez Perce Tribe
  - National Oceanic and Atmospheric Administration
  - Oregon Department of Fish and Wildlife
  - U.S. Department of the Interior

- Performing Parties (these are typically potentially responsible parties)

- Primary community groups
  - Community Advisory Group
  - Willamette Riverkeeper
  - Portland Harbor Community Advisory Group

1.2.3 Remedial Design Sampling Activities

For the remedial design efforts, a performing party would implement an investigation to supplement existing site-wide data to inform and support remedial design.

The following types of sample collection activities may be completed as specified in each respective EPA-approved sampling plan submitted by performing parties:

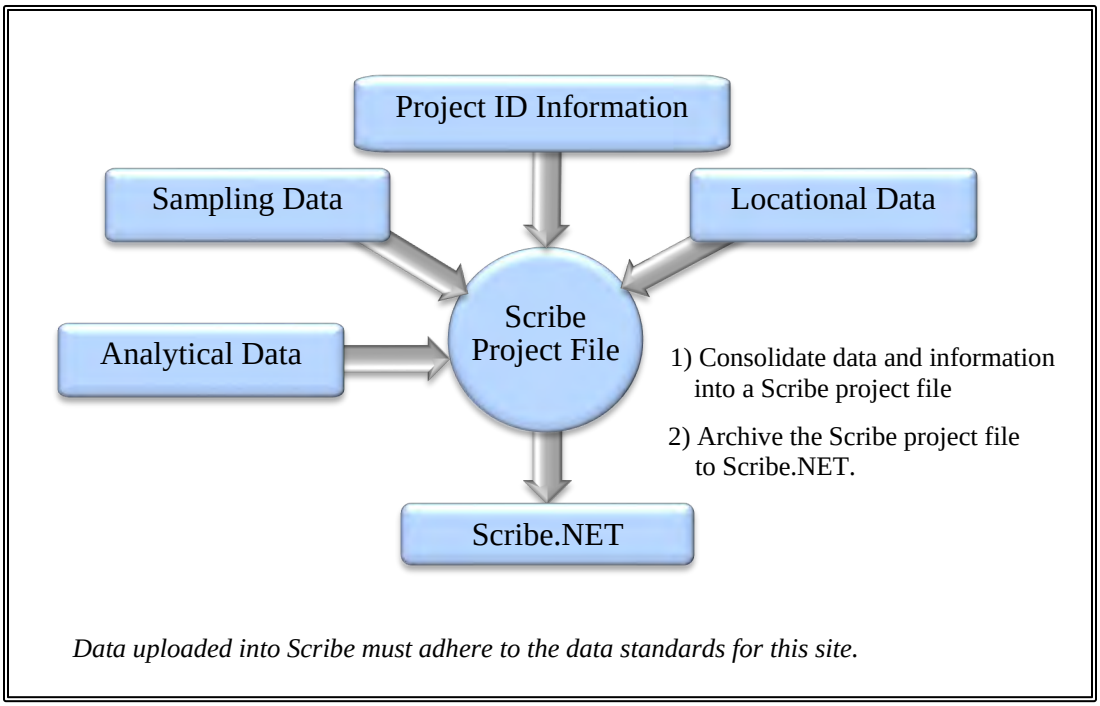
- Surface sediment sampling
- Fish tissue sampling
- Surface water sampling
- Sediment coring
- Soil sampling
- Porewater sampling

2.0 Data Management

Effective data management among the Portland Harbor performing parties relies upon delivery of data to a central repository using a common data management platform. The platform selected for the PHSS is Scribe, and the repository is the Region 10 subscription to Scribe.NET. Although individual performing parties may have diverse data management systems, the Scribe software and Scribe.NET repository is required for consolidation and access to project information, sampling data, and applicable locational data for each sampling activity. For many projects Scribe will already be in use for managing environmental samples. In those cases, the same Scribe project files can be used to document the project information, receive the sampling data, and publish the complete set of information to Scribe.NET. A simplified data flow for the Scribe data management process is illustrated on Figure 1. The Scribe Project ID is required for each data set and is provided by the EPA Scribe.NET Data Coordinator. Sampling Data comprises sample nomenclature identification, temporal data, and details specific to the sampling event. Locational Data comprise the spatial information for each sample.

Independent of the Scribe and Scribe.NET repository, a site-wide repository is being developed by the State of Oregon to capture and provide access to comprehensive Portland Harbor data. Appendix C provides a conceptual model depicting the comprehensive approach to the management of data derived from previous and future studies as a part of the PHSS.

Figure 1. Data Flow and Archiving for Scribe



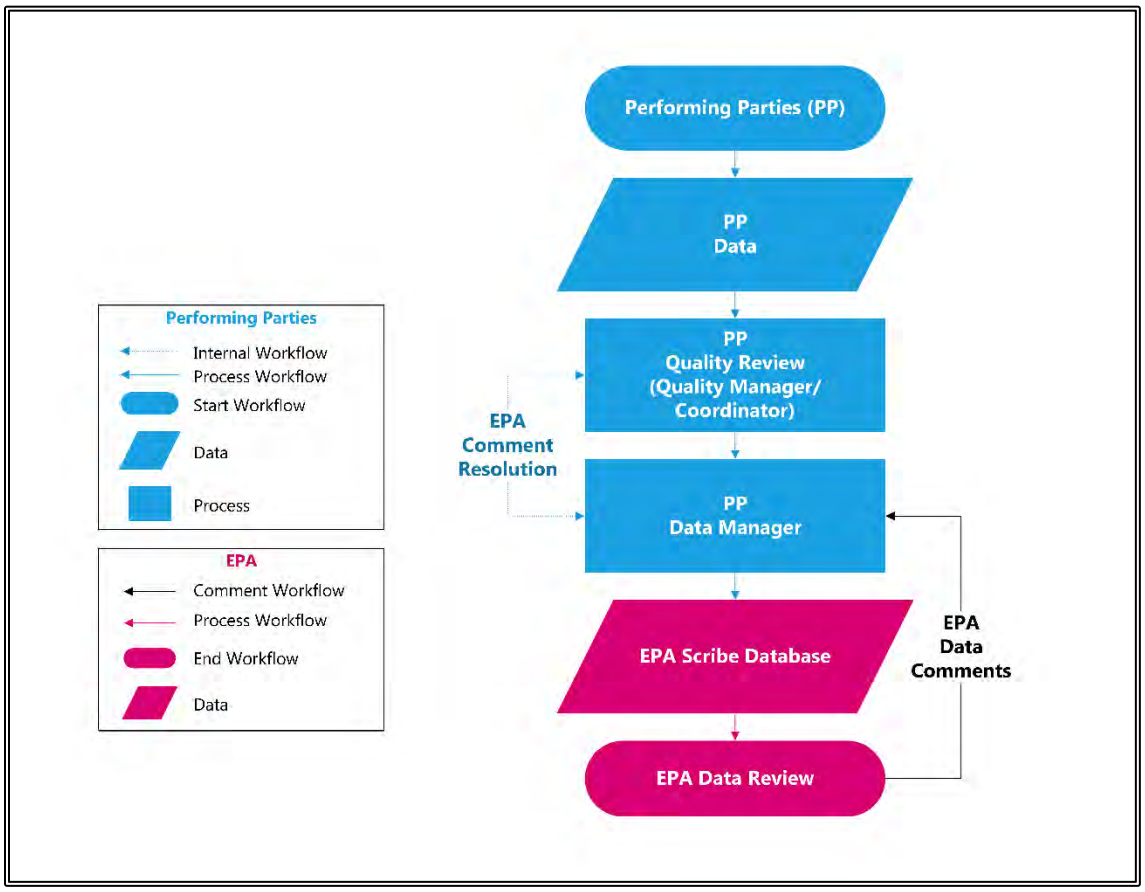
2.1 Data Management Platform

The data management platform selected for the PHSS is Scribe. This software is based on a Microsoft database and is available for download (www.ert.org). In addition to the Scribe software, an EPA Region 10 template, which contains the required data fields, data lists, and validation criteria, needs to be downloaded and installed. For each project, a Scribe project file is created. Here, the project-specific information is entered, which identifies both the performing party or group conducting the sampling and the type of sampling activity performed.

2.2 Roles and Responsibilities

The major roles and responsibilities for data management are identified for the performing parties in addition to the role of the data manager within each organization. The performing parties will be responsible for their own in-house data management but will designate a “data manager” who will fill the role as defined within this DMP. Figure 2 provides an overview of the workflow between EPA Region 10 and the performing parties.

Figure 2. Process Workflow



2.2.1 Performing Parties

EPA Region 10 has the primary responsibility for oversight of all sampling and monitoring activities. EPA has identified the minimal data elements and data delivery requirements that would allow it to achieve its oversight goals and share data among the other stakeholders, performing parties, and community groups. Each of the performing parties is responsible for collecting the necessary data elements covered under their respective sampling activity as approved by EPA, and providing that information to EPA by submitting electronic data deliverables (EDD's) or entering or uploading the information into a Scribe project file, and publishing (archiving) the complete file to Scribe.NET. Coordination with EPA and the Oregon Department of Environmental Quality (ODEQ) is required to ensure data requirements for a sampling event are met. To accomplish this task on a project-specific basis, the performing party will need:

- DMPs to cover their respective sampling activities
- A data manager designated to complete the Scribe project file or EDD's

Details regarding the roles and responsibilities of the data manager are provided in the following section.

2.2.2 Data Manager

Each of the performing parties will need to designate a data manager to create the EDD submittals or create and manage the Scribe project file and upload the file to Scribe.NET. Regardless of the

data management system each performing party utilizes, a Scribe EDD or Scribe project file is required for consolidation and archiving of the project data to a designated national server. The major responsibilities of the data manager are:

- Creation of EDD submittals or the Creation of the Scribe project file
- Coordination with EPA and/or ODEQ regarding all data matters.
- Participation in the Portland Harbor data management coordination calls for ongoing discussion and updates or suggested revisions to this DMP

Designation and training for the data manager can be coordinated with the EPA's Regional Scribe.NET Data Coordinator if direct use of Scribe project files is planned. Web training sessions are also available from the EPA Emergency Response Team (ERT) on a regular basis. To begin, the data manager will need to go to the ERT website (www.ert.org) and download on to their computer:

- Scribe (Version 3.9.4 or current)
- EPA Region 10 Scribe template

Once these have been installed, the EPA Region 10 template will need to be selected during the startup of Scribe after which it will become the default template for future projects. As a security measure, once a Scribe project file has been started, it stays locked to the originating computer until it has been relinquished by the data manager. Data and information can be uploaded into Scribe via an import wizard or hand entered through the user interface. During use, it is a recommended practice to regularly back up the Scribe project file to Scribe.NET to preserve the information in the event the originating computer is lost, stolen, or experiences a system failure.

It is anticipated that there will be no coordination with respect to the EPA regional laboratory program for any of the sampling events conducted by any performing party. Section 2.2.4 describes how contact may be made to discuss specific requirements regarding Scribe EDD submittals and/or Region 10 Scribe template.

2.2.3 EPA Remedial Project Managers

EPA's oversight of the performing parties at the Portland Harbor site resides with EPA's Superfund Remedial Project Managers (RPM). The RPM will work directly with the performing parties on the direction and type of environmental sampling activities conducted. This includes data quality objective development; approval of sampling plans; and acceptance of sampling reports, assessments, and data for entry into the agency's administrative record. Central to this role is the identification of critical data needs on each approved sampling activity at each sediment management area. In addition, the RPM will participate in the Portland Harbor data management calls and coordinate with the performing party's data manager for refinements to the DMP if needed.

2.2.4 EPA Regional Scribe.NET Data Coordinator

The EPA Scribe.NET Data Coordinator (to be determined) is the project's EPA Scribe data management point of contact and reviews all EPA Region 10 Scribe deliverables for adherence to the EPA Region 10 DMP.

As part of the Portland Harbor data management coordination calls, the EPA Scribe.NET Data Coordinator will communicate with all performing parties regarding all data issues related to the management of data, Scribe EDD submittals and/or Scribe templates. The coordinator will also be the central point of contact for all technical information and database requirements related to the publishing of data to Scribe.NET.

2.3 Data Elements

As stated in Section 1.2.1, the plan identifies standard data elements for project identification information, environmental sampling data, and locational data. A complete list of data elements is provided in Appendix A and the valid values in Appendix B. Valid values are also provided as drop-down entry items in the Region 10 Scribe template/Portland Harbor template (when available). The following sections summarize the information in these appendices as they relate to the major data categories.

2.3.1 Project Identification Information

Project identifiers provide the necessary descriptive information (metadata) about the project. This allows data users an efficient way of categorizing and searching archived Scribe project files. A complete list of these data elements is found in Appendix A under the Site and Event Categories. Critical among these is identification of the project, monitoring organization, and type of monitoring activity (see Appendix A; Events – Activity data element). The Activity data type is a Superfund identifier that distinguishes environmental data by its intended programmatic use (i.e., Performance Evaluation, Remedial Action). The EPA Region 10 template contains a list of valid values for the Activity data element. It is important for the data manager to verify with the EPA RPM on the agreed upon Activity type during the project planning.

2.3.2 Environmental Sampling Data

The data elements for environmental sampling data allow for a complete identification of the analytical results such that the data may be subject to interpretation. This includes the identification of the sample matrix, sample collection time, measurement parameter, units of measurement, limits of detection, dates of analysis, analytical method, and so on. A complete list of these data elements and their descriptors are in Appendix A under the Samples and Lab Results categories. For data being uploaded into the Lab Results table of Scribe, the sample numbers must match up against the sample numbers that are already loaded into the Samples table.

2.3.3 Locational Data

The locational data establish the spatial representativeness of the environmental sample and are critical for data analysis. These include latitude, longitude, datum, elevation, and geomethod for sample collection points. Additional spatial identifiers for water monitoring (e.g., hydrologic unit codes [HUCs]) have been added for this site as these were identified as required geospatial identifiers by EPA. Valid values for the HUCs have been incorporated into the Region 10 template. A complete list of the locational data elements is in Appendix A under the Location and Samples categories.

2.4 Data Repository

The repository for archiving and retrieving Scribe project files is Scribe.NET. This repository resides within a national server maintained by ERT and is accessed directly from Scribe. For each project file, a unique ID is assigned at the time the file is first published to Scribe.NET. Access to the archived Scribe project file can be granted to other stakeholders, performing parties, and groups upon submitting a request to ERT; however, the repository files can only be updated from the computer that originated the file (unless the Scribe project file is relinquished by the originator in Scribe). Independent of the Scribe.NET repository, a site-wide repository being developed by the State of Oregon, will capture and provide access to comprehensive Portland Harbor site data.

3.0 Data Verification

If the Scribe project is initiated by a performing party for Portland Harbor, Scribe is configured to undergo a self-inspection of information as part of the data generation or file upload process. The Region 10 template contains auditor rules for verification of Scribe project files as they are uploaded to Scribe.NET Close observance of these rules is the responsibility of the data manager.

4.0 Data Reporting Procedures

Final project information, sampling, and locational data are delivered to EPA in the form of an EDD or Scribe project file that has been fully populated and published to Scribe.NET. Upon completion of Scribe project file and upload to Scribe.NET, the performing party data manager notifies the EPA RPM and the EPA Scribe.NET Data Coordinator and provides the Scribe project ID number (assigned at the time of publishing to Scribe.NET) associated with the project for identification and access by EPA Region 10. The concept for integrating the analytical and locational data of Scribe.NET with the comprehensive data management repository is provided in Appendix C.

5.0 Data Access

Major stakeholder groups have been identified as those groups who are actively involved in site-wide planning and environmental data collection and sharing for the PHSS. The major stakeholders include signatories to the 2001 Memorandum of Understanding, performing parties, and community groups: These stakeholders are provided access to the Portland Harbor subscription of Scribe.NET. Data access is performed through Scribe. For all the Portland Harbor Scribe project files, each stakeholder, performing party, or primary community groups has data access rights and can download the Scribe project file from Scribe. Only the originating performing party data manager can update files that have been published to Scribe.NET. Appendix C provides a conceptual model depicting the comprehensive approach to the site-wide management and sharing of data derived from previous and future studies at the PHSS.

6.0 References

U.S. EPA. *Memorandum: Superfund Site Data Definitions and Recommended Practices*. 29 Nov. 2017.

Appendix A – Required Data Elements

Required Data Elements

Data Element Field Names	Required, Optional, Conditional, Not Applicable (R/O/C/NA)	Description or Preferred Values		Field Format/Length		Origin	Scribe Table.DataFieldName	Upload into Scribe from EDD?	Comments/Questions
CASE_NUMBER	C	Unique ID that identifies groups of sample batches under a specific project. Required for the Contract Lab Program. Valid values are determined by the CLP Contract.	Possible values are determined by the CLP Contract.	Text	5	Scribe / Lab	COC.CaseNumber	N	In Scribe this is found in the "COC.CaseNumber" and "Site.CaseNumber" fields. In the xml file it is the Site.CaseNumber element. There's no place for this in the Scribe LabResults Table.
SAMPLE_DELIVERY_GROUP	C	A set of samples scheduled under a Case Number (max = 20). Required for the Contract Lab Program.	Possible values are determined by the CLP Contract.	Text	30	Lab	LabResults.Lab_Batch_No	Y	Generated by the Lab.
SAMPLE_ID	C	EPA Sample Number. Required if data are reported by the Contract Lab Program.	Possible values are determined by the CLP Contract.	Text	25	Lab	SamplesTags.CLP_Samp_No LabResults.CLP_Samp_No	Y	Originates in Scribe from the "SamplesTags.CLP_Sample_No" field and is also uploaded into the "LabResults.Sample_CLP_No" field. Generated by Lab in EDD.
CAS_NUMBER	R	Chemical Abstracts Service (CAS) Registry Number for the chemical compound or element reported.	Possible values are determined by the CAS Registry.	Text	50	Lab	LabResults.Cas_No	Y	Generated by the Lab.
ANALYTE	R	Name of the chemical compound or element that was measured.	Name comprised of any combination of alpha-numeric values which may also contain hyphens and commas.	Text	60	Lab	LabResults.Analyte	Y	Generated by the Lab.
FINAL_RESULT	R	The final validated result of the chemical compound or element that was measured.	Numeric value which may be integer or decimal.	Text	8	Lab / Data Reviewer	LabResults.Result	Y	Generated by the Lab & verified by Data Reviewer. May be edited in EDM whereas the "Lab_Result" field below cannot be edited during data validation. The Final_Result field is mandatory for MEL and other (sub-contracted, government, etc.) labs.
RESULT_UNITS	R	The units of measurement for the "Final Result" and "Lab Result".	Possible values are determined by the CLP Contract or the lab. Examples: ug/kg, mg/kg, ug/L, mg/L, ug	Text	20	Lab	LabResults.Result_Units	Y	Generated by the Lab.
FINAL_VALIDATION_QUALIFIER	R	National Functional Guidelines Data Validation or MEL Data Qualifiers. These should be identified in the QAPP.	Possible values assigned by the National Functional Guidelines or QAPP.	Text	10	EDM / Data Reviewer	LabResults.Result_Qualifier	Y	Generated by the EDM or Data Reviewer.
DATA_VAL_LABEL	R	EPA Data Validation Label Code from the "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use". Identifies the rigor of the data validation or review.	Possible values assigned by the guidance document.	Text	250	EDM / Data Reviewer	LabResults.QA_Comment	Y	Generated by the EDM or Data Reviewer. The Scribe LabResults Table will utilize the QA Comment field in order to accommodate this critical data element.
SAMPLE_ADJUSTED_CRQL	R	The Contract Required Quantitation Limit (CRQL) or lab's Reporting Limit that has been adjusted for sample weight, sample volume, dilution, percent solids, etc.	Numeric value which may be integer or decimal.	Text	8	Lab	LabResults.Quantitation_Limit	Y	Generated by the Lab.
SAMPLE_ADJUSTED_MDL	R	The Method Detection Limit (MDL) that has been adjusted for sample weight, sample volume, dilution, percent solids, etc.	Numeric value which may be integer or decimal.	Text	8	Lab	LabResults.MDL	Y	Generated by the Lab.
LAB_RESULT	C	The pre-validated analytical result as reported by the testing lab (CLP only).	Numeric value which may be integer or decimal.	Text	8	Lab		N	There's no data field for this in the Scribe LabResults Table. The "Final_Result" data element which passes validation/lab verification will be uploaded into the Scribe lab results table.

Required Data Elements

Data Element Field Names	Required, Optional, Conditional, Not Applicable (R/O/C/NA)	Description or Preferred Values		Field Format/Length		Origin	Scribe Table.DataFieldName	Upload into Scribe from EDD?	Comments/Questions
LAB_QUALIFIERS	C	Lab Applied Data Qualifier(s). Qualifer codes which describe certain aspects of data utility or quality (e.g., non-detect, estimated value, etc.).	Possible value defined by either the CLP Statement of Work or the lab.	Text	10	Lab	LabResults.Lab_Result_Qualifier	Y	Generated by the Lab.
METHOD_CRQL	R	Un-adjusted CRQL or Reporting Limit	Numeric value which may be integer or decimal.	Text	8	Lab	LabResults.Reporting_Limit	Y	Generated by the Lab.
NONMOISTURE_SAMPLE_ADJUSTED_CRQL	NA	Contract Required Quantitation Limit (CRQL) or Reporting Limit that is adjusted for sample weight, volume, dilution, **BUT NOT** percent solids. Created by the data review program used to validate CLP data.	Numeric value which may be integer or decimal.	Text	8	EDM		N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
CRQL_UNITS	R	Sample Adjusted Contract Required Quantitation Limit (CRQL) or Reporting Limit Units of Measurement.	Possible values are determined by the CLP Contract or the lab. Examples: ug/kg, mg/kg, ug/L, mg/L, ug	Text	20	Lab	LabResults.Quantitation_Limit_Units LabResults.Reporting_Limit_Units	Y	Generated by the Lab. The Quantitation and Reporting Limit data elements as we're applying them use the same units of measurement so this data element needs to be uploaded into two different fields.
INSTRUMENT_MDL	O	Instrument Detection Limit (MDL) that is not adjusted for sample mass/volume or percent moisture (solids).	Numeric value which may be integer or decimal.	Text	8	Lab		N	There's no data field for this in the Scribe LabResults Table. R10 Does not use this field.
NONMOISTURE_SAMPLE_ADJUSTED_MDL	NA	Method Detection Limit (MDL) that is adjusted for sample weight, volume, dilution, **BUT NOT** percent solids. Created by the data review program used to validate CLP data.	Numeric value which may be integer or decimal.	Text	8	EDM		N	There's no data field for this in the Scribe LabResults Table. R10 Does not use this field.
MDL_UNITS	R	MDL Measurement Units	Possible values are determined by the CLP Contract or the lab. Examples: ug/kg, mg/kg, ug/L, mg/L, ug	Text	20	Lab	LabResults.MDL_Units	Y	Generated by the Lab.
PERCENT_SOLIDS	R	The Percent Solids for soils and sediments. Used to determine the dry weight basis of the chemical analyses.	Reported as a "Percent".	Text	8	Lab	LabResults.Percent_Solids	Y	Generated by the Lab.
PERCENT_MOISTURE	R	The Percent Moisture content for soils or sediments. Used to determine the dry weight basis of the chemical analyses.	Reported as a "Percent".	Text	8	Lab	LabResults.Percent_Moisture	Y	Generated by the Lab.
DILUTION_FACTOR	R	Dilution Factor applied to the digest or extract. The dilution factor is only applied when the laboratory has diluted the extract or digest due to a high concentration of analyte(s).	Integer values e.g., 1, 2, 3, etc.	Text	8	Lab	LabResults.Dilution_Factor	Y	Generated by the Lab.
ANALYSIS_FRACTION	R	Identifies the type of analysis fraction or method category of the analysis.	Possible values determined by the CLP Contract or reporting Lab.	Text	100	Lab	LabResults.Analysis	Y	Generated by the Lab.

Required Data Elements

Data Element Field Names	Required, Optional, Conditional, Not Applicable (R/O/C/NA)	Description or Preferred Values		Field Format/Length		Origin	Scribe Table.DataFieldName	Upload into Scribe from EDD?	Comments/Questions
ANALYSIS_LEVEL	C	The concentration range or level performed by the lab for the analytical methods.	Possible values are determined by the CLP Contract. Examples: trace, low, med	Text	15	Lab		N	There's no data field for this in the Scribe LabResults Table.
REPORTING_BASIS	R	Indicates whether the results were adjusted due to the moisture content of the sample.	Sediment samples = DRY or WET depending upon whether moisture correction was applied.	Text	10	Lab	LabResults.Basis	Y	Generated by the Lab.
SAMPLE_DATE_TIME	R	The Date & Time of Sample Collection	For all field samples (including Field Blank and Performance Evaluation samples) = MM/DD/YYYY HH:MM:SS	Date/Time	20	Scribe	Samples.Sampledate LabResults.Date_Collected	Y	Originates in Scribe but is not overwritten in COC XML resubmittals. This is due to the ability to edit this information in EDM during data validation. To allow overwrite via COC XML resubmittal would violate a business rule against duel overwrite input pathways and introduce an vulnerability to the system. Sample Date & Time are concatenated from two Scribe COC XML fields.
DATE_SHIPPED	R	Date of Sample Shipment.	For all field samples (including Field Blank and Performance Evaluation samples) = MM/DD/YYYY. For Matrix Spike, Post-Digestion Spike, Duplicates, Matrix Spike Duplicate = Ship Date of associated Parent Sample	Date	20	Scribe	COC.DateShipped	N	There's no data field for this in the Scribe LabResults Table and it already appears in the COC Table.
DATE_TIME_RECEIVED	R	Date & Time of Sample Receipt at Lab.	For all field samples (including Field Blank and Performance Evaluation samples) = MM/DD/YYYY HH:MM:SS For Matrix Spike, Post-Digestion Spike, Duplicate, Matrix Spike Duplicate = Sample Receipt Date and Time of associated Parent Sample	Date/Time	20	Lab	LabResults.Date_Received	Y	Generated by the Lab. Need to double check the date/time fields in the LabResults Table. The Scribe Table Defn. file shows the length of these fields to be "8" but we need them to be "20".
PREP_DATE_TIME	R	Date & Time of Sample Digestion/Extraction.	For all laboratory samples = MM/DD/YYYY HH:MM:SS For Matrix Spike, Post-Digestion Spike, Duplicate, Matrix Spike Duplicate = Sample Receipt Date and Time of associated Parent Sample	Date/Time	20	Lab	LabResults.Date_Extracted	Y	Generated by the Lab.
ANALYSIS_DATE_TIME	R	The Date & Time of Analysis of the sample digest or extract.	For all laboratory samples = MM/DD/YYYY HH:MM:SS	Date/Time	20	Lab	LabResults.Date_Analyzed	Y	Generated by the Lab.
LAB_SAMPLE_TYPE	R	Identifies types of samples as either "field" or specific lab QCbut does not identify field QC types. Required by the Contract Lab Program.	Possible values are determined by the CLP Contract or Reporting Lab. Examples: Field_Sample, Method_Blank, Matrix_Spike, Serial_Dilution, etc.	Text	40	Lab	LabResults.QC_Type	Y	Generated by the Lab. This data type uses Lab QC long names (e.g., "Laboratory_Control_Sample) and perfectly matches the data definition of the QC_Type data field. The previously identified Sample_Type_Code was only 10 characters long.

Required Data Elements

Data Element Field Names	Required, Optional, Conditional, Not Applicable (R/O/C/NA)	Description or Preferred Values		Field Format/Length		Origin	Scribe Table.DataFieldName	Upload into Scribe from EDD?	Comments/Questions
SAMPLE_MATRIX	R	Identifies the matrix type of soil, water, etc. as reported by the lab. Required by the Contract Lab Program.	Possible values are determined by the CLP Contract or reporting Lab. Examples: Water, Soil, Sediment, Wipe, Filter	Text	20	Lab	LabResults.Matrix_ID	Y	Generated by the Lab. CLP has it's definitions but does it also need to match up with the Samples.Matrix Scribe data field? I thought these were populated separately.
RESULT_COMMENT	C	Concatenated result information (can be from FORM I Comment Field)	Comments are recorded in the Lab and reported.	Text	250	Lab	LabResults.Comments	Y	Generated by the Lab. For the CLP this was concatenated from the Form I comment field to provide information such as size fraction.
LAB_NAME	R	Laboratory Name (long name)	Possible values are determined by the CLP Contract or reporting Lab.	Text	50	Lab	LabResults.Lab_Name	Y	Generated by the Lab.
LAB_CODE	C	An abbreviated form of the Lab Name.	Possible values are determined by the CLP Contract. The abbreviated lab name is a code used for reporting.	Text	30	Lab		N	There's no data field for this in the Scribe LabResults Table.
CONTRACT_NUMBER	C	Laboratory Contract Number assigned under the CLP.	Possible values are determined by the CLP Contract or reporting Lab.	Text	30	Lab		N	There's no data field for this in the Scribe LabResults Table.
METHOD_NUMBER_OR_CLP_SOW	R	CLP SOW Value or "Method Source:Method Number", e.g., SW:9060A	Valid EPA or other reference methods or CLP SOW editions. Examples: ISM01.3, 6010, 8270, etc.	Text	100	Lab	LabResults.Analytical_Method	Y	Generated by the Lab.
MA_NUMBER	C	The Modified Analysis (MA) Number is a tracking number used by the CLP for non-standard or altered methods.	Possible values are determined by the CLP Contract or reporting Lab.	Text	30	Lab		N	There's no data field for this in the Scribe LabResults Table.
TR_COC_NUMBER	R	The Traffic Report (TR) /Chain of Custody Form Number is a unique tracking number assigned to the COC.	Long segmented number separated by hyphens.	Text	30	Scribe	SamplesTags.COC LabResults.Lab_Coc_No	Y	Generated by the Lab.
LAB_SAMPLE_ID	C	Laboratory Sample ID (internal ID#). Labs issue their own sample IDs for internal sample tracking and reporting purposes.	Possible values are determined by the CLP Contract or reporting Lab.	Text	25	Lab	LabResults.Lab_Samp_No	N	Generated by the Lab.
LAB_FILE_ID	C	Laboratory File ID (Internal to the lab only)	Possible values are determined by the CLP Contract or reporting Lab.	Text	25	Lab		N	There's no data field for this in the Scribe LabResults Table.
INSTRUMENT_ID	C	Unique Instrument Identification Number	Possible values are determined by the CLP Contract or reporting Lab.	Text	25	Lab		N	There's no data field for this in the Scribe LabResults Table.
SAMPLE_ALIQUOT	R	The mass or volume of sample that removed for extraction or digestion.	Numeric value may be an integer or decimal.	Text	8	Lab	LabResults.SubSample_Amount	Y	Generated by the Lab.
SAMPLE_ALIQUOT_UNITS	R	The units of measurement for the mass or volume of sample that removed for extraction or digestion.	Examples: "g" for grams, "mL" for milliliters.	Text	20	Lab	LabResults.SubSample_Amount_Unit	Y	Generated by the Lab.
FINAL_VOLUME	R	The final volume of the sample Digest or Extract.	Numeric value may be an integer or decimal.	Text	8	Lab	LabResults.Final_Volume	Y	Generated by the Lab.

Required Data Elements

Data Element Field Names	Required, Optional, Conditional, Not Applicable (R/O/C/NA)	Description or Preferred Values		Field Format/Length		Origin	Scribe Table.DataFieldName	Upload into Scribe from EDD?	Comments/Questions
FINAL_VOLUME_UNITS	R	Volume of Sample Digest /Extract Units	For Organic: uL For Inorganic: mL	Text	20	Lab	LabResults.Final_Volume_Unit	Y	Generated by the Lab.
SOIL_EXTRACT_VOLUME	C	The volume of extract used for a Medium Level VOC soils analysis.	Numeric value may be an integer or decimal.	Text	8	Lab		N	There's no data field for this in the Scribe LabResults Table. The analysis requires the use of too many fields (e.g., final volume is already filled).
SOIL_EXTRACT_VOLUME_UNITS	C	Soil Extract Volume Units (Medium VOA)	For Organic (VOA): uL	Text	20	Lab		N	There's no data field for this in the Scribe LabResults Table. The analysis requires the use of too many fields (e.g., final volume is already filled).
SOIL_ALIQUOT_VOLUME	C	The volume of aliquot removed from the extract used for a Medium Level VOC soils analysis.	Numeric value may be an integer or decimal.	Text	8	Lab		N	There's no data field for this in the Scribe LabResults Table. The analysis requires the use of too many fields (e.g., final volume is already filled).
SOIL_ALIQUOT_VOLUME_UNITS	C	Soil Aliquot Volume Units (Medium VOA)	For Organic (VOA): uL	Text	20	Lab		N	There's no data field for this in the Scribe LabResults Table. The analysis requires the use of too many fields (e.g., final volume is already filled).
PURGE_VOLUME	C	For analysis of Volatile Organic Compounds, the volume of an aqueous sample that is used to "purge" the VOCs.	Numeric value may be an integer or decimal.	Text	8	Lab	LabResults.Final_Volume	Y	Generated by the Lab.
PURGE_VOLUME_UNITS	C	Purge Volume Units (VOA)	For Organic (VOA only): mL	Text	20	Lab	LabResults.Final_Volume_Unit	Y	Generated by the Lab.
SPIKE_ADDED	C	Amount Added for Lab Matrix Spike or Spike Duplicate sample or Laboratory Control Sample	Numeric value may be an integer or decimal.	Text	8	Lab		N	There's no data field for this in the Scribe LabResults Table.
CONCENTRATED_EXTRACT_ VOLUME	C	Concentrated Extract Volume (SVOA/PEST/PCB)	Numeric value may be an integer or decimal.	Text	8	Lab		N	There's no data field for this in the Scribe LabResults Table. The analysis requires the use of too many fields (e.g., final volume is already filled).
CONCENTRATED_EXTRACT_VOL UME_UNITS	C	Concentrated Extract Volume Units (SVOA/PEST/PCB)	For Organic (SVOA, Pesticides, PCBs): uL	Text	20	Lab		N	There's no data field for this in the Scribe LabResults Table. The analysis requires the use of too many fields (e.g., final volume is already filled).
INJECTION_VOLUME	C	The volume of extrac injected into the instrument. (SVOA/PEST/PCB)	Numeric value may be an integer or decimal.	Text	8	Lab		N	There's no data field for this in the Scribe LabResults Table.
INJECTION_VOLUME_UNITS	C	Injection Volume Units (SVOA/PEST/PCB)	For Organic (SVOA, Pesticides, PCBs): uL	Text	20	Lab		N	There's no data field for this in the Scribe LabResults Table.
PREPARATION_METHOD	R	Type of Extraction for Organics or Digestion for Inorganics. "SONC" for sonication etc. (SVOA/PEST/PCB) of Organics and most relevant method digestion numbers for Inorganic.	Possible values are determined by the CLP Contract or reporting Lab. For Organic: Sonication, Soxhlet, Pressurized_Fluid , Liq_Liq, Liq_Membrane For Inorganic: 200.7, 200.8, 3050B, 3015A, 3051A, 7300, 7470A, 7471B, Midi-distillation, Micro-distillation	Text	100	Lab	LabResults.Extraction_Method	Y	Generated by the Lab.

Required Data Elements

Data Element Field Names	Required, Optional, Conditional, Not Applicable (R/O/C/NA)	Description or Preferred Values		Field Format/Length		Origin	Scribe Table.DataFieldName	Upload into Scribe from EDD?	Comments/Questions
GPC_CLEANUP	C	Cleanup Type (SVOA/PEST/PCB)	For Organic (SVOA, Pesticides, PCBs): Y or N	Text	20	Lab		N	There's no data field for this in the Scribe LabResults Table.
GPC_FACTOR	C	1.0 if no GPC, 2.0 if GPC is performed (SVOA/PEST/PCB)	"1.0 if no GPC, 2.0 if GPC is performed" derived from presence or absence of GPC value in CLEANUP_TYPE field	Text	8	Lab		N	There's no data field for this in the Scribe LabResults Table.
DECANTED	C	Identifies if the Lab decanted the sample in a Yes or No response. (SVOA/PEST/PCB)	Contract or reporting Lab. For Organic (SVOA, Pesticides, PCBs): Decanted or Not_Decanted	Text	20	Lab		N	There's no data field for this in the Scribe LabResults Table.
PH	C	The pH Determination of a soil or water sample. Reported in pH Units (SVOA/PEST/PCB, and Inorganic water samples)	Numeric value may be an integer or decimal.	Text	8	Lab		N	There's no data field for this in the Scribe LabResults Table.
COLOR_BEFORE	O	Description of sample before & after digestion. Used in CLP Metals analysis of waters.	Possible values are determined by the CLP Contract or reporting Lab.	Text	100	Lab		N	There's no data field for this in the Scribe LabResults Table.
COLOR_AFTER	O	Description of sample before & after digestion. Used in CLP Metals analysis of waters.	Possible values are determined by the CLP Contract or reporting Lab.	Text	100	Lab		N	There's no data field for this in the Scribe LabResults Table.
CLARITY_BEFORE	O	Description of sample before & after digestion. Used in CLP Metals analysis of waters.	Possible values are determined by the CLP Contract or reporting Lab.	Text	100	Lab		N	There's no data field for this in the Scribe LabResults Table.
CLARITY_AFTER	O	Description of sample before & after digestion. Used in CLP Metals analysis of waters.	Possible values are determined by the CLP Contract or reporting Lab.	Text	100	Lab		N	There's no data field for this in the Scribe LabResults Table.
TEXTURE	O	Description of sample. Used in CLP Metals analysis of soil/sediments.	Possible values are determined by the CLP Contract or reporting Lab.	Text	100	Lab		N	There's no data field for this in the Scribe LabResults Table.
ARTIFACTS	O	Description of sample. Used in CLP Metals analysis of soil/sediments.	Possible values are determined by the CLP Contract or reporting Lab.	Text	100	Lab		N	There's no data field for this in the Scribe LabResults Table.
COOLER_TEMP	R	Recorded temperature of the sample cooler upon Receipt at the Lab.	Recorded in Degrees Celcius.	Text	8	Lab		N	There's no data field for this in the Scribe LabResults Table.
SAMPLE_FRACTION	C	Identifies the representativeness of a water sample due to any pretreatment (e.g., filtration at 0.45 micron).	"D" for dissolved (filtered at 0.45 micron), "F" for other filtered, "T" for total (unfiltered). If "F" is used then the filter size/type should be entered in the Result_Comment field.	Text	1	Scribe	LabResults.Total_Or_Dissolved	Y	Generated by the Lab.
METHOD_SPECIATION	C	Part of a chemical characteristic (Nitrogen "As" ...)	Detemined by the analytical method.	Text	30	Lab		N	Generated by the Lab. There's no data field for this in the Scribe LabResults Table.

Required Data Elements

Data Element Field Names	Required, Optional, Conditional, Not Applicable (R/O/C/NA)	Description or Preferred Values		Field Format/Length		Origin	Scribe Table.DataFieldName	Upload into Scribe from EDD?	Comments/Questions
SAMPLE_SUBMATRIX	R	Scribe Matrix, expanded to include surface water, surface sediment etc. Use a custom list in Scribe	Examples: Air, AirIndoor, Sediment, Sediment Subsurface, Sediment Surface, Soil, Soil Surface, Soil Subsurface, SoilGas, Tissue, Waste, Waste SolidWaste, Waste LiquidWaste, Water, Water SurfaceWater, Water GroundWater, Water Potable, Water SepticEffluent, Water Stormwater	Text	40	Scribe	Samples.Matrix	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SAMPLING_REASON	R	General program or technical reason for the study. Program reasons are specific and tie the data collection to more prescribed data uses.	Examples: Emergency Response, Site Investigation, Preliminary Assessment, Site Assessment, Remedial Investigation, Remedial Action	Text	30	Scribe	Site.Site_Action	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SAMPLE_COLLECTION_METHOD	R	Sample Collection Method (i.e., Grab, Composite, Discrete Interval)	Examples: Grab, Composite, Discrete Interval	Text	30	Scribe	Samples.SampleCollection	N	Already in Scribe. No place for it in the Scribe LabResults Table.
EPA_REGION	R	"EPA Region" plus the Regional designation number (EPA Region 10)	Valid Values: "EPA Region" + 1 - 10	Text	15	Scribe	Site.EPARegionNumber	N	Already in Scribe. No place for it in the Scribe LabResults Table.
STATION_LOCATION	R	Station Location Codes	Determined by the project.	Text	50	Scribe	Location.Location	N	Originates in Scribe but is not overwritten in COC XML resubmittals. This is due to the ability to edit this information in EDM during data validation. To allow overwrite via COC XML resubmittal would violate a business rule against duel overwrite input pathways and introduce an vulnerability to the system.
LOCATION_DESCRIPTION	R	Further descibes the Station Location.	Determined by the project.	Text	100	Scribe	Location.LocationDescription	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SCRIBE_SAMPLE_NUMBER	R	The Scribe / field sample number. This may be Scribe generated or a Regionally assigned number.	Possible value determined by the Scribe Project Manager or the Regional Sample Control Coordinator.	Text	50	Scribe	Samples.Samp_No LabResults.Samp_No	Y	Originates in Scribe in the "Samples.Samp_No" field but is also uploaded into the "LabResults.Sample_CLP_No" field.
LOCATION_ZONE	R	The type of area that is impacted by the sample location.	Examples: Lake, Land, River/Stream, Well	Text	25	Scribe	Location.LocationZone	N	Already in Scribe. No place for it in the Scribe LabResults Table.
LATITUDE	R	The geographic latitude where the sample was collected or field measurement was taken.	12 character decimal degrees. Decimal places should be carried out to a minimum of 6 places in order to ensure minimal accuracy.	Text	12	Scribe	Location.Latitude	N	Already in Scribe. No place for it in the Scribe LabResults Table.
LONGITUDE	R	The geographic longitude where the sample was collected or field measurement was taken.	12 character decimal degrees (preceded by a negative sign "-" for North America). Decimal places should be carried out to a minimum of 6 places in order to ensure minimal accuracy.	Text	12	Scribe	Location.Longitude	N	Already in Scribe. No place for it in the Scribe LabResults Table.
DATUM	R	The horizontal coordinate system reference Datum name.	WGS84	Text	50	Scribe	Location.Datum	N	Already in Scribe. No place for it in the Scribe LabResults Table.

Required Data Elements

Data Element Field Names	Required, Optional, Conditional, Not Applicable (R/O/C/NA)	Description or Preferred Values		Field Format/Length		Origin	Scribe Table.DataFieldName	Upload into Scribe from EDD?	Comments/Questions
GEOMETHOD	R	The method used to determine latitude and longitude.	GPS, Survey	Text	30	Scribe	Location.GeoMethod	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SURFACE_ELEVATION	C	The determined elevation of a geographic point where the sample was collected or field measurement was taken. This is required for groundwater monitoring wells and where surface elevation data is needed for a project.	In feet or meters, need to provide for GW Wells that have been surveyed and not just GPS.	Text	8	Scribe	Location.Surf_Elev	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SURFACE_ELEVATION_UNITS	C	The units of measurement for the surface elevation data. This is required when surface elevation measurements are reported.	meters, feet	Text	20	Scribe	Location.Surf_Units	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SURFACE_ELEVATION_METHOD	C	The method used to determine the surface elevation. This is required when surface elevation measurements are reported.	GPS, Survey	Text	30	Scribe	Location.ElevMethod	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SURFACE_ELEVATION_DATUM	C	The vertical control datum for the surface elevation measurement. This is required when surface elevation measurements are reported.	NAVD88	Text	50	Scribe	Location.ElevDatum	N	Already in Scribe. No place for it in the Scribe LabResults Table.
TOP_DEPTH	C	Top depth of Sample Collection (for cores) or depth of sample collection for a monitoring well.	Numeric value may be an integer or decimal.	Text	8	Scribe	Samples.Samp_Depth	N	Already in Scribe. No place for it in the Scribe LabResults Table.
BOTTOM_DEPTH	C	Depth To bottom of sample collection for a core sample.	Numeric value may be an integer or decimal.	Text	8	Scribe	Samples.Samp_Depth_To	N	Already in Scribe. No place for it in the Scribe LabResults Table.
TOP_DEPTH_UNITS	C	Units of Sample Depth	Feet or meters	Text	20	Scribe	Samples.Samp_Depth_Units	N	Already in Scribe. No place for it in the Scribe LabResults Table.
BOTTOM_DEPTH_UNITS	C	Units of the Bottom Depth	Feet or meters	Text	20	Scribe	Samples.Samp_Depth_Units	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SAMPLER_NAME	R	Sampler Name	Full name of the sampler.	Text	30	Scribe	Samples.Sampler	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SAMPLING_COMPANY_ CONTACT	R		Full name of the sampling contact. Person usually coordinates sample collection on behalf of the sampling company.	Text	50	Scribe	Site.CTRContact	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SAMPLING_COMPANY_NAME	R	Sampling Company Name	Full name of the sampling company.	Text	50	Scribe	Site.Contractor	N	Already in Scribe. No place for it in the Scribe LabResults Table.
PROJECT_NAME	R	Site Name / Project Name	Assigned by the Sample Control Coordinator.	Text	50	RSCC/EDM	Site.Site_Name	N	Already in Scribe. No place for it in the Scribe LabResults Table. Originates from the laboratory request submitted during scheduling.

Required Data Elements

Data Element Field Names	Required, Optional, Conditional, Not Applicable (R/O/C/NA)	Description or Preferred Values		Field Format/Length		Origin	Scribe Table.DataFieldName	Upload into Scribe from EDD?	Comments/Questions
SITE_PROJECT_CODE	R	Regional Project Code	Assigned by the Sample Control Coordinator.	Text	50	RSCC/EDM	COC.ProjectCode	N	Already in Scribe. No place for it in the Scribe LabResults Table. Originates from the laboratory request submitted during scheduling. Also hand entered onto COC during COC generation and uploaded to lab in COC XML.
SITE_EVENT_ID	R	EventID. Use to group data by sampling/monitoring events (i.e. EOC, Site Assessment) (Primary Key)	A unique ID used by Scribe.	Text	50	Scribe	Site.Control_No	N	Already in Scribe. No place for it in the Scribe LabResults Table.
STATE	R	State where sample collection occurred. This field is populated in CLPSS during ASR entry	2 Character State Abbreviation	Text	20	RSCC/EDM	Stite.Site_State	N	Already in Scribe. No place for it in the Scribe LabResults Table. Originates from the laboratory request submitted during scheduling.
CITY	R	City where sample collection occurred. This field is populated in CLPSS during ASR entry	Full City Name	Text	60	RSCC/EDM	Site.Area	N	Already in Scribe. No place for it in the Scribe LabResults Table. Originates from the laboratory request submitted during scheduling.
CERCLIS	R	CERLIS ID	The CERCLIS identification. Used only by the Superfund program.	Text	20	Scribe	Site.CERCLIS	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SCRIBE_SITE_NUMBER	R	Scribesite key (Primary Key)	A unique ID used by Scribe.	Text	12	Scribe	Site.Site_No	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SCRIBE_NET_PROJECT_ID	R	ScribeNetID Project ID	A unique ID used by Scribe.	Text	4	Scribe	Site.ScribeNetProjectID	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SCRIBE_SAMPLES_ID	NA	Scribe Database AutoGenerated Number	A unique ID used by Scribe.	Text	4	Scribe	Samples.SampleID	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SAMPLE_TAG	R	Container ID codes - autogenerated if left blank	A unique ID used by Scribe.	Text	15	Scribe	SamplesTags.Tag	N	Already in Scribe. No place for it in the Scribe LabResults Table.
SCRIBE_COMMENT	C	Comment field from Scribe	Filled in by sampler to denote special sample treatment or conditions. Required if the entry is filled in by Scribe.	Text	255	Scribe	Samples.Remarks	N	Already in Scribe. No place for it in the Scribe LabResults Table.
FIELD_SAMPLE_TYPE	R	Distinguishes field samples from lab QC, field QC and other associated sample types.	Possible values used in the Scribe template. Example: "Field Sample", etc.	Text	30	Scribe	Samples.SampleType	N	Already in Scribe. No place for it in the Scribe LabResults Table.
VERSION_CODE	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
DATA_PROVIDER	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
PARENT_SAMPLE_NAME	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
PARENT_SAMPLE_LOCATION	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
LAB_REPLICATE_TYPE	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
SAMPLE_SOURCE	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.

Required Data Elements

Data Element Field Names	Required, Optional, Conditional, Not Applicable (R/O/C/NA)	Description or Preferred Values		Field Format/Length		Origin	Scribe Table.DataFieldName	Upload into Scribe from EDD?	Comments/Questions
ORGANIC_YN	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
PRESERVATIVE	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
TEST_BATCH_TYPE	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
PREP_BATCH_ID	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
ANALYSIS_TYPE	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
SAMPLE_ANALYSIS_LOCATION	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
COLUMN_ID	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
RUN_BATCH_ID	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
ANALYSIS_BATCH_ID	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
ANALYST_NAME	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
ANALYTE_TYPE	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
REPORTABLE_RESULT	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
DETECT_FLAG	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
TIC_RETENTION_TIME	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
TIC_RETENTION_TIME_UNITS	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
EXPECTED_VALUE	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
QC_ORIGINAL_CONC	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
QC_SPIKE_MEASURED	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
QC_SPIKE_RECOVERY	R	Percent Recovery of lab QC types (matrix spikes, surrogates, etc).	Numbers are represented as "%".	Text	8	Lab	LabResults.Percent_Recovery	Y	Generated by the Lab.
QC_DUP_ORIGINAL_CONC	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
QC_DUP_SPIKE_ADDED	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
QC_DUP_SPIKE_MEASURED	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.

Required Data Elements

Data Element Field Names	Required, Optional, Conditional, Not Applicable (R/O/C/NA)	Description or Preferred Values		Field Format/Length		Origin	Scribe Table.DataFieldName	Upload into Scribe from EDD?	Comments/Questions
QC_DUP_SPIKE_RECOVERY	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
QC_RPD	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
QC_SPIKE_LCL	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
QC_SPIKE_UCL	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
QC_RPD_CL	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
QC_SPIKE_STATUS_FLAG	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
QC_DUP_SPIKE_STATUS_FLAG	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
QC_RPD_STATUS	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
SAMPLE_RUN	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
PARAMID	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
PAR_VAL_UNCERT	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
RESULT_ERROR_DELTA	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
INTERPRETED_QUALIFIERS	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
SYS_LOC_CODE	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
TASK_CODE	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
COLLECTION_QUARTER	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
SAMPLE_CLASS	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
COMPOSITE_DESC	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
LEACH_LOT	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
LEACHATE_METHOD	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
LEACHATE_DATE	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.

Required Data Elements

Data Element Field Names	Required, Optional, Conditional, Not Applicable (R/O/C/NA)	Description or Preferred Values		Field Format/Length		Origin	Scribe Table.DataFieldName	Upload into Scribe from EDD?	Comments/Questions
LEACHATE_TIME	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
RESP	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
CUSTOM_FIELD_1	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
CUSTOM_FIELD_2	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
CUSTOM_FIELD_3	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.
COMMENT	NA	Reserved for use by another Region.						N	There's no data field for this in the Scribe LabResults Table. Not used by Region 10.

Appendix B – Data Element Valid Values

Data Element Valid Values

Category (Database Table)	Data Element (Database Field)	Valid Value
Events	Activity	Remedial Design
Events	Activity	Remedial Design Oversight
Events	QAPP_Approved	Y
Events	QAPP_Approved	N
Events	QAPP_ApprovedBy	US EPA Region 10
Events	QAPP_ApprovedBy	ODEQ
Location	CountryCode	US
Location	CountyCode	051
Location	Datum	NAD83
Location	Datum	UNKWN
Location	Datum	WGS84
Location	ElevDatum	NAVD88
Location	ElevDatum	NGVD29
Location	ElevDatum	OTHER
Location	ElevDatum	UNKWN
Location	ElevMethod	Altimetry
Location	ElevMethod	GPS
Location	ElevMethod	Interpolation
Location	ElevMethod	Other
Location	ElevMethod	Survey
Location	GeoMethod	GPS-Unspecified
Location	GeoMethod	Unknown
Location	GeoMethod	GPS
Location	GeoMethod	Interpolation
Location	GeoMethod	Survey
Location	HorizAccuracyMeasureUnit	Ft
Location	HorizAccuracyMeasureUnit	Meter
Location	HucEightDigitCode	17090012
Location	HucTwelveDigitCode	170900120201
Location	HucTwelveDigitCode	170900120202
Location	HucTwelveDigitCode	170900120301
Location	HucTwelveDigitCode	170900120305
Location	HucTwelveDigitCode	170900120304
Location	HucTwelveDigitCode	170900120302
Location	HucTwelveDigitCode	170900120303
Location	HucTwelveDigitCode	170900120102
Location	HucTwelveDigitCode	170900120104
Location	HucTwelveDigitCode	170900120101
Location	HucTwelveDigitCode	170900120103
Location	<Structuring of location (Site, subsite[by river mile], and SMA) will be determined with the EPA RPM> Developed as a part of the Portland Harbor Scribe Template.	
Location	LocationZone	Borehole
Location	LocationZone	Canal Transport

Data Element Valid Values

Category (Database Table)	Data Element (Database Field)	Valid Value
Location	LocationZone	Combined Sewer
Location	LocationZone	Estuary
Location	LocationZone	Facility Industrial
Location	LocationZone	Facility Other
Location	LocationZone	Lake
Location	LocationZone	Land
Location	LocationZone	Land Flood Plain
Location	LocationZone	Landfill
Location	LocationZone	Ocean
Location	LocationZone	Other-Ground Water
Location	LocationZone	Other-Seawater
Location	LocationZone	Other-Surface Water
Location	LocationZone	Other-Surface Water
Location	LocationZone	Pond-Stormwater
Location	LocationZone	Reservoir
Location	LocationZone	River/Stream
Location	LocationZone	River/Stream
Location	LocationZone	Seep
Location	LocationZone	Spring
Location	LocationZone	Storm Sewer
Location	LocationZone	Test Pit
Location	LocationZone	Waste Pit
Location	LocationZone	Waste Sewer
Location	LocationZone	Well
Location	LocationZone	Wetland Undifferentiated
Location	State Code	OR
Location	Sub_Basin	Lower Willamette
Samples	Activity	Pre-Design
Samples	Activity	Design
Samples	Matrix	Air
Samples	Matrix	Air Indoor
Samples	Matrix	Asbestos
Samples	Matrix	Biological
Samples	Matrix	Benthic
Samples	Matrix	Drinking Water
Samples	Matrix	Dust
Samples	Matrix	Filtered Water
Samples	Matrix	Ground Water Dissolved
Samples	Matrix	Ground Water Total
Samples	Matrix	Habitat
Samples	Matrix	Lab Sand
Samples	Matrix	Liquid Waste
Samples	Matrix	Porewater Dissolved
Samples	Matrix	Porewater Total
Samples	Matrix	Potable Water
Samples	Matrix	Saline Water Dissolved
Samples	Matrix	Saline Water Total

Data Element Valid Values

Category (Database Table)	Data Element (Database Field)	Valid Value
Samples	Matrix	Sand
Samples	Matrix	Sediment
Samples	Matrix	Sediment <2mm
Samples	Matrix	Sediment <63um
Samples	Matrix	Sediment 125-250um
Samples	Matrix	Sediment 63-125um
Samples	Matrix	Sediment 63-250um
Samples	Matrix	Sediment Bulk
Samples	Matrix	Sediment Subsurface
Samples	Matrix	Sediment Surface
Samples	Matrix	Septic Effluent
Samples	Matrix	Soil
Samples	Matrix	Soil Gas
Samples	Matrix	Soil Subsurface
Samples	Matrix	Soil Surface
Samples	Matrix	Solid Waste
Samples	Matrix	Stormwater
Samples	Matrix	Surface Water
Samples	Matrix	Surface Water Dissolved
Samples	Matrix	Surface Water Total
Samples	Matrix	Tissue
Samples	Matrix	Waste
Samples	Matrix	Subsurface Soil/Sediment
Samples	Matrix	Surface Soil/Sediment
Samples	Samp_Depth_Units	Ft
Samples	SampleCollection	Activity Trap
Samples	SampleCollection	A-Frame Net
Samples	SampleCollection	Anchor Box Dredge
Samples	SampleCollection	Artificial Substrate
Samples	SampleCollection	Backpack Electroshock
Samples	SampleCollection	Beach Seine Net
Samples	SampleCollection	Beam Trawl
Samples	SampleCollection	Benthic Corer (Other)
Samples	SampleCollection	Benthic Dredge (Other)
Samples	SampleCollection	Benthic Grab (Other)
Samples	SampleCollection	Birge Closing Net
Samples	SampleCollection	Black Light Trap
Samples	SampleCollection	Block Net
Samples	SampleCollection	Boat-Mounted Electroshock
Samples	SampleCollection	Bod Dredge
Samples	SampleCollection	Bongo Net
Samples	SampleCollection	Boomerang Corer
Samples	SampleCollection	Boomerang Grab
Samples	SampleCollection	Box Corer
Samples	SampleCollection	Box Sampler
Samples	SampleCollection	Brail
Samples	SampleCollection	Bucket

Data Element Valid Values

Category (Database Table)	Data Element (Database Field)	Valid Value
Samples	SampleCollection	Burrell Epibenthic Sled
Samples	SampleCollection	Campbell Grab
Samples	SampleCollection	Cast Net
Samples	SampleCollection	Center Bag
Samples	SampleCollection	Chain Dredge
Samples	SampleCollection	Clam-Shell Grab
Samples	SampleCollection	Clarke-Bumpus Net
Samples	SampleCollection	Concussion
Samples	SampleCollection	Creel Survey
Samples	SampleCollection	Danish Seine Net
Samples	SampleCollection	Dart Corer (Gravity)
Samples	SampleCollection	D-Frame Net
Samples	SampleCollection	DH-81
Samples	SampleCollection	DH-95
Samples	SampleCollection	Dietz-Lafond Grab
Samples	SampleCollection	Dip Net
Samples	SampleCollection	Draw Down
Samples	SampleCollection	Drift Gill Net
Samples	SampleCollection	Drilled Sampler
Samples	SampleCollection	Drive Sampler (Generic)
Samples	SampleCollection	Drop Net
Samples	SampleCollection	Ekman Grab
Samples	SampleCollection	Electric Seine
Samples	SampleCollection	Electroshock (Other)
Samples	SampleCollection	Emergence Trap
Samples	SampleCollection	English Umbrella Net
Samples	SampleCollection	Erwin Piston Corer
Samples	SampleCollection	Ewing Gravity Corer
Samples	SampleCollection	Experimental Brail
Samples	SampleCollection	Experimental Gill Net
Samples	SampleCollection	Fish Weir
Samples	SampleCollection	Free Fall Grab
Samples	SampleCollection	Fry Trap
Samples	SampleCollection	Funnel Trap
Samples	SampleCollection	Fyke Net
Samples	SampleCollection	Glass Slide
Samples	SampleCollection	Glass Slide Device
Samples	SampleCollection	Gravity Corer (Generic)
Samples	SampleCollection	Hand Corer
Samples	SampleCollection	Herring Trawl
Samples	SampleCollection	Hess Sampler
Samples	SampleCollection	Hester-Dendy
Samples	SampleCollection	Hook And Line
Samples	SampleCollection	Hydraulic Grab
Samples	SampleCollection	Hydroacoustics
Samples	SampleCollection	Hydroplastic (PVC) Corer
Samples	SampleCollection	Insect Trap

Data Element Valid Values

Category (Database Table)	Data Element (Database Field)	Valid Value
Samples	SampleCollection	Isaacs-Kidd Trawl
Samples	SampleCollection	Juday Trap
Samples	SampleCollection	Kemmerer Bottle
Samples	SampleCollection	Kick Net
Samples	SampleCollection	Kullenberg Gravity Corer
Samples	SampleCollection	Larval Light Fish Trap
Samples	SampleCollection	Long Line
Samples	SampleCollection	Marmap Neuston Net
Samples	SampleCollection	Minnow Seine Net
Samples	SampleCollection	Miscellaneous (Other)
Samples	SampleCollection	Mochness Net
Samples	SampleCollection	Modified Surber Sampler
Samples	SampleCollection	MTD Net
Samples	SampleCollection	Nansen Bottle
Samples	SampleCollection	Natural Substrate
Samples	SampleCollection	Net Vertical Tow (Other)
Samples	SampleCollection	Net/Horizontal Tow (Other)
Samples	SampleCollection	Net/Non Tow (Other)
Samples	SampleCollection	Niskin Bottle
Samples	SampleCollection	Norpac Net
Samples	SampleCollection	Orange-Peel Grab
Samples	SampleCollection	Original Surber Sampler
Samples	SampleCollection	Other Toxicant
Samples	SampleCollection	Otter Trawl
Samples	SampleCollection	Pair Trawl
Samples	SampleCollection	Pamatmat Multiple Quartz Corer
Samples	SampleCollection	Peterson Grab
Samples	SampleCollection	Petite Ponar Grab
Samples	SampleCollection	Phleger Corer (Gravity)
Samples	SampleCollection	Pipe Dredge
Samples	SampleCollection	Piston Corer (Generic)
Samples	SampleCollection	Plankton Net
Samples	SampleCollection	Plexiglass Slide Device
Samples	SampleCollection	Plexiglass Trap
Samples	SampleCollection	Plummet Net
Samples	SampleCollection	Polar Orga. Chem. Integrative Sampler
Samples	SampleCollection	Ponar Grab
Samples	SampleCollection	Pound Net
Samples	SampleCollection	Pram Electroshock
Samples	SampleCollection	Probe/Sensor
Samples	SampleCollection	Pull Sled
Samples	SampleCollection	Pump/Air Lift
Samples	SampleCollection	Pump/Bailer
Samples	SampleCollection	Pump/Centrifugal
Samples	SampleCollection	Pump/Jet
Samples	SampleCollection	Pump/Non-Submersible
Samples	SampleCollection	Pump/Peristaltic

Data Element Valid Values

Category (Database Table)	Data Element (Database Field)	Valid Value
Samples	SampleCollection	Pump/Piston
Samples	SampleCollection	Pump/Rotary
Samples	SampleCollection	Pump/Submersible
Samples	SampleCollection	Pump/Turbine
Samples	SampleCollection	Purse Seine Net
Samples	SampleCollection	Push Net
Samples	SampleCollection	Push Point Sampler
Samples	SampleCollection	Radiello
Samples	SampleCollection	Rectangular Net
Samples	SampleCollection	Remotely Operated Vehicle
Samples	SampleCollection	Rock Basket
Samples	SampleCollection	Roller Frame Trawl
Samples	SampleCollection	Rotenone
Samples	SampleCollection	Roving Drop Net
Samples	SampleCollection	Scoop Fish Grab
Samples	SampleCollection	Sediment Trap
Samples	SampleCollection	Seine Net
Samples	SampleCollection	Semipermeable Membrane Device
Samples	SampleCollection	Set (Passive) Gill Net
Samples	SampleCollection	Shelby Tube
Samples	SampleCollection	Ship Sea Chest
Samples	SampleCollection	Shipek Grab
Samples	SampleCollection	SHOVEL
Samples	SampleCollection	Shrimp Trawl
Samples	SampleCollection	Simple Conical Net
Samples	SampleCollection	Single-Vessel Operated Tow Net
Samples	SampleCollection	Smith-McIntire Grab
Samples	SampleCollection	Sodium Cyanide
Samples	SampleCollection	Spear/Gun
Samples	SampleCollection	Spear/Hand
Samples	SampleCollection	Spear/Hawaiian Sling
Samples	SampleCollection	Split Spoon
Samples	SampleCollection	Square-Mouth Net
Samples	SampleCollection	Stainless Steel Spoon
Samples	SampleCollection	Stationary Drop Net
Samples	SampleCollection	Still Camera
Samples	SampleCollection	Stop Net
Samples	SampleCollection	Storm Water Sampler
Samples	SampleCollection	Stovepipe Sampler
Samples	SampleCollection	Stream-Side Electroshock
Samples	SampleCollection	Suction Dredge
Samples	SampleCollection	Summa
Samples	SampleCollection	Surber Sampler
Samples	SampleCollection	Syringe
Samples	SampleCollection	Terminal Bag
Samples	SampleCollection	Tile Plate
Samples	SampleCollection	Tow Net

Data Element Valid Values

Category (Database Table)	Data Element (Database Field)	Valid Value
Samples	SampleCollection	Towed Dredge
Samples	SampleCollection	Trammel Net
Samples	SampleCollection	Trap Net
Samples	SampleCollection	Trap Substrate (Other)
Samples	SampleCollection	Traveling Screen
Samples	SampleCollection	Trot Line
Samples	SampleCollection	T-Sampler
Samples	SampleCollection	Tucker Net
Samples	SampleCollection	Two-Vessel Operated Tow Net
Samples	SampleCollection	Van Dorn Bottle
Samples	SampleCollection	Van Veen Grab
Samples	SampleCollection	Variable Mesh Gill Net
Samples	SampleCollection	Vibrating Corer
Samples	SampleCollection	Video Camera
Samples	SampleCollection	Vinyl Tube
Samples	SampleCollection	Visual Sighting
Samples	SampleCollection	Water Bottle
Samples	SampleCollection	Water Sampler (Other)
Samples	SampleCollection	WBH-96
Samples	SampleCollection	Whirl-pak bag
Samples	SampleCollection	Wisconsin-Style Net
Samples	SampleCollection	Yankee Trawl
Samples	SampleCollection	Young Grab
Samples	Sampler	<Performing Parties> Will be added as they are defined and organized into groups
Samples	SampleType	Depth Integrated Sample
Samples	SampleType	Field Duplicate
Samples	SampleType	Field Msr/Obs
Samples	SampleType	Field Sample
Samples	SampleType	Incremental Sampling Horiz
Samples	SampleType	Incremental Sampling Vert
Samples	SampleType	QC Blank - Bottle/Preservative
Samples	SampleType	QC Blank - Field
Samples	SampleType	QC Blank - Filter
Samples	SampleType	QC Blank - Rinsate/Equipment
Samples	SampleType	QC Blank - Trip
Samples	SampleType	Sample-Composite Without Parents
LabResults	Analysis	<To be determined from performing party site specific sampling plan>
LabResults	Analyte	1,1-Dichloroethane
LabResults	Analyte	1,1-Dichloroethene
LabResults	Analyte	1,1-Dichloroethylene
LabResults	Analyte	1,1,1-Trichloroethane
LabResults	Analyte	1,1,1,-Trichloroethane
LabResults	Analyte	1,1,2-Trichloroethane
LabResults	Analyte	Trichloroethane
LabResults	Analyte	1,1,2,2-Tetrachloroethane

Data Element Valid Values

Category (Database Table)	Data Element (Database Field)	Valid Value
LabResults	Analyte	Tetrachloroethane
LabResults	Analyte	1,2-Dibromoethane
LabResults	Analyte	Dibromoethane
LabResults	Analyte	1,2-Dichloroethane
LabResults	Analyte	Ethylene dichloride
LabResults	Analyte	1,2-Dichloropropane
LabResults	Analyte	Propylene dichloride
LabResults	Analyte	1,2,3-Trichloropropane
LabResults	Analyte	1,2,3,4,7,8-HxCDF
LabResults	Analyte	1,2,3,7,8-PeCDD
LabResults	Analyte	1,2,4-Trichlorobenzene
LabResults	Analyte	1,2-Dichlorobenzene
LabResults	Analyte	1,3-Dichlorobenzene
LabResults	Analyte	1,4-Dichlorobenzene
LabResults	Analyte	2-Butanone
LabResults	Analyte	Methyl Ethyl Ketone
LabResults	Analyte	2-Hexanone
LabResults	Analyte	2-Chloroethylvinyl Ether
LabResults	Analyte	2,4,5-TP (Silvex)
LabResults	Analyte	2,2'-oxybis(1- Chloropropane)
LabResults	Analyte	2,3,4,6-Tetrachlorophenol
LabResults	Analyte	2,3,4,7,8-PeCDF
LabResults	Analyte	2,3,7,8-TCDF
LabResults	Analyte	2,3,7,8-TCDD-Dioxin
LabResults	Analyte	2,3,7,8-TCDD
LabResults	Analyte	2,4,5-Trichlorophenol
LabResults	Analyte	2,4,6-Trichlorophenol
LabResults	Analyte	2,4-Dichlorophenol
LabResults	Analyte	2,4-D
LabResults	Analyte	2,4-Dimethylphenol
LabResults	Analyte	Dinitrophenol
LabResults	Analyte	2,4-Dinitrophenol
LabResults	Analyte	2,4-Dinitrotoluene
LabResults	Analyte	2,6-Dinitrotoluene
LabResults	Analyte	2-Chloronaphthalene
LabResults	Analyte	2-Chlorophenol
LabResults	Analyte	2-Methylnaphthalene
LabResults	Analyte	o-Cresol
LabResults	Analyte	2-Methylphenol
LabResults	Analyte	2-Nitroaniline
LabResults	Analyte	2-Nitrophenol
LabResults	Analyte	3,3'-Dichlorobenzidine
LabResults	Analyte	3,3'- Dichlorobenzidine
LabResults	Analyte	3-Nitroaniline
LabResults	Analyte	Methyl isobutyl ketone
LabResults	Analyte	4-Methyl-2-Pentanone
LabResults	Analyte	4-Bromophenyl- phenylether

Data Element Valid Values

Category (Database Table)	Data Element (Database Field)	Valid Value
LabResults	Analyte	4-Bromophenyl phenyl ether
LabResults	Analyte	3-Methyl-4-chlorophenol
LabResults	Analyte	4-Chloro-3-methylphenol
LabResults	Analyte	4-Chloro-3- methylphenol
LabResults	Analyte	4-Chloroaniline
LabResults	Analyte	4-Chlorophenyl phenyl ether
LabResults	Analyte	4-Chlorophenyl- phenyl ether
LabResults	Analyte	4-Methylphenol
LabResults	Analyte	p-Cresol
LabResults	Analyte	4-Nitroaniline
LabResults	Analyte	4-Nitrophenol
LabResults	Analyte	Acenaphthene
LabResults	Analyte	Acenaphthylene
LabResults	Analyte	Acrolein
LabResults	Analyte	Acrylonitrile
LabResults	Analyte	Aldrin
LabResults	Analyte	Aluminum
LabResults	Analyte	Aluminim
LabResults	Analyte	Anthracene
LabResults	Analyte	Antimony
LabResults	Analyte	Arsenic
LabResults	Analyte	Benzene
LabResults	Analyte	Benzo(a)anthracene
LabResults	Analyte	Benzo(a)pyrene
LabResults	Analyte	Benzo(b)fluoranthene
LabResults	Analyte	Benzo(ghi)perylene
LabResults	Analyte	Benzo(g,h,i)perylene
LabResults	Analyte	Benzo(k)fluoranthene
LabResults	Analyte	Benzoic Acid
LabResults	Analyte	Benzyl alcohol
LabResults	Analyte	bis(2-Chloroethoxy) methane
LabResults	Analyte	Bis(2-chloroethyl) ether
LabResults	Analyte	bis(2-Chloroethyl)ether
LabResults	Analyte	bis(2-Ethylhexyl) phthalate
LabResults	Analyte	Di(2-ethylhexyl)phthalate
LabResults	Analyte	Bromochloromethane
LabResults	Analyte	Bromodichloromethane
LabResults	Analyte	Dichlorobromomethane
LabResults	Analyte	Tribromomethane
LabResults	Analyte	Bromoform
LabResults	Analyte	Bromomethane
LabResults	Analyte	Methyl Bromide
LabResults	Analyte	Butylbenzylphthalate
LabResults	Analyte	Butyl benzyl phthalate
LabResults	Analyte	Cadmium
LabResults	Analyte	Carbazole
LabResults	Analyte	Carbon Disulfide

Data Element Valid Values

Category (Database Table)	Data Element (Database Field)	Valid Value
LabResults	Analyte	Tetrachloromethane
LabResults	Analyte	Carbon Tetrachloride
LabResults	Analyte	Chlorobenzene, total
LabResults	Analyte	Chlorobenzene
LabResults	Analyte	Chlorobenzene (each)
LabResults	Analyte	Chlorodibromomethane
LabResults	Analyte	Dibromochloromethane
LabResults	Analyte	Chloroethane
LabResults	Analyte	Chloroform
LabResults	Analyte	Methyl Chloride
LabResults	Analyte	Chloromethane
LabResults	Analyte	Chromium
LabResults	Analyte	Chrysene
LabResults	Analyte	cis-1,2-Dichloroethylene
LabResults	Analyte	cis-1,2-Dichloroethene
LabResults	Analyte	cis-1,3-Dichloropropene
LabResults	Analyte	Copper
LabResults	Analyte	Cyanide
LabResults	Analyte	Cyanide, free (total)
LabResults	Analyte	Dibenzo(a,h)anthracene
LabResults	Analyte	Dibenzo(a,h)- anthracene
LabResults	Analyte	Dibenzofuran
LabResults	Analyte	Dibromomethane
LabResults	Analyte	Dichlorodifluoromethane
LabResults	Analyte	DDD
LabResults	Analyte	4,4'-DDD
LabResults	Analyte	p,p'-DDD
LabResults	Analyte	p,p'-DDE
LabResults	Analyte	4,4'-DDE
LabResults	Analyte	EDDE
LabResults	Analyte	DDE
LabResults	Analyte	p,p'-DDT
LabResults	Analyte	Total DDT
LabResults	Analyte	4,4'-DDT
LabResults	Analyte	DDT
LabResults	Analyte	Dieldrin
LabResults	Analyte	Diethylphthalate
LabResults	Analyte	Dimethyl phthalate
LabResults	Analyte	Dimethylphthalate
LabResults	Analyte	Di-n-butyl phthalate
LabResults	Analyte	Di-n-butylphthalate
LabResults	Analyte	n-Butylphthalate
LabResults	Analyte	Di-n-octyl phthalate
LabResults	Analyte	Di-n-octylphthalate
LabResults	Analyte	Endosulfan I
LabResults	Analyte	a-Endosulfan
LabResults	Analyte	b-Endosulfan

Data Element Valid Values

Category (Database Table)	Data Element (Database Field)	Valid Value
LabResults	Analyte	Endosulfan II
LabResults	Analyte	Endosulfan sulfate
LabResults	Analyte	Endrin
LabResults	Analyte	Endrin aldehyde
LabResults	Analyte	Endrin ketone
LabResults	Analyte	Ethyl benzene
LabResults	Analyte	Ethylbenzene
LabResults	Analyte	Fluoranthene
LabResults	Analyte	Fluorene
LabResults	Analyte	Heptachlor
LabResults	Analyte	Heptachlor Epoxide
LabResults	Analyte	Hexachlorobenzene
LabResults	Analyte	Hexachlorobutadiene
LabResults	Analyte	Hexachlorocyclopentadiene
LabResults	Analyte	Hexachloroethane
LabResults	Analyte	Indeno(1,2,3-c,d)pyrene
LabResults	Analyte	Indeno(1,2,3-cd)- pyrene
LabResults	Analyte	Iodomethane
LabResults	Analyte	Isophorone
LabResults	Analyte	Isopropylbenzene
LabResults	Analyte	Manganese
LabResults	Analyte	Mercury
LabResults	Analyte	Mercury, Inorganic
LabResults	Analyte	Methoxychlor
LabResults	Analyte	Methylmercury
LabResults	Analyte	2-Methyl-4,6-Dinitrophenol
LabResults	Analyte	4,6-Dinitro-2- methylphenol
LabResults	Analyte	4,6-Dinitro-2-methylphenol
LabResults	Analyte	Methylene chloride
LabResults	Analyte	Dichloromethane
LabResults	Analyte	Methyl tert-Butyl Ether
LabResults	Analyte	Naphthalene
LabResults	Analyte	Nickel
LabResults	Analyte	Nitrobenzene
LabResults	Analyte	N-Nitroso-di-n propylamine
LabResults	Analyte	N-Nitrosodi-n-propylamine
LabResults	Analyte	N-Nitrosodiphenylamine
LabResults	Analyte	N-Nitroso diphenylamine
LabResults	Analyte	Pentachlorophenol
LabResults	Analyte	Phenanthrene
LabResults	Analyte	Phenol
LabResults	Analyte	Pyrene
LabResults	Analyte	Selenium
LabResults	Analyte	Silver
LabResults	Analyte	Styrene
LabResults	Analyte	Tetrachloroethylene
LabResults	Analyte	Tetrachloroethene

Data Element Valid Values

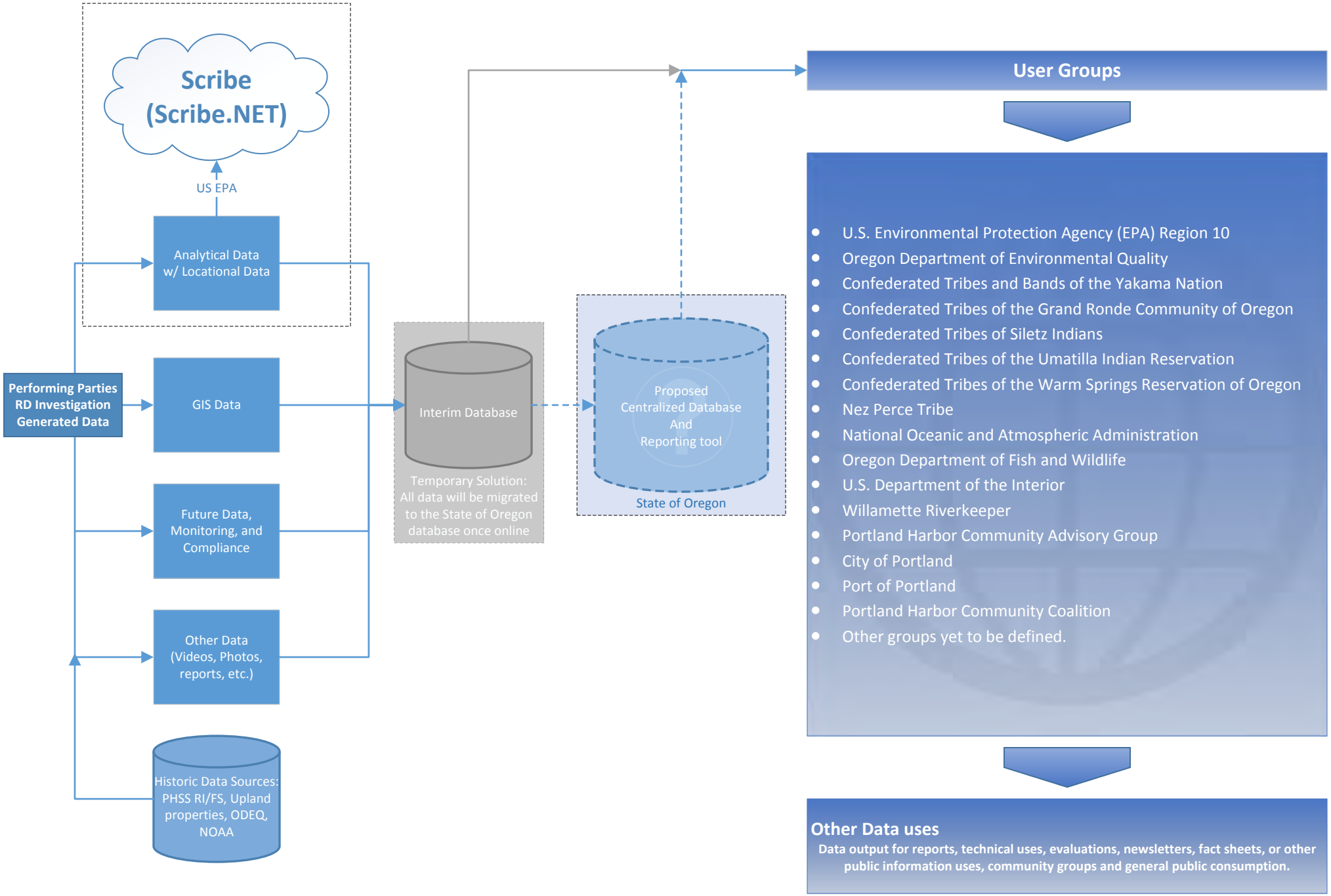
Category (Database Table)	Data Element (Database Field)	Valid Value
LabResults	Analyte	Toluene
LabResults	Analyte	Toxaphene
LabResults	Analyte	1,2-Trans-Dichloroethylene
LabResults	Analyte	trans-1,2-Dichloroethylene
LabResults	Analyte	trans-1,2-Dichloroethene
LabResults	Analyte	trans-1,3-Dichloropropene
LabResults	Analyte	trans-1,4-Dichloro-2-Butene
LabResults	Analyte	Tributyl tin
LabResults	Analyte	Trichloroethylene
LabResults	Analyte	Trichloroethene
LabResults	Analyte	Trichlorofluoromethane
LabResults	Analyte	Vanadium
LabResults	Analyte	Vinyl Acetate
LabResults	Analyte	Vinyl Chloride
LabResults	Analyte	Xylene
LabResults	Analyte	Xylene, total
LabResults	Analyte	Xylenes (total)
LabResults	Analyte	Zinc
LabResults	Analyte	alpha-BHC
LabResults	Analyte	a-BHC
LabResults	Analyte	beta-BHC
LabResults	Analyte	b-BHC
LabResults	Analyte	g-BHC
LabResults	Analyte	gamma-BHC (Lindane)
LabResults	Analyte	Lindane (g-BHC)
LabResults	Analyte	delta-BHC
LabResults	Analyte	d-BHC
LabResults	Result_Units	<To be determined from performing party site specific sampling plan>
LabResults	Total_or_Dissolved	Total
LabResults	Total_or_Dissolved	Dissolved
LabResults	Total_or_Dissolved	NA
LabResults	Total_or_Dissolved	DI Leach
LabResults	Total_or_Dissolved	MWM (Meteoric Water Mobility Ext)
LabResults	Total_or_Dissolved	SPLP
LabResults	Total_or_Dissolved	Suspended
LabResults	Total_or_Dissolved	TCLP
LabResults	Total_or_Dissolved	Acid Soluble
LabResults	Total_or_Dissolved	Bioavailable
LabResults	Total_or_Dissolved	Comb Available
LabResults	Total_or_Dissolved	Extractable
LabResults	Total_or_Dissolved	Filterable
LabResults	Total_or_Dissolved	Fixed
LabResults	Total_or_Dissolved	Free Available
LabResults	Total_or_Dissolved	Inorganic
LabResults	Total_or_Dissolved	Non-filterable
LabResults	Total_or_Dissolved	Non-settleable

Data Element Valid Values

Category (Database Table)	Data Element (Database Field)	Valid Value
LabResults	Total_or_Dissolved	Non-volatile
LabResults	Total_or_Dissolved	Organic
LabResults	Total_or_Dissolved	Pot. Dissolved
LabResults	Total_or_Dissolved	Settleable
LabResults	Total_or_Dissolved	Supernate
LabResults	Total_or_Dissolved	Total Recoverable
LabResults	Total_or_Dissolved	Total Residual
LabResults	Total_or_Dissolved	Vapor
LabResults	Total_or_Dissolved	Volatile
LabResults	Total_or_Dissolved	WAD
LabResults	Analytical_Method	<To be determined from performing party site specific sampling plan>
LabResults	Basis	Wet
LabResults	Basis	Dry
LabResults	Lab_Name	<To be determined from performing party site specific sampling plan>
LabResults	QA_Comment	Final
LabResults	QA_Comment	Accepted
LabResults	QA_Comment	Preliminary
LabResults	QA_Comment	Rejected
LabResults	QA_Comment	Validated
LabResults	Result_Qualifier	J
LabResults	Result_Qualifier	U
LabResults	Result_Qualifier	UJ
LabResults	Result_Qualifier	J-
LabResults	Result_Qualifier	J+
LabResults	Result_Qualifier	R
LabResults	Validated	Yes
LabResults	Validated	No
LabResults	ValidationLevel	S2BVEM
LabResults	ValidationLevel	S3VEM
LabResults	ValidationLevel	S4VEM
LabResults	ValidationLevel	NA
LabResults	ValueType	Actual
LabResults	ValueType	Calculated
LabResults	ValueType	Blank Corrected Calc
LabResults	ValueType	Control Adjusted
LabResults	ValueType	Estimated

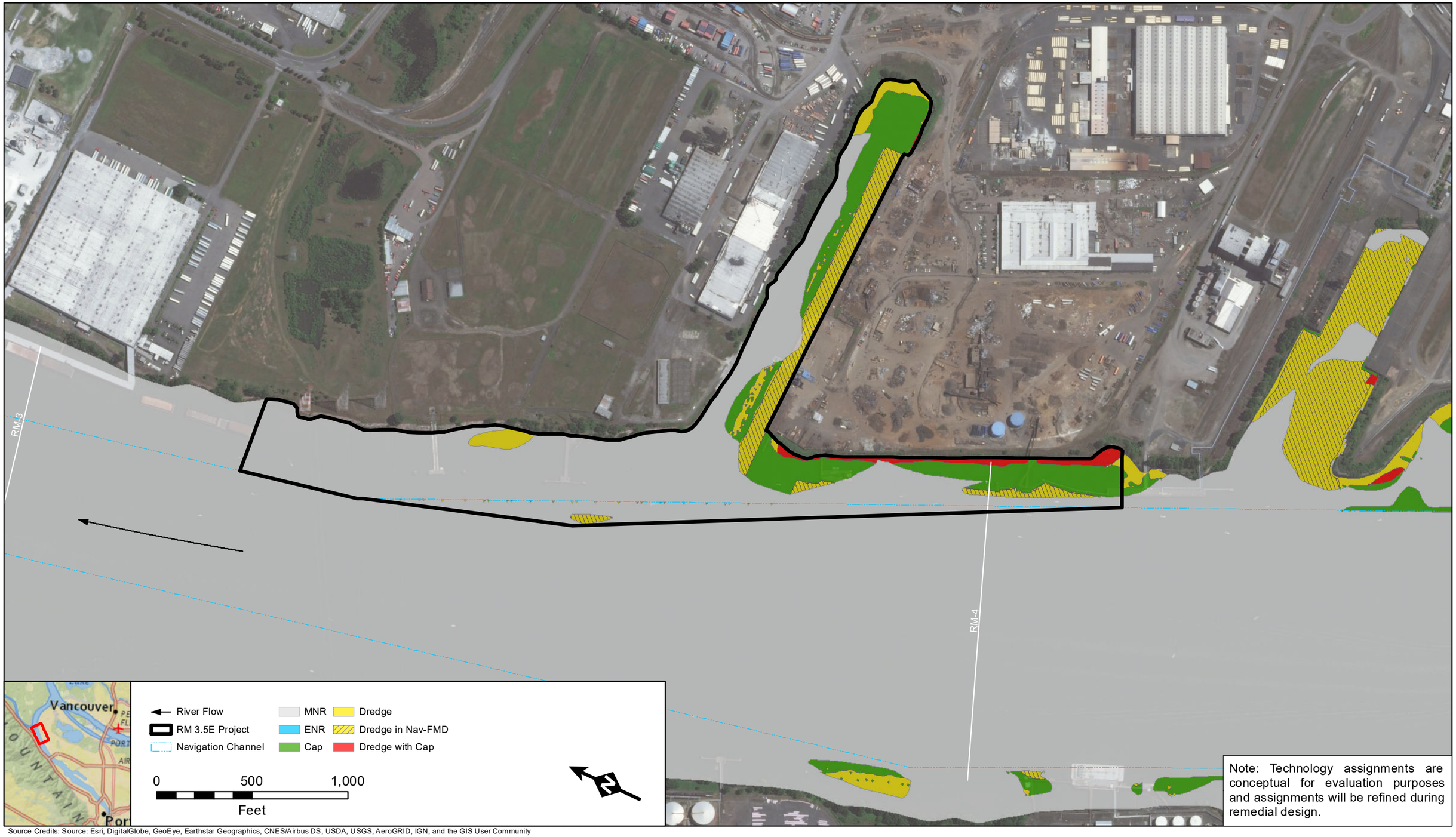
Appendix C - Data Management Conceptual Model

Data Management Conceptual Model



Appendix B

River Mile 3.5 East Project Area Map



Note: Technology assignments are conceptual for evaluation purposes and assignments will be refined during remedial design.

Source Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Technology Assignments, Selected Remedy
RM 3.5E Project Area
Portland Harbor Superfund Site

Path: E:_Projects\Portland Harbor\GIS\MapDocuments\Post ROD Phase\Site Assessment\Technology-Assignments-RM3-5E.mxd, Created by: MLF

Date Saved: 9/25/2019 12:33:27 PM