EcoChem, INC.
Environmental Data Quality

# DATA VALIDATION REPORT

## North Olympic Peninsula
## Regional Background Sediment Characterization

**Prepared for:**

NewFields
115 2nd Ave N
Suite 100
Edmonds, WA 98020

**Prepared by:**

EcoChem, Inc.
1011 Western Ave., Suite 1011
Seattle, Washington 98104

EcoChem Project: C24703-1

July 31, 2013

**Approved for Release**

Chris Ransom

## Basis for Data Validation

This report summarizes the results of QA-2 validation (EPA Stage 3/4) performed on sediment, and quality control (QC) sample data for the Regional Background Study – North Olympic Peninsula. Rinsate blanks received a QA-1 (EPA Stage 2A) level of rveview. A list of all samples is provided in the **Sample Index**. Laboratory batch ID numbers and associated levels of validation are provided at the beginning of each technical section.

Samples were analyzed by Analytical Resources, Inc., Tukwila, Washington and Axys Analytical, Sidney, British Columbia, Canada. The analytical methods and EcoChem project chemists are listed below.

| Analysis | Method of Analysis | Primary Review | Secondary Review |
|---|---|---|---|
| Polycyclic Aromatic Hydrocarbons | SW8270D-SIM | Julie Holder | Christine Ransom |
| Dioxin & Furan Compounds | EPA 1613B | Mark Brindle | |
| PCB Congeners | EPA 1668A | Melissa. Swanson | |
| Metals and Mercury | 200.8, 7470A, 7471A | Yas Hida | Dorothy Kerlin |
| Total Organic Carbon | Plumb 1981 | | |
| Grain Size | PSEP | | |
| Preserved Total Solids & Total Solids | SM 2540B | | |
| Sulfide | EPA 376.2 | | |
| Total Volatile Solids | SM2540E | | |

The data were reviewed using guidance and quality control criteria documented in the analytical methods; *North Olympic Peninsula Regional Background Sediment Characterization Sampling and Analysis Plan* (NewFields, May 3, 2013); *USEPA National Functional Guidelines for Chlorinated Dioxin/Furan Data Review* (USEPA, September 2010); *National Functional Guidelines for Organic Data Review* (USEPA 2008); and *USEPA National Functional Guidelines for Inorganic Data Review* (USEPA 2010).

EcoChem's goal in assigning data assessment qualifiers is to assist in proper data interpretation. If values are estimated (J or UJ), data may be used for site evaluation and risk assessment purposes but reasons for data qualification should be taken into consideration when interpreting sample concentrations. If values are assigned a DNR flag (do-not-report), the data should not be used for any site evaluation purposes. If values have no data qualifier assigned, then the data meet the data quality objectives as stated in the documents and methods referenced above.

Data qualifier definitions, reason codes, and validation criteria are included as **Appendix A**. The qualified data summary table is included as **Appendix B.** Data Validation Worksheets and the associated communication records will be kept on file at EcoChem, Inc. A qualified laboratory electronic data deliverable (EDD) has also been submitted as a deliverable for this project.

**Sample Index**
**North Olympic Peninsula - Regional Background Sediment Characterization**
**Analytical Resources, Inc.**

| SDG | Sample ID | Laboratory ID | PAH | Metals | Mercury | TOC, TVS | Sulfide | Grain Size |
|---|---|---|---|---|---|---|---|---|
| WP45 | RB13-DUN-03-S | WP45A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-06-S | WP45B | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-07-S | WP45C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-12-S | WP45D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-10-S | WP45E | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-13-S | WP45F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-05-S | WP45G | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-05-D | WP45H | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-05-T | WP45I | | | | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-09-S | WP45J | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-04-S | WP45K | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-02-S | WP45L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-11-S | WP45M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-01-S | WP45N | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP45 | RB13-DUN-08-S | WP45O | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP46 | RB13-DUN-17-S | WP46A | | | ✓ | | ✓ | ✓ |
| WP46 | RB13-DUN-19-S | WP46B | | | ✓ | | ✓ | ✓ |
| WP46 | RB13-DUN-14-S | WP46C | | | ✓ | | ✓ | ✓ |
| WP46 | RB13-DUN-20-S | WP46D | | | ✓ | | ✓ | ✓ |
| WP46 | RB13-DUN-16-S | WP46E | | | ✓ | | ✓ | ✓ |
| WP46 | RB13-DUN-22-S | WP46F | | | ✓ | | ✓ | ✓ |
| WP46 | RB13-DUN-21-S | WP46G | | | ✓ | | ✓ | ✓ |
| WP46 | RB13-DUN-15-S | WP46H | | | ✓ | | ✓ | ✓ |
| WP46 | RB13-DIS-04-S | WP46I | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP46 | RB13-DIS-11-S | WP46J | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP46 | RB13-DIS-08-S | WP46K | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP46 | RB13-DIS-06-S | WP46L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP46 | RB13-NOP-RB | WP46M | ✓ | ✓ | ✓ | | | |
| WP46 | RB13-NOP-ER-1 | WP46N | ✓ | ✓ | ✓ | | | |
| WP46 | RB13-DIS-09-S | WP46O | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP46 | RB13-DIS-09-D | WP46P | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP46 | RB13-DIS-09-T | WP46Q | | | | ✓ | ✓ | ✓ |
| WP46 | RB13-DUN-18-S | WP46R | | | ✓ | | ✓ | ✓ |
| WP47 | RB13-DIS-14-S | WP47A | | | ✓ | | ✓ | ✓ |
| WP47 | RB13-DIS-15-S | WP47B | | | ✓ | | ✓ | ✓ |
| WP47 | RB13-DIS-18-S | WP47C | | | ✓ | | ✓ | ✓ |
| WP47 | RB13-DIS-10-S | WP47D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP47 | RB13-DIS-07-S | WP47E | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP47 | RB13-DIS-01-S | WP47F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP47 | RB13-DIS-13-S | WP47G | | | ✓ | | ✓ | ✓ |
| WP47 | RB13-DIS-03-S | WP47H | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP47 | RB13-DIS-20-S | WP47I | | | ✓ | | ✓ | ✓ |
| WP47 | RB13-DIS-12-S | WP47J | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP47 | RB13-DIS-19-S | WP47K | | | ✓ | | ✓ | ✓ |
| WP47 | RB13-DIS-02-S | WP47L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP47 | RB13-DIS-05-S | WP47M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

**Sample Index**
**North Olympic Peninsula - Regional Background Sediment Characterization**
**Analytical Resources, Inc.**

| SDG | Sample ID | Laboratory ID | PAH | Metals | Mercury | TOC, TVS | Sulfide | Grain Size |
|---|---|---|---|---|---|---|---|---|
| WP47 | RB13-DIS-17-S | WP47N | | | ✓ | | ✓ | ✓ |
| WP47 | RB13-NOP-ER-2 | WP47O | ✓ | ✓ | ✓ | | | |
| WP47 | RB13-DIS-16-S | WP47P | | | ✓ | | ✓ | ✓ |
| WP62 | RB13-SEQ-05-S | WP62A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP62 | RB13-SEQ-08-S | WP62B | | | ✓ | | ✓ | ✓ |
| WP62 | RB13-SEQ-02-S | WP62C | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP62 | RB13-SEQ-06-S | WP62D | | | ✓ | | ✓ | ✓ |
| WP62 | RB13-SEQ-04-S | WP62E | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP62 | RB13-SEQ-03-S | WP62F | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP62 | RB13-SEQ-03-D | WP62G | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP62 | RB13-SEQ-03-T | WP62H | | | | ✓ | ✓ | ✓ |
| WP62 | RB13-SEQ-07-S | WP62I | | | ✓ | | ✓ | ✓ |
| WP62 | RB13-SEQ-01-S | WP62J | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP62 | RB13-NOP-ER-3 | WP62K | ✓ | ✓ | ✓ | | | |
| WP72 | RB13-PT-13-S | WP72A | | | ✓ | | ✓ | ✓ |
| WP72 | RB13-PT-13-D | WP72B | | | ✓ | | ✓ | ✓ |
| WP72 | RB13-PT-13-T | WP72C | | | | | ✓ | ✓ |
| WP72 | RB13-PT-14-S | WP72D | | | ✓ | | ✓ | ✓ |
| WP72 | RB13-PT-08-S | WP72E | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP72 | RB13-PT-15-S | WP72F | | | ✓ | | ✓ | ✓ |
| WP72 | RB13-PT-01-S | WP72G | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP72 | RB13-PT-06-S | WP72H | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP72 | RB13-PT-09-S | WP72I | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP72 | RB13-PT-04-S | WP72J | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP72 | RB13-PT-02-S | WP72K | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP72 | RB13-PT-05-S | WP72L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP72 | RB13-PT-10-S | WP72M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP72 | RB13-PT-07-S | WP72N | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP72 | RB13-PT-03-S | WP72O | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WP72 | RB13-PT-12-S | WP72P | | | ✓ | | ✓ | ✓ |
| WP72 | RB13-PT-11-S | WP72Q | | | ✓ | | ✓ | ✓ |
| WP72 | RB13-NOP-ER-4 | WP72R | | | ✓ | | | |

**Sample Index**
**North Olympic Peninsula - Regional Background Sediment Characterization**
**Axys Analytical**

| SDG | Sample ID | Laboratory ID | Dioxins | PCB Congeners |
|---|---|---|---|---|
| WG43679 | RB13-DUN-03-S | L19652-1 | ✓ | ✓ |
| WG43679 | RB13-DUN-06-S | L19652-2 | ✓ | ✓ |
| WG43679 | RB13-DUN-07-S | L19652-3 | ✓ | ✓ |
| WG43679 | RB13-DUN-12-S | L19652-4 | ✓ | ✓ |
| WG43679 | RB13-DUN-10-S | L19652-5 | ✓ | ✓ |
| WG43679 | RB13-DUN-13-S | L19652-6 | ✓ | ✓ |
| WG43679 | RB13-DUN-05-S | L19652-7 | ✓ | ✓ |
| WG43679 | RB13-DUN-05-D | L19652-8 | | ✓ |
| WG43679 | RB13-DUN-09-S | L19652-9 | ✓ | ✓ |
| WG43679 | RB13-DUN-04-S | L19652-10 | ✓ | ✓ |
| WG43679 | RB13-DUN-02-S | L19652-11 | ✓ | ✓ |
| WG43679 | RB13-DUN-11-S | L19652-12 | ✓ | ✓ |
| WG43679 | RB13-DUN-01-S | L19652-13 | ✓ | ✓ |
| WG43679 | RB13-DUN-08-S | L19652-14 | ✓ | ✓ |
| WG43679 | RB13-PT-06-S | L19652-15 | ✓ | ✓ |
| WG43699 | RB13-PT-09-S | L19652-16 | ✓ | ✓ |
| WG43699 | RB13-PT-04-S | L19652-17 | ✓ | ✓ |
| WG43699 | RB13-PT-05-S | L19652-19 | ✓ | ✓ |
| WG43699 | RB13-PT-10-S | L19652-20 | ✓ | ✓ |
| WG43699 | RB13-PT-07-S | L19652-21 | ✓ | ✓ |
| WG43699 | RB13-PT-03-S | L19652-22 | ✓ | ✓ |
| WG43699 | RB13-PT-08-S | L19652-23 | ✓ | ✓ |
| WG43699 | RB13-PT01-S | L19652-24 | ✓ | ✓ |
| WG43699 | RB13-SEQ-05-S | L19652-25 | ✓ | ✓ |
| WG43699 | RB13-SEQ-02-S | L19652-26 | ✓ | ✓ |
| WG43699 | RB13-SEQ-04-S | L19652-27 | ✓ | ✓ |
| WG43699 | RB13-SEQ-03-S | L19652-28 | ✓ | ✓ |
| WG43699 | RB13-SEQ-03-D | L19652-29 | ✓ | ✓ |
| WG43721 | RB13-SEQ-01-S | L19652-30 | ✓ | ✓ |
| WG43721 | RB13-DIS-10-S | L19652-31 | | ✓ |
| WG43721 | RB13-DIS-07-S | L19652-32 | ✓ | ✓ |
| WG43721 | RB13-DIS-01-S | L19652-33 | ✓ | ✓ |
| WG43721 | RB13-DIS-03-S | L19652-34 | ✓ | ✓ |
| WG43721 | RB13-DIS-12-S | L19652-35 | ✓ | ✓ |
| WG43721 | RB13-DIS-02-S | L19652-36 | ✓ | ✓ |
| WG43721 | RB13-DIS-05-S | L19652-37 | ✓ | ✓ |
| WG43721 | RB13-DIS-04-S | L19652-38 | ✓ | ✓ |
| WG43721 | RB13-DIS-11-S | L19652-39 | ✓ | ✓ |
| WG43721 | RB13-DIS-08-S | L19652-40 | ✓ | ✓ |
| WG43721 | RB13-DIS-06-S | L19652-41 | ✓ | ✓ |
| WG43721 | RB13-DIS-09-S | L19652-42 | ✓ | ✓ |
| WG43721 | RB13-DIS-09-D | L19652-43 | ✓ | ✓ |
| WG43769 | RB13-PT-02-S | L19652-18 | ✓ | ✓ |
| WG43834 | RB13-DUN-05-D | L19652-8 | ✓ | |
| WG43834 | RB13-DIS-10-S | L19652-31 | ✓ | |

# DATA VALIDATION REPORT
# North Olympic Peninsula
# Regional Background Sediment Characterization
# Dioxin & Furan Compounds by Axys Method MLA-017 (EPA 1613B)

This report documents the review of analytical data from the analysis of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Axys Analytical Services, Ltd. of Sidney, British Columbia, Canada. Refer to the **Sample Index** for a complete list of samples.

| SDG | Number of Samples | Validation Level |
|---|---|---|
| WG43679 | 15 Sediment | QA-2 (EPA Stage 4) |
| WG43699 | 13 Sediment | QA-2 (EPA Stage 4) |
| WG43721 | 13 Sediment | QA-2 (EPA Stage 4) |
| WG43769 | 1 Sediment | QA-2 (EPA Stage 4) |
| WG43834 | 2 Sediment | QA-2 (EPA Stage 4) |

## I. DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

## II. EDD TO LABORATORY REPORT PACKAGE VERIFICATION

A complete (100%) verification of the electronic data deliverable (EDD) results was performed by comparison to the laboratory data package. Laboratory QC results were also verified (10%). No errors were noted.

## III. TECHNICAL DATA VALIDATION

The QC requirements reviewed are summarized in the following table:

| | | | |
|---|---|---|---|
| √ | Sample Receipt, Preservation, and Holding Time | **1** | Reference Materials (RM) |
| √ | System Performance and Resolution Checks | **2** | Field Duplicates |
| √ | Initial Calibration (ICAL) | √ | Laboratory Duplicates |
| √ | Calibration Verification (CVER) | √ | Target Analyte List |
| **2** | Method Blanks | **2** | Reported Results |
| **2** | Labeled Compound Recovery | **2** | Compound Identification |
| √ | Ongoing Precision and Recovery (OPR) | **1** | Calculation Verification |

***√ Stated method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.***
***[1] Quality control results are discussed below, but no data were qualified.***
***[2] Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.***

## Method Blanks

In order to assess the impact of blank contamination on the reported sample results, action levels are established at five times the blank concentrations. If the concentrations in the associated field samples are less than the action levels, the results are qualified as not detected (U-7).

The laboratory assigned K-flags to dioxin and furan values when a peak was detected but did not meet identification criteria. These values cannot be considered as positive identifications, but are "estimated maximum possible concentrations". When these occurred in the method blank the results were considered as false positives. No action levels were established for these analytes.

***SDG WG43679:*** The following results were qualified as not-detected based on method blank contamination:

| Sample ID | Congener |
|---|---|
| RB13-DUN-08-S<br>RB13-DUN-07-S<br>RB13-DUN-12-S<br>RB13-DUN-05-S | 1,2,3,4,7,8-HxCDD |
| RB13-DUN-03-S<br>RB13-DUN-02-S<br>RB13-DUN-11-S<br>RB13-DUN-07-S<br>RB13-DUN-10-S | 1,2,3,6,7,8-HxCDD |
| RB13-DUN-01-S | 1,2,3,7,8,9-HxCDF |
| RB13-DUN-02-S<br>RB13-DUN-11-S<br>RB13-DUN-09-S | OCDF |

***SDG WG43699:*** The analyte OCDD was detected in the method blank; however all associated sample results were greater than the action level. No qualifiers were required.

***SDG WG43721:*** The analytes 1,2,3,4,6,7,8-HpCDD, OCDD, and OCDF were detected in the method blank. All associated sample results were greater than the action levels. No qualifiers were required.

***SDG WG43769:*** The analyte OCDD was detected in the method blank; however all associated sample results were greater than the action level. No qualifiers were required.

## Labeled Compound Recovery

***SDG WG43699:*** The percent recovery (%R) for the labeled compound $^{13}C_{12}$-OCDD was less than the lower control limit in Sample RB13-PT-03-S. The OCDD result for this sample was estimated (J-13L) to indicate a potential low bias.

***SDG WG43721:*** The following labeled compound outliers were noted:

| Sample ID | Labeled Congener | Bias | Qualifier Assigned |
|---|---|---|---|
| RB13-DIS-12-S | $^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF | Low | J-13L |
| RB13-DIS-06-S | $^{13}C_{12}$-1,2,3,4,7,8-HxCDD | Low | |
| | $^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF | Low | |
| RB13-DIS-09-S | $^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF | Low | |

***SDG WG43834:*** The %R value for the clean-up standard $^{37}$Cl-2,3,7,8-TCDD was less than the lower control limit in Sample RB13-DUN-05-D. No qualifiers were assigned as all labeled compound recoveries were acceptable.

## Reference Materials

***SDG WG43679:*** The Puget Sound Sediment Reference Material was analyzed with the samples in this SDG. The current acceptance limits are +/-50% of the average concentration. The result for 1,2,3,7,8,9-HxCDF was less than the lower control limit and the result for OCDF was greater than the upper control limit. No data were qualified based on these outliers as this reference material is still undergoing evaluation and is not yet certified.

## Field Duplicates

The following acceptance criteria were used to evaluate field precision: the relative percent difference (RPD) control limit is 50% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the difference between the sample and duplicate must be less than 2x the RL.

***SDG WG43699:*** One set of field duplicates, RB13-SEQ-03-S and RB13-SEQ-03-D, were submitted. The RPD values were within control limits. Field precision was acceptable.

***SDG WG43721:*** One set of field duplicates, RB13-DIS-09-S and RB13-DIS-09-D, were submitted. The RPD value for total tetra dioxins was greater than the control limit; these results were estimated in the field duplicate samples.

***SDG WG43834:*** One set of field duplicates, RB13-DUN-05-S (from SDG WG43679) and RB13-DUN-05-D, were submitted. The RPD values were within control limits. Field precision was acceptable.

## Reported Results

All results for 2,3,7,8-TCDF were confirmed on a DB-225 column as required by the method. The 2,3,7,8-TCDF results from both columns were reported. The 2,3,7,8-TCDF results from the DB-5 column were qualified do-not-report (DNR-11).

## Compound Identification

The laboratory assigned a" K" flag to one or more analytes in all samples to indicate the ion ratio criterion were not met. Since the ion abundance ratio is the primary identification criterion for high resolution mass spectroscopy, an outlier indicates that the reported result may be a false positive. All “K” flagged results were qualified as not detected (U-25) at the reported concentration.

***SDG WG43721:*** Sample RB13-DIS-09-D exhibited lock-mass disturbances that affected one target analyte. The laboratory assigned a "G" flag to the 1,2,3,7,8-PeCDD result. This “G” flagged result was estimated (J-14).

## Calculation Verification

Several results were verified by recalculation from the raw data. No calculation or transcription errors were noted.

# IV. OVERALL ASSESSMENT

As was determined by this evaluation, the laboratory followed the specified analytical method. With the exceptions noted above, accuracy was acceptable as demonstrated by the labeled compound, reference material, and on-going precision and recovery standard recoveries and precision was acceptable as demonstrated by the laboratory and field duplicate RPD values.

Detection limits were elevated based on ion ratio outliers and method blank contamination. Data were estimated due to labeled compound recovery outliers, a field duplicate RPD outlier, and lock-mass disturbances.

Results for 2,3,7,8-TCDF on the DB-5 column were qualified do-not-report (DNR). A usable result remains for this compound in all samples; completeness was unaffected.

Data that have been flagged DNR are not useable for any purpose.

All other data, as qualified, are acceptable for use.

# DATA VALIDATION REPORT
# North Olympic Peninsula
# Regional Background Sediment Characterization
# PCB Congeners by Axys Method MLA-010 (EPA 1668)

This report documents the review of analytical data from the analysis of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Axys Analytical Services Ltd. of Sydney, British Columbia, Canada. Refer to the **Sample Index** for a complete list of samples.

| SDG | Number of Samples | Validation Level |
|---|---|---|
| WG43679 | 15 Sediment | QA-2 (EPA Stage 4) |
| WG43699 | 13 Sediment | QA-2 (EPA Stage 4) |
| WG43721 | 14 Sediment | QA-2 (EPA Stage 4) |
| WG43769 | 1 Sediment | QA-2 (EPA Stage 4) |

## I. DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

## II. EDD TO LABORATORY REPORT PACKAGE VERIFICATION

A complete (100%) verification of the electronic data deliverable (EDD) results was performed by comparison to the laboratory data package. Laboratory QC results were also verified (10%). No errors were noted.

## III. TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

| | | | |
|---|---|---|---|
| **1** | Sample Receipt, Preservation, and Holding Times | √ | Laboratory Duplicates |
| √ | GC/MS Instrument Performance Check | **1** | Reference Materials |
| √ | Initial Calibration (ICAL) | **2** | Field Duplicates |
| √ | Continuing Calibration (CCAL) | **2** | Compound Identification |
| **2** | Method Blanks | **2** | Reported Results |
| **2** | Labeled Compounds | **1** | Reporting Limits |
| **2** | Ongoing Precision and Recovery (OPR) | **1** | Calculation Verification |

***√ Stated method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.***
***[1] Quality control results are discussed below, but no data were qualified.***
***[2] Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.***

## Sample Receipt, Preservation, and Holding Times

***SDG WG43721:*** The sample ID on the sample container RB13-DIS-**03**-S, did not match the sample ID listed on the chain-of-custody (RB13-DIS-**01**-S). The laboratory contacted the client and was instructed to use the sample ID listed on the sample container for all tracking and analyses.

## Method Blanks

Method blanks were analyzed at the appropriate frequency. To assess the impact of each blank contaminant on the reported sample results, an action level was established at five times the concentration detected in the blank and the sample results were compared to these action levels. The laboratory assigned K-flags to values when a peak was detected but did not meet identification criteria. These values cannot be considered as positive identifications, but are "estimated maximum possible concentrations". When these occurred in the method blank the results were considered as false positives. No action levels were established for these analytes.

Several PCB congeners were detected in the method blanks however, only PCB-167, PCB-190, and PCB-203 in Sample RB13-DIS-10-S were qualified as not detected (U-7). All other associated results were either greater than the action levels or not-detected.

## Labeled Compound Recovery

Labeled compounds were added to all samples. The labeled compound percent recovery (%R) values were evaluated using the laboratory control limits.

***SDG WG43721:*** The recoveries for PCB 1L, PCB 4L, and PCB 19L in Sample RB13-DIS-10-S were less than the lower control limit. The associated results were estimated (J/UJ-13L) to indicate a potential low bias.

## Ongoing Precision and Recovery

***SDG WG43721:*** For the ongoing precision and recovery (OPR) standard analyzed with this data set, the laboratory noted instrumental interferences in the quantitation of PCB 1 and PCB 3. The extract for the OPR sample was re-analyzed at dilution with no change. Because these congeners could not be quantitated in the OPR, the results for PCB 1 and PCB 3 in the associated samples were estimated (J-10).

## Reference Materials

***SDG WG43679:*** The Puget Sound Sediment Reference Material was analyzed with the samples in this SDG. The published acceptance criteria are ±50% of the average value. The recoveries for PCB 3, PCB 4, and PCB 56 were less than the lower control limits and the recoveries for PCB 129/138/160/163 and PCB 134/143 were greater than the upper control limits. No data were qualified based on these outliers as this reference material is still undergoing evaluation and is not yet certified.

## Field Duplicates

The following acceptance criteria were used to evaluate field precision: the relative percent difference (RPD) control limit is 50% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the difference between the sample and duplicate must be less than 2x the RL. The following field duplicates were collected:

| SDG | Parent Sample ID | Duplicate Sample ID |
|---|---|---|
| WG43679 | RB13-DUN-05-S | RB13-DUN-05-D |
| WG43699 | RB13-SEQ-03-S | RB13-SEQ-03-D |
| WG43721 | RB13-DIS-09-S | RB13-DIS-09-D |

***SDG WG43721:*** For samples RB13-DIS-09-S and RB13-DIS-09D, the RPD for PCB 156 was greater than the control limit. Results for this congener were estimated (J-9) in both samples.

## Compound Identification

The laboratory assigned a "K" flag to one or more analytes in all samples to indicate the ion ratio criterion were not met. Since the ion abundance ratio is the primary identification criterion for high resolution mass spectroscopy, an outlier indicates that the reported result may be a false positive. These “K” flagged results were qualified as not-detected (U-25) at elevated detection limits.

## Reported Results

Lock-mass interferences were present that affected the quantitation and/or resolution of one or more results in several samples. These samples were diluted and re-analyzed, the laboratory reported only the most appropriate result for each congener. The laboratory assigned a "G" flag to results affected by lock-mass disturbances. These "G" flagged results were estimated (J/UJ-24).

## Reporting Limits

***SDGs WG43679 & WG43699:*** Several samples in these SDG were reanalyzed at dilution (10x) due to lock mass disturbances. Reporting limits were elevated accordingly.

## Calculation Verification

Several results were verified by recalculation from the raw data. No transcription or calculation errors were found.

## IV. OVERALL ASSESSMENT

As was determined by this evaluation, the laboratory followed the specified analytical method. With the exceptions noted above, accuracy was acceptable as demonstrated by the labeled compound and OPR recoveries and precision was acceptable as demonstrated by the RPD values for the laboratory and field duplicates.

Data were estimated due to lock-mass interferences, labeled compound outliers, OPR outliers, and a field duplicate RPD outlier. Detection limits were elevated due to ion ratio outliers and method blank contamination.

All data, as qualified, are acceptable for use.

# DATA VALIDATION REPORT
# North Olympic Peninsula
# Regional Background Sediment Characterization
# Polycyclic Aromatic Hydrocarbons by SW846 Method 8270D-SIM

This report documents the review of analytical data from the analysis of sediment samples and the associated laboratory and field quality control (QC) samples. Analytical Resources, Inc., Tukwila, Washington, analyzed the samples. Refer to the **Sample Index** for a complete list of samples.

| SDG | Number of Samples | Validation Level |
|---|---|---|
| WP45 | 14 Sediment | QA-2 (EPA Stage 4) |
| WP46 | 6 Sediment<br>2 Equipment Rinsate | QA-2 (EPA Stage 4)<br>QA-1 (EPA Stage 2A) |
| WP47 | 7 Sediment<br>1 Equipment Rinsate | QA-2 (EPA Stage 4)<br>QA-1 (EPA Stage 2A) |
| WP62 | 6 Sediment<br>1 Equipment Rinsate | QA-2 (EPA Stage 4)<br>QA-1 (EPA Stage 2A) |
| WP72 | 10 Sediment | QA-2 (EPA Stage 4) |

## I. DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

## II. EDD TO LABORATORY REPORT PACKAGE VERIFICATION

A complete (100%) verification of the electronic data deliverable (EDD) results was performed by comparison to the laboratory data package. No errors were noted.

## III. TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

| | | | |
|---|---|---|---|
| **1** | Sample Receipt, Preservation, and Holding Times | **1** | Field Duplicates |
| √ | Initial Calibration (ICAL) | √ | Internal Standards |
| √ | Continuing Calibration (CCAL) | √ | Target Analyte List |
| √ | Laboratory Blanks | **1** | Reporting Limits |
| **1** | Field Blanks | √ | Compound Identification |
| √ | Surrogate Compounds | **1** | Reported Results |
| √ | Laboratory Control Samples (LCS/LCSD) | **1** | Calculation Verification |
| √ | Matrix Spike/Matrix Spike Duplicates (MS/MSD) | | |

√ ***Stated method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.***
[1] ***Quality control results are discussed below, but no data were qualified.***
[2] ***Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.***

## Sample Receipt, Preservation, and Holding Times

As stated in validation guidance documents, sample shipping coolers should arrive at the laboratory within the advisory temperature range of 2° to 6°C. The laboratory received several sample coolers with temperatures less than the advisory control limits, the lowest at -1.8°C. It was determined that these outliers did not impact data quality and no qualifiers were assigned.

***SDG WP45:*** The sample ID on the sample container, RB13-DUN-09-S, did not match the chain of custody (RB13-DUN-09). The laboratory logged the sample in using the ID on the sample container as it followed project naming conventions.

## Field Blanks

***SDG WP46:*** Two equipment rinsates, RB13-NOP-RB and RB13-NOP-ER-1, were submitted. No target analytes were detected in these field blanks.

***SDG WP47:*** One equipment rinsate, RB13-NOP-ER-2, was submitted. No target analytes were detected in this field blank.

***SDG WP62:*** One equipment rinsate, RB13-NOP-ER-3, was submitted. No target analytes were detected in this field blank.

## Field Duplicates

For results greater than five times the reporting limit (RL), the relative percent difference (RPD) control limit is 50%. For results less than five times the RL, the difference between the sample and duplicate must be less than twice the RL.

***SDG WP45:*** One set of field duplicates, RB13-DUN-05-S & RB13-DUN-05-D, were submitted. Field precision was acceptable.

***SDG WP46:*** One set of field duplicates, RB13-DIS-09-S & RB13-DIS-09-D, were submitted. All field precision criteria were met.

***SDG WP62:*** One set of field duplicates, RB13-SEQ-03-S & RB13-SEQ-03-D, were submitted. Field precision was acceptable.

## Reporting Limits

***SDG WP45:*** Several samples were analyzed at dilution due to high concentrations of target analytes; reporting limits were elevated accordingly.

## Reported Results

The QAPP specified that non-detected result should be reported at the MDL. The lab reported down to the MDL, however the laboratory reporting system is set up to report non-detects at the reporting limit (RL). During validation, the results in the EDD were changed to be ND at the MDL. No further action was taken

***SDG WP45:*** The indeno(1,2,3-cd)pyrene result for Sample RB13-DUN-12-S was detected at a level greater than the MDL, but was reported with a "U" flag. The laboratory was contacted and resubmitted the summary form with a "J" flag for this result. The EDD was also corrected during validation.

### Calculation Verification

Several results were verified by recalculation from the raw data. No calculation or transcription errors were found.

## IV. OVERALL ASSESSMENT

As was determined by this evaluation, the laboratory followed the specified analytical method. Accuracy was acceptable as demonstrated by the surrogate, matrix spike/matrix spike duplicate (MS/MSD), and laboratory control sample/laboratory control sample duplicate (LCS/LCSD) percent recovery values. Precision was also acceptable as demonstrated by the LCS/LCSD, MS/MSD, and field duplicate RPD values.

No data were qualified for any reason.

All data, as reported, are acceptable for use.

# DATA VALIDATION REPORT
# North Olympic Peninsula
# Regional Background Sediment Characterization
# Metals by Methods 200.8, 7470A, and 7471A

This report documents the review of analytical data from the analysis of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Analytical Resources, Inc., Tukwila, Washington. Refer to the **Sample Index** for a complete list of samples.

| SDG | Number of Samples | Validation Level |
|---|---|---|
| WP45 | 14 Sediment | QA-2 (EPA Stage 3) |
| WP46 | 15 Sediment<br>2 Rinsate Blank | QA-2 (EPA Stage 3)<br>QA-1 (EPA Stage 2A) |
| WP47 | 15 Sediment<br>1 Rinsate Blank | QA-2 (EPA Stage 3)<br>QA-1 (EPA Stage 2A) |
| WP62 | 9 Sediment<br>1 Rinsate Blank | QA-2 (EPA Stage 3)<br>QA-1 (EPA Stage 2A) |
| WP72 | 16 Sediment<br>1 Rinsate Blank | QA-2 (EPA Stage 3)<br>QA-1 (EPA Stage 2A) |

## I. DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

## II. EDD TO HARDCOPY VERIFICATION

A complete (100%) verification of the electronic data deliverable (EDD) results was performed by comparison to the hardcopy laboratory data package; no errors were found.

## III. TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

| | | | |
|---|---|---|---|
| 1 | Sample Receipt, Preservation, and Holding Times | 2 | Laboratory Duplicates |
| √ | Initial Calibration | 1 | Field Duplicates |
| √ | Calibration Verification | √ | Interference Check Samples |
| √ | Reporting Limit Standards | √ | Serial Dilutions |
| √ | Laboratory Blanks | √ | ICP-MS Internal Standards |
| 1 | Field Blanks | √ | Reporting Limits |
| √ | Laboratory Control Samples (LCS) | √ | Reported Results |
| 2 | Matrix Spikes (MS) | | |

***√ Stated method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.***
***[1] Quality control results are discussed below, but no data were qualified.***
***[2] Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.***

## Sample Receipt, Preservation, and Holding Times

As stated in validation guidance documents, sample shipping coolers should arrive at the laboratory within the advisory temperature range of 2° to 6°C. The laboratory received sample coolers with temperatures less than the lower control limit, the lowest at -1.8°C. It was determined that these outliers did not impact data quality and no action was necessary.

***SDG WP45:*** The sample ID on the sample container, RB13-DUN-09-S, did not match the chain of custody (RB13-DUN-09). The laboratory logged the sample in using the ID on the sample container as it followed project naming conventions.

## Field Blanks

***SDG WP46:*** This SDG included two rinsate samples: RB13-NOP-RB and RB13-NOP-ER-1. No target analytes were detected in these blanks.

***SDG WP47:*** This SDG included one rinsate sample: RB13-NOP-ER-2. No target analytes were detected in the blank.

***SDG WP62:*** This SDG included one rinsate sample: RB13-NOP-ER-3. No target analytes were detected in the blank.

***SDG WP72:*** This SDG included one rinsate sample: RB13-NOP-ER-4. No target analytes were detected in the blank.

## Matrix Spikes

***SDG WP46:*** For the sediment QC sample, the mercury percent recovery (%R) was less than the lower control limit of 75%; the mercury results in the associated samples were estimated (J/UJ-8L) to indicate a potential low bias.

## Laboratory Duplicates

***SDG WP46:*** For the sediment QC sample, the mercury relative percent difference (RPD) value was greater than the control limit of 50%; all associate mercury results were estimated (J/UJ-9).

## Field Duplicates

For results greater than five times the reporting limit (RL), the relative percent difference (RPD) control limit is 50%. For results less than five times the RL, the difference between the sample and duplicate must be less than twice the RL.

***SDG WP45:*** One set of field duplicates were submitted: RB13-DUN-05-S and RB13-DUN-05-D. Field precision was acceptable.

***SDG WP46:*** One set of field duplicates were submitted: RB13-DIS-09-S and RB13-DIS-09-D. Field precision was acceptable.

***SDG WP62:*** One set of field duplicates were submitted: RB13-SEQ-03-S and RB13-SEQ-03-D. All field precision criteria were met.

***SDG WP72:*** One set of field duplicates were submitted: RB13-PT-13-S and RB13-PT-13-D. All field precision criteria were met.

## IV. OVERALL ASSESSMENT

As was determined by this evaluation, the laboratory followed the specified analytical methods. With the exception noted above, accuracy was acceptable as demonstrated by the laboratory control sample and MS recoveries and precision was acceptable as demonstrated by the RPD values for the laboratory and field duplicate samples.

Data were estimated based on matrix spike recovery and duplicate precision outliers.

All data, as qualified, are acceptable for use.

# DATA VALIDATION REPORT
# North Olympic Peninsula
# Regional Background Sediment Characterization
# Conventionals Analyses

This report documents the review of analytical data from the analysis of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Analytical Resources, Inc., Tukwila, Washington. Refer to the **Sample Index** for a complete list of samples.

| | | |
|---|---|---|
| WP45 | 15 Sediment | QA-2 (EPA Stage 3) |
| WP46 | 16 Sediment | QA-2 (EPA Stage 3) |
| WP47 | 15 Sediment | QA-2 (EPA Stage 3) |
| WP62 | 10 Sediment | QA-2 (EPA Stage 3) |
| WP72 | 17 Sediment | QA-2 (EPA Stage 3) |

The analytical tests that were performed are summarized below:

| Parameter | Method |
|---|---|
| Grain Size | PSEP-PS |
| Total Organic Carbon | Plumb, 1981 |
| Total Solids | SM2540B |
| Preserved Total Solids | SM2540B |
| Total Volatile Solids | SM2540E |
| Sulfide | EPA 376.2 |

## I. DATA PACKAGE COMPLETENESS

The laboratory submitted all necessary deliverables for a summary validation. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

## II. EDD TO HARDCOPY VERIFICATION

A complete (100%) verification of the electronic data deliverable (EDD) results was performed by comparison to the hardcopy laboratory data package; no errors were found.

## III. TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed in the following table.

| | | | |
|---|---|---|---|
| **1** | Sample Receipt, Preservation, and Holding Times | **2** | Matrix Spike/Matrix Spike Duplicates (MS/MSD) |
| √ | Initial Calibration | **2** | Laboratory Replicates |
| √ | Calibration Verification | **2** | Field Replicates |
| √ | Laboratory Blanks | √ | Reporting Limits |
| **2** | Laboratory Control Samples (LCS) | **1** | Reported Results |
| **1** | Reference Materials | **1** | Calculation Verification |

***√ Stated method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.***
***[1] Quality control results are discussed below, but no data were qualified.***
***[2] Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.***

### Sample Receipt, Preservation, and Holding Times

As stated in validation guidance documents, sample shipping coolers should arrive at the laboratory within the advisory temperature range of 2° to 6°C. The laboratory received sample coolers with temperatures less than the lower control limit, the lowest at -1.8°C. It was determined that these outliers did not impact data quality and no action was necessary.

***SDG WP45:*** The sample ID on the sample container, RB13-DUN-09-S, did not match the chain of custody (RB13-DUN-09). The laboratory logged the sample in using the ID on the sample container as it followed project naming conventions.

### Laboratory Control Samples (LCS)

***SDG WP72:*** The percent recovery (%R) for sulfide was greater than the upper control limit of 125%; all associated sulfide results were estimated (J-10H) to indicate a potential high bias.

### Reference Materials

The standard reference material NIST #1941B was analyzed for total organic carbon (TOC). All recoveries were within the certified acceptance ranges.

### Matrix Spike/Matrix Spike Duplicates (MS/MSD)

***SDG WP47:*** The total organic carbon (TOC) %R value was less than the lower control limit of 75%; the TOC results in the associated samples were estimated (J-8L) to indicate a potential low bias.

***SDG WP62:*** The sulfide %R value was less than the lower control limit of 75%; the sulfide results in the associated samples were estimated (J-8L) to indicate a potential low bias.

### Laboratory Replicates

***SDG WP72:*** For QC Sample RB13-PT-13-S, the relative percent difference (RPD) value for sulfide was greater than the control limit of 50%; all associated sulfide results were estimated (J-9).

## Field Replicates

For results greater than five times the reporting limit (RL), the percent relative standard deviation (%RSD) control limit is 50%. For results less than five times the RL, the difference between the replicates must be less than twice the RL.

***SDG WP45:*** One set of field triplicates was submitted: RB13-DUN-05-S, RB13-DUN-05-D and RB13-DUN-05-T. Field precision was acceptable.

***SDG WP46:*** One set of field triplicates was submitted: RB13-DIS-09-S, RB13-DIS-09-D and RB13-DIS-09-T. The %RSD value for sulfide was greater than the control limit of 50%. The sulfide results in these three samples were estimated (J-9).

***SDG WP62:*** One set of field triplicates was submitted: RB13-SEQ-03-S, RB13-SEQ-03-S and RB13-SEQ-03-S. All field precision criteria were met.

***SDG WP72:*** One set of field triplicates was submitted: RB13-PT-13-S, RB13-PT-13-D and RB13-PT-13-T. The %RSD value for sulfide was greater than the control limit of 50%. The sulfide results for these samples were estimated (J-9).

## Reported Results

***SDG WP62:*** For Sample RB13-SEQ-03-S, the raw data was missing the dilution factor for sulfide, which resulted in an error in the reported result. The laboratory was contacted and submitted revised summary forms and raw data. The result in the EDD was corrected during validation.

## Calculation Verification

Several results were verified by recalculation from the raw data. With the exception noted above, no calculation or transcription errors were noted.

# IV. OVERALL ASSESSMENT

As was determined by this evaluation, the laboratory followed the specified analytical methods. With the exceptions noted above, accuracy was acceptable as demonstrated by the laboratory control sample, reference material, and matrix spike (MS) recoveries and precision was acceptable as demonstrated by the % RPD and RSD values for the laboratory and field replicate samples.

Data were estimated based on field replicate and laboratory duplicate precision outliers and matrix spike recovery outliers.

All data, as qualified, are acceptable for use.

EcoChem, INC.
Environmental Data Quality

# APPENDIX A

# DATA QUALIFIER DEFINITIONS REASON CODES AND CRITERIA TABLES

# DATA VALIDATION QUALIFIER CODES
# National Functional Guidelines

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

| | |
|---|---|
| U | The analyte was analyzed for, but was not detected above the reported sample quantitation limit. |
| J | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. |
| N | The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification". |
| NJ | The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents the approximate concentration. |
| UJ | The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. |
| R | The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified. |

The following is an EcoChem qualifier that may also be assigned during the data review process:

| | |
|---|---|
| DNR | Do not report; a more appropriate result is reported from another analysis or dilution. |

# DATA QUALIFIER REASON CODES

| Group | Code | Reason for Qualification |
|---|---|---|
| Sample Handling | 1 | Improper Sample Handling or Sample Preservation (i.e., headspace, cooler temperature, pH, summa canister pressure); Exceeded Holding Times |
| Instrument Performance | 24 | Instrument Performance (i.e., tune, resolution, retention time window, endrin breakdown) |
| | 5A | Initial Calibration (RF, %RSD, $r^2$) |
| | 5B | Calibration Verification (ICV, CCV, CCAL; RF, %D, %R)<br>Use bias flags (H,L)[1] where appropriate |
| Blank Contamination | 6 | Field Blank Contamination (Equipment Rinsate, Trip Blank, etc.) |
| | 7 | Lab Blank Contamination (i.e., method blank, instrument blank, etc.)<br>Use low bias flag (L)[1] for negative instrument blanks |
| Precision and Accuracy | 8 | Matrix Spike (MS &/or MSD) Recoveries<br>Use bias flags (H,L)[1] where appropriate |
| | 9 | Precision (all replicates: LCS/LCSD, MS/MSD, Lab Replicate, Field Replicate) |
| | 10 | Laboratory Control Sample Recoveries (a.k.a. Blank Spikes)<br>Use bias flags (H,L)[1] where appropriate |
| | 12 | Reference Material<br>Use bias flags (H,L)[1] where appropriate |
| | 13 | Surrogate Spike Recoveries (a.k.a. labeled compounds, recovery standards)<br>Use bias flags (H,L)[1] where appropriate |
| Interferences | 16 | ICP/ICP-MS Serial Dilution Percent Difference |
| | 17 | ICP/ICP-MS Interference Check Standard Recovery<br>Use bias flags (H,L)[1] where appropriate |
| | 19 | Internal Standard Performance (i.e., area, retention time, recovery) |
| | 22 | Elevated Detection Limit due to Interference (i.e., chemical and/or matrix) |
| | 23 | Bias from Matrix Interference (i.e. diphenyl ether, PCB/pesticides) |
| Identification and Quantitation | 2 | Chromatographic pattern in sample does not match pattern of calibration standard |
| | 3 | 2nd column confirmation (RPD or %D) |
| | 4 | Tentatively Identified Compound (TIC) (associated with NJ only) |
| | 20 | Calibration Range or Linear Range Exceeded |
| | 25 | Compound Identification (i.e., ion ratio, retention time, relative abundance, etc.) |
| Miscellaneous | 11 | A more appropriate result is reported (multiple reported analyses i.e., dilutions, re-extractions, etc. Associated with "R" and "DNR" only) |
| | 14 | Other (See DV report for details) |
| | 26 | Method QC information not provided |

**[1] H = high bias indicated**
**L = low bias indicated**

# EcoChem Validation Guidelines for Dioxin/Furan Analysis by HRMS
## (Based on EPA Reg. 10 SOP, Rev. 2, 1996 & EPA SW-846, Methods 1613b and 8290)

| VALIDATION QC ELEMENT | ACCEPTANCE CRITERIA | ACTION | REASON CODE |
|---|---|---|---|
| Cooler/Storage Temperature | Waters/Solids < 4°C<br>Tissues <-10°C | EcoChem PJ, see TM-05 | 1 |
| Holding Time | Extraction - Water: 30 days from collection<br>*Note:* Under CWA, SDWA, and RCRA the HT for H2O is 7 days*<br>Extraction - Soil: 30 days from collection<br>Analysis: 40 days from extraction | J(+)/UJ(-) if ext > 30 days<br>J(+)/UJ(-) if analysis > 40 Days<br>EcoChem PJ, see TM-05 | 1 |
| Mass Resolution | >=10,000 resolving power at m/z 304.9824<br>Exact mass of m/z 380.9760 w/in 5 ppm of theoretical value (380.97410 to 380.97790) .<br>Analyzed prior to ICAL and at the start and end of each 12 hr. shift | R(+/-) if not met | 14 |
| Window Defining Mix and Column Performance Mix | Window defining mixture/Isomer specificity std run before ICAL and CCAL<br>Valley < 25% (valley = (x/y)*100%)<br>x = ht. of TCDD<br>y = baseline to bottom of valley<br>For all isomers eluting near 2378-TCDD/TCDF isomers (TCDD only for 8290) | J(+) if valley > 25% | 5A (ICAL)<br>5B (CCAL |
| Initial Calibration | Minimum of five standards<br>%RSD < 20% for native compounds<br>%RSD <30% for labeled compounds<br>(%RSD <35% for labeled compounds under 1613b) | J(+) natives if %RSD > 20% | 5A |
| | Abs. RT of $^{13}C_{12}$-1234-TCDD<br>>25 min on DB5<br>>15 min on DB-225 | EcoChem PJ, see TM-05 | |
| | Ion Abundance ratios within QC limits<br>(Table 8 of method 8290)<br>(Table 9 of method 1613B) | EcoChem PJ, see TM-05 | |
| | S/N ratio > 10 for all native and labeled compounds in CS1 std. | If <10, elevate Det. Limit or R(-) | |

# EcoChem Validation Guidelines for Dioxin/Furan Analysis by HRMS
## (Based on EPA Reg. 10 SOP, Rev. 2, 1996 & EPA SW-846, Methods 1613b and 8290)

| VALIDATION QC ELEMENT | ACCEPTANCE CRITERIA | ACTION | REASON CODE |
|---|---|---|---|
| Continuing Calibration | Analyzed at the start and end of each 12 hour shift.<br>%D+/-20% for native compounds<br>%D +/-30% for labeled compounds<br>(Must meet limits in Table 6, Method 1613B)<br>(If %Ds in the closing CCAL are w/in 25%/35% the avg RF from the two CCAL may be used to calculate samples per Method 8290, Section 8.3.2.4) | Do not qualify labeled compounds. Narrate in report for labeled compound %D outliers.<br>For native compound %D outliers:<br>8290: J(+)/UJ(-) if %D = 20% - 75%<br>J(+)/R(-) if %D > 75%<br>1613: J(+)/UJ(-) if %D is outside Table 6 limits<br>J(+)/R(-) if %D is +/- 75% of Table 6 limit | 5B |
| | Abs. RT of $^{13}C_{12}$-1234-TCDD and $^{13}C12$-123789-HxCDD +/- 15 sec of ICAL. | EcoChem PJ, see ICAL section of TM-05 | |
| | RRT of all other compounds must meet Table 2 of 1613B. | EcoChem PJ, see TM-05 | |
| | Ion Abundance ratios within QC limits<br>(Table 8 of method 8290)<br>(Table 9 of method 1613B) | EcoChem PJ, see TM-05 | |
| | S/N ratio > 10 | If <10, elevate Det. Limit or R(-) | |
| Method Blank | One per matrix per batch<br>No positive results | If sample result <5X action level, qualify U at reported value. | 7 |
| Field Blanks (Not Required) | No positive results | If sample result <5X action level, qualify U at reported value. | 6 |
| LCS / OPR | Concentrations must meet limits in Table 6, Method 1613B or lab limits. | J(+) if %R > UCL<br>J(+)/UJ(-) if %R < LCL<br>J(+)/R(-) using PJ if %R <<LCL (< 10%) | 10 |
| MS/MSD (recovery) | May not analyze MS/MSD<br>%R should meet lab limits. | Qualify parent only unless other QC indicates systematic problems:<br>J(+) if both %R > UCL<br>J(+)/UJ(-) if both %R < LCL<br>J(+)/R(-) if both %R < 10%<br>PJ if only one %R outlier | 8 |
| MS/MSD (RPD) | May not analyze MS/MSD<br>RPD < 20% | J(+) in parent sample if RPD > CL | 9 |

# EcoChem Validation Guidelines for Dioxin/Furan Analysis by HRMS
## (Based on EPA Reg. 10 SOP, Rev. 2, 1996 & EPA SW-846, Methods 1613b and 8290)

| VALIDATION QC ELEMENT | ACCEPTANCE CRITERIA | ACTION | REASON CODE |
|---|---|---|---|
| Lab Duplicate | RPD <25% if present. | J(+)/UJ(-) if outside limts | 9 |
| Labeled Compounds / Internal Standards | *Method 8290:* %R = 40% - 135% in all samples<br>*Method 1613B:* %R must meet limits specified in Table 7, Method 1613 | J(+)/UJ(-) if %R = 10% to LCL<br>J(+) if %R > UCL<br>J(+)/R(-) if %R < 10% | 13 |
| Quantitation/ Identification | Ions for analyte, IS, and rec. std. must max w/in 2 sec.<br>S/N >2.5<br>IA ratios meet limits in Table 9 of 1613B or Table 8 of 8290<br>RRTs w/in limits in Table 2 of 1613B | If RT criteria not met, use PJ (see TM-05)<br>If S/N criteria not met, J(+).<br>if unlabelled ion abundance not met, change to EMPC<br>If labelled ion abundance not met, J(+). | 21 |
| EMPC (estimated maximum possible concentration) | If quantitation idenfication criteria are not met, laboratory should report an EMPC value. | If laboratory correctly reported an EMPC value, qualify with U to indicate that the value is a detection limit. | 14 |
| Interferences | PCDF interferences from PCDPE | If both detected, change PCDF result to EMPC | 14 |
| Second Column Confirmation | All 2378-TCDF hits must be confirmed on a DB-225 (or equiv) column. All QC specs in this table must be met for the confirmation analysis. | Report lower of the two values.<br>If not performed use PJ (see TM-05). | 3 |
| Field Duplicates | Use QAPP limits. If no QAPP:<br>Solids: RPD <50%<br>OR absolute diff. < 2X RL (for results < 5X RL)<br>Aqueous: RPD <35%<br>OR absolute diff. < 1X RL (for results < 5X RL) | Narrate and qualify if required by project (EcoChem PJ) | 9 |
| Two analyses for one sample | Report only one result per analyte | "DNR" results that should not be used | 11 |

# EcoChem Validation Guidelines for PCB Congener Analysis by HRMS (Based on EPA Reg. 10 SOP, Rev. 1, 12/1995 & EPA SW-846, Method 1668)

| VALIDATION QC ELEMENT | ACCEPTANCE CRITERIA | ACTION | REASON CODE |
|---|---|---|---|
| Cooler/Storage Temperature | Waters/Solids <4°C<br>Tissues <-10°C | EcoChem PJ, see TM-05 | 1 |
| Holding Time | Samples: Up to one year if stored in the dark & temp as above.<br><br>Extracts: Up to 1 year if stored at <-10°C and in the dark | J(+)/UJ(-) if HT > 1 year<br>EcoChem PJ, see TM-05 | 1 |
| Mass Resolution | >=10,000 resolving power at m/z 330.9792<br><5 ppm deviation from each m/z listed in Table 7 of method.<br>Analyzed prior to ICAL and at the beginning<br>and end of each 12 hr. shift | R(+/-) if not met | 14 |
| Column Resolution 209 Congener Solution | Mix of all 209 PCBs run prior to each ICAL<br>and each 12 hour shift<br>RT of PCB209 must be > 55 min<br>PCB 156 & 157 must coelute w/in 2 sec<br>PCB34 & 23 and PCB187 & 182 must be resolved<br>where ( (x/y)*100%) < 40%<br>x = ht. of valley and y = ht of shortest peak | J(+) if valley >40% | 5A (ICAL)<br>5B (CCAL) |
| Initial Calibration | Minimum of five standards<br>%RSD < 20% for native compounds<br>%RSD < 35% for labeled compounds | J(+) natives if %RSD > 20% | 5A |
| | Ion Abundance ratios within QC limits<br>(Method 1668, Table 8) in CS1 std. | EcoChem PJ, see TM-05 | |
| | S/N ratio > 10 for all native and labeled compounds in CS1 std. | If <10, elevate Det. Limit or R(-) | |
| Continuing Calibration | Every 12 hours: Concentrations must meet criteria specified in Method 1668, Table 6 | J(+)/(UJ(-) natives if %D = 30% - 50%<br>J(+)/R(-) natives if %D > 75% | 5B |
| | Absolute RT of all Labelled Compounds and Window Defining Congeners must be +/- 15 sec of RT in ICAL<br>RRT of all compounds must meet Table 2 of method. | EcoChem PJ, see ICAL section of TM-05 | |
| | S/N ratio > 10 | If <10, elevate Det. Limit or R(-) | |
| | Ion Abundance ratios must meet criteria specified in Method 1668, Table 8 | EcoChem PJ, see TM-05 | |
| Method Blank | One per matrix per batch<br>No positive results | If sample result <5X action level,<br>qualify U at reported value. | 7 |

# EcoChem Validation Guidelines for PCB Congener Analysis by HRMS (Based on EPA Reg. 10 SOP, Rev. 1, 12/1995 & EPA SW-846, Method 1668)

| VALIDATION QC ELEMENT | ACCEPTANCE CRITERIA | ACTION | REASON CODE |
|---|---|---|---|
| Rinse/Field Blank (if required) | One per matrix per batch<br>No positive results | If sample result <5X action level, qualify U at reported value. | 6 |
| LCS / OPR | One per matrix per batch<br>%R Values w/in limits specified in Method 1668, Table 6 | J(+) if %R > UCL<br>J(+)/UJ(-) if %R < LCL<br>J(+)/R(-) using PJ if %R <<LCL (< 10%) | 10 |
| MS/MSD (if required) | Accuracy: %R values within laboratory limits | Qualify parent sample only unless other QC indicates systematic problems:<br>J(+) if both %R > UCL<br>J(+)/UJ(-) if both %R < LCL<br>J(+)/R(-) if both %R < 10%<br>PJ if only one %R outlier | 8 |
| | Precision: RPD < 20% | J(+) in parent sample if RPD > 20% | 9 |
| Duplicate (if required) | RPD <25% | J(+)/UJ(-) if outside limts | 9 |
| Labeled Compounds / Internal Standards | %R must meet limits specified in Method 1668, Table 6. | J(+)/UJ(-) if %R = 10% to LCL<br>J(+) if %R > UCL<br>J(+)/R(-) if %R < 10% | 13 |
| Quantitation/ Identification | Ions for analyte, IS, and rec. std. must max w/in 2 sec.<br>S/N >2.5<br>Ion abundance (IA ratios) must meet limits stated in Table 8 of Method 1668<br>Relative retention times (RRT) must be w/in limits stated in Table 2 of Method 1668 | If RT criteria not met, use PJ (see TM-05)<br>J(+) if S/N criteria not met<br>if unlabelled ion abundance not met, change to EMPC<br>J(+) if labelled ion abundance not met. | 21 |
| Interferences | Lock masses must not deviate +/- 20% | Change result to EMPC | 14 |
| Field Duplicates | Use QAPP limits. If no QAPP:<br>Solids: RPD <50%<br>OR absolute diff. < 2X RL (for results < 5X RL)<br><br>Aqueous: RPD <35%<br>OR absolute diff. < 1X RL (for results < 5X RL) | Narrate and qualify if required by project (EcoChem PJ) | 9 |
| Two analyses for one sample | Report only one result per analyte | "DNR" results that should not be used to avoid reporting two results for one sample | 11 |

# EcoChem Validation Guidelines for Semivolatile Analysis by GC/MS (Based on Organic NFG 1999)

| VALIDATION QC ELEMENT | ACCEPTANCE CRITERIA | ACTION | REASON CODE |
|---|---|---|---|
| Cooler Temperature | 4°C ±2° | J(+)/UJ(-) if greater than 6 deg. C (EcoChem PJ) | 1 |
| Holding Time | Water: 7 days from collection<br>Soil: 14 days from collection<br>Analysis: 40 days from extraction | Water:<br>J(+)/UJ(-) if ext. > 7 and < 21 days<br>J(+)/R(-) if ext > 21 days (EcoChem PJ)<br>Solids/Wastes:<br>J(+)/UJ(-) if ext. > 14 and < 42 days<br>J(+)/R(-) if ext. > 42 days (EcoChem PJ)<br><br>J(+)/UJ(-) if analysis >40 days | 1 |
| Tuning | DFTPP<br>Beginning of each 12 hour period<br>Method acceptance criteria | R(+/-) all analytes in all samples associated with the tune | 5A |
| Initial Calibration (Minimum 5 stds.) | RRF > 0.05 | (EcoChem PJ, see TM-06)<br>If MDL= reporting limit:<br>J(+)/R(-) if RRF < 0.05<br><br>If reporting limit > MDL:<br>note in worksheet if RRF <0.05 | 5A |
| | %RSD < 30% | (EcoChem PJ, see TM-06)<br>J(+) if %RSD > 30% | 5A |
| Continuing Calibration (Prior to each 12 hr. shift) | RRF > 0.05 | (EcoChem PJ, see TM-06)<br>If MDL= reporting limit:<br>J(+)/R(-) if RRF < 0.05<br><br>If reporting limit > MDL:<br>note in worksheet if RRF <0.05 | 5B |
| | %D <25% | (EcoChem PJ, see TM-06)<br>If > +/-90%: J+/R-<br>If -90% to -26%: J+ (high bias)<br>If 26% to 90%: J+/UJ- (low bias) | 5B |
| Method Blank | One per matrix per batch<br>No results > CRQL | U(+) if sample (+) result is less than CRQL and less than appropriate 5X or 10X rule (raise sample value to CRQL) | 7 |
| | | U(+) if sample (+) result is greater than or equal to CRQL and less than appropriate 5X and 10X rule (at reported sample value) | 7 |
| | No TICs present | R(+) TICs using 10X rule | 7 |
| Field Blanks (Not Required) | No results > CRQL | Apply 5X/10X rule; U(+) < action level | 6 |

# EcoChem Validation Guidelines for Semivolatile Analysis by GC/MS (Based on Organic NFG 1999)

| VALIDATION QC ELEMENT | ACCEPTANCE CRITERIA | ACTION | REASON CODE |
|---|---|---|---|
| MS/MSD (recovery) | One per matrix per batch<br>Use method acceptance criteria | Qualify parent only unless other QC indicates systematic problems:<br>J(+) if both %R > UCL<br>J(+)/UJ(-) if both %R < LCL<br>J(+)/R(-) if both %R < 10%<br>PJ if only one %R outlier | 8 |
| MS/MSD (RPD) | One per matrix per batch<br>Use method acceptance criteria | J(+) in parent sample if RPD > CL | 9 |
| LCS<br>low conc. H2O SVOA | One per lab batch<br>Within method control limits | J(+) assoc. cmpd if > UCL<br>J(+)/R(-) assoc. cmpd if < LCL<br>J(+)/R(-) all cmpds if half are < LCL | 10 |
| LCS<br>regular SVOA (H2O & solid) | One per lab batch<br>Lab or method control limits | J(+) if %R > UCL J(+)/UJ(-) if %R <LCL<br>J(+)/R(-) if %R < 10% (EcoChem PJ) | 10 |
| LCS/LCSD<br>*(if required)* | One set per matrix and batch of 20 samples<br>RPD < 35% | J(+)/UJ(-) assoc. cmpd. in all samples | 9 |
| Surrogates | Minimum of 3 acid and 3 base/neutral compounds<br>Use method acceptance criteria | Do not qualify if only 1 acid and/or 1 B/N surrogate is out unless <10%<br>J(+) if %R > UCL J(+)/UJ(-) if %R < LCL<br>J(+)/R(-) if %R < 10% | 13 |
| Internal Standards | Added to all samples<br>Acceptable Range: IS area 50% to 200% of CCAL area<br>RT within 30 seconds of CC RT | J(+) if > 200%<br>J(+)/UJ(-) if < 50%<br>J(+)/R(-) if < 25%<br>RT>30 seconds, narrate and Notify PM | 19 |
| Field Duplicates | Use QAPP limits. If no QAPP:<br>Solids: RPD <50%<br>OR absolute diff. < 2X RL (for results < 5X RL)<br><br>Aqueous: RPD <35%<br>OR absolute diff. < 1X RL (for results < 5X RL) | Narrate and qualify if required by project<br>(EcoChem PJ) | 9 |
| TICs | Major ions (>10%) in reference must be present in sample; intensities agree within 20%; check identification | NJ the TIC unless:<br>R(+) common laboratory contaminants<br>See Technical Director for ID issues | 4 |
| Quantitation/ Identification | RRT within 0.06 of standard RRT<br>Ion relative intensity within 20% of standard<br>All ions in std. at > 10% intensity must be present in sample | See Technical Director if outliers | 14<br>21 (false +) |

# EcoChem Validation Guidelines for Metals Analysis by ICP-MS (Based on Inorganic NFG 1994 & 2004)

| VALIDATION QC ELEMENT | ACCEPTANCE CRITERIA | ACTION | REASON CODE |
|---|---|---|---|
| Cooler Temperature and Preservation | Cooler temperature: 4°C ±2°<br>Waters: Nitric Acid to pH < 2<br>For Dissolved Metals: 0.45um filter & preserve after filtration | EcoChem Professional Judgment - no qualification based on cooler temperature outliers<br>J(+)/UJ(-) if pH preservation requirements are not met | 1 |
| Holding Time | 180 days from date sampled<br>Frozen tissues - HT extended to 2 years | J(+)/UJ(-) if holding time exceeded | 1 |
| Tune | Prior to ICAL<br>monitoring compounds analyzed 5 times wih Std Dev. ≤ 5%<br>mass calibration <0.1 amu from True Value<br>Resolution < 0.9 AMU @ 10% peak height or <0.75 amu @ 5% peak height | Use Professional Judgment to evaluate tune<br>J(+)/UJ(-) if tune criteria not met | 5A |
| Initial Calibration | Blank + minimum 1 standard<br>If more than 1 standard, r>0.995 | J(+)/UJ(-) if r<0.995 (for multi point cal) | 5A |
| Initial Calibration Verification (ICV) | Independent source analyzed immediately after calibration<br>%R within ±10% of true value | J(+)/UJ(-) if %R 75-89%<br>J(+) if %R = 111-125%<br>R(+) if %R > 125%<br>R(+/-) if %R < 75% | 5A |
| Continuing Calibration Verification (CCV) | Every ten samples, immediately following ICV/ICB and at end of run<br>±10% of true value | J(+)/UJ(-) if %R = 75-89%<br>J(+) if %R 111-125%<br>R(+) if %R > 125%<br>R(+/-) if %R < 75% | 5B |
| Initial and Continuing Calibration Blanks (ICB/CCB) | After each ICV and CCV<br>every ten samples and end of run<br>\| blank \| < IDL (MDL) | Action level is 5x absolute value of blank conc.<br>For (+) blanks, U(+) results < action level<br>For (-) blanks, J(+)/UJ(-) results < action level<br>refer to **TM-02** for additional details | 7 |
| Reporting Limit Standard (CRI) | 2x RL analyzed beginning of run<br>Not required for Al, Ba, Ca, Fe, Mg, Na, K<br>%R = 70%-130% (50%-150% Co,Mn, Zn) | R(-),(+) < 2x RL if %R < 50% (< 30% Co,Mn, Zn)<br>J(+) < 2x RL, UJ(-) if %R 50-69% (30%-49% Co,Mn, Zn)<br>J(+) < 2x RL if %R 130%-180% (150%-200% Co,Mn, Zn)<br>R(+) < 2x RL if %R > 180% (200% Co, Mn, Zn) | 14 |
| Interference Check Samples (ICSA/ICSAB) | Required by SW 6020, but not 200.8<br>ICSAB %R 80% - 120% for all spiked elements<br>\| ICSA \| < IDL (MDL) for all unspiked elements | For samples with Al, Ca, Fe, or Mg > ICS levels<br>R(+/-) if %R < 50%<br>J(+) if %R >120%<br>J(+)/UJ(-) if %R = 50% to 79%<br>Use Professional Judgment for ICSA to determine if bias is present<br>see **TM-09** for additional details | 17 |
| Method Blank | One per matrix per batch<br>(batch not to exceed 20 samples)<br>blank < MDL | Action level is 5x blank concentration<br>U(+) results < action level | 7 |

# EcoChem Validation Guidelines for Metals Analysis by ICP-MS (Based on Inorganic NFG 1994 & 2004)

| VALIDATION QC ELEMENT | ACCEPTANCE CRITERIA | ACTION | REASON CODE |
|---|---|---|---|
| Laboratory Control Sample (LCS) | One per matrix per batch<br>Blank Spike: %R within 80%-120% | R(+/-) if %R < 50%<br>J(+)/UJ(-) if %R = 50-79%<br>J(+) if %R >120% | 10 |
| | CRM: Result within manufacturer's certified acceptance range or project guidelines | J(+)/UJ(-) if < LCL,<br>J(+) if > UCL | |
| Matrix Spike/ Matrix Spike Duplicate (MS/MSD) | One per matrix per batch<br>75-125% for samples where results do not exceed 4x spike level | J(+) if %R>125%<br>J(+)/UJ(-) if %R <75%<br>J(+)/R(-) if %R<30% **or**<br>J(+)/UJ(-) if Post Spike %R 75%-125%<br>Qualify all samples in batch | 8 |
| Post-digestion Spike | If Matrix Spike is outside 75-125%,<br>Spike parent sample at 2x the sample conc. | No qualifiers assigned based on this element | |
| Laboratory Duplicate (or MS/MSD) | One per matrix per batch<br>RPD < 20% for samples > 5x RL<br>Diff ≤ RL for samples >RL and < 5x RL<br>(Diff ≤ 2x RL for solids) | J(+)/UJ(-) if RPD > 20% or diff > RL<br>all samples in batch | 9 |
| Serial Dilution | 5x dilution one per matrix<br>%D < 10% for original sample values > 50x MDL | J(+)/UJ(-) if %D >10%<br>All samples in batch | 16 |
| Internal Standards | Every sample<br>SW6020: 60%-125% of cal blank IS<br>200.8: 30%-120% of cal blank IS | J (+)/UJ (-) all analytes associated with IS outlier | 19 |
| Field Blank | Blank < MDL | Action level is 5x blank conc.<br>U(+) sample values < AL<br>in associated field samples only | 6 |
| Field Duplicate | For results > 5x RL:<br>Water: RPD < 35% Solid: RPD < 50%<br>For results < 5 x RL:<br>Water: Diff < RL Solid: Diff < 2x RL | J(+)/UJ(-) in parent samples only | 9 |
| Linear Range | Sample concentrations must fall within range | J values over range | 20 |

# EcoChem Validation Guidelines for Mercury Analysis by CVAA (Based on Inorganic NFG 1994 & 2004)

| VALIDATION QC ELEMENT | ACCEPTANCE CRITERIA | ACTION | REASON CODE |
|---|---|---|---|
| Cooler Temperature and Preservation | Cooler temperature: 4°C ±2°<br>Waters: Nitric Acid to pH < 2<br>For Dissolved Metals: 0.45um filter & preserve after filtration | EcoChem Professional Judgment - no qualification based on cooler temperature outliers<br>J(+)/UJ(-) if pH preservation requirements are not met | 1 |
| Holding Time | 28 days from date sampled<br>Frozen tissues: HT extended to 6 months | J(+)/UJ(-) if holding time exceeded | 1 |
| Initial Calibration | Blank + 4 standards, one at RL<br>r > 0.995 | J(+)/UJ(-) if r<0.995 | 5A |
| Initial Calibration Verification (ICV) | Independent source analyzed immediately after calibration<br>%R within ±20% of true value | J(+)/UJ(-) if %R = 65%-79%<br>J(+) if %R = 121-135%<br>R(+/-) if %R < 65% R(+) if %R > 135% | 5A |
| Continuing Calibration Verification (CCV) | Every ten samples, immediately following ICV/ICB and at end of run<br>%R within ±20% of true value | J(+)/UJ(-) if %R = 65%-79%<br>J(+) if %R = 121-135%<br>R(+/-) if %R < 65% R(+) if %R > 135% | 5B |
| Initial and Continuing Calibration Blanks (ICB/CCB) | after each ICV and CCV<br>every ten samples and end of run<br>\| blank \| < IDL (MDL) | Action level is 5x absolute value of blank conc.<br>For (+) blanks, U(+) results < action level<br>For (-) blanks, J(+)/UJ(-) results < action level<br>refer to **TM-02** for additional details | 7 |
| Reporting Limit Standard (CRA) | conc at RL - analyzed beginning of run<br>%R = 70-130% | R(-),(+)<2xRL if %R <50%<br>J(+)<2x RL, UJ(-) if %R 50-69%<br>J(+) <2x RL if %R 130-180%<br>R(+)<2x RL if %R>180% | 14 |
| Method Blank | One per matrix per batch<br>(batch not to exceed 20 samples)<br>blank < MDL | Action level is 5x blank concentration<br>U(+) results < action level | 7 |
| Laboratory Control Sample (LCS) | One per matrix per batch | | 10 |
| | Blank Spike: %R within 80-120% | R(+/-) if %R < 50%<br>J(+)/UJ(-) if %R = 50-79%<br>J(+) if %R >120% | |
| | CRM: Result within manufacturer's certified acceptance range or project guidelines | J(+)/UJ(-) if < LCL,<br>J(+) if > UCL | |
| Matrix Spike/Matrix Spike Duplicate (MS/MSD) | One per matrix per batch<br>5% frequency<br>75-125% for samples less than 4x spike level | J(+) if %R>125%<br>J(+)/UJ(-) if %R <75%<br>J(+)/R(-) if %R<30%<br>all samples in batch | 8 |
| Laboratory Duplicate (or MS/MSD) | One per matrix per batch<br>RPD < 20% for samples > 5x RL<br>Diff ≤ RL for samples >RL and < 5x RL<br>(Diff ≤ 2x RL for solids) | J(+)/UJ(-) if RPD > 20% or diff > RL<br>all samples in batch | 9 |

# EcoChem Validation Guidelines for Mercury Analysis by CVAA (Based on Inorganic NFG 1994 & 2004)

| VALIDATION QC ELEMENT | ACCEPTANCE CRITERIA | ACTION | REASON CODE |
|---|---|---|---|
| Field Blank | Blank < MDL | Action level is 5x blank conc.<br>U(+) sample values < action level<br>in associated field samples only | 6 |
| Field Duplicate | For results > 5x RL:<br>Water: RPD < 35% Solid: RPD < 50%<br>For results < 5x RL:<br>Water: Diff<RL Solid: Diff < 2x RL | J(+)/UJ(-) in parent samples only | 9 |
| Linear Range | Sample concentrations must be less than 110% of high standard | J values over range | 20 |

# EcoChem Validation Guidelines for Conventional Chemistry Analysis (Based on EPA Standard Methods)

| VALIDATION QC ELEMENT | ACCEPTANCE CRITERIA | ACTION | REASON CODE |
|---|---|---|---|
| Cooler Temperature and Preservation | Cooler Temperature 4°C ±2°C<br>Preservation: Method Specific | Use Professional Judgment to qualify based to qualify for coole temp outliers<br>J(+)/UJ(-) if preservation requirements not met | 1 |
| Holding Time | Method Specific | Professional Judgment<br>J(+)/UJ(-) if holding time exceeded<br>J(+)/R(-) if HT exceeded by > 3X | 1 |
| Initial Calibration | Method specific<br>r>0.995 | Use professional judgment<br>J(+)/UJ(-) for r < 0.995 | 5A |
| Initial Calibration Verification (ICV) | Where applicable to method<br>Independent source analyzed immediately after calibration<br>%R method specific, usually 90% - 110% | R(+/-) if %R significantly < LCL<br>J(+)/UJ(-) if %R < LCL<br>J(+) if %R > UCL<br>R(+) if %R significantly > UCL | 5A |
| Continuing Cal Verification (CCV) | Where applicable to method<br>Every ten samples, immed. following ICV/ICB and end of run<br>%R method specific, usually 90% - 110% | R(+/-) if %R significantly < LCL<br>J(+)/UJ(-) if %R < LCL<br>J(+) if %R > UCL<br>R(+) if %R significantly > UCL | 5B |
| Initial and Continuing Cal Blanks (ICB/CCB) | Where applicable to method<br>After each ICV and CCV every ten samples and end of run<br>\| blank\| < MDL | Action level is 5x absolute value of blank conc.<br>For (+) blanks, U(+) results < action level<br>For (-) blanks, J(+)/UJ(-) results < action level<br>refer to TM-02 for additional details | 7 |
| Method Blank | One per matrix per batch<br>(not to exceed 20 samples)<br>blank < MDL | Action level is 5x absolute value of blank conc.<br>For (+) blk value, U(+) results < action level<br>For (-) blk value, J(+)/UJ(-) results < action level | 7 |
| Laboratory Control Sample | Waters:<br>One per matrix per batch<br>%R (80-120%) | R(+/-) if %R < 50%<br>J(+)/UJ(-) if %R = 50-79%<br>J(+) if %R >120% | 10 |
| | Soils:<br>One per matrix per batch<br>Result within manufacturer's certified acceptance range | J(+)/UJ(-) if < LCL,<br>J(+) if > UCL | 10 |
| Matrix Spike | One per matrix per batch; 5% frequency<br>75-125% for samples less than 4 x spike level | J(+) if %R > 125% or < 75%<br>UJ(-) if %R = 30-74%<br>R(+/-) results < IDL if %R < 30% | 8 |
| Laboratory Duplicate | One per matrix per batch<br>RPD <20% for samples > 5x RL<br>Diff <RL for samples >RL and <5 x RL<br>(may use RPD < 35%, Diff < 2X RL for solids) | J(+)/UJ(-) if RPD > 20% or diff > RL<br>all samples in batch | 9 |

# EcoChem Validation Guidelines for Conventional Chemistry Analysis (Based on EPA Standard Methods)

| VALIDATION QC ELEMENT | ACCEPTANCE CRITERIA | ACTION | REASON CODE |
|---|---|---|---|
| Field Blank | blank < MDL | Action level is 5x blank conc.<br>U(+) sample values < action level<br>in associated field samples only | 6 |
| Field Duplicate | For results > 5X RL:<br>Water: RPD < 35% Solid: RPD < 50%<br>For results < 5 x RL:<br>Water: Diff<RL Solid: Diff < 2X RL | J(+)/UJ(-) in parent samples only | 9 |

EcoChem, INC.
Environmental Data Quality

# APPENDIX B
# QUALIFIED DATA SUMMARY TABLE

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-DUN-03-S | L19652-1 | E1613 | 1,2,3,4,7,8-HXCDD | 0.06 | NG/KG | KBJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1613 | 1,2,3,4,7,8-HXCDF | 0.06 | NG/KG | KBJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1613 | 1,2,3,6,7,8-HXCDD | 0.258 | NG/KG | BJ | U | 7 |
| RB13-DUN-03-S | L19652-1 | E1613 | 1,2,3,7,8,9-HXCDD | 0.211 | NG/KG | KBJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1613 | 1,2,3,7,8-PECDD | 0.096 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1613 | 1,2,3,7,8-PECDF | 0.068 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1613 | 2,3,7,8-TCDD | 0.052 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1613 | 2,3,7,8-TCDF | 0.225 | NG/KG | | DNR | 11 |
| RB13-DUN-04-S | L19652-10 | E1613 | 2,3,7,8-TCDF | 1.25 | NG/KG | | DNR | 11 |
| RB13-DUN-02-S | L19652-11 | E1613 | 1,2,3,4,7,8-HXCDD | 0.049 | NG/KG | KBJ | U | 25 |
| RB13-DUN-02-S | L19652-11 | E1613 | 1,2,3,6,7,8-HXCDD | 0.145 | NG/KG | BJ | U | 7 |
| RB13-DUN-02-S | L19652-11 | E1613 | 1,2,3,7,8-PECDD | 0.061 | NG/KG | KJ | U | 25 |
| RB13-DUN-02-S | L19652-11 | E1613 | 2,3,4,7,8-PECDF | 0.055 | NG/KG | KBJ | U | 25 |
| RB13-DUN-02-S | L19652-11 | E1613 | 2,3,7,8-TCDD | 0.051 | NG/KG | KJ | U | 25 |
| RB13-DUN-02-S | L19652-11 | E1613 | 2,3,7,8-TCDF | 0.231 | NG/KG | | DNR | 11 |
| RB13-DUN-02-S | L19652-11 | E1613 | OCDF | 0.377 | NG/KG | BJ | U | 7 |
| RB13-DUN-11-S | L19652-12 | E1613 | 1,2,3,6,7,8-HXCDD | 0.117 | NG/KG | BJ | U | 7 |
| RB13-DUN-11-S | L19652-12 | E1613 | 2,3,4,7,8-PECDF | 0.048 | NG/KG | KBJ | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1613 | 2,3,7,8-TCDF | 0.103 | NG/KG | J | DNR | 11 |
| RB13-DUN-11-S | L19652-12 | E1613 | OCDF | 0.301 | NG/KG | BJ | U | 7 |
| RB13-DUN-01-S | L19652-13 (A) | E1613 | 1,2,3,7,8,9-HXCDF | 0.068 | NG/KG | BJ | U | 7 |
| RB13-DUN-01-S | L19652-13 (A) | E1613 | 2,3,7,8-TCDF | 1.71 | NG/KG | | DNR | 11 |
| RB13-DUN-08-S | L19652-14 | E1613 | 1,2,3,4,7,8-HXCDD | 0.179 | NG/KG | BJ | U | 7 |
| RB13-DUN-08-S | L19652-14 | E1613 | 2,3,4,6,7,8-HXCDF | 0.123 | NG/KG | KJ | U | 25 |
| RB13-DUN-08-S | L19652-14 | E1613 | 2,3,7,8-TCDD | 0.099 | NG/KG | KJ | U | 25 |
| RB13-DUN-08-S | L19652-14 | E1613 | 2,3,7,8-TCDF | 0.473 | NG/KG | | DNR | 11 |
| RB13-PT-06-S | L19652-15 | E1613 | 1,2,3,4,7,8-HXCDF | 0.346 | NG/KG | KBJ | U | 25 |
| RB13-PT-06-S | L19652-15 | E1613 | 2,3,7,8-TCDD | 0.155 | NG/KG | KJ | U | 25 |
| RB13-PT-06-S | L19652-15 | E1613 | 2,3,7,8-TCDF | 0.76 | NG/KG | K | U | 25 |
| RB13-PT-06-S | L19652-15 | E1613 | 2,3,7,8-TCDF | 1.36 | NG/KG | | DNR | 11 |
| RB13-PT-09-S | L19652-16 i | E1613 | 1,2,3,4,7,8-HXCDD | 0.137 | NG/KG | KJ | U | 25 |
| RB13-PT-09-S | L19652-16 i | E1613 | 2,3,4,6,7,8-HXCDF | 0.094 | NG/KG | KJ | U | 25 |
| RB13-PT-09-S | L19652-16 i | E1613 | 2,3,4,7,8-PECDF | 0.112 | NG/KG | KBJ | U | 25 |
| RB13-PT-09-S | L19652-16 i | E1613 | 2,3,7,8-TCDD | 0.052 | NG/KG | KJ | U | 25 |
| RB13-PT-09-S | L19652-16 i | E1613 | 2,3,7,8-TCDF | 0.331 | NG/KG | | DNR | 11 |
| RB13-PT-04-S | L19652-17 | E1613 | 1,2,3,7,8,9-HXCDF | 0.057 | NG/KG | KJ | U | 25 |
| RB13-PT-04-S | L19652-17 | E1613 | 2,3,7,8-TCDD | 0.245 | NG/KG | K | U | 25 |
| RB13-PT-04-S | L19652-17 | E1613 | 2,3,7,8-TCDF | 1.93 | NG/KG | | DNR | 11 |
| RB13-PT-02-S | L19652-18 R | E1613 | 1,2,3,7,8,9-HXCDF | 0.053 | NG/KG | KJ | U | 25 |
| RB13-PT-02-S | L19652-18 R | E1613 | 2,3,7,8-TCDF | 3.23 | NG/KG | | DNR | 11 |
| RB13-PT-05-S | L19652-19 | E1613 | 2,3,7,8-TCDF | 3.38 | NG/KG | | DNR | 11 |
| RB13-DUN-06-S | L19652-2 | E1613 | 1,2,3,4,7,8,9-HPCDF | 0.106 | NG/KG | KJ | U | 25 |
| RB13-DUN-06-S | L19652-2 | E1613 | 2,3,7,8-TCDF | 0.797 | NG/KG | | DNR | 11 |
| RB13-PT-10-S | L19652-20 | E1613 | 1,2,3,7,8,9-HXCDF | 0.137 | NG/KG | KJ | U | 25 |
| RB13-PT-10-S | L19652-20 | E1613 | 2,3,4,7,8-PECDF | 0.765 | NG/KG | KBJ | U | 25 |
| RB13-PT-10-S | L19652-20 | E1613 | 2,3,7,8-TCDF | 3.01 | NG/KG | | DNR | 11 |
| RB13-PT-07-S | L19652-21 (A) | E1613 | 1,2,3,4,6,7,8-HPCDF | 0.311 | NG/KG | KJ | U | 25 |
| RB13-PT-07-S | L19652-21 (A) | E1613 | 1,2,3,4,7,8,9-HPCDF | 0.068 | NG/KG | KJ | U | 25 |
| RB13-PT-07-S | L19652-21 (A) | E1613 | 1,2,3,4,7,8-HXCDD | 0.099 | NG/KG | KJ | U | 25 |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-PT-07-S | L19652-21 (A) | E1613 | 1,2,3,4,7,8-HXCDF | 0.049 | NG/KG | KJ | U | 25 |
| RB13-PT-07-S | L19652-21 (A) | E1613 | 1,2,3,6,7,8-HXCDF | 0.068 | NG/KG | KJ | U | 25 |
| RB13-PT-07-S | L19652-21 (A) | E1613 | 1,2,3,7,8,9-HXCDD | 0.2 | NG/KG | KJ | U | 25 |
| RB13-PT-07-S | L19652-21 (A) | E1613 | 2,3,4,6,7,8-HXCDF | 0.086 | NG/KG | KJ | U | 25 |
| RB13-PT-07-S | L19652-21 (A) | E1613 | 2,3,7,8-TCDD | 0.055 | NG/KG | KJ | U | 25 |
| RB13-PT-07-S | L19652-21 (A) | E1613 | 2,3,7,8-TCDF | 0.097 | NG/KG | KJ | U | 25 |
| RB13-PT-07-S | L19652-21 (A) | E1613 | 2,3,7,8-TCDF | 0.166 | NG/KG | KJ | DNR | 11 |
| RB13-PT-07-S | L19652-21 (A) | E1613 | OCDF | 0.686 | NG/KG | KJ | U | 25 |
| RB13-PT-03-S | L19652-22 | E1613 | 2,3,7,8-TCDF | 2.91 | NG/KG | | DNR | 11 |
| RB13-PT-03-S | L19652-22 | E1613 | OCDD | 204 | NG/KG | B | J | 13L |
| RB13-PT-08-S | L19652-23 | E1613 | 1,2,3,7,8,9-HXCDF | 0.129 | NG/KG | KJ | U | 25 |
| RB13-PT-08-S | L19652-23 | E1613 | 2,3,7,8-TCDF | 3.83 | NG/KG | | DNR | 11 |
| RB13-PT01-S | L19652-24 | E1613 | 2,3,7,8-TCDF | 2.56 | NG/KG | | DNR | 11 |
| RB13-SEQ-05-S | L19652-25 | E1613 | 2,3,7,8-TCDF | 1.3 | NG/KG | | DNR | 11 |
| RB13-SEQ-02-S | L19652-26 | E1613 | 2,3,7,8-TCDF | 1.5 | NG/KG | | DNR | 11 |
| RB13-SEQ-04-S | L19652-27 | E1613 | 1,2,3,4,7,8-HXCDF | 0.378 | NG/KG | KJ | U | 25 |
| RB13-SEQ-04-S | L19652-27 | E1613 | 2,3,7,8-TCDF | 1.52 | NG/KG | | DNR | 11 |
| RB13-SEQ-03-S | L19652-28 | E1613 | 1,2,3,4,7,8-HXCDD | 0.764 | NG/KG | KJ | U | 25 |
| RB13-SEQ-03-S | L19652-28 | E1613 | 2,3,7,8-TCDF | 2.41 | NG/KG | | DNR | 11 |
| RB13-SEQ-03-D | L19652-29 | E1613 | 2,3,7,8-TCDF | 2.14 | NG/KG | | DNR | 11 |
| RB13-DUN-07-S | L19652-3 | E1613 | 1,2,3,4,6,7,8-HPCDF | 0.269 | NG/KG | KBJ | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1613 | 1,2,3,4,7,8-HXCDD | 0.075 | NG/KG | BJ | U | 7 |
| RB13-DUN-07-S | L19652-3 | E1613 | 1,2,3,4,7,8-HXCDF | 0.055 | NG/KG | KBJ | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1613 | 1,2,3,6,7,8-HXCDD | 0.164 | NG/KG | BJ | U | 7 |
| RB13-DUN-07-S | L19652-3 | E1613 | 1,2,3,7,8-PECDD | 0.064 | NG/KG | KJ | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1613 | 2,3,7,8-TCDF | 0.119 | NG/KG | J | DNR | 11 |
| RB13-DUN-07-S | L19652-3 | E1613 | 2,3,7,8-TCDF | 0.06 | NG/KG | KJ | U | 25 |
| RB13-SEQ-01-S | L19652-30 | E1613 | 1,2,3,4,7,8-HXCDF | 0.835 | NG/KG | KJ | U | 25 |
| RB13-SEQ-01-S | L19652-30 | E1613 | 2,3,4,6,7,8-HXCDF | 0.556 | NG/KG | KJ | U | 25 |
| RB13-SEQ-01-S | L19652-30 | E1613 | 2,3,7,8-TCDF | 2.11 | NG/KG | | DNR | 11 |
| RB13-DIS-10-S | L19652-31 R | E1613 | 2,3,7,8-TCDF | 2.82 | NG/KG | | DNR | 11 |
| RB13-DIS-07-S | L19652-32 | E1613 | 1,2,3,7,8,9-HXCDF | 0.087 | NG/KG | KJ | U | 25 |
| RB13-DIS-07-S | L19652-32 | E1613 | 2,3,7,8-TCDF | 3.54 | NG/KG | | DNR | 11 |
| RB13-DIS-01-S | L19652-33 | E1613 | 1,2,3,7,8,9-HXCDF | 0.081 | NG/KG | KJ | U | 25 |
| RB13-DIS-01-S | L19652-33 | E1613 | 2,3,7,8-TCDF | 3.34 | NG/KG | | DNR | 11 |
| RB13-DIS-03-S | L19652-34 (A) | E1613 | 1,2,3,4,7,8-HXCDD | 0.099 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1613 | 1,2,3,4,7,8-HXCDF | 0.09 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1613 | 1,2,3,6,7,8-HXCDD | 0.326 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1613 | 1,2,3,7,8-PECDD | 0.087 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1613 | 2,3,4,6,7,8-HXCDF | 0.061 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1613 | 2,3,7,8-TCDD | 0.06 | NG/KG | KBJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1613 | 2,3,7,8-TCDF | 0.269 | NG/KG | | DNR | 11 |
| RB13-DIS-12-S | L19652-35 | E1613 | 1,2,3,4,6,7,8-HPCDF | 1.41 | NG/KG | | J | 13L |
| RB13-DIS-12-S | L19652-35 | E1613 | 1,2,3,7,8-PECDF | 0.093 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1613 | 2,3,7,8-TCDD | 0.071 | NG/KG | KBJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1613 | 2,3,7,8-TCDF | 0.444 | NG/KG | | DNR | 11 |
| RB13-DIS-02-S | L19652-36 | E1613 | 2,3,7,8-TCDD | 0.301 | NG/KG | KB | U | 25 |
| RB13-DIS-02-S | L19652-36 | E1613 | 2,3,7,8-TCDF | 2.73 | NG/KG | | DNR | 11 |
| RB13-DIS-05-S | L19652-37 | E1613 | 2,3,7,8-TCDF | 1.98 | NG/KG | | DNR | 11 |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-DIS-04-S | L19652-38 | E1613 | 2,3,7,8-TCDF | 2.08 | NG/KG | | DNR | 11 |
| RB13-DIS-11-S | L19652-39 | E1613 | 2,3,7,8-TCDF | 2.09 | NG/KG | | DNR | 11 |
| RB13-DUN-12-S | L19652-4 | E1613 | 1,2,3,4,7,8-HXCDD | 0.221 | NG/KG | BJ | U | 7 |
| RB13-DUN-12-S | L19652-4 | E1613 | 1,2,3,4,7,8-HXCDF | 0.135 | NG/KG | KBJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1613 | 2,3,4,7,8-PECDF | 0.074 | NG/KG | KBJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1613 | 2,3,7,8-TCDD | 0.086 | NG/KG | KJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1613 | 2,3,7,8-TCDF | 0.566 | NG/KG | | DNR | 11 |
| RB13-DIS-08-S | L19652-40 | E1613 | 1,2,3,4,7,8-HXCDD | 0.185 | NG/KG | KJ | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1613 | 2,3,7,8-TCDD | 0.082 | NG/KG | KBJ | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1613 | 2,3,7,8-TCDF | 0.612 | NG/KG | | DNR | 11 |
| RB13-DIS-06-S | L19652-41 | E1613 | 1,2,3,4,6,7,8-HPCDF | 13.3 | NG/KG | | J | 13L |
| RB13-DIS-06-S | L19652-41 | E1613 | 1,2,3,4,7,8-HXCDD | 1.44 | NG/KG | | J | 13L |
| RB13-DIS-06-S | L19652-41 | E1613 | 2,3,7,8-TCDF | 3.96 | NG/KG | | DNR | 11 |
| RB13-DIS-09-S | L19652-42 | E1613 | 1,2,3,4,6,7,8-HPCDF | 3.62 | NG/KG | | J | 13L |
| RB13-DIS-09-S | L19652-42 | E1613 | 2,3,7,8-TCDF | 1.42 | NG/KG | | DNR | 11 |
| RB13-DIS-09-S | L19652-42 | E1613 | TOTAL TETRA-DIOXINS | 2 | NG/KG | | J | 9 |
| RB13-DIS-09-D | L19652-43 | E1613 | 1,2,3,7,8-PECDD | 0.473 | NG/KG | JG | J | 24 |
| RB13-DIS-09-D | L19652-43 | E1613 | 2,3,7,8-TCDF | 1.55 | NG/KG | | DNR | 11 |
| RB13-DIS-09-D | L19652-43 | E1613 | TOTAL TETRA-DIOXINS | 3.69 | NG/KG | | J | 9 |
| RB13-DUN-10-S | L19652-5 | E1613 | 1,2,3,4,6,7,8-HPCDF | 0.419 | NG/KG | KBJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1613 | 1,2,3,4,7,8-HXCDD | 0.076 | NG/KG | KBJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1613 | 1,2,3,4,7,8-HXCDF | 0.059 | NG/KG | KBJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1613 | 1,2,3,6,7,8-HXCDD | 0.251 | NG/KG | BJ | U | 7 |
| RB13-DUN-10-S | L19652-5 | E1613 | 1,2,3,7,8,9-HXCDD | 0.21 | NG/KG | KBJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1613 | 1,2,3,7,8-PECDD | 0.072 | NG/KG | KJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1613 | 2,3,4,6,7,8-HXCDF | 0.058 | NG/KG | KJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1613 | 2,3,7,8-TCDF | 0.233 | NG/KG | | DNR | 11 |
| RB13-DUN-13-S | L19652-6 | E1613 | 1,2,3,4,7,8-HXCDD | 0.065 | NG/KG | KBJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1613 | 1,2,3,6,7,8-HXCDD | 0.243 | NG/KG | KBJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1613 | 2,3,7,8-TCDD | 0.062 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1613 | 2,3,7,8-TCDF | 0.277 | NG/KG | K | DNR | 11 |
| RB13-DUN-05-S | L19652-7 | E1613 | 1,2,3,4,7,8-HXCDD | 0.208 | NG/KG | BJ | U | 7 |
| RB13-DUN-05-S | L19652-7 | E1613 | 1,2,3,4,7,8-HXCDF | 0.231 | NG/KG | KBJ | U | 25 |
| RB13-DUN-05-S | L19652-7 | E1613 | 2,3,7,8-TCDF | 0.803 | NG/KG | | DNR | 11 |
| RB13-DUN-05-D | L19652-8 R | E1613 | 1,2,3,4,7,8,9-HPCDF | 0.149 | NG/KG | KJ | U | 25 |
| RB13-DUN-05-D | L19652-8 R | E1613 | 1,2,3,7,8-PECDD | 0.258 | NG/KG | KJ | U | 25 |
| RB13-DUN-05-D | L19652-8 R | E1613 | 1,2,3,7,8-PECDF | 0.14 | NG/KG | KJ | U | 25 |
| RB13-DUN-05-D | L19652-8 R | E1613 | 2,3,7,8-TCDD | 0.102 | NG/KG | KJ | U | 25 |
| RB13-DUN-05-D | L19652-8 R | E1613 | 2,3,7,8-TCDF | 0.732 | NG/KG | | DNR | 11 |
| RB13-DUN-09-S | L19652-9 | E1613 | 1,2,3,6,7,8-HXCDD | 0.102 | NG/KG | KBJ | U | 25 |
| RB13-DUN-09-S | L19652-9 | E1613 | 2,3,4,7,8-PECDF | 0.052 | NG/KG | KBJ | U | 25 |
| RB13-DUN-09-S | L19652-9 | E1613 | 2,3,7,8-TCDF | 0.147 | NG/KG | J | DNR | 11 |
| RB13-DUN-09-S | L19652-9 | E1613 | OCDF | 0.28 | NG/KG | BJ | U | 7 |
| RB13-DIS-03-S | WG43721-103 | E1613 | 2,3,7,8-TCDF | 0.226 | NG/KG | | DNR | 11 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,2',3,3',4,5',6-HPCB | 0.171 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,2',3,3',4,6,6'-HPCB | 0.34 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,2',3,3',4-PECB | 0.811 | NG/KG | G | J | 24 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,2',3,3',5,5',6,6'-OCCB | 0.584 | NG/KG | K | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,2',3,3',5,5'-HXCB | 0.272 | NG/KG | KJ | U | 25 |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-DUN-03-S | L19652-1 | E1668A | 2,2',3,4,4',6-HXCB | 0.201 | NG/KG | CKJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,2',3,4,5',6-HXCB | 0.38 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,2',3,4,6'-PECB | 0.081 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,2',3,5-TECB | 0.169 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,2',4,5',6-PECB | 0.103 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,3,3',4,4',5,5'-HPCB | 0.177 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,3,3',4,4',5',6-HPCB | 0.119 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,3,3',4,6-PECB | 1.24 | NG/KG | K | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,3,3',4-TECB | 0.132 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,3,4,4',5-PECB | 0.216 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,3',4,5,5'-PECB | 0.076 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,3',6-TRICB | 0.05 | NG/KG | JG | J | 24 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,3,6-TRICB | | NG/KG | UG | UJ | 24 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,4-DICB | 0.378 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 2,5-DICB | 0.36 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 3,3',4,5'-TECB | 0.325 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 | E1668A | 3,4',5-TRICB | 0.089 | NG/KG | KJ | U | 25 |
| RB13-DUN-03-S | L19652-1 W | E1668A | 2-MOCB | 0.833 | NG/KG | KDJ | U | 25 |
| RB13-DUN-03-S | L19652-1 W | E1668A | 3,4-DICB | 8.23 | NG/KG | CKD | U | 25 |
| RB13-DUN-03-S | L19652-1 W | E1668A | 4-MOCB | 1.7 | NG/KG | KBDJ | U | 25 |
| RB13-DUN-04-S | L19652-10 i2 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 1.88 | NG/KG | CG | J | 24 |
| RB13-DUN-04-S | L19652-10 i2 | E1668A | 2',3,3',4,5-PECB | 0.918 | NG/KG | K | U | 25 |
| RB13-DUN-04-S | L19652-10 i2 | E1668A | 2,3,3',5,5'-PECB | 0.156 | NG/KG | KJ | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,2',3,3',4,4',5-HPCB | 1.04 | NG/KG | G | J | 24 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,2',3,3',4,5',6,6'-OCCB | 0.115 | NG/KG | KJ | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,2',3,3',4',5,6-HPCB | 0.992 | NG/KG | K | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,2',3,3',4,5'-HXCB | 0.499 | NG/KG | K | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,2',3,3',4-PECB | 0.409 | NG/KG | KG | UJ | 24,25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,2',3,3',5,5',6-HPCB | 0.42 | NG/KG | K | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,2',3,4,4',5,5'-HPCB | 2.18 | NG/KG | CBG | J | 24 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,2',3,4,4',5-HXCB | 0.245 | NG/KG | KJ | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,2',3,4,5',6-HXCB | 0.183 | NG/KG | KJ | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,2',5-TRICB | 0.931 | NG/KG | CBG | J | 24 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,2',6-TRICB | 0.13 | NG/KG | KJ | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,3,3',4,4',5,6-HPCB | 0.259 | NG/KG | KJ | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2',3,4,4',5-PECB | 0.151 | NG/KG | KJ | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,3',6-TRICB | 0.105 | NG/KG | JG | J | 24 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,3,6-TRICB | | NG/KG | UG | UJ | 24 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,4'-DICB | 1.48 | NG/KG | G | J | 24 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2,5-DICB | 0.415 | NG/KG | K | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 2-MOCB | 0.731 | NG/KG | K | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 3,3',4,4',5-PECB | 0.129 | NG/KG | KJ | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 3,3',4,5'-TECB | 0.101 | NG/KG | KJ | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 3,4-DICB | 1.64 | NG/KG | CKG | UJ | 24,25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 3,5-DICB | 0.298 | NG/KG | KJ | U | 25 |
| RB13-DUN-02-S | L19652-11 M | E1668A | 4-MOCB | 0.93 | NG/KG | KB | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,3',4,4',5,6'-OCCB | 0.277 | NG/KG | KJ | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,3',4,4',5,6-OCCB | 0.303 | NG/KG | KJ | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 0.129 | NG/KG | CKJ | U | 25 |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,3',4,4',6-HPCB | 0.396 | NG/KG | CK | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,3',4,5,5'-HPCB | 0.21 | NG/KG | KJ | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,3',4,5',6-HPCB | 0.109 | NG/KG | KJ | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,3',4,5'-HXCB | 0.46 | NG/KG | K | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,3',4,6,6'-HPCB | 0.152 | NG/KG | KJ | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,3',4-PECB | 0.437 | NG/KG | G | J | 24 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,3',5,5',6,6'-OCCB | 0.296 | NG/KG | KJ | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,3',5,5',6-HPCB | 0.481 | NG/KG | K | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,3',5,5'-HXCB | 0.151 | NG/KG | KJ | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,3',5,6-HXCB | 0.211 | NG/KG | CKJ | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,2',3,4,5,5'-HXCB | 0.567 | NG/KG | K | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,3,3',4,6-PECB | 0.632 | NG/KG | K | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,3,4,4',5-PECB | 0.126 | NG/KG | KJ | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,3',4,5,5'-PECB | 0.064 | NG/KG | KJ | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 2,5-DICB | 0.364 | NG/KG | KJ | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 3,3',4-TRICB | 0.288 | NG/KG | KJ | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 3,4-DICB | 0.934 | NG/KG | CK | U | 25 |
| RB13-DUN-11-S | L19652-12 | E1668A | 4-MOCB | 0.717 | NG/KG | KB | U | 25 |
| RB13-DUN-01-S | L19652-13 i (A) | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 2.06 | NG/KG | CG | J | 24 |
| RB13-DUN-01-S | L19652-13 i (A) | E1668A | 2,2',3,4',5,5'-HXCB | 17.9 | NG/KG | G | J | 24 |
| RB13-DUN-01-S | L19652-13 i (A) | E1668A | 2,2',3,4',6,6'-HXCB | 0.211 | NG/KG | KJ | U | 25 |
| RB13-DUN-01-S | L19652-13 i (A) | E1668A | 2,2',3,4,6'-PECB | 0.925 | NG/KG | K | U | 25 |
| RB13-DUN-01-S | L19652-13 i (A) | E1668A | 2,2',3,5,6,6'-HXCB | 0.08 | NG/KG | KJ | U | 25 |
| RB13-DUN-01-S | L19652-13 i (A) | E1668A | 2,2',3,6,6'-PECB | 0.367 | NG/KG | KJ | U | 25 |
| RB13-DUN-01-S | L19652-13 i (A) | E1668A | 2,3,3',5,5'-PECB | 0.19 | NG/KG | KJ | U | 25 |
| RB13-DUN-01-S | L19652-13 i (A) | E1668A | 2,3',4,5',6-PECB | 0.081 | NG/KG | KJ | U | 25 |
| RB13-DUN-01-S | L19652-13 i (A) | E1668A | 3,5-DICB | 0.466 | NG/KG | K | U | 25 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 0.594 | NG/KG | CG | J | 24 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,2',3,3',4,5',6-HPCB | 0.341 | NG/KG | KJ | U | 25 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,2',3,3',5,5',6-HPCB | 2.04 | NG/KG | K | U | 25 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,2',3,3',5,5'-HXCB | 0.553 | NG/KG | K | U | 25 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,2',3,4',5,5'-HXCB | 5.48 | NG/KG | G | J | 24 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,2',3,4',5,6'-HXCB | 0.163 | NG/KG | KJ | U | 25 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,2',3,5-TECB | 0.3 | NG/KG | KJ | U | 25 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,2',3,6,6'-PECB | 0.12 | NG/KG | KJ | U | 25 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,2',3,6'-TECB | 0.387 | NG/KG | K | U | 25 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,2',3,6-TECB | 1.29 | NG/KG | CK | U | 25 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,2',4,5',6-PECB | 0.254 | NG/KG | KJ | U | 25 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,2',5-TRICB | 3.36 | NG/KG | CBG | J | 24 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,3,3',4,4',5,5',6-OCCB | 0.161 | NG/KG | KJ | U | 25 |
| RB13-DUN-08-S | L19652-14 | E1668A | 2,3,3',4,5,5'-HXCB | 0.299 | NG/KG | KJ | U | 25 |
| RB13-PT-06-S | L19652-15 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 1.8 | NG/KG | CG | J | 24 |
| RB13-PT-06-S | L19652-15 | E1668A | 2,2',3,3',4,6-HXCB | 0.874 | NG/KG | K | U | 25 |
| RB13-PT-06-S | L19652-15 | E1668A | 2,2',3,4,4',5,6'-HPCB | 0.177 | NG/KG | KJ | U | 25 |
| RB13-PT-06-S | L19652-15 | E1668A | 2,2',3,4,4',5,6-HPCB | 0.226 | NG/KG | KJ | U | 25 |
| RB13-PT-06-S | L19652-15 | E1668A | 2,2',3,4',5,5'-HXCB | 15.9 | NG/KG | G | J | 24 |
| RB13-PT-06-S | L19652-15 | E1668A | 2,2',3,4',5,6,6'-HPCB | 0.141 | NG/KG | KJ | U | 25 |
| RB13-PT-06-S | L19652-15 | E1668A | 2,2',3,4',5,6'-HXCB | 0.465 | NG/KG | K | U | 25 |
| RB13-PT-06-S | L19652-15 | E1668A | 2,2',3,5,6,6'-HXCB | 0.079 | NG/KG | KJ | U | 25 |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-PT-06-S | L19652-15 | E1668A | 2,2',3,5,6'-PECB | 0.378 | NG/KG | KJ | U | 25 |
| RB13-PT-06-S | L19652-15 | E1668A | 2,2',3,6,6'-PECB | 0.414 | NG/KG | K | U | 25 |
| RB13-PT-06-S | L19652-15 | E1668A | 2,3,3',5,5',6-HXCB | 0.231 | NG/KG | KJ | U | 25 |
| RB13-PT-06-S | L19652-15 | E1668A | 2,3,3',5,5'-PECB | 0.181 | NG/KG | KJ | U | 25 |
| RB13-PT-09-S | L19652-16 i | E1668A | 2,2',3,3',4,6,6'-HPCB | 0.712 | NG/KG | K | U | 25 |
| RB13-PT-09-S | L19652-16 i | E1668A | 2,3,3',4,4',5,6-HPCB | 0.707 | NG/KG | K | U | 25 |
| RB13-PT-09-S | L19652-16 i | E1668A | 2,3',4,5,5'-PECB | 0.21 | NG/KG | KJ | U | 25 |
| RB13-PT-09-S | L19652-16 i | E1668A | 3,3',4,5'-TECB | 0.266 | NG/KG | KJ | U | 25 |
| RB13-PT-04-S | L19652-17 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 2.32 | NG/KG | CG | J | 24 |
| RB13-PT-04-S | L19652-17 | E1668A | 2,2',3,4,4',5,6-HPCB | 0.358 | NG/KG | KJ | U | 25 |
| RB13-PT-04-S | L19652-17 | E1668A | 2,2',3,4',5,6'-HXCB | 0.604 | NG/KG | K | U | 25 |
| RB13-PT-04-S | L19652-17 | E1668A | 2,3,3',5,5'-PECB | 0.192 | NG/KG | KJ | U | 25 |
| RB13-PT-04-S | L19652-17 | E1668A | 2,3,6-TRICB | 0.233 | NG/KG | KJ | U | 25 |
| RB13-PT-02-S | L19652-18 R | E1668A | 2,2',3,4,4',5,6'-HPCB | 0.41 | NG/KG | K | U | 25 |
| RB13-PT-02-S | L19652-18 R | E1668A | 2,2',3,4',6,6'-HXCB | 0.402 | NG/KG | K | U | 25 |
| RB13-PT-02-S | L19652-18 R | E1668A | 2,2',6,6'-TECB | 0.267 | NG/KG | KJ | U | 25 |
| RB13-PT-02-S | L19652-18 R | E1668A | 2,3,3',5,5'-PECB | 0.252 | NG/KG | KJ | U | 25 |
| RB13-PT-02-S | L19652-18 R | E1668A | 2,3',5',6-TECB | 0.237 | NG/KG | KJ | U | 25 |
| RB13-PT-02-S | L19652-18 R | E1668A | 3,3',4,5,5'-PECB | 0.364 | NG/KG | KJ | U | 25 |
| RB13-PT-02-S | L19652-18 R | E1668A | 3,4,4',5-TECB | 0.94 | NG/KG | K | U | 25 |
| RB13-PT-02-S | L19652-18 R | E1668A | 3,4-DICB | 10.7 | NG/KG | CK | U | 25 |
| RB13-PT-02-S | L19652-18 R | E1668A | 3,5-DICB | 1.19 | NG/KG | K | U | 25 |
| RB13-PT-05-S | L19652-19 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 3.35 | NG/KG | CG | J | 24 |
| RB13-PT-05-S | L19652-19 | E1668A | 2,2',3,4',5,6,6'-HPCB | 0.262 | NG/KG | KJ | U | 25 |
| RB13-PT-05-S | L19652-19 | E1668A | 2,2',3,4',5,6'-HXCB | 0.225 | NG/KG | KJ | U | 25 |
| RB13-PT-05-S | L19652-19 | E1668A | 2,3,3',4',5,5'-HXCB | 0.799 | NG/KG | K | U | 25 |
| RB13-PT-05-S | L19652-19 | E1668A | 2,3,6-TRICB | 0.319 | NG/KG | KJ | U | 25 |
| RB13-PT-05-S | L19652-19 | E1668A | 3,5-DICB | 0.946 | NG/KG | K | U | 25 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,2',3,3',4-PECB | 3.06 | NG/KG | G | J | 24 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,2',3,4,4',5,6-HPCB | 0.075 | NG/KG | KJ | U | 25 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,2',3,4',5,6'-HXCB | 0.114 | NG/KG | KJG | UJ | 24,25 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,2',3,4',6,6'-HXCB | 0.145 | NG/KG | KJ | U | 25 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,2',3,4,6'-PECB | 0.364 | NG/KG | KJ | U | 25 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,2',3,5,6,6'-HXCB | 0.066 | NG/KG | KJ | U | 25 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,2',3,5,6'-PECB | 0.224 | NG/KG | KJ | U | 25 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,2',4-TRICB | 4.87 | NG/KG | BG | J | 24 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,2',5-TRICB | 8.23 | NG/KG | CBG | J | 24 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,2',6,6'-TECB | 0.05 | NG/KG | KJ | U | 25 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,3,3',4,4',5',6-HPCB | 0.452 | NG/KG | K | U | 25 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,3,3',4',5,5'-HXCB | 0.221 | NG/KG | KJ | U | 25 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,3,3',4,5,5'-HXCB | 0.42 | NG/KG | K | U | 25 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,3',6-TRICB | 0.501 | NG/KG | G | J | 24 |
| RB13-DUN-06-S | L19652-2 | E1668A | 2,3,6-TRICB | 0.1 | NG/KG | KJ | U | 25 |
| RB13-DUN-06-S | L19652-2 | E1668A | 3,3',4,4'-TECB | 6.26 | NG/KG | BG | J | 24 |
| RB13-DUN-06-S | L19652-2 | E1668A | 3,3'-DICB | 21.8 | NG/KG | G | J | 24 |
| RB13-DUN-06-S | L19652-2 | E1668A | 3,5-DICB | 0.633 | NG/KG | KG | UJ | 24,25 |
| RB13-PT-10-S | L19652-20 | E1668A | 2,2',6,6'-TECB | 0.133 | NG/KG | KJ | U | 25 |
| RB13-PT-10-S | L19652-20 | E1668A | 2,3,3',4,4',5,5'-HPCB | 1.04 | NG/KG | K | U | 25 |
| RB13-PT-10-S | L19652-20 | E1668A | 2,3,3',4',5,5'-HXCB | 0.478 | NG/KG | K | U | 25 |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-PT-10-S | L19652-20 | E1668A | 3,4,5-TRICB | 0.367 | NG/KG | KJ | U | 25 |
| RB13-PT-10-S | L19652-20 | E1668A | 3,5-DICB | 0.995 | NG/KG | K | U | 25 |
| RB13-PT-10-S | L19652-20 W | E1668A | 2,2',3,6'-TECB | 1.67 | NG/KG | KDJ | U | 25 |
| RB13-PT-10-S | L19652-20 W | E1668A | 2,3,4',5-TECB | 3.47 | NG/KG | KDJ | U | 25 |
| RB13-PT-10-S | L19652-20 W | E1668A | 2,3',5',6-TECB | 1.17 | NG/KG | KDJ | U | 25 |
| RB13-PT-10-S | L19652-20 W | E1668A | 3,3',4,5'-TECB | 1.97 | NG/KG | KDJ | U | 25 |
| RB13-PT-10-S | L19652-20 W | E1668A | 3,4-DICB | 10.8 | NG/KG | CKD | U | 25 |
| RB13-PT-07-S | L19652-21 (A) | E1668A | 2,2',3,3',4,6,6'-HPCB | 0.287 | NG/KG | KJ | U | 25 |
| RB13-PT-07-S | L19652-21 (A) | E1668A | 2,2',3,3',4-PECB | 0.74 | NG/KG | K | U | 25 |
| RB13-PT-07-S | L19652-21 (A) | E1668A | 2,3',6-TRICB | 0.148 | NG/KG | KJ | U | 25 |
| RB13-PT-03-S | L19652-22 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 2.39 | NG/KG | CG | J | 24 |
| RB13-PT-03-S | L19652-22 | E1668A | 2,2',3,4,4',6,6'-HPCB | 0.102 | NG/KG | KJ | U | 25 |
| RB13-PT-03-S | L19652-22 | E1668A | 2,2',3,4',6,6'-HXCB | 0.31 | NG/KG | KJ | U | 25 |
| RB13-PT-03-S | L19652-22 | E1668A | 2,2',3,5,6,6'-HXCB | 0.11 | NG/KG | KJ | U | 25 |
| RB13-PT-03-S | L19652-22 | E1668A | 2,2',3,6,6'-PECB | 0.572 | NG/KG | K | U | 25 |
| RB13-PT-03-S | L19652-22 | E1668A | 2,3,3',4',5,5'-HXCB | 0.605 | NG/KG | K | U | 25 |
| RB13-PT-03-S | L19652-22 | E1668A | 2,3,3',5,5'-PECB | 0.213 | NG/KG | KJ | U | 25 |
| RB13-PT-03-S | L19652-22 | E1668A | 2,3',4,5,5'-PECB | 0.863 | NG/KG | K | U | 25 |
| RB13-PT-08-S | L19652-23 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 3.26 | NG/KG | CG | J | 24 |
| RB13-PT-08-S | L19652-23 | E1668A | 2,2',3,4,4',6,6'-HPCB | 0.118 | NG/KG | KJ | U | 25 |
| RB13-PT-08-S | L19652-23 | E1668A | 2,2',3,4,6,6'-HXCB | 0.111 | NG/KG | KJ | U | 25 |
| RB13-PT-08-S | L19652-23 | E1668A | 2,3,3',4',5,5'-HXCB | 0.911 | NG/KG | K | U | 25 |
| RB13-PT-08-S | L19652-23 | E1668A | 2,3,3',5,5',6-HXCB | 0.276 | NG/KG | KJ | U | 25 |
| RB13-PT-08-S | L19652-23 | E1668A | 2,3,3',5,5'-PECB | 0.212 | NG/KG | KJ | U | 25 |
| RB13-PT-01-S | L19652-24 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 2.47 | NG/KG | CG | J | 24 |
| RB13-PT-01-S | L19652-24 | E1668A | 2,2',3,4',5,6'-HXCB | 0.537 | NG/KG | K | U | 25 |
| RB13-PT-01-S | L19652-24 | E1668A | 2,3,3',4',5,5'-HXCB | 0.573 | NG/KG | K | U | 25 |
| RB13-PT-01-S | L19652-24 | E1668A | 2,3',4,5,5'-PECB | 0.868 | NG/KG | K | U | 25 |
| RB13-PT-01-S | L19652-24 | E1668A | 2,3,6-TRICB | 0.305 | NG/KG | KJ | U | 25 |
| RB13-SEQ-05-S | L19652-25 | E1668A | 2,2',3,5,6'-PECB | 0.473 | NG/KG | K | U | 25 |
| RB13-SEQ-05-S | L19652-25 | E1668A | 2,3,3',5,5',6-HXCB | 0.191 | NG/KG | KJ | U | 25 |
| RB13-SEQ-02-S | L19652-26 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 1.69 | NG/KG | CG | J | 24 |
| RB13-SEQ-02-S | L19652-26 | E1668A | 2,2',3,4',5,6'-HXCB | 0.356 | NG/KG | KJ | U | 25 |
| RB13-SEQ-02-S | L19652-26 | E1668A | 2,3,3',5,5'-PECB | 0.17 | NG/KG | KJ | U | 25 |
| RB13-SEQ-04-S | L19652-27 | E1668A | 2,2',3,4',5,6,6'-HPCB | 0.211 | NG/KG | KJ | U | 25 |
| RB13-SEQ-04-S | L19652-27 | E1668A | 2,2',3,4',5,6'-HXCB | 0.171 | NG/KG | KJ | U | 25 |
| RB13-SEQ-04-S | L19652-27 | E1668A | 2,3,3',4,4',5',6-HPCB | 0.557 | NG/KG | K | U | 25 |
| RB13-SEQ-04-S | L19652-27 | E1668A | 2,3,3',4,5,5'-HXCB | 0.921 | NG/KG | K | U | 25 |
| RB13-SEQ-04-S | L19652-27 | E1668A | 2,3,3',5,5'-PECB | 0.153 | NG/KG | KJ | U | 25 |
| RB13-SEQ-04-S | L19652-27 | E1668A | 2,3',4,5,5'-PECB | 0.752 | NG/KG | K | U | 25 |
| RB13-SEQ-04-S | L19652-27 | E1668A | 3,4,4',5-TECB | 0.451 | NG/KG | K | U | 25 |
| RB13-SEQ-04-S | L19652-27 | E1668A | 3,4,5-TRICB | 0.323 | NG/KG | KJ | U | 25 |
| RB13-SEQ-04-S | L19652-27 | E1668A | 3,5-DICB | 0.803 | NG/KG | K | U | 25 |
| RB13-SEQ-03-S | L19652-28 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 2.6 | NG/KG | CG | J | 24 |
| RB13-SEQ-03-S | L19652-28 | E1668A | 2,2',3,4,4',5,6-HPCB | 0.227 | NG/KG | KJ | U | 25 |
| RB13-SEQ-03-S | L19652-28 | E1668A | 2,2',3,4',6,6'-HXCB | 0.337 | NG/KG | KJ | U | 25 |
| RB13-SEQ-03-S | L19652-28 | E1668A | 2,2',3,5,6,6'-HXCB | 0.131 | NG/KG | KJ | U | 25 |
| RB13-SEQ-03-S | L19652-28 | E1668A | 2,3,3',4',5,5'-HXCB | 0.637 | NG/KG | K | U | 25 |
| RB13-SEQ-03-S | L19652-28 | E1668A | 2,3,3',5,5'-PECB | 0.224 | NG/KG | KJ | U | 25 |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-SEQ-03-S | L19652-28 | E1668A | 2,3,6-TRICB | 0.227 | NG/KG | KJ | U | 25 |
| RB13-SEQ-03-S | L19652-28 | E1668A | 3,4,5-TRICB | 0.499 | NG/KG | K | U | 25 |
| RB13-SEQ-03-D | L19652-29 | E1668A | 2,2',3,4,4',5,6'-HPCB | 0.375 | NG/KG | KJ | U | 25 |
| RB13-SEQ-03-D | L19652-29 | E1668A | 2,2',3,4',5,6'-HXCB | 0.178 | NG/KG | KJ | U | 25 |
| RB13-SEQ-03-D | L19652-29 | E1668A | 2,3,3',5,5'-PECB | 0.24 | NG/KG | KJ | U | 25 |
| RB13-SEQ-03-D | L19652-29 | E1668A | 2,3,6-TRICB | 0.286 | NG/KG | KJ | U | 25 |
| RB13-SEQ-03-D | L19652-29 | E1668A | 3,5-DICB | 0.944 | NG/KG | K | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,2',3,3',4,4',5,5',6-NOCB | 0.719 | NG/KG | K | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,2',3,3',4,4',5-HPCB | 1.51 | NG/KG | K | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,2',3,3',4,5,5'-HPCB | 0.224 | NG/KG | KJ | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,2',3,3',4,5',6-HPCB | 0.068 | NG/KG | KJ | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,2',3,3',4,5'-HXCB | 0.532 | NG/KG | K | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,2',3,3',4-PECB | 0.376 | NG/KG | KJG | UJ | 24,25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,2',3,3',5,5'-HXCB | 0.13 | NG/KG | KJ | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,2',3,3',5,6-HXCB | 0.631 | NG/KG | CK | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,2',3,3',6,6'-HXCB | 0.398 | NG/KG | K | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,2',3,4,4',5',6-HPCB | 0.94 | NG/KG | CK | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,2',3,4,4',5-HXCB | 0.244 | NG/KG | KJ | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,2',3,4,4',6-HXCB | 0.114 | NG/KG | CKJ | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,2',4,5',6-PECB | 0.064 | NG/KG | KJ | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,3,3',4,5,5'-HXCB | 0.065 | NG/KG | KJ | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2',3,3',4,5-PECB | 0.086 | NG/KG | KJ | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,3',4,4',5,5'-HXCB | 0.297 | NG/KG | KJ | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 2,3',4,5-TECB | 0.157 | NG/KG | KJ | U | 25 |
| RB13-DUN-07-S | L19652-3 | E1668A | 3,4,5-TRICB | 0.06 | NG/KG | KJ | U | 25 |
| RB13-DUN-07-S | L19652-3 W | E1668A | 3,4-DICB | 8.72 | NG/KG | CKD | U | 25 |
| RB13-DUN-07-S | L19652-3 W | E1668A | 4,4'-DICB | 2.2 | NG/KG | KDJ | U | 25 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 3.54 | NG/KG | CG | J | 24 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 2,2',3,4,4',6,6'-HPCB | 0.153 | NG/KG | KJ | U | 25 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 2,2',3,4',5,5'-HXCB | 32.1 | NG/KG | BG | J | 24 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 2,2',3,4',5,6'-HXCB | 0.529 | NG/KG | K | U | 25 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 2,2',5-TRICB | 23.1 | NG/KG | CBG | J | 24 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 2,2',6,6'-TECB | 0.145 | NG/KG | KJ | U | 25 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 2,3,3',5,5'-PECB | 0.385 | NG/KG | KJ | U | 25 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 2,3',5',6-TECB | 0.166 | NG/KG | KJ | U | 25 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 2,3,6-TRICB | 0.408 | NG/KG | K | U | 25 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 2-MOCB | 5.12 | NG/KG | | J | 10 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 3,3',4,5,5'-PECB | 0.239 | NG/KG | KJ | U | 25 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 3,4,4',5-TECB | 0.816 | NG/KG | K | U | 25 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 3,5-DICB | 1.17 | NG/KG | K | U | 25 |
| RB13-SEQ-01-S | L19652-30 | E1668A | 4-MOCB | 6.78 | NG/KG | B | J | 10 |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 3.94 | NG/KG | CG | J | 24 |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,2',3,3',5,5'-HXCB | 4.07 | NG/KG | K | U | 25 |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,2',3,4,4',5,6'-HPCB | 0.494 | NG/KG | K | U | 25 |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,2',3,4',5,5'-HXCB | 33.7 | NG/KG | BG | J | 24 |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,2',3,4',5,6'-HXCB | 0.515 | NG/KG | K | U | 25 |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,2',3,4',6,6'-HXCB | 0.485 | NG/KG | K | U | 25 |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,2',3-TRICB | 12.4 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,2',4-TRICB | 15.2 | NG/KG | | J | 13L |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-DIS-10-S | L19652-31 | E1668A | 2,2',5-TRICB | 23.9 | NG/KG | CB | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,2',6-TRICB | 2.32 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,2'-DICB | 9.08 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,3,3',5,5',6-HXCB | 0.447 | NG/KG | KJ | U | 25 |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,3,3'-TRICB | 132 | NG/KG | CB | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,3',4-TRICB | 8.85 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,3,4'-TRICB | 31.7 | NG/KG | B | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,3,4-TRICB | 42.1 | NG/KG | C | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2',3,5-TRICB | 0.496 | NG/KG | K | UJ | 13L,25 |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,3',5-TRICB | 15.1 | NG/KG | C | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,3,5-TRICB | | NG/KG | U | UJ | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,3',6-TRICB | 2.73 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,3,6-TRICB | 0.29 | NG/KG | KJ | UJ | 13L,25 |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,3'-DICB | 5.84 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,3-DICB | 0.528 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,4',5-TRICB | 82.8 | NG/KG | B | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,4',6-TRICB | 12.5 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,4'-DICB | 37.3 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,4-DICB | 2.16 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,5-DICB | 1.43 | NG/KG | K | UJ | 13L,25 |
| RB13-DIS-10-S | L19652-31 | E1668A | 2,6-DICB | 0.359 | NG/KG | J | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 2-MOCB | 6.52 | NG/KG | | J | 10,13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 3,3',4-TRICB | 5.77 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 3,3',5-TRICB | 3.21 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 3,3'-DICB | 67.2 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 3,4,4',5-TECB | 0.914 | NG/KG | K | U | 25 |
| RB13-DIS-10-S | L19652-31 | E1668A | 3,4',5-TRICB | 1.11 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 3,4,5-TRICB | 0.749 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 3,4-DICB | 9.73 | NG/KG | C | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 3,5-DICB | 1.18 | NG/KG | K | UJ | 13L,25 |
| RB13-DIS-10-S | L19652-31 | E1668A | 3-MOCB | 41.5 | NG/KG | | J | 13L |
| RB13-DIS-10-S | L19652-31 | E1668A | 4-MOCB | 7.16 | NG/KG | B | J | 10 |
| RB13-DIS-07-S | L19652-32 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 4.87 | NG/KG | CG | J | 24 |
| RB13-DIS-07-S | L19652-32 | E1668A | 2,2',3,3',4,6-HXCB | 2.53 | NG/KG | K | U | 25 |
| RB13-DIS-07-S | L19652-32 | E1668A | 2,2',3,4,4',6,6'-HPCB | 0.165 | NG/KG | KJ | U | 25 |
| RB13-DIS-07-S | L19652-32 | E1668A | 2,2',3,4',5,5',6-HPCB | 109 | NG/KG | BG | J | 24 |
| RB13-DIS-07-S | L19652-32 | E1668A | 2,2',3,4',5,5'-HXCB | 47.9 | NG/KG | BG | J | 24 |
| RB13-DIS-07-S | L19652-32 | E1668A | 2,2',3,5,6'-PECB | 1.02 | NG/KG | K | U | 25 |
| RB13-DIS-07-S | L19652-32 | E1668A | 2,2',6,6'-TECB | 0.16 | NG/KG | KJ | U | 25 |
| RB13-DIS-07-S | L19652-32 | E1668A | 2-MOCB | 7.64 | NG/KG | | J | 10 |
| RB13-DIS-07-S | L19652-32 | E1668A | 3,4,4',5-TECB | 1.42 | NG/KG | K | U | 25 |
| RB13-DIS-07-S | L19652-32 | E1668A | 3,4,5-TRICB | 0.722 | NG/KG | K | U | 25 |
| RB13-DIS-07-S | L19652-32 | E1668A | 4-MOCB | 9.16 | NG/KG | B | J | 10 |
| RB13-DIS-01-S | L19652-33 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 4.11 | NG/KG | CG | J | 24 |
| RB13-DIS-01-S | L19652-33 | E1668A | 2,2',3,4,4',5,6,6'-OCCB | 0.054 | NG/KG | KJ | U | 25 |
| RB13-DIS-01-S | L19652-33 | E1668A | 2,2',3,4,4',5,6'-HPCB | 0.519 | NG/KG | K | U | 25 |
| RB13-DIS-01-S | L19652-33 | E1668A | 2,2',3,4',5,5',6-HPCB | 91.8 | NG/KG | BG | J | 24 |
| RB13-DIS-01-S | L19652-33 | E1668A | 2,2',3,4',5,5'-HXCB | 42.9 | NG/KG | BG | J | 24 |
| RB13-DIS-01-S | L19652-33 | E1668A | 2,2',3,4',5,6'-HXCB | 0.507 | NG/KG | K | U | 25 |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-DIS-01-S | L19652-33 | E1668A | 2,2',4,5',6-PECB | 2.05 | NG/KG | K | U | 25 |
| RB13-DIS-01-S | L19652-33 | E1668A | 2,2',6,6'-TECB | 0.145 | NG/KG | KJ | U | 25 |
| RB13-DIS-01-S | L19652-33 | E1668A | 2,3-DICB | 0.532 | NG/KG | K | U | 25 |
| RB13-DIS-01-S | L19652-33 | E1668A | 2-MOCB | 7.79 | NG/KG | | J | 10 |
| RB13-DIS-01-S | L19652-33 | E1668A | 3,4,4',5-TECB | 1.03 | NG/KG | K | U | 25 |
| RB13-DIS-01-S | L19652-33 | E1668A | 3,5-DICB | 1.22 | NG/KG | K | U | 25 |
| RB13-DIS-01-S | L19652-33 | E1668A | 4-MOCB | 8.44 | NG/KG | B | J | 10 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 0.407 | NG/KG | CKG | UJ | 24,25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,2',3,3',4,6,6'-HPCB | 0.557 | NG/KG | K | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,2',3,3',4,6-HXCB | 0.184 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,2',3,3',4-PECB | 1.56 | NG/KG | G | J | 24 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,2',3,4',5,6'-HXCB | | NG/KG | UG | UJ | 24 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,2',3,4,5',6-HXCB | 0.616 | NG/KG | K | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,2',3,4,6'-PECB | 0.162 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,2',3,6,6'-PECB | 0.09 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,3,3',4,4',5,5',6-OCCB | 0.113 | NG/KG | J | U | 7 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,3,3',4,4',5,5'-HPCB | 0.252 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,3,3',4,4',5,6-HPCB | 0.145 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,3,3',4,4',5,6-HPCB | 0.672 | NG/KG | B | U | 7 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,3,3',4',5,5'-HXCB | 0.107 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,3,3',5,5',6-HXCB | 0.07 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,3,3',6-TECB | 0.704 | NG/KG | CK | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,3',4,4',5,5'-HXCB | 0.904 | NG/KG | B | U | 7 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,3',4,5'-TECB | 0.143 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,3',6-TRICB | 0.259 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,3,6-TRICB | 0.048 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2,5-DICB | 0.197 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 2-MOCB | 0.847 | NG/KG | | J | 10 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 3,3',4,4',5-PECB | 0.147 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 3,4,4',5-TECB | 0.102 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 3,4,5-TRICB | 0.268 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 3,4-DICB | 1.28 | NG/KG | CK | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 3,5-DICB | 0.201 | NG/KG | KJ | U | 25 |
| RB13-DIS-03-S | L19652-34 (A) | E1668A | 4-MOCB | 1.03 | NG/KG | B | J | 10 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,2',3,3',4,6-HXCB | 0.316 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,2',3,3',4-PECB | 2.93 | NG/KG | G | J | 24 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,2',3,4,4',5,6-HPCB | 0.073 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,2',3,4',5,6,6'-HPCB | 0.054 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,2',3,4',5,6'-HXCB | 0.084 | NG/KG | KJG | UJ | 24,25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,2',3,4',6,6'-HXCB | 0.079 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,2',3,4,6'-PECB | 0.268 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,2',3,5,6'-PECB | 0.187 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,2',3,6,6'-PECB | 0.134 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,2',3,6'-TECB | 0.547 | NG/KG | K | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,3,3',4,4',5,5',6-OCCB | 0.28 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,3,3',4,4',5,5'-HPCB | 0.504 | NG/KG | K | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,3,3',4',5,5'-HXCB | 0.223 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,3,3',4,5,5'-HXCB | 0.354 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,3,3',5,5'-PECB | 0.069 | NG/KG | KJ | U | 25 |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-DIS-12-S | L19652-35 | E1668A | 2,3,3',5'-TECB | 0.103 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,3',4,5,5'-PECB | 0.282 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,3',5,5'-TECB | 0.35 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,3',5',6-TECB | 0.048 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2',3,5-TRICB | 0.115 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,3,6-TRICB | 0.073 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,4-DICB | 0.318 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2,5-DICB | 0.325 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 2-MOCB | 2.15 | NG/KG | | J | 10 |
| RB13-DIS-12-S | L19652-35 | E1668A | 3,4,4',5-TECB | 0.171 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 3,4-DICB | 2.73 | NG/KG | CK | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 3,5-DICB | 0.3 | NG/KG | KJ | U | 25 |
| RB13-DIS-12-S | L19652-35 | E1668A | 4-MOCB | 2.88 | NG/KG | B | J | 10 |
| RB13-DIS-02-S | L19652-36 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 3.68 | NG/KG | CG | J | 24 |
| RB13-DIS-02-S | L19652-36 | E1668A | 2,2',3,4',5,5',6-HPCB | 82 | NG/KG | BG | J | 24 |
| RB13-DIS-02-S | L19652-36 | E1668A | 2,2',3,4',5,5'-HXCB | 39.2 | NG/KG | BG | J | 24 |
| RB13-DIS-02-S | L19652-36 | E1668A | 2,2',3,5,6,6'-HXCB | 0.173 | NG/KG | KJ | U | 25 |
| RB13-DIS-02-S | L19652-36 | E1668A | 2,2',4,4',6,6'-HXCB | 0.151 | NG/KG | KJ | U | 25 |
| RB13-DIS-02-S | L19652-36 | E1668A | 2,2',5-TRICB | 27.1 | NG/KG | CBG | J | 24 |
| RB13-DIS-02-S | L19652-36 | E1668A | 2-MOCB | 7.48 | NG/KG | | J | 10 |
| RB13-DIS-02-S | L19652-36 | E1668A | 3,3',4,5,5'-PECB | 0.574 | NG/KG | K | U | 25 |
| RB13-DIS-02-S | L19652-36 | E1668A | 3,4,4',5-TECB | 0.969 | NG/KG | K | U | 25 |
| RB13-DIS-02-S | L19652-36 | E1668A | 3,5-DICB | 1.32 | NG/KG | K | U | 25 |
| RB13-DIS-02-S | L19652-36 | E1668A | 4-MOCB | 8.23 | NG/KG | B | J | 10 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,2',3,4,4',5,6'-HPCB | 0.409 | NG/KG | K | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,2',3,4,4',5,6-HPCB | 0.582 | NG/KG | K | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,2',3,4',5,6,6'-HPCB | 0.176 | NG/KG | KJ | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,2',3,4',5,6'-HXCB | 0.643 | NG/KG | K | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,2',3,5,6,6'-HXCB | 0.237 | NG/KG | KJ | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,2',3,5-TECB | 2.13 | NG/KG | K | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,2',3,6,6'-PECB | 1.04 | NG/KG | K | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,3,3',4,4',5,5',6-OCCB | 1.13 | NG/KG | K | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,3,3',5,5',6-HXCB | 0.379 | NG/KG | K | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,3,3',5,5'-PECB | 0.339 | NG/KG | KJ | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,3',5',6-TECB | 0.24 | NG/KG | KJ | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,3,6-TRICB | 0.328 | NG/KG | KJ | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,3-DICB | 0.33 | NG/KG | KJ | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2,5-DICB | 1.04 | NG/KG | K | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 2-MOCB | 5.71 | NG/KG | | J | 10 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 3,4,4',5-TECB | 0.693 | NG/KG | K | U | 25 |
| RB13-DIS-05-S | L19652-37 L | E1668A | 4-MOCB | 5.47 | NG/KG | B | J | 10 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 2.75 | NG/KG | CG | J | 24 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2,2',3,3',4-PECB | 12.2 | NG/KG | G | J | 24 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2,2',3,4,4',5,6-HPCB | 0.225 | NG/KG | KJ | U | 25 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2,2',3,4',5,5',6-HPCB | 57.1 | NG/KG | BG | J | 24 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2,2',3,4',5,5'-HXCB | 24.1 | NG/KG | BG | J | 24 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2,2',3,4',5,6,6'-HPCB | 0.115 | NG/KG | KJ | U | 25 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2,2',3,4',5,6'-HXCB | 0.482 | NG/KG | KG | UJ | 24,25 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2,2',3,4,6,6'-HXCB | 0.059 | NG/KG | KJ | U | 25 |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-DIS-04-S | L19652-38 | E1668A | 2,2',3,5,6,6'-HXCB | 0.118 | NG/KG | KJ | U | 25 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2,2',3,6,6'-PECB | 0.579 | NG/KG | K | U | 25 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2,2',4,4',6,6'-HXCB | 0.051 | NG/KG | KJ | U | 25 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2,2',6,6'-TECB | 0.076 | NG/KG | KJ | U | 25 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2,3,3',4,4',5,5'-HPCB | 1.18 | NG/KG | K | U | 25 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2,3',4,5',6-PECB | 0.079 | NG/KG | KJ | U | 25 |
| RB13-DIS-04-S | L19652-38 | E1668A | 2-MOCB | 6.21 | NG/KG | | J | 10 |
| RB13-DIS-04-S | L19652-38 | E1668A | 3,3',4,5,5'-PECB | 0.177 | NG/KG | KJ | U | 25 |
| RB13-DIS-04-S | L19652-38 | E1668A | 3,3',4,5-TECB | 0.1 | NG/KG | KJ | U | 25 |
| RB13-DIS-04-S | L19652-38 | E1668A | 3,4,4',5-TECB | 0.738 | NG/KG | K | U | 25 |
| RB13-DIS-04-S | L19652-38 | E1668A | 3,5-DICB | 0.638 | NG/KG | K | U | 25 |
| RB13-DIS-04-S | L19652-38 | E1668A | 4-MOCB | 5.25 | NG/KG | B | J | 10 |
| RB13-DIS-11-S | L19652-39 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 3.48 | NG/KG | CG | J | 24 |
| RB13-DIS-11-S | L19652-39 | E1668A | 2,2',3,4',5,5',6-HPCB | 71.7 | NG/KG | BG | J | 24 |
| RB13-DIS-11-S | L19652-39 | E1668A | 2,2',3,4',5,5'-HXCB | 30.6 | NG/KG | BG | J | 24 |
| RB13-DIS-11-S | L19652-39 | E1668A | 2,2',3,4',5,6,6'-HPCB | 0.213 | NG/KG | KJ | U | 25 |
| RB13-DIS-11-S | L19652-39 | E1668A | 2,2',3,4',6,6'-HXCB | 0.408 | NG/KG | K | U | 25 |
| RB13-DIS-11-S | L19652-39 | E1668A | 2,3,3',5,5'-PECB | 0.285 | NG/KG | KJ | U | 25 |
| RB13-DIS-11-S | L19652-39 | E1668A | 2,3',4,5',6-PECB | 0.087 | NG/KG | KJ | U | 25 |
| RB13-DIS-11-S | L19652-39 | E1668A | 2,3-DICB | 0.569 | NG/KG | K | U | 25 |
| RB13-DIS-11-S | L19652-39 | E1668A | 2,6-DICB | 0.38 | NG/KG | KJ | U | 25 |
| RB13-DIS-11-S | L19652-39 | E1668A | 2-MOCB | 6.49 | NG/KG | | J | 10 |
| RB13-DIS-11-S | L19652-39 | E1668A | 3,3',4,5,5'-PECB | 0.349 | NG/KG | KJ | U | 25 |
| RB13-DIS-11-S | L19652-39 | E1668A | 3,4,4',5-TECB | 0.996 | NG/KG | K | U | 25 |
| RB13-DIS-11-S | L19652-39 | E1668A | 3,5-DICB | 0.992 | NG/KG | K | U | 25 |
| RB13-DIS-11-S | L19652-39 | E1668A | 4-MOCB | 5.98 | NG/KG | B | J | 10 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 0.501 | NG/KG | CKG | UJ | 24,25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,2',3,4,4',5-HXCB | 1.3 | NG/KG | K | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,2',3,4',5,6'-HXCB | 0.052 | NG/KG | KJG | UJ | 24,25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,2',3,4',6,6'-HXCB | 0.072 | NG/KG | KJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,2',3,4,6'-PECB | 0.24 | NG/KG | KJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,2',3,5,6,6'-HXCB | 0.048 | NG/KG | KJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,2',3,5,6'-PECB | 0.132 | NG/KG | KJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,2',4,4',6,6'-HXCB | 0.052 | NG/KG | KJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,2',4,5',6-PECB | 0.331 | NG/KG | KJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,3,3',4,4',5,5'-HPCB | 0.45 | NG/KG | K | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,3,3',5,5',6-HXCB | 0.069 | NG/KG | KJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,3,3',5,5'-PECB | 0.085 | NG/KG | KJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,3,3',5-TECB | 0.165 | NG/KG | KJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,3',4,5,5'-PECB | 0.27 | NG/KG | KJG | UJ | 24,25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 2,3-DICB | 0.113 | NG/KG | KJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 3,4,4',5-TECB | 0.277 | NG/KG | KJ | U | 25 |
| RB13-DUN-12-S | L19652-4 | E1668A | 3,5-DICB | 0.628 | NG/KG | K | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 2,2',3,4,5',6-HXCB | 1.43 | NG/KG | K | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 2,2',3,4',6,6'-HXCB | 0.092 | NG/KG | KJ | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 2,2',3,5,6'-PECB | 0.159 | NG/KG | KJ | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 2,2',4,4',6,6'-HXCB | 0.075 | NG/KG | KJ | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 2,2',4,5',6-PECB | 0.374 | NG/KG | KJ | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 2,2',6,6'-TECB | 0.057 | NG/KG | KJ | U | 25 |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-DIS-08-S | L19652-40 | E1668A | 2,2',6-TRICB | 0.736 | NG/KG | K | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 2,3,3',4,4',5',6-HPCB | 0.325 | NG/KG | KJ | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 2,3,3',4',5,5'-HXCB | 0.251 | NG/KG | KJ | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 2,3,3',5,5'-PECB | 0.079 | NG/KG | KJ | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 2,3,3',5'-TECB | 0.108 | NG/KG | KJ | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 2,3',5',6-TECB | 0.093 | NG/KG | KJ | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 2-MOCB | 1.97 | NG/KG | | J | 10 |
| RB13-DIS-08-S | L19652-40 | E1668A | 3,4,4',5-TECB | 0.332 | NG/KG | KJ | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 3,5-DICB | 0.275 | NG/KG | KJ | U | 25 |
| RB13-DIS-08-S | L19652-40 | E1668A | 4-MOCB | 2.31 | NG/KG | B | J | 10 |
| RB13-DIS-06-S | L19652-41 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 9.64 | NG/KG | CG | J | 24 |
| RB13-DIS-06-S | L19652-41 | E1668A | 2,2',3,4,4',5,6,6'-OCCB | 0.116 | NG/KG | KJ | U | 25 |
| RB13-DIS-06-S | L19652-41 | E1668A | 2,2',3,4,4',5,6'-HPCB | 1.03 | NG/KG | K | U | 25 |
| RB13-DIS-06-S | L19652-41 | E1668A | 2,2',3,4,4',5,6-HPCB | 0.837 | NG/KG | K | U | 25 |
| RB13-DIS-06-S | L19652-41 | E1668A | 2,2',3,4,4',6,6'-HPCB | 0.334 | NG/KG | KJ | U | 25 |
| RB13-DIS-06-S | L19652-41 | E1668A | 2,2',3,4',5,5'-HXCB | 87 | NG/KG | BG | J | 24 |
| RB13-DIS-06-S | L19652-41 | E1668A | 2,2',3,4',5,6,6'-HPCB | 0.58 | NG/KG | K | U | 25 |
| RB13-DIS-06-S | L19652-41 | E1668A | 2,2',4,4',6,6'-HXCB | 0.116 | NG/KG | KJ | U | 25 |
| RB13-DIS-06-S | L19652-41 | E1668A | 2,3',6-TRICB | 7.81 | NG/KG | G | J | 24 |
| RB13-DIS-06-S | L19652-41 | E1668A | 2-MOCB | 10.8 | NG/KG | | J | 10 |
| RB13-DIS-06-S | L19652-41 | E1668A | 3,3',4,4',5,5'-HXCB | 0.906 | NG/KG | K | U | 25 |
| RB13-DIS-06-S | L19652-41 | E1668A | 3,3',4,5-TECB | 0.386 | NG/KG | KJ | U | 25 |
| RB13-DIS-06-S | L19652-41 | E1668A | 3,3',5,5'-TECB | 0.235 | NG/KG | KJ | U | 25 |
| RB13-DIS-06-S | L19652-41 | E1668A | 3,4,4',5-TECB | 2.24 | NG/KG | K | U | 25 |
| RB13-DIS-06-S | L19652-41 | E1668A | 3,4-DICB | 14.4 | NG/KG | CKG | UJ | 24,25 |
| RB13-DIS-06-S | L19652-41 | E1668A | 3,5-DICB | 1.84 | NG/KG | K | U | 25 |
| RB13-DIS-06-S | L19652-41 | E1668A | 4-MOCB | 13.2 | NG/KG | B | J | 10 |
| RB13-DIS-09-S | L19652-42 | E1668A | 2,2',3,4,4',5,6-HPCB | 0.193 | NG/KG | KJ | U | 25 |
| RB13-DIS-09-S | L19652-42 | E1668A | 2,2',3,4',5,6,6'-HPCB | 0.086 | NG/KG | KJ | U | 25 |
| RB13-DIS-09-S | L19652-42 | E1668A | 2,2',3,4,6'-PECB | 0.852 | NG/KG | K | U | 25 |
| RB13-DIS-09-S | L19652-42 | E1668A | 2,2',3,5,6,6'-HXCB | 0.078 | NG/KG | KJ | U | 25 |
| RB13-DIS-09-S | L19652-42 | E1668A | 2,2',3,5-TECB | 1.42 | NG/KG | K | U | 25 |
| RB13-DIS-09-S | L19652-42 | E1668A | 2,3,3',4,4',5-HXCB | 21.4 | NG/KG | CB | J | 9 |
| RB13-DIS-09-S | L19652-42 | E1668A | 2,3,3',5,5'-PECB | 0.251 | NG/KG | KJ | U | 25 |
| RB13-DIS-09-S | L19652-42 | E1668A | 2,6-DICB | 0.258 | NG/KG | KJ | U | 25 |
| RB13-DIS-09-S | L19652-42 | E1668A | 2-MOCB | 5.05 | NG/KG | | J | 10 |
| RB13-DIS-09-S | L19652-42 | E1668A | 3,4,4',5-TECB | 0.606 | NG/KG | K | U | 25 |
| RB13-DIS-09-S | L19652-42 | E1668A | 3,5-DICB | 0.652 | NG/KG | K | U | 25 |
| RB13-DIS-09-S | L19652-42 | E1668A | 4-MOCB | 4.33 | NG/KG | B | J | 10 |
| RB13-DIS-09-D | L19652-43 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 2.31 | NG/KG | CG | J | 24 |
| RB13-DIS-09-D | L19652-43 | E1668A | 2,2',3,4,6'-PECB | 0.867 | NG/KG | K | U | 25 |
| RB13-DIS-09-D | L19652-43 | E1668A | 2,3,3',4,4',5-HXCB | 12.7 | NG/KG | CB | J | 9 |
| RB13-DIS-09-D | L19652-43 | E1668A | 2,3,3',5,5',6-HXCB | 0.198 | NG/KG | KJ | U | 25 |
| RB13-DIS-09-D | L19652-43 | E1668A | 2,3',4,5,5'-PECB | 0.746 | NG/KG | K | U | 25 |
| RB13-DIS-09-D | L19652-43 | E1668A | 2,3',5',6-TECB | 0.247 | NG/KG | KJ | U | 25 |
| RB13-DIS-09-D | L19652-43 | E1668A | 2-MOCB | 5.59 | NG/KG | | J | 10 |
| RB13-DIS-09-D | L19652-43 | E1668A | 3,3',4,5-TECB | 0.114 | NG/KG | KJ | U | 25 |
| RB13-DIS-09-D | L19652-43 | E1668A | 3,3',5,5'-TECB | 0.095 | NG/KG | KJ | U | 25 |
| RB13-DIS-09-D | L19652-43 | E1668A | 3,4,4',5-TECB | 0.567 | NG/KG | K | U | 25 |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-DIS-09-D | L19652-43 | E1668A | 3,4,5-TRICB | 0.449 | NG/KG | K | U | 25 |
| RB13-DIS-09-D | L19652-43 | E1668A | 3,5-DICB | 0.573 | NG/KG | K | U | 25 |
| RB13-DIS-09-D | L19652-43 | E1668A | 4-MOCB | 4.78 | NG/KG | B | J | 10 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,2',3,3',4,4',5,6'-OCCB | 0.619 | NG/KG | K | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,2',3,3',4-PECB | 0.581 | NG/KG | G | J | 24 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,2',3,3',5,5',6-HPCB | 0.838 | NG/KG | K | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,2',3,3',5,5'-HXCB | 0.238 | NG/KG | KJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,2',3,3',5,6-HXCB | 0.939 | NG/KG | CK | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,2',3,4',5,6'-HXCB | | NG/KG | UG | UJ | 24 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,2',3,5,5'-PECB | 1.68 | NG/KG | K | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,2',3,5-TECB | 0.166 | NG/KG | KJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,3,3',4,4',6-HXCB | 0.931 | NG/KG | K | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2',3,3',4,5-PECB | 0.124 | NG/KG | KJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2',3,4,4',5-PECB | 0.267 | NG/KG | KJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,3,4,4',5-PECB | 0.239 | NG/KG | KJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,3',4,5-TECB | 0.317 | NG/KG | KJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,3',6-TRICB | 0.088 | NG/KG | JG | J | 24 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,3,6-TRICB | 0.051 | NG/KG | KJG | UJ | 24,25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,3'-DICB | 0.467 | NG/KG | K | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,4-DICB | 0.311 | NG/KG | KJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 2,5-DICB | 0.365 | NG/KG | K | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 3,4,4',5-TECB | 0.103 | NG/KG | KJ | U | 25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 3,4-DICB | 5.74 | NG/KG | CKG | UJ | 24,25 |
| RB13-DUN-10-S | L19652-5 | E1668A | 3,5-DICB | 0.325 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,3',4,4',5,5',6,6'-DECB | 1.52 | NG/KG | K | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,3',4,4',5,6,6'-NOCB | 0.198 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,3',4,4',5,6-OCCB | 0.752 | NG/KG | K | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,3',4,4',5-HPCB | 2.85 | NG/KG | K | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 0.18 | NG/KG | CKJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,3',4,5',6,6'-OCCB | 0.24 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,3',4,5',6-HPCB | 0.172 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,3',4-PECB | 0.815 | NG/KG | G | J | 24 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,3',5,6-HXCB | 1.17 | NG/KG | CK | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,4,4',6-HXCB | 0.224 | NG/KG | CKJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,4',5,6,6'-HPCB | 0.05 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,4',5,6'-HXCB | | NG/KG | UG | UJ | 24 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,4,6'-PECB | 0.115 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,2',3,6,6'-PECB | 0.059 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,3,3',4,4',5,5',6-OCCB | 0.082 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,3,3',4,4',5',6-HPCB | 0.073 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,3,3',4',5,5'-HXCB | 0.06 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,3,3',4,5,5'-HXCB | 0.116 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,3,3',4',5-PECB | 0.435 | NG/KG | CK | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2',3,4,4',5-PECB | 0.252 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2',3,5-TRICB | 0.047 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,3',6-TRICB | 0.15 | NG/KG | JG | J | 24 |
| RB13-DUN-13-S | L19652-6 | E1668A | 2,5-DICB | 0.423 | NG/KG | K | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 3,4,4',5-TECB | 0.078 | NG/KG | KJ | U | 25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 3,4,5-TRICB | 0.171 | NG/KG | KJ | U | 25 |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-DUN-13-S | L19652-6 | E1668A | 3,4-DICB | 3.38 | NG/KG | CKG | UJ | 24,25 |
| RB13-DUN-13-S | L19652-6 | E1668A | 3,5-DICB | 0.243 | NG/KG | KJ | U | 25 |
| RB13-DUN-05-S | L19652-7 M | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 0.807 | NG/KG | CG | J | 24 |
| RB13-DUN-05-S | L19652-7 M | E1668A | 2,2',3,3',4-PECB | 3.28 | NG/KG | G | J | 24 |
| RB13-DUN-05-S | L19652-7 M | E1668A | 2,2',3,4',5,5'-HXCB | 8.31 | NG/KG | G | J | 24 |
| RB13-DUN-05-S | L19652-7 M | E1668A | 2,2',3,4',5,6'-HXCB | 0.161 | NG/KG | KJG | UJ | 24,25 |
| RB13-DUN-05-S | L19652-7 M | E1668A | 2,2',3,6,6'-PECB | 0.162 | NG/KG | KJ | U | 25 |
| RB13-DUN-05-S | L19652-7 M | E1668A | 2,2',4-TRICB | 4.56 | NG/KG | BG | J | 24 |
| RB13-DUN-05-S | L19652-7 M | E1668A | 2,2',5-TRICB | 7.28 | NG/KG | CBG | J | 24 |
| RB13-DUN-05-S | L19652-7 M | E1668A | 2,3,3',4,4',5,5'-HPCB | 0.513 | NG/KG | K | U | 25 |
| RB13-DUN-05-S | L19652-7 M | E1668A | 2,3',4,5,5'-PECB | 0.315 | NG/KG | KJ | U | 25 |
| RB13-DUN-05-S | L19652-7 M | E1668A | 2,3',6-TRICB | 0.592 | NG/KG | G | J | 24 |
| RB13-DUN-05-S | L19652-7 M | E1668A | 2,4'-DICB | 11.5 | NG/KG | G | J | 24 |
| RB13-DUN-05-S | L19652-7 M | E1668A | 3,4-DICB | 3.14 | NG/KG | CKG | UJ | 24,25 |
| RB13-DUN-05-S | L19652-7 M | E1668A | 3,5-DICB | 0.282 | NG/KG | KJ | U | 25 |
| RB13-DUN-05-S | L19652-7 W | E1668A | 4-MOCB | 3.86 | NG/KG | KBDJ | U | 25 |
| RB13-DUN-05-D | L19652-8 i | E1668A | 2,2',3,3',4,4',6,6'-OCCB | 1.14 | NG/KG | CG | J | 24 |
| RB13-DUN-05-D | L19652-8 i | E1668A | 2,2',3,4',6,6'-HXCB | 0.101 | NG/KG | KJ | U | 25 |
| RB13-DUN-05-D | L19652-8 i | E1668A | 3,5-DICB | 0.295 | NG/KG | KJ | U | 25 |
| RB13-DUN-09-S | L19652-9 M | E1668A | 2,2',3,3',4,4',5,5',6,6'-DECB | 0.501 | NG/KG | K | U | 25 |
| RB13-DUN-09-S | L19652-9 M | E1668A | 2,2',3,3',4,5',6,6'-OCCB | 0.125 | NG/KG | KJ | U | 25 |
| RB13-DUN-09-S | L19652-9 M | E1668A | 2,2',3,3',4-PECB | 0.402 | NG/KG | G | J | 24 |
| RB13-DUN-09-S | L19652-9 M | E1668A | 2,2',3,3',5,5',6,6'-OCCB | 0.235 | NG/KG | KJ | U | 25 |
| RB13-DUN-09-S | L19652-9 M | E1668A | 2,2',3,3',5,5'-HXCB | 0.125 | NG/KG | KJ | U | 25 |
| RB13-DUN-09-S | L19652-9 M | E1668A | 2,2',3,3',5,6-HXCB | 0.128 | NG/KG | CKJ | U | 25 |
| RB13-DUN-09-S | L19652-9 M | E1668A | 2,2',3,6'-TECB | 0.127 | NG/KG | KJ | U | 25 |
| RB13-DUN-09-S | L19652-9 M | E1668A | 2,2',5-TRICB | 0.829 | NG/KG | CBG | J | 24 |
| RB13-DUN-09-S | L19652-9 M | E1668A | 2,3,3',4',5',6-HXCB | 0.29 | NG/KG | KJ | U | 25 |
| RB13-DUN-09-S | L19652-9 M | E1668A | 2,3,4,4',5-PECB | 0.136 | NG/KG | KJ | U | 25 |
| RB13-DUN-09-S | L19652-9 M | E1668A | 2,4'-DICB | 1.29 | NG/KG | G | J | 24 |
| RB13-DUN-09-S | L19652-9 M | E1668A | 2,5-DICB | 0.344 | NG/KG | KJ | U | 25 |
| RB13-DUN-09-S | L19652-9 M | E1668A | 3,3',4,4',5-PECB | 0.102 | NG/KG | KJ | U | 25 |
| RB13-DIS-09-S | WP46O | EPA376.2 | Sulfide | 10.5 | mg/kg | | J | 9 |
| RB13-DIS-09-D | WP46P | EPA376.2 | Sulfide | 32.6 | mg/kg | | J | 9 |
| RB13-DIS-09-T | WP46Q | EPA376.2 | Sulfide | 7.22 | mg/kg | | J | 9 |
| RB13-PT-13-S | WP72A | EPA376.2 | Sulfide | 19.5 | mg/kg | | J | 9,10H |
| RB13-PT-13-D | WP72B | EPA376.2 | Sulfide | 98.1 | mg/kg | | J | 9,10H |
| RB13-PT-13-T | WP72C | EPA376.2 | Sulfide | 27.0 | mg/kg | | J | 9,10H |
| RB13-PT-14-S | WP72D | EPA376.2 | Sulfide | 3.64 | mg/kg | | J | 9,10H |
| RB13-PT-08-S | WP72E | EPA376.2 | Sulfide | 4.18 | mg/kg | | J | 9,10H |
| RB13-PT-15-S | WP72F | EPA376.2 | Sulfide | 3.13 | mg/kg | | J | 9,10H |
| RB13-PT-01-S | WP72G | EPA376.2 | Sulfide | 3.16 | mg/kg | | J | 9,10H |
| RB13-PT-06-S | WP72H | EPA376.2 | Sulfide | 2.64 | mg/kg | | J | 9,10H |
| RB13-PT-09-S | WP72I | EPA376.2 | Sulfide | 1.75 | mg/kg | | J | 9,10H |
| RB13-PT-04-S | WP72J | EPA376.2 | Sulfide | 7.56 | mg/kg | | J | 9,10H |
| RB13-PT-02-S | WP72K | EPA376.2 | Sulfide | 7.99 | mg/kg | | J | 9,10H |
| RB13-PT-05-S | WP72L | EPA376.2 | Sulfide | 120 | mg/kg | | J | 9,10H |
| RB13-PT-10-S | WP72M | EPA376.2 | Sulfide | 56.9 | mg/kg | | J | 9,10H |
| RB13-PT-07-S | WP72N | EPA376.2 | Sulfide | 179 | mg/kg | | J | 9,10H |

**Qualified Data Summary Table**
**North Olympic Peninsula - Regional Background Sediment Characterization**

| Sample ID | Laboratory ID | Method | Analyte | Result | Units | Lab Flag | DV Qual | DV Reason |
|---|---|---|---|---|---|---|---|---|
| RB13-PT-03-S | WP72O | EPA376.2 | Sulfide | 152 | mg/kg | | J | 9,10H |
| RB13-PT-12-S | WP72P | EPA376.2 | Sulfide | 30.3 | mg/kg | | J | 9,10H |
| RB13-PT-11-S | WP72Q | EPA376.2 | Sulfide | 7.35 | mg/kg | | J | 9,10H |
| RB13-DIS-10-S | WP47D | PLUMB81TC | Total Organic Carbon | 5.79 | % | | J | 8L |
| RB13-DIS-07-S | WP47E | PLUMB81TC | Total Organic Carbon | 8.29 | % | | J | 8L |
| RB13-DIS-01-S | WP47F | PLUMB81TC | Total Organic Carbon | 3.02 | % | | J | 8L |
| RB13-DIS-03-S | WP47H | PLUMB81TC | Total Organic Carbon | 0.733 | % | | J | 8L |
| RB13-DIS-12-S | WP47J | PLUMB81TC | Total Organic Carbon | 2.49 | % | | J | 8L |
| RB13-DIS-02-S | WP47L | PLUMB81TC | Total Organic Carbon | 1.94 | % | | J | 8L |
| RB13-DIS-05-S | WP47M | PLUMB81TC | Total Organic Carbon | 1.97 | % | | J | 8L |
| RB13-DUN-17-S | WP46A | SW7471A | Mercury | 0.04 | mg/kg | | J | 8L,9 |
| RB13-DUN-19-S | WP46B | SW7471A | Mercury | 0.07 | mg/kg | | J | 8L,9 |
| RB13-DUN-14-S | WP46C | SW7471A | Mercury | 0.03 | mg/kg | | J | 8L,9 |
| RB13-DUN-20-S | WP46D | SW7471A | Mercury | 0.03 | mg/kg | U | UJ | 8L,9 |
| RB13-DUN-16-S | WP46E | SW7471A | Mercury | 0.02 | mg/kg | U | UJ | 8L,9 |
| RB13-DUN-22-S | WP46F | SW7471A | Mercury | 0.03 | mg/kg | | J | 8L,9 |
| RB13-DUN-21-S | WP46G | SW7471A | Mercury | 0.02 | mg/kg | U | UJ | 8L,9 |
| RB13-DUN-15-S | WP46H | SW7471A | Mercury | 0.03 | mg/kg | U | UJ | 8L,9 |
| RB13-DIS-04-S | WP46I | SW7471A | Mercury | 0.35 | mg/kg | | J | 8L,9 |
| RB13-DIS-11-S | WP46J | SW7471A | Mercury | 0.09 | mg/kg | | J | 8L,9 |
| RB13-DIS-08-S | WP46K | SW7471A | Mercury | 0.03 | mg/kg | U | UJ | 8L,9 |
| RB13-DIS-06-S | WP46L | SW7471A | Mercury | 0.14 | mg/kg | | J | 8L,9 |
| RB13-DIS-09-S | WP46O | SW7471A | Mercury | 0.07 | mg/kg | | J | 8L,9 |
| RB13-DIS-09-D | WP46P | SW7471A | Mercury | 0.07 | mg/kg | | J | 8L,9 |
| RB13-DUN-18-S | WP46R | SW7471A | Mercury | 0.07 | mg/kg | | J | 8L,9 |