PORTLAND HARBOR RI/FS

HISTORICAL CHEMISTRY DATA CATEGORY RECLASSIFICATION TECHNICAL MEMORANDUM

May 30, 2003

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1.0 INTRODUCTION

A key objective identified in the Portland Harbor Superfund Site Remedial Investigation/Feasibility Study (RI/FS) Scope of Work was "to identify and compile applicable historical information and data that are of acceptable quality for use during the RI/FS process" (EPA 2001). To satisfy that objective, Data Quality Objectives (DQOs) were developed for evaluating the historical chemical and biological data for both sampling and analysis methods (see SEA 2001). A DQO specific to historical chemical data was the need for quality assurance review equivalent to QA1. QA1 data quality evaluation is an abbreviated review consistent with Puget Sound Estuary Program (PSEP) guidance (1986) and the Puget Sound Dredged Disposal Analysis (PSDDA) Abbreviated Data Quality Evaluation (QA1) for Dredged Material Disposal Projects (PTI 1989) with revisions (PSDDA 1991). The QA quality assurance reviews were performed, prior to entering the historical Portland Harbor chemical data into the project database, and data were classified into two data quality categories (i.e., Category 1 – known and acceptable quality and Category 2 – unknown or suspect quality; see Appendix A). During the review of the Round 1 Work Plan (SEA et al. 2002), however, the agencies emphasized the need to identify as many suitable chemical data points as possible for various components of the RI. In response to agency concerns, historical Category 2 chemical data were re-evaluated and some data were reclassified as Category 1. This memorandum presents the results of the re-evaluation.

2.0 CHEMICAL DATA QUALITY RE-EVALUATION PROCESS

This section describes the process used to re-evaluate chemical data quality. The re-evaluation focused on three distinct questions with regard to initial classification of the data:

1) Was all information necessary to assess data quality available initially?
2) Were chemical data quality criteria too restrictive?
3) Were criteria applied to data consistently?

The first step in the re-evaluation process was to assess the outcome of the initial data quality review provided in Appendix G of the Round 1 Work Plan (SEA et al. 2002). It was noted that many surveys with Category 2 classification were lacking appropriate quality assurance/quality control (QA/QC) documentation necessary for data validation. It was also noted (as mentioned by agency representatives in meetings) that the lack of chain-of-custody forms was responsible for Category 2 classification of otherwise high quality data. The next step in the process was to obtain source documents for all Category 2 data from the project library. Investigators of those source documents without laboratory documentation were contacted and asked to obtain and transmit the necessary back-up. The project chemist then performed the following tasks:

- Evaluate the adequacy of the chemical quality criteria,
- Ensure that data quality criteria were consistently applied to all data, including those classified as Category 1,
- Identify any QA/QC information that was either not initially available or that may have been originally overlooked, and
- Classify data based on newly acquired back-up documentation.

Tasks necessary for reassigning category classification are described individually below.

2.1 REVISED CHEMICAL DATA REVIEW CRITERIA

The project chemist reviewed chemical data review criteria stated in the Round 1 Work Plan (SEA et al. 2002) and generally found them to be appropriate for QA1 validation. Data quality review criteria are provided in Appendix A. Only one criterion - traceability - changed in response to agency comments. The revised criterion is as follows:

Traceability. Chain-of-custody (COC) is preferably documented and complete, and attached to the report or supporting documentation package. However, a data set is not rejected as Category 1 data based solely on the absence of COC documentation. If a high quality data set satisfies all criteria except chain-of-custody documentation, there may either be references to chain-of-custody forms in the text of a report or appendix or there

may be other documentation consistent with state or federal guidelines that demonstrate investigators are typically compliant with industry standard field collection and documentation requirements and imply chain-of-custody forms were used. In that instance, an assumption is made that the investigator and contracted laboratories used appropriate sample tracking methods and the dataset is assessed as Category 1.

Data sets that lacked chain-of-custody forms but were of high quality overall were reclassified as Category 1 data. Affected studies include:

- McCormick & Baxter Creosoting Co. Remedial Investigation. Prepared by PTI Environmental Services. This affects both sediment and tissue data (MBCREOS1, MBCREOS2).
- U.S. Moorings 1989, 1994 and 1999 Sediment Chemical Data. Prepared by U.S. Army Corps of Engineers (MOOR1089, MOOR0694, WLR0499, WLR1199).
- RI/FS Quarterly Progress Report, 1st Quarter 1995, Surface Water and Sediment, Rhone-Poulenc (6/95). Prepared by Woodward-Clyde Consultants. This affects both surface water and sediment data (WLCRPB95).
- Dredged Material Characterization Study – Marine Terminal 2, Berths 203-206 and Marine Terminal 5, Berth 501 (8/01). Prepared by Hart Crowser (WLCTOF01).
- Port of Portland Terminal 1, Berth 104 (1992) (WLCT1L91).
- Port of Portland Terminal 2, Berth 203 Sediment Characterization (1994) (WLRPT294).
- Sediment Characterization Study – Terminal 4, Berth 416 (3/98). Prepared by Hart Crowser (WLCT4J97).

2.2 CONSISTENT APPLICATION OF DATA QUALITY CRITERIA

The project chemist reviewed Appendix G text and QA summary tables provided in the Round 1 Work Plan (SEA et al. 2002) to ensure consistent application of the data quality criteria. From this review, only two minor changes were made.

- McCormick & Baxter Creosoting Co., Portland Oregon (10/99). Prepared by E&E. Arsenic sediments data were originally incorrectly classified as Category 2. These data were reclassified as Category 1 to be consistent with precision criteria. For surface water data, additional precision information was located, and the data were reclassified from Category 2 to Category 1. This affects both sediment and surface water data (MLCMBJ99, WLCMBA01).

- Lower Willamette River Reference Area Study (2001). Prepared by Hart Crowser. The validation reports originally characterized as "brief" were reclassified as Category 1 because the project chemist deemed the data validation reports suitable for QA1. This affects both sediment and tissue data (WLLRSI01).

No other surveys were affected.

2.3 AVAILABILITY OF BACK-UP DOCUMENTATION

Source documents, data validation reports, and back-up laboratory documentation necessary for the QA1 level of review were obtained from numerous sources during the data compilation phase of the RI. The section summarizes the availability of back-up documentation in this re-evaluation of data quality.

2.3.1 Initial Data Compilation Exercise

The LWG's initial request for historical analytical sediment, tissue, and water data included a request for supporting documentation, including the source document, data validation report(s) (if prepared), chain-of-custody forms, and the laboratory report with QA/QC results. These data were in fact received for most requests. In some instances, however, some or all of the supporting information was either not available or not provided initially. A second effort was made to obtain supporting documentation for Category 2 data collected after 1990. Data was obtained for five studies:

- Expanded Preliminary Assessment Data Report – Union Pacific Railroad Albina Yard (11/00). Prepared by Jacobs Engineering (WLCAYH00).
- Expanded Preliminary Assessment Data Report – Marine Finance Site, Portland (11/00). Prepared by Jacobs Engineering (WLCMFH00).
- (Gasco) Phase I Remedial Investigation Summary Report & Preliminary Analysis of Soil Data (10/98). Prepared by Hahn & Associates (WLCGSA96).
- Data Validation and Compiled Chemical Laboratory Analytical Data – Ross Island Lagoon (1999). Prepared by Hart Crowser. This affects both sediment and surface water data (WLCRIL99).
- Rose Festival Moorage/ Front Ave. Seawall Sediment Sampling and Analysis (7/95). Prepared by AGI (WLCRFE95).

The project chemist evaluated data from the five studies listed above and reclassified analytical suites as appropriate.

Limited back-up laboratory information was obtained for a sixth study (Expanded Preliminary Site Assessment for the Linnton Site – Georgia Pacific (8/00). Prepared by CH2M Hill – WLCGPE00). The data validator felt that a third request was necessary to obtain additional information necessary for a complete QA1 review.

A request for back-up documentation for a seventh study (Terminal 4 Slip 1 and Berth 401 Sediment Characterization Study. Letter report prepared by Hart Crowser 5/31/00 – WLCT4K99) was made, but the Port of Portland has been unable to locate the information necessary for review. No additional laboratory QA/QC back-up is available for the remaining Category 2 data sets noted as having inadequate supporting documentation. For example, the Portland District of the Corps has provided the LWG with all known supporting documentation for Portland District projects available to them. Studies performed by the USGS (WBWRIR98) or DEQ (WLRWQH92) do not include back-up laboratory or data quality information nor do online databases (CLBC8494 and water quality monitoring databases) or most tissue studies. A source document for the Reidel 1996 (RIEDEL96) study could not be located.

2.3.2 DEQ Validated Studies

Avocet Consulting completed the data validation of 23 Portland Harbor studies under subcontract to DEQ. Avocet's data validation memoranda were considered complete for initial data quality classification. The project chemist reclassified only 2 data sets originally validated by Avocet Consulting. These include:

- A chain-of-custody form noted as missing from the 1994 U.S. Moorings study was later found (MOOR0694), and
- Method blank results noted as missing for the 1997 Channel Deepening Study were also later found (WLCTOI98).

3.0 RESULTS

A summary of the data quality reclassification exercise is provided in Table 1. Reclassification by analyte group is provided in Table 2 (sediment), Table 3 (water), and Table 4 (tissue).

3.1 SEDIMENT

The reclassification of historical sediment chemical data affected some or all analyte groups from 20 surveys. Table 1 shows the surveys with revised data quality classification from the list of all surveys included in the LWG's Portland Harbor database. Seven (7) surveys changed from Category 2 data exclusively to Category 1 data exclusively, five (5) surveys changed from Category 2 data exclusively to a combination of Categories 1 and 2 data, four (4) surveys changed from a combination of Categories 1 and 2 data to Category 1 data exclusively, and four (4) surveys remained a combination of both Categories 1 and 2 data.

Of the 72 data sets that were reviewed by analytical group, 34 (up from 23) were reclassified as Category 1, and 13 (down from 25) were reclassified as Category 2. Twenty-five (25) surveys (up from 24) contained a mixture of Category 1 and Category 2 data. In addition, sediment samples from two studies have been added to the database. These include the City of Portland's Outfall Pilot Project (mixture of Category 1 and 2 data sets) and the Environmental Assessment of GATX Linnton Terminal (Category 1). Sediments from these studies are also included in statistical summaries described in the following paragraphs.

Category 1 surface and subsurface sediment chemical data were statistically summarized for fourteen chemicals before and after the data category reclassification effort. Results are provided in Tables 5 (initial classification) and Table 6 (reclassification) for comparison. Maximum detected concentrations for all surface and subsurface samples have either remained the same or increased following reclassification; however, mean detected concentrations for surface and subsurface metals, bulk TBT, and total DDTs have slightly decreased. Other mean chemical concentrations for total PCBs, dioxin, bis (2-ethylhexyl) phthalate, HPAHs, LPAHs, and TBT in porewater have markedly increased following reclassification. Maximum increases in mean chemical concentrations were related to the reclassification of surface sediment samples, although increased mean concentrations of dioxin, HPAHs, LPAHs, and porewater TBT did occur in subsurface sediment samples as well.

The number of post-1990 Category 1 sediment samples organized by river mile was provided in the Programmatic Work Plan (SEA et al. 2003) as Table 4-12. The counts represented data from the initial data quality classification scheme. This table is repeated here as Table 7. The Category 1 sediment sample counts have been recalculated for reclassified data sets and are presented in Table 8. The totals provided in Tables 7 and 8 are compared in Table 9. The number of Category 1 surface sediment samples by

chemical group between river miles 0 and 11 has increased by 10 to 314 percent for an average of 46 percent. The number of Category 1 subsurface sediment samples by chemical group between river miles 0 and 11 has increased by 0 to 47 percent for an average of 16 percent.

3.2 WATER

The reclassification of historical water chemical data affected all analyte groups from three surveys. Data sets from all three surveys have been fully upgraded from Category 2 to Category 1 classification (see Table 1). Category 1 surveys now include the McCormick & Baxter RI (Phase 3) (WLCMBJ99), Ross Island Site Investigation (WLCRIL99), and the Rhone-Poulenc St. Helens Road Facility RI/FS Quarterly Progress Report, 1st Quarter 1995 (WLCRPB95).

3.3 TISSUE

The reclassification of historical tissue chemical data affected some or all analyte groups from two surveys. One survey has been fully upgraded to Category 1, and one survey is now a mixture of Category 1 and Category 2 data (see Table 1). Analytical tissue chemistry from the McCormick & Baxter RI (MBCREOS92) now has a mixture of Category 1 and Category 2 data, and bioaccumulation data collected from the Phase 2 Willamette River Reference Area Study (WLLRSI01) are now Category 1 exclusively.

4.0 REFERENCES

EPA. 2001. Statement of Work, Remedial Investigation/Feasibility Study (RI/FS) & Identification of Potential Early Action Areas for the Portland Harbor Superfund Site. U.S. Environmental Protection Agency, Region 10, Seattle, WA.

Puget Sound Estuary Program (PSEP). 1986. Recommended Protocols for Measuring Selected Environmental Variables in Puget Sound. Final Report. TC-3991-04. Prepared for EPA, Region 10, Seattle, Washington.

Puget Sound Dredged Disposal Analysis (PSDDA). 1991. PSDDA Chemistry QA/QC and Streamlining Workshop, January 24, 1991. U.S. Army Corps of Engineers, Seattle District, Seattle, Washington.

PTI Environmental Services, Inc. (PTI). 1989. PSDDA Abbreviated Data Quality Evaluation for Dredged Material Disposal Projects. Prepared for the Washington State Department of Ecology. PTI Environmental Services, Inc. Bellevue, Washington.

SEA. 2001. Portland Harbor Superfund Site, Technical Memorandum: Data Quality Objectives for Historical Data. Prepared for Lower Willamette Group, Portland, OR. Striplin Environmental Associates, Inc., Olympia, WA.

SEA, Windward, Anchor Environmental, and Kennedy/Jenks. 2002. Round 1 Work Plan Portland Harbor RI/FS DRAFT. Prepared for Lower Willamette Group, Portland, OR. Striplin Environmental Associates, Olympia, WA.

SEA, Windward, Anchor Environmental, and Kennedy/Jenks. 2003. Portland Harbor RI/FS Programmatic Work Plan REVISED. Prepared for Lower Willamette Group, Portland, OR. Striplin Environmental Associates, Olympia, WA.

APPENDIX A

Following re-evaluation of the data quality for available data sets, some historical Portland Harbor chemical data were re-classified. The two data quality categories did not change from the initial classification provided in the Programmatic RI/FS Work Plan and are defined as follows (from SEA et al. 2003):

Category 1. Category 1 data are of known quality and are considered to be acceptable for use in decision-making for the Site. There is sufficient information on these data sets to confidently verify that the data, along with associated data qualifiers, accurately represent chemical concentrations present at the time of sampling. *Data uses:* Analyses upon which project decisions will be based will utilize Category 1 data. As examples, the ecological and human health risk assessments will use Category 1 data in the risk calculations, and the definition of sediment management areas will rely on Category 1 sediment data.

Category 2. Category 2 data are of generally unknown or suspect quality. The QA/QC information shows that data quality is poor or suspect, or essential QA/QC data (e.g., surrogate recoveries, matrix spike/matrix spike duplicates) are either incomplete or lacking. Category 2 data are useful for many project objectives primarily related to project scoping and understanding general trends in chemical distributions and effects. *Data uses:* Category 2 data will be used during project scoping. For example, Category 2 tissue data were used to help identify chemicals of interest, and Category 2 sediment data were used in the initial assessment of trends in chemical concentrations, which was useful for defining the site characterization sampling program.

The chemical data review was conducted by analyte group (i.e., metals, semivolatile organic compounds, etc.) for each matrix type. As a result, a data set may contain all Category 1 data, all Category 2 data, or both categories 1 and 2 data. Data quality was assessed by evaluating the following four factors (*revised text is underlined*):

- **Traceability**. <u>Chain-of-custody is preferably documented and complete, and attached to the report or supporting documentation package. However, a data set is not rejected as Category 1 data based solely on the absence of COC documentation. If a high quality data set satisfies all criteria except chain-of-custody documentation, there may either be references to chain-of-custody forms in the text of a report or appendix or there may be other documentation consistent with state or federal guidelines that demonstrate investigators are typically compliant with industry standard field collection and documentation requirements and imply chain-of-custody forms were used. In that instance, an assumption is made that the investigator and contracted laboratories used appropriate sample tracking methods and the dataset is assessed as Category 1, based on best professional judgment.</u>

- **Comparability**. Analytical procedures or methods are identified and are accepted in the industry as "standard" or "universal."
- **Sample Integrity**. Sample holding times and conditions between collection and analysis meet established criteria, which are generally identified by the EPA Puget Sound Estuary Program (PSEP 1986, 1997a,b,c) or other pertinent and published guidance.
- **Potential Measurement Bias**. Procedural and/or analytical method blanks are available to evaluate potential for introduction of positive bias in reported results, and bias is within acceptable limits. Lower reporting or quantitation levels may be limited by the presence of background or laboratory contamination. Potential measurement bias includes an evaluation of both accuracy and precision:
  - **Accuracy**. Matrix spikes (MS), laboratory control samples, (which may be spiked blanks or other pertinent reference materials), and/or organic surrogate compounds are available for review, and accuracy falls within an acceptable range. Recoveries fall within ranges typically established by major national monitoring programs, regional guidance, or other accepted "standards." Acceptable analyte recoveries tend to be in the range of 50% to 150%. Recoveries measured outside specified acceptance ranges generally result in the qualification of associated analytical results as estimates or unusable/rejected.
  - **Precision**. Replicate samples are generally available to evaluate analytical variability, and variability falls with an acceptable range. However, the lack of replicate data does not preclude Category 1 status as long as other laboratory quality control data to evaluate bias (e.g., blanks and accuracy quality control samples) are available for review to bolster the evaluation. When available, duplicate or triplicate analyses are normally performed at frequencies of 5% or once for every 20 samples analyzed (of the same matrix). Measurement of analytical variability for organic compounds is performed by analyses of MS and matrix spike duplicate (MSD) samples. (Occasionally, MS/MSD analyses are unable to provide desired measurements due to spike levels that were significantly less than native concentrations. This occurs mostly for highly contaminated solids where *in-situ* levels can be extreme compared to spiking levels.) Acceptable replicate analyses in most monitoring programs are less than or equal to 25% to 50% relative standard deviation or relative percent difference. Variability outside acceptance ranges results in the qualification of associated results as estimates.

Data sets that met the criteria above were assigned Category 1.

Table 1. Data Quality Re-evaluation of Historical Sediment, Tissue, and Willamette River Water Chemical Investigations in Portland Harbor.

LWG Survey Code	Avocet QA	Initial Category Classification	Revised Category Classification/Reason for Upgrade	Survey Name
Sediment				
CLBC8494*		2		Columbia River Basin Contaminant Sediment Online Data
COLWIL90		2		Columbia & Lower Wil Rivers Channel Deepening Reconnaissance Study
MBCREOS1		2	1,2: All analytes but Cr (VI) upgraded to 1/ COCs referenced	McCormick & Baxter RI Phase 1
MBCREOS2		2	1,2: All analytes but Cr (VI) upgraded to 1/ COCs referenced	McCormick & Baxter RI Phase 2
MCAL0986	Y	1,2		McCall Oil Dock 9/1986
MCAL1286	Y	1,2		McCall Oil Dock 12/1986
MOOR0595	Y	1,2		US Moorings May 1995
MOOR0694	Y	1,2	1,2: All previous Cat. 2 analytes but grain size & volatile solids upgraded to 1/COCs found	US Moorings June 1994
MOOR1089		2	1,2: All analytes but grain size & volatile solids upgraded to 1/COCs BPJ	US Moorings Sediment Quality Evalation
MOOR1294		1		US Moorings Preliminary Assessment Sampling
PPTLDT24		1,2		Sediment Study Marine Terminals 2 and 4
PSBTH311	Y	1,2		Port of Portland Berth 311 Dredge Data
PSYD&M97	Y	1		Portland Shipyard Env. Audit
PSYDD3	Y	1		Portland Shipyard DD-3 Post-Dredge Data
PSYDD4	Y	1,2		Portland Shipyard DD4 Post-Dredge Data
PSYSEA98	Y	1		Portland Shipyard Sed. Inv.
RIEDEL96		2		Focused ESA Riedel
RIEDEL97	Y	1		Baseline Sediment Assessment Riedel
TOSCO99	Y	1		TOSCO Sediment Sampling Results 1999
WBWRIR98		2		USGS - Bonn
WLCAYH00		2	1: All analytes upgraded to 1/Back-up laboratory package provided by DEQ	Union Pacific Railroad Albina Yard Expanded Preliminary Assess. Data Report
WLCCIF01		1		Cargill Irving Elevator Permit Applications
WLCCPF01		1		Chevron Dredging Permit Application
WLCDRE87		2		Organic Compounds in Willamette sediments
WLCGAF00		1		Goldendale Aluminum Dredge Phase 1
WLCGAL00		1		Goldendale Aluminum Dredge Phase 2
WLCGPE00		2	*Request made for additional information*	G-P Linnton Site Preliminary Assessment
WLCGSA96		2	1: All analytes upgraded to 1/Back-up laboratory package provided by NW Natural	Gasco PI Remedial Investigation

Table 1. Data Quality Re-evaluation of Historical Sediment, Tissue, and Willamette River Water Chemical Investigations in Portland Harbor.

LWG Survey Code	Avocet QA	Initial Category Classification	Revised Category Classification/Reason for Upgrade	Survey Name
WLCGSD01		1		Gasco Source Control Evaluation
WLCGXV99		1	*New data set*	Environmental Site Assessment GATX Terminals Corp.
WLCMBA01		1,2	1: Arsenic upgraded to Category 1/Revised to be consistent with other data sets	McCormick & Baxter RI Phase 4
WLCMBJ99		1,2	1: Arsenic upgraded to Category 1/Revised to be consistent with other data sets	McCormick & Baxter RI Phase 3
WLCMCB02		1		MarCom Expanded Preliminary Assessment
WLCMFH00		2	1: All analytes upgraded to 1/Back-up laboratory package provided by DEQ	Marine Finance Expanded Preliminary Assessment Data Report
WLCOFH02		1,2	*New data set*	City of Portland Outfall Pilot Project, Outfall 18 and outfall M-1
WLCOSJ00		1		Pre-Remedial Investigation Field Activities Data Report for Oregon Steel Mills
WLCRFE95		1,2	1,2: All previous Cat. 2 analytes but grain size upgraded to 1/Back-up MS&MSD, replicate, and surrogate data provided by Port of Portland	Rose Festival Fleet Moorage
WLCRIJ99		1		Ross Island Lagoon Baseline
WLCRIL99		2	1: All analytes upgraded to 1/Back-up data validation reports provided by Port of Portland	Ross Island Site Investigation (Hart Crowser)
WLCRIV99		1		Ross Island Phase 1 (Landau)
WLCRPB95		2	1: All analytes upgraded to 1/COC BPJ	Rhône-Poulenc St Helens Road Facility Q1,95
WLCT0F01		2	1: All analytes upgraded to 1/COCs referenced	Terminal 2 and Terminal 5 2001 Dredge Characterization Study
WLCT0I98	Y	1,2	1: All previous Cat. 2 analytes upgraded to 1/Method blank results found	Sed Char Local Sponsors of Columbia/Willamette Chan Deep
WLCT0K96		1		Port of Portland T1, T2, and T5 Sediment Characterization Study
WLCT1F00		1		T1 South Sediment Study
WLCT1L91		2	1,2: All analytes but grain size upgraded to 1/COC referenced	Port of Portland 1992 Terminal 1 Sediment Characterization
WLCT4J97		2	1,2: All analytes but grain size upgraded to 1/COC BPJ	Port of Portland Terminal 4 Berth 416 1997 Sediment Characterization Study
WLCT4J98	Y	1		Port of Portland T4 RI
WLCT4K99		2	*Back-up documentation could not be obtained*	Port of Portland T4 - Slip 1 & Berth 401 Sediment Characterization
WLCT4L93		1,2		T4 Berth 408 Maintenance Dredging
WLCT5K99		1,2		1999, T5, Berths 501, 503 Sediment Characterization Study
WLCWCJ95	Y	1		Willamette Cove SA

Table 1. Data Quality Re-evaluation of Historical Sediment, Tissue, and Willamette River Water Chemical Investigations in Portland Harbor.

LWG Survey Code	Avocet QA	Initial Category Classification	Revised Category Classification/Reason for Upgrade	Survey Name
WLFL0496	Y	2		Willamette Falls Locks 1996 Flood Deposits Sediment Quality Evaluation
WLLRSH01		1,2		Willamette River Reference Area Study (Phase I)
WLR0277		2		Analyses of Bottom Materials from the Willamette River Portland Harbor
WLR0388		1,2		Broadway Bridge Evaluation of Sediment Lead Levels
WLR0488	Y	1,2		Lower Willamette River (March & April 1988)
WLR0499		1,2	1,2: All previous Cat. 2 analytes but metals and TOC upgraded to 1/COC BPJ	Willamette River Sediment Quality Evaluation - April
WLR0577		2		Elutriation Study of Willamette River Bottom Material and Willamette Columbia River Water
WLR0692	Y	1,2		Lower Willamette River, Portland Harbor 1992
WLR0789		2		Willamette River Burlington Northern RR Bridge Sediment Quality Evaluation
WLR0797	Y	1,2		CRCD - Willamette River Channel Deepening
WLR0988		1,2		Lower Willamette River (Sept. 1988)
WLR1083		2		Quality of Bottom Materials & Elutriates in the LWR, Portland Or
WLR1196	Y	1,2		Lower Willamette Portland Harbor 1996
WLR1199		1,2	1,2: All previous Cat. 2 analytes but metals and TOC upgraded to 1/COC BPJ	Willamette River Sediment Quality Evaluation - November
WLRELF99	Y	1		Elf Atochem Willamette River, 1999
WLRPT294		2	1: All analytes upgraded to 1/COC BPJ	Terminal 2, Berth 203
WLRWQH92		2		Willamette River Toxic Pollutants Summary
WLRWTF98	Y	1		Willbridge Terminal Facility, 1998
WRD&M98	Y	1		Willamette River, 1998 Data
WRSTRM94	Y	1		Characterization of Stormwater Outfalls
WR-WSI98		1,2		Portland Harbor Sediment Investigation
WLLRSI01		1,2	1: All previous Cat. 2 analytes upgraded to 1/Data validation reports acceptable (previously noted as very brief)	Willamette River Reference Area Study (Phase II)

Table 1. Data Quality Re-evaluation of Historical Sediment, Tissue, and Willamette River Water Chemical Investigations in Portland Harbor.

LWG Survey Code	Avocet QA	Initial Category Classification	Revised Category Classification/Reason for Upgrade	Survey Name
Willamette River Water				
WLCMBJ99		2	1: All previous Cat. 2 analytes upgraded to 1/Validation performed considered acceptable	McCormick & Baxter RI Phase 3
WLCRIL99		2	1: All analytes upgraded to 1/Back-up data validation reports provided by Port of Portland	Ross Island Site Investigation (Hart Crowser)
WLCRPB95		2	1: All analytes upgraded to 1/COC BPJ	Rhône-Poulenc St Helens Road Facility Q1,95
WLR0577		2		Elutriate Study of Willamette River Bottom Material and…River
Tissue				
CLBC8494*		2		Columbia River Basin Contaminant Biota/Sediment Data
CLWLTC94		2		Environmental Contaminants Great Blue Herons Lower Columbia/Willamette
PGERAP88		2		Remedial Action Plan , Station "L" Site, Willamette River
DEQWQP97		2		DEQ Water Quality Program - Mercury (Gene Foster per Avocet)
ORRORS00		2		The Oregonian's River of Risk Series
MBCREOS2		2	1,2: All analytes but pest/PCBs upgraded to 1/ COCs referenced	McCormick & Baxter Creosoting Remedial Investigation Report
WBWRIR98		2		Dioxins and Furans in Bed Sediment and Fish Tissue of the Willamette Basin, Oregon (1992-95)
WLLRSI01		2	1: All analytes upgraded to 1/Data validation reports acceptable (previously noted as very brief)	Willamette River Reference Area Study (Phase II)

Notes:
QA - Quality Assurance, Cat. - Category, COC - Chain-of-Custody, BPJ - Best Professional Judgment
* Includes Curtis et al. 1993, Willamette River Toxics Study, Schmitt et al. 1990, Schmitt and Brumbaugh 1990
EPA's STORET water quality data, DEQ's Ambient Monitoring Data (LASAR), and USGS data are not included in the database.
USGS data may be reviewed in Anderson et al. 1996, Fuhrer et al. 1996, and Tetra Tech 1992.

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
EPA Region 10, Columbia River Basin Contaminant Aquatic Biota and Sediment Data - On-line Database (biota 1987-1993; sediment 1984-1994). Sources include USFWS	CLBC8494		Cat2; no QC data	No	??	butyltins, dioxins/furans, metals, PCBs, pesticies, and SVOCs	NACat2	NA	*(none)*	biota and sediments	(unknown)							
Sediment Quality (Dioxin/Furan) Evaluation - Lower Columbia & Willamette Rivers (5/90)	COLWIL90	COLWIL90	Cat2	No	SW846 M.8290	chlorinated dioxins & furans	QA1Cat2	QA1	*(Lab report - DMD review, 3/02)*		Twin City Testing / St. Paul, MN	none	Unknown conditions - 4 mo. HT	Acceptable	Acceptable		Acceptable	Acceptable
Sediment Quality (Dioxin/Furan) Evaluation - Lower Columbia & Willamette Rivers (5/90)	COLWIL90	COLWIL90	Cat2	No	Walkley-Black in Methods for Soil Analysis (1965)	TOC	QA1Cat2	QA1	*(Lab report - DMD review, 3/02)*		Twin City Testing / St. Paul, MN	none	Acceptable	none reported	none	none	Acceptable	
Sediment Quality (Dioxin/Furan) Evaluation - Lower Columbia & Willamette Rivers (5/90)	COLWIL90	COLWIL90	Cat2	No	ASTM EM 1110-2-1906	Grain size & volatile solids	QA1Cat2	QA1	*(Lab report - DMD review, 3/02)*		USACE / Troutdale, OR	none	Acceptable				Acceptable	
McCormick & Baxter Creosoting Company, Remedial Investigation Report, Vol. II of IV (Appendices A-D) by PTI Environmental Services (9/92)	MBCREOS1, MBCREOS2	MBCREOS1, MBCREOS2	Cat 1	Yes - COCs referenced multiple times in DV reports; Labs identified in Volume 1 of RI report	PSEP (1986) & SW846 M.9060	Grain size & TOC	QA1Cat2	QA1	*PTI (9/92)*	67 surface seds. and 29 cores	Columbia Analytical Services	Referenced in data validaton report	Acceptable	Acceptable		Acceptable	Acceptable	
McCormick & Baxter Creosoting Company, Remedial Investigation Report, Vol. II of IV (Appendices A-D) by PTI Environmental Services (9/92)	MBCREOS1, MBCREOS2	MBCREOS1, MBCREOS2	Cat 1	Yes - COCs referenced multiple times in DV reports; Labs identified in Volume 1 of RI report	Barrick et al. 1980 (extraction/gravimetric)	total aliphatic hydrocarbons	QA1Cat2	QA1	*PTI (9/92)*	66 surface seds. and 25 cores	Analytical Technologies Inc.	Referenced in data validaton report	within 180 days	Acceptable		Acceptable	Acceptable	
McCormick & Baxter Creosoting Company, Remedial Investigation Report, Vol. II of IV (Appendices A-D) by PTI Environmental Services (9/92)	MBCREOS1, MBCREOS2	MBCREOS1, MBCREOS2	Cat 1	Yes - COCs referenced multiple times in DV reports; Labs identified in Volume 1 of RI report	U.S. EPA ??	chlorinated dioxins & furans	QA1Cat2	QA1	*PTI (9/92)*	8 surface seds. and 4 cores	Triangle Laboratories Inc.	Referenced in data validaton report	Acceptable	HxCDD, OCDD, HpCDF & OCDF detected			Acceptable	Acceptable
McCormick & Baxter Creosoting Company, Remedial Investigation Report, Vol. II of IV (Appendices A-D) by PTI Environmental Services (9/92)	MBCREOS1, MBCREOS2	MBCREOS1, MBCREOS2	Cat 1	Yes - COCs referenced multiple times in DV reports; Labs identified in Volume 1 of RI report	U.S. EPA ??	Chlorin. pesticides & total PCBs	QA1Cat2	QA1	*PTI (9/92)*	66 surface seds. and 29 cores	Analytical Technologies Inc.	Referenced in data validaton report	within 180 days	Acceptable	Acceptable	none		Some data qual. due to low recovereis.
McCormick & Baxter Creosoting Company, Remedial Investigation Report, Vol. II of IV (Appendices A-D) by PTI Environmental Services (9/92)	MBCREOS1, MBCREOS2	MBCREOS1, MBCREOS2	Cat 1	Yes - COCs referenced multiple times in DV reports; Labs identified in Volume 1 of RI report	U.S. EPA ??	Metals	QA1Cat2	QA1	*PTI (9/92)*	66 surface seds. and 25 cores	Columbia Analytical Services	Referenced in data validaton report	Some exceeded by up to 5 months.	Acceptable	Some data qual. ("J" & "R") due to low recoveries	Acceptable	none	
McCormick & Baxter Creosoting Company, Remedial Investigation Report, Vol. II of IV (Appendices A-D) by PTI Environmental Services (9/92)	MBCREOS1, MBCREOS2	MBCREOS1, MBCREOS2	Cat2 (or unusable due to extended holding times and v. low recoveries)	No	SW846 M.3060 / 7195 / CLP (ICP)	Cr (VI)	QA1Cat2	QA1	*PTI (9/92)*	60 surface seds. and 8 cores	Columbia Analytical Services	Referenced in data validaton report	Some exceeded by up to 14 days (qual. As "G").	Acceptable	Low recov. (0-30%)	Low recov. (0-30%)	Acceptable	
U.S. Moorings 1995 Data	MOOR0595	COEUSM95	Cat2	No	(unreferenced)	Grain size & volatile solids	QA1Cat2	QA1	USM1995_Convs	13 subsurface sediments	USACE / Troutdale, OR	Acceptable	Acceptable				Acceptable	
U.S. Moorings 1995 Data	MOOR0595	COEUSM95	Cat1	No	EPA 160.3	total solids	QA1Cat1	QA1	USM1995_Convs	42 subsurface sediments	CAS / Kelso	Acceptable	Acceptable				Acceptable	
U.S. Moorings 1995 Data	MOOR0595	COEUSM95	Cat1	No	SW846 M.7420; digestion by M.3050	Metals; Pb only	QA1Cat1	QA1	USM1995_Metals	42 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	none	Acceptable	
U.S. Moorings 1995 Data	MOOR0595	COEUSM95	Cat1 (all analytes do not appear to be reported in SedQual)	No	SW846 M.8290	chlorinated dioxins & furans	QA1Cat1	QA1	USM1995_PCDD_PCDF	7 subsurface sediments	Alta / ElDorado Hills, CA	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
U.S. Moorings 1995 Data	MOOR0595	COEUSM95	Cat1	No	SW846 M.8080; extraction by M.3540 (soxhlet)	Chlorinated pesticides only	QA1Cat1	QA1	USM1995_PestPCB	42 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
U.S. Moorings 1995 Data	MOOR0595	COEUSM95	Cat1	No	SW846 M.8270 (SIM); extraction by M.3540 (soxhlet)	PAHs only	QA1Cat1	QA1	USM1995_SVOCs	42 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
U.S. Moorings 1995 Data	MOOR0595	COEUSM95	Cat1; qual. as estimates due to HT exceedances	No	GC/FPD (Krone et al., 1989)	TBT	QA1Cat1	QA1	USM1995_TBT	7 subsurface sediments	CAS / Kelso	Acceptable	Acceptable; with qual. As estimates due to HT exceedances by 26	Acceptable	Acceptable	Acceptable		Acceptable
U.S. Moorings 1994 Data	MOOR0694	COEUSM94	Cat2	No	(unreferenced)	Grain size & volatile solids	QA1Cat2	QA1	USM94_Convs	21 surface sediments	USACE / Troutdale, OR	none	Acceptable				none	
U.S. Moorings 1994 Data	MOOR0694	COEUSM94	Cat 1	Yes - COC found in data package	EPA 160.3 (solids), SW846 M.9030 (t. sulfides), EPA draft 1991 (AVS) & ASTM D4129-82 (TOC)	Conventionals (t. solids, t. sulfides, acid volatile sulfides & TOC)	QA1Cat2	QA1	USM94_Convs	15 surface sediments	CAS / Kelso	none	Acceptable	Acceptable	MS acceptable; no data for TOC & low recoveries for	none	Acceptable	
U.S. Moorings 1994 Data	MOOR0694	COEUSM94	Cat 1	Yes - COC found in data package	EPA 200.8 (As, Cd, Cr, Cu, Pb, Ni, Ag & Zn) & SW846 M.7471 (Hg)	Metals	QA1Cat2	QA1	USM94_Metals	15 surface sediments	CAS / Kelso	none	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
U.S. Moorings 1994 Data	MOOR0694	COEUSM94	Cat 1	Yes - COC found in data package	SW846 M.8080; extraction by M.3550 (sonication)	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	USM94_PestPCB	15 surface sediments	CAS / Kelso	none	Acceptable; exceeded HT by 11 days	Acceptable	Acceptable	none		Acceptable
U.S. Moorings 1994 Data	MOOR0694	COEUSM94	Cat 1	Yes - COC found in data package	SW846 M.8270 (SIM); extraction by M.3550 (sonication)	SVOCs	QA1Cat2	QA1	USM94_SVOCs	15 surface sediments	CAS / Kelso	none	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
U.S. Moorings 1994 Data	MOOR0694	COEUSM94	Cat 1	Yes - COC found in data package	GC/FPD (Krone et al., 1989)	TBT	QA1Cat2	QA1	USM94_TBT	15 surface sediments	CAS / Kelso	none	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable; low recoveries requiring qual. as estimates
U.S. Moorings 1994 Data	MOOR0694	COEUSM94	Cat1	No	SW846 M.8290	chlorinated dioxins & furans	QA1Cat1	QA1	USM94_PCDD_PCD	4 surface sediments	Alta / ElDorado Hills, CA	Acceptable	Acceptable	Acceptable	none required	Acceptable		Acceptable
Results of 1989 U.S. Moorings Sediment Quality Evaluation	MOOR1089	COEUSM89	Cat2	No	ASTM EM1110-2-1906 (sieve/hydrometer)	Grain size & volatile solids	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	3 subsurface sediments (10/12/89)	USACE / Troutdale, OR	none	unknown				none	
Results of 1989 U.S. Moorings Sediment Quality Evaluation	MOOR1089	COEUSM89	Cat 1	Yes - no explicit reference to COC - replicates acceptable	SW846 M.3050 & "atomic absorption"	Metals (Ag, As, Cd, Cr, Cu, Pb, Hg, Ni & Zn)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	3 subsurface sediments (10/12/89)	Battelle / Sequim	none	unknown	none		Acceptable	Acceptable	
Results of 1989 U.S. Moorings Sediment Quality Evaluation	MOOR1089	COEUSM89	Cat 1	Yes - no explicit reference to COC	(unreferenced)	total sulfides	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	3 subsurface sediments (10/12/89)	Battelle / Sequim	none	(more than 16 weeks)	none	MS acceptable		Acceptable	
Results of 1989 U.S. Moorings Sediment Quality Evaluation	MOOR1089	COEUSM89	Cat 1	Yes - no explicit reference to COC	SW846 M.8270	SVOCs	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	3 subsurface sediments (10/12/89)	Battelle / Sequim	none	Acceptable	Acceptable	none	none		Acceptable
Results of 1989 U.S. Moorings Sediment Quality Evaluation	MOOR1089	COEUSM89	Cat 1	Yes - no explicit reference to COC	SM 502	TOC	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	3 subsurface sediments (10/12/89)	Battelle / Sequim	none	Acceptable	none	none	none		
Results of 1989 U.S. Moorings Sediment Quality Evaluation	MOOR1089	COEUSM89	Cat 1	Yes - no explicit reference to COC	SW846 M.8080	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	3 subsurface sediments (10/12/89)	Battelle / Sequim	none	Acceptable	none	none	none		Acceptable
Results of 1989 U.S. Moorings Sediment Quality Evaluation	MOOR1089	COEUSM89	Cat 1	Yes - no explicit reference to COC	SW846 M.8290	chlorinated dioxins & furans	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	1 subsurface composite (10/12/89)	Twin City Testing	none	Acceptable	none				Acceptable
Results of 1989 U.S. Moorings Sediment Quality Evaluation	MOOR1089	COEUSM89	Cat2	No	ASTM EM1110-2-1906 (sieve/hydrometer)	Grain size & volatile solids	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	3 subsurface sediments (10/12/89)	USACE / Troutdale, OR	none	unknown				none	
U.S. Moorings 12/20/94 Data	MOOR1294	MOOR1294	Cat1 (J qual. As estimates Pb & Zn data)	No	SW846 M. 6010; M.7xxx (As, Pb, Hg, Se)	Metals (Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, Zn)	QA1Cat1	QA1	*(Lab report - DMD review, 3/02)*		NET Pacific / Santa Rosa, CA	Acceptable	Acceptable	Acceptable	Acceptable (require J qualification of all	Acceptable	Acceptable	
Sediment Characterization Study Marine Terminal 2, Berths 203-206 (3/17/99) AND Terminal 4, Berth 416 (4/20/99) by Hart Crowser	PPTLDT24	PPTLDT24	Cat2	No	ASTM D4129-82M (TOC), EPA 350.1 (NH3), PSEP 1986 (t.sulfides) & EPA 160.4 (TVS)	conventionals (TOC, NH_3, total sulfides & total volatile solids)	QA1Cat2	QA1	PTLDBRTH_Convs	30 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	none	MS acceptable; total sulfides as estimates due to low recoveries.	Acceptable	Acceptable	
Sediment Characterization Study Marine Terminal 2, Berths 203-206 (3/17/99) AND Terminal 4, Berth 416 (4/20/99) by Hart Crowser	PPTLDT24	PPTLDT24	Cat1	No	EPA 200.8 (Sb, As, Cd, Cr, Cu, Pb, Ni, Ag & Zn) & SW846 M.7471 (Hg); digestion: M.3050 & M.7471A	Metals	QA1Cat1	QA1	PTLDBRTH_Metals	30 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable; some Cd reported with "B" - recommend replacing with"U" code.	MS acceptable; variable recov. require qual. as estimates.	Acceptable; variable recov. require qual. as estimates.	Acceptable	
Sediment Characterization Study Marine Terminal 2, Berths 203-206 (3/17/99) AND Terminal 4, Berth 416 (4/20/99) by Hart Crowser	PPTLDT24	PPTLDT24	Cat1	No	SW846 M.8080 (pesticides) & M.8082 (PCBs [Aroclors]); extraction: M.3550	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	PTLDBRTH_PestPCB	30 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Sediment Characterization Study Marine Terminal 2, Berths 203-206 (3/17/99) AND Terminal 4, Berth 416 (4/20/99) by Hart Crowser	PPTLDT24	PPTLDT24	Cat1; use results from initial analyses.	No	SW846 M.8270 (SIM); extraction by M.3550 (sonication) & M.3540 (soxhlet)	SVOCs	QA1Cat1	QA1	PTLDBRTH_SVOCs	30 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable (initial analyses OK; reanalyses outside HTs)	Acceptable	Acceptable; consistently low recov. for phenolics - qual. as estimates	Acceptable		Acceptable; large # of surrogates outside specification - require qual. of many results as estimates
Sediment Characterization Study Marine Terminal 2, Berths 203-206 (3/17/99) AND Terminal 4, Berth 416 (4/20/99) by Hart Crowser	PPTLDT24	PPTLDT24	Cat1 - require qual. as estimates when any surrogate <50%.	No	GC/FPD (Krone et al., 1989)	TBT	QA1Cat1	QA1	PTLDBRTH_TBT	24 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable - recov. consistent with surrogate recov.	Acceptable - recov. consistent with surrogate recov.		Acceptable - require qual. of all results when any surrogate recov.
Sediment Characterization Study Marine Terminal 2, Berths 203-206 (3/17/99) AND Terminal 4, Berth 416 (4/20/99) by Hart Crowser	PPTLDT24	PPTLDT24	Cat1	No	SW846 M.8260	dichlorobenzenes	QA1Cat1	QA1	PTLDBRTH_VOCs	30 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Sediment Characterization Study Marine Terminal 2, Berths 203-206 (3/17/99) AND Terminal 4, Berth 416 (4/20/99) by Hart Crowser	PPTLDT24	PPTLDT24	Cat2	No	ASTM D4129-82M (TOC), EPA 350.1 (NH3), PSEP 1986 (t.sulfides) & EPA 160.4 (TVS)	conventionals (TOC, NH_3, total sulfides & total volatile solids)	QA1Cat2	QA1	PTLDBRTH_Convs	30 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	none	MS acceptable; total sulfides as estimates due to low recoveries.	Acceptable	Acceptable	
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat2	No	SW846 M.8270	SVOCs	QA1Cat2	QA1	PSY_Berth311_Convs	4 subsurface sediments	Pacific Environmental Laboratory / Beaverton	none	unknown	Acceptable	none	none		none
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat2, no QC data	No	(unreferenced)	Grain size & volatile solids	QA1Cat2	QA1	PSY_Berth311_Convs	11 subsurface sediments	USACE / Troutdale, OR	none	unknown				none	
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat2, no QC data	No	(unreferenced)	Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Ag & Zn)	QA1Cat2	QA1	PSY_Berth311_Convs	6 subsurface sediments	USACE / Troutdale, OR	none	unknown	Acceptable	none	none	none	
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat2, lack of QC data	No	(unreferenced)	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	PSY_Berth311_Convs	6 subsurface sediments	Pacific Environmental Laboratory / Beaverton	none	unknown	Acceptable	none	none		none
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat2	No	SW846 M.8270 (SIM)	PAHs & phenols	QA1Cat2	QA1	PSY_Berth311_Convs	6 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	All phenol hits qualify as nondetected "U" qualifier.	none	none		none
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat2, lack of QC data	No	SW846 M.8240	VOCs	QA1Cat2	QA1	PSY_Berth311_Convs	6 subsurface sediments	Pacific Environmental Laboratory / Beaverton	none	unknown	Acceptable	none	none		none
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat1	No	U.S.EPA 160.3, 160.4 & ASTM D422	total & volatile solids, grain size	QA1Cat1	QA1	PSY_Berth311_Convs	4 subsurface sediments	CAS / Kelso	Acceptable	Acceptable				Acceptable (GS)	
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat1	No	SW846 M.8080 / 3540 (soxhlet)	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	PSY_Berth311_Convs	4 subsurface	CAS / Kelso	Acceptable	Acceptable	Acceptable	none	none		Acceptable
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat1	No	SW846 M.8240	VOCs (7 analytes only)	QA1Cat1	QA1	PSY_Berth311_Convs	4 subsurface	CAS / Kelso	Acceptable	Acceptable	Acceptable	none	none		Acceptable
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat2	No	SW846 M.8270	SVOCs	QA1Cat2	QA1	PSY_Berth311_Convs	4 subsurface sediments	Pacific Environmental Laboratory / Beaverton	none	unknown	Acceptable	none	none		none
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat2, no QC data	No	(unreferenced)	Grain size & volatile solids	QA1Cat2	QA1	PSY_Berth311_Convs	11 subsurface sediments	USACE / Troutdale, OR	none	unknown				none	
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat2, no QC data	No	(unreferenced)	Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Ag & Zn)	QA1Cat2	QA1	PSY_Berth311_Convs	6 subsurface sediments	USACE / Troutdale, OR	none	unknown	Acceptable	none	none	none	
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat2, lack of QC data	No	(unreferenced)	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	PSY_Berth311_Convs	6 subsurface sediments	Pacific Environmental Laboratory / Beaverton	none	unknown	Acceptable	none	none		none
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat2	No	SW846 M.8270 (SIM)	PAHs & phenols	QA1Cat2	QA1	PSY_Berth311_Convs	6 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	All phenol hits qualify as nondetected "U"	none	none		none
Sediment Testing at PSY Berth 311	PSBTH311	PSBTH311	Cat2, lack of QC data	No	SW846 M.8240	VOCs	QA1Cat2	QA1	PSY_Berth311_Convs	6 subsurface sediments	Pacific Environmental Laboratory / Beaverton	none	unknown	Acceptable	none	none		none
Appendix D: Dames & Moore Data	PSYD&M97, WRD&M98	PSYD&M97, WRD&M98	Cat1	No	PSEP 1986 (AVS), SW846 M.9060 (TOC), ASTM D422 (GS)	acid volatile sulfides, TOC & grain size	QA2Cat1	QA2	DM_Convs	23 surface sediments	North Creek Analytical / Beaverton, OR	Acceptable	Acceptable	Acceptable	Acceptable MS	Acceptable	Acceptable	
Appendix D: Dames & Moore Data	PSYD&M97, WRD&M98	PSYD&M97, WRD&M98	Cat1	No	SW846 M.6010A (Cd, Cr, Cu, Fe, Mn, Ni, Ag, Zn, Ti), M.6020 (As, Pb, Sn), M.7471 (Hg)	Metals	QA2Cat1	QA2	DM_Metals	22 surface sediments	North Creek Analytical / Beaverton, OR	Acceptable	Acceptable	Acceptable	Acceptable MS	Acceptable	Acceptable	
Appendix D: Dames & Moore Data	PSYD&M97, WRD&M98	PSYD&M97, WRD&M98	Cat1	No	SW846 M.8081; extraction by M.3550 (sonication)	PCBs (Aroclors)	QA2Cat1	QA2	DM_PestPCB	19 surface sediments	North Creek Analytical / Beaverton, OR	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Appendix D: Dames & Moore Data	PSYD&M97, WRD&M98	PSYD&M97, WRD&M98	Cat1; bis(2-ethylhexyl) & dioctyl phthalates reported in MB and "B" qualified -	No	SW846 M.8270 (SIM); extraction by M.3550 (sonication)	6 phthalates & 16 PAHs	QA2Cat1	QA2	DM_SVOCs	19 surface sediments	North Creek Analytical / Beaverton, OR	Acceptable	Acceptable	Acceptable (some analytes reported)	Acceptable	Acceptable		Acceptable
Appendix D: Dames & Moore Data	PSYD&M97, WRD&M98	PSYD&M97, WRD&M98	Cat1	No	GC/FPD after Krone et al. 1989	TBT	QA2Cat1	QA2	DM_TBT	14 surface sediments	ToxScan	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Appendix D: Dames & Moore Data	PSYD&M97, WRD&M98	PSYD&M97, WRD&M98	Cat1	No	SW846 M.8260	VOCs	QA2Cat1	QA2	DM_VOCs	3 surface sediments	North Creek Analytical / Beaverton, OR	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Sediment Testing at PSY Dry Dock #3, Post Dredging (source unknown) and Sediment Testing at PSY Dry Dock #4, Post Dredging (source unknown)	PSYDD3	PSYDD3	Cat1	No	ASTM D422-63 & U.S.EPA 160.3	Grain size & total solids	QA1Cat1	QA1	PSY_Dry_Dock_Convs	9 subsurface sediments (Dry Dock 3)	North Creek Analytical / Beaverton	Acceptable	Acceptable				Acceptable	
Sediment Testing at PSY Dry Dock #3, Post Dredging (source unknown) and Sediment Testing at PSY Dry Dock #4, Post Dredging (source unknown)	PSYDD3	PSYDD3	Cat1	No	SW846 M.6010, 7041 (Sb), 7060 (As), 7131 (Cd), 7760 (Ag & 7471 (Hg)	Metals (Sb, As, Cd, Cr, Cu, Pb, Hg, Ni, Ag & Zn)	QA1Cat1	QA1	PSY_Dry_Dock_Metals	9 subsurface sediments (Dry Dock 3) [6 surface seds??]	North Creek Analytical / Beaverton	Acceptable	Acceptable	Acceptable	MS acceptable - some results qualified as	Acceptable	Acceptable	

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Sediment Testing at PSY Dry Dock #3, Post Dredging (source unknown) and Sediment Testing at PSY Dry Dock #4, Post Dredging (source unknown)	PSYDD3	PSYDD3	Cat1	No	SW846 M.8080	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	PSY_Dry_Dock_Pest PCB	6 subsurface sediments (Dry Dock 3)	North Creek Analytical / Beaverton	Acceptable	Acceptable	Acceptable	Acceptable	none		Acceptable
Sediment Testing at PSY Dry Dock #3, Post Dredging (source unknown) and Sediment Testing at PSY Dry Dock #4, Post Dredging (source unknown)	PSYDD3	PSYDD3	Cat1	No	SW846 M.8270	SVOCs	QA1Cat1	QA1	PSY_Dry_Dock_SVO Cs	9 subsurface sediments (Dry Dock 3)	North Creek Analytical / Beaverton	Acceptable	Acceptable	Acceptable	Acceptable - some low recoveries	none		Acceptable - one sample required all results qualified as
Sediment Testing at PSY Dry Dock #3, Post Dredging (source unknown) and Sediment Testing at PSY Dry Dock #4, Post Dredging (source unknown)	PSYDD3	PSYDD3	Cat1	No	GC/FPD (Krone et al. 1989)	TBT	QA1Cat1	QA1	PSY_Dry_Dock_TBT	6 subsurface sediments (Dry Dock 3)	ToxScan, Inc. / Watsonville, CA	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Sediment Testing at PSY Dry Dock #3, Post Dredging (source unknown) and Sediment Testing at PSY Dry Dock #4, Post Dredging (source unknown)	PSYDD3	PSYDD3	Cat1	No	SW846 M.8240	VOCs	QA1Cat1	QA1	PSY_Dry_Dock_VO Cs	6 subsurface sediments (Dry Dock 3)	North Creek Analytical / Beaverton	Acceptable	Acceptable	Acceptable	Acceptable	none		Acceptable
Sediment Testing at PSY Dry Dock #3, Post Dredging (source unknown) and Sediment Testing at PSY Dry Dock #4, Post Dredging (source unknown)	PSYDD4	PSYDD4	Cat1	No	ASTM D422-63 & U.S.EPA 160.3	Grain size & total solids	QA1Cat1	QA1	PSY_Dry_Dock_Con vs	8 surface sediments (Dry Dock 4)	CAS / Kelso	Acceptable	Acceptable				Acceptable - do not use triplicate result of very high fine sand.	
Sediment Testing at PSY Dry Dock #3, Post Dredging (source unknown) and Sediment Testing at PSY Dry Dock #4, Post Dredging (source unknown)	PSYDD4	PSYDD4	Cat1	No	SW846 M.8080 / 3550 (sonication)	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	PSY_Dry_Dock_Pest PCB	8 surface sediments (Dry Dock 4)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	none		Acceptable
Sediment Testing at PSY Dry Dock #3, Post Dredging (source unknown) and Sediment Testing at PSY Dry Dock #4, Post Dredging (source unknown)	PSYDD4	PSYDD4	Cat1	No	SW846 M.8270 (SIM)	phthalate esters, PAHs & phenols	QA1Cat1	QA1	PSY_Dry_Dock_SVO Cs	8 surface sediments (Dry Dock 4)	CAS / Kelso	Acceptable	Acceptable	Acceptable - all bis(2-ethylhexyl)phthal	Acceptable	none		Acceptable
Sediment Testing at PSY Dry Dock #3, Post Dredging (source unknown) and Sediment Testing at PSY Dry Dock #4, Post Dredging (source unknown)	PSYDD4	PSYDD4	Cat1	No	GC/FPD (Krone et al. 1989)	TBT	QA1Cat1	QA1	PSY_Dry_Dock_TBT	8 surface sediments (Dry Dock 4)	Battelle / Sequim	Acceptable	Potentially exceeded HTs - all data qualified as estimates ("J")	Acceptable	none	Acceptable		Acceptable
Sediment Testing at PSY Dry Dock #3, Post Dredging (source unknown) and Sediment Testing at PSY Dry Dock #4, Post Dredging (source unknown)	PSYDD4	PSYDD4	Cat1	No	SW846 M.8240	VOCs (7 analytes only)	QA1Cat1	QA1	PSY_Dry_Dock_VO Cs	8 surface sediments (Dry Dock 4)	CAS / Kelso	Acceptable	Acceptable	Acceptable	none	none		Acceptable
Sediment Testing at PSY Dry Dock #3, Post Dredging (source unknown) and Sediment Testing at PSY Dry Dock #4, Post Dredging (source unknown)	PSYDD4	PSYDD4	Cat2	No	U.S.EPA 200.8 & SW846 M.7471 (Hg)	Metals (Sb, As, Cr, Cu, Pb, Hg, Ni, Ag & Zn)	QA1Cat2	QA1	PSY_Dry_Dock_Meta ls	8 surface sediments (Dry Dock 4)	CAS / Kelso	Acceptable	Acceptable	Acceptable	none	none	Acceptable	
Portland Shipyard Sediment Investigation, Port of Portland and Cascade General, Inc. October 1, 1998.	PSYSEA98	PSYSEA98	Cat1; some results qual. as estimates due to low MS recoveries and high rep. variabilities.	No	EPA 200.8 (Sb, As, Cd, Cr, Cu, Pb, Ni, Ag & Zn), SW846 M.7471A (Hg) & EPA 1991 (AVS [M.6010 & 7470A])	Metals	QA2Cat1	QA2	PSYSEA_Metals	122 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable MS; low MS recov. for Sb with qual. as estimates.	Acceptable	Acceptable; some results qual. as estimates due to high variabilities (RPDs).	
Portland Shipyard Sediment Investigation, Port of Portland and Cascade General, Inc. October 1, 1998.	PSYSEA98	PSYSEA98	Cat1	No	SW846 M.8081 (chlor. Pest. & PCBs [Aroclors]) & M.8082 (PCBs [Aroclors])	Chlorin. pesticides & PCBs (Aroclors)	QA2Cat1	QA2	PSYSEA_PestPCB	103 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Portland Shipyard Sediment Investigation, Port of Portland and Cascade General, Inc. October 1, 1998.	PSYSEA98	PSYSEA98	Cat1; some results qual. as estimates due to out of range MS, LCS and surrogate recoveries.	No	SW846 M.8270C (SIM) & M.3550 (sonication)	SVOCs	QA2Cat1	QA2	PSYSEA_SVOCs	103 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable: bis(2-ethylhexyl)phthalate reported in MB - recommend "U"	Acceptable; large variabilities showing high and low recoveries.	Acceptable; large variabilities showing high and low recoveries.		Acceptable; low and high recoveries require qual. of results as estimates.
Portland Shipyard Sediment Investigation, Port of Portland and Cascade General, Inc. October 1, 1998.	PSYSEA98	PSYSEA98	Cat1; qual. as estimates when one surrogate shows <50% recovery.	No	GC/FPD (Krone et al., 1989)	TBT	QA2Cat1	QA2	PSYSEA_TBT	56 porewaters and 16 sub and surficial sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable; highly variable recoveries requiring qual. as estimates.
Portland Shipyard Sediment Investigation, Port of Portland and Cascade General, Inc. October 1, 1998.	PSYSEA98	PSYSEA98	Cat1	No	SW846 M.8260	VOCs	QA2Cat1	QA2	PSYSEA_VOCs	5 surface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Portland Shipyard Sediment Investigation, Port of Portland and Cascade General, Inc. October 1, 1998.	PSYSEA98	PSYSEA98	Cat1	No	ASTM D4129-82M (TOC), EPA 350.1 (NH_3) & EPA 1991 (AVS)	conventionals (TOC, NH_3 & acid volatile sulfides)	QA1Cat1	QA1	PSYSEA_Convs	129 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	
Reidel/Triangle Park 1997 Data	RIEDEL97	RIEDEL97	Cat1	No	ASTM M.4129-82, EPA M.160.3, ASTM M.D-422	Conventionals (TOC, total solids & grain size)	QA1Cat1	QA1	Reidel_Convs-rev	28 subsurface sediments	CAS / Kelso	Acceptable	Acceptable		MS acceptable	Acceptable	Acceptable	
Reidel/Triangle Park 1997 Data	RIEDEL97	RIEDEL97	Cat1	No	SW846 M.6010A & 7060A (As)	Metals (Cr, Cu, Pb & As)	QA1Cat1	QA1	Reidel_Metals	20 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
Reidel/Triangle Park 1997 Data	RIEDEL97	RIEDEL97	Cat1	No	SW846 M.8270 (SIM) / M.3545 (ASE) & M.3550 (sonication)	PAHs	QA1Cat1	QA1	Reidel_SVOCs	8 subsurface sediments	CAS / Kelso	Acceptable	Two samples extracted 30 days after the max recommended HT - all associated results require qualification as estimates ("J"). Substitute J for H qual. data.	Acceptable	Generally low recoveries - requiring qual. as estimates for many PAHs.	Acceptable		Acceptable - generally low recoveries
Reidel/Triangle Park 1997 Data	RIEDEL97	RIEDEL97	Cat1	No	GC/FPD (Krone et al. 1989)	TBT	QA1Cat1	QA1	Reidel_TBT	20 subsurface sediments	CAS / Kelso	Acceptable	Four samples extracted 30 days after the max recommended HT - all associated results require qualification as estimates ("J"). Substitute J for H qual. data.	Acceptable	Acceptable	Acceptable		Acceptable
TOSCO Willamette TPT Sediment Investigation	TOSCO99	TOSCO99	Cat1	No	SW846 M.9030 (sulfides), EPA 350.1/350.3 (NH_3) & ASTM D422 (GS)	conventionals (total sulfides, NH_3 & grain size)	QA2Cat1	QA2	TOSCO_Convs1	4 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
TOSCO Willamette TPT Sediment Investigation	TOSCO99	TOSCO99	Cat1	No	SW846 M.6010B (Sb, Be, Cd, Cr, Cu, Pb, Ni, Ag & Zn); M.7060A (As); M.7740 (Se); M.7841 (Tl); M.7471A (Hg)	Metals	QA2Cat1	QA2	TOSCO_Metals1	3 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
TOSCO Willamette TPT Sediment Investigation	TOSCO99	TOSCO99	Cat1	No	SW846 M.8082	PCBs (Aroclors)	QA2Cat1	QA2	TOSCO_PCBs1	3 subsurface	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
TOSCO Willamette TPT Sediment Investigation	TOSCO99	TOSCO99	Cat1	No	SW846 M.8081; extraction by M.3550B (sonication)	Chlorinated pesticides	QA2Cat1	QA2	TOSCO_Pest1	3 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
TOSCO Willamette TPT Sediment Investigation	TOSCO99	TOSCO99	Cat1	No	SW846 M.8270C (SIM); extraction by M.3550B (sonication)	SVOCs	QA2Cat1	QA2	TOSCO_SVOCs1	3 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
USGS Water-Resources Investigations Report 97-4082-D - Dioxins and Furans in Bed Sediment and Fish Tissue of the Willamette Basin, 1992-95	WBWRIR98		Cat2; lack of QC data	No	SW846 M.8290	chlorinated dioxins & furans	NACat2	NA		*(none)*	finfish from 8 stations	Quanterra Environmental Services / W.	??	??	??	??	??	
USGS Water-Resources Investigations Report 97-4082-D - Dioxins and Furans in Bed Sediment and Fish Tissue of the Willamette Basin, 1992-95	WBWRIR98		Cat2; lack of QC data	No	SW846 M.8290	chlorinated dioxins & furans	NACat2	NA		*(none)*	finfish from 8 stations	Quanterra Environmental Services / W.	??	??	??	??	??	
Expanded Preliminary Assessment Data Report - Union Pacific Railroad Albina Yard (11/00) by Jacobs Engineering	WLCAYH00		Cat 1	Yes - Data packages received	NWTPH-Dx	TPH	NACat2	NA	*(none)*	8 sediments, 2 soils (8/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable	Acceptable

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Expanded Preliminary Assessment Data Report - Union Pacific Railroad Albina Yard (11/00) by Jacobs Engineering	WLCAYH00		Cat 1	Yes - Data packages received	SW846 M.6010B & 7471A (Hg)	Metals (Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Ni, K, Se, Ag, Na, Tl, V, Zn, Hg)	NACat2	NA	*(none)*	9 sediments, 2 soils (8/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Expanded Preliminary Assessment Data Report - Union Pacific Railroad Albina Yard (11/00) by Jacobs Engineering	WLCAYH00		Cat 1	Yes - Data packages received	SW846 M.8270 (SIM)	SVOCs	NACat2	NA	*(none)*	8 sediments, 2 soils (8/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Expanded Preliminary Assessment Data Report - Union Pacific Railroad Albina Yard (11/00) by Jacobs Engineering	WLCAYH00		Cat 1	Yes - Data packages received	SW846 8082	PCBs (as Aroclors)		NA		8 sediments, 2 soils (8/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Expanded Preliminary Assessment Data Report - Union Pacific Railroad Albina Yard (11/00) by Jacobs Engineering	WLCAYH00		Cat 1	Yes - Data packages received	GC/FPD (Krone et al. 1989)	TBT	NACat2	NA	*(none)*	8 sediments (8/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Expanded Preliminary Assessment Data Report - Union Pacific Railroad Albina Yard (11/00) by Jacobs Engineering	WLCAYH00		Cat 1	Yes - Data packages received	SW846 M.9060	TOC	NACat2	NA	*(none)*	8 sediments (8/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Results of Bioassay Analyses - Cargill Irving Elevator Terminal USACE Permit 95-1063 and DSL Permit RP3158 (10/1/01) by Harding ESE, Inc.	WLCCIF01		Cat2 due to no QC data	No	unreferenced	Grain size	NACat2	NA	*(none)*	3 sediments (6/23/01)	unknown	none	unknown					
Results of Bioassay Analyses - Cargill Irving Elevator Terminal USACE Permit 95-1063 and DSL Permit RP3158 (10/1/01) by Harding ESE, Inc.	WLCCIF01		Cat2 due to no QC data	No	unreferenced	Grain size	NACat2	NA	*(none)*	3 sediments (6/23/01)	unknown	none	unknown					
Results of Sediment Sampling & Analysis, Cargill Irving Elevator Terminal (8/3/01) by Harding ESE	WLCCIF01		Cat1	No	PSEP, Plumb & ASTM D422	Conventionals (TOC, total solids, grain size, NH3, & total sulfides)	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	5 sediment cores (6/29/01)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
Results of Sediment Sampling & Analysis, Cargill Irving Elevator Terminal (8/3/01) by Harding ESE	WLCCIF01		Cat1	No	U.S. EPA 200.8 & 7471A (Hg)	Metals (Sb, As, Cd, Cr, Cu, Pb, Hg, Ni, Ag & Zn)	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	5 sediment cores (6/29/01)	CAS / Kelso	Acceptable	Acceptable	Acceptable (some hits - qual.	MS acceptable	Acceptable	Acceptable	
Results of Sediment Sampling & Analysis, Cargill Irving Elevator Terminal (8/3/01) by Harding ESE	WLCCIF01		Cat1	No	GC/FPD (Krone et al. 1989)	TBT	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	5 sediment cores (6/29/01)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable (some low recoveries requiring some qual. as estimates)
Results of Sediment Sampling & Analysis, Cargill Irving Elevator Terminal (8/3/01) by Harding ESE	WLCCIF01		Cat1, with qualification as indicated.	No	SW846 M.8270C (SIM)	SVOCs	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	5 sediment cores (6/29/01)	CAS / Kelso	Acceptable	HT exceeded by 8 days - qual. all hits as estimated "J".	High phenol - all phenol hits as nondetected with "U".	Acceptable	2,4-dimethylphenol very low recovery - all "U" replace with "R" (unusable), and hits as estimated		Acceptable
Results of Sediment Sampling & Analysis, Cargill Irving Elevator Terminal (8/3/01) by Harding ESE	WLCCIF01		Cat1, with qualification as indicated.	No	SW846 M.8081A / 8082	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	5 sediment cores (6/29/01)	CAS / Kelso	Acceptable	Acceptable	Acceptable	dieldrin not recovered - "R" qualify all dieldrin nondetects.	Acceptable		Acceptable
Results of Sediment Sampling & Analysis, Cargill Irving Elevator Terminal (8/3/01) by Harding ESE	WLCCIF01		Cat1	No	SW846 M.8260B	VOCs	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	5 sediment cores (6/29/01)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Chevron Willbridge Terminal Dock Sediment Sampling (06/27/01), PNG Environmental	WLCCPF01		Cat1	No	SW846 M.8260B	VOCs	2	QA1	*(Lab report - JMC@SEA review, 04/16/02)*	15 sediments	North Creek Analytical, Inc.	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Chevron Willbridge Terminal Dock Sediment Sampling (06/27/01), PNG Environmental	WLCCPF01		Cat1	No	SW846 M.8260B	VOCs	2	QA1	*(Lab report - JMC@SEA review, 04/16/02)*	15 sediments	North Creek Analytical, Inc.	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Chevron Willbridge Terminal Dock Sediment Sampling (06/27/01), PNG Environmental	WLCCPF01		Cat1	No	SW846 M.8270C	SVOCs	2		*(Lab report - JMC@SEA review, 04/16/02)*	15 sediments	North Creek Analytical, Inc.	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Chevron Willbridge Terminal Dock Sediment Sampling (06/27/01), PNG Environmental	WLCCPF01		Cat1	No	SW846 M.8270C (SIM)	PAHs	2	QA1	*(Lab report - JMC@SEA review, 04/16/02)*	15 sediments	North Creek Analytical, Inc.	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Chevron Willbridge Terminal Dock Sediment Sampling (06/27/01), PNG Environmental	WLCCPF01		Cat1	No	SW846 M.8081A	Chlorin. Pesticides	2	QA1, all data estimate "J" due to CCV non conformance	*(Lab report - JMC@SEA review, 04/16/02)*	15 sediments	North Creek Analytical, Inc.	Acceptable	Acceptable	Acceptable	Acceptable, 4,4'-DDT %R>40-160 no flag	Acceptable, Aldrin RPD>20 no flag	Acceptable	Acceptable
Chevron Willbridge Terminal Dock Sediment Sampling (06/27/01), PNG Environmental	WLCCPF01		Cat1	No	SW846 M.8082	PCBs (Aroclors)	2	QA1	*(Lab report - JMC@SEA review, 04/16/02)*	15 sediments	North Creek Analytical, Inc.	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Chevron Willbridge Terminal Dock Sediment Sampling (06/27/01), PNG Environmental	WLCCPF01		Cat1	No	NWTPH-Dx	diesel & lube oil	2	QA1	*(Lab report - JMC@SEA review, 04/16/02)*	15 sediments	North Creek Analytical, Inc.	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Chevron Willbridge Terminal Dock Sediment Sampling (06/27/01), PNG Environmental	WLCCPF01		Cat1	No	SW846 M.6020 & 7471 (Hg)	Metals (Sb, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn, Hg)	2	QA1	*(Lab report - JMC@SEA review, 04/16/02)*	15 sediments	North Creek Analytical, Inc.	Acceptable	Acceptable	Acceptable	Acceptable, Dup RPD for Sb > 20 matrix effects "J", Zn conc<MRL "J"	Acceptable, SRM = Cd & Pb < MRL "J"	Acceptable	none
Chevron Willbridge Terminal Dock Sediment Sampling (06/27/01), PNG Environmental	WLCCPF01		Cat1	No	EPA 160.3	Total Solids	2	QA1	*(Lab report - JMC@SEA review, 04/16/02)*	15 sediments	North Creek Analytical, Inc.	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	none
Chevron Willbridge Terminal Dock Sediment Sampling (06/27/01), PNG Environmental	WLCCPF01		Cat1	No	EPA 160.4	Total Volatile Solids	2	QA1	*(Lab report - JMC@SEA review, 04/16/02)*	15 sediments	North Creek Analytical, Inc.	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	none
Chevron Willbridge Terminal Dock Sediment Sampling (06/27/01), PNG Environmental	WLCCPF01		Cat1	No	EPA 350.3	Ammonia	2	QA1	*(Lab report - JMC@SEA review, 04/16/02)*	15 sediments	North Creek Analytical, Inc.	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	none
Chevron Willbridge Terminal Dock Sediment Sampling (06/27/01), PNG Environmental	WLCCPF01		Cat1	No	EPA 9030	Sulfide	2	QA1	*(Lab report - JMC@SEA review, 04/16/02)*	15 sediments	North Creek Analytical, Inc.	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	none
Polychlorinated Biphenyl and Trace-Metal Concentrations in Columbia River and Willamette Harbor Bottom Sediment (5/2/87) by ACOE/Portland	WLCDRE87		Cat2	No	Compilation of Previous Studies (see Fuhrer 1989). Methods not reported.	Trace Metals, pesticides/PCBs, SVOCs, grain size, TOC	2	none	*(Data report - DMD review, 12/01)*	sediment and elutriates	unknown	none	none	none	none	none	none	none
Preliminary Assessment and Dredging Sampling Results, Goldendale Alumina Unloading Facility (3/01) by CH2MHill	WLCGAF00		Cat1	No	ASTM D4129-82, 160.3M, 160.4M, 350.1M & PSEP 1986	conventionals (TOC, total solids, total vol. solids, NH_3, & total sulfides)	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	9 surface sediments (6/00 - phase I)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
Preliminary Assessment and Dredging Sampling Results, Goldendale Alumina Unloading Facility (3/01) by CH2MHill	WLCGAF00		Cat1	No	U.S. EPA 200.8, 6010B (Al) & 7471A (Hg)	Metals (Al, Sb, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn & Hg)	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	9 surface sediments (6/00 - phase I)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable (Sb results estimates with "J" qualifier code)	Acceptable	Acceptable	
Preliminary Assessment and Dredging Sampling Results, Goldendale Alumina Unloading Facility (3/01) by CH2MHill	WLCGAF00		Cat1	No	SW846 M.8081A / 8082	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	9 surface sediments (6/00 - phase I)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Preliminary Assessment and Dredging Sampling Results, Goldendale Alumina Unloading Facility (3/01) by CH2MHill	WLCGAF00		Cat1	No	SW846 M.8260B	VOCs	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	9 surface sediments (6/00 - phase I)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable (generally low recoveries)	Acceptable		Acceptable

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Preliminary Assessment and Dredging Sampling Results, Goldendale Alumina Unloading Facility (3/01) by CH2MHill	WLCGAF00		Cat1	No	SW846 M.8270 (SIM)	SVOCs	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	9 surface sediments (6/00 - phase I)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable (generally low recoveries)
Preliminary Assessment and Dredging Sampling Results, Goldendale Alumina Unloading Facility (3/01) by CH2MHill	WLCGAF00		Cat1 (reported in terms of cation conc.)	No	GC/FPD (Krone et al. 1989)	TBT	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	9 surface sediments (6/00 - phase I)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Preliminary Assessment and Dredging Sampling Results, Goldendale Alumina Unloading Facility (3/01) by CH2MHill	WLCGAF00		Cat1	No	SW846 M.8270C (SIM)	PAHs	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	9 surface sediments (12/00 - phase II)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Expanded Preliminary Assessment for the Linnton Site (Georgia-Pacific) 8/00 by CH2MHill	WLCGPE00		Cat2; no QC data	No - request for additional back-up made	SW846 M.8270M (SIM)	PAHs & phenols	NACat2	NA	*(none)*	13 surface sediment & 12 core composites	CH2MHill / Corvallis	??	??	??	??	??	??	??
Expanded Preliminary Assessment for the Linnton Site (Georgia-Pacific) 8/00 by CH2MHill	WLCGPE00		Cat2; no QC data	No - request for additional back-up made	NWTPH-Dx	TPH	NACat2	NA	*(none)*	13 surface sediment & 12 core composites	CH2MHill / Corvallis	??	??	??	??	??	??	??
Expanded Preliminary Assessment for the Linnton Site (Georgia-Pacific) 8/00 by CH2MHill	WLCGPE00		Cat2; no QC data	No - request for additional back-up made	ASTM E777-81	TOC	NACat2	NA	*(none)*	13 surface sediment & 12 core composites	CH2MHill / Corvallis	??	??	??	??	??	??	
Expanded Preliminary Assessment for the Linnton Site (Georgia-Pacific) 8/00 by CH2MHill	WLCGPE00		Cat2; no QC data	No - request for additional back-up made	SW846 M.6010B, 7471A(Hg)	Metals (Sb, As, Ba, Be, Cd, Cr, Co, Pb, Hg, Ni, Se, V & Zn)	NACat2	NA	*(none)*	13 surface sediment & 12 core composites	CH2MHill / Corvallis	??	??	??	??	??	??	
Expanded Preliminary Assessment for the Linnton Site (Georgia-Pacific) 8/00 by CH2MHill	WLCGPE00		Cat2; no QC data	No - request for additional back-up made	ASTM D422	Grain size	NACat2	NA	*(none)*	13 surface sediment & 12 core composites	CAS / Kelso	??	??				??	
Phase I Remedial Investigation Summary Report & Preliminary Analysis of Soil Data - Volume 2 (10/9/98), Hahn & Assoc.	WLCGSA96		Cat 1	Yes - Laboratory data packages received	"ODEQ" method	TPH-G	nonCat	none	*(none)*	11 sediment samples (1/96)	NET Portland	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Phase I Remedial Investigation Summary Report & Preliminary Analysis of Soil Data - Volume 2 (10/9/98), Hahn & Assoc.	WLCGSA96		Cat 1	Yes - Laboratory data packages received	"ODEQ" method / 418.1M	TPH-D	nonCat	none	*(none)*	11 sediment samples (1/96)	NET Portland	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Phase I Remedial Investigation Summary Report & Preliminary Analysis of Soil Data - Volume 2 (10/9/98), Hahn & Assoc.	WLCGSA96		Cat 1	Yes - Laboratory data packages received	SW846 M.8270 (SIM)	PAHs	nonCat	none	*(none)*	11 sediment samples (1/96)	NET Portland	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Phase I Remedial Investigation Summary Report & Preliminary Analysis of Soil Data - Volume 2 (10/9/98), Hahn & Assoc.	WLCGSA96		Cat 1	Yes - Laboratory data packages received	SW846 M.8020	BTEX	nonCat	none	*(none)*	11 sediment samples (1/96)	NET Portland	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Phase I Remedial Investigation Summary Report & Preliminary Analysis of Soil Data - Volume 2 (10/9/98), Hahn & Assoc.	WLCGSA96		Cat 1	Yes - Laboratory data packages received	EPA 415.1	TOC	nonCat	none	*(none)*	11 sediment samples (1/96)	NET Portland	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable	
Phase I Remedial Investigation Summary Report & Preliminary Analysis of Soil Data - Volume 2 (10/9/98), Hahn & Assoc.	WLCGSA96		Cat 1	Yes - Laboratory data packages received	SW846 M.6010	Pb only	nonCat	none	*(none)*	11 sediment samples (1/96)	NET Portland	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		
NW Natural "Gasco" Site, Draft Screening Level Nearshore Source Control Evaluation Results Report. July 2001	WLCGSD01		Cat1	No	PSEP (1986; TOC), EPA 160.3 (solids) & EPA 9010B (CN)	conventionals (TOC, total solids & cyanide)	QA2Cat1	QA2	*(K. Gunderson, 6/01)*	27 surface & subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
NW Natural "Gasco" Site, Draft Screening Level Nearshore Source Control Evaluation Results Report. July 2001	WLCGSD01		Cat1; some results qual. as estimates due to high variability	No	SW846 M.6020	Metals (As, Cr, Cu, Pb, Ni & Zn)	QA2Cat1	QA2	*(K. Gunderson, 6/01)*	27 surface & subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
NW Natural "Gasco" Site, Draft Screening Level Nearshore Source Control Evaluation Results Report. July 2001	WLCGSD01		Cat1	No	SW846 M.8270C (SIM)	PAHs only	QA2Cat1	QA2	*(K. Gunderson, 6/01)*	27 surface & subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable (spike levels generally less than native levels)	Acceptable (some results qual. as estimates due to low recoveries		Acceptable
NW Natural "Gasco" Site, Draft Screening Level Nearshore Source Control Evaluation Results Report. July 2001	WLCGSD01		Cat1	No	SW846 M.8021B	BTEX	QA2Cat1	QA2	*(K. Gunderson, 6/01)*	27 surface & subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Environmental Site Assessment GATX Terminals Corporation KHM Environmental Management December 1999	WLCGXV99		Cat 1	--	TPH - NW TPH-Gx - Dx and - oil; EPA 8021B for BTEX; EPA 8260B for VOCs	TPH & BTEX & PAHs & VOCs				32 soil samples; 5 GW BTEX; 3 GW VOCs	NCA Beaverton	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Environmental Site Assessment GATX Terminals Corporation KHM Environmental Management December 1999	WLCGXV99		Cat 1	--	EPA 6000/7000 for Metals	Metals				14 surface soil samples; 8 sediment samples; 5 groundwater samples	NCA Beaverton	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	
Environmental Site Assessment GATX Terminals Corporation KHM Environmental Management December 1999	WLCGXV99		Cat 1	--	EPA 8082/8081A	Pesticides /PCB Aroclors				8 sediment samples	NCA Beaverton	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Environmental Site Assessment GATX Terminals Corporation KHM Environmental Management December 1999	WLCGXV99		Cat 1	--	PSEP, APHA/USEPA	Grain Size, TOC, Ammonia				8 sediment samples	NCA Beaverton	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable	
Environmental Site Assessment GATX Terminals Corporation KHM Environmental Management December 1999	WLCGXV99		Cat 1	--	EPA 8270; EPA 8270-SIM for PAHs	SVOCs				8 sediment samples; 4 GW PAHs	NCA Beaverton	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
McCormick & Baxter Creosoting Co., Portland; 10/99 & 1/01	WLCMBJ99, WLCMBA01		Cat 1	Yes - Categorization revised to be consistent with other data sets.	EPA 200.9	arsenic	NACat2	NA	*(Sediment Remedial Design Data Summary Report, Feb. 2001; E&E)*	43 surface sediments (1/00)	Oregon Analytical Labs / Beaverton	Acceptable	Acceptable	Not available - only cali blanks	MS acceptable	Acceptable	Acceptable	
McCormick & Baxter Creosoting Co., Portland; 10/99 & 1/01	WLCMBJ99, WLCMBA01		Cat1	No	ASTM D422-63	Grain size	NACat1	NA	*(Sediment Remedial Design Data Summary Report, Feb. 2001; E&E)*	43 surface sediments (10/99)	PSI / Portland	Acceptable	Acceptable				none	
McCormick & Baxter Creosoting Co., Portland; 10/99 & 1/01	WLCMBJ99, WLCMBA01		Cat1	No	SW846 M.8270 (SIM)	PAHs & pentachlorophenol	NACat1	NA	*(Sediment Remedial Design Data Summary Report, Feb. 2001; E&E)*	43 surface sediments (1/00)	Oregon Analytical Labs / Beaverton	Acceptable	Acceptable	Acceptable	Acceptable			Acceptable
McCormick & Baxter Creosoting Co., Portland; 10/99 & 1/01	WLCMBJ99, WLCMBA01		Cat1	No	SW846 M.8290	chlorinated dioxins & furans	NACat1	NA	*(Sediment Remedial Design Data Summary Report, Feb. 2001; E&E)*	43 surface sediments (1/00)	Pace Analytical / Minneapolis	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
McCormick & Baxter Creosoting Co., Portland; 10/99 & 1/01	WLCMBJ99, WLCMBA01		Cat1	No	ASTM D422	Grain size	NACat1	NA	*(Sediment Remedial Design Data Summary Report, Feb. 2001; E&E)*	30 surface sediments (1/01)	Rosa Env. & Geotech / Seattle	Acceptable	Acceptable				Acceptable	
McCormick & Baxter Creosoting Co., Portland; 10/99 & 1/01	WLCMBJ99, WLCMBA01		Cat1	No	SW846 M.8270 (SIM)	PAHs & pentachlorophenol	NACat1	NA	*(Sediment Remedial Design Data Summary Report, Feb. 2001; E&E)*	30 surface sediments (2/01)	North Creek Analytical	Acceptable	Acceptable	Acceptable	Acceptable			Acceptable
February 2002 3 sediment samples collected downstream of two stormwater outfalls adjacent to	WLCMCB02		Cat 1	No	EPA 6000/7000	Metals (Al, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl,		none		3 sediment samples (2/02)	North Creek Analytical / Portland	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	
February 2002 3 sediment samples collected downstream of two stormwater outfalls adjacent to	WLCMCB02		Cat 1	No	EPA 8270-M SIM	PAHs		none		3 sediment samples (2/02)	North Creek Analytical / Portland	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
February 2002 3 sediment samples collected downstream of two stormwater outfalls adjacent to	WLCMCB02		Cat 1	No	PSEP	Organotins		none		3 sediment samples (2/02)	Severn Trent Laboratory/Seattle	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Expanded Preliminary Assessment Data Report - Marine Finance Site, Portland (11/00) by Jacobs	WLCMFH00		Cat 1	Yes - Received Laboratory Data Packages	NWTPH-Dx	TPH	NACat2	None	*(none)*	11 sediments (8/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable	Acceptable
Expanded Preliminary Assessment Data Report - Marine Finance Site, Portland (11/00) by Jacobs	WLCMFH00		Cat 1	Yes - Received Laboratory Data Packages	SW846 Method 8082	PCBs (as Aroclors)	NACat2	None	*(none)*	9 sediments (8/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Expanded Preliminary Assessment Data Report - Marine Finance Site, Portland (11/00) by Jacobs	WLCMFH00		Cat 1	Yes - Received Laboratory Data Packages	Krone	TBT	NACat2	None	*(none)*	11 sediments (8/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Expanded Preliminary Assessment Data Report - Marine Finance Site, Portland (11/00) by Jacobs	WLCMFH00		Cat 1	Yes - Received Laboratory Data Packages	ASTM D4129-82M	TOC	NACat2	None	*(none)*	8 sediments (8/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	
Expanded Preliminary Assessment Data Report - Marine Finance Site, Portland (11/00) by Jacobs	WLCMFH00		Cat 1	Yes - Received Laboratory Data Packages	SW846 6020, 7471	Metals (Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, Zn)		None		11 sediments (8/00)	CAS/Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	
Expanded Preliminary Assessment Data Report - Marine Finance Site, Portland (11/00) by Jacobs	WLCMFH00		Cat 1	Yes - Received Laboratory Data Packages	EPA 8270 SIM	SVOCs	NACat2	None	*(none)*	11 sediments (8/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Lab Data for Phase 1 Data Evaluation & Phase 2 Work Planning for City of Portland Outfall 18	WLCOFH02		Cat 1	--	EPA 8270C	SVOCs				9 sediments (8/02)	Severn Trent Laboratory/Seattle	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Lab Data for Phase 1 Data Evaluation & Phase 2 Work Planning for City of Portland Outfall 18	WLCOFH02		Cat 1	--	EPA 8151M	Chlorinated Herbicides				9 sediments (8/02)	Severn Trent Laboratory/Seattle	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Lab Data for Phase 1 Data Evaluation & Phase 2 Work Planning for City of Portland Outfall 18	WLCOFH02		Cat 1	--	EPA 8081	Pesticides				9 sediments (8/02)	Severn Trent Laboratory/Seattle	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Lab Data for Phase 1 Data Evaluation & Phase 2 Work Planning for City of Portland Outfall 18	WLCOFH02		Cat 1	--	EPA 6010B (Al) and 6020	Metals (Al, Sb, As, Cd, Cr, Cu, Pb, Ni, Se, Ag, Zn)				9 sediments (8/02)	Severn Trent Laboratory/Seattle	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	
Lab Data for Phase 1 Data Evaluation & Phase 2 Work Planning for City of Portland Outfall 18	WLCOFH02		Cat 2	No replicates	ASTM D422	Grain Size				10 sediments (8/02)	Severn Trent Laboratory/Burlington	Acceptable	Acceptable					
Lab Data for Phase 1 Data Evaluation & Phase 2 Work Planning for City of Portland Outfall 18	WLCOFH02		Cat 1	--	NWTPH-Dx	TPH				9 sediments (8/02)	CH2M Hill Corvallis	Acceptable	Acceptable	Acceptable		Acceptable		Acceptable
Lab Data for Phase 1 Data Evaluation & Phase 2 Work Planning for City of Portland Outfall 18	WLCOFH02		Cat 1	--	EPA 8082/8081A	PCBs (as Aroclors)				9 sediments (8/02)	CH2M Hill Corvallis	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Lab Data for Phase 1 Data Evaluation & Phase 2 Work Planning for City of Portland Outfall 18	WLCOFH02		Cat 2	No lab duplicate or replicates identified in data package	EPA 7471A	Mercury				9 sediments (8/02)	CH2M Hill Corvallis	Acceptable	Acceptable	Calibration Blanks Acceptables		Acceptable		
Lab Data for Phase 1 Data Evaluation & Phase 2 Work Planning for City of Portland Outfall 18	WLCOFH02		Cat 1	--	ASTM E-777	TOC				9 sediments (8/02)	CH2M Hill Corvallis	Acceptable	Acceptable	Acceptable		Acceptable		
Lab Data for City of Portland Outfall M-1	WLCOFH02		Cat 1	--	EPA 8270C	SVOCs				10 sediments (8/02)	Severn Trent Laboratory/Seattle	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Lab Data for City of Portland Outfall M-1	WLCOFH02		Cat 1	--	EPA 8151M	Chlorinated Herbicides				10 sediments (8/02)	Severn Trent Laboratory/Seattle	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Lab Data for City of Portland Outfall M-1	WLCOFH02		Cat 1	--	EPA 8081	Pesticides				10 sediments (8/02)	Severn Trent Laboratory/Seattle	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Lab Data for City of Portland Outfall M-1	WLCOFH02		Cat 1	--	EPA 6010B (Al) and 6020	Metals (Al, Sb, As, Cd, Cr, Cu, Pb, Ni, Se, Ag, Zn)				10 sediments (8/02)	Severn Trent Laboratory/Seattle	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	
Lab Data for City of Portland Outfall M-1	WLCOFH02		Cat 2	Grain Size data referenced in cover letter but not appended to lab data package.	ASTM D422-PSEP	Grain Size				3 sediments (8/02)	STL Burlington							
Lab Data for City of Portland Outfall M-1	WLCOFH02		Cat 1	--	NWTPH-Dx	TPH				10 sediments (8/02)	CH2M Hill Corvallis	Acceptable	Acceptable	Acceptable		Acceptable		Acceptable
Lab Data for City of Portland Outfall M-1	WLCOFH02		Cat 1	--	EPA 8082/8081A	PCBs (as Aroclors)				10 sediments (8/02)	CH2M Hill Corvallis	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Lab Data for City of Portland Outfall M-1	WLCOFH02		Cat 1	--	EPA 7471A	Mercury				10 sediments (8/02)	CH2M Hill Corvallis	Acceptable	Acceptable	Calibration Blanks Acceptables		Acceptable	Acceptable	
Lab Data for City of Portland Outfall M-1	WLCOFH02		Cat 1	--	ASTM E-777	TOC				10 sediments (8/02)	CH2M Hill Corvallis	Acceptable	Acceptable	Acceptable		Acceptable		
Pre-Remedial Investigation Field Activities Data Report, Oregon Steel Mills, Inc. 2/01 by Exponent	WLCOSJ00		Cat1	No	SW846 M.8270C (SIM)	SVOCs	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	16 surface sediments (10/10/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Pre-Remedial Investigation Field Activities Data Report, Oregon Steel Mills, Inc. 2/01 by Exponent	WLCOSJ00		Cat1	No	SW846 M.8082	PCBs (as Aroclors)	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	16 surface sediments (10/10/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Pre-Remedial Investigation Field Activities Data Report, Oregon Steel Mills, Inc. 2/01 by Exponent	WLCOSJ00		Cat1	No	SW846 M.8015B	TPH	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	16 surface sediments (10/10/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Pre-Remedial Investigation Field Activities Data Report, Oregon Steel Mills, Inc. 2/01 by Exponent	WLCOSJ00		Cat1	No	SW846 6010B, 7060A (As), 7740 (Se), 7841 (Tl) &7470A (Hg)	Metals (Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl & Zn)	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	16 surface sediments (10/10/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
Pre-Remedial Investigation Field Activities Data Report, Oregon Steel Mills, Inc. 2/01 by Exponent	WLCOSJ00		Cat1	No	ASTM D4129-82M & PSEP 1986	TOC & grain size	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	16 surface sediments (10/10/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable		Acceptable	
Rose Festival Moorage / Front Ave. Seawall - Sediment Sampling & Analysis Report; AGI 7/95	WLCRFE95		Cat2	No	ASTM D422	Grain size	QA1Cat2	QA1	*(Lab report - DMD review, 12/01)*	5 subsurface composite sediments (5/95)	(unknown)	none						
Rose Festival Moorage / Front Ave. Seawall - Sediment Sampling & Analysis Report; AGI 7/95	WLCRFE95		Cat 1	Yes - MS/MSD, Replicate, Surrogate Documention Found	SW846 M.8080; extraction by M.3550	Chlorin Pest. & PCBs (Aroclors)	QA1Cat2	QA1	*(Lab report - DMD review, 12/01)*	5 subsurface composite sediments (5/95)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable
Rose Festival Moorage / Front Ave. Seawall - Sediment Sampling & Analysis Report; AGI 7/95	WLCRFE95		Cat1	No	ASTM D4129-82	TOC	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	5 subsurface composite sediments (5/95)	CAS / Kelso	Acceptable	Acceptable	Acceptable			Acceptable	
Rose Festival Moorage / Front Ave. Seawall - Sediment Sampling & Analysis Report; AGI 7/95	WLCRFE95		Cat1	No	SW846 M.6010A & EPA 200.8 (As, Cr, Cd, Cu, Pb, Ni, Ag, Zn); M.7470 (Hg)	Metals	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	5 subsurface composite sediments (5/95)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable			
Rose Festival Moorage / Front Ave. Seawall - Sediment Sampling & Analysis Report; AGI 7/95	WLCRFE95		Cat1	No	SW846 M. 8310; extraction by M. 3540 / 3550	PAHs only	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	5 subsurface composite sediments (5/95)	CAS / Kelso	Acceptable	Acceptable	Acceptable				Acceptable
Rose Festival Moorage / Front Ave. Seawall - Sediment Sampling & Analysis Report; AGI 7/95	WLCRFE95		Cat1	No	GC/FPD & GC/MS (SIM) (Krone et al., 1989)	TBT	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	5 subsurface composite sediments (5/95)	CAS / Kelso	Acceptable	Acceptable	Acceptable		Acceptable		Acceptable
Rose Festival Moorage / Front Ave. Seawall - Sediment Sampling & Analysis Report; AGI 7/95	WLCRFE95		Cat2	No	ASTM D422	Grain size	QA1Cat2	QA1	*(Lab report - DMD review, 12/01)*	5 subsurface composite sediments (5/95)	(unknown)	none						
Baseline Sediment Characterization In-Water Clear Zone Sampling Results, Ross Island Lagoon (1/24/00) by Landau (P. Stoltz & J. Wilson)	WLCRIJ99		Cat1	No	SW846 M.6020 (Sb, Ag), 200.8 & 7471A (Hg)	Metals (Sb, Ag, As, Cd, Cr, Cu, Pb, Ni, Zn, Hg)	QA1Cat1	QA1	*EcoChem (1/24/00)*	12 sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
Baseline Sediment Characterization In-Water Clear Zone Sampling Results, Ross Island Lagoon (1/24/00) by Landau (P. Stoltz & J. Wilson)	WLCRIJ99		Cat1	No	SW846 M.8081A / 8082	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	*EcoChem (1/24/00)*	12 sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Baseline Sediment Characterization In-Water Clear Zone Sampling Results, Ross Island Lagoon (1/24/00) by Landau (P. Stoltz & J. Wilson)	WLCRIJ99		Cat1	No	GC/FPD (Krone et al. 1989)	TBT	QA1Cat1	QA1	*EcoChem (1/24/00)*	12 seds. & 4 sed. porewaters	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable			Acceptable
Baseline Sediment Characterization In-Water Clear Zone Sampling Results, Ross Island Lagoon (1/24/00) by Landau (P. Stoltz & J. Wilson)	WLCRIJ99		Cat1	No	SW846 M.8270 (SIM)	SVOCs	QA1Cat1	QA1	*EcoChem (1/24/00)*	12 sediments	CAS / Kelso	Acceptable	Acceptable	Some detects - data qual. appropriately	Acceptable			
Baseline Sediment Characterization In-Water Clear Zone Sampling Results, Ross Island Lagoon (1/24/00) by Landau (P. Stoltz & J. Wilson)	WLCRIJ99		Cat1	No	PSEP	TOC	QA1Cat1	QA1	*EcoChem (1/24/00)*	12 sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable	

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Appendix A: Data Validation Summary and Complied Chemical Laboratory Analytical Data - Ross Island Lagoon, by Hart Crowser	WLCRIL99		Cat 1	Yes - Complete QA reports submitted by Port	U.S.EPA 200.8 & SW846 M.7471A (Hg)	Metals (Sb, As, Cd, Cu, Pb, Ni, Ag, Zn, Hg)	QA1Cat2	QA1	*Environmental Synectics, Inc.*	63 sediments, 6 soils, 44 porewaters, 8 surfacewaters, 13 groundwaters & 45 leachates	Columbia Analytical Services	Referenced in data validaton report	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	
Appendix A: Data Validation Summary and Complied Chemical Laboratory Analytical Data - Ross Island Lagoon, by Hart Crowser	WLCRIL99		Cat 1	Yes - Complete QA reports submitted by Port	Krone et al. 1989	TBT	QA1Cat2	QA1	*Environmental Synectics, Inc.*	44 porewaters	Columbia Analytical Services	Referenced in data validaton report	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Appendix A: Data Validation Summary and Complied Chemical Laboratory Analytical Data - Ross Island Lagoon, by Hart Crowser	WLCRIL99		Cat 1	Yes - Complete QA reports submitted by Port	SW846 M.8270 (SIM)	SVOCs	QA1Cat2	QA1	*Environmental Synectics, Inc.*	63 sediments, 6 soils, 44 porewaters, 8 surfacewaters, 13 groundwaters & 45 leachates	Columbia Analytical Services	Referenced in data validaton report	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Appendix A: Data Validation Summary and Complied Chemical Laboratory Analytical Data - Ross Island Lagoon, by Hart Crowser	WLCRIL99		Cat 1	Yes - Complete QA reports submitted by Port	SW846 M.8260B	VOCs	QA1Cat2	QA1	*Environmental Synectics, Inc.*	63 sediments, 6 soils, 44 porewaters, 8 surfacewaters, 13 groundwaters & 45 leachates	Columbia Analytical Services	Referenced in data validaton report	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Appendix A: Data Validation Summary and Complied Chemical Laboratory Analytical Data - Ross Island Lagoon, by Hart Crowser	WLCRIL99		Cat 1	Yes - Complete QA reports submitted by Port	SW846 M.8081	Chlorin. pesticides (DDTs only)	QA1Cat2	QA1	*Environmental Synectics, Inc.*	63 sediments, 6 soils, 44 porewaters, 8 surfacewaters, 13 groundwaters & 45 leachates	Columbia Analytical Services	Referenced in data validaton report	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Appendix A: Data Validation Summary and Complied Chemical Laboratory Analytical Data - Ross Island Lagoon, by Hart Crowser	WLCRIL99		Cat 1	Yes - Complete QA reports submitted by Port	SW846 M.8082	PCBs (as Aroclors)	QA1Cat2	QA1	*Environmental Synectics, Inc.*	63 sediments, 6 soils, 44 porewaters, 8 surfacewaters, 13 groundwaters & 45 leachates	Columbia Analytical Services	Referenced in data validaton report	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Appendix A: Data Validation Summary and Complied Chemical Laboratory Analytical Data - Ross Island Lagoon, by Hart Crowser	WLCRIL99		Cat 1	Yes - Complete QA reports submitted by Port	SW846 M.9060	TOC	QA1Cat2	QA1	*Environmental Synectics, Inc.*	63 sediments, 6 soils, 44 porewaters, 8 surfacewaters, 13 groundwaters & 45 leachates	Columbia Analytical Services	Referenced in data validaton report	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	
Phase I Remedial Investigation Ross Island Sand & Gravel Co. (3/00) by Landau Assoc.	WLCRIV99		Cat1	No	PSEP 1986	Grain size & TOC	QA2Cat1	QA2	*EcoChem (2/24/00)*	4 surface sediments (10/28/99)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
Phase I Remedial Investigation Ross Island Sand & Gravel Co. (3/00) by Landau Assoc.	WLCRIV99		Cat1	No	SW846 M.8270 (SIM)	PAHs	QA2Cat1	QA2	*EcoChem (2/24/00)*	4 surface sediments (10/28/99)	CAS / Kelso	Acceptable	Acceptable	Acceptable (some hits - qual.	Acceptable	Acceptable		Acceptable
Phase I Remedial Investigation Ross Island Sand & Gravel Co. (3/00) by Landau Assoc.	WLCRIV99		Cat1	No	SW846 M.8081A / 8082	Chlorin. pesticides & PCBs (Aroclors)	QA2Cat1	QA2	*EcoChem (2/24/00)*	4 surface sediments (10/28/99)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Phase I Remedial Investigation Ross Island Sand & Gravel Co. (3/00) by Landau Assoc.	WLCRIV99		Cat1	No	GC/FPD (Krone et al. 1989)	TBT	QA2Cat1	QA2	*EcoChem (2/24/00)*	4 surface sediments (10/28/99)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Phase I Remedial Investigation Ross Island Sand & Gravel Co. (3/00) by Landau Assoc.	WLCRIV99		Cat1	No	U.S. EPA 200.8 & 7471A (Hg)	Metals (Sb, As, Cd, Cr, Cu, Pb, Hg, Ni, Ag & Zn)	QA2Cat1	QA2	*EcoChem (2/24/00)*	4 surface sediments (10/28/99)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
Phase I Remedial Investigation Ross Island Sand & Gravel Co. (3/00) by Landau Assoc.	WLCRIV99		Cat1	No	SW846 M.8260B	VOCs	QA2Cat1	QA2	*EcoChem (2/24/00)*	4 surface sediments (10/28/99)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.8010/8020	Halogenated/Aromatic Organics	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	8 surface sediments (1-2/95)	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.8080	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	8 surface sediments (1-2/95)	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.8140	Phosphate ester pesticides	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	8 surface sediments (1-2/95)	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.8150	Chlorin. herbicides	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	8 surface sediments (1-2/95)	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.8290	chlorinated dioxins & furans	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	8 surface sediments (1-2/95)	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.6010	Metals	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	8 surface sediments (1-2/95)	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.9060	TOC	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	8 surface sediments (1-2/95)	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.8270	SVOCs	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	8 surface sediments (1-2/95)	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
COE Willamette River Channel Deepening 1997 Data	WLCT0F01		Cat 1	Yes - Laboratory case narrative references accompanying COC	PSEP, U.S.EPA 350.1M, PSEP & 160.4	Conventionals (TOC, NH_3, total sulfides & total vol. solids)	QA1Cat2	QA1	*Hart Crowser 8/24/01*	4 sediments & 54 waters (7/01)	CAS / Kelso	Lab case narrative references COC	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
Dredge Material Characterization Study; Marine Terminal 2, Berths 203-206; Marine Terminal 5, Berth 501 (8/24/01) by Hart Crowser	WLCT0F01		Cat 1	Yes - Laboratory case narrative references accompanying COC	U.S.EPA 200.8 & SW846 M.7471	Metals (Sb, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn, Hg)	QA1Cat2	QA1	*Hart Crowser 8/24/01*	4 sediments & 54 waters (7/01)	CAS / Kelso	Lab case narrative references COC	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	
Dredge Material Characterization Study; Marine Terminal 2, Berths 203-206; Marine Terminal 5, Berth 501 (8/24/01) by Hart Crowser	WLCT0F01		Cat 1	Yes - Laboratory case narrative references accompanying COC	GC/FPD (Krone et al. 1989)	TBT	QA1Cat2	QA1	*Hart Crowser 8/24/01*	4 sediment porewaters (7/01)	CAS / Kelso	Lab case narrative references COC	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Dredge Material Characterization Study; Marine Terminal 2, Berths 203-206; Marine Terminal 5, Berth 501 (8/24/01) by Hart Crowser	WLCT0F01		Cat 1	Yes - Laboratory case narrative references accompanying COC	SW846 M.8270 (SIM)	SVOCs	QA1Cat2	QA1	*Hart Crowser 8/24/01*	4 sediments & 54 waters (7/01)	CAS / Kelso	Lab case narrative references COC	All sample HT exceeded - require "J" qual. of all results.	Acceptable	Acceptable	Acceptable		Acceptable
Dredge Material Characterization Study; Marine Terminal 2, Berths 203-206; Marine Terminal 5, Berth 501 (8/24/01) by Hart Crowser	WLCT0F01		Cat 1	Yes - Laboratory case narrative references accompanying COC	SW846 M.8081	Chlorin. Pesticides	QA1Cat2	QA1	*Hart Crowser 8/24/01*	4 sediments & 54 waters (7/01)	CAS / Kelso	Lab case narrative references COC	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Dredge Material Characterization Study; Marine Terminal 2, Berths 203-206; Marine Terminal 5, Berth 501 (8/24/01) by Hart Crowser	WLCT0F01		Cat 1	Yes - Laboratory case narrative references accompanying COC	SW846 M.8082	PCBs (as Aroclors)	QA1Cat2	QA1	*Hart Crowser 8/24/01*	4 sediments & 54 waters (7/01)	CAS / Kelso	Lab case narrative references COC	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Sediment Characterization Study of Local Sponsors' Berths: Columbia & Willamette River prepared by Hart-Crowser	WLCT0I98	PTLDBRTH	Cat 1	Yes - found Method Blank results	ASTM D4129-82M (TOC), EPA 350.1 (NH3), PSEP 1986 (t.sulfides) & EPA 160.4 (TVS)	conventionals (TOC, NH_3, total sulfides & total volatile solids)	QA1Cat2	QA1	PTLDBRTH_Convs	30 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable; total sulfides as estimates due to low recoveries.	Acceptable	Acceptable	
Port of Portland, Sediment Characterization Study of Local Sponsors' Berths (2/1/99) - Terminal 4, Slip 1 Preliminary Assessment Appendix by Hart Crowser	WLCT0I98		Cat1	No	U.S.EPA 200.8 & SW846 M.7471 (Hg)	Metals (Sb, As, Cd, Cr, Cu, Pb, Hg, Ni, Ag & Zn)	QA1Cat1	QA1	*Hart Crowser (10/1/99)*	34 sediments (9/98)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Port of Portland, Sediment Characterization Study of Local Sponsors' Berths (2/1/99) - Terminal 4, Slip 1 Preliminary Assessment Appendix by Hart Crowser	WLCT0I98		Cat1	No	SW846 M.8270 (SIM)	SVOCs	QA1Cat1	QA1	*Hart Crowser (10/1/99)*	34 sediments (9/98)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Low recov. for phenols - "J" qual. required for all phenols.
Port of Portland, Sediment Characterization Study of Local Sponsors' Berths (2/1/99) - Terminal 4, Slip 1 Preliminary Assessment Appendix by Hart Crowser	WLCT0I98		Cat1	No	SW846 M.8260B	VOCs	QA1Cat1	QA1	*Hart Crowser (10/1/99)*	34 sediments (9/98)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Port of Portland, Sediment Characterization Study of Local Sponsors' Berths (2/1/99) - Terminal 4, Slip 1 Preliminary Assessment Appendix by Hart Crowser	WLCT0I98		Cat1	No	SW846 M.8081 / 8082	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	*Hart Crowser (10/1/99)*	34 sediments (9/98)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Port of Portland, Sediment Characterization Study of Local Sponsors' Berths (2/1/99) - Terminal 4, Slip 1 Preliminary Assessment Appendix by Hart Crowser	WLCT0I98		Cat1	No	GC/FPD (Krone et al. 1989)	TBT	QA1Cat1	QA1	*Hart Crowser (10/1/99)*	12 sed. porewaters (9/98)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Some low recoveries	Acceptable		Some data qual. due to low recovereis.
Port of Portland, Sediment Characterization Study of Local Sponsors' Berths (2/1/99) - Terminal 4, Slip 1 Preliminary Assessment Appendix by Hart Crowser	WLCT0I98		Cat1	No	ASTM D4129-82M, U.S.EPA 350.1M, PSEP & 160.4M	Conventionals (TOC, NH_3, total sulfides & vol. solids)	QA1Cat1	QA1	*Hart Crowser (10/1/99)*	34 sediments (9/98)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
Sediment Characterization Study of Local Sponsors' Berths: Columbia & Willamette River prepared by Hart-Crowser	WLCT0I98	PTLDBRTH	Cat1	No	EPA 200.8 (Sb, As, Cd, Cr, Cu, Pb, Ni, Ag & Zn) & SW846 M.7471 (Hg); digestion: M.3050 & M.7471A	Metals	QA1Cat1	QA1	PTLDBRTH_Metals	30 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable; some Cd reported with "B" - recommend replacing with"U" code.	MS acceptable; variable recov. require qual. as estimates.	Acceptable; variable recov. require qual. as estimates.	Acceptable	
Sediment Characterization Study of Local Sponsors' Berths: Columbia & Willamette River prepared by Hart-Crowser	WLCT0I98	PTLDBRTH	Cat1	No	SW846 M.8080 (pesticides) & M.8082 (PCBs [Aroclors]); extraction: M.3550	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	PTLDBRTH_PestPCB	30 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Sediment Characterization Study of Local Sponsors' Berths: Columbia & Willamette River prepared by Hart-Crowser	WLCT0I98	PTLDBRTH	Cat1; use results from initial analyses.	No	SW846 M.8270 (SIM); extraction by M.3550 (sonication) & M.3540 (soxhlet)	SVOCs	QA1Cat1	QA1	PTLDBRTH_SVOCs	30 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable (initial analyses OK; reanalyses outside HTs)	Acceptable	Acceptable; consistently low recov. for phenolics - qual. as estimates	Acceptable		Acceptable; large # of surrogates outside specification - require qual. of many results as estimates
Sediment Characterization Study of Local Sponsors' Berths: Columbia & Willamette River prepared by Hart-Crowser	WLCT0I98	PTLDBRTH	Cat1 - require qual. as estimates when any surrogate <50%.	No	GC/FPD (Krone et al., 1989)	TBT	QA1Cat1	QA1	PTLDBRTH_TBT	24 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable - recov. consistent with surrogate recov.	Acceptable - recov. consistent with surrogate recov.		Acceptable - require qual. of all results when any surrogate recov.
Sediment Characterization Study of Local Sponsors' Berths: Columbia & Willamette River prepared by Hart-Crowser	WLCT0I98	PTLDBRTH	Cat1	No	SW846 M.8260	dichlorobenzenes	QA1Cat1	QA1	PTLDBRTH_VOCs	30 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Sediment Characterization Study of Local Sponsors' Berths: Columbia & Willamette River prepared by Hart-Crowser	WLCT0I98	PTLDBRTH	Cat2	No	ASTM D4129-82M (TOC), EPA 350.1 (NH3), PSEP 1986 (t.sulfides) & EPA 160.4 (TVS)	conventionals (TOC, NH_3, total sulfides & total volatile solids)	QA1Cat2	QA1	PTLDBRTH_Convs	30 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	none	MS acceptable; total sulfides as estimates due to low recoveries.	Acceptable	Acceptable	
Sediment Characterization Study, River Terminals 1, 2 and 5, Willamette River (1/14/97) by Hart Crowser	WLCT0K96		Cat1	No	PSEP	Grain size	QA1Cat1	QA1	*Hart Crowser 1/14/97 / (Lab report - DMD review, 1/02)*	8 sed. cores (includes 1 field dup.)	CAS / Kelso	Acceptable	Acceptable				Acceptable	
Sediment Characterization Study, River Terminals 1, 2 and 5, Willamette River (1/14/97) by Hart Crowser	WLCT0K96		Cat1	No	U.S.EPA 200.8 & SW846 M.7471 (Hg)	Metals (As, Cd, Cu, Pb, Ni, Ag, Zn, Hg)	QA1Cat1	QA1	*Hart Crowser 1/14/97 / (Lab report - DMD review, 1/02)*	8 sed. cores (includes 1 field dup.)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	none	Acceptable - Hg shows high variability and require hits as "J".	
Sediment Characterization Study, River Terminals 1, 2 and 5, Willamette River (1/14/97) by Hart Crowser	WLCT0K96		Cat1	No	SW846 M.8270 (SIM)	SVOCs	QA1Cat1	QA1	*Hart Crowser 1/14/97 / (Lab report - DMD review, 1/02)*	8 sed. cores (includes 1 field dup.)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable - pyrene RPD requires qual. of some results as	none		Acceptable
Sediment Characterization Study, River Terminals 1, 2 and 5, Willamette River (1/14/97) by Hart Crowser	WLCT0K96		Cat1	No	SW846 M.8080	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	*Hart Crowser 1/14/97 / (Lab report - DMD review, 1/02)*	8 sed. cores (includes 1 field dup.)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Sediment Characterization Study, River Terminals 1, 2 and 5, Willamette River (1/14/97) by Hart Crowser	WLCT0K96		Cat1	No	GC/FPD (Krone et al. 1989)	TBT	QA1Cat1	QA1	*Hart Crowser 1/14/97 / (Lab report - DMD review, 1/02)*	8 sed. cores (includes 1 field dup.)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Sediment Characterization Study, River Terminals 1, 2 and 5, Willamette River (1/14/97) by Hart Crowser	WLCT0K96		Cat1	No	ASTM D4129-82M, U.S.EPA 350.1M & PSEP	Conventionals (TOC, NH_3 & total sulfides)	QA1Cat1	QA1	*Hart Crowser 1/14/97 / (Lab report - DMD review, 1/02)*	8 sed. cores (includes 1 field dup.)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable		Acceptable - sulfides show high variability and require hits as "J".	
Marine Terminal 1 Baseline Investigation, Final Report (8/25/00) by Striplin Environmental Associates	WLCT1F00		Cat1	No	ASTM D4129M, PSEP/9030M & PSEP	Conventionals (TOC, total sulfides & grain size)	QA1Cat1	QA1	*SEA (8/00)*	9 surface sediments (6/23/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable	
Marine Terminal 1 Baseline Investigation, Final Report (8/25/00) by Striplin Environmental Associates	WLCT1F00		Cat1	No	U.S.EPA 200.8 & SW846 M.7471 (Hg)	Metals (Sb, As, Cd, Cr, Cu, Pb, Hg, Ni, Ag & Zn)	QA1Cat1	QA1	*SEA (8/00)*	9 surface sediments (6/23/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
Marine Terminal 1 Baseline Investigation, Final Report (8/25/00) by Striplin Environmental Associates	WLCT1F00		Cat1	No	GC/FPD (Krone et al. 1989)	TBT	QA1Cat1	QA1	*SEA (8/00)*	9 surface sed. porewaters (6/23/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	none reported
Marine Terminal 1 Baseline Investigation, Final Report (8/25/00) by Striplin Environmental Associates	WLCT1F00		Cat1	No	SW846 M.8081	Chlorin. pesticides	QA1Cat1	QA1	*SEA (8/00)*	9 surface sediments (6/23/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		none reported
Marine Terminal 1 Baseline Investigation, Final Report (8/25/00) by Striplin Environmental Associates	WLCT1F00		Cat1	No	SW846 M.8082	PCBs (as Aroclors)	QA1Cat1	QA1	*SEA (8/00)*	9 surface sediments (6/23/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		none reported
Marine Terminal 1 Baseline Investigation, Final Report (8/25/00) by Striplin Environmental Associates	WLCT1F00		Cat1	No	SW846 M.8270 (SIM)	SVOCs	QA1Cat1	QA1	*SEA (8/00)*	9 surface sediments (6/23/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		none reported
Marine Terminal 1 Baseline Investigation, Final Report (8/25/00) by Striplin Environmental Associates	WLCT1F00		Cat1	No	SW846 M.8260	VOCs	QA1Cat1	QA1	*SEA (8/00)*	9 surface sediments (6/23/00)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable			none reported
Port of Portland Terminal 1, Berth 104, 1992 Sediment Characterization	WLCT1L91		Cat2	No	ASTM D422(M)	Grain size	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	2 sediments (12/91)	CAS / Kelso	Data package references COC	Acceptable	Acceptable			none	
Port of Portland Terminal 1, Berth 104, 1992 Sediment Characterization	WLCT1L91		Cat 1	Yes - COC referenced in data package	SW846 M.8080	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	2 sediments (12/91)	CAS / Kelso	Data package references COC	Acceptable	Acceptable	none	none		Acceptable
Port of Portland Terminal 1, Berth 104, 1992 Sediment Characterization	WLCT1L91		Cat 1	Yes - COC referenced in data package	SW846 M.8270 (SIM)	SVOCs	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	2 sediments (12/91)	CAS / Kelso	Data package references COC	Acceptable	Acceptable	none	none		Acceptable
Port of Portland Terminal 1, Berth 104, 1992 Sediment Characterization	WLCT1L91		Cat 1	Yes - COC referenced in data package	SW846 M.8260B	VOCs (TCE, PCE, ethylbenzene, xylenes, dichlorobenzenes)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	2 sediments (12/91)	CAS / Kelso	Data package references COC	Acceptable	Acceptable	none	none		Acceptable
Sediment Characterization Study - Terminal 4, Berth 416 Willamette River (3/10/98) by Hart Crowser	WLCT4J97		Cat2 - no QC data	No	unreferenced	Grain size	QA1Cat2	QA1	*Hart Crowser (3/10/98)*	4 sediments (includes a dup. pair)	unknown	none	??				??	
Sediment Characterization Study - Terminal 4, Berth 416 Willamette River (3/10/98) by Hart Crowser	WLCT4J97		Cat 1	Yes - no explicit reference to COC	SW846 M.9060, U.S.EPA 350.3, PSEP & 160.4	Conventionals (TOC, NH_3, total sulfides & total vol. solids)	QA1Cat2	QA1	*Hart Crowser (3/10/98)*	4 sediments (includes a dup. pair)	North Creek Analytical / Bothell	none	Acceptable - sulfides exceeded and require all qual. as "J"	Acceptable	Acceptable	Acceptable	Acceptable - sulfides show high variability and require hits as "J".	
Sediment Characterization Study - Terminal 4, Berth 416 Willamette River (3/10/98) by Hart Crowser	WLCT4J97		Cat 1	Yes - no explicit reference to COC	Sw846 M.6010 & 7471 (Hg)	Metals (Sb, As, Cd, Cu, Pb, Ni, Ag, Zn, Hg)	QA1Cat2	QA1	*Hart Crowser (3/10/98)*	4 sediments (includes a dup. pair)	North Creek Analytical / Bothell	none	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
Sediment Characterization Study - Terminal 4, Berth 416 Willamette River (3/10/98) by Hart Crowser	WLCT4J97		Cat 1	Yes - no explicit reference to COC	GC/FPD (Krone et al. 1989)	TBT	QA1Cat2	QA1	*Hart Crowser (3/10/98)*	4 sed. porewaters (includes a dup. pair)	North Creek Analytical / Bothell	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Sediment Characterization Study - Terminal 4, Berth 416 Willamette River (3/10/98) by Hart Crowser	WLCT4J97		Cat 1	Yes - no explicit reference to COC	SW846 M.8081	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	*Hart Crowser (3/10/98)*	4 sediments (includes a dup. pair)	North Creek Analytical / Bothell	none	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Sediment Characterization Study - Terminal 4, Berth 416 Willamette River (3/10/98) by Hart Crowser	WLCT4J97		Cat 1	Yes - no explicit reference to COC	SW846 M.8270 (SIM)	SVOCs	QA1Cat2	QA1	*Hart Crowser (3/10/98)*	4 sediments (includes a dup. pair)	North Creek Analytical / Bothell	none	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
1998 Terminal 4, Slip 3 Sediment Investigation, Port of Portland	WLCT4J98	HC-10-98	Cat1	No	PSEP 1986 (sulfides), EPA 350.1 (NH_3) & ASTM D4129-82 (TOC)	conventionals (total sulfides, NH_3 & TOC)	QA1Cat1	QA1	POP_Convs_DV	49 surface sediments	CAS / Kelso	Acceptable	Acceptable; sulfides qual. as estimates due to exceedance of HT.	Acceptable	Acceptable MS	Acceptable		
1998 Terminal 4, Slip 3 Sediment Investigation, Port of Portland	WLCT4J98	HC-10-98	Cat1	No	NWTPH-Dx	diesel & lube oil	QA1Cat1	QA1	POP_HC_DV	48 surface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable MS	Acceptable	Acceptable	Acceptable
1998 Terminal 4, Slip 3 Sediment Investigation, Port of Portland	WLCT4J98	HC-10-98	Cat1; selected results qual. as estimates due to low MS and LCS recoveries.	No	EPA 200.8 & SW846 M.7471A (Hg)	Metals	QA1Cat1	QA1	POP_Metals_DV	44 surface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable MS; low recoveries for Sb, Cd, Pb, Ni, Ag & Zn	Acceptable; low recoveries for Sb, Cd, Pb, Ni, Ag & Zn	Acceptable	
1998 Terminal 4, Slip 3 Sediment Investigation, Port of Portland	WLCT4J98	HC-10-98	Cat1; all results qual. as estimates due to HT exceedances.	No	SW846 M.8081A	Chlorinated pesticides	QA1Cat1	QA1	POP_Pest_DV	5 surface and subsurface sediments	CAS / Kelso	Acceptable	All exceeded recommended HTs by 41 days.	Acceptable	Acceptable	Acceptable		Acceptable
1998 Terminal 4, Slip 3 Sediment Investigation, Port of Portland	WLCT4J98	HC-10-98	Cat1; phenolics qual. as estimates due to low recoveries.	No	SW846 M.8270C	SVOCs	QA1Cat1	QA1	POP_SVOC_DV	56 surface sediments	CAS / Kelso	Acceptable	Acceptable (initial analyses OK; reanalyses outside HTs)	Acceptable; rinsate blk showed bis(2-ethylhexyl)phthalate near RL.	Acceptable; consistently low recov. for phenolics - qual. as estimates	Acceptable; consistently low recov. for phenolics qual. as estimates		Acceptable; consistently low recov. for phenolics - qual. as estimates
1998 Terminal 4, Slip 3 Sediment Investigation, Port of Portland	WLCT4J98	HC-10-98	Cat1	No	SW846 M.8260B	VOCs (benzene, Cl_3ethene, toluene, Cl_4ethene, ethylbenzene, xylenes,	QA1Cat1	QA1	POP_VOC_DV	55 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Terminal 4 - Slip 1 and Berth 401 Sediment Characterization Study (5/31/00) by Hart Crowser	WLCT4K99	PPTLDSL1	Cat2 (no QC data presented, only results)	No	unknown	Metals (Sb, As, Cd, Cr, Cu, Pb, Ni, Ag & Zn), TOC, Chlorin. Pesticides/PCBs (Aroclors) & SVOCs	NACat2	NA	*(none)*	10 sediments (11/99)	unknown	??	??	??	??	??	??	??
Terminal 4 - Slip 1 and Berth 401 Sediment Characterization Study (5/31/00) by Hart Crowser	WLCT4K99	PPTLDSL1	Cat2 (no QC data presented, only results)	No	unknown	Metals (Sb, As, Cd, Cr, Cu, Pb, Ni, Ag & Zn), TOC, Chlorin. Pesticides/PCBs (Aroclors) & SVOCs	NACat2	NA	*(none)*	10 sediments (11/99)	unknown	??	??	??	??	??	??	??
Terminal 4 Berth 408 Dredging Sediment Quality (1/19/94) by Port of Portland	WLCT4L93		Cat2 (minimal QC data presented)	No	U.S.EPA 200.8, SW846 M.6010 (Cr, Cu, Zn) & SW846 M.7471 (Hg)	Metals (Sb, As, Cd,Pb, Ni, Ag, Cr, Cu, Zn, Hg)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	3 surface sediments (12/7/93)	CAS / Kelso	Acceptable	Acceptable	Acceptable	none	none	none	
Terminal 4 Berth 408 Dredging Sediment Quality (1/19/94) by Port of Portland	WLCT4L93		Cat1	No	GC/FPD (Krone et al. 1989)	TBT	QA1Cat1	QA1	*(Lab report - DMD review, 1/02)*	3 surface sediments (12/7/93)	CAS / Kelso	Acceptable	Acceptable	Acceptable				Acceptable
Terminal 4 Berth 408 Dredging Sediment Quality (1/19/94) by Port of Portland	WLCT4L93		Cat1	No	ASTM D422(M)	Grain size	QA1Cat1	QA1	*(Lab report - DMD review, 1/02)*	3 surface sediments (12/7/93)	CAS / Kelso	Acceptable	Acceptable				Acceptable	
Terminal 4 Berth 408 Dredging Sediment Quality (1/19/94) by Port of Portland	WLCT4L93		Cat1	No	SW846 M.8080	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	*(Lab report - DMD review, 1/02)*	3 surface sediments (12/7/93)	CAS / Kelso	Acceptable	Acceptable	Acceptable	none	none		Acceptable
Terminal 4 Berth 408 Dredging Sediment Quality (1/19/94) by Port of Portland	WLCT4L93		Cat1	No	SW846 M.8240	VOCs (TCE, PCE, ethylbenzene, xylenes, dichlorobenzenes)	QA1Cat1	QA1	*(Lab report - DMD review, 1/02)*	3 surface sediments (12/7/93)	CAS / Kelso	Acceptable	Acceptable	Acceptable	none	none		Acceptable
Terminal 4 Berth 408 Dredging Sediment Quality (1/19/94) by Port of Portland	WLCT4L93		Cat1 with qualification of data as indicated.	No	SW846 M.8270 (SIM)	SVOCs	QA1Cat1	QA1	*(Lab report - DMD review, 1/02)*	3 surface sediments (12/7/93)	CAS / Kelso	Acceptable	Acceptable	Acceptable (bis(2-ethylhexyl)phthalate in all samples require "U" qualification	none	none		All neutral surrogates not evaluated - require all neutrals to be "J" qualified.
Terminal 4 Berth 408 Dredging Sediment Quality (1/19/94) by Port of Portland	WLCT4L93		Cat2 (minimal QC data presented)	No	U.S.EPA 200.8, SW846 M.6010 (Cr, Cu, Zn) & SW846 M.7471 (Hg)	Metals (Sb, As, Cd,Pb, Ni, Ag, Cr, Cu, Zn, Hg)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	3 surface sediments (12/7/93)	CAS / Kelso	Acceptable	Acceptable	Acceptable	none	none	none	
Sediment Characterization at Marine Terminal 5, Barge Berth 501 and Berth 503 (2/1/00) by Hart Crowser	WLCT5K99		Cat2 (no QC data presented, only results)	No	unreferenced	Grain size	NACat2	NA	*Hart Crowser (2/1/00)*	3 composite sediments (11/22/99)	CAS / Kelso	Report states that all samples collected under COC	Acceptable				none	
Sediment Characterization at Marine Terminal 5, Barge Berth 501 and Berth 503 (2/1/00) by Hart	WLCT5K99		Cat1	No	SW846 M.6020 & 7471 (Hg)	Metals (Sb, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn, Hg)	QA1Cat1	QA1	*Hart Crowser (2/1/00)*	3 composite sediments (11/22/99)	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable		
Sediment Characterization at Marine Terminal 5, Barge Berth 501 and Berth 503 (2/1/00) by Hart	WLCT5K99		Cat1	No	SW846 M.8270(SIM)	SVOCs	QA1Cat1	QA1	*Hart Crowser (2/1/00)*	3 composite sediments (11/22/99)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Sediment Characterization at Marine Terminal 5, Barge Berth 501 and Berth 503 (2/1/00) by Hart	WLCT5K99		Cat1	No	SW846 M.8080A	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	*Hart Crowser (2/1/00)*	3 composite sediments (11/22/99)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Sediment Characterization at Marine Terminal 5, Barge Berth 501 and Berth 503 (2/1/00) by Hart Crowser	WLCT5K99		Cat1	No	GC/FPD (Krone et al. 1989)	TBT	QA1Cat1	QA1	*Hart Crowser (2/1/00)*	3 composite seds. & 2 sed. porewaters (11/22/99)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Sediment Characterization at Marine Terminal 5, Barge Berth 501 and Berth 503 (2/1/00) by Hart Crowser	WLCT5K99		Cat1 (qual. sulfides)	No	ASTM D4129-82M, U.S.EPA 350.1M, PSEP & 160.4M	Conventionals (TOC, NH_3, total sulfides & vol. solids)	QA1Cat1	QA1	*Hart Crowser (2/1/00)*	3 composite sediments (11/22/99)	CAS / Kelso	Acceptable	Acceptable (HT unknown for sulfides - require qual. as estimates "J" for all	Acceptable	MS acceptable	Acceptable	Acceptable	
Sediment Characterization at Marine Terminal 5, Barge Berth 501 and Berth 503 (2/1/00) by Hart	WLCT5K99		Cat2 (no QC data presented, only results)	No	unreferenced	Grain size	NACat2	NA	*Hart Crowser (2/1/00)*	3 composite sediments (11/22/99)	CAS / Kelso	none	Acceptable				none	
Oregon Department of Environmental Quality. DEQ Site Assessment, Willamette Cove	WLCWCJ95	WILLCOVE	Cat1	No	SW846 M.6010A (Sb, Be, Cd, Cr, Cu, Ni, Ag & Zn); M.7060 (As); M.7421 (Pb); M.7740 (Se); M.7841 (Tl); M.7471 (Hg); digestion via M.3050 & M.7471A	Metals	QA1Cat1	QA1	WillCove_Metals	11 surface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	none	Acceptable	
Oregon Department of Environmental Quality. DEQ Site Assessment, Willamette Cove	WLCWCJ95	WILLCOVE	Cat1	No	SW846 M.8080; extraction by M.3540 (soxhlet)	PCBs (as Aroclors) only	QA1Cat1	QA1	WillCove_PestPCB	11 surface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	none		Acceptable
Oregon Department of Environmental Quality. DEQ Site Assessment, Willamette Cove	WLCWCJ95	WILLCOVE	Cat1	No	SW846 M.8270; M.8310 (PAHs); M.8150A (chl. phenols); extraction by M.3540 & M.3550	SVOCs	QA1Cat1	QA1	WillCove_SVOCs	8 surface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable; some low recoveries requiring qual. as estimates
Oregon Department of Environmental Quality. DEQ Site Assessment, Willamette Cove	WLCWCJ95	WILLCOVE	Cat1	No	GC/FPD (Krone et al., 1989)	TBT	QA1Cat1	QA1	WillCove_TBT	1 surface sediment	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable; low recoveries	Acceptable; low recoveries		Acceptable
Oregon Department of Environmental Quality. DEQ Site Assessment, Willamette Cove	WLCWCJ95	WILLCOVE	Cat1	No	SW846 M.8260	VOCs	QA1Cat1	QA1	WillCove_VOCs	9 surface sediment	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	none		Acceptable
USACE Willamette Falls Lock Sediment Investigation 1996 Event	WLFL0496	WLFL96	Cat2; no analysis dates, COC, replication or referenced methods	No	(unreferenced)	Grain size (particle size)	QA1Cat2	QA1	Convs_WFL	3 subsurface sediments	USACE / Troutdale, OR	none	Acceptable				none	
USACE Willamette Falls Lock Sediment Investigation 1996 Event	WLFL0496	WLFL96	Cat2; lack of documentation and QC	No	SW846 M.6010 (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn), M.7471 (Hg)	Metals	QA1Cat2	QA1	Metals_WFL	1 subsurface sediment (composite)	ARDL / Mt. Vernon, IL	none	Acceptable	none	none	none	none	
USACE Willamette Falls Lock Sediment Investigation 1996 Event	WLFL0496	WLFL96	Cat2	No	SW846 M.8270C (PAHs by SIM, others via full-scan) & M.3550 (ultrasonic)	SVOCs	QA1Cat2	QA1	SVOCs_WFL	1 subsurface sediment (composite)	ARDL / Mt. Vernon, IL	none	Acceptable	Acceptable	none	none		Partial - only nonpolar surrogates used, no phenolics
USACE Willamette Falls Lock Sediment Investigation 1996 Event	WLFL0496	WLFL96	Cat2; no analysis dates, COC, replication or referenced methods	No	(unreferenced)	Grain size (particle size)	QA1Cat2	QA1	Convs_WFL	3 subsurface sediments	USACE / Troutdale, OR	none	Acceptable				none	
USACE Willamette Falls Lock Sediment Investigation 1996 Event	WLFL0496	WLFL96	Cat2; lack of documentation and QC	No	SW846 M.6010 (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn), M.7471 (Hg)	Metals	QA1Cat2	QA1	Metals_WFL	1 subsurface sediment (composite)	ARDL / Mt. Vernon, IL	none	Acceptable	none	none	none	none	
USACE Willamette Falls Lock Sediment Investigation 1996 Event	WLFL0496	WLFL96	Cat2	No	SW846 M.8270C (PAHs by SIM, others via full-scan) & M.3550 (ultrasonic)	SVOCs	QA1Cat2	QA1	SVOCs_WFL	1 subsurface sediment (composite)	ARDL / Mt. Vernon, IL	none	Acceptable	Acceptable	none	none		Partial - only nonpolar surrogates used, no phenolics

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Willamette River Reference Area Study - Phase I Results and Recommendations for Phase II Sampling Locations (9/01) by Hart-Crowser	WLLRSH01		Cat2; no QC data	No	ASTM D422 Modified	Grain size	QA1Cat2	QA1	*(Lab report - DMD review, 12/01)*	10 surface sediments	Hart-Crowser	none	unknown				none	
Willamette River Reference Area Study - Phase I Results and Recommendations for Phase II Sampling Locations (9/01) by Hart-Crowser	WLLRSH01		Cat1	No	SW846 M.8015M	TPH	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	10 surface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Willamette River Reference Area Study - Phase I Results and Recommendations for Phase II Sampling Locations (9/01) by Hart-Crowser	WLLRSH01		Cat1	No	SW846 M.8081A / 8082	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	*(Lab report - DMD review, 12/01)*	10 surface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Willamette River Reference Area Study - Phase I Results and Recommendations for Phase II Sampling Locations (9/01) by Hart-Crowser	WLLRSH01		Cat2; no QC data	No	(unreferenced)	Grain size	QA1Cat2	QA1	*(Lab report - DMD review, 12/01)*	10 surface sediments	Hart-Crowser	none	unknown				none	
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat 1	Yes - Validation report acceptable (previously DV report noted as very brief).	Krone	TBT	QA1Cat3	QA2	Appendix C - reviewed - JMC@SEA 04/25/09	pore water	Columbia Analytical Services	Acceptable	Acceptable	Acceptable The results for n-butyltin is suspect due to low P&A results	Acceptable The results for n-butyltin is suspect due to low P&A results	Acceptable	Acceptable The results for n-butyltin is suspect due to low P&A results	Acceptable
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat1	No	SW846 M.8270C	SVOCs	2	QA1	Appendix C - reviewed -	8 sediments	Columbia Analytical Services	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat1	No	SW846 M.8081A	Chlorin. Pesticides	2	QA1	Appendix C - reviewed -	9 sediments	Columbia Analytical Services	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat1	No	SW846 M.8082	PCBs (Aroclors)	2	QA1	Appendix C - reviewed -	10 sediments	Columbia Analytical Services	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat1	No	SW846 M.8270C (SIM)	PAHs	2	QA1	Appendix C - reviewed -	11 sediments	Columbia Analytical Services	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat1	No	SW846 M.200.8 & 7470 (Hg)	Metals (Sb, As, Cd, Cr, Cu, Ni, Ag, Zn, Hg)	2	QA1	Appendix C - reviewed - JMC@SEA 04/25/06	12 sediments	Columbia Analytical Services	Acceptable	Acceptable	MDL<Sb result<MRL and marked as an estimation "J" Note on Sb it is recovering low in all samples and QA	Acceptable Note on Sb it is recovering low in all samples and QA	Acceptable Note on Sb it is recovering low in all samples and QA	Acceptable Note on Sb it is recovering low in all samples and QA	none
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat1	No	ASTM D4129-82M	Total Organic Carbon	2	QA1	Appendix C - reviewed -	13 sediments	Columbia Analytical Services	Acceptable	Acceptable	none	none	Acceptable	Acceptable	none
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat1	No	EPA 160.4M	Total Volatile Solids	2	QA1	Appendix C - reviewed -	14 sediments	Columbia Analytical Services	Acceptable	Acceptable	none	none	Acceptable	Acceptable	none
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat1	No	EPA 160.3M	Total Solids	2	QA1	Appendix C - reviewed -	15 sediments	Columbia Analytical Services	Acceptable	Acceptable	none	none	Acceptable	Acceptable	none
Analyses of Bottom Material from the Willamette River (1977) by McKenzie/USGS	WLR0277		Cat2 (no QC data presented, only results)	No	unreferenced	Metals (As, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Ni, Se, Zn)	NACat2	NA	*(none)*	2 surface sediments (2/1/77)	USGS Lab	??	??	??	??	??	??	
Analyses of Bottom Material from the Willamette River (1977) by McKenzie/USGS	WLR0277		Cat2 (no QC data presented, only results)	No	USGS methods	nutrients & TOC (P, Kjeldahl N, NO_3, NO_2, NH_3)	NACat2	NA	*(none)*	2 surface sediments (2/1/77)	USGS Lab	??	??	??	??	??	??	
Analyses of Bottom Material from the Willamette River (1977) by McKenzie/USGS	WLR0277		Cat2 (no QC data presented, only results - nondetects reported as	No	USGS methods	Organics (chlorin. Pesticides, total PCBs, phosphate ester & carbamate pesticides)	NACat2	NA	*(none)*	2 surface sediments (2/1/77)	USGS Lab	??	??	??	??	??	??	??
Analyses of Bottom Material from the Willamette River (1977) by McKenzie/USGS	WLR0277		Cat2 (no QC data presented, only results)	No	unreferenced	Metals (As, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Ni, Se, Zn)	NACat2	NA	*(none)*	2 surface sediments (2/1/77)	USGS Lab	??	??	??	??	??	??	
Analyses of Bottom Material from the Willamette River (1977) by McKenzie/USGS	WLR0277		Cat2 (no QC data presented, only results)	No	USGS methods	nutrients & TOC (P, Kjeldahl N, NO_3, NO_2, NH_3)	NACat2	NA	*(none)*	2 surface sediments (2/1/77)	USGS Lab	??	??	??	??	??	??	
Analyses of Bottom Material from the Willamette River (1977) by McKenzie/USGS	WLR0277		Cat2 (no QC data presented, only results - nondetects reported as	No	USGS methods	Organics (chlorin. Pesticides, total PCBs, phosphate ester & carbamate pesticides)	NACat2	NA	*(none)*	2 surface sediments (2/1/77)	USGS Lab	??	??	??	??	??	??	??
Evaluation of Sediment Lead (Pb) Levels, Corps Operations Dredging at Broadway Bridge, lower Willamette River (6/30/88) by ACOE/Portland	WLR0388		Cat2 (no QC data presented, only results - limited lab data report)	No	unknown	Pb only	NACat2	NA	*(none)*	5 sediments (3/88)	Battelle / Sequim	none						
Evaluation of Sediment Lead (Pb) Levels, Corps Operations Dredging at Broadway Bridge, lower Willamette River (6/30/88) by ACOE/Portland	WLR0388		Cat2 (no QC data presented, only results - limited lab data report)	No	unknown	Pb only	NACat2	NA	*(none)*	5 sediments (3/88)	Battelle / Sequim	none						
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2; no analysis dates, COC, replication or referenced methods. General lack of documentation.	No	(unreferenced for GS; assumed to be ASTM) ASTM EM1110-2-1906 for oil & grease	Grain size, volatile solids & oil&grease	QA1Cat2	QA1	Convs_LWR	42 subsurface sediments	USACE / Troutdale, OR	none	unknown			Acceptable - oil & grease	1988 grain size duplicate	
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2; general lack of documentation.	No	(unreferenced)	TOC	QA1Cat2	QA1	Convs_LWR	subsurface sediments (1986 event)	Laucks / Seattle	none	unknown			Acceptable	1988 duplicate	
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2	No	SW846 M.9060 (TOC) & unreferenced (NH_3)	TOC and NH_3	QA1Cat2	QA1	Convs_LWR	subsurface sediments (1988 event)	Weston Analytics	none	unknown	Acceptable	Acceptable	Acceptable		
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2; lack of documentation and QC data.	No	12/86: Bloom & Crecelius (1983)(Hg), Crecelius (1978)(As), Bloom & Crecelius (1984)(Cu, Pb, Cd), unspecified methods (Zn & Cr). 3/88 & 9/88: unspecified methods. 12/92: SW846 M.7060 (As), M.7131 (Cd), M.6010 (Cr, Cu, Zn), M.7421 (Pb), M.7471 (Hg),	Metals	QA1Cat2	QA1	Metals_LWR	24 subsurface sediments	Battelle / Sequim	sporadic	12/86: acceptable. Others unknown.	9/88 & 6/92: acceptable. Others no data.	6/92: acceptable. Others no data.	86 & 88: acceptable. Others no data.	88 & 92: acceptable. 86: no data.	
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2	No	(unreferenced)	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	Pest_PCB_LWR	25 subsurface sediments (1986 event)	Battelle / Sequim	none	unknown	Acceptable	none	none		none
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2	No	(unreferenced)	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	Pest_PCB_LWR	25 subsurface sediments (9/88 event)	ARI / Seattle	none	unknown	Acceptable	none	none		Acceptable

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2	No	SW846 M.8080	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	Pest_PCB_LWR	25 subsurface sediments (6/92 event)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2	No	(unreferenced)	SVOCs	QA1Cat2	QA1	SVOCs_LWR	25 subsurface sediments (1986 event)	Battelle / Sequim	Acceptable	unknown	Acceptable	none	none		Acceptable
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2	No	(unreferenced)	SVOCs	QA1Cat2	QA1	SVOCs_LWR	25 subsurface sediments (9/88 event)	ARI / Seattle	Acceptable	unknown	none	none	none		Acceptable
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2; no analysis dates, COC, replication or referenced methods. General lack of documentation.	No	(unreferenced; assumed to be ASTM)	Grain size, volatile solids & oil&grease	QA1Cat2	QA1	Convs_LWR	42 subsurface sediments	USACE / Troutdale, OR	none	unknown					
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2; general lack of documentation.	No	(unreferenced)	TOC	QA1Cat2	QA1	Convs_LWR	subsurface sediments (1986 event)	Laucks / Seattle	none	unknown					
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2	No	SW846 M.9060 (TOC) & unreferenced (NH_3)	TOC and NH_3	QA1Cat2	QA1	Convs_LWR	subsurface sediments (1988 event)	Weston Analytics	none	unknown	Acceptable	Acceptable	Acceptable		
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2; lack of documentation and QC data.	No	12/86: Bloom & Crecelius (1983)(Hg), Crecelius (1978)(As), Bloom & Crecelius (1984)(Cu, Pb, Cd), unspecified methods (Zn & Cr). 3/88 & 9/88: unspecified methods. 12/92: SW846 M.7060 (As), M.7131 (Cd), M.6010 (Cr, Cu, Zn), M.7421 (Pb), M.7471 (Hg),	Metals	QA1Cat2	QA1	Metals_LWR	24 subsurface sediments	Battelle / Sequim	sporadic	12/86: acceptable. Others unknown.	9/88 & 6/92: acceptable. Others no data.	6/92: acceptable. Others no data.	86 & 88: acceptable. Others no data.	88 & 92: acceptable. 86: no data.	
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2	No	(unreferenced)	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	Pest_PCB_LWR	25 subsurface sediments (1986 event)	Battelle / Sequim	none	unknown	Acceptable	none	none		none
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2	No	(unreferenced)	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	Pest_PCB_LWR	25 subsurface sediments (9/88 event)	ARI / Seattle	none	unknown	Acceptable	none	none		Acceptable
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2	No	SW846 M.8080	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	Pest_PCB_LWR	25 subsurface sediments (6/92 event)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2	No	(unreferenced)	SVOCs	QA1Cat2	QA1	SVOCs_LWR	25 subsurface sediments (1986 event)	Battelle / Sequim	Acceptable	unknown	Acceptable	none	none		Acceptable
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat2	No	(unreferenced)	SVOCs	QA1Cat2	QA1	SVOCs_LWR	25 subsurface sediments (9/88 event)	ARI / Seattle	Acceptable	unknown	none	none	none		Acceptable
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat1	No	ASTM (GS & VS), EPA 1991 (AVS), EPA 415.1 (TOC)	grains size, volatile solids, acid volatile sulfides, TOC	QA1Cat1	QA1	Convs_LWR	subsurface sediments (1992 event)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable MS	Acceptable	Acceptable	
USACE Lower Willamette River, 1986, 1988 (2 events) and 1992 Sampling Events	WLR0488, WLR0988, WLR0692, MCAL0986 & MCAL1286	WLR0388, WLR0988, WLR0692, WLMD0986 & WLMD1286	Cat1	No	SW846 M.8270 (SIM)	SVOCs	QA1Cat1	QA1	SVOCs_LWR	25 subsurface sediments (6/92 event)	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Willamette River Sediment Sampling Event, U.S. Moorings (4/28/99)	WLR0499	WLR0499	Cat 1	Yes - COC present for all other parameters	ASTM D422 (COE mod.)	Grain size	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	9 sediments	Aquatic Research, Inc. / Seattle	none	Acceptable				Acceptable	
Willamette River Sediment Sampling Event, U.S. Moorings (4/28/99)	WLR0499	WLR0499	Cat2	No	SW846 M.6010, 6020 (As, Cd, Ag) & 7471 (Hg)	Metals (Sb, As, Cu, Cd, Pb, Ni, Ag, Zn & Hg)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	11 sediments	Sound Analytical Services / Tacoma	Acceptable	Acceptable		none	none	none	
Willamette River Sediment Sampling Event, U.S. Moorings (4/28/99)	WLR0499	WLR0499	Cat2	No	SW846 M.9060	TOC	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	11 sediments	Sound Analytical Services / Tacoma	Acceptable	Acceptable				none	
Willamette River Sediment Sampling Event, U.S. Moorings (4/28/99)	WLR0499	WLR0499	Cat1	No	SW846 M.8270	SVOCs	QA1Cat1	QA1	*(Lab report - DMD review, 1/02)*	11 sediments	Sound Analytical Services / Tacoma	Acceptable	Acceptable	Acceptable	none	none		Acceptable
Willamette River Sediment Sampling Event, U.S. Moorings (4/28/99)	WLR0499	WLR0499	Cat1	No	PSEP / Krone et al. 1989	TBT	QA1Cat1	QA1	*(Lab report - DMD review, 1/02)*	3 sed. porewaters	Sound Analytical Services / Tacoma	Acceptable	Acceptable		none	none		Acceptable
Willamette River Sediment Sampling Event, U.S. Moorings (4/28/99)	WLR0499	WLR0499	Cat1	No	SW846 M.8081A / 8082	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	*(Lab report - DMD review, 1/02)*	11 sediments	Sound Analytical Services / Tacoma	Acceptable	Acceptable		none	none		Acceptable
Willamette River Sediment Sampling Event, U.S. Moorings (4/28/99)	WLR0499	WLR0499	Cat1	No	SW846 M.8151(M)	Chlorin. herbicides	QA1Cat1	QA1	*(Lab report - DMD review, 1/02)*	11 sediments	Sound Analytical Services / Tacoma	Acceptable	Acceptable		none	none		Acceptable
Willamette River Sediment Sampling Event, U.S. Moorings (4/28/99)	WLR0499	WLR0499	Cat1	No	SW846 M.8290	chlorinated dioxins & furans	QA1Cat1	QA1	*(Lab report - DMD review, 1/02)*	2 sediments	Quanterra Environmental Services / W. Sacramento, CA	Acceptable	Acceptable	Acceptable		Acceptable		Acceptable
Willamette River Sediment Sampling Event, U.S. Moorings (4/28/99)	WLR0499	WLR0499	Cat2	No	SW846 M.6010, 6020 (As, Cd, Ag) & 7471 (Hg)	Metals (Sb, As, Cu, Cd, Pb, Ni, Ag, Zn & Hg)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	11 sediments	Sound Analytical Services / Tacoma	Acceptable	Acceptable		none	none	none	
Willamette River Sediment Sampling Event, U.S. Moorings (4/28/99)	WLR0499	WLR0499	Cat2	No	SW846 M.9060	TOC	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	11 sediments	Sound Analytical Services / Tacoma	Acceptable	Acceptable				none	

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Elutriation Study of Willamette River Bottom Material and Willamette-Columbia River Water (1977) by USGS/Rinella & McKenzie	WLR0577		Cat2 (no QC data presented, only results)	No	unreferenced	NH_3, CN, COD, TOC	NACat2	NA	*(none)*	1 sediment (2/1/77)	USGS / Arvada	none	??	??			??	
Elutriation Study of Willamette River Bottom Material and Willamette-Columbia River Water (1977) by USGS/Rinella & McKenzie	WLR0577		Cat2 (no QC data presented, only results)	No	unreferenced	Metals (As, Cr, Cu, Fe, Pb, Mn, Hg, Zn)	NACat2	NA	*(none)*	1 sediment (2/1/77)	USGS / Arvada	none	??	??			??	
Elutriation Study of Willamette River Bottom Material and Willamette-Columbia River Water (1977) by USGS/Rinella & McKenzie	WLR0577		Cat2 (no QC data presented, only results)	No	unreferenced	Chlorin. Pest. & total PCBs	NACat2	NA	*(none)*	1 sediment (2/1/77)	USGS / Arvada	none	??	??			??	
Elutriation Study of Willamette River Bottom Material and Willamette-Columbia River Water (1977) by USGS/Rinella & McKenzie	WLR0577		Cat2 (no QC data presented, only results)	No	unreferenced	NH_3, CN, COD, TOC	NACat2	NA	*(none)*	1 sediment (2/1/77)	USGS / Arvada	none	??	??			??	
Elutriation Study of Willamette River Bottom Material and Willamette-Columbia River Water (1977) by USGS/Rinella & McKenzie	WLR0577		Cat2 (no QC data presented, only results)	No	unreferenced	Metals (As, Cr, Cu, Fe, Pb, Mn, Hg, Zn)	NACat2	NA	*(none)*	1 sediment (2/1/77)	USGS / Arvada	none	??	??			??	
Elutriation Study of Willamette River Bottom Material and Willamette-Columbia River Water (1977) by USGS/Rinella & McKenzie	WLR0577		Cat2 (no QC data presented, only results)	No	unreferenced	Chlorin. Pest. & total PCBs	NACat2	NA	*(none)*	1 sediment (2/1/77)	USGS / Arvada	none	??	??			??	
Willamette River - Burlington Northern Railroad Bridge (8/14/89) by ACOE/Troutdale	WLR0789		Cat2 (no QC data presented, only results - nondetects reported as	No	unreferenced	Grain size	NACat2	NA	*(none)*	5 sediments (no collection dates - assume 7/89)	ACOE / Troutdale	none	*(probably OK)*					
Willamette River - Burlington Northern Railroad Bridge (89/15/89) by Battelle/Sequim	WLR0789		Cat2 (no QC data presented, only results - limited lab data report)	No	SW846 M.3050 & "atomic absorption"	Metals (Ag, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	5 surface sediments (7/89)	Battelle / Sequim	none	Acceptable	none	none	none	none	
Willamette River - Burlington Northern Railroad Bridge (89/15/89) by Battelle/Sequim	WLR0789		Cat2 (no QC data presented, only results - limited lab data report)	No	reported as SM502 (1975), which is incorrect	Oil & Grease	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	5 surface sediments (7/89)	Battelle / Sequim	none	Acceptable	none	none	none	none	
Willamette River - Burlington Northern Railroad Bridge (89/15/89) by Battelle/Sequim	WLR0789		Cat2 (no QC data presented, only results - limited lab data report)	No	SW846 M.8270	SVOCs	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	5 surface sediments (7/89)	ARI / Seattle	none	??	Acceptable	none	none		Acceptable
Willamette River - Burlington Northern Railroad Bridge (89/15/89) by Battelle/Sequim	WLR0789		Cat2 (no QC data presented, only results - limited lab data report)	No	reported as SM502 (1975), which is incorrect	TOC	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	5 surface sediments (7/89)	Battelle / Sequim	none	??					
Willamette River - Burlington Northern Railroad Bridge (89/15/89) by Battelle/Sequim	WLR0789		Cat2 (no QC data presented, only results - limited lab data report)	No	SW846 M.8080	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	5 surface sediments (7/89)	ARI / Seattle	none	??	Acceptable	none	none		Acceptable
Willamette River - Burlington Northern Railroad Bridge (8/14/89) by ACOE/Troutdale	WLR0789		Cat2 (no QC data presented, only results - nondetects reported as	No	unreferenced	Grain size	NACat2	NA	*(none)*	5 sediments (no collection dates - assume 7/89)	ACOE / Troutdale	none	*(probably OK)*					
Willamette River - Burlington Northern Railroad Bridge (89/15/89) by Battelle/Sequim	WLR0789		Cat2 (no QC data presented, only results - limited lab data report)	No	SW846 M.3050 & "atomic absorption"	Metals (Ag, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	5 surface sediments (7/89)	Battelle / Sequim	none	Acceptable	none	none	none	none	
Willamette River - Burlington Northern Railroad Bridge (89/15/89) by Battelle/Sequim	WLR0789		Cat2 (no QC data presented, only results - limited lab data report)	No	reported as SM502 (1975), which is incorrect	Oil & Grease	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	5 surface sediments (7/89)	Battelle / Sequim	none	Acceptable	none	none	none	none	
Willamette River - Burlington Northern Railroad Bridge (89/15/89) by Battelle/Sequim	WLR0789		Cat2 (no QC data presented, only results - limited lab data report)	No	SW846 M.8270	SVOCs	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	5 surface sediments (7/89)	ARI / Seattle	none	??	Acceptable	none	none		Acceptable
Willamette River - Burlington Northern Railroad Bridge (89/15/89) by Battelle/Sequim	WLR0789		Cat2 (no QC data presented, only results - limited lab data report)	No	reported as SM502 (1975), which is incorrect	TOC	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	5 surface sediments (7/89)	Battelle / Sequim	none	??					
Willamette River - Burlington Northern Railroad Bridge (89/15/89) by Battelle/Sequim	WLR0789		Cat2 (no QC data presented, only results - limited lab data report)	No	SW846 M.8080	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	5 surface sediments (7/89)	ARI / Seattle	none	??	Acceptable	none	none		Acceptable
COE Willamette River Channel Deepening 1997 Data	WLR0797	WRCHDEEP	Cat2; no analysis dates, COC, replication or referenced methods	No	EM1110-9-1906	Grain size & volatile solids	QA1Cat2	QA1	COE_CD_Convs	68 subsurface sediments	USACE / Troutdale, OR	none	Acceptable				none	
COE Willamette River Channel Deepening 1997 Data	WLR0797	WRCHDEEP	Cat1	No	ASTM D4129-82 & EPA draft method for VS	TOC, volatile sulfides	QA1Cat1	QA1	COE_CD_Convs	52 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable	
COE Willamette River Channel Deepening 1997 Data	WLR0797	WRCHDEEP	Cat1	No	EPA 200.8 (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn [M.3050 digestion]); SW846 M.7471A (Hg)	Metals	QA1Cat1	QA1	COE_CD_Metals	52 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable	
COE Willamette River Channel Deepening 1997 Data	WLR0797	WRCHDEEP	Cat1; MB shows DDT & "B" qualified, could be "U"	No	SW846 M.8080; extraction by M.3550 (sonication)	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	COE_CD_PestPCB	52 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable (DDTreported)	Acceptable	Acceptable		Acceptable
COE Willamette River Channel Deepening 1997 Data	WLR0797	WRCHDEEP	Cat1; results qual. as estimates due to low surrogates, MS & LCS recov.; MB showed some analytes & "B" qual. Note: check units - ppb or ppm?	No	SW847 M.8270 (SIM); extraction by M.3545 (PFE)	18 PAHs	QA1Cat1	QA1	COE_CD_SVOCs	52 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable (some analytes reported)	Low recoveries; qual. results	Low recoveries; qual. results		Low recoveries; qual. results
COE Willamette River Channel Deepening 1997 Data	WLR0797	WRCHDEEP	Cat1	No	GC/FPD (Krone et al., 1989)	TBT	QA1Cat1	QA1	COE_CD_TBT	18 sediment	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable MS	Acceptable		Acceptable
COE Willamette River Channel Deepening 1997 Data	WLR0797	WRCHDEEP	Cat2; no analysis dates, COC, replication or referenced methods	No	(unreferenced)	Grain size & volatile solids	QA1Cat2	QA1	COE_CD_Convs	68 subsurface sediments	USACE / Troutdale, OR	none	Acceptable				none	
Quality of Bottom Material & Elutriates in the Lower Willamette River (1989) by Fuhrer /USGS	WLR1083		Cat2 (no QC data presented, only results)	No	Fishman & Friedman 1985	Metals (As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, Hg)	NACat2	NA	*(none)*	5 surface sed. composites (10/83)	USGS Central Lab / Arvada	??	??	??	??	??	??	
Quality of Bottom Material & Elutriates in the Lower Willamette River (1989) by Fuhrer /USGS	WLR1083		Cat2 (no QC data presented, only results)	No	Wershaw 1983	Pesticides & total PCBs	NACat2	NA	*(none)*	10 surface sediments (10/83)	USGS Central Lab / Arvada	??	??	??	??	??	??	??
Quality of Bottom Material & Elutriates in the Lower Willamette River (1989) by Fuhrer /USGS	WLR1083		Cat2 (no QC data presented, only results)	No	Wershaw 1983	SVOCs	NACat2	NA	*(none)*	10 surface sediments (10/83)	USGS Central Lab / Arvada	??	??	??	??	??	??	??
Quality of Bottom Material & Elutriates in the Lower Willamette River (1989) by Fuhrer /USGS	WLR1083		Cat2 (no QC data presented, only results)	No	Wershaw 1983	Chlorin. phenoxy herbicides	NACat2	NA	*(none)*	5 surface sediments (10/83)	USGS Central Lab / Arvada	??	??	??	??	??	??	??
Quality of Bottom Material & Elutriates in the Lower Willamette River (1989) by Fuhrer /USGS	WLR1083		Cat2 (no QC data presented, only results)	No	"pipet method"	Grain size	NACat2	NA	*(none)*	10 surface sediments (10/83)	USGS Oregon Office Lab / Portland	??	??				??	
Quality of Bottom Material & Elutriates in the Lower Willamette River (1989) by Fuhrer /USGS	WLR1083		Cat2 (no QC data presented, only results)	No	Fishman & Friedman 1985	Metals (As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn, Hg)	NACat2	NA	*(none)*	5 surface sed. composites (10/83)	USGS Central Lab / Arvada	??	??	??	??	??	??	
Quality of Bottom Material & Elutriates in the Lower Willamette River (1989) by Fuhrer /USGS	WLR1083		Cat2 (no QC data presented, only results)	No	Wershaw 1983	Pesticides & total PCBs	NACat2	NA	*(none)*	10 surface sediments (10/83)	USGS Central Lab / Arvada	??	??	??	??	??	??	??
Quality of Bottom Material & Elutriates in the Lower Willamette River (1989) by Fuhrer /USGS	WLR1083		Cat2 (no QC data presented, only results)	No	Wershaw 1983	SVOCs	NACat2	NA	*(none)*	10 surface sediments (10/83)	USGS Central Lab / Arvada	??	??	??	??	??	??	??
Quality of Bottom Material & Elutriates in the Lower Willamette River (1989) by Fuhrer /USGS	WLR1083		Cat2 (no QC data presented, only results)	No	Wershaw 1983	Chlorin. phenoxy herbicides	NACat2	NA	*(none)*	5 surface sediments (10/83)	USGS Central Lab / Arvada	??	??	??	??	??	??	??
Quality of Bottom Material & Elutriates in the Lower Willamette River (1989) by Fuhrer /USGS	WLR1083		Cat2 (no QC data presented, only results)	No	"pipet method"	Grain size	NACat2	NA	*(none)*	10 surface sediments (10/83)	USGS Oregon Office Lab / Portland	??	??				??	

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
USACE Willamette River, Portland Harbor 1996 Event	WLR1196	WLR1196	Cat2; no analysis dates, COC, replication or referenced methods	No	(unreferenced)	Grain size (particle size)	QA1Cat2	QA1	Convs_WRPH	6 subsurface sediments	USACE / Troutdale, OR	none	Acceptable				none	
USACE Willamette River, Portland Harbor 1996 Event	WLR1196	WLR1196	Cat1	No	EPA 410.1 (phenols), 591 AVSM, AVS-SEM EPA 1991, ASTM D4129-82M (TOC)	phenols, acid volatile sulfides, AVS metals (simultaneous extracted), TOC	QA1Cat1	QA1	Convs_WRPH	6 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable MS		Acceptable	
USACE Willamette River, Portland Harbor 1996 Event	WLR1196	WLR1196	Cat1	No	EPA 200.8 (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn [M.3050 digestion]); SW846 M.7471A (Hg)	Metals	QA1Cat1	QA1	Metals_WRPH	6 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable MS	Acceptable	Acceptable	
USACE Willamette River, Portland Harbor 1996 Event	WLR1196	WLR1196	Cat1; results qual. as estimates due to low surrogates	No	SW846 M.8080A; extraction by M.3540 (soxhlet)	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	Pest_PCB_WRPH	6 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Low recoveries; qual. results
USACE Willamette River, Portland Harbor 1996	WLR1196	WLR1196	Cat1	No	SW846 M.8270C (SIM)	PAHs only	QA1Cat1	QA1	SVOCs_WRPH	6 subsurface	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
USACE Willamette River, Portland Harbor 1996 Event	WLR1196	WLR1196	Cat1	No	GC/FPD (Krone et al., 1989)	TBT (& DBT & MBT)	QA1Cat1	QA1	TBT_WRPH	6 subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable; low recoveries for MBT (as	Acceptable; low recoveries for MBT (as estimates)		Acceptable
USACE Willamette River, Portland Harbor 1996 Event	WLR1196	WLR1196	Cat2; no analysis dates, COC, replication or referenced methods	No	(unreferenced)	Grain size (particle size)	QA1Cat2	QA1	Convs_WRPH	6 subsurface sediments	USACE / Troutdale, OR	none	Acceptable				none	
Willamette River Sediment Sampling Event, U.S. Moorings (11/29/99)	WLR1199	WLR1199	Cat2	No	SW846 M.6010 (Cu, Ni, Zn), 6020 & 7471 (Hg)	Metals (Cu, Ni, Zn, As, Sb, Cd, Pb, Ag, Hg)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	9 sediments	Sound Analytical Services / Tacoma	Acceptable	Acceptable	Acceptable	none	none	none	
Willamette River Sediment Sampling Event, U.S. Moorings (11/29/99)	WLR1199	WLR1199	Cat2	No	SW846 M.9060	TOC	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	9 sediments	Sound Analytical Services / Tacoma	Acceptable	Acceptable	none	none	none	none	
Willamette River Sediment Sampling Event, U.S. Moorings (11/29/99)	WLR1199	WLR1199	Cat 1	Yes - Data package cover letter refers to COC	ASTM D422 (COE mod.)	Grain size	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	16 sediments	Aquatic Research, Inc. / Seattle	Data package references COC	Acceptable				Acceptable	
Willamette River Sediment Sampling Event, U.S. Moorings (11/29/99)	WLR1199	WLR1199	Cat1	No	SW846 M.8270	SVOCs	QA1Cat1	QA1	*(Lab report - DMD review, 1/02)*	10 sediments	Sound Analytical Services / Tacoma	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Willamette River Sediment Sampling Event, U.S. Moorings (11/29/99)	WLR1199	WLR1199	Cat1	No	PSEP	TBT	QA1Cat1	QA1	*(Lab report - DMD review, 1/02)*	8 sed. porewaters	Sound Analytical Services / Tacoma	Acceptable	Acceptable	none (no sample detects)				Acceptable
Willamette River Sediment Sampling Event, U.S. Moorings (11/29/99)	WLR1199	WLR1199	Cat1	No	SW846 M.8081A	Chlorin. pesticides	QA1Cat1	QA1	*(Lab report - DMD review, 1/02)*	9 sediments	Sound Analytical Services / Tacoma	Acceptable	Acceptable	none (no sample detects)	Acceptable			Acceptable
Willamette River Sediment Sampling Event, U.S. Moorings (11/29/99)	WLR1199	WLR1199	Cat2	No	SW846 M.6010 (Cu, Ni, Zn), 6020 & 7471 (Hg)	Metals (Cu, Ni, Zn, As, Sb, Cd, Pb, Ag, Hg)	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	9 sediments	Sound Analytical Services / Tacoma	Acceptable	Acceptable	Acceptable	none	none	none	
Willamette River Sediment Sampling Event, U.S. Moorings (11/29/99)	WLR1199	WLR1199	Cat2	No	SW846 M.9060	TOC	QA1Cat2	QA1	*(Lab report - DMD review, 1/02)*	9 sediments	Sound Analytical Services / Tacoma	Acceptable	Acceptable	none	none	none	none	
1998 and 1999 Elf Atochem: River Sediment and Riverbank Sediment Investigation	WLRELF99	WLRELF99	Cat1; note: same samples listed as sub and surficial	No	PSEP 1986 (grain size), EPA 415.1 (TOC)	conventionals (grain size & TOC)	QA1Cat1	QA1	Convs_DV	28 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable MS		Acceptable	
1998 and 1999 Elf Atochem: River Sediment and Riverbank Sediment Investigation	WLRELF99	WLRELF99	Cat1	No	SW846 M.8081A	Chlorinated pesticides	QA1Cat1	QA1	Pest_DV	28 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
1998 and 1999 Elf Atochem: River Sediment and Riverbank Sediment Investigation	WLRELF99	WLRELF99	Cat1; report highest detected value from two sets of analyses and qual. as estimates; all nondetects are unusable and should not be reported	No	SW846 M.8270C (SIM) & M.3550B (sonication)	SVOCs	QA1Cat1	QA1	SVOCs_DV	28 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable (initial analyses OK; reanalyses outside HTs)	Acceptable	Acceptable; generally low recoveries	Acceptable; generally low recoveries		Acceptable; initial analyses very low recov.; reanalyses better
1998 and 1999 Elf Atochem: River Sediment and Riverbank Sediment Investigation	WLRELF99	WLRELF99	Cat1	No	SW846 M.8260B	VOCs	QA1Cat1	QA1	VOCs_DV	28 surface and subsurface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Port of Portland Terminal 2 Berth 203 5/1994	WLRPT294		Cat1	Y - referece to COC in data package	EPA 160.3 M/ASTM D422M	Solids/Grainsize		QA2	*(none)*	2 surface sediments	CAS	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Port of Portland Terminal 2 Berth 203 5/1994	WLRPT294		Cat1	Y - referece to COC in data package	SW846 M.6020 & 7471 (Hg)	Metals (Sb, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn,		QA2	*(none)*	2 surface sediments	CAS	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Port of Portland Terminal 2 Berth 203 5/1994	WLRPT294		Cat1	Y - referece to COC in data package	SW846 M.8081A / 8082	Chlorin. pesticides & PCBs (Aroclors)		QA2	*(none)*	2 surface sediments	CAS	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Port of Portland Terminal 2 Berth 203 5/1994	WLRPT294		Cat1	Y - referece to COC in data package	SW846 M.8260B	VOCs		QA2	*(none)*	2 surface sediments	CAS	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Port of Portland Terminal 2 Berth 203 5/1994	WLRPT294		Cat1	Y - referece to COC in data package	PSEP - Krone et al. 1989	Organotins		QA2	*(none)*	2 surface sediments	CAS	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Port of Portland Terminal 2 Berth 203 5/1994	WLRPT294		Cat1	Y - referece to COC in data package	SW846 M.8270C (SIM)	Phthalates Esters, Phenols, PAHs		QA2	*(none)*	2 surface sediments	CAS	none	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Surrogate Recovery in MB<criteria for all associated samples. Qualify
Willamette River Basin Water Quality Study. Component 2: Review & Summary of Toxic Pollutants in the Willamette River and Major Tributaries (8/27/92) by Tetra Tech	WLRWQH92	from STORET	Cat2	No	unknown	metals (As, Ba, Cd, Cr, Cu, Pb, Ni, Ag, Zn, Sb, Se, Tl, Hg), chlorin. pest./PCBs, VOCs, SVOCs & chlorin. dioxin/furan (2,3,7,8-TCDD & 2,3,7,8-TCDF, only)	NACat2	NA	*(none)*	25 sediment stations (1987-92)	from STORET	??	??	??	??	??	??	??
Willamette River Basin Water Quality Study. Component 2: Review & Summary of Toxic Pollutants in the Willamette River and Major Tributaries (8/27/92) by Tetra Tech	WLRWQH92	from STORET	Cat2	No	unknown	metals (As, Ba, Cd, Cr, Cu, Pb, Ni, Ag, Zn, Sb, Se, Tl, Hg), chlorin. pest./PCBs, VOCs, SVOCs & chlorin. dioxin/furan (2,3,7,8-TCDD & 2,3,7,8-TCDF, only)	NACat2	NA	*(none)*	25 sediment stations (1987-92)	from STORET	??	??	??	??	??	??	??
Willbridge Terminal Facility, Portland Sediment Investigation	WLRWTF98	WLRWTF98	Cat1	No	SW846 M.8020A	BTEX	QA1Cat1	QA1	BTEX_QA_DV	14 surface sediments	North Creek Analytical / Portland	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Willbridge Terminal Facility, Portland Sediment Investigation	WLRWTF98	WLRWTF98	Cat1	No	SW846 M.6020 (As, Se), M.6010A (Ba, Cd, Cr, Cu, Pb, Ag, Zn), M.7470A/7471A (Hg)	Metals	QA1Cat1	QA1	Metals_QA_DV	11 surface sediments	North Creek Analytical / Portland	Acceptable	Acceptable	Acceptable	Acceptable MS	Acceptable	Acceptable	
Willbridge Terminal Facility, Portland Sediment Investigation	WLRWTF98	WLRWTF98	Cat1	No	SW846 M.8081	Chlorinated pesticides	QA1Cat1	QA1	Pest_QA_DV	10 surface sediments	North Creek Analytical / Portland	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Willbridge Terminal Facility, Portland Sediment Investigation	WLRWTF98	WLRWTF98	Cat1; qual. as estimates due to low recoveries	No	SW846 M.8270C (PAHs by SIM, others via full-scan)	SVOCs	QA1Cat1	QA1	SVOCs_QA_DV	14 surface sediments	North Creek Analytical / Portland	Acceptable	Acceptable	Acceptable	Acceptable; low recoveries reported	Acceptable; low recoveries reported		Acceptable; low recoveries reported similar to MS/MSD and LCS - some analytes qual. as estimates
Willbridge Terminal Facility, Portland Sediment Investigation	WLRWTF98	WLRWTF98	Cat1	No	EPA 9060	TOC	QA1Cat1	QA1	TOC_QA_MEMO (& reinspection)	13 surface sediments	North Creek Analytical / Portland	Acceptable	Acceptable	Acceptable	none	Acceptable	Acceptable	
Chemical Characterization of Sediments Adjacent to Storm Water Discharges in the Willamette River Near Portland. Feb. 20, 1995. Submitted to the U.S. EPA; prepared by Hartman Assoc. & Fishman Environ. Serv.	WRSTRM94	WRSTRM94	Cat1; some documentation lacking	No	SW846 M.6010A (Sb, Be, Cd, Cr, Cu, Pb, Ni, Ag & Zn); M.7060 (As); M.7740 (Se); M.7841 (Tl); M.7471 (Hg); digestion via M.3050 & M.7471A	Metals	QA1Cat1	QA1	Stormwater_Metals	29 surface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	MS acceptable	none	Acceptable	
Chemical Characterization of Sediments Adjacent to Storm Water Discharges in the Willamette River Near Portland. Feb. 20, 1995. Submitted to the U.S. EPA; prepared by Hartman Assoc. & Fishman Environ.	WRSTRM94	WRSTRM94	Cat1	No	SW846 M.8080 & M.3540 (soxhlet)	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat1	QA1	Stormwater_PestPCB	29 surface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable
Chemical Characterization of Sediments Adjacent to Storm Water Discharges in the Willamette River Near Portland. Feb. 20, 1995. Submitted to the U.S. EPA; prepared by Hartman Assoc. & Fishman Environ. Serv.	WRSTRM94	WRSTRM94	Cat1	No	SW846 M.8270 & M.3540C (soxhlet)	SVOCs	QA1Cat1	QA1	Stormwater_SVOCs	29 surface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable	Acceptable; low recoveries reported	Acceptable; low recoveries reported		Acceptable; low recoveries reported similar to MS/MSD and LCS - phenols qual. as estimates

Table 2. Historical Sediment Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	SURVEY_CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Chemical Characterization of Sediments Adjacent to Storm Water Discharges in the Willamette River Near Portland. Feb. 20, 1995. Submitted to the U.S. EPA; prepared by Hartman Assoc. & Fishman Environ. Serv.	WRSTRM94	WRSTRM94	Cat1	No	SW846 M.8240	VOCs	QA1Cat1	QA1	Stormwater_VOCs	29 surface sediments	CAS / Kelso	Acceptable	Acceptable	Acceptable; $MeCl_2$ reported & "B" qual. - recommend replace with "U" code	Acceptable	none		Acceptable
Portland Harbor Sediment Investigation Report (5/98) by Roy F. Weston, Inc.	WR-WSI98	WR-WSI98	Cat2 (no QC data reported)	No	SW846 M.8151A	Chlorin. phenoxy herbicides	nonCat2	none	*(none)*	7 surface sediments (8-9/97)	???	Acceptable						
Portland Harbor Sediment Investigation Report (5/98) by Roy F. Weston, Inc.	WR-WSI98	WR-WSI98	Cat1 (some results qual.)	No	SW846 M.6010 & 7471A (Hg)	Metals	QA2Cat1	QA2	*Weston (1-2/98)*	158 surface seds. (30 porewaters) & 61 cores (8-9/97)	ARI / Seattle	Acceptable	Acceptable	Acceptable (some results qual. due to presence of Al, Ca, K, Na, Zn)	MS acceptable (some Ca, Sb & Hg results qual. as estimates "J" due to low recoveries; some Sb nondetects "R" qual.)	Acceptable	Acceptable (some Hg results qual. as estimates "J" due to high variabilities)	
Portland Harbor Sediment Investigation Report (5/98) by Roy F. Weston, Inc.	WR-WSI98	WR-WSI98	Cat1	No	SW846 M.6010	Titanium	QA2Cat1	QA2	*Weston (1-2/98)*	68 surface seds. & 41 cores (8-9/97)	ARI / Seattle	Acceptable	Acceptable	Acceptable	MS acceptable	Acceptable	Acceptable	
Portland Harbor Sediment Investigation Report (5/98) by Roy F. Weston, Inc.	WR-WSI98	WR-WSI98	Cat1 (some results required qualification due to method blank performance)	No	SW846 M.8270 - PSEP	SVOCs	QA2Cat1	QA2	*Weston (1-2/98)*	158 surface seds. & 61 cores (8-9/97)	ARI / Seattle	Acceptable	Acceptable	Acceptable (some results qual. due to presence of *bis* (2-ethylhexyl)phthal	Acceptable (some PCP results qual. as unusable due to low recoveries)		Acceptable	Acceptable
Portland Harbor Sediment Investigation Report (5/98) by Roy F. Weston, Inc.	WR-WSI98	WR-WSI98	Cat1 (some results qual.)	No	SW846 M.8081 - PSEP	Chlorin. Pesticides	QA2Cat1	QA2	*Weston (1-2/98)*	47 surface seds. & 34 cores (8-9/97)	ARI / Seattle	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable (some results qual. as estimates due to low recoveries)
Portland Harbor Sediment Investigation Report (5/98) by Roy F. Weston, Inc.	WR-WSI98	WR-WSI98	Cat1 (some results qual.)	No	SW846 M.8081 - PSEP	PCBs (as Aroclors)	QA2Cat1	QA2	*Weston (1-2/98)*	53 surface seds. & 40 cores (8-9/97)	ARI / Seattle	Acceptable	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable (some results qual. as estimates due to low recoveries)
Portland Harbor Sediment Investigation Report (5/98) by Roy F. Weston, Inc.	WR-WSI98	WR-WSI98	Cat1 (some results qual.)	No	PSEP - Krone et al. 1989	TBT	QA2Cat1	QA2	*Weston (1-2/98)*	66 surface seds. (30 porewaters) & 43 cores (8-9/97)	ARI / Seattle	Acceptable	Acceptable	Acceptable	Acceptable (some results qual. as estimates "J" due to low recoveries)	Acceptable (some MBT & DBT results qual. as estimates "J" due to low recoveries)	Acceptable	Acceptable (some results qual. as estimates "J" due to low recoveries)
Portland Harbor Sediment Investigation Report (5/98) by Roy F. Weston, Inc.	WR-WSI98	WR-WSI98	Cat1 (some results qual.)	No	ASTM D442-63/PSEP & SW846 M.9060/PSEP	Grain size & TOC	QA2Cat1	QA2	*Weston (1-2/98)*	158 surface seds. & 61 cores (8-9/97)	Rosa Env. / Seattle & ARI / Seattle	Acceptable	Acceptable	Acceptable (TOC)	MS acceptable (some TOC results qual. as estimates due to low recoveries)	Acceptable (TOC)	Acceptable	
Portland Harbor Sediment Investigation Report (5/98) by Roy F. Weston, Inc.	WR-WSI98	WR-WSI98	Cat1 (some results qual.)	No	SW846 M.8290	chlorinated dioxins & furans	QA2Cat1	QA2	*Weston (2/98)*	3 surface seds. & 4 cores (8-9/97)	Maxim Technologies / Twin City Testing	Acceptable	Acceptable	Acceptable (some results qual. due to 2,3,7,8-TCDF, 2,3,4,6,7,8-HxCDF, OCDF & OCDD detections)	Acceptable (1,2,3,7,8-PeCDF & 1,2,3,6,7,8-HxCDF qual. as estimates due to high recoveries)	Acceptable		Acceptable

Notes: Definition of headings in Tables 2-4 - "Survey CD" is the survey code as assigned in the LWG database. "SedQual Survey Code" is data taken from SEDQUAL database. The "Comments" column contains the recommended QC assignment of data based on fulfillment or nonfulfillment of the data quality performance factors. "Analytical Method" is as noted. "Parameter Group" lists the reported analytes using the specified method(s). "QC Level" contains two pieces of information - the level of review (QA1 or QA2) and the assignment of data quality (Category 1 or Category 2). QA Review - either QA1, QA2 or NA (not available). "DV Survey Code" identifies the document or source for the data review - it may be published or could be (in the case of DMD QA1) as presented/summarized in this "decision matrix". "Matrix" is as specified. "Laboratory" is the analytical lab that performed the analyses. "C-O-C" indicates whether or not a means of determining sample accountability/integrity between the lab and the field is available. "HT's" indicates that sample holding times are able to be determined - they could have been exceeded with consequent assignment of pertinent data qualifier codes, as indicated in the "decision matrix". "Method Blanks", "MS/MSD", "LCS", "Replicates and Surrogate(s)" are evaluated as indicated - blanks indicates that the factor was not evaluated and may not be necessary to establish data quality for the samples/analytes of concern. ?? means that the info is required to establish data quality and is unavailable.

Table 3. Historical Water Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	Survey CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Ambient Water Quality Monitoring Program - Laboratory Analytical Storage and Retrieval Database	--	from LASAR	Cat2	No	unknown	metals, conventionals	NACat2	NA	*(none)*	water-column	from LASAR	none	??	??	??	??	??	??
Occurrence of Selected Trace Elements and Organic Compounds and Their Relation to Land Use in The Willamette River Basin, Oregon, 1992-94; Anderson et al. (USGS Water-Resources Invest. Report 96-4234) 1996.	--	from STORET	Cat2	No	unknown	metals, VOCs & pest./PCBs	NACat2	NA	*(none)*	water-column data for VOCs, metals & pesticides/PCBs	from STORET	none	??	??	??	??	??	??
Willamette River Basin Water Quality Study. Component 2: Review & Summary of Toxic Pollutants in the Willamette River and Major Tributaries (8/27/92) by Tetra Tech	--	from STORET	Cat2	No	unknown	metals (As, Ba, Cd, Cr, Cu, Pb, Ni, Ag, Zn, Sb, Se, Tl, Hg), chlorin. pest./PCBs, VOCs, SVOCs & chlorin. dioxin/furan (2,3,7,8-TCDD & 2,3,7,8-TCDF, only)	NACat2	NA	*(none)*	water	from STORET	??	??	??	??	??	??	??
Water Quality of the Lower Columbia River Basin: Analysis of Current and Historical Water-Quality Data through 1994 by Fuhrer et al. (USGS Water-Resources Invest. Report 95-4294) 1996	--	from STORET	Cat2	No	unknown	nutrients, metals & pesticides	NACat2	NA	*(none)*	water-column data for nutrients, metals & pesticides	from STORET	none	??	??	??	??	??	??
McCormick & Baxter Creosoting Co., Portland; 10/99 & 1/01	WLCMBJ99, WLCMBA01		Cat1	No	SW846 M.8270 (SIM)	PAHs & pentachlorophenol	NACat1	NA	*(Sediment Remedial Design Data Summary Report, Feb. 2001; E&E)*	validation of 6 sediments - 10 percent of samples validated	OAL	none	Acceptable	Acceptable	Acceptable			Acceptable
McCormick & Baxter Creosoting Co., Portland; 10/99 & 1/01	WLCMBJ99, WLCMBA01		Cat1	No	SW846 M.8290	chlorinated dioxins & furans	NACat1	NA	*(Sediment Remedial Design Data Summary Report, Feb. 2001; E&E)*	validation of 12 sediments - 10 percent of samples validated	Pace Analytical, Minneapolis Minnesota	none	Acceptable	Acceptabe		Acceptable		
McCormick & Baxter Creosoting Co., Portland; 10/99 & 1/01	WLCMBJ99, WLCMBA01		Cat1	No	SW846 M.8270 (SIM)	PAHs & pentachlorophenol	NACat1	NA	*(Sediment Remedial Design Data Summary Report, Feb. 2001; E&E)*	validation of 3 sediments- 10 percent of samples validated	NCA	none	Acceptable	Acceptable	Acceptable			Acceptable
McCormick & Baxter Creosoting Co., Portland; 10/99 & 1/01	WLCMBJ99, WLCMBA01		Cat 1	Yes - Additional precision information found.	EPA 200.9	arsenic	NACat2	NA	*(Sediment Remedial Design Data Summary Report, Feb. 2001; E&E)*	validation of 6 sediments - 10 percent of samples validated	OAL	None	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	
Appendix A: Data Validation Summary and Complied Chemical Laboratory Analytical Data - Ross Island Lagoon, by Hart Crowser	WLCRIL99		Cat 1	Yes - Complete QA reports submitted by Port	U.S.EPA 200.8 & SW846 M.7471A (Hg)	Metals (Sb, As, Cd, Cu, Pb, Ni, Ag, Zn, Hg)	QA1Cat2	QA1	*Environmental Synectics, Inc.*	63 sediments, 6 soils, 44 porewaters, 8 surfacewaters, 13 groundwaters & 45 leachates	CAS	Referenced in DV report	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	

Table 3. Historical Water Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	Survey CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Appendix A: Data Validation Summary and Complied Chemical Laboratory Analytical Data - Ross Island Lagoon, by Hart Crowser	WLCRIL99		Cat 1	Yes - Complete QA reports submitted by Port	SW846 M.8270 (SIM)	SVOCs	QA1Cat2	QA1	*Environmental Synectics, Inc.*	63 sediments, 6 soils, 44 porewaters, 8 surfacewaters, 13 groundwaters & 45 leachates	CAS	Referenced in DV report	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Appendix A: Data Validation Summary and Complied Chemical Laboratory Analytical Data - Ross Island Lagoon, by Hart Crowser	WLCRIL99		Cat 1	Yes - Complete QA reports submitted by Port	SW846 M.8260B	VOCs	QA1Cat2	QA1	*Environmental Synectics, Inc.*	63 sediments, 6 soils, 44 porewaters, 8 surfacewaters, 13 groundwaters & 45 leachates	CAS	Referenced in DV report	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Appendix A: Data Validation Summary and Complied Chemical Laboratory Analytical Data - Ross Island Lagoon, by Hart Crowser	WLCRIL99		Cat 1	Yes - Complete QA reports submitted by Port	SW846 M.8081	Chlorin. pesticides (DDTs only)	QA1Cat2	QA1	*Environmental Synectics, Inc.*	63 sediments, 6 soils, 44 porewaters, 8 surfacewaters, 13 groundwaters & 45 leachates	CAS	Referenced in DV report	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Appendix A: Data Validation Summary and Complied Chemical Laboratory Analytical Data - Ross Island Lagoon, by Hart Crowser	WLCRIL99		Cat 1	Yes - Complete QA reports submitted by Port	SW846 M.8082	PCBs (as Aroclors)	QA1Cat2	QA1	*Environmental Synectics, Inc.*	63 sediments, 6 soils, 44 porewaters, 8 surfacewaters, 13 groundwaters & 45 leachates	CAS	Referenced in DV report	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Appendix A: Data Validation Summary and Complied Chemical Laboratory Analytical Data - Ross Island Lagoon, by Hart Crowser	WLCRIL99		Cat 1	Yes - Complete QA reports submitted by Port	SW846 M.9060/ EPA 415.1	TOC	QA1Cat2	QA1	*Environmental Synectics, Inc.*	63 sediments, 6 soils, 44 porewaters, 8 surfacewaters, 13 groundwaters & 45 leachates	CAS	Referenced in DV report	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	
Elutriation Study of Willamette River Bottom Material and Willamette-Columbia River Water (1977) by USGS/Rinella & McKenzie	WLR0577		Cat2 (no QC data presented, only results)	No	unreferenced	NH_3, CN, COD, TOC	NACat2	NA	*(none)*		USGS / Arvada							
Elutriation Study of Willamette River Bottom Material and Willamette-Columbia River Water (1977) by USGS/Rinella & McKenzie	WLR0577		Cat2 (no QC data presented, only results)	No	unreferenced	Metals (As, Cr, Cu, Fe, Pb, Mn, Hg, Zn)	NACat2	NA	*(none)*		USGS / Arvada							
Elutriation Study of Willamette River Bottom Material and Willamette-Columbia River Water (1977) by USGS/Rinella & McKenzie	WLR0577		Cat2 (no QC data presented, only results)	No	unreferenced	Chlorin. Pest. & total PCBs	NACat2	NA	*(none)*		USGS / Arvada							
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.8010/8020	Halogenated/Aromatic Organics	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	3 Surface water samples from Doane Lake and 4 surface water samples from Willamette River	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.8080	Chlorin. pesticides & PCBs (Aroclors)	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	3 Surface water samples from Doane Lake and 4 surface water samples from Willamette River	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.8140	Phosphate ester pesticides	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	3 Surface water samples from Doane Lake and 4 surface water samples from Willamette River	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable

Table 3. Historical Water Chemical Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	Survey CD	SedQual Survey Code	Comments	Recommend Category Revision (Y/N-comment)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.8150	Chlorin. herbicides	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	3 Surface water samples from Doane Lake and 4 surface water samples from Willamette River	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.8290	chlorinated dioxins & furans	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	3 Surface water samples from Doane Lake and 4 surface water samples from Willamette River	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable		Acceptable	
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.6010	Metals	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	3 Surface water samples from Doane Lake and 4 surface water samples from Willamette River	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable		Acceptable	
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.9060	TOC	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	3 Surface water samples from Doane Lake and 4 surface water samples from Willamette River	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable		Acceptable	
RI/FS Quarterly Progress Report, 1st quarter 1995, Surface Water & Sediment, Rhône-Poulenc (6/95) by Woodward-Clyde Consultants	WLCRPB95		Cat 1	Yes - no explicit reference to COC	SW846 M.8270	SVOCs	QA1Cat2	QA1	*Woodward-Clyde (6/95)*	3 Surface water samples from Doane Lake and 4 surface water samples from Willamette River	Quanterra Environmental Services / W. Sacramento, CA	none	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable

Table 4. Historical Tissue Residue Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	Survey CD	SedQual Survey Code	Comments	Recommended Category Revision (Y/N)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Found in: EPA Region 10, Columbia River Basin Contaminant Aquatic Biota and Sediment Data - On-line Database (biota 1987-1993; sediment 1984-1994). Curtis et al. 1993/94.	CLBC8494		Cat2	No	unkown (dioxins/furans & chlor. pest & PCBs), SW846 M.8270/M.3540 (PAHs)	chlorinated dioxins/furans, PCBs, chlor. pest. & PAHs	NACat2	NA	*(none)*	wholebody & fillet (N. squawfish, cutthroat trout & carp)	(unknown - possibly OSU, Corvallis)	??	??	??	??	??	??	Variable - some acceptable
EPA Region 10, Columbia River Basin Contaminant Aquatic Biota and Sediment Data - On-line Database (biota 1987-1993; sediment 1984-1994). Sources include USFWS	CLBC8494		Cat2; no QC data	No	??	butyltins, dioxins/furans, metals, PCBs, pesticies, and SVOCs	NACat2	NA	*(none)*	biota and sediments	(unknown)							
DEQ Mercury Data; Foster 1/97	DEQWQP97		Cat2	No	??	mercury	NACat2	NA	*(none)*	fish from 2 stations	ODEQ ??							
McCormick & Baxter Creosoting Company, Remedial Investigation Report, 9/92	MBCREOS2	MBCREOS2	Cat 1	Yes - COCs referenced multiple times in DV reports; Labs identified in Volume 1 of RI report	EPA M.1625C	Selected SVOCs	QA1Cat2	QA1 equiv.	PTI 9/92	40 crayfish & fish composites	ATI / Fort Collins, CO	referenced in report	Acceptable	Acceptable	Acceptable		Acceptable	Acceptable
McCormick & Baxter Creosoting Company, Remedial Investigation Report, 9/92	MBCREOS2	MBCREOS2	Cat2; very little QC data presented	No	EPA CLP procedures	chlorinated pesticides & total PCBs	QA1Cat2	QA1 equiv.	PTI 9/92	?? crayfish & fish composites	ATI / Fort Collins, CO	none presented or referenced	no presentation	no presentation	no presentation			no presentation
McCormick & Baxter Creosoting Company, Remedial Investigation Report, 9/92	MBCREOS2	MBCREOS2	Cat 1	Yes - COCs referenced multiple times in DV reports; Labs identified in Volume 1 of RI report	SW846 M.8290 (mod.)	chlorinated dioxins & furans	QA1Cat2	QA1 equiv.	PTI 9/92	12 crayfish & fish composites	Triangle Labs / Durham, NC	referenced in report	Acceptable	Elevated levels reported in MBs	Unknown - various modifications made to method		Acceptable	Acceptable
McCormick & Baxter Creosoting Company, Remedial Investigation Report, 9/92	MBCREOS2	MBCREOS2	Cat 1	Yes - COCs referenced multiple times in DV reports; Labs identified in Volume 1 of RI report	EPA CLP procedures	metals	QA1Cat2	QA1 equiv.	PTI 9/92	24 crayfish & fish composites	CAS / Kelso	referenced in report	Acceptable	Acceptable	MS Acceptable, results qual. as estimates due to low recoveries	Acceptable	Variable - some not analyzed	
The Oregonian's "River of Risk" series - December 17-20, 2000 (OSU data)	ORRORS00		Cat2	No	(unreferenced)	Chlorin. pest. & PCB congeners	NACat2	NA	*(none)*	finfish from 6 sites	OSU ??	??	??	??	??	??	??	??
Remedial Action Plan, Station "L" Site, Willamette River Sediments, Hart Crowser, 2/88	PGERAP88		Cat2; no QC data	No	(unreferenced)	total PCBs	NACat2	NA	*(none)*	9 crayfish & 9 sculpin composites	(unknown)							
USGS Water-Resources Investigations Report 97-4082-D - Dioxins and Furans in Bed Sediment and Fish Tissue of the Willamette Basin, 1992-95	WBWRIR98		Cat2; lack of QC data	No	SW846 M.8290	chlorinated dioxins & furans	NACat2	NA	*(none)*	finfish from 8 stations	Quanterra Environmental Services / W. Sacramento, CA	??	??	??	??	??		
Willamette River Toxics Study, 1988/1991 - ODEQ 7/94	WRTOXS94		Cat2	No	"DEQ standard analytical techniques", EPA M.1613A & SW846 M.8270	chlor. pest., PCBs, dioxins/furans, PAHs & metals	NACat2	NA	*(none)*	fish from 21 stations	ODEQ	??	??	??	??	??	??	??
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat 1	Yes - Validation report acceptable (previously DV report noted as very brief).	Freeze Dry	Total Solids	Cat2	QA1	Appendix C - reviewed - JMC@SEA 04/25/07	5 tissue	Columbia Analytical Services	Missing analysis, not marked on COC	Acceptable	none	none	none	none	none

Table 4. Historical Tissue Residue Data Quality Reclassification Results. Highlighted cells show new or revised information.

Project Description	Survey CD	SedQual Survey Code	Comments	Recommended Category Revision (Y/N)	Analytical Method(s)	Parameter group	qc_level	QA Review	DV Survey Code	Matrix	Laboratory	C-O-C	HT's	Method Blank(s)	MS/MSD's	LCS's	Replicates	Surrogate(s)
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat 1	Yes - Validation report acceptable (previously DV report noted as very brief).	SW846 M.200.8 & 7470 (Hg)	Metals (Sb, As, Cd, Cr, Cu, Ni, Ag, Zn, Hg)	Cat2	QA1	Appendix C - reviewed - JMC@SEA 04/25/08	5 tissue	Columbia Analytical Services	Missing analysis, not marked on COC	Acceptable	MB: Cu>MRL all samples < MRL = "U" those > MRL = "J"	Acceptable	Acceptable	Acceptable	none
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat 1	Yes - Validation report acceptable (previously DV report noted as very brief).	SW846 M.8081A	Chlorin. Pesticides	Cat2	QA1	Appendix C - reviewed - JMC@SEA 04/25/09	5 tissue	Columbia Analytical Services	Missing analysis, not marked on COC	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat 1	Yes - Validation report acceptable (previously DV report noted as very brief).	SW846 M.8082	PCBs (Aroclors)	Cat2	QA1	Appendix C - reviewed - JMC@SEA 04/25/09	5 tissue	Columbia Analytical Services	Missing analysis, not marked on COC	Acceptable	Acceptable MDLs based on EPA3540C samples prepped with EPA3541	none	Acceptable MDLs based on EPA3540C samples prepped with EPA3541	Acceptable MDLs based on EPA3540C samples prepped with EPA3541	Acceptable MDLs based on EPA3540C samples prepped with EPA3541
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat 1	Yes - Validation report acceptable (previously DV report noted as very brief).	SW846 M.8270C	SVOCs	Cat2	QA1	Appendix C - reviewed - JMC@SEA 04/25/09	5 tissue	Columbia Analytical Services	Missing analysis, not marked on COC	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	sample 7650F surrogates out high
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat 1	Yes - Validation report acceptable (previously DV report noted as very brief).	Krone	TBT	Cat2	QA1	Appendix C - reviewed - JMC@SEA 04/25/09	5 tissue	Columbia Analytical Services	Missing analysis, not marked on COC	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	sample 7648F surrogates out high
Phase I & II Lower Willamette River Reference Area Study USACOE - Hart Crowser, Inc.	WLLRSI01		Cat 1	Yes - Validation report acceptable (previously DV report noted as very brief).	PSEP	Lipids	Cat2	QA1	Appendix C - reviewed - JMC@SEA 04/25/09	5 tissue	Columbia Analytical Services	Missing analysis, not marked on COC	Acceptable	none	none	none	none	none

Table 5. Sediment Summary Statistics for Category 1 Sediment Chemical Data Pre-Reclassification.

Sample			N	%	Detected Concentrations					Detected and Nondetected Concentrations				
Group	Analyte	N	Detected	Detected	Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
All Cat1	2,3,7,8-Tetrachlorodibenzo-p-dioxin (ng/kg)	29	14	48.3	0.51	4	1.60	1.2	3.1	0.51	6.9 U	1.45	1 U	3.1
All Cat1	Arsenic (mg/kg)	627	446	71.1	0.5	140	6.15	4	14 G	0.5	140	5.77	4.24	9.3
All Cat1	Bis(2-ethylhexyl) phthalate (ug/kg)	546	369	67.6	10 B	38000	978.11	300	3040 G	10 U	38000	933.99	220	3260 B
All Cat1	Cadmium (mg/kg)	580	484	83.4	0.03	6.6 G	0.61	0.4	2 G	0.03	6.6 G	0.65	0.4	2.12
All Cat1	Copper (mg/kg)	627	621	99.0	8	2200	85.11	41.6	187 E	8	2200	84.53	41.4	187 E
All Cat1	High Molecular Weight PAH (ug/kg)	777	707	91.0	2 A	1893000 A	37282.76	1230 A	180500 A	2 A	1893000 A	33996.35	1090 A	166000 A
All Cat1	Lead (mg/kg)	665	638	95.9	1.2	1160 E	49.91	20.8	174 G	1.2	1160 E	48.66	20 U	169
All Cat1	Low Molecular Weight PAH (ug/kg)	777	649	83.5	1.4 A	4299000 A	25810.87	322 A	105800 A	1.4 A	4299000 A	21732.78	236 A	77300 A
All Cat1	Mercury (mg/kg)	580	466	80.3	0.01	2.1	0.13	0.07 J	0.37	0.01	2.1	0.13	0.07 J	0.34 E
All Cat1	Polychlorinated biphenyls (ug/kg)	413	181	43.8	3 A	9300 A	378.03	79.1 A	1370 A	3 A	150000 UA	626.96	39 UA	1160 A
All Cat1	Total of 3 isomers: pp-DDT,-DDD,-DDE (ug/kg)	360	233	64.7	0.2 A	84909 A	1269.04	8 A	2646 A	0.2 A	84909 A	823.93	5.3 UA	1900 A
All Cat1	Tributyltin ion (ug/kg)	207	180	87.0	0.4 J	90000	2678.76	86 J	15000	0.4 J	90000	2331.30	38 H	11100 H
All Cat1	Tributyltin ion (ug/l)	153	68	44.4	0.006 J	11	0.71	0.18 J	2.24	0.006 J	11	0.33	0.037	1.31
All Cat1	Zinc (mg/kg)	607	607	100.0	10.8	2700 L	187.10	105	638	10.8	2700 L	187.10	105	638
Surface Cat1	2,3,7,8-Tetrachlorodibenzo-p-dioxin (ng/kg)	18	11	61.1	0.51	4	1.73	1.2	3.1	0.51	4	1.45	1 U	3.1
Surface Cat1	Arsenic (mg/kg)	400	269	67.3	0.6 E	132	6.52	4	14 G	0.6 E	132	6.12	5 U	9.9
Surface Cat1	Bis(2-ethylhexyl) phthalate (ug/kg)	372	247	66.4	21	38000	1198.36	350	3510	20 UG	38000	1105.50	270	3260 B
Surface Cat1	Cadmium (mg/kg)	383	328	85.6	0.05	6.6 G	0.64	0.4	2	0.05	6.6 G	0.74	0.4	2.2
Surface Cat1	Copper (mg/kg)	400	396	99.0	8	2000	84.12	42.6	163	8	2000	83.50	42.5	163
Surface Cat1	High Molecular Weight PAH (ug/kg)	463	424	91.6	2 A	1057400 A	32222.15	1156 A	158100 A	2 A	1057400 A	29612.57	1101 A	134300 A
Surface Cat1	Lead (mg/kg)	401	383	95.5	3.9	1160 E	50.40	18	174	3.9	1160 E	49.00	19	169
Surface Cat1	Low Molecular Weight PAH (ug/kg)	463	385	83.2	2.5 A	771800 A	13719.17	247 A	49000 A	2.5 A	771800 A	11674.44	214 A	29320 A
Surface Cat1	Mercury (mg/kg)	383	303	79.1	0.01	1.5	0.11	0.07	0.27	0.01	1.5	0.12	0.07	0.251
Surface Cat1	Polychlorinated biphenyls (ug/kg)	245	90	36.7	3 A	9300 A	480.03	105 A	1370 A	3 A	9300 A	259.50	40 A	1160 A
Surface Cat1	Total of 3 isomers: pp-DDT,-DDD,-DDE (ug/kg)	188	119	63.3	0.2 A	84909 A	1278.00	5 A	2260 A	0.2 A	84909 A	812.08	5 UA	920 A
Surface Cat1	Tributyltin ion (ug/kg)	129	122	94.6	0.4 J	47000	2400.45	92	9660 H	0.4 J	47000	2270.51	72	9660 H
Surface Cat1	Tributyltin ion (ug/l)	118	56	47.5	0.006 J	11	0.77	0.261 G	2.24	0.006 J	11	0.38	0.05 G	1.4
Surface Cat1	Zinc (mg/kg)	392	392	100.0	17.3 G	2700 L	198.22	105	655	17.3 G	2700 L	198.22	105	655
Subsurface Cat	2,3,7,8-Tetrachlorodibenzo-p-dioxin (ng/kg)	11	3	27.3	0.96	1.2	1.12	0.96	1.2	0.64 U	6.9 U	1.46	0.8 U	1.2
Subsurface Cat	Arsenic (mg/kg)	227	177	78.0	0.5	140	5.60	3.2	12	0.5	140	5.15	3.4	8 U
Subsurface Cat	Bis(2-ethylhexyl) phthalate (ug/kg)	174	122	70.1	10 B	16000 G	532.19	220	1400	10 U	16000 G	567.31	180 UJ	3040 G
Subsurface Cat	Cadmium (mg/kg)	197	156	79.2	0.03	5.3	0.55	0.331	1.62	0.03	5.3	0.49	0.3	1.38 E
Subsurface Cat	Copper (mg/kg)	227	225	99.1	8.31	2200	86.87	36.8	233	8.31	2200	86.33	36.7	233
Subsurface Cat	High Molecular Weight PAH (ug/kg)	314	283	90.1	2 A	1893000 A	44864.73	1415 A	198000 A	2 A	1893000 A	40460.34	1069 A	190000 A
Subsurface Cat	Lead (mg/kg)	264	255	96.6	1.2	1080	49.17	24.8	169	1.2	1080	48.14	24	146
Subsurface Cat	Low Molecular Weight PAH (ug/kg)	314	264	84.1	1.4 A	4299000 A	43444.60	442 A	152500 A	1.4 A	4299000 A	36564.02	318 A	139400 A
Subsurface Cat	Mercury (mg/kg)	197	163	82.7	0.01	2.1	0.17	0.09	0.5	0.01	2.1	0.16	0.08 E	0.46
Subsurface Cat	Polychlorinated biphenyls (ug/kg)	168	91	54.2	4 A	7100 A	277.15	69 A	799 A	4 A	150000 UA	1162.83	32 UA	710 A
Subsurface Cat	Total of 3 isomers: pp-DDT,-DDD,-DDE (ug/kg)	172	114	66.3	0.3 A	51000 A	1259.68	29 A	3056 A	0.3 A	51000 A	836.88	5.9 A	2185 A
Subsurface Cat	Tributyltin ion (ug/kg)	78	58	74.4	1	90000	3264.17	47	15000	1 U	90000	2431.84	23	12000
Subsurface Cat	Tributyltin ion (ug/l)	35	12	34.3	0.021	3.5	0.43	0.05 G	0.7	0.016 U	3.5	0.17	0.03 G	0.5
Subsurface Cat	Zinc (mg/kg)	215	215	100.0	10.8	1500 L	166.84	105	579 G	10.8	1500 L	166.84	105	579 G

Notes: The mean (i.e., average or arithmetic mean) is the sum of all the values divided by the number of values for a given analyte. The median is the middle of the distribution of values for a given analyte: half of the values are above the median and half are below the median. The 95th percentile is the smallest actual value that is greater than 95% of the values for a given analyte. When nondetected values were included in the calculation, the detection limits were used. Data were not log normalized for these calculations.

Table 6. Sediment Summary Statistics for Category 1 Sediment Chemical Data Post-Reclassification.

Sample Group	Analyte	N	N Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
All Cat1	2,3,7,8-Tetrachlorodibenzo-p-dioxin (ng/kg)	47	20	42.6	0.51	100	7.11	1.5	6 M	0.1 U	100	3.86	1 U	5 U
All Cat1	Arsenic (mg/kg)	942	714	75.8	0.5	140	5.64	4	11.7	0.2 UJ	140	5.32	4 U	9.6
All Cat1	Bis(2-ethylhexyl) phthalate (ug/kg)	736	465	63.2	10 B	88000 J	1229.04	300	3040 G	10 U	88000 J	1133.73	250	3700 B
All Cat1	Cadmium (mg/kg)	771	589	76.4	0.03	6.6 G	0.57	0.32	1.89	0.00927 U	6.6 G	0.58	0.31	1.89
All Cat1	Copper (mg/kg)	897	888	99.0	1	2200	75.94	39.9	151	1	2200	75.38	39.5	151
All Cat1	High Molecular Weight PAH (ug/kg)	1072	935	87.2	2 A	12268000 A	65605.04	1501 A	268000 A	2 A	12268000 A	57287.26	1114 A	227000 A
All Cat1	Lead (mg/kg)	877	849	96.8	1.2	1160 E	45.44	19.8	169	1.2	1160 E	44.60	20	168 B
All Cat1	Low Molecular Weight PAH (ug/kg)	1072	855	79.8	1.4 A	14140000 A	94751.32	433 A	223800 A	1.4 A	14140000 A	75716.48	300 UA	155000 A
All Cat1	Mercury (mg/kg)	762	572	75.1	0.01	2.1	0.13	0.08	0.37	0.01	2.1	0.13	0.08	0.33
All Cat1	Polychlorinated biphenyls (ug/kg)	596	253	42.4	3 A	980000 Q	4202.91	78 A	1370 A	3 A	980000 Q	2113.47	37 UA	799 A
All Cat1	Total of 3 isomers: pp-DDT,-DDD,-DDE (ug/kg)	533	322	60.4	0.2 A	84909 A	962.15	10.4 A	2185 A	0.2 A	84909 A	584.28	6.7 UA	900 A
All Cat1	Tributyltin ion (ug/kg)	273	234	85.7	0.2 J	90000	2094.79	66	9660 H	0.2 J	90000	1797.05	28 J	9600
All Cat1	Tributyltin ion (ug/l)	199	84	42.2	0.006 J	27	0.96	0.13	3.4	0.006 J	27	0.42	0.05 U	1.31
All Cat1	Zinc (mg/kg)	879	879	100.0	10.8	2700 L	167.52	102	479	10.8	2700 L	167.52	102	479
Surface Cat1	2,3,7,8-Tetrachlorodibenzo-p-dioxin (ng/kg)	29	14	48.3	0.51	100	9.18	1.5	6 M	0.24 U	100	5.29	1.1	5 U
Surface Cat1	Arsenic (mg/kg)	593	429	72.3	0.6 E	132	6.17	4.3	12	0.6 E	132	5.78	5	9.9
Surface Cat1	Bis(2-ethylhexyl) phthalate (ug/kg)	470	307	65.3	21	88000 J	1590.15	350	3510	15 U	88000 J	1410.82	270	3900 B
Surface Cat1	Cadmium (mg/kg)	479	374	78.1	0.05	6.6 G	0.62	0.4	2 G	0.00927 U	6.6 G	0.68	0.4	2 E
Surface Cat1	Copper (mg/kg)	548	541	98.7	1	2000	76.35	43	146	1	2000	75.62	43	146
Surface Cat1	High Molecular Weight PAH (ug/kg)	625	559	89.4	2 A	12268000 A	68652.03	1506 A	268800 A	2 A	12268000 A	61485.63	1260 A	202000 A
Surface Cat1	Lead (mg/kg)	508	489	96.3	2.8	1160 E	46.50	18.8	168	2.8	1160 E	45.48	19.7	166
Surface Cat1	Low Molecular Weight PAH (ug/kg)	625	508	81.3	2.5 A	14140000 A	93242.87	372 A	167600 A	2.5 A	14140000 A	75996.98	270 A	112400 A
Surface Cat1	Mercury (mg/kg)	470	345	73.4	0.01	1.5	0.11	0.07	0.27	0.01	1.5	0.12	0.08	0.24
Surface Cat1	Polychlorinated biphenyls (ug/kg)	339	120	35.4	3 A	980000 Q	8571.46	108 A	1370 A	3 A	980000 Q	3106.97	39 UA	1000 A
Surface Cat1	Total of 3 isomers: pp-DDT,-DDD,-DDE (ug/kg)	277	158	57.0	0.2 A	84909 A	989.70	7.8 A	1230 A	0.2 A	84909 A	568.36	6.7 UA	679 A
Surface Cat1	Tributyltin ion (ug/kg)	153	146	95.4	0.4 J	47000	2022.76	92	9600	0.4 J	47000	1930.48	86 J	9600
Surface Cat1	Tributyltin ion (ug/l)	152	64	42.1	0.006 J	11	0.68	0.14	1.79	0.006 J	11	0.31	0.05 U	1.07
Surface Cat1	Zinc (mg/kg)	542	542	100.0	17.3 G	2700 L	183.09	108 J	479	17.3 G	2700 L	183.09	108 J	479
Subsurface Cat1	2,3,7,8-Tetrachlorodibenzo-p-dioxin (ng/kg)	18	6	33.3	0.96	4.3	2.28	1.2	3 J	0.1 U	6.9 U	1.55	0.8 U	4.3
Subsurface Cat1	Arsenic (mg/kg)	349	285	81.7	0.5	140	4.84	3	8 G	0.2 UJ	140	4.54	3 G	8 G
Subsurface Cat1	Bis(2-ethylhexyl) phthalate (ug/kg)	266	158	59.4	10 B	16000 G	527.39	210	1700 M	10 U	21500 U	644.14	210	3040 G
Subsurface Cat1	Cadmium (mg/kg)	292	215	73.6	0.03	5.3	0.47	0.3	1.6	0.03	5.3	0.43	0.3	1.2 G
Subsurface Cat1	Copper (mg/kg)	349	347	99.4	8.31	2200	75.28	31.9	162	8.31	2200	75.00	31.6	162
Subsurface Cat1	High Molecular Weight PAH (ug/kg)	447	376	84.1	2 A	2063000 A	61075.06	1480 A	255400 A	2 A	2063000 A	51417.07	900 A	227000 A
Subsurface Cat1	Lead (mg/kg)	369	360	97.6	1.2	1080	43.99	20	175	1.2	1080	43.38	20	169
Subsurface Cat1	Low Molecular Weight PAH (ug/kg)	447	347	77.6	1.4 A	8230000 A	96959.67	500 A	272000 A	1.4 A	8230000 A	75324.28	300 UA	173569 A
Subsurface Cat1	Mercury (mg/kg)	292	227	77.7	0.01	2.1	0.16	0.08 J	0.46	0.01	2.1	0.15	0.09	0.414 U
Subsurface Cat1	Polychlorinated biphenyls (ug/kg)	257	133	51.8	4 A	7100 A	261.36	69 A	799 A	4 A	150000 UA	802.97	26 UA	635 A
Subsurface Cat1	Total of 3 isomers: pp-DDT,-DDD,-DDE (ug/kg)	256	164	64.1	0.2 A	51000 A	935.61	14.7 A	2190 A	0.2 A	51000 A	601.51	6.7 UA	1460 A
Subsurface Cat1	Tributyltin ion (ug/kg)	120	88	73.3	0.2 J	90000	2214.31	28	7100	0.2 J	90000	1626.94	13	4900
Subsurface Cat1	Tributyltin ion (ug/l)	47	20	42.6	0.012	27	1.85	0.07	3.5	0.0089 U	27	0.80	0.034	0.7
Subsurface Cat1	Zinc (mg/kg)	337	337	100.0	10.8	1500 L	142.48	81.3	450 J	10.8	1500 L	142.48	81.3	450 J

Notes: The mean (i.e., average or arithmetic mean) is the sum of all the values divided by the number of values for a given analyte. The median is the middle of the distribution of values for a given analyte: half of the values are above the median and half are below the median. The 95th percentile is the smallest actual value that is greater than 95% of the values for a given analyte. When nondetected values were included in the calculation, the detection limits were used. Data were not log normalized for these calculations.

Table 7. Pre-Category Classification: Number of Post-1990 Category 1 Sediment Samples in Portland Harbor by River Mile.

Surface Sediment	River Mile 0 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 - 6	6 - 7	7 - 8	8 - 9	9 - 10	10 - 11	Total
Aroclors	2	4	17	6	12	9	16	31	75	16	19	207
Butyltins	2	3	3	9	11	21	19	48	77	11	17	221
Conventionals	2	4	17	17	78	28	57	117	143	20	24	507
Dioxins/Furans							11	7				18
Herbicides							5	2				7
Metals	2	4	17	20	63	37	45	81	91	17	19	396
PAHs	2	4	17	17	78	23	60	105	92	17	22	437
Pesticides	2	3	3	6	17	8	15	39	28	13	16	150
Petroleum			1		44			2				47
SVOCs	2	3	17	17	67	20	31	78	90	14	19	358
Phenols		2	14	15	66	18	47	93	84	13	15	367
Phthalates		1	14	15	66	18	29	76	90	16	18	343
VOCs					37		11	28	28	5	11	120

Subsurface Sediment	River Mile 0 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 - 6	6 - 7	7 - 8	8 - 9	9 - 10	10 - 11	Total
Aroclors	10	5	4	1	7	6	5	30	56	11	9	144
Butyltins	3	5	2	1	5	6	9	33	26	9	5	104
Conventionals	11	6	5	3	28	6	82	79	146	11	10	387
Dioxins/Furans			1				8	1	1			11
Herbicides			2						7	2		11
Metals	10	5	2	3	21	7	62	45	71	9	9	244
PAHs	10	5	5	3	28	7	82	62	64	15	10	291
Pesticides	10	5	4	1	7	6	43	34	17	12	9	148
Petroleum			1		16			13				30
SVOCs	10	4	5	3	28	7	44	53	63	14	6	237
Phenols	1	5	4	3	27	6	24	54	59	13	5	201
Phthalates	1	4	4	3	27	6	4	45	60	9		163
VOCs					21		18	25	3	2		69

Notes: River mile 0 is the confluence with the Columbia River.

Table 8. Post-Category Reclassification: Number of Post-1990 Category 1 Sediment Samples in Portland Harbor by River Mile.

Surface Sediment	River Mile 0 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 - 6	6 - 7	7 - 8	8 - 9	9 - 10	10 - 11	Total
Aroclors	2	4	17	6	16	14	31	31	91	16	24	252
Butyltins	2	3	3	9	11	27	34	48	77	11	19	244
Conventionals	2	4	17	17	82	34	86	124	159	20	27	572
Dioxins/Furans							14	8				22
Herbicides							8	3	18			29
Metals	2	4	17	20	67	43	93	108	109	17	22	502
PAHs	2	4	17	17	82	29	89	112	110	17	27	506
Pesticides	2	3	3	6	21	8	33	40	44	13	18	191
Petroleum			1		44	6	9	4	18		3	85
SVOCs	2	3	17	17	71	26	51	83	106	14	24	414
Phenols		2	14	15	70	24	67	98	102	13	20	425
Phthalates		1	14	15	70	24	47	77	108	16	23	395
VOCs					41		23	31	26	5	13	139

Subsurface Sediment	River Mile 0 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 - 6	6 - 7	7 - 8	8 - 9	9 - 10	10 - 11	Total
Aroclors	10	7	4	1	12	11	5	30	55	15	11	161
Butyltins	3	7	2	1	6	11	9	33	26	11	7	116
Conventionals	11	8	5	3	33	11	91	88	144	16	12	422
Dioxins/Furans			1				10	3	1			15
Herbicides			2						7	2		11
Metals	10	7	2	3	26	12	80	55	71	11	11	288
PAHs	10	7	5	3	33	12	100	72	64	17	12	335
Pesticides	10	7	4	1	12	8	43	34	16	17	9	161
Petroleum			1		16	3	9	13			2	44
SVOCs	10	6	5	3	33	12	53	62	62	16	8	270
Phenols	1	7	4	3	32	11	33	63	59	15	7	235
Phthalates	1	6	4	3	32	11	4	45	60	11	2	179
VOCs					21		27	26	2	2		78

Table 9. Comparison of Pre- and Post-Category Reclassification: Number of Post-1990 Category 1 Sediment Samples in Portland Harbor by River Mile.

Surface Sediment	Post-Classification Total	Pre-Classification Total	Percent Change
Aroclors	252	207	21.7
Butyltins	244	221	10.4
Conventionals	572	507	12.8
Dioxins/Furans	22	18	22.2
Herbicides	29	7	314.3
Metals	502	396	26.8
PAHs	506	437	15.8
Pesticides	191	150	27.3
Petroleum	85	47	80.9
SVOCs	414	358	15.6
Phenols	425	367	15.8
Phthalates	395	343	15.2
VOCs	139	120	15.8

Subsurface Sediment	Post-Classification Total	Pre-Classification Total	Percent Change
Aroclors	161	144	11.8
Butyltins	116	104	11.5
Conventionals	422	387	9.0
Dioxins/Furans	15	11	36.4
Herbicides	11	11	0
Metals	288	244	18.0
PAHs	335	291	15.1
Pesticides	161	148	8.8
Petroleum	44	30	46.7
SVOCs	270	237	13.9
Phenols	235	201	16.9
Phthalates	179	163	9.8
VOCs	78	69	13.0