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September 19, 2023

Dear Jessica:

On behalf of James Connolly of COWI North America and Taylor Lancelot of the City of Berkeley, I have uploaded our revised report "Characterization of the Sediment from the Berkeley Marina: Results of Sediment Sampling and Analysis" to the DMMO website for review at the September 27<sup>th</sup> DMMO meeting. The following was revised:

- Figure 2-1 was replaced with an updated version;
- Biota Sediment Accumulation Factors (BSAF) were determined for total mercury and total PCBs to support Theoretical Bioaccumulation Potential (TBP) estimates for these compounds performed on the BM-DU3-01, BM-DU3-02, and BM-DU3-03 sediment cores.

If you have any questions, please give me a call at (707) 207-7761. I look forward to hearing from you.

Sincerely,

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# **DATA REPORT**

## **Characterization of the Sediment from the Berkeley Marina: Results of Sediment Sampling and Analysis**

### **Episode 1**

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**September 2023**

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# Table of Contents

	Page
<b>1. INTRODUCTION .....</b>	<b>1</b>
1.1 Objectives of the Sediment Investigation.....	1
1.2 Organization of this Document .....	2
<b>2. FIELD SEDIMENT SAMPLE COLLECTION .....</b>	<b>5</b>
<b>3. SAMPLE PROCESSING.....</b>	<b>8</b>
3.1 Homogenization and Compositing of Sediments.....	8
3.2 Shipping of Sediment Samples to the Analytical Laboratories.....	8
3.2.1 Chain-of-Custody (COC) Protocol .....	9
<b>4. RESULTS OF PHYSICAL/CHEMICAL ANALYSES .....</b>	<b>10</b>
4.1 Berkeley Marina Compositing Sediments: Results of Physical/Chemical Analyses .....	11
4.1.1. Total Solids and Total Organic Carbon .....	11
4.1.2. Particle Size Distribution .....	11
4.1.3. Metals.....	11
4.1.4. Butyltins .....	12
4.1.5. Polychlorinated Biphenyls .....	12
4.1.6. Organochlorine Pesticides.....	12
4.1.7. Polycyclic Aromatic Hydrocarbons .....	12
4.1.8. Dioxins and Furans .....	12
4.2 Individual Sediment Core Samples: Results of Physical/Chemical Analyses .....	18
4.3 Berkeley Marina Z-Layer Composite Sediment: Results of Mercury, Total PCBs, Dioxins/Furans, Total Solids and TOC analysis.....	20
4.4 Results of Chemical Analyses of Modified Elutriates .....	23
4.5 Results of Chemical Analyses of BM-DU3-Comp DI-WET.....	23
<b>5. RESULTS OF BIOLOGICAL TESTING.....</b>	<b>25</b>
5.1 Benthic (Solid-Phase Sediment) Toxicity Testing .....	25
5.1.1 Sediment Porewater Characterization .....	26
5.1.2 Effects of the Berkeley Marina Sediments on <i>Leptocheirus plumulosus</i> .....	26
5.1.2.1 Reference Toxicant Toxicity to <i>Leptocheirus plumulosus</i> .....	26
5.1.3 Effects of the Berkeley Marina Sediments on <i>Neanthes arenaceodentata</i> .....	27
5.1.3.1 Reference Toxicant Toxicity to <i>Neanthes arenaceodentata</i> .....	27
5.2 Water Column (Standard Sediment Elutriate) Toxicity Testing .....	28
5.2.1 Toxicity of the Berkeley Marina Sediment Elutriates to <i>Mytilus galloprovincialis</i> ....	29
5.2.1.1 Reference Toxicant Toxicity to <i>Mytilus galloprovincialis</i> Embryos.....	30
5.3 Toxicity Testing of Berkeley Marina Modified Elutriates using <i>Americamysis bahia</i> .....	31
5.3.1 Reference Toxicant Toxicity to <i>Americamysis bahia</i> .....	31
5.3.2 Bioaccumulation Testing of the BM-DU3-Comp Sediment.....	32
5.3.2.1 Sediment Bioaccumulation Test Data for <i>Macoma nasuta</i> .....	32
5.3.2.2 Sediment Bioaccumulation Test Data for <i>Nereis virens</i> .....	32
<b>6. CHEMICAL ANALYSES OF BIVALVE AND POLYCHAETE TISSUES.....</b>	<b>33</b>
6.1 Bioaccumulation Test Tissue Analytical Chemistry Results .....	34

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6.1.1 <i>Macoma nasuta</i> Tissue Analytical Chemistry Results .....	34
6.1.2 <i>Nereis virens</i> Tissue Analytical Chemistry Results .....	34
6.2 Calculation of Site Specific Biota-Sediment Accumulation Factor (BSAF) .....	37
6.3 Theoretical Bioaccumulation Potential (TBP) of the Berkeley Marina Sediments .....	39
6.4 BM-DU3-Comp and BM-DU3-03 Tissue Concentrations Exceeding SF-DODS Reference Site Database .....	42
6.5 Comparison of Tissue Concentrations to Tissue Residue Effects Data for Invertebrates..	42
6.5.1 Development of Toxicity Reference Values Using the USACE ERED .....	42
6.5.2 Comparison of Tissue Analyte Concentrations to Toxicity Reference Values .....	44
6.6 Comparison of Tissue Analyte Concentrations to USFDA Action Levels .....	44
6.7 Potential for Trophic Transfer and Biomagnification at SF-DODS.....	46
6.8 Potential for Trophic Transfer and Biomagnification in SF Bay .....	46
6.9 Potential for Dioxins/Furans Biomagnification to Fish .....	47
6.9.1 Comparison of Estimated Fish Tissue Concentrations to Screening Values .....	48
<b>7. QUALITY CONTROL REVIEW .....</b>	<b>51</b>
7.1 Conventional and Chemical Analytical Quality Control Summary .....	51
7.1.1 Sediment Conventional and Chemical Analytical QA/QC Summary .....	51
7.1.2 MET Sample Analytical QA/QC Summary .....	51
7.1.3 DI-WET Sample Analytical QA/QC Summary .....	52
7.1.4 Tissue Sample Analytical QA/QC Summary.....	52
7.2 Biological Testing Quality Lab Control Summary .....	52
<b>8. SUMMARY .....</b>	<b>54</b>
8.1 Unconfined Aquatic Disposal at In-Bay Sites.....	54
8.2 Unconfined Aquatic Disposal at SF-DODS.....	56
8.3 Placement at Cullinan Ranch Restoration Project.....	56
8.4 Placement at Montezuma Wetlands Restoration Project .....	57
8.5 Z-layer Assessment .....	58
<b>9. REFERENCES.....</b>	<b>59</b>

**Appendices**

Appendix A	Sampling Field Logs and Data Sheets
Appendix B	Eurofins Data Report for the Sediment Analyses
Appendix C	Eurofins Data Reports for the Z-Layer Composite and Individual Core Sediment Analyses
Appendix D	Eurofins Data Reports for the Sediment MET Elutriate Analyses Reports
Appendix E	Eurofins Data Reports for the Sediment DI-WET Elutriate Analyses Reports
Appendix F	Results for Ammonia and Sulfide Analyses Performed in Support of Bioassay Testing
Appendix G	Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Berkeley Marina Sediments to the Amphipod, <i>Leptocheirus plumulosus</i>
Appendix H	Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Amphipod, <i>Leptocheirus plumulosus</i>
Appendix I	Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Berkeley Marina Sediments to the Polychaete, <i>Neanthes arenaceodentata</i>
Appendix J	Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Polychaete, <i>Neanthes arenaceodentata</i>
Appendix K	Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Berkeley Marina Sediment Elutriates to Bivalve ( <i>Mytilus galloprovincialis</i> ) Embryos
Appendix L	Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Bivalve ( <i>Mytilus galloprovincialis</i> ) Embryos
Appendix M	Test Data and Summary of Statistics for the Toxicity Evaluation of the Berkeley Marina Modified Elutriate Test Sediment Elutriates to <i>Americamysis bahia</i>
Appendix N	Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Mysid, <i>Americamysis bahia</i>
Appendix O	Test Data for the Berkeley Marina Sediment Bioaccumulation Tests with the Bivalve, <i>Macoma nasuta</i>

## **Appendices (Continued)**

Appendix P	Test Data for the Berkeley Marina Sediment Bioaccumulation Tests with the Polychaete, <i>Nereis virens</i>
Appendix Q	Bioassay Standard Test Conditions
Appendix R	Results of <i>Macoma nasuta</i> and <i>Nereis virens</i> Tissue Analyses: Laboratory Data Report Submitted by Eurofins
Appendix S	Bioaccumulation Risk Assessment Modeling System (BRAMS) Trophic Trace Module Input Parameters
Appendix T	Estimation of Fish Tissue Total Dioxin/Furan Concentrations: Results of Trophic Transfer Modeling Using the Bioaccumulation Risk Assessment Modeling System (BRAMS) Trophic Trace Module

## List of Figures

	Page
Figure 1-1. Location Map: Berkeley Marina .....	3
Figure 1-2. Vicinity Map: Berkeley Marina .....	4
Figure 2-1. Site Map: Berkeley Marina: Proposed and Actual Sample Locations .....	7
Figure 8-1. Berkeley Marina Proposed Sediment Suitability .....	55

## List of Tables

	Page
Table 1-1. Berkeley Marina Episode 1 Dredging Volumes.....	2
Table 2-1. Locations of Sampling Stations and Core Depths Achieved.....	6
Table 4-1. Berkeley Marina 2023 Sediment Sample Chemistries .....	13
Table 4-2. Results of Chemical Analyses of BM-DU3-Comp Individual Cores. ....	19
Table 4-3. BM-DU3-Z-Layer-Comp Sediment Sample Chemistries .....	21
Table 4-4. Berkeley Marina 2023 Modified Elutriate Chemistry Results .....	23
Table 4-5. Berkeley Marina DI-Wet Chemistry Results .....	24
Table 5-1. Sediment Porewater Initial Water Quality Characteristics.....	26
Table 5-2. <i>Leptocheirus plumulosus</i> Berkeley Marina Sediments .....	26
Table 5-3. Reference Toxicant Testing: Effects of KCl on <i>Leptocheirus plumulosus</i> .....	27
Table 5-4. <i>Neanthes arenaceodentata</i> Survival in the Berkeley Marina Sediments .....	27
Table 5-5. Reference Toxicant Testing: Effects of KCl on <i>Neanthes arenaceodentata</i> .....	28
Table 5-6. Effects of BM-DU1-Comp Sediment Elutriate on <i>Mytilus galloprovincialis</i> .....	29
Table 5-7. Effects of BM-DU2-Comp Sediment Elutriate on <i>Mytilus galloprovincialis</i> .....	30
Table 5-8. Effects of BM-DU3-Comp Sediment Elutriate on <i>Mytilus galloprovincialis</i> .....	30
Table 5-9. Reference Toxicant Testing: Effects of KCl on <i>Mytilus galloprovincialis</i> .....	30
Table 5-10. Effects of Berkeley Marina MET Elutriates on <i>Americamysis bahia</i> .....	31
Table 5-11. Reference Toxicant Testing: Effects of KCl on <i>Americamysis bahia</i> .....	31
Table 5-12. Berkeley Marina Sediment Bioaccumulation Testing with <i>Macoma nasuta</i> .....	32
Table 5-13. Berkeley Marina Sediment Bioaccumulation Testing with <i>Nereis virens</i> .....	32
Table 6-1. <i>Macoma nasuta</i> Tissue Concentrations (µg/kg, wet wt).....	35
Table 6-2. <i>Nereis virens</i> Tissue Concentrations (µg/kg, wet wt) .....	36
Table 6-3. Determination of <i>Macoma nasuta</i> Site Specific PCB BSAF .....	38
Table 6-4. Determination of <i>Nereis virens</i> Site Specific PCB BSAF.....	38
Table 6-5. Determination of <i>Macoma nasuta</i> Site Specific Mercury BSAF .....	38
Table 6-6. Determination of <i>Nereis virens</i> Site Specific Mercury BSAF .....	39
Table 6-7. Predicted Bioaccumulation of PCBs in the Berkeley Marina Sediments in <i>Macoma nasuta</i> Tissues: Results of TBP Calculations. ....	40
Table 6-8. Predicted Bioaccumulation of PCBs in the Berkeley Marina Sediments in <i>Nereis</i> <i>virens</i> Tissues: Results of TBP Calculations. ....	40

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Table 6-9. Predicted Bioaccumulation of Mercury in the Berkeley Marina Sediments in <i>Macoma nasuta</i> Tissues: Results of TBP Calculations. ....	41
Table 6-10. Predicted Bioaccumulation of Mercury in the Berkeley Marina Sediments in <i>Nereis virens</i> Tissues: Results of TBP Calculations. ....	41
Table 6-11. Tissue Analytes whose Concentrations Exceeded SF-DODS Reference Tissue Database Values. ....	42
Table 6-12. Summary of ERED Tissue ‘Effect’ Concentrations Used to Determine Potential Benthic Impacts. ....	43
Table 6-13. Comparison of <i>Macoma nasuta</i> Steady-State Tissue Concentrations to USACE ERED Database TRV. ....	45
Table 6-14. Comparison of <i>Nereis virens</i> Steady-State Tissue Concentrations to USACE ERED Database TRV. ....	45
Table 6-15. Comparison of Tissue Burden Levels to USFDA Action Levels. ....	46
Table 6-16. Dioxin/Furan Congener Log K <sub>ow</sub> and Log K <sub>oc</sub> Input Values. ....	47
Table 6-17. Comparison of Estimated Shiner Surf Perch Dioxin/Furan Total TEQ Tissue Burden Levels to Fish Tissue Screening Concentrations Assuming Prey Composition of 100% Bivalves or 100% Polychaetes. ....	50
Table 6-18. Comparison of Estimated White Croaker Dioxin/Furan Total TEQ Tissue Burden Levels to Fish Tissue Screening Concentrations Assuming Prey Composition of 100% Bivalves or 100% Polychaetes. ....	50



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## List of Acronyms

<b>ASTM</b>	American Society for Testing and Materials
<b>Bay</b>	San Francisco Bay
<b>BCDC</b>	Bay Conservation and Development Commission
<b>BT</b>	Bioaccumulation trigger
<b>City</b>	City of Berkeley
<b>COC</b>	Chain-of-custody
<b>CRRP</b>	Cullinan Ranch Restoration Project
<b>DDT</b>	Dichlorodiphenyltrichloroethane
<b>DI-WET</b>	Deionized Water Waste Extraction Test
<b>DMMO</b>	Dredged Material Management Office
<b>EC50</b>	50% Effect Concentration
<b>Eurofins</b>	Eurofins Calscience
<b>GPS</b>	Global positioning system
<b>g/L</b>	Grams/liter
<b>HDPE</b>	High density polyethylene
<b>ITM</b>	Inland Testing Manual
<b>LC50</b>	50% Lethality Concentration
<b>LCS</b>	Laboratory Control Sample
<b>Marina</b>	Berkeley Marina
<b>MET</b>	modified elutriate test
<b>µg/kg</b>	Microgram per kilogram
<b>mg/kg</b>	Milligram per kilogram
<b>mg/L</b>	Milligram per liter
<b>MLLW</b>	Mean lower low water
<b>MDL</b>	Method detection limit
<b>MET</b>	Modified Elutriate Test
<b>MS</b>	Matrix Spike
<b>MSD</b>	Matrix Spike Duplicate
<b>MWRP</b>	Montezuma Wetlands Restoration Project
<b>OTM</b>	Ocean Testing Manual
<b>PAH</b>	Polycyclic aromatic hydrocarbons
<b>PCB</b>	Polychlorinated biphenyls
<b>PER</b>	Pacific EcoRisk, Inc.
<b>QA/QC</b>	Quality assurance/quality control

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<b>SAP</b>	Sampling and Analysis Plan
<b>SD</b>	Standard Deviation
<b>SET</b>	sediment elutriate test
<b>SF</b>	San Francisco
<b>SFEI</b>	San Francisco Estuary Institute
<b>SFRWQCB</b>	San Francisco Regional Water Quality Control Board
<b>SF-11</b>	San Francisco Disposal Site 11
<b>SF-DODS</b>	Deep Ocean Disposal Site
<b>SLC</b>	State Lands Commission
<b>SOP</b>	Standard operating procedures
<b>SPP</b>	Suspended particulate phase
<b>SUAD</b>	Suitable for unconfined aquatic disposal
<b>TEF</b>	Toxicity equivalency factors
<b>TEQ</b>	Toxicity equivalency quotients
<b>TMDL</b>	Total maximum daily load
<b>TOC</b>	Total organic carbon
<b>USACE</b>	U.S. Army Corps of Engineers
<b>USEPA</b>	U.S. Environmental Protection Agency
<b>USFDA</b>	US Food and Drug Administration
<b>WAAS</b>	Wide angle augmentation system
<b>WHO</b>	World Health Organization
<b>WQC</b>	Water Quality Certification
<b>WQO</b>	Water Quality Objectives
<b>yds<sup>3</sup></b>	Cubic yards

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## 1. INTRODUCTION

The City of Berkeley (City) is proposing to conduct maintenance dredging from the Berkeley Marina (Marina) and its Entrance Area located on the eastern shoreline of San Francisco Bay in Berkeley, CA (Figures 1-1 through 1-3). The most recent maintenance dredging episode at the marina was performed in 2009 with the dredged material placed at the SF-11 Alcatraz disposal site. This Episode 1 dredging will be performed under new 10-year permits with the United States Army Corps of Engineers (USACE) and San Francisco Bay Conservation and Development Commission (BCDC); the City will be seeking an 10-year water quality certification (WQC) from the San Francisco (SF) Bay Regional Water Quality Control Board (SFRWQCB) for this dredging.

In order to provide the chemical and biological characterization needed to obtain regulatory approval for this dredging, on behalf of the City, COWI North America (COWI) contracted Pacific EcoRisk (PER) to perform sampling and testing of the Marina and Entrance Channel sediments. Sampling and testing of these sediments were performed according to the Inland Testing Manual (ITM [USEPA/USACE 1998]), Ocean Testing Manual (OTM [USEPA/USACE 1991]), beneficial reuse site permit conditions, and San Francisco Dredged Material Management Office (DMMO) guidance. Sampling and testing covered requirements for placement of material at the Alcatraz in-Bay disposal site (SF-11), at the San Francisco Deep Ocean Disposal Site (SF-DODS), and at the Cullinan Ranch Restoration Project (CRRP) and Montezuma Wetlands Restoration Project (MWRP) wetland beneficial reuse sites.

To ensure an adequate water depth, the City requires dredging of the Entrance Area to a depth of -8.0 ft. MLLW + 1.0 ft. over-dredge; this area was sampled and tested to a total depth of -9.0 MLLW. Depending on area, the Marina requires dredge depths of -8.0 MLLW + 1.0 ft. over-dredge, -10.0 ft. MLLW + 1.0 ft. over-dredge, and -12.0 MLLW + 2.0 ft. over-dredge. These areas were sampled and tested to a total depth of -9.0 to -14.0 ft. MLLW. In addition, a “Z-layer” sample consisting of the top 6 inches of the post-dredged mudline was collected at each sediment core location. Based on the most recent bathymetric survey, the total volume of the material requiring dredging is estimated to be approximately 209,679 cubic yards (yds<sup>3</sup>) consisting of 139,576 yds<sup>3</sup> above project depth and 70,103 yds<sup>3</sup> of allowable over-depth. Estimated dredge depths and estimated volumes of dredged material to be removed, including side slope and over-depth, are summarized in Table 1-1.

### 1.1 Objectives of the Sediment Investigation

The objective of the current sampling and testing was to evaluate the proposed dredged material to determine whether any potential adverse impacts may occur during removal operations and/or placement at permitted disposal and beneficial reuse sites. The procedures for sediment sample collection, sample processing and preparation, physical and chemical analyses, biological testing, and data analyses were presented in the SAP (PER 2023). The specific objectives of the SAP scope-of-work were as follows:

- Collect core samples from within the designated sampling areas following field protocol detailed in the SAP; and
- Conduct chemical and biological analyses of the collected sediments to determine whether they are suitable for unconfined aquatic disposal (SUAD) at in-Bay sites (e.g., SF-11), SF-DODS, or for beneficial reuse at CRRP and MWRP.

**Table 1-1. Berkeley Marina Episode 1 Dredging Volumes.**

Area/ Composite Sample ID	Episode Dredge Footprint (Acres)	Proposed Depth (ft. MLLW)	Estimated Volume (yds <sup>3</sup> )	Over- depth (ft.)	Estimated Volume (yds <sup>3</sup> )	Permitted Depth + Over-depth (ft. MLLW)	Total Estimated Volume (yds <sup>3</sup> ) <sup>B</sup>
DU1	22.7	-8.0	73,582	+1.0	32,515	-9.0	106,097
DU2	7.68	-8.0	16,589	+1.0	11,854	-9.0	28,443
	7.25	-10.0	29,502	+1.0	11,530	-11.0	41,032
DU3	7.47	-8.0	8,891	+1.0	8,685	-8.0	17,576
	2.8	-10.0	9,834	+1.0	3,843	-11.0	13,667
	0.22	-12.0	1,178	+2.0	1,676	-14.0	2,854
<b>Total:</b>	48.1 <sup>A</sup>	-	<b>139,576</b>	-	<b>70,103</b>	-	<b>209,679</b>

**Notes:**

ft = Feet.

MLLW = Mean Lower Low Water.

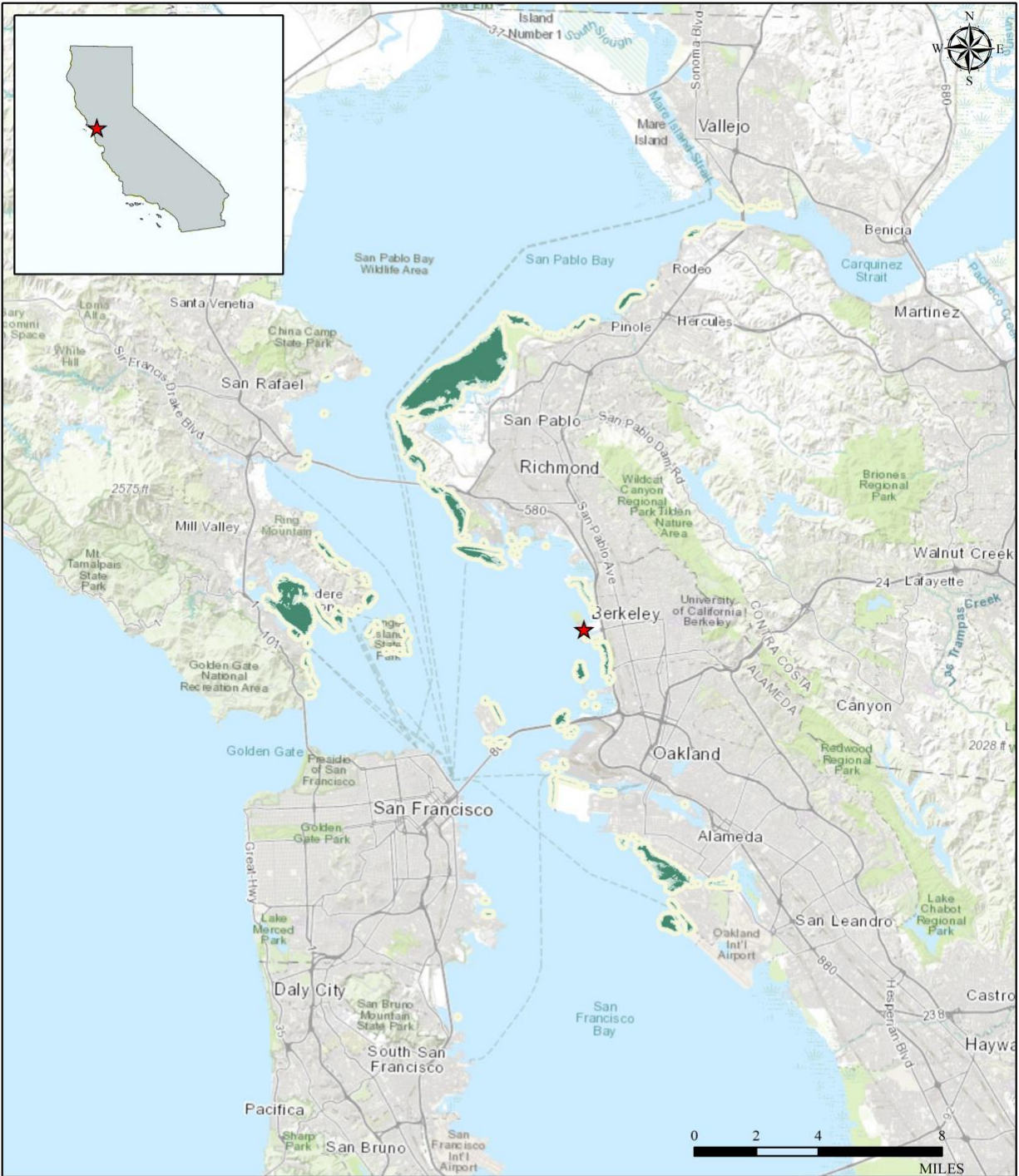
yds<sup>3</sup> = cubic yards.

A - Dredge boundary is 69.8 acres.

B - Dredge volumes are estimates are based on eTrac Multi-beam bathymetric survey performed September 12-15, 2022.


**1.2 Organization of this Document**

Sample collection and handling procedures are discussed in Sections 2 and 3 of this report. Results of chemical analyses and biological toxicity testing are provided in Sections 4 - 6. Section 7 discusses quality control (QC) and Section 8 presents the conclusions regarding suitability of the material for placement at SF-11, SF-DODS, CRRP, and MWRP.



LEGEND	
	PROJECT LOCATION
	EELGRASS BEDS
	45m EELGRASS BUFFER
	250m EELGRASS BUFFER

**FIGURE 1-1.**  
LOCATION MAP:  
BERKELEY MARINA

 **PACIFIC ECORISK** ENVIRONMENTAL CONSULTING & TESTING





## 2. FIELD SEDIMENT SAMPLE COLLECTION

All sediments (and site water) were collected in accordance with guidelines and procedures outlined in the SAP (PER 2023). Sampling was performed under the direction of Mr. Jeffrey Cotsifas (of PER). PER provided the positioning system, sampling equipment, and performed sediment core and site water collection.

Sampling was performed on March 15-17, 2023. A total of eighteen sediment cores were collected from within the proposed dredge boundary (Figure 2-1) of three dredge units (termed BM-DU1, BM-DU2, and BM-DU3).

All sediment cores were collected to the project depth plus over-depth using an appropriate coring device; for each of the initially collected cores, an additional 0.5 ft core section was collected from immediately below the ‘project depth plus over-depth’ and was designated the ‘Z-layer’. The ‘Z-layer’ section of sediment was removed from each core and stored in a separate container. The remaining individual sediment cores were extruded and placed into food-grade polyethylene bags on board the sampling vessel. While aboard the vessel, samples were temporarily stored on ice (or frozen “blue ice”) within insulated coolers until transport to the laboratory in Fairfield, CA.

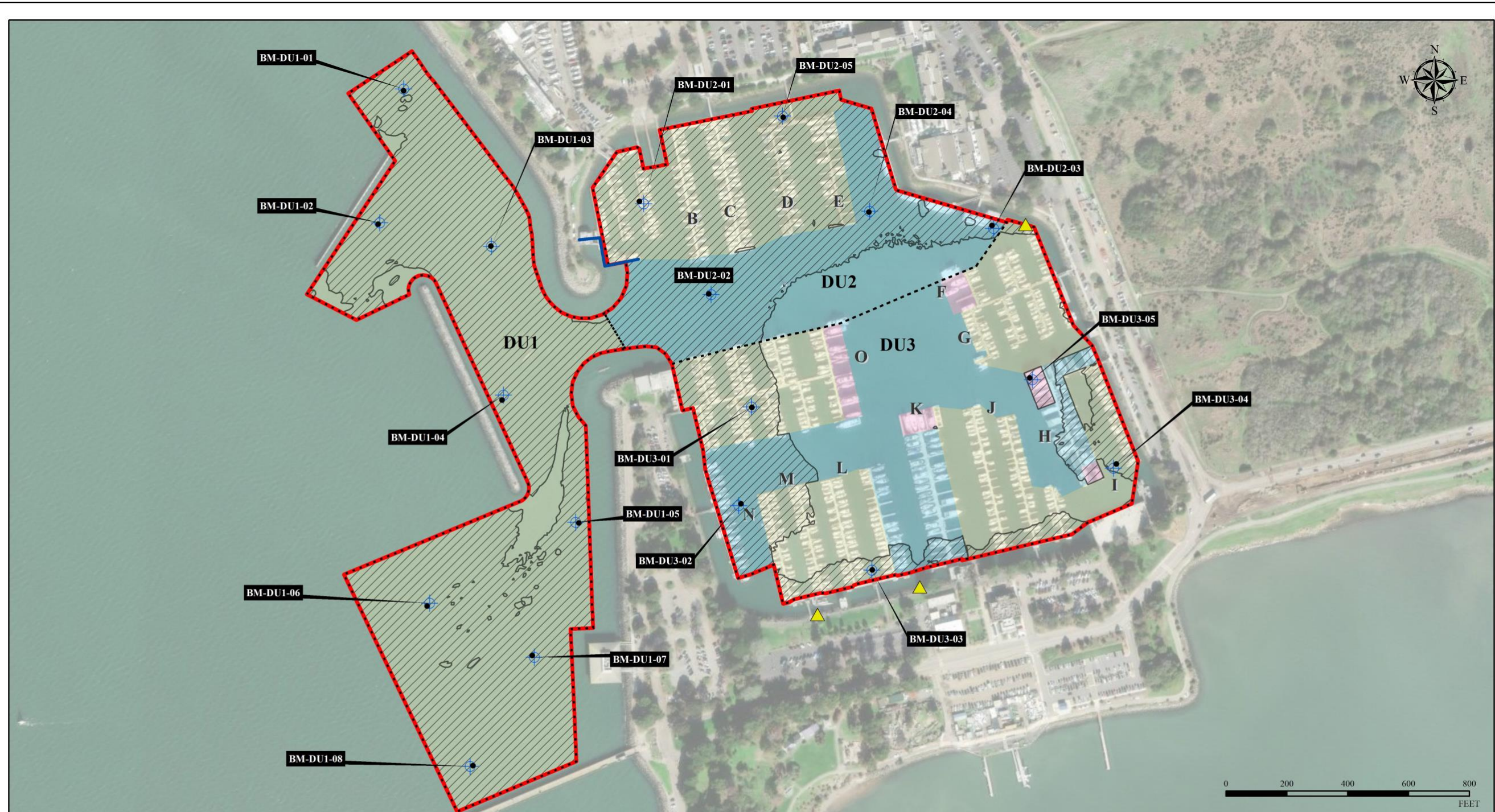
Final sample site positions were determined with a global positioning system (GPS) that uses U.S. Government Wide Angle Augmentation System (WAAS) differential correction data to identify each sampling location.

Upon receipt at PER, all samples were logged in and placed in cold storage at  $\leq 4^{\circ}\text{C}$  in the dark until needed. There were no unusual circumstances encountered during the fieldwork, and no major deviations from the SAP (PER 2023). Field log sheets are presented in Appendix A.

**Table 2-1. Locations of Sampling Stations and Core Depths Achieved.**

Dredge Unit	SAMPLE ID	Latitude (decimal-deg) <sup>A</sup>	Longitude (decimal-deg) <sup>A</sup>	Mudline Elevation (ft MLLW)	Core Penetration Depth (ft) Excluding Z-Layer	Core Penetration Depth (ft) Including Z-Layer	Cored Depth (ft MLLW)
DU1	BM-DU1-01	37.868791	-122.320392	7.0	2.0	2.5	-9.5
	BM-DU1-02	37.867570	-122.320652	5.0	4.0	4.5	-9.5
	BM-DU1-03	37.867392	-122.319363	5.2	3.8	4.3	-9.5
	BM-DU1-04	37.866002	-122.319202	3.5	5.5	6.0	-9.5
	BM-DU1-05	37.864903	-122.318300	7.5	1.5	2.0	-9.5
	BM-DU1-06	37.864126	-122.320010	8.2	0.8	1.3	-9.5
	BM-DU1-07	37.86399	-122.318800	6.9	2.1	2.6	-9.5
	BM-DU1-08	37.862692	-122.319453	6.9	2.1	2.6	-9.5
DU2	BM-DU2-01	37.867822	-122.317680	7.1	1.9	2.4	-9.5
	BM-DU2-02	37.866998	-122.316870	7.3	3.7	4.2	-11.5
	BM-DU2-03	37.867665	-122.313660	7.6	3.4	3.9	-11.5
	BM-DU2-04	37.867765	-122.315064	8.6	2.4	2.9	-11.5
	BM-DU2-05	37.868606	-122.316062	5.4	3.6	4.1	-9.5
DU3	BM-DU3-01	37.865979	-122.316354	7.3	1.7	2.2	-9.5
	BM-DU3-02	37.865107	-122.316458	8.5	2.5	3.0	-11.5
	BM-DU3-03	37.864532	-122.314948	7.0	2.0	2.5	-9.5
	BM-DU3-04	37.865508	-122.312181	8.4	0.6	1.1	-9.5
	BM-DU3-05	37.866295	-122.313195	11.0	2.0	2.5	-13.5

A – NAD 83 Geographic Coordinate System.




LEGEND	
●	ACTUAL SAMPLE LOCATIONS
⊕	PROPOSED SAMPLE LOCATIONS
▲	STORMWATER OUTFALL
—	GAS DOCK
▨	DREDGE FOOTPRINT
⋯	DU BOUNDARY
▭ (Red)	DREDGE BOUNDARY 69.8 Acres
▭ (Yellow)	-8 FT DREDGE DEPTH
▭ (Blue)	-10 FT DREDGE DEPTH
▭ (Pink)	-12 FT DREDGE DEPTH
	DU1 = 25.7 Acres, DU2 = 7.7 Acres, DU3 = 14.5 Acres
	DU1 = 24.1 Acres, DU2 = 14.5 Acres, DU3 = 8.1 Acres
	DU2 = 9.6 Acres, DU3 = 11.2 Acres
	DU3 = 1.1 Acres

**NOTES**

1. SURVEY DATA COLLECTED ON SEPT 12-15, 2022.
2. HORIZONTAL DATUM/PROJECTION: NAD83 (2011), SPCS CALIFORNIA ZONE 03 - US SURVEY FEET.
3. HORIZONTAL CONTROL: ETRAC ACTUAL REFERENCE STATION: WESTAR, N 37 46' 27.45 W 122 22' 56.66"
4. VERTICAL DATUM: MLLW, US SURVEY FEET.
5. VERTICAL CONTROL: NOAA TIDE BENCH MARK PID HT2935, ELEVATION 11.05'
6. CONVERSION BETWEEN NAVD88 AND MLLW BASED ON NOAA TIDE BENCH MARK PID HT2935 YACHT 1947 SHIFT OF +0.13'
7. THIS SURVEY REPRESENTS GENERAL CONDITIONS AT THE TIME OF THE SURVEY.
8. POSITIONING AND MOTION DATA WAS COLLECTED USING AN APPLANIX POS MV V5.
9. SOUNDINGS WERE COLLECTED USING AN R2SONIC 2022 AND 2024 OPERATING AT 200 KHZ.
10. MAP PREPARED BY PACIFIC ECORISK ON 3/28/23.

**FIGURE 2-1**  
BERKELEY MARINA  
PROPOSED AND ACTUAL SAMPLE LOCATIONS


**PACIFIC ECORISK** ENVIRONMENTAL CONSULTING & TESTING

### 3. SAMPLE PROCESSING

#### 3.1 Homogenization and Compositing of Sediments

As described above, each core was divided into maintenance-depth sections and Z-layer sections. Subsequent homogenization and compositing of individual sediment core sections was performed at the PER laboratory facility in Fairfield, CA. The maintenance depth sections from each individual core were individually homogenized in a stainless-steel bowl or high-density polyethylene (HDPE) container. A 500-mL sub-sample of the homogenized sediment from each individual sediment core was archived to allow for additional chemical analyses, if necessary; archived samples are stored frozen at  $\leq -20^{\circ}\text{C}$  for up to one [1] year after sample collection.

Proportionate amounts of the homogenized sediment from each of the BM-DU1 individual sediment cores were composited and homogenized within a stainless-steel container to form the “BM-DU1” composite sediment. The DU2 and DU3 individual sediment cores were similarly processed to form the “BM-DU2” and “BM-DU3” composite sediments. Sub-samples of the BM-DU1-Comp, BM-DU2-Comp, and BM-DU3-Comp samples were frozen for archival storage as described above. The Z-layer sediment sections were processed and archived in a similar fashion.

Samples of the composited maintenance-depth sediments were submitted for chemical and conventional analyses and toxicity testing to support a suitability determination for in-Bay placement.

All sediment was processed following procedures outlined in the SAP (PER 2023), with no deviations.

#### 3.2 Shipping of Sediment Samples to the Analytical Laboratories

Prior to shipping to the analytical laboratory, sample containers were wrapped in bubble wrap and securely packed inside a cooler with ice or ice packs. A temperature blank was included in each cooler. The original signed chain-of-custody (COC) forms were placed in a sealed plastic bag and taped to the inside lid of each cooler. Appropriate packaging tape was wrapped completely around each cooler. *This Side Up* arrow labels and a *Glass-Handle with Care* label were attached on each side and to the top of each cooler, respectively. Each cooler was then sealed with custody seals on both the front and the back lid seams.

The sediment samples were shipped by overnight delivery. The sub-contracting analytical laboratories have been instructed to not dispose of any samples for this project unless notified by PER in writing.

**3.2.1 Chain-of-Custody (COC) Protocol**

COC procedures were followed for all samples throughout the collection, handling, and analyses activities. The Sampling and Analysis Project Manager, or a designee, was responsible for all sample tracking and COC procedures. This person was responsible for final sample inventory, maintenance of sample custody documentation, and completion of COC forms prior to transferring samples to the analytical laboratory. A COC form accompanied each cooler of samples to the respective analytical laboratories. Each custodian of the samples signed the COC form; copies of the COC forms are retained in the project file.

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#### 4. RESULTS OF PHYSICAL/CHEMICAL ANALYSES

Sediment physical and chemical characteristics provide information about chemicals of concern present in the sediment and their potential bioavailability, and about non-chemical factors that could affect toxicity. The Marina composite sediments were submitted to Eurofins Calscience (Garden Grove, CA) for conventional and chemical parameters specified in the SAP (PER 2023). Conventional parameters included total organic carbon (TOC), total solids, and grain size. Chemical analyses included trace metals, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), organochlorine (OC) pesticides, butyltins (also referred to as organotins), and dioxins/furans. The results of these analyses are presented in Table 4-1; the full Data Report submitted by Eurofins is provided in Appendix B.

Due to the observation of elevated PCBs and mercury in the BM-DU3-Comp sample, the individual cores used to prepare the BM-DU3-Comp were analyzed by Eurofins for total PCBs, mercury, total solids, and TOC. Due to the exceedance of a PCB, mercury, or dioxin/furan SF Bay Bioaccumulation trigger or SF Bay TMDL Threshold, the BM-DU3-Z-Layer composite sample was analyzed by Eurofins for total PCBs, mercury, dioxins/furans, total solids, and TOC. The results of the individual core analyses are presented in Section 4.2 and Table 4-2; the results of the Z-Layer composite analyses are presented in Section 4.3 and Table 4-3. The full Data Report submitted by Eurofins is provided in Appendix C.

Modified Elutriate Test (MET) samples were prepared for the Marina composite samples and analyzed for metals; the results of these analyses are presented in Section 4.4 and Table 4-4. The full Data Report submitted by Eurofins for the MET analyses is provided in Appendix D. The MET elutriates were also evaluated for toxicity; the results of those analyses are presented in Section 5.

A de-ionized water waste extraction test (DI-WET) was also performed for the BM-DU3-Comp sample and the resulting extract was evaluated for metals; the results of these DI-WET analyses are presented in Table 4-5 and Section 4-5. The full Data Report submitted by Eurofins for the DI-WET analyses is provided in Appendix E.

The results of the physical and chemical analyses of the sediments were compared to:

- San Francisco (SF) Bay ambient sediment concentrations (SFEI 2015);
- SF Bay sediment Bioaccumulation Trigger (BT) Levels (SFEI 2023a);
- SF Bay sediment mercury and PCB TMDL Thresholds (SFEI 2023b);
- CRRP sediment screening levels (USFWS 2010), and
- MWRP sediment screening levels (where they differ from the SF Bay ambient concentrations) and sediment elutriate screening levels (SFRWQCB 2012).

#### 4.1 Berkeley Marina Compositeds Sediments: Results of Physical/Chemical Analyses

The results of the analysis of the Marina composite sediment samples are presented in Table 4-1 and in Sections 4.1.1 through 4.1.8.

##### 4.1.1. Total Solids and Total Organic Carbon

Total solids in the composite samples ranged from 41.0 –54.2%. The TOC concentrations range were 1.3 – 1.6%.

##### 4.1.2. Particle Size Distribution

Particle size distribution in the composite samples ranged from 69.8 – 89.6% fines (silt and clay). The total sand and gravel range was 10.4 – 30.2%.

##### 4.1.3. Metals

BM-DU1-Comp:

- The measured lead and mercury concentrations were above the SF Bay ambient sediment concentration and SF-DODS database value, but below all remaining screening criteria. The selenium concentration was above the SF Bay ambient sediment concentration, but below all remaining screening criteria. The measured arsenic concentration was above the SF-DODS database value, but below all remaining screening criteria.

BM-DU2-Comp:

- The measured selenium concentration was above the SF Bay ambient sediment concentration, but below all remaining screening criteria. The measured arsenic and mercury concentrations were above the SF-DODS database value, but below all remaining screening criteria.

BM-DU3-Comp:

- The measured mercury concentration was above the SF Bay ambient sediment concentration, the SF-DODS database value, the CRRP and MWRP wetland cover screening criteria, and SF TMDL threshold, but below the MWRP foundation screening criteria. The measured copper, lead, and zinc concentrations were above the SF Bay ambient sediment concentration, the SF-DODS database value, and the CRRP and MWRP wetland cover screening criteria, but below all remaining screening criteria. The measured cadmium concentration was above the SF Bay ambient sediment concentration and the MWRP wetland cover screening criteria, but below all remaining screening criteria. The measured selenium and silver concentrations were above the SF Bay ambient sediment concentration, but below all remaining screening criteria. The measured arsenic concentration was above the SF-DODS database value, but below all remaining screening criteria.

All remaining metal analyte concentrations were below all screening criteria in all composite samples.

#### **4.1.4. Butyltins**

The total butyltins concentrations in the BM-DU2-Comp and BM-DU3-Comp samples were 4.3 µg/kg and 12 µg/kg respectively which were both above the SF-DODS database value. Total butyltins concentration in the BM-DU1-Comp sample was below the method detection limit (MDL).

#### **4.1.5. Polychlorinated Biphenyls (PCBs)**

The total PCB concentration in the BM-DU3-Comp sample was 101.2 µg/kg, which was above the SF Bay ambient sediment concentration, the SF-DODS database value, the CRRP and MWRP wetland cover screening criteria, San Francisco Bay Bioaccumulation trigger, and SF TMDL threshold, but below the MWRP foundation screening criteria. The total PCB concentrations in the BM-DU1-Comp and BM-DU2-Comp were 11.9 µg/kg and 7.42 µg/kg respectively, which were above the SF-DODS database value, but below all remaining screening criteria.

#### **4.1.6. Organochlorine (OC) Pesticides**

Total DDT concentrations in the composite samples ranged from <MDL – 1.6 µg/kg, which were below all screening criteria. 4,4'-DDE was measured at 1.6 µg/kg, which was above the SF-DODS database value, but below all remaining screening criteria. Endosulfan sulfate was measured at 0.34 µg/kg in the BM-DU1-Comp sample, which were above the SF-DODS database value, but below all remaining screening criteria. All remaining OC analyte concentrations were below their respective MDLs.

#### **4.1.7. Polycyclic Aromatic Hydrocarbons (PAHs)**

The total PAH concentrations in the composite samples were 666 µg/kg – 1,682 µg/kg, which were above the SF-DODS database value, but below all remaining screening criteria.

#### **4.1.8. Dioxins and Furans**

Each composite sample dioxins and furan concentration was adjusted according to applicable World Health Organization (WHO) toxicity equivalency factors (TEFs) and are expressed as toxicity equivalency quotients (TEQs). The total dioxins and furans TEQ in the BM-DU3-Comp sample was 11.0 ng TEQ/kg which was above the SF Bay ambient sediment concentration and San Francisco Bay Bioaccumulation trigger but below the CRRP cover screening criteria. Total dioxins and furans TEQ in the BM-DU1-Comp sample was 4.18 ng TEQ/kg which was above the SF Bay ambient sediment concentration but below remaining screening criteria.

Total dioxins and furans TEQ in the BM-DU2-Comp was 2.67 ng TEQ/kg, which was below all screening criteria.



Table 4-1. Berkeley Marina 2023 Sediment Sample Chemistries.

Analyte	Sample ID			Bay Background <sup>1</sup> <100% fines	SF DODs Reference <sup>2</sup>	CRRP Screening Criteria <sup>3</sup>	MWRP Screening Criteria <sup>4</sup>	
	BM-DU1-Comp	BM-DU2-Comp	BM-DU3-Comp				Cover	Foundation
% Solids	45.4	54.2	41.0	-	-	-	-	-
% TOC	1.3	1.3	1.6	-	-	-	-	-
<b>Grain Size</b> (% , dry wt)								
Gravel (>2.00 mm)	5.57	0	0	<100% fines	16-60	NA	NA	NA
Sand (0.0625 mm to 2.00 mm)	12.92	30.23	10.38					
Silt (0.0039 mm to 0.0625 mm)	59.2	49.84	67.17					
Clay (< 0.0039 mm)	22.31	19.93	22.45					
Percent fines (Silt+Clay)	81.51	69.77	89.62					
<b>Metals</b> (mg/kg, dry wt)								
Arsenic	8.71 <sup>B</sup>	8.45 <sup>B</sup>	10.7 <sup>B</sup>	13.9	2.2-5.33	15.3	15.3	70
Cadmium	0.175	0.227	0.477 <sup>A,D</sup>	0.33	0.3-0.6	0.7	0.33	9.6
Chromium	79.3	66.7	91.6	112	69.2-283	112	112	370
Copper	45.2	49.3	88.9 <sup>A,B,C,D</sup>	53.9	18.3-86.3	68.1	68.1	270
Lead	27.8 <sup>A,B</sup>	22.4	55.2 <sup>A,B,C,D</sup>	25.1	5.1-26	43.2	43.2	218
Mercury	0.335 <sup>A,B</sup>	0.307 <sup>B</sup>	0.900 <sup>A,B,C,D,E</sup>	0.33 (0.47 <sup>a</sup> )	0.1-0.2	0.43	0.43	1.3
Nickel	74.7	61.3	71.7	98.3	50.9-238	112	112	200
Selenium	0.449 <sup>A</sup>	0.374 <sup>A</sup>	0.627 <sup>A</sup>	0.36	0.6-2.6	0.64	0.64	1.4
Silver	0.256	0.212	0.488 <sup>A</sup>	0.32	0.2-1.0	0.58	0.58	3.7
Zinc	116	106	170 <sup>A,C,D</sup>	136	60.8-288	158	158	410
<b>Butyltins</b> (µg/kg, dry wt)								
Monobutyltin	<1.2	<0.99	<1.3	-	-	-	-	-
Dibutyltin	<2.8	4.3 J	12	-	-	-	-	-
Tributyltin	<3.0	<2.6	<3.4	-	-	-	-	-
Tetrabutyltin	<3.5	<3.0	<3.9	-	-	-	-	-
<b>∑ detected Butyltins</b>	<b>0</b>	<b>4.3 J<sup>B</sup></b>	<b>12<sup>B</sup></b>	-	<b>nd-1.3</b>	-	-	-

**Notes:**

1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).

2 - SF-DODS Reference Database (USEPA 2023).

3 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).

4 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).

a - Mercury concentration SF Bay TMDL threshold (= 99th percentile for San Francisco Bay [SFEI 2023b]).

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.

All concentrations reported as being below the laboratory MDL are reported above as &lt; the MDL.

A - Value exceeds Bay Background (SFEI 2015).

B - Value exceeds SF-DODS Database (USEPA 2023).

C - Value exceeds CRRP screening value.

D - Value exceeds MWRP wetland cover material screening value.

E - Value exceeds SF Bay TMDL threshold (SFEI 2023b).

Table 4-1. (continued) Berkeley Marina 2023 Sediment Sample Chemistries.

Analyte	Sample ID			Bay Background <sup>1</sup> <100% fines	SF DODs Reference <sup>2</sup>	CRRP Screening Criteria <sup>3</sup>	MWRP Screening Criteria <sup>4</sup>	
	BM-DU1-Comp	BM-DU2-Comp	BM-DU3-Comp				Cover	Foundation
<b>Organochlorine Pesticides</b> (µg/kg, dry wt)								
Aldrin	<0.80	<0.67	<0.89	0.03	nd	-	-	-
alpha-BHC	<0.18	<0.15	<0.20	-	nd	-	-	-
beta-BHC	<0.42	<0.35	<0.46	-	nd	-	-	-
delta-BHC	<0.33	<0.28	<0.37	-	nd	-	-	-
gamma-BHC (Lindane)	<0.23	<0.19	<0.26	-	nd	-	-	-
Total BHCs	0	0	0	0.78	-	0.99	-	-
Chlordane	<1.6	<1.3	<1.7	0.34 (37 <sup>a</sup> )	nd	1.1	2.3	4.8
Dieldrin	<0.15	<0.12	<0.16	0.16 (1.9 <sup>a</sup> )	nd	0.72	0.70	4.3
Endosulfan I	<0.26	<0.21	<0.28	-	nd	-	-	-
Endosulfan II	<0.50	<0.42	<0.55	-	nd	-	-	-
Endosulfan Sulfate	0.34 J <sup>A</sup>	<0.20	<0.26	-	nd	-	-	-
Endrin	<0.42	<0.35	<0.46	0.01	nd	-	-	-
Endrin Aldehyde	<2.1	<1.8	<2.4	-	-	-	-	-
Heptachlor	<0.13	<0.11	<0.14	-	nd	-	-	-
Heptachlor Epoxide	<0.19	<0.16	<0.21	-	nd	-	-	-
Toxaphene	<2.2	<1.8	<2.4	-	nd	-	-	-
2,4'-DDD	<0.14	<0.12	<0.16	0.51	-	-	-	-
4,4'-DDD	<1.1	<0.92	<1.2	1.98	-	-	-	-
2,4'-DDE	<2.3	<1.9	<2.5	0.11	-	-	-	-
4,4'-DDE	1.6 J <sup>A</sup>	<0.50	<0.66	1.98	nd	-	-	-
2,4'-DDT	<0.20	<0.17	<0.22	0.04	-	-	-	-
4,4'-DDT	<0.68	<0.56	<0.75	0.27	-	-	-	-
<b>∑ detected DDTs</b>	<b>1.6 J</b>	<b>0</b>	<b>0</b>	<b>4.68 (50<sup>a</sup>)</b>	<b>≤2.1</b>	<b>7.0</b>	<b>7.0</b>	<b>100</b>

**Notes:**

1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).

2 - SF-DODS Reference Database (USEPA 2023).

3 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).

4 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).

a - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2023a).

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.

All concentrations reported as being below the laboratory MDL are reported above as &lt; the MDL.

A - Value exceeds SF-DODS Database (USEPA 2023).

Table 4-1. (continued) Berkeley Marina 2023 Sediment Sample Chemistries.

Analyte	Sample ID			Bay Background <sup>1</sup> <100% fines	SF DODs Reference <sup>2</sup>	CRRP Screening Criteria <sup>3</sup>	MWRP Screening Criteria <sup>4</sup>	
	BM-DU1-Comp	BM-DU2-Comp	BM-DU3-Comp				Cover	Foundation
<b>PAHs</b> (µg/kg, dry wt)								
1,6,7-Trimethylnaphthalene	<41	<35	<46	7.43	-	-	-	-
1-Methylnaphthalene	<43	<36	<48	13.4	-	-	-	-
1-Methylphenanthrene	<48	<40	<53	37.6	-	-	-	-
2,6-Dimethylnaphthalene	<28	<24	<31	13	-	-	-	-
2-Methylnaphthalene	<41	<34	<45	20.8	-	-	-	-
Acenaphthene	<47	<40	<53	13.5	-	-	-	-
Acenaphthylene	<46	<39	<51	32.6	-	-	-	-
Anthracene	<42	57 J	53 J	80.1	-	-	-	-
Benzo(a)anthracene	63 J	100	130	212	-	-	-	-
Benzo(a)pyrene	<65	150	140	428	-	-	-	-
Benzo(b)fluoranthene	<75	140	180	227	-	-	-	-
Benzo(e)pyrene	31 J	90 J	89 J	244	-	-	-	-
Benzo(g,h,i)perylene	<72	<60	<80	416	-	-	-	-
Benzo(k)fluoranthene	<81	130	150	231	-	-	-	-
Biphenyl	<32	<27	<35	11.7	-	-	-	-
Chrysene	57 J	190	230	252	-	-	-	-
Dibenz(a,h)anthracene	<42	<36	<47	49.9	-	-	-	-
Dibenzothiophene	<61	<52	<68	16.3	-	-	-	-
Fluoranthene	200	160	250	620	-	-	-	-
Fluorene	<48	<41	<54	27.1	-	-	-	-
Indeno(1,2,3-cd)pyrene	<78	<66	<87	337	-	-	-	-
Naphthalene	<31	<26	<35	56.4	-	-	-	-
Perylene	<59	<50	<66	216	-	-	-	-
Phenanthrene	75 J	71 J	100 J	176	-	-	-	-
Pyrene	240	250	360	791	-	-	-	-
<b>∑ detected PAHs</b>	<b>666<sup>A</sup></b>	<b>1,338<sup>A</sup></b>	<b>1,682<sup>A</sup></b>	<b>4,540 (4,500<sup>a</sup>)</b>	<b>≤192</b>	<b>3,390</b>	<b>3,390</b>	<b>44,792</b>

**Notes:**

1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).

2 - SF-DODS Reference Database (USEPA 2023).

3 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).

4 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012)

a - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2023a).

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.

All concentrations reported as being below the laboratory MDL are reported above as &lt; the MDL.

A - Value exceeds SF-DODS Database (USEPA 2023).

Table 4-1. (continued) Berkeley Marina 2023 Sediment Sample Chemistries.

Analyte	Sample ID			Bay Background <sup>1</sup> <100% fines	SF DODs Reference <sup>2</sup>	CRRP Screening Criteria <sup>3</sup>	MWRP Screening Criteria <sup>4</sup>	
	BM-DU1-Comp	BM-DU2-Comp	BM-DU3-Comp				Cover	Foundation
<b>PCBs</b> (µg/kg, dry wt)								
PCB 005/008	<0.25	<0.21	<0.28	-	-	-	-	-
PCB 018	<0.21	<0.17	<0.23	-	-	-	-	-
PCB 028	<0.22	<0.18	3.6	-	-	-	-	-
PCB 031	<0.19	<0.16	1.7	-	-	-	-	-
PCB 033	<0.10	<0.087	<0.11	-	-	-	-	-
PCB 044	<0.26	<0.22	5.2	-	-	-	-	-
PCB 049	<0.24	<0.20	5.0	-	-	-	-	-
PCB 052	<0.17	0.32 J	4.8	-	-	-	-	-
PCB 056	<0.10	<0.087	1.2	-	-	-	-	-
PCB 060	<0.28	<0.24	<0.31	-	-	-	-	-
PCB 066	<0.24	<0.20	6.0	-	-	-	-	-
PCB 070	<0.20	<0.17	4.4	-	-	-	-	-
PCB 074	<0.23	<0.19	2.0	-	-	-	-	-
PCB 087	<0.27	<0.23	<0.30	-	-	-	-	-
PCB 095	<0.14	<0.12	4.8	-	-	-	-	-
PCB 097	<0.30	<0.26	0.94	-	-	-	-	-
PCB 099	0.96	0.69	4.9	-	-	-	-	-
PCB 101	1.3	0.88	7.1	-	-	-	-	-
PCB 105	<0.23	<0.19	<0.26	-	-	-	-	-
PCB 110	2.3	0.55	7.2	-	-	-	-	-
PCB 118	2.6	0.52	6.2	-	-	-	-	-
PCB 128	<0.30	<0.25	<0.33	-	-	-	-	-
PCB 132/153	2.1	1.6	9.1	-	-	-	-	-
PCB 138/158	1.2	1.7	9.0	-	-	-	-	-
PCB 141	<0.14	<0.12	<0.16	-	-	-	-	-
PCB 149	<0.24	0.96	5.7	-	-	-	-	-
PCB 151	<0.20	0.20 J	2.7	-	-	-	-	-
PCB 156	<0.21	<0.17	<0.23	-	-	-	-	-
PCB 170	<0.23	<0.19	<0.25	-	-	-	-	-
PCB 174	<0.13	<0.11	<0.14	-	-	-	-	-
PCB 177	<0.21	<0.17	1.2	-	-	-	-	-
PCB 180	1.4	<0.15	3.9	-	-	-	-	-
PCB 183	<0.27	<0.22	1.4	-	-	-	-	-
PCB 187	<0.20	<0.16	3.2	-	-	-	-	-
PCB 194	<0.24	<0.21	<0.27	-	-	-	-	-
PCB 195	<0.14	<0.11	<0.15	-	-	-	-	-
PCB 201	<0.30	<0.26	<0.34	-	-	-	-	-
PCB 203	<0.15	<0.13	<0.17	-	-	-	-	-
<b>∑ detected PCBs</b>	<b>11.9<sup>B</sup></b>	<b>7.42<sup>B</sup></b>	<b>101.2<sup>A,B,C,D,E</sup></b>	<b>18.3, 29.5<sup>a</sup>, 18<sup>b</sup></b>	<b>&lt;MDL</b>	<b>22.7</b>	<b>22.7</b>	<b>180</b>

Notes:

- 1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
  - 2 - SF-DODS Reference Database (USEPA 2023).
  - 3 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
  - 4 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012)
  - a - Total PCB concentration SF Bay TMDL threshold (= 99<sup>th</sup> percentile for San Francisco Bay [SFEI 2023b]).
  - b - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2023a).
  - J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.
- All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
- A - Value exceeds Bay Background (SFEI 2015). B - Value exceeds SF-DODS Database (USEPA 2023). C - Value exceeds CRRP screening value and MWRP wetland cover material screening value.
- D - Value exceeds Bay Bioaccumulation Trigger (SFEI 2023).
- E - Value exceeds SF Bay TMDL threshold(SFEI 2023b).

Table 4-1. (continued) Berkeley Marina 2023 Sediment Sample Chemistries.

Analyte	TEF	Sample ID						Bay Background <sup>1</sup> <100% fines	SF DODs Reference <sup>2</sup>	CRRP Screening Criteria <sup>3</sup>	MWRP Screening Criteria <sup>4</sup>	
		BM-DU1-Comp		BM-DU2-Comp		BM-DU3-Comp					Cover	Foundation
<i>Dioxins and Furans</i> (ng/kg, dry wt)		Concentration	TEQ	Concentration	TEQ	Concentration	TEQ					
1,2,3,4,6,7,8-HpCDD	0.010	51	0.51	60	0.6	200	2	-	-	-	-	
1,2,3,4,6,7,8-HpCDF	0.010	14	0.14	7.0 J	0.07	47	0.47	-	-	-	-	
1,2,3,4,7,8-HxCDD	0.10	1.0 J	0.1	0.63 J	0.063	2.7 J	0.27	-	-	-	-	
1,2,3,4,7,8-HxCDF	0.10	2.3 J	0.23	0.82 J	0.082	4.2 J	0.42	-	-	-	-	
1,2,3,4,7,8,9-HpCDF	0.010	1.1 J	0.011	0.50 J	0.005	2.3 J	0.023	-	-	-	-	
1,2,3,6,7,8-HxCDD	0.10	3.2 J	0.32	2.4 J	0.24	8.5 J	0.85	-	-	-	-	
1,2,3,6,7,8-HxCDF	0.10	1.2 J	0.12	0.56 J	0.056	2.9 J	0.29	-	-	-	-	
1,2,3,7,8-PeCDD	1.0	1.0 J	1	0.38 J	0.38	2.3 J	2.3	-	-	-	-	
1,2,3,7,8-PeCDF	0.030	0.74 J	0.0222	0.87 J	0.0261	1.7 J	0.051	-	-	-	-	
1,2,3,7,8,9-HxCDD	0.10	2.6 J	0.26	1.2 J	0.12	5.2 J	0.52	-	-	-	-	
1,2,3,7,8,9-HxCDF	0.10	0.38 J	0.038	0.59 J	0.059	1.4 J	0.14	-	-	-	-	
2,3,4,6,7,8-HxCDF	0.10	1.7 J	0.17	0.94 J	0.094	5.4 J	0.54	-	-	-	-	
2,3,4,7,8-PeCDF	0.30	2.6 J	0.78	2.1 J	0.63	8.2 J	2.46	-	-	-	-	
2,3,7,8-TCDD	1.0	0.19 J	0.19	<0.025	0	0.18 J	0.18	-	-	-	-	
2,3,7,8-TCDF	0.10	1.6 J	0.16	1.0 J	0.1	<0.57	0	-	-	-	-	
OCDD	0.0003	390	0.117	480	0.144	1500	0.45	-	-	-	-	
OCDF	0.0003	24	0.0072	16 J	0.0048	110	0.033	-	-	-	-	
<b>∑ Dioxin/Furan ng TEQ/kg</b>	<b>NA</b>	<b>NA</b>	<b>4.18<sup>A</sup></b>	<b>NA</b>	<b>2.67</b>	<b>NA</b>	<b>11.0<sup>A,B</sup></b>	<b>2.90 (10<sup>a</sup>)</b>	-	<b>20</b>	-	

**Notes:**

1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).

2 - SF-DODS Reference Database (USEPA 2023).

3 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).

4 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).

a - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2023a).

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.

All concentrations reported as being below the laboratory MDL are reported above as &lt; the MDL.

TEF = Toxicity Equivalency Factor.

TEQ = Toxicity Equivalency Quotient.

A - Value exceeds Bay Background (SFEI 2015).

B - Value exceeds Bay Bioaccumulation Trigger (SFEI 2023).

## 4.2 Individual Sediment Core Samples: Results of Physical/Chemical Analyses

Based on the observation of elevated mercury and total PCB concentrations in the BM-DU3 composite sample, the individual sediment cores that comprised the BM-DU3-Comp sample were analyzed for grain size, total solids, TOC, mercury, and PCBs. These results are summarized below and in Table 4-2.

### **Total Solids and Total Organic Carbon**

Total solids in the BM-DU3-Comp individual sediment core samples ranged from 34.8 – 48.9%. The TOC concentrations ranged from 1.07 - 1.60%.

### **Mercury**

The individual sediment cores total mercury concentrations ranged from 0.381 – 1.20 µg/kg. BM-DU3-04 and BM-DU3-05 results were below what was observed for the BM-DU3-Comp composite sample (0.900 µg/kg). BM-DU3-01, BM-DU3-02, and BM-DU3-03 results were above what was observed for the BM-DU3-Comp composite sample. All individual results were below the MWRP foundation screening criteria.

### **PCBs**

The individual sediment cores total PCBs concentrations ranged from 3.49 - 151 µg/kg.

- BM-DU3-01, BM-DU3-02, and BM-DU3-03 sediment core total PCB concentrations were above the SF Bay ambient sediment concentration, the SF-DODS database value, the CRRP and MWRP wetland cover screening criteria, San Francisco Bay Bioaccumulation trigger, and SF TMDL threshold, but below the MWRP foundation screening criteria. The BM-DU3-01 and BM-DU3-02 total PCB concentrations were below the concentration of the BM-DU3-Comp composite sample (101 µg/kg). The BM-DU3-03 sediment core total PCB concentration (151 µg/kg) was above the concentration of the BM-DU3-Comp composite sample.
- BM-DU3-04 and BM-DU3-05 sediment core total PCB concentrations were above the SF-DODS reference site database concentration, but below remaining screening criteria and the concentration of the BM-DU3-Comp composite sample.

Table 4-2. Results of Chemical Analyses of BM-DU3-Comp Individual Cores.

Analyte	BM-DU3-01	BM-DU3-02	BM-DU3-03	BM-DU3-04	BM-DU3-05	Bay Background <sup>1</sup>	SF DODs Reference <sup>2</sup>	CRRP Screening Criteria <sup>3</sup>	MWRP Screening Criteria <sup>4</sup>	
									Cover	Foundation
% Solids	48.9	41.2	41.7	42.7	34.8	-	-	-	-	-
TOC	1.07	1.49	1.34	1.60	1.40	-	-	-	-	-
<b>Metals (mg/kg, dry wt)</b>										
Mercury	1.01 <sup>A,B,C,D,E</sup>	0.961 <sup>A,B,C,D,E</sup>	1.20 <sup>A,B,C,D,E</sup>	0.381	0.401	0.33 (0.47 <sup>a</sup> )	0.1-0.2	0.43	0.43	1.3
<b>PCBs (µg/kg, dry wt)</b>										
PCB 005/008	0.68 J	0.59 J	2.1	<0.27	<0.33	-	-	-	-	-
PCB 018	<0.19	1.5	3.5	<0.22	<0.27	-	-	-	-	-
PCB 028	0.83	2.1	4.9	<0.23	<0.29	-	-	-	-	-
PCB 031	<0.18	1.2	2.9	<0.21	<0.25	-	-	-	-	-
PCB 033	1.1	<0.11	2.9	<0.11	<0.13	-	-	-	-	-
PCB 044	2.5	2.8	8.8	<0.28	<0.34	-	-	-	-	-
PCB 049	2.0	2.4	6.8	<0.25	<0.31	-	-	-	-	-
PCB 052	4.6	2.8	11	<0.18	<0.23	-	-	-	-	-
PCB 056	<0.096	<0.11	2.2	<0.11	<0.13	-	-	-	-	-
PCB 060	<0.26	<0.31	<0.31	<0.30	<0.37	-	-	-	-	-
PCB 066	3.2	2.8	9.0	<0.26	<0.31	-	-	-	-	-
PCB 070	2.5	2.0	8.2	<0.22	<0.26	-	-	-	-	-
PCB 074	1.1	1.1	4.3	<0.24	<0.29	-	-	-	-	-
PCB 087	<0.25	<0.30	1.8	<0.29	<0.35	-	-	-	-	-
PCB 095	4.6	2.7	7.4	<0.15	<0.19	-	-	-	-	-
PCB 097	1.7	<0.34	1.9	<0.32	<0.40	-	-	-	-	-
PCB 099	5.1	2.7	6.5	<0.20	<0.25	-	-	-	-	-
PCB 101	7.1	4.6	11	0.59	<0.31	-	-	-	-	-
PCB 105	1.3	<0.26	1.2	<0.25	<0.30	-	-	-	-	-
PCB 110	7.1	4.7	8.4	<0.21	0.76	-	-	-	-	-
PCB 118	5.6	5.4	8.0	<0.19	0.65	-	-	-	-	-
PCB 128	<0.28	<0.33	<0.33	<0.32	<0.39	-	-	-	-	-
PCB 132/153	11	6.6	9.6	<0.56	2.4	-	-	-	-	-
PCB 138/158	9.5	6.1	9.1	1.5	1.3	-	-	-	-	-
PCB 141	<0.13	<0.16	<0.16	<0.15	<0.19	-	-	-	-	-
PCB 149	7.4	3.3	7.4	1.4	1.5	-	-	-	-	-
PCB 151	2.8	1.1	3.3	<0.21	<0.26	-	-	-	-	-
PCB 156	<0.19	<0.23	<0.23	<0.22	<0.27	-	-	-	-	-
PCB 170	3.2	<0.25	<0.25	<0.24	<0.30	-	-	-	-	-
PCB 174	1.7	<0.14	<0.14	<0.13	<0.16	-	-	-	-	-
PCB 177	1.7	<0.23	<0.22	<0.22	<0.27	-	-	-	-	-
PCB 180	4.2	3.0	4.3	<0.19	<0.24	-	-	-	-	-
PCB 183	1.6	1.0	1.5	<0.28	<0.35	-	-	-	-	-
PCB 187	3.8	2.3	2.9	<0.21	0.84	-	-	-	-	-
PCB 194	<0.23	<0.27	<0.27	<0.26	<0.32	-	-	-	-	-
PCB 195	<0.13	<0.15	<0.15	<0.15	<0.18	-	-	-	-	-
PCB 201	<0.28	<0.34	<0.33	<0.32	<0.40	-	-	-	-	-
PCB 203	<0.14	<0.17	<0.17	<0.16	<0.20	-	-	-	-	-
<b>Σ detected PCBs</b>	<b>97.91<sup>A,B,C,D,E</sup></b>	<b>62.79<sup>A,B,C,D,E</sup></b>	<b>150.9<sup>A,B,C,D,E</sup></b>	<b>3.49<sup>B</sup></b>	<b>7.45<sup>B</sup></b>	<b>18.3, 29.5<sup>a</sup>, 18<sup>b</sup></b>	<b>&lt;MDL</b>	<b>22.7</b>	<b>22.7</b>	<b>180</b>

Notes:  
 1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015). 2 - SF-DODS Reference Database (USEPA 2023).  
 3 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010). 4 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).  
 a - Total PCB concentration SF Bay TMDL threshold (= 99<sup>th</sup> percentile for San Francisco Bay [SFEI 2023]). b - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2023a).  
 J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.  
 A - Value exceeds Bay Background (SFEI 2015). B - Value exceeds SF-DODS Database (USEPA 2023). C - Value exceeds CRRP screening value and MWRP wetland cover material screening value. D - Value exceeds Bay Bioaccumulation Trigger (SFEI 2023). E - Value exceeds SF Bay TMDL threshold(SFEI 2023a).

### **4.3 Berkeley Marina Z-Layer Composite Sediment: Results of Mercury, Total PCBs, Dioxins/Furans, Total Solids, and TOC analysis.**

The BM-DU3-Z-Layer composite sediment was evaluated for mercury, total PCBs, and dioxins/furans to determine if the sediment layer that would be exposed after dredging operations would exceed overlying sediment mercury, total PCBs, and dioxins/furans concentrations. Total solids and TOC were also evaluated. The results of analysis of the Z-layer composite sediment are presented in Table 4-3.

#### **Total Solids and Total Organic Carbon**

Total solids in the BM-DU3-Z-Layer-Comp sample were 41.4%. The TOC concentration was 1.4%.

#### **Mercury**

The BM-DU3-Z-Layer-Comp mercury concentration was 2.05 µg/kg, which is greater than the concentration (0.900 µg/kg) reported for the proposed dredge material in the BM-DU3-Comp sample.

#### **PCBs**

The BM-DU3-Z-Layer-Comp total PCBs concentration was 190 µg/kg, which is greater than the concentration (101 µg/kg) reported for the proposed dredge material in the BM-DU3-Comp sample.

#### **Dioxins/Furans**

The composite sample dioxins and furan concentrations were adjusted according to applicable World Health Organization (WHO) toxicity equivalency factors (TEFs) and are expressed as toxicity equivalency quotients (TEQs). The total dioxins and furans TEQ in the BM-DU3-Z-Layer-Comp sample was 22.5 ng TEQ/kg, which is greater than the concentration (11.0 ng TEQ/kg) reported for the proposed dredge material in the BM-DU3-Comp sample.



Table 4-3. BM-DU3-Z-Layer-Comp Sediment Sample Chemistries.

Analyte	Sample ID
	BM-DU3-Z-Layer-Comp
% Solids	41.4
% TOC	1.4
<b>Metals</b> (mg/kg, dry wt)	
Mercury	2.05 <sup>A</sup>
<b>PCBs</b> (µg/kg, dry wt)	
PCB 005/008	1.1
PCB 018	1.9
PCB 028	2.9
PCB 031	3.0
PCB 033	<0.11
PCB 044	5.4
PCB 049	5.0
PCB 052	8.1
PCB 056	<0.11
PCB 060	<0.31
PCB 066	7.6
PCB 070	6.3
PCB 074	2.9
PCB 087	3.6
PCB 095	7.7
PCB 097	2.1
PCB 099	6.7
PCB 101	14
PCB 105	7.5
PCB 110	12
PCB 118	15
PCB 128	<0.33
PCB 132/153	18
PCB 138/158	16
PCB 141	2.3
PCB 149	13
PCB 151	5.4
PCB 156	<0.23
PCB 170	3.5
PCB 174	1.7
PCB 177	1.8
PCB 180	7.8
PCB 183	2.5
PCB 187	5.0
PCB 194	<0.27
PCB 195	<0.15
PCB 201	<0.34
PCB 203	<0.17
<b>∑ detected PCBs</b>	<b>189.8<sup>A</sup></b>

**Notes:**

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.

All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

A - Value above overlying sediment value.

Table 4-3. (continued) BM-DU3-Z-Layer-Comp Sediment Sample Chemistries.

Analyte	TEF	Sample ID		Bay Background <sup>1</sup> <100% fines	SF DODs Reference <sup>2</sup>	CRRP Screening Criteria <sup>3</sup>	MWRP Screening Criteria <sup>4</sup>	
		BM-DU3-Z-Layer-Comp					Cover	Foundation
<i>Dioxins and Furans</i> (ng/kg, dry wt)		Concentration	TEQ					
1,2,3,4,6,7,8-HpCDD	0.010	350	3.5	-	-	-	-	-
1,2,3,4,6,7,8-HpCDF	0.010	130	1.3	-	-	-	-	-
1,2,3,4,7,8-HxCDD	0.10	3.5 J	0.35	-	-	-	-	-
1,2,3,4,7,8-HxCDF	0.10	7.7 J	0.77	-	-	-	-	-
1,2,3,4,7,8,9-HpCDF	0.010	8.1 J	0.081	-	-	-	-	-
1,2,3,6,7,8-HxCDD	0.10	16	1.6	-	-	-	-	-
1,2,3,6,7,8-HxCDF	0.10	7.9 J	0.79	-	-	-	-	-
1,2,3,7,8-PeCDD	1.0	4.2 J	4.2	-	-	-	-	-
1,2,3,7,8-PeCDF	0.030	5.2 J	0.156	-	-	-	-	-
1,2,3,7,8,9-HxCDD	0.10	7.7 J	0.77	-	-	-	-	-
1,2,3,7,8,9-HxCDF	0.10	2.1 J	0.21	-	-	-	-	-
2,3,4,6,7,8-HxCDF	0.10	10 J	1	-	-	-	-	-
2,3,4,7,8-PeCDF	0.30	19	5.7	-	-	-	-	-
2,3,7,8-TCDD	1.0	0.74 J	0.74	-	-	-	-	-
2,3,7,8-TCDF	0.10	5.5	0.55	-	-	-	-	-
OCDD	0.0003	2400	0.72	-	-	-	-	-
OCDF	0.0003	270	0.081	-	-	-	-	-
<b>∑ Dioxin/Furan ng TEQ/kg</b>	<b>NA</b>	<b>NA</b>	<b>22.5<sup>A</sup></b>	<b>2.90 (10<sup>a</sup>)</b>	<b>-</b>	<b>20</b>	<b>-</b>	<b>-</b>

**Notes:**

1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).

2 - SF-DODS Reference Database (USEPA 2023).

3 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).

4 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).

a - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2023a).

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.

All concentrations reported as being below the laboratory MDL are reported above as &lt; the MDL.

TEF = Toxicity Equivalency Factor.

TEQ = Toxicity Equivalency Quotient.

A - Value above overlying sediment value.

#### 4.4 Results of Chemical Analyses of Modified Elutriates

The Berkeley Marina MET elutriates were analyzed and evaluated to predict the concentrations of metals that would be present in decant water discharged from a wetland beneficial reuse site following the upland placement of dredged material; the results of these analyses are summarized in Table 4-2. All Marina composite MET elutriate sample analyte concentrations were below MWRP screening criteria.

**Table 4-4. Berkeley Marina 2023 Modified Elutriate Chemistry Results.**

Analyte	BM-DU1-Comp	BM-DU2-Comp	BM-DU3-Comp	MWRP Surface Water Discharge Screening Criteria <sup>1</sup>
<i>Metals</i> (µg/L)				
Dissolved Arsenic	8.87	4.55	21.2	69
Dissolved Cadmium	0.0300 J	0.0315 J	0.0494	3.9 <sup>a</sup>
Dissolved Chromium	<0.340	<0.340	0.385 J	16 <sup>b</sup>
Dissolved Copper	0.690	0.565	0.483	9.4
Dissolved Lead	0.0547	0.0400	0.0919	65
Total Mercury	0.00409	0.00342	0.00518	2.1
Dissolved Nickel	1.20	1.17	0.892	74
Total Selenium	<0.390	<0.390	<0.390	20
Dissolved Silver	<0.500	<0.500	<0.500	1.9
Dissolved Zinc	1.50	1.35	1.58	90

1- Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).

a - Assumes a hardness of 100 mg/L as CaCO<sub>3</sub>.

b - WQO is for Chromium VI; however, it may be met as total Chromium.

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.

All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

#### 4.5 Results of Chemical Analyses of BM-DU3-Comp DI-WET

BM-DU3-Comp Modified Waste Extraction Tests (DI-WET) extracts were evaluated to predict the concentrations of metals that would be present in leachate discharged to groundwater following the upland placement of dredged material for foundation use; the results of these analyses are summarized in Table 4-5.

None of the DI-WET analyte concentrations exceeded groundwater background concentrations.

**Table 4-5. Berkeley Marina DI-WET Chemistry Results.**

Analyte	Sample ID	MWRP Surface Water Discharge Screening Criteria <sup>1</sup>
	BM-DU3-Comp	
<b>Metals (µg/L)</b>		
Arsenic	6.50	69
Cadmium	0.0215 J	3.9 <sup>a</sup>
Chromium	0.534	16 <sup>b</sup>
Copper	1.67	9.4
Lead	0.543	65
Mercury	0.00929	2.1
Nickel	2.04	74
Selenium	0.501	20
Silver	0.0170 J	1.9
Zinc	2.59	90

**Notes:**

1- Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).

a - Assumes a hardness of 100 mg/L as CaCO<sub>3</sub>.

b - WQO is for Chromium VI; however, it may be met as total Chromium.

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.

All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

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## 5. RESULTS OF BIOLOGICAL TESTING

Four different biological tests were performed for the Marina composite samples:

1. A 10-day amphipod survival test with the amphipod *Leptocheirus plumulosus*,
2. A 10-day juvenile polychaete survival test with the polychaete *Neanthes arenaceodentata*,
3. A 48-hr bivalve embryo survival & development test with the mussel *Mytilus galloprovincialis*, and
4. A 96-hr modified (MET) elutriate mysid survival test with *Americamysis bahia*.

All tests were performed following appropriate protocols as outlined in the SAP (PER 2023). Test data and summaries of the statistical analyses for the bioassay results are provided in Appendices F-P. Summaries of test conditions and test acceptability criteria are provided in Appendix Q.

### 5.1 Benthic (Solid-Phase Sediment) Toxicity Testing

Solid-phase bioassays were conducted with the amphipod *L. plumulosus* and the polychaete *N. arenaceodentata*.

Positive and negative Control treatments were tested concurrently with the bioassays. The positive Control for both species consisted of a 96-hr waterborne reference toxicant test. The results of these tests were compared to PER's in-house reference toxicant test response databases to determine whether these test organisms were responding to toxic stress in a typical fashion. The negative Control (termed "Lab Control") for the *L. plumulosus* and *N. arenaceodentata* tests consisted of sediment collected from Paradise Cove, located in Central SF Bay.

ITM/OTM guidance requires that site sediment results be compared with disposal site and/or reference site sediment results or a reference site database (if available) to determine the potential impact of whole sediment on benthic organisms at and beyond the boundaries of the disposal site (USEPA/USACE 1991,1998). As detailed in the ITM/OTM, comparative guidelines for acceptance were followed as listed below:

1. If survival is greater in the proposed dredged sediments than in reference site sediment(s) or the reference site sediment database, the proposed dredged sediments are not acutely toxic to benthic organisms.
2. If the difference between the survival response in the site sediment and in the reference sediment (or the 'reference site database survival') is  $\leq 20\%$  for amphipods or  $\leq 10\%$  for polychaetes, the test sediments are not acutely toxic to benthic organisms.
3. If the difference between the survival response in the site sediment and in the reference sediment (or the 'reference site database survival') is  $> 20\%$  for amphipods or  $> 10\%$  for polychaetes, then the respective survival responses must be statistically compared. If a statistically significant reduction in survival is observed for the site sediment, then the site sediment is considered to be acutely toxic to benthic organisms. Statistical analyses are not performed when reference site database values are used.

### 5.1.1 Sediment Porewater Characterization

Prior to the initiation of the sediment tests, the composite samples were removed from refrigerated storage, and each sample was re-homogenized in a large stainless-steel bowl. Aliquots of the re-homogenized composite sediments were centrifuged at 2,500 g for 15 minutes; the resulting supernatant porewaters were carefully collected and analyzed for ammonia analysis (Table 5-1). A summary of the measured concentrations of total ammonia and total sulfides in the sediment porewaters, and summary tables of the total ammonia concentrations measured in the test overlying waters are presented in Appendix F.

**Table 5-1. Sediment Porewater Initial Water Quality Characteristics.**

Sample ID	pH	Total Ammonia (mg/L N)	Total Sulfide (mg/L)
BM-DU1-Comp	7.91	7.31	0.139
BM-DU2-Comp	7.86	4.36	0.131
BM-DU3-Comp	8.12	8.07	0.326

### 5.1.2 Effects of the Berkeley Marina Sediments on *Leptocheirus plumulosus*

The results of this testing are summarized in Table 5-2. There was 99% survival in the Lab Control treatment, indicating an acceptable survival response by the test organisms. There was also 99% survival in each of the site sediment samples. Reductions in survival in the site sediment samples relative to the SF-11 and SF-DODS reference database values was <20%. The reductions in survival in the site sediment samples relative to the Control treatment were <20%. These test results indicate that the Marina sediments were *not* toxic to amphipods. The test data and summary of statistical analyses for this testing are presented in Appendix G.

**Table 5-2. *Leptocheirus plumulosus* Survival in the Berkeley Marina Sediments.**

Sediment Site	% Survival in Test Replicates					Mean % Survival
	Rep A	Rep B	Rep C	Rep D	Rep E	
Lab Control	100	100	95	100	100	99
SF-11 Database <sup>A</sup>	-	-	-	-	-	97.3
SF-DODS Reference Database	-	-	-	-	-	92
BM-DU1-Comp	100	95	100	100	100	99
BM-DU2-Comp	100	100	100	95	100	99
BM-DU3-Comp	95	100	100	100	100	99

A – Pacific EcoRisk 2020-2022 testing mean results.

**5.1.2.1 Reference Toxicant Toxicity to *Leptocheirus plumulosus*** - The results of this test are presented in Table 5-3. The LC<sub>50</sub> for this test was consistent with the reference toxicant test database for this species, indicating that these test organisms were responding to toxic stress in a typical fashion. The test data and summary of statistical analyses for this test are presented in Appendix H.

**Table 5-3. Reference Toxicant Testing: Effects of KCl on *Leptocheirus plumulosus*.**

KCl Treatment (g/L)	Mean % Survival
Lab Control	90
0.25	100
0.5	100
1	100
2	<b>5.0*</b>
4	<b>0.0*</b>
LC <sub>50</sub> =	1.47 g/L KCl
Typical Response Range (mean LC <sub>50</sub> ± 2 SD) =	0.81 – 1.72 g/L KCl

\* The survival response at this treatment was significantly less than the Lab Control response at  $p < 0.05$ .

### 5.1.3 Effects of the Berkeley Marina Sediments on *Neanthes arenaceodentata*

The results of this testing are summarized in Table 5-4. There was 100% survival in the Control treatment, indicating an acceptable survival response by the test organisms. There was  $\geq 96\%$  survival in the site sediment samples. Reductions in survival in the site sediments relative to the SF-11 reference database value was  $< 10\%$ . The reduction in survival in the site sediments relative to the Control treatment were  $< 10\%$ . These test results indicate that the Marina sediments were **not** toxic to polychaetes. The test data and summary of statistical analyses for this testing are presented in Appendix I.

**Table 5-4. *Neanthes arenaceodentata* Survival in the Berkeley Marina Sediments.**

Sediment Site	% Survival in Test Replicates					Mean % Survival
	Rep A	Rep B	Rep C	Rep D	Rep E	
Lab Control	100	100	100	100	100	100
SF-11 Database <sup>A</sup>	-	-	-	-	-	99
SF-DODS Reference Database	-	-	-	-	-	98
BM-DU1-Comp	90	100	90	100	100	96
BM-DU2-Comp	100	100	100	100	100	100
BM-DU3-Comp	100	100	90	100	100	98

A – Pacific EcoRisk 2020-2022 testing mean results.

**5.1.3.1 Reference Toxicant Toxicity to *Neanthes arenaceodentata*** - The results of this test are presented in Table 5-5. The LC<sub>50</sub> for this test was consistent with the reference toxicant test database for this species, indicating that these test organisms were responding to toxic stress in a typical fashion. The test data and summary of statistical analyses for this test are attached as Appendix J.

**Table 5-5. Reference Toxicant Testing: Effects of KCl on *Neanthes arenaceodentata*.**

KCl Treatment (g/L)	Mean % Survival
Lab Control	100
0.5	100
1	100
2	40*
3	0*
4	0*
LC <sub>50</sub> =	1.76 g/L KCl
Typical Response Range (mean LC <sub>50</sub> ± 2 SD) =	1.06 – 2.04 g/L KCl

\* The survival response at this treatment was significantly less than the Lab Control response at  $p < 0.05$ .

## 5.2 Water Column (Standard Sediment Elutriate) Toxicity Testing

The 48-hr bivalve embryo development toxicity test with *M. galloprovincialis* was performed on a standard sediment elutriate to assess the effects of dredged material disposal on the water column. A summary of the results of this test are presented in Table 5-6; detailed toxicity test results are presented in Section 5.2.1. The test data and summary of statistical analyses for this test are presented in Appendix K.

Positive and negative Lab Control treatments were tested concurrently with the site sediment elutriate. The positive Lab Control consisted of a ‘waterborne’ reference toxicant test; the results of this tests were compared to PER’s reference toxicant test response database to determine whether these test organisms were responding to toxic stress in a typical fashion. The negative Lab Control (and dilution media) consisted of 0.45 µm-filtered natural seawater (obtained from the UC Davis - Bodega Marine Laboratory), diluted to a test salinity of 30 ppt via addition of Type 1 lab water (reverse-osmosis de-ionized water). As an additional QA measure, the site water that was collected from the same area as the sediment cores, and which was mixed with the sediments to prepare the 100% elutriates, was also tested.

The test results for the sediment composite elutriates were compared with the test organism responses at the negative Lab Control treatment to determine the potential impact of the proposed dredged materials on pelagic organisms at and beyond the boundaries of the disposal site (USEPA/USACE 1991, 1998). The following criteria were used for suitability determinations:

1. If the survival response and/or normal embryo development response in the 100% sediment elutriate treatment is  $\geq$  the Control (clean seawater) treatment response(s), the dredged material is not predicted to be acutely toxic to water column organisms.
2. If the reduction in survival response and/or normal embryo development response in the 100% sediment elutriate treatment relative to the Control treatment is  $\leq 10\%$ , there is no



need for statistical analyses and no indication of water column toxicity attributable to the test sediments.

3. If the reduction in survival response and/or normal embryo development response in the 100% sediment elutriate treatment relative to the Control treatment is >10%, then the data must be evaluated statistically to determine the magnitude of toxicity. If there is >50% survival or normal embryo development in the 100% elutriate treatment, the LC<sub>50</sub>/EC<sub>50</sub> is assumed to be ≥100%. If there is <50% survival or normal embryo development in at least one of the elutriate treatments, then an LC<sub>50</sub>/EC<sub>50</sub> should be calculated and compared with existing acceptability standards.

In order for the dredged material to be determined suitable for disposal at in-Bay sites (SF-11) and SF-DODS, compliance with the narrative water quality standard must be met. Compliance with the narrative water quality standard is determined by evaluating whether the dredge material concentration (suspended particulate phase [SPP]), after mixing, would exceed 1% of the LC<sub>50</sub> or EC<sub>50</sub> value calculated from the sediment elutriate test (whichever is most conservative), outside of the mixing zone. Since the EC<sub>50</sub>/LC<sub>50</sub> values were >100% sediment elutriate, dilution model calculations were not necessary.

### 5.2.1 Toxicity of the Berkeley Marina Sediment Elutriates to *Mytilus galloprovincialis*

The results of this testing are summarized below in Tables 5-6 through 5-8. There was ≥74.5% survival and ≥96.5% normal development in the Lab Control treatments, indicating acceptable responses by the test organisms. The survival LC<sub>50</sub> and development EC<sub>50</sub> values were >100% elutriate for all Berkeley Marina composite sediments. The test data and the summary of statistical analyses for these tests are presented in Appendix K.

**Table 5-6. Effects of BM-DU1-Comp Sediment Elutriate on *Mytilus galloprovincialis*.**

Elutriate Treatment	Mean % Survival	Mean % Normal Development
Lab Control	82.8	96.6
1%	71.2	96.4
10%	80.8	96.6
50%	80.9	97.9
100%	70.9	96.0
Site Water	77.5	96.3
Salt Control	78.3	97.2
Survival LC <sub>50</sub> or Development EC <sub>50</sub> =	>100% elutriate	>100% elutriate

**Table 5-7. Effects of BM-DU2-Comp Sediment Elutriate on *Mytilus galloprovincialis*.**

Elutriate Treatment	Mean % Survival	Mean % Normal Development
Lab Control	74.5	96.5
1%	74.1	94.5
10%	71.0	95.2
50%	71.3	94.3
100%	72.2	97.1
Site Water	77.5	96.3
Salt Control	78.3	97.2
Survival LC <sub>50</sub> or Development EC <sub>50</sub> =	>100% elutriate	>100% elutriate

**Table 5-8. Effects of BM-DU3-Comp Sediment Elutriate on *Mytilus galloprovincialis*.**

Elutriate Treatment	Mean % Survival	Mean % Normal Development
Lab Control	82.6	96.9
1%	83.6	94.8
10%	81.7	95.2
50%	87.4	95.9
100%	82.6	97.5
Site Water	77.5	96.3
Salt Control	78.3	97.2
Survival LC <sub>50</sub> or Development EC <sub>50</sub> =	>100% elutriate	>100% elutriate

**5.2.1.1 Reference Toxicant Toxicity to *Mytilus galloprovincialis* Embryos** - The results of this test are presented in Table 5-9. The EC<sub>50</sub> for this test was consistent with PER's reference toxicant test database for this species, indicating that these test organisms were responding to toxic stress in a typical fashion. The test data and summary of statistical analyses for this test are presented in Appendix L.

**Table 5-9. Reference Toxicant Testing: Effects of KCl on *Mytilus galloprovincialis*.**

KCl Treatment (g/L)	Mean % Normal Embryo Development
Lab Control	95.9
0.5	95.6
1	95.9
2	<b>64.7*</b>
3	<b>0.6*</b>
4	<b>0.0*</b>
EC <sub>50</sub> =	2.13 g/L KCl
Typical Response Range (mean EC <sub>50</sub> ± 2 SD)	1.88 – 2.79 g/L KCl

\* The normal development response at this treatment was significantly less than the Lab Control response at  $p < 0.05$ .

### 5.3 Toxicity Testing of Berkeley Marina Modified Elutriates (MET) using *Americamysis bahia*

The results of the MET exposure are summarized in Table 5-10. There was 100% survival at the Lab Control treatment, indicating an acceptable survival response by the test organisms. There was 100% survival in the Berkeley Marina composite MET samples. The test data and summary of statistical analyses for these tests are presented in Appendix M.

**Table 5-10. Effects of Berkeley Marina MET Elutriates on *Americamysis bahia*.**

Test Treatments	Mean % Survival
Lab Control	100
Site Water	92
BM-DU1-Comp	100
BM-DU2-Comp	100
BM-DU3-Comp	100

#### 5.3.1 Reference Toxicant Toxicity to *Americamysis bahia*

The results of this test are presented in Table 5-11. The LC<sub>50</sub> for this test was consistent with PER's reference toxicant test database for this species, indicating that these test organisms were responding to toxic stress in a typical fashion. The test data and summary of statistical analyses for this test are presented in Appendix N.

**Table 5-11. Reference Toxicant Testing: Effects of KCl on *Americamysis bahia*.**

KCl Treatment (g/L)	Mean % Survival
Lab Control	97.5
0.125	100
0.25	90.0
0.5	<b>51.9*</b>
1	<b>0.0*</b>
2	<b>0.0*</b>
LC <sub>50</sub> =	0.47 g/L KCl
Typical Response Range (mean ± 2 SD) =	0.37 – 0.84 g/L KCl

\* The response at this test treatment was significantly less than the Control treatment response at  $p < 0.05$ .

### 5.3.2 Bioaccumulation Testing of the BM-DU3-Comp Sediment

Due to the observation of mercury, PCBs, and dioxins/furnas greater than the SF Bay Bioaccumulation Trigger Level in the BM-DU3-Comp sediment, bioaccumulation testing was performed using the bivalve *M. nasuta* and the polychaete *N. virens*. Negative Lab Control treatments consisted of “clean” sediment collected from Paradise Cove in San Francisco Bay. The survival results for the bioaccumulation tests with *M. nasuta* and *N. virens* are presented in Tables 5-12 and 5-13, respectively.

**5.3.2.1 Sediment Bioaccumulation Test Data for *Macoma nasuta*** - The percentage of bivalves that survived in each of the test replicates is summarized in Table 5-12. The test data for this testing are presented in Appendix O.

**Table 5-12 Berkeley Marina Sediment Bioaccumulation Testing with *Macoma nasuta*.**

Test Treatment	Percent of Polychaetes that Survived					Mean % Survival
	Rep A	Rep B	Rep C	Rep D	Rep E	
Lab Control	100	100	100	100	100	100
BM-DU3-Comp	85.7	100	71.4	85.7	100	88.6

**5.3.2.2 Sediment Bioaccumulation Test Data for *Nereis virens*** - The percentage of polychaetes that survived in each of the test replicates is summarized in Table 5-13. The test data for this testing are presented in Appendix P.

**Table 5-13. Berkeley Marina Sediment Bioaccumulation Testing with *Nereis virens*.**

Test Treatment	Percent of Polychaetes that Survived					Mean % Survival
	Rep A	Rep B	Rep C	Rep D	Rep E	
Lab Control	60	100	100	100	100	92
BM-DU3-Comp	100	100	100	100	100	100

## 6. CHEMICAL ANALYSES OF BIVALVE AND POLYCHAETE TISSUES

The tissue samples from the sediment bioaccumulation tests performed on the Berkeley Marina BM-DU3-Comp sediment were analyzed for total mercury, total PCBs, and dioxins/furans. Tissue analyte concentrations were determined on a composite sample comprised of tissue proportionately subsampled from each bioaccumulation test replicate. Analysis of BM-DU3-Comp individual sediment cores for total PCBs and total mercury indicated that measured total PCBs and total mercury concentrations for the BM-DU3-01, BM-DU3-02, and BM-DU3-03 individual sediment cores were elevated. The theoretical bioaccumulation potential (TBP) of PCBs and total mercury were assessed for these sediments.

Evaluation of the BM-DU3-Comp bioaccumulation test data was consistent with ITM/OTM guidelines and DMMO guidance and was performed as follows:

1. Analyte concentrations in test organism tissue were compared to the SF-DODS reference database;
2. Tissue concentrations were steady-state corrected using the best available data and then compared to available U.S. Food & Drug Administration (USFDA) action levels. If the tissue concentrations were greater than USFDA action levels, then the dredged material was predicted to result in benthic bioaccumulation of contaminants;
3. Tissue concentrations were compared to “effects” data deemed most relevant to the test species obtained from peer-reviewed literature [from the USACE ERED database (<http://wes.army.mil/el/ered/index.html>; USACE 2023)]; and
4. If a tissue concentration was less than effects data concentrations, then no further evaluation was performed for that analyte with respect to SF-DODS placement. If the test organism tissue concentration was greater than effects data concentrations, then the magnitude of the exceedance was evaluated along with an assessment of potential food chain effects.

TBP of total PCBs and total mercury in BM-DU3-01, BM-DU3-02, and BM-DU3-03 individual sediment cores was assessed using the following approach:

1. Site-specific Biota-Sediment Accumulation Factors (BSAF) were developed using:
  - a. Sediment total PCBs, total mercury, and TOC concentrations (Table 4-1);
  - b. Bioaccumulation test tissue total PCBs, total mercury, and lipid content (Tables 6-1 and 6-2);
    - i. As the 28-day bioaccumulation test results may underestimate steady-state levels, the 28-day tissue total PCB and total mercury concentrations were adjusted, as needed, to represent steady-state corrected conditions prior to development of the site-specific BSAF.

2. The resultant BSAF for each analyte was then used to determine the theoretical bioaccumulation potential (TBP) of total PCBs and total mercury to marine benthic invertebrates (i.e., *Macoma nasuta* and *Nereis virens*) exposed to marina sediments;
3. The highest TBP estimated tissue total PCB and total mercury concentration was compared to the SF-DODS reference database. If below the reference database, further evaluation was not performed. If the analyte concentration was above the SF-DODS reference database, then the TBP result was compared to “effects” data deemed most relevant to the test species obtained from peer-reviewed literature [from the USACE ERED database (<http://wes.army.mil/el/ered/index.html>); USACE 2023)]; and
4. If a tissue concentration was less than effects data concentrations, then no further evaluation was performed for that analyte with respect to SF-DODS placement.

The results of this evaluation is presented in Sections 6.1 through 6.9.

## 6.1 Bioaccumulation Test Tissue Analytical Chemistry Results

The results of these analyses are summarized in Tables 6-1 and 6-2 and below in Sections 6.1.1 and 6.1.2.

### 6.1.1 *Macoma nasuta* Tissue Analytical Chemistry Results

The *Macoma nasuta* test initiation (T<sub>0</sub>) mean total lipids were 0.77%.

The T<sub>0</sub> and Control tissue total mercury concentrations were <MDL. The tissue mercury concentration for *M. nasuta* exposed to the BM-DU3-Comp sediment was <MDL.

The T<sub>0</sub> and Control tissue total PCB concentrations were <MDL and 7.59 µg/kg wet wt. respectively. The tissue total PCB concentration for *M. nasuta* exposed to the BM-DU3-Comp sediment was <MDL.

The T<sub>0</sub> and Control tissue dioxins/furans total TEQs were 0.038 ng TEQ/kg and 0.131 ng TEQ/kg, respectively. The tissue dioxins/furans total TEQ for *M. nasuta* exposed to the BM-DU3-Comp sediment was 0.063 ng TEQ/kg. There are no *M. nasuta* dioxin/furans tissue screening values for SF-DODS.

The full Data Report for the *M. nasuta* tissue analyses is presented in Appendix R.

### 6.1.2 *Nereis virens* Tissue Analytical Chemistry Results

The *N. virens* test initiation (T<sub>0</sub>) mean total lipids were 0.70%.

The T<sub>0</sub> and Control tissue mercury concentrations were 0.015 mg/kg wet wt. and <MDL respectively. The tissue mercury concentration for *N. virens* exposed to the BM-DU3-Comp sediment was <MDL.

**Table 6-1. *Macoma nasuta* Tissue Concentrations (µg/kg, wet wt).**

Analyte	Test Initiation (T <sub>0</sub> )	Control (Day 28)	BM-DU3-Comp	SF-DODs Reference <sup>1</sup>
% Lipids	0.770			
<b>Metals (mg/kg, dry wt))</b>				
Mercury	<0.0149	<0.0149	<0.0150	0.01-0.1
<b>PCBs (µg/kg, wet wt)</b>				
PCB 005/008	<0.11	<0.11	<0.11	-
PCB 018	<0.094	<0.093	<0.093	-
PCB 028	<0.10	<0.099	<0.10	-
PCB 031	<0.089	<0.088	<0.088	-
PCB 033	<0.047	<0.047	<0.047	-
PCB 044	<0.12	<0.12	<0.12	-
PCB 049	<0.11	0.62	<0.11	-
PCB 052	<0.079	0.53	<0.079	-
PCB 056	<0.047	<0.047	<0.047	-
PCB 060	<0.13	<0.13	<0.13	-
PCB 066	<0.11	0.58	<0.11	-
PCB 070	<0.093	0.37	<0.092	-
PCB 074	<0.10	<0.10	<0.10	-
PCB 087	<0.12	<0.12	<0.12	-
PCB 095	<0.066	0.48	<0.066	-
PCB 097	<0.14	<0.14	<0.14	-
PCB 099	<0.086	0.67	<0.086	-
PCB 101	<0.11	0.94	<0.11	-
PCB 105	<0.11	<0.10	<0.10	-
PCB 110	<0.089	0.82	<0.089	-
PCB 118	<0.080	<0.079	<0.079	-
PCB 128	<0.14	<0.14	<0.14	-
PCB 132/153	<0.24	1.2	<0.24	-
PCB 138/158	<0.24	0.60	<0.24	-
PCB 141	<0.066	<0.065	<0.066	-
PCB 149	<0.11	0.52	<0.11	-
PCB 151	<0.092	0.26	<0.091	-
PCB 156	<0.095	<0.094	<0.094	-
PCB 170	<0.10	<0.10	<0.10	-
PCB 174	<0.057	<0.057	<0.057	-
PCB 177	<0.094	<0.093	<0.094	-
PCB 180	<0.083	<0.082	<0.082	-
PCB 183	<0.12	<0.12	<0.12	-
PCB 187	<0.089	<0.088	<0.089	-
PCB 194	<0.11	<0.11	<0.11	-
PCB 195	<0.062	<0.062	<0.062	-
PCB 201	<0.14	<0.14	<0.14	-
PCB 203	<0.070	<0.069	<0.069	-
<b>∑ detected PCBs</b>	<b>0</b>	<b>7.59</b>	<b>0</b>	<b>ND-4.2</b>
<b>∑ Dioxin/Furan ng TEQ/kg</b>	<b>0.038</b>	<b>0.131</b>	<b>0.063</b>	-

All results below laboratory method detection limit (MDL) are reported as < the MDL concentration.

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.

ND - not detected

A - Mean tissue concentration exceeds SF-DODS reference site database.

Table 6-2. *Nereis virens* Tissue Concentrations ( $\mu\text{g}/\text{kg}$ , wet wt).

Analyte	Test Initiation (T <sub>0</sub> )	Control (Day 28)	BM-DU3-Comp	SF-DODs Reference <sup>1</sup>
% Lipids	0.700			
<b>Metals (mg/kg, dry wt)</b>				
Mercury	0.0150 J	<0.0147	<0.0150	0.01-0.1
<b>PCBs (<math>\mu\text{g}/\text{kg}</math>, wet wt)</b>				
PCB 005/008	<0.11	<0.11	<0.11	-
PCB 018	<0.094	<0.094	0.18 J	-
PCB 028	<0.10	<0.10	<0.10	-
PCB 031	<0.089	<0.089	<0.089	-
PCB 033	<0.047	<0.047	<0.047	-
PCB 044	<0.12	<0.12	<0.12	-
PCB 049	<0.11	<0.11	0.43	-
PCB 052	<0.079	<0.079	1.1	-
PCB 056	<0.047	<0.047	<0.047	-
PCB 060	<0.13	<0.13	<0.13	-
PCB 066	<0.11	<0.11	0.84	-
PCB 070	<0.093	<0.093	<0.092	-
PCB 074	<0.10	<0.10	<0.10	-
PCB 087	<0.12	<0.12	<0.12	-
PCB 095	<0.066	<0.066	1.1	-
PCB 097	<0.14	<0.14	<0.14	-
PCB 099	<0.086	<0.086	0.67	-
PCB 101	<0.11	<0.11	1.3	-
PCB 105	<0.11	<0.11	<0.10	-
PCB 110	<0.089	<0.089	0.82	-
PCB 118	<0.080	<0.080	0.63	-
PCB 128	<0.14	<0.14	<0.14	-
PCB 132/153	0.94	<0.24	1.7	-
PCB 138/158	<0.24	<0.24	1.3	-
PCB 141	<0.066	<0.066	<0.066	-
PCB 149	0.14 J	<0.11	0.82	-
PCB 151	<0.092	<0.092	<0.091	-
PCB 156	<0.095	<0.095	<0.094	-
PCB 170	<0.10	<0.10	<0.10	-
PCB 174	<0.057	<0.057	<0.057	-
PCB 177	<0.094	<0.094	<0.094	-
PCB 180	<0.083	<0.083	0.57	-
PCB 183	<0.12	<0.12	<0.12	-
PCB 187	0.65	<0.089	1.2	-
PCB 194	<0.11	<0.11	<0.11	-
PCB 195	<0.062	<0.062	<0.062	-
PCB 201	<0.14	<0.14	<0.14	-
PCB 203	<0.070	<0.070	<0.069	-
<b><math>\Sigma</math> detected PCBs</b>	<b>1.73<sup>A</sup></b>	<b>0</b>	<b>12.7<sup>A</sup></b>	<b>ND</b>
<b><math>\Sigma</math> Dioxin/Furan ng TEQ/kg</b>	<b>0.137</b>	<b>0.289</b>	<b>0.388</b>	<b>-</b>

All results below laboratory method detection limit (MDL) are reported as < the MDL concentration.

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.

ND - not detected

A - Mean tissue concentration exceeds SF-DODS reference site database.



The T<sub>0</sub> and Control tissue total PCB concentrations were 1.73 µg/kg wet wt. and <MDL respectively. The tissue total PCB concentration for *N. virens* exposed to the BM-DU3-Comp sediment was 12.7 µg/kg wet wt. which was above the tissue screening value for SF-DODS.

The T<sub>0</sub> and Control tissue dioxins/furans total TEQs were 0.137 ng TEQ/kg and 0.289 ng TEQ/kg, respectively. The tissue dioxins/furans total TEQ for *N. virens* exposed to the BM-DU3-Comp sediment was 0.388 ng TEQ/kg. There are no *N. virens* dioxin/furans tissue screening values for SF-DODS.

The full Data Report for the *N. virens* tissue analyses is presented in Appendix R.

## 6.2 Calculation of Site-Specific Biota-Sediment Accumulation Factor (BSAF)

A BSAF is a model describing bioaccumulation of sediment-associated organic compounds or metals into tissues of ecological receptors based upon the concentrations of these contaminants in the sediment. The BSAF is calculated from four measured variables (see Equation 1 below):

### Equation #1:

$$BSAF = \frac{C_o/f_l}{C_s/f_{soc}}$$

where:

- $C_o$  is the chemical concentration in the organism on a wet weight basis (µg/kg wet weight [ww]);
- $f_l$  is the lipid content of the wet tissue (g lipid/g ww);
- $C_s$  is the chemical concentration in the sediment on a dry weight basis (µg/kg dry weight [dw]);  
and
- $f_{soc}$  is the organic carbon content of the dry sediment (g organic carbon/g dw).

A site-specific BSAF for total PCBs and total mercury was determined for use in estimating sediment bioaccumulation potential using paired measured overlying (maintenance-depth) sediment and tissue concentrations for total PCBs (as estimated using the RMP 40 congeners) and total mercury, as described above. As the maintenance-depth 28-day bioaccumulation test tissue results may underestimate steady-state levels, the 28-day tissue total PCB and total mercury concentrations were adjusted using available information (USACE 2010, USEPA/USACE 1998), as necessary, to represent steady-state corrected conditions prior to development of the site-specific BSAF. These data, used to calculate BSAFs for the bivalve, *Macoma nasuta*, and the polychaete, *Nereis virens*, are presented in Tables 6-3 though 6-6.

**Table 6-3. Determination of *Macoma nasuta* Site Specific PCB BSAF.**

Sediment Sample ID	Sediment Total PCBs <sup>A</sup> (µg/kg dw)	TOC (% dw) <sup>A,B</sup>	Lipid (% ww) <sup>C,D</sup>	<i>Macoma nasuta</i> Tissue Total PCBs (µg/kg ww)		BSAF
				28-Days <sup>C</sup>	Steady-State Corrected <sup>E</sup>	
BM-DU3-COMP	101.2	1.6	0.77	1.96 <sup>F</sup>	3.02	0.06

A - Data obtained from testing performed on maintenance-depth sediment (Table 4-1).

B - (g organic carbon/g dw)\*100.

C - Data obtained from testing performed on maintenance-depth sediment (Table 6-1).

D - (g lipids/g ww)\*100.

E - Steady-state correction factor of 1.54 applied (USACE 2010).

F - As PCBs were not detected in the sample, ½ the detection limit of each congener was used and then summed to get a total PCB concentration to use for this assessment.

dw = dry weight; ww = wet weight.

**Table 6-4. Determination of *Nereis virens* Site Specific PCB BSAF.**

Sediment Sample ID	Sediment Total PCBs <sup>A</sup> (µg/kg dw)	TOC (% dw) <sup>A,B</sup>	Lipid (% ww) <sup>C,D</sup>	<i>Nereis virens</i> Tissue Total PCBs (µg/kg ww)		BSAF
				28-Days <sup>C</sup>	Steady State Corrected <sup>E</sup>	
BM-DU3-COMP	101.2	1.6	0.70	12.7	12.7	0.29

A - Data obtained from testing performed on maintenance-depth sediment (Table 4-1).

B - (g organic carbon/g dw)\*100.

C - Data obtained from testing performed on maintenance-depth sediment (Table 6-2).

D - (g lipids/g ww)\*100.

E - Steady-state correction factor not required (USACE 2010).

dw = dry weight; ww = wet weight.

**Table 6-5. Determination of *Macoma nasuta* Site Specific Mercury BSAF.**

Sediment Sample ID	Sediment Total Mercury <sup>A</sup> (mg/kg dw)	TOC (% dw) <sup>A,B</sup>	Lipid (% ww) <sup>C,D</sup>	<i>Macoma nasuta</i> Tissue Total Mercury (mg/kg ww)		BSAF
				28-Days <sup>C</sup>	Steady-State Corrected <sup>E</sup>	
BM-DU3-COMP	0.9	1.6	0.77	0.0075 <sup>F</sup>	0.012	0.03

A - Data obtained from testing performed on maintenance-depth sediment (Table 4-1).

B - (g organic carbon/g dw)\*100.

C - Data obtained from testing performed on maintenance-depth sediment (Table 6-1).

D - (g lipids/g ww)\*100.

E - Steady-state correction factor of 1.58 applied (USACE 2010).

F - As total mercury was not detected in the sample ½ the detection limit was used for this assessment.

dw = dry weight; ww = wet weight.

**Table 6-6. Determination of *Nereis virens* Site Specific Mercury BSAF.**

Sediment Sample ID	Sediment Total Mercury <sup>A</sup> (mg/kg dw)	TOC (% dw) <sup>A,B</sup>	Lipid (% ww) <sup>C,D</sup>	<i>Nereis virens</i> Tissue Total Mercury (mg/kg ww)		BSAF
				28-Days <sup>C</sup>	Steady State Corrected <sup>E</sup>	
BM-DU3-COMP	0.9	1.6	0.70	0.0075 <sup>F</sup>	0.0075	0.02

A - Data obtained from testing performed on maintenance-depth sediment (Table 4-1).

B - (g organic carbon/g dw)\*100.

C - Data obtained from testing performed on maintenance-depth sediment (Table 6-2).

D - (g lipids/g ww)\*100.

E - Steady-state correction factor not required (USACE 2010).

F - As total mercury was not detected in the sample ½ the detection limit was used for this assessment.

dw = dry weight; ww = wet weight.

### 6.3 Theoretical Bioaccumulation Potential (TBP) of the Berkeley Marina Sediments

Since bioaccumulation testing was not performed on the Berkeley Marina individual core sediments, the TBP of PCBs and total mercury for these sediments was calculated using a site-specific BSAF derived from paired measured sediment and tissue analytes for the BM-DU3 composite sediments (from Tables 6-3 through 6-6, above). The TBP for each sediment sample was then calculated using Equation #2 (below):

#### Equation #2:

$$TBP = BSAF (C_s/TOC) \cdot L$$

where:

TBP is expressed on a whole-body wet-weight basis in the same units as  $C_s$  and:

BSAF = site-specific factor derived from measured paired sediment analyte and tissue analyte values for a particular site;

$C_s$  = analyte concentration measured in the sediment sample;

TOC = TOC concentration (%) measured in the sediment sample; and

L = *Macoma nasuta* or *Nereis virens* measured lipid content (%).

The results of these calculations are presented below in Tables 6-7 through 6-10; the BM-DU3-03 sediment had the highest TBP estimated *Macoma nasuta* and *Nereis virens* tissue total PCB concentration; this estimated concentration was higher than the SF-DODS reference database. As a conservative measure, the estimated tissue total PCB concentration for this sediment was used for all subsequent evaluations. BM-DU3-01 sediment had the highest TBP estimated tissue total mercury concentration; however, this estimated concentration was below the SF-DODS reference database and no further analysis was performed.

**Table 6-7. Predicted Bioaccumulation of PCBs in the Berkley Marina Sediments in *Macoma nasuta* Tissues: Results of TBP Calculations.**

Model Input/Output	Sediment Sample ID:		
	BM-DU3-01	BM-DU3-02	BM-DU3-03
BSAF <sup>A</sup> =	0.06	0.06	0.06
Sediment Total PCB Concentration ( $\mu\text{g}/\text{kg dw}$ ) <sup>B</sup> =	97.9	62.8	151
Sediment TOC (% dw) <sup>C</sup> =	1.07	1.49	1.34
Tissue Lipid (% ww) <sup>D, E</sup> =	0.77	0.77	0.77
TBP [ $\mu\text{g}/\text{kg ww}$ ] =	4.37	2.01	5.37
Greater than SF DODS Database Range (ND-4.2)	Yes	No	Yes

A - Determined using paired measured overlying (maintenance-depth) sediment and tissue concentrations for total PCBs (see Tables 4-1 and 6-1).

B - Data presented in Table 4-2.

C - (g organic carbon/g dw)\*100.

D - (g lipids/g ww)\*100.

E - Data presented in Table 6-1.

BSAF = Biota Sediment Accumulation Factor.

TBP = Theoretical Bioaccumulation Potential.

dw = dry weight.

ww = wet weight.

Highest TBP result.

ND – Not Detected

**Table 6-8. Predicted Bioaccumulation of PCBs in the Berkley Marina Sediments in *Nereis virens* Tissues: Results of TBP Calculations.**

Model Input/Output	Sediment Sample ID:		
	BM-DU3-01	BM-DU3-02	BM-DU3-03
BSAF <sup>A</sup> =	0.06	0.06	0.06
Sediment Total PCB Concentration ( $\mu\text{g}/\text{kg dw}$ ) <sup>B</sup> =	97.9	62.8	151
Sediment TOC (% dw) <sup>C</sup> =	1.07	1.49	1.34
Tissue Lipid (% ww) <sup>D, E</sup> =	0.70	0.70	0.70
TBP [ $\mu\text{g}/\text{kg ww}$ ] =	18.4	8.46	22.6
Greater than SF DODS Database Range (ND)	Yes	Yes	Yes

A - Determined using paired measured overlying (maintenance-depth) sediment and tissue concentrations for total PCBs (see Tables 4-1 and 6-2).

B - Data presented in Table 4-2

C - (g organic carbon/g dw)\*100.

D - (g lipids/g ww)\*100.

E - Data presented in Table 6-2

BSAF = Biota Sediment Accumulation Factor.

TBP = Theoretical Bioaccumulation Potential.

dw = dry weight.

ww = wet weight.

Highest TBP result

ND – Not Detected

**Table 6-9. Predicted Bioaccumulation of Mercury in the Berkley Marina Sediments in *Macoma nasuta* Tissues: Results of TBP Calculations.**

Model Input/Output	Sediment Sample ID:		
	BM-DU3-01	BM-DU3-02	BM-DU3-03
BSAF <sup>A</sup> =	0.03	0.03	0.03
Sediment Mercury Concentration (mg/kg dw) <sup>B</sup> =	1.01	0.96	1.20
Sediment TOC (% dw) <sup>C</sup> =	1.07	1.49	1.34
Tissue Lipid (% ww) <sup>D, E</sup> =	0.77	0.77	0.77
TBP [mg/kg ww] =	0.020	0.014	0.019
Greater than SF DODS Database Range (0.01-1.0 mg/kg ww)	No	No	No

A - Determined using paired measured overlying (maintenance-depth) sediment and tissue concentrations for total mercury (see Tables 4-1 and 6-1).

B - Data presented in Table 4-2.

C - (g organic carbon/g dw)\*100.

D - (g lipids/g ww)\*100.

E - Data presented in Table 6-1.

BSAF = Biota Sediment Accumulation Factor.

TBP = Theoretical Bioaccumulation Potential.

dw = dry weight.

ww = wet weight.

Highest TBP result.

**Table 6-10. Predicted Bioaccumulation of Mercury in the Berkley Marina Sediments in *Nereis virens* Tissues: Results of TBP Calculations.**

Model Input/Output	Sediment Sample ID:		
	BM-DU3-01	BM-DU3-02	BM-DU3-03
BSAF <sup>A</sup> =	0.02	0.02	0.02
Sediment Mercury Concentration (mg/kg dw) <sup>B</sup> =	1.01	0.96	1.20
Sediment TOC (% dw) <sup>C</sup> =	1.07	1.49	1.34
Tissue Lipid (% ww) <sup>D, E</sup> =	0.70	0.70	0.70
TBP [mg/kg ww] =	0.013	0.009	0.012
Greater than SF DODS Database Range (0.01-1.0 mg/kg ww)	No	No	No

A - Determined using paired measured overlying (maintenance-depth) sediment and tissue concentrations for total mercury (see Tables 4-1 and 6-2).

B - Data presented in Table 4-2

C - (g organic carbon/g dw)\*100.

D - (g lipids/g ww)\*100.

E - Data presented in Table 6-2

BSAF = Biota Sediment Accumulation Factor.

TBP = Theoretical Bioaccumulation Potential.

dw = dry weight.

ww = wet weight.

Highest TBP result

#### 6.4 BM-DU3-Comp and BM-DU3-03 Tissue Concentrations Exceeding SF-DODS Reference Site Database

The *M. nasuta* and *N. virens* tissues total PCBs and total mercury concentrations, and the predicted BM-DU3-03 tissue total PCB and total mercury concentrations were compared to the SF-DODS reference database (see Sections 6.1 and 6.3). Exceedances for the BM-DU3-Comp and BM-DU3-03 sediments are listed in Table 6-11. It should be noted that there are no *M. nasuta* and *N. virens* dioxins/furans tissue screening values for SF-DODS. As there are no tissue screening values in the SF-DODS database, *M. nasuta* and *N. virens* tissue dioxins/furans concentrations were included in TRV evaluations presented below in Section 6.5 to support assessment of SF-DODS suitability.

**Table 6-11. Tissue Analytes whose Concentrations Exceeded SF-DODS Reference Tissue Database Values.**

Dredge Unit	<i>Macoma nasuta</i> Tissues	<i>Nereis virens</i> Tissues
BM-DU3-Comp	Dioxins/furans <sup>A</sup>	Total PCBs & dioxins/furans <sup>A</sup>
BM-DU3-03	Total PCBs	Total PCBs

A – Although there are no tissue screening values in the SF-DODS database, dioxins/furans were included in TRV evaluations presented below to support assessment of SF-DODS suitability.

#### 6.5 Comparison of Tissue Concentrations to Tissue Residue Effects Data for Invertebrates

The *M. nasuta* and *N. virens* tissue analyte concentrations were compared to USACE ERED effects data to determine the potential for impacts to benthic invertebrates after placement at unconfined aquatic placement sites such as SF-11 or SF-DODS. The results of this assessment are presented in Sections 6.3.1 and 6.3.2.

##### 6.5.1 Development of Toxicity Reference Values (TRV) Using the USACE ERED

There are currently no promulgated screening criteria for determination of ecological effects at unconfined aquatic placement sites such as SF-11 or SF-DODS; accordingly, and consistent with ITM/OTM and USACE ERED guidance, toxicity reference values (TRVs) were developed using “effects” data from the USACE ERED database.

Consistent with ITM/OTM and USACE ERED guidance, data used in developing TRVs for use in dredged material disposal assessments were limited to effects data reported in the USACE ERED database that identify measurable biological effects (e.g., reduced survival, growth, or reproduction) for species that were most relevant to *M. nasuta* and *N. virens*.

Available relevant data for each of the compounds identified in organism tissues are presented in Table 6-12. The TRV was established as equivalent to the lesser of the reported lowest observed-effect concentration (LOEC) or lowest observed-effect dose (LOED) to ensure that a

**Table 6-12 ERED Tissue ‘Effect’ Concentration Used to Determine Potential Benthic Impacts.**

Compound	Species	Units	Reported “Effects” Concentration	TRV	Type of Effect	Toxicity Endpoint	Lifestage	ERED Reference
Total PCBs	<i>Asterias rubens</i>	µg/kg ww	1,620	162 <sup>A</sup>	Development	Estimated LOEC	adult	den Besten et al. 1989
Dioxins/Furans (2,3,7,8-TCDD)	<i>Pacifastacus leniusculus</i> (Crayfish)	ng/kg ww	3,000	300 <sup>B</sup>	Delayed mortality	Estimated LOEC	adult	Ashley et al. 1996

LOEC - Lowest Observed Effect Concentration.

ww – wet weight.

A - Uncertainty factor of 10 applied to reported LC25 value to obtain an estimated LOEC-based TRV value (SFEI 2018).

B - Uncertainty factor of 10 applied to reported value to obtain an estimated LOEC-based TRV value (USACHPPM, 2000).

conservative screening was applied. In the absence of a relevant LOEC or LOED value, an estimated LOEC-LOED TRV was calculated by applying any appropriate uncertainty factor (i.e., uncertainty factor of 10 is applied to LD25/ED25 values [USACHPPM 2000]). The PCB TRV value used followed the above guidance and was developed by the San Francisco Estuary Institute (SFEI 2018).

It should be noted that the USACE ERED database contains no relevant records for dioxin/furan impacts on marine benthic invertebrate species that would provide a toxicity reference value. (TRV) for comparison to the bioaccumulation test dioxin/furan tissue total TEQ results (SFEI 2018). In the absence of available data, results for a study performed using freshwater crayfish (Ashley et al. 1996) was used as an interim TRV value at the DMMO's request.

### **6.5.2 Comparison of Tissue Analyte Concentrations to Toxicity Reference Values**

As the bioaccumulation tests were 28-days in duration and may not represent "steady-state" conditions, an estimation of steady-state for each compound was performed, where necessary, using available information (USACE 2010, ASTM 2016, USACE/USEPA 1998) prior to comparison to TRV values.

The *M. nasuta* tissue total PCB and dioxins/furans total TEQ concentrations and *N. virens* tissue total PCB concentrations and dioxins/furans total TEQ concentrations were compared to the appropriate TRV; the tissue concentrations did not exceed the TRV values. The results of this comparison are summarized in Tables 6-13 and 6-14.

### **6.6 Comparison of Tissue Analyte Concentrations to USFDA Action Levels**

Tissues concentrations were compared to available USFDA action levels. Steady-state corrected tissue total PCB concentrations were compared to available USFDA action levels (Table 6-15). The predicted *M. nasuta* and *N. virens* range of tissue total PCB concentrations were below USFDA action levels. The USFDA does not identify an action level for dioxin/furan compounds that can be used as a basis for comparison of measured concentrations in invertebrate (i.e., *M. nasuta* and *N. virens*) tissues. However, there is an USFDA advisory level for dioxin/furan compounds that is considered safe for consumption (USEPA 1992); this has been utilized as a basis for comparison.



**Table 6-13. Comparison of *Macoma nasuta* Steady-State Tissue Concentrations to USACE ERED Database TRV.**

Dredge Unit	Chemical	Units	Mean 28-day Tissue Concentration	Steady State Correction Factor <sup>A</sup>	Estimated Steady State Corrected Mean Tissue Concentration	TRV <sup>B</sup>	Exceedance of TRV?
BM-DU3-Comp	PCBs	µg/kg wet wt	3.92 <sup>C</sup>	1.54	6.03	162	no
	Dioxins/Furans (2,3,7,8-TCDD)	ng TEQ /kg, wet wt	0.063	- <sup>D</sup>	0.12 <sup>C</sup>	300	no
BM-DU3-03	PCBs	µg/kg wet wt	- <sup>E</sup>	- <sup>E</sup>	5.37	162	no

**Notes:**

TRV = toxicity reference value.

ww = wet weight.

A - (USACE 2010).

B - (SFEI 2018).

C – As PCBs were not detected in the sample ½ the detection limit of each congener was used and then summed to get a total PCB concentration to use for this assessment.

D - Each 28-day dioxin and furan congener tissue concentration was steady-state corrected after which the TEF (WHO 2005) for each congener was applied and the resulting TEQs summed to achieve a total TEQ.

E - Predicted total PCB value steady-state corrected as part of TBP calculation.

**Table 6-14. Comparison of *Nereis virens* Steady-State Tissue Concentrations to USACE ERED Database TRV.**

Dredge Unit	Chemical	Units	Mean 28-day Tissue Concentration	Steady State Correction Factor <sup>A</sup>	Estimated Steady State Corrected Mean Tissue Concentration	TRV <sup>B</sup>	Exceedance of TRV?
BM-DU3-Comp	PCBs	µg/kg wet wt	12.7	0.0	12.7	162	no
	Dioxins/Furans (2,3,7,8-TCDD)	ng TEQ /kg, wet wt	0.388	- <sup>C</sup>	0.75 <sup>C</sup>	300	no
BM-DU3-03	PCBs	µg/kg wet wt	- <sup>D</sup>	- <sup>D</sup>	22.6	162	no

**Notes:**

TRV = toxicity reference value.

ww = wet weight.

A - (USACE 2010).

B - (SFEI 2018).

C - Each 28-day dioxin and furan congener tissue concentration was steady-state corrected after which the TEF (WHO 2005) for each congener was applied and the resulting TEQs summed to achieve a total TEQ.

D - Predicted total PCB value steady-state corrected as part of TBP calculation.

**Table 6-15. Comparison of Tissue Burden Levels to USFDA Action Levels.**

Compound	Units	Steady-state Corrected Tissue Concentration Range ( $\mu\text{g}/\text{kg}$ ) <sup>A</sup>	USFDA Action Level ( $\mu\text{g}/\text{kg}$ )
$\Sigma\text{PCBs}$	$\mu\text{g}/\text{kg}$ wet wt	6.0-12.7	2,000
Total Mercury	$\text{mg}/\text{kg}$ wet wt	<0.015 to 0.020	1.0*
Dioxins/Furans (2,3,7,8-TCDD TEQ)	$\text{ng TEQ}/\text{kg}$ , wet wt	0.12-0.75	<25

A - Tissue concentration represents the overall range of tissue concentration observed in the study (See Tables 6-1, 6-2, 6-13 and 6-14).

USFDA Action Level is for methyl mercury.

### 6.7 Potential for Trophic Transfer and Biomagnification at SF-DODS

For sediments placed at SF-DODS, the depth of this site is approximately 3,000 meters. At this depth, there is substantial dilution of any dredged materials as they are dispersed through the water column during the settling process and deposit onto the benthic “mudline”. Given this dilution and the reduction in any eventual bioaccumulation of the subsequent bedded sediments at SF-DODS that should be expected (relative to the bioaccumulation in *M. nasuta* and *N. virens* in the current “non-diluted” sediments), it is unlikely that significant uptake of mercury, PCBs or dioxins/furans by resident benthic organisms at SF-DODS would occur.

### 6.8 Potential for Trophic Transfer and Biomagnification in SF Bay

The analysis of dioxins/furans indicated that the dioxins/furan total TEQ concentration for the BM-DU3 Comp sediment was slightly above the SF Bay Bioaccumulation Trigger. As a result, these sediments require further evaluation to determine if they are suitable for placement in-Bay.

Biomagnification potential of dioxins/furans was assessed using the following approach:

1. Biomagnification of dioxins/furans from the marina sediments to fish (shiner surf perch and white croaker) was estimated using the Trophic Trace module of the Bioaccumulation Risk Assessment Modeling System (BRAMS);
2. The estimated fish tissue dioxin/furan concentrations were then compared to the most recent SF Bay ambient shiner surf perch and white croaker dioxin/furan fish tissue concentrations (SFEI 2023b);
3. Tissue concentrations were compared to tissue concentration “effects” data deemed most relevant to the test species obtained from peer-reviewed literature [from the USACE ERED database (<https://ered.el.erdc.dren.mil>; 2023)]; and
4. Tissue concentrations were also compared to a USFDA Health Advisory for Fish.

The results of this assessment are provided in the following sections.

## 6.9 Potential for Dioxins/Furans Biomagnification to Fish

The Trophic Trace bioaccumulation model (described in detail in Appendix S), a component of the Bioaccumulation Risk Assessment Modeling System (BRAMS), was used to estimate dioxin/furan biomagnification to shiner surf perch and white croaker from ingestion of prey species (i.e., *M. nasuta* and *N. virens*) exposed to the BM-DU3-Comp Berkeley Marina sediment. The model was executed assuming a diet of 100% bivalves (*M. nasuta*) or 100% polychaetes (*N. virens*); species-specific and abiotic component model inputs are listed below (described in detail in Appendix S); Trophic Trace results are presented in Appendix T.

### Species Specific Parameters

The following model inputs were used:

- *Macoma nasuta* (bivalve) mean lipid content (%) = 0.77 (from Table 6-1);
- *Nereis virens* (polychaete) mean lipid content (%) = 0.70 (from Table 6-2);
- Shiner surf perch lipid content (%) = 1.52 (from Davis et al. 2011);
- Shiner surf perch weight (grams) = 14 (from Gobas and Wilcockson 2003);
- White croaker lipid content (%) = 1.22 (from Davis et al. 2011);
- White croaker weight (grams) = 240 (from Gobas and Wilcockson 2003); and
- Site use factor = 1.

### Abiotic Components

The following model inputs were used:

- Site-specific sediment dioxin/furan total TEQ concentrations presented in Table 4-2;
- Site-specific sediment TOC concentration presented in Table 4-2;
- Particulate organic carbon (mg/L) = 1.85 (from Gobas and Wilcockson 2003);
- Bay water temperature (°C) = 10 (from Gobas and Wilcockson 2003);
- Dissolved organic carbon (mg/L) = 2.4 (from Gobas and Wilcockson 2003);
- Log( $K_{ow}$ ) dioxins/furans = Table 6-16 (<https://rais.ornl.gov/tools/profile.php>);
- Log( $K_{oc}$ ) dioxins/furans = Table 6-16 (Hawker and Connell 1988).

**Table 6-16. Dioxin/Furan Congener Log  $K_{ow}$  and Log  $K_{oc}$  Input Values.**

Dioxin/Furan Congener	Log $K_{ow}$	Log $K_{oc}$ <sup>A</sup>
2,3,7,8-TCDD	6.80	6.38
1,2,3,7,8-PeCDD	6.64	6.23
1,2,3,6,7,8-HxCDD	8.21	7.70
1,2,3,4,7,8-HxCDD	7.80	7.32
1,2,3,7,8,9-HxCDD	8.21	7.70
1,2,3,4,6,7,8-HpCDD	8.20	7.69
OCDD	8.20	7.69

2,3,7,8-TCDF	6.53	6.13
1,2,3,7,8-PeCDF	6.79	6.37
2,3,4,7,8-PeCDF	6.92	6.49
1,2,3,6,7,8-HxCDF	7.92	7.43
1,2,3,7,8,9-HxCDF	7.58	7.11
1,2,3,4,7,8-HxCDF	7.92	7.43
2,3,4,6,7,8-HxCDF	7.92	7.43
1,2,3,4,6,7,8-HpCDF	7.92	7.43
1,2,3,4,7,8,9-HpCDF	7.92	7.43
OCDF	8.60	8.07

A- Estimated based on Connell and Hawker, 1988.

### 6.9.1 Comparison of Estimated Fish Tissue Concentrations to Screening Values

There are no promulgated fish tissue limits for SF Bay with which to screen resulting predicted shiner surf perch or white croaker tissue dioxin/furan burden concentrations. As a result, the SF Bay ambient shiner surf perch and white croaker dioxin/furan tissue concentrations (SFEI 2023b) were utilized as screening levels. The predicted shiner surf perch or white croaker tissue concentration was also compared to a fish tissue TRV obtained from the from the USACE ERED database (USACE 2023) and USFDA advisory level for dioxin/furan compounds that is considered safe for human consumption (USEPA 1992).

The results of Trophic Trace modeling estimating dioxin/furan total TEQ fish tissue concentrations are presented in Tables 6-17 and 6-18 and indicated the following:

#### Shiner Surf Perch

- When bivalves are the only dietary food source, the predicted shiner surf perch fish tissue dioxin/furan total TEQ concentrations would be expected to be below SF Bay ambient concentrations (SFEI 2023b), the available fish TRV (USACE ERED 2023), and the USFDA Health Advisory for Fish for which there are no serious human health concerns (USEPA 1992).
- When polychaetes are the only dietary food source, the predicted shiner surf perch fish tissue dioxin/furan total TEQ concentrations would be expected to be below the mean SF Bay ambient concentration, within the range of reported concentrations (SFEI 2023b), below the available fish TRV (USACE ERED 2023) and the USFDA Health Advisory for Fish for which there are no serious human health concerns (USEPA 1992).

#### White Croaker:

- When bivalves are the only dietary food source, the predicted white croaker fish tissue dioxin/furan total TEQ concentrations would be expected to be below SF Bay ambient concentrations (SFEI 2023b), the available fish TRV (USACE ERED 2023), and the

USFDA Health Advisory for Fish for which there are no serious human health concerns (USEPA 1992).

- When polychaetes are the only dietary food source, the predicted white croaker fish tissue dioxin/furan total TEQ concentrations would be expected to be above the mean SF Bay ambient concentration but within the range of reported concentrations (SFEI 2023b), below the available fish TRV (USACE ERED 2023) and below the USFDA Health Advisory for Fish for which there are no serious human health concerns (USEPA 1992).

**Table 6-17. Comparison of Estimated Shiner Surf Perch Dioxin/Furan Total TEQ Tissue Burden Levels to Fish Tissue Screening Concentrations Assuming Prey Composition of 100% Bivalves or 100% Polychaetes.**

Sediment Sample ID	Prey	Estimated Prey Dioxin/Furan Total TEQ Concentration (ng TEQ/kg ww)	Estimated Shiner Surf Perch Tissue Dioxin/Furan Total TEQ Concentration (ng TEQ/kg ww)	Shiner Surf Perch Screening Concentrations (ng TEQ/kg ww)			
				Ambient Levels <sup>B, C</sup>		Fish TRV <sup>D</sup>	Human Consumption
				Range	Mean		
BM-DU3-COMP	100% bivalves	0.12	0.09	0.47-1.60	0.89	50	<25 <sup>E</sup>
	100% polychaetes	0.75	0.59				

A - SFRWQCB 2008.

B - Based on analysis of whole fish (without head, tail, and guts).

C - SFEI CD3 Database (SFEI 2023b).

D - Flatfish LC<sub>50</sub> value of 1000 ng TEQ/kg (USACE ERED 2023) with uncertainty factor of 20 applied (USACHPPM 2000).

E - USFDA Health Advisory for Fish: no serious health concerns (USEPA 1992).

**Table 6-18. Comparison of Estimated White Croaker Dioxin/Furan Total TEQ Tissue Burden Levels to Fish Tissue Screening Concentrations Assuming Prey Composition of 100% Bivalves or 100% Polychaetes.**

Sediment Sample ID	Prey	Estimated Prey Dioxin/Furan Total TEQ Concentration (ng TEQ/kg ww)	Estimated White Croaker Tissue Dioxin/Furan Total TEQ Concentration (ng TEQ/kg ww)	White Croaker Screening Concentrations (ng TEQ/kg ww)			
				Ambient Levels <sup>B, C</sup>		Fish TRV <sup>D</sup>	USFDA Advisory
				Range	Mean		
BM-DU3-COMP	100% bivalves	0.12	0.11	0.13-0.81	0.46	50	<25 <sup>E</sup>
	100% polychaetes	0.75	0.70				

A - SFRWQCB 2008.

B - Based on analysis of fish fillet with skin off.

C - SFEI CD3 Database (SFEI 2023b).

D - Flatfish LC<sub>50</sub> value of 1000 ng TEQ/kg (USACE ERED 2023) with uncertainty factor of 20 applied (USACHPPM 2000).

E - USFDA Health Advisory for Fish: no serious health concerns (USEPA 1992).

## 7. QUALITY CONTROL REVIEW

### 7.1 Conventional and Chemical Analytical Quality Control Summary

The QA/QC review entailed reviewing the contract lab Data Reports for sample integrity, correct methodology, and compliance with all appropriate quality Lab Control requirements. The overall data quality assessment found that all data were usable. A summary of any anomalies reported by the analytical laboratory are presented in Sections 7.1.1 – 7.1.4. Appendices B and C contains the sediment conventional and chemical analysis reports. Appendices D and E contains the MET and DI-WET results report. Appendix Q contains tissues analysis reports. The report includes the contract laboratory QA/QC narrative.

#### 7.1.1 Sediment Conventional and Chemical Analytical QA/QC Summary

##### **Eurofins Calscience Report 570-133080-1**

###### **PAHs**

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-317359 and analytical batch 570-319311 were outside control limits. Sample matrix interference was suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

###### **OCI Pesticides**

The RPD of the LCS and LCSD for preparation batch 570-317364 and analytical batch 570-320263 was recovered outside control limits for endrin aldehyde.

###### **Metals**

The method blank for preparation batch 570-316396 and analytical batch 570-317008 contained copper above the method detection limit (MDL). This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

No additional analytical or quality issues were noted.

##### **Eurofins Calscience Report 570-133080-2**

###### **Dioxins/Furans**

No analytical or quality issues were noted.

#### 7.1.2 MET Sample Analytical QA/QC Summary

##### **Eurofins Calscience Report 570-133325-1**

The BM-DU1-Comp MET (570-133325-1), BM-DU2-Comp MET (570-133325-2) and BM-DU3-Comp MET (570-133325-3) samples were associated with a bracket of 13 samples, while

the method requirement is no more than 10 samples. As all continuing calibration verifications (CCV) for these samples passed for analytes reported, the data was reported.

The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 580-422269 and 580-422543 and analytical batch 580-422759 was outside control limits. Sample matrix interference was suspected. Laboratory control samples / laboratory control samples duplicate (LCS/LCSD) precision was in control for affected analytes.

No additional analytical or quality issues were noted.

**Eurofins Calscience Report 570-140024-1**

No analytical or quality issues were noted.

**Eurofins Calscience Report 570-140024-2**

No analytical or quality issues were noted.

**7.1.3 DI-WET Sample Analytical QA/QC Summary**

**Eurofins Calscience Report 570-133080-1**

No analytical or quality issues were noted.

**7.1.4 Tissue Sample Analytical QA/QC Summary**

**Eurofins Calscience Report 570-143339-1**

**PCBs**

The MS/MSD recoveries for preparation batch 570-343678 and 570-342453 and analytical batch 570-345452 were outside control limits. Sample matrix interference was suspected because the associated LCS recovery was within acceptance limits.

No additional analytical or quality issues were noted.

**7.2 Biological Testing Quality Lab Control Summary**

The biological testing of the sediments incorporated standard QA/QC procedures to ensure that the test results were valid. Standard QA/QC procedures included the use of negative Lab Controls, positive Lab Controls, test replicates, and measurements of water quality during testing.

Quality assurance procedures that were used for sediment testing are consistent with methods described in the USEPA/USACE (1998). Sediments for the bioassay testing were stored appropriately at  $\leq 4^{\circ}\text{C}$  and were used within the 8-week holding time period. Sediment interstitial water characteristics were within test acceptability limits at the start of the tests. The overlying water in the benthic sediment toxicity tests consisted of high-quality natural seawater diluted to



the test salinity using Type 1 lab water. Sediment elutriates were prepared using site water, and high-quality natural seawater diluted to the test salinity using Type 1 lab water was used as the dilution medium.

All measurements of routine water quality characteristics were performed as described in the PER Lab Standard Operating Procedures (SOPs). All biological testing water quality conditions were within the appropriate limits. Laboratory instruments were calibrated daily according to Lab SOPs, and calibration data were logged and initialed. Standard test conditions are presented in Appendix Q.

**Negative Lab Control** – The biological responses for all the test organisms at the negative Lab Control treatments were within acceptable limits for the sediment and sediment elutriate tests.

**Positive Lab Control** – The key reference toxicant test concentration-response LC and/or EC point estimates for the tests were within the respective typical response ranges for these species, indicating that these test organisms were responding to toxic stress in a typical fashion.

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## 8. SUMMARY

The Berkeley Marina sediments were analyzed to evaluate suitability of sediment to be dredged with subsequent placement in-Bay at SF-11, SF-DODS, or upland at the MWRP and CRRP beneficial reuse sites.

A summary of the chemical and biological evaluations assessing each of these potential placement options is provided below in Sections 8.1 through 8.4 and in Figure 8-1. As summary of the Z-layer results is presented in Section 8-5.

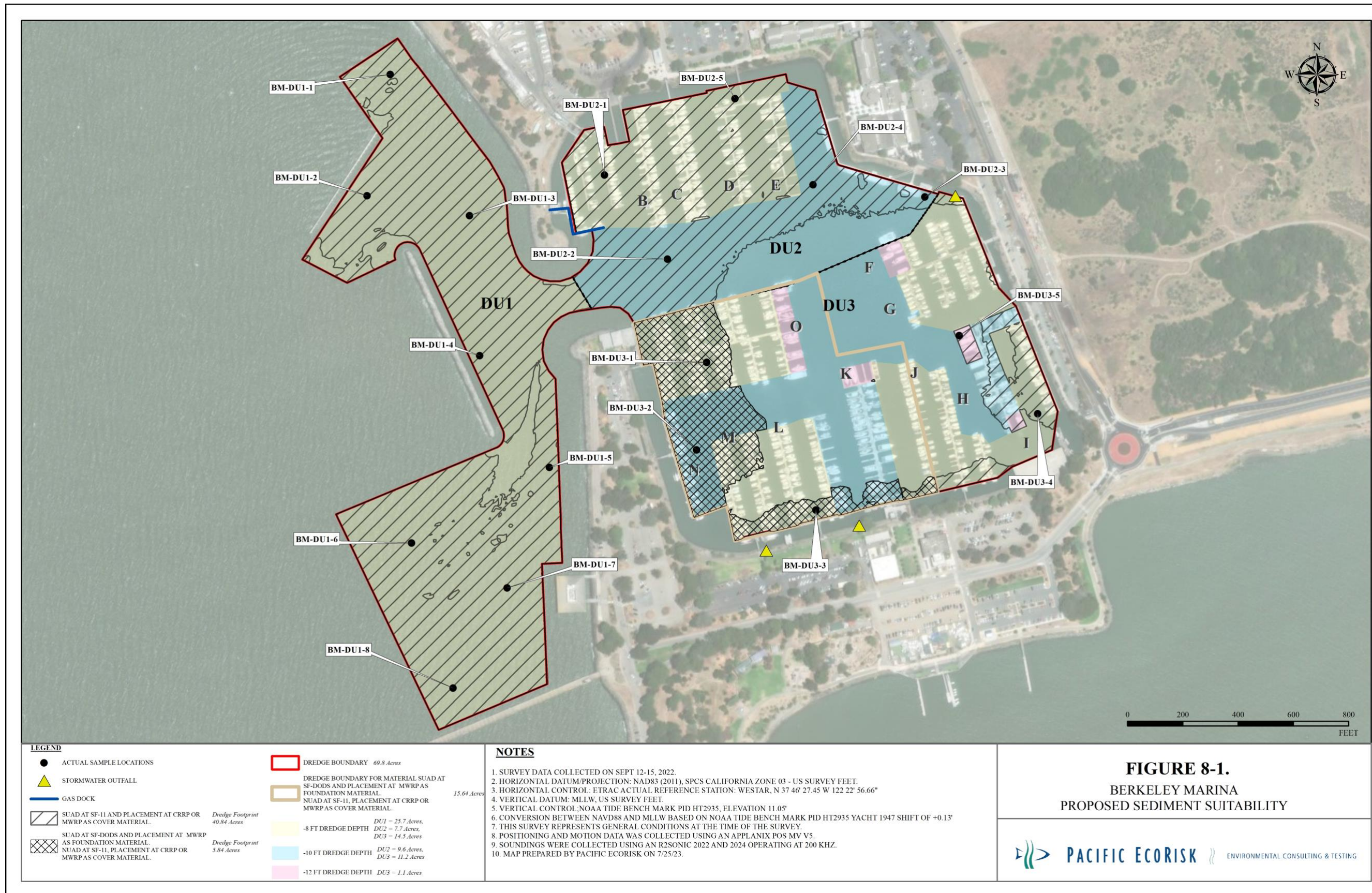
### 8.1 Unconfined Aquatic Disposal at In-Bay Sites

One or more analyte concentrations were above SF Bay ambient levels for each of the Dredge Units; however benthic toxicity tests indicated that none of the measured compounds were biologically available to cause toxicity in the 10-day sediment tests. The narrative WQO was met for the sediment elutriate tests. The measured mercury, total PCBs, and dioxins/furans concentrations in the BM-DU3-Comp sediment sample were above the SF Bay Bioaccumulation Trigger. The measured mercury and total PCBs were above the SF Bay TMDL threshold.

As the BM-DU3-Comp sediment measured mercury and total PCBs were above the SF Bay TMDL threshold, the individual sediment cores that comprised the BM-DU3-Comp sediment were each evaluated for mercury and total PCBs. The results of this testing indicated that the BM-DU3-01, BM-DU3-02, and BM-DU3-03 sediments were above the mercury and total PCB TMDL threshold. The BM-DU3-04, and BM-DU3-05 sediments were below the mercury and total PCB TMDL threshold as well as the SF Bay Bioaccumulation Trigger.

Bioaccumulation testing was performed on the BM-DU3-Comp sediment to support evaluation of dioxin/furan impacts on invertebrates and fish. Evaluation of fish impacts consisted of the performance Trophic Trace modeling (Section 6.8) utilizing bioaccumulation test results to estimate fish tissue dioxin/furan burden levels resulting from exposure to BM-DU3 sediment. The results of this assessment indicated that:

- Comparison of predicted bioaccumulation test tissue dioxins/furans total TEQ concentrations to invertebrate TRVs indicated that tissue burden levels would be expected to be below concentrations reported to cause effects to invertebrates;
- The predicted shiner surf perch fish tissue dioxins/furans total TEQ concentrations would be expected to be below SF Bay ambient concentrations (SFEI 2023b) when bivalves are the only source of food. When polychaetes are the only source of food, the tissue concentration was predicted to be below the mean SF Bay ambient concentration, within the range of reported concentrations (SFEI 2023b), below the available fish TRV (USACE ERED 2023) and the USFDA Health Advisory for Fish for which there are no serious health concerns (USEPA 1992); and



- The predicted white croaker fish tissue dioxins/furans total TEQ concentration would be expected to be below the mean SF Bay ambient concentration (SFEI 2023b) when bivalves are the only source of food. When polychaetes are the only source of food, the tissue concentration was predicted to be above the mean SF Bay ambient concentration, within the range of reported concentrations (SFEI 2023b), below the available fish TRV (USACE ERED 2023), and below the USFDA Health Advisory for Fish for which there are no serious health concerns (USEPA 1992).

Based on these results, the BM-DU1-Comp, BM-DU2-Comp, BM-DU3-04, and BM-DU3-05 sediments would be considered suitable for unconfined aquatic disposal (SUAD) at in-Bay placement sites and the BM-DU3-01, BM-DU3-02, and BM-DU3-03 sediments would be considered not suitable for unconfined aquatic disposal (NUAD) at in-Bay placement sites.

## **8.2 Unconfined Aquatic Disposal at SF-DODS**

As the BM-DU3-Comp sediment measured mercury and total PCBs were above the SF Bay TMDL threshold, further assessment was performed on this sediment to determine suitability for placement at SF-DODS.

One or more analyte concentrations were above SF-DODS reference database concentrations; however benthic toxicity tests indicated that none of the measured compounds were biologically available to cause toxicity in the 10-day sediment tests. In addition, the narrative WQO was met for the sediment elutriate test.

Comparison of BM-DU3-Comp bioaccumulation test tissue PCBs and dioxins/furans total TEQ concentrations to the SF-DODS database indicated that tissue levels for these compounds were above available SF-DODS reference site tissue screening values. Comparison of BM-DU3-03 individual sediment core predicted total PCBs and total mercury concentrations to the SF-DODS database indicated that the tissue total PCB concentration was above available SF-DODS reference site tissue screening values. All total PCB and dioxin/furan total TEQ sediment tissues concentrations were below invertebrate “effects” concentrations obtained from the USACE ERED database; the results of these analyses also indicated that the tissue concentrations were also below USFDA and USEPA action levels.

Based on these results, the BM-DU3-Comp sediments would be considered SUAD at SF-DODS.

## **8.3 Placement at Cullinan Ranch Restoration Project**

None of the analyte concentrations in the BM-DU1-Comp and BM-DU2-Comp sediments were above CRRP screening criteria.

In the BM-DU3-Comp sediment sample, the measured cadmium, copper, lead, mercury, zinc, and total PCBs concentrations were above the CRRP wetland cover screening criteria. Benthic toxicity tests indicated that none of the measured compounds were biologically available to cause toxicity in the 10-day sediment tests.

Due to elevated mercury and total PCBs above CRRP screening criteria, the individual sediment cores that comprised the BM-DU3-Comp sediment were evaluated for mercury and total PCBs. The results of this analysis indicated that the BM-DU3-01, BM-DU3-02, and BM-DU3-03 sediments were above CRRP screening criteria. The BM-DU3-04, and BM-DU3-05 sediments were below the mercury and total PCB CRRP screening criteria.

Based on these results, the BM-DU1-Comp, BM-DU2-Comp, BM-DU3-04, and BM-DU3-05 sediments would be considered suitable for placement at CRRP and the BM-DU3-01, BM-DU3-02, and BM-DU3-03 sediments would not be considered suitable for placement at CRRP.

#### **8.4 Placement at Montezuma Wetlands Restoration Project**

None of the analyte concentrations in the BM-DU1-Comp and BM-DU2-Comp sediments were above MWRP screening criteria.

In the BM-DU3-Comp sediment sample, the measured cadmium, copper, lead, mercury, zinc, and total PCBs concentrations were above the CRRP wetland cover screening criteria. Benthic toxicity tests indicated that none of the measured compounds were biologically available to cause toxicity in the 10-day sediment tests.

Due to elevated mercury and total PCBs above MWRP screening criteria, the individual sediment cores that comprised the BM-DU3-Comp sediment were evaluated for mercury and total PCBs. The results of this analysis indicated that the BM-DU3-01, BM-DU3-02, and BM-DU3-03 sediments were above MWRP screening criteria. The BM-DU3-04, and BM-DU3-05 sediments were below the mercury and total PCB MWRP screening criteria.

The results of the Berkeley Marina MET elutriate analyses indicated that none of the metals exceeded the MWRP screening concentrations. The narrative water quality objective was met for the modified sediment elutriate tests.

The results of the BM-DU3-Comp DI-WET analyses indicated that none of the metals exceeded MWRP screening concentrations.

Based on these results, the BM-DU1-Comp, BM-DU2-Comp, BM-DU3-04, and BM-DU3-05 sediments would be considered suitable for placement at MWRP as cover material. The BM-DU3-01, BM-DU3-02, and BM-DU3-03 sediments would not be considered suitable for placement at MWRP as cover material, but suitable for use as foundation material.

**8.5 Z-layer Assessment**

Due to an exceedance of the SF-Bay Bioaccumulation Trigger or TMDL Threshold for mercury, total PCBs, and dioxins/furans, the BM-DU3-Z-layer sediment composite sample was submitted for analysis of mercury, total PCBs, and dioxins/furans. As the BM-DU3-Z-layer composite sediment mercury, total PCBs, and dioxins/furans concentrations were greater than the concentrations for each of these constituents in the proposed dredge material, additional assessment of the Z-layer sediment for mercury, total PCBs, and dioxins/furans was performed and will be submitted under separate cover.

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## **Appendix A**

### **Sampling Field Logs and Data Sheets**

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### Sediment Core Collection Form

Station ID: BM - DU 1 - 01 Date: 3 / 15 / 2023

Project Name: Berkeley Marina Project No.: 32289

Coordinates: 37.868791 Lat/Northing: 37.868791 Long/Easting: -122.320392

Vertical Datum: MLLW MLW Other: \_\_\_\_\_

Depth Measurement: Leadline Sounder \_\_\_\_\_

Project Depth: (-8<sup>ft</sup> PD) - 9 ftt + over Overdredge: 1 ft

Site Characteristics: + 0.5 z = 9.5 ft total

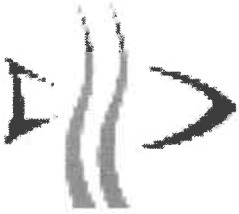
	Attempt 1	Attempt 2
Time:	<u>0925</u>	
(A) Measured Water Depth	<u>10.2 - 10.2 ft</u>	
(B) Tide Height	<u>3.2 ft</u>	
(C) Mudline Elevation (A-B=C)	<u>10.2 - 3.2 = 7.0 ft</u>	
(D) Calculated Core Length (PD+OD-C=D)	<u>9.0 - 7.0 = 2.5 ft</u>	
Estimated Penetration	<u>4.5 ft</u>	
Description of Core Drive	<u>Surgey *</u>	
Refusal Encountered?		
Total Core Length Recovered	<u>2.0 + 0.5 z-layer ft</u>	

### Core Characteristics:

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		

Comments: \* Some resistance during coring

Recorded By: TF



**Sediment Core Collection Form**

**Station ID:** BM - DU 1 - 02 **Date:** 3 / 15 / 2023

**Project Name:** Berkeley Marina **Project No.:** 37289

**Coordinates:**  
Lat/Northing: 37.867570 Long/Easting: 722.320652

**Vertical Datum:**  MLLW  MLW  Other:

**Depth Measurement:**  Sounder  Leadline

**Project Depth:** 8.0 ft **Overdredge:** 1.0 ft

**Site Characteristics:** -9.0 ft + 0.5 ft E-layer

	Attempt 1	Attempt 2
<b>Time:</b>	<u>1010</u>	
(A) Measured Water Depth	<u>7.4 ft</u>	
(B) Tide Height	<u>2.4 ft</u>	
(C) Mudline Elevation (A-B=C)	<u>5.0 ft</u>	
(D) Calculated Core Length (PD+OD-C=D)	<u>9.5 - 5 = 4.5 ft</u>	
Estimated Penetration	<u>5.0 ft</u>	
Description of Core Drive	<u>Smooth-ish</u>	
Refusal Encountered?	<u>Y</u>	
Total Core Length Recovered	<u>4.0 ft + 0.5 ft E-layer</u>	

**Core Characteristics:**

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		
Comments:		

Recorded By:



### Sediment Core Collection Form

**Station ID:** BM - DU 1 - 03 **Date:** 3 / 15 / 2023

**Project Name:** Berkeley Marina **Project No.:** 37289

**Coordinates:**  
Lat/Northing: 37.867392 Long/Easting: -122.319363

**Vertical Datum:** MLLW MLW Other:

**Depth Measurement:** Sounder Leadline

**Project Depth:** 8 ft **Overdredge:** 1 ft

**Site Characteristics:** -9.5 total including z-layer  
ft

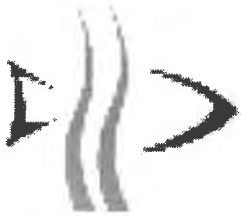
	Attempt 1	Attempt 2
<b>Time:</b>	<del>1005</del> 1045	
(A) Measured Water Depth	6.9 ft	
(B) Tide Height	1.7 ft	
(C) Mudline Elevation (A-B=C)	5.2 ft	
(D) Calculated Core Length (PD+OD-C=D)	9.5 - 5.2 = 4.3 ft	
Estimated Penetration	4.8 ft	
Description of Core Drive	Smooth	
Refusal Encountered?		
Total Core Length Recovered	3.8 ft + 0.5 ft z-layer	

**Core Characteristics:**

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		

**Comments:**

Recorded By: [Signature]



### Sediment Core Collection Form

Station ID: BM - DU 1 - 04 Date: 3 / 15 / 2023

Project Name: Berkeley Marina Project No.: 37289

Coordinates:  
Lat/Northing: 37.866002 Long/Easting: -122.39202

Vertical Datum: MLLW MLW Other:

Depth Measurement: Sounder Leadline

Project Depth: 8 ft Overdredge: 1 ft

Site Characteristics: 9.5 ft total (including z-layer) to .5 z-layer

	Attempt 1	Attempt 2
Time:	<u>1120</u>	
(A) Measured Water Depth	<u>4.6 ft</u>	
(B) Tide Height	<u>1.1 ft</u>	
(C) Mudline Elevation (A-B=C)	<u>3.5 ft</u>	
(D) Calculated Core Length (PD+OD-C=D)	<u>9.5 - 3.5 = 6 ft</u>	
Estimated Penetration	<u>7.0 ft</u>	
Description of Core Drive	<u>Surgey *</u>	
Refusal Encountered?		
Total Core Length Recovered	<u>5.5 ft 0.5 z layer ft</u>	

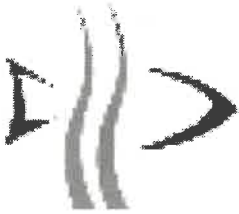
6.0 ft total core length

#### Core Characteristics:

Sediment Type	<u>cobble, gravel, sand C M F, silt clay, organic matter</u>	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	<u>gray, black, brown, brown surface, olivine</u>	gray, black, brown, brown surface, olivine
Sediment Odor	<u>None, slight, mod, strong H<sub>2</sub>S, petroleum, septic</u>	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		

Comments: \* some resistance

Recorded By: TF



### Sediment Core Collection Form

Station ID: BM - DU 1 - 05 Date: 3 / 15 / 2023

Project Name: Berkeley Marina Project No.: 37289

Coordinates: 37.864905 Lat/Northing: 37.864905 Long/Easting: 122.318300

Vertical Datum: MLLW MLW Other:

Depth Measurement: Sounder Leadline

Project Depth: 8.0 ft Overdredge: 1.0 ft to 5' (2 layer)

Site Characteristics: 9.5 ft total length

	Attempt 1	Attempt 2
Time:	<u>1:55</u>	
(A) Measured Water Depth	<u>8.0 ft</u>	
(B) Tide Height	<u>0.5 ft</u>	
(C) Mudline Elevation (A-B=C)	<u>7.5 ft</u>	
(D) Calculated Core Length (PD+OD-C=D)	<u>9.5 - 7.5 = 2 ft</u>	
Estimated Penetration	<u>3.0 ft</u>	
Description of Core Drive	<u>Good</u>	
Refusal Encountered?	<u>N</u>	
Total Core Length Recovered	<u>2.0 ft</u>	

(includes 2-layer)

**Core Characteristics:**

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		
Comments:		

Recorded By: TH



**Sediment Core Collection Form**

Station ID: BM - DU - 06 Date: 3 / 15 / 2023

Project Name: Berkeley Marina Project No.: 37289

Coordinates: Lat/Northing: 37.864126 Long/Easting: -122.320010

Vertical Datum: MLLW MLW Other: \_\_\_\_\_

Depth Measurement: Sounder Leadline

Project Depth: -8 ft Overdredge: -1 ft

Site Characteristics: 9.5 total length

	Attempt 1	Attempt 2
Time:	<u>1300</u>	
(A) Measured Water Depth	<u>8.5</u> <u>8.2 ft</u>	
(B) Tide Height	<u>0.0</u> <u>ft</u>	
(C) Mudline Elevation (A-B=C)	<u>8.5</u> <u>8.2 ft</u>	
(D) Calculated Core Length (PD+OD-C=D)	<u>9.5 - 8.2 = 1.3 ft</u>	
Estimated Penetration	<u>5.0</u> <u>ft</u>	
Description of Core Drive	<u>Smooth</u>	
Refusal Encountered?	<u>N</u>	
Total Core Length Recovered	<u>1.3 ft (includes z-layer)</u>	

**Core Characteristics:**

Sediment Type	<u>2</u> cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	<u>8</u> gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	<u>8</u> None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		
Comments:		

Recorded By: [Signature]



### Sediment Core Collection Form

**Station ID:** BM - DU 1 - 07 **Date:** 3 / 15 / 2023

**Project Name:** Berkeley Marina **Project No.:** 37289

**Coordinates:**  
Lat/Northing: 37-863699 Long/Easting: 127-318800

**Vertical Datum:** MLLW MLW Other:

**Depth Measurement:** Sounder Leadline

**Project Depth:** 8.0 ft **Overdredge:** 1 ft

**Site Characteristics:**

	Attempt 1	Attempt 2
<b>Time:</b>	1335	
(A) Measured Water Depth	6.8 ft	
(B) Tide Height	-0.1 ft	
(C) Mudline Elevation (A-B=C)	6.9 ft	
(D) Calculated Core Length (PD+OD-C=D)	9.5 - 6.9 = 2.6 ft	
Estimated Penetration	4.0 ft	
Description of Core Drive	Smooth	
Refusal Encountered?	N	
Total Core Length Recovered	2.6 ft (includes z-layer)	

**Core Characteristics:**

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		
Comments:		

Recorded By:





**Sediment Core Collection Form**

**Station ID:** BM - DU 1-08 **Date:** 3/15/2023

**Project Name:** Berkeley Marina **Project No.:** 37289

**Coordinates:** 37.862692 **Long/Easting:** -122 319453

**Vertical Datum:** MLLW MLW Other:

**Depth Measurement:** Sounder Leadline

**Project Depth:** 8.0 ft **Overdredge:** 1.0 ft

**Site Characteristics:**

	Attempt 1	Attempt 2
<b>Time:</b>	1420	
(A) Measured Water Depth	7.0 ft	
(B) Tide Height	0.1 ft	
(C) Mudline Elevation (A-B=C)	6.9 ft	
(D) Calculated Core Length (PD+OD-C=D)	9.5 - 6.9 = 2.6 ft	
Estimated Penetration	4.0 ft	
Description of Core Drive	Smooth	
Refusal Encountered?	N	
Total Core Length Recovered	2.6 ft	

(includes 0.5 ft Z-layer)

**Core Characteristics:**

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		

Comments:

Recorded By: TF



**Sediment Core Collection Form**

Station ID: BM - DU 2 - 01 Date: 3/15/2023

Project Name: Berkeley Marina Project No.: 37289

Coordinates: 37.867822 Lat/Northing: 122.317680 Long/Easting:

Vertical Datum: MLLW MLW Other: \_\_\_\_\_

Depth Measurement: Sounder Leadline

Project Depth: - 8 ft Overdredge: - 1 ft

**Site Characteristics:**

	Attempt 1	Attempt 2
Time:	1505	1520
(A) Measured Water Depth	7.6 ft	7.6 ft
(B) Tide Height	0.5 ft	0.5 ft
(C) Mudline Elevation (A-B=C)	7.6 - 0.5 = 7.1 ft	7.1 ft
(D) Calculated Core Length (PD+OD-C=D)	9.5 - 7.1 = 2.4 ft	9.0 - 7.1 = 1.9 ft
Estimated Penetration	3.5 ft	3.0 ft
Description of Core Drive	Smooth	Smooth
Refusal Encountered?	N	N
Total Core Length Recovered	2.4 ft	1.9 ft

(includes 2-layer) (excludes 2-layer)

**Core Characteristics:**

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, (brown surface) olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		

Comments:

Recorded By:



### Sediment Core Collection Form

Station ID: BM - DU 2-02 Date: 3 / 16 / 2023

Project Name: Berkeley Marina Project No.: 37289

Coordinates: Lat/Northing: 37.866998 Long/Easting: -122.76870

Vertical Datum: MLLW MLW Other:

Depth Measurement: Sounder Leadline

Project Depth: 0 ft Overdredge: 1 ft

Site Characteristics: +0.5 z layer

	Attempt 1	Attempt 2
Time:	<u>0820</u>	<u>0840</u>
(A) Measured Water Depth	<u>12.7 ft</u>	<u>12.7 ft</u>
(B) Tide Height	<u>0.4 ft</u>	<u>0.4 ft</u>
(C) Mudline Elevation (A-B=C)	<u>12.7 - 0.4 = 12.3 ft</u>	<u>12.3 ft</u>
(D) Calculated Core Length (PD+OD-C=D)	<u>11.5 - 12.3 = -0.8 ft</u>	<u>3.7 ft</u>
Estimated Penetration	<u>5.5 ft</u>	<u>4.0 ft</u>
Description of Core Drive	<u>Minor refusal</u>	<u>Minor Refusal</u>
Refusal Encountered?	<u>N</u>	<u>N</u>
Total Core Length Recovered	<u>4.2 ft</u>	<u>3.7 ft</u>

(includes z-layer) (excludes z-layer)

### Core Characteristics:

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering	<u>1 ft brown, rest gray</u>	
Comments:		

Recorded By: TF



**Sediment Core Collection Form**

Station ID: BM - DU 2-03 Date: 3/16/2023

Project Name: Berkeley Marina Project No.: 37289

Coordinates: 37.867665 Lat/Northing: 37.867665 Long/Easting: -122.313660

Vertical Datum: MLLW MLW Other: (circle)

Depth Measurement: Sounder Leadline

Project Depth: 10 ft Overdredge: 1 ft

Site Characteristics: +0.5 z layer

	Attempt 1	Attempt 2
Time:	<del>0915</del> 0915	0925
(A) Measured Water Depth	12.3 ft	<del>12.3</del> 12.1 ft
(B) Tide Height	4.7 ft	<del>4.7</del> 4.5 ft
(C) Mudline Elevation (A-B=C)	12.3 - 4.7 = 7.6 ft	7.6 ft
(D) Calculated Core Length (PD+OD-C=D)	11.5 - 7.6 = 3.9 ft	3.4 ft
Estimated Penetration	1.5 ft	3.4 ft
Description of Core Drive	Minor Refusal	Minor Ref
Refusal Encountered?	N	N
Total Core Length Recovered	3.9 ft	3.4 ft

(includes z-layer) (excludes z-layer)

Core Characteristics:

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		

Comments: Cruse boat docked next to site.

Recorded By: TF



**Sediment Core Collection Form**

Station ID: BM - DU 2-04 Date: 3/16/2023

Project Name: Berkeley Marina Project No.: 31289

Coordinates: Lat/Northing: 37.862765 Long/Easting: 122.315064

Vertical Datum: MLLW MLW Other:

Depth Measurement: Leadline Sounder

Project Depth: 10 ft Overdredge: 1 ft

Site Characteristics: +0.5 z-layer

	Attempt 1	Attempt 2
Time:	<u>11:00</u>	<u>1015</u>
(A) Measured Water Depth	<u>12.5 ft</u>	<u>12.2 ft</u>
(B) Tide Height	<u>3.9 ft</u>	<u>3.6 ft</u>
(C) Mudline Elevation (A-B=C)	<u>12.5 - 3.9 = 8.6 ft</u>	<u>8.6 ft</u>
(D) Calculated Core Length (PD+OD-C=D)	<u>11.5 - 8.6 = 2.9 ft</u>	<u>2.4 ft</u>
Estimated Penetration	<u>4.0 ft</u>	<u>4.0</u>
Description of Core Drive	<u>Mild refusal</u>	<u>Mild refusal</u>
Refusal Encountered?		
Total Core Length Recovered	<u>2.9 ft</u>	<u>2.4 ft</u>

(includes z-layer) (excludes z-layer)

**Core Characteristics:**

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		

Comments:

Recorded By: TF



### Sediment Core Collection Form

**Station ID:** BM - DU 2 - OS **Date:** 3 / 16 / 2023

**Project Name:** Berkeley Marina **Project No.:** 37289

**Coordinates:**  
Lat/Northing: 37.868606 Long/Easting: -122.316062

**Vertical Datum:** MLLW MLW Other: \_\_\_\_\_

**Depth Measurement:** Sounder Leadline

**Project Depth:** 8 ft **Overdredge:** 1 ft

**Site Characteristics:** +0.5 2-layer

	Attempt 1	Attempt 2
<b>Time:</b>	<u>1100</u>	<u>1130</u>
(A) Measured Water Depth	<u>8.0 ft</u>	<u>7.3 ft</u>
(B) Tide Height	<u>2.6 ft</u>	<u>1.9 ft</u>
(C) Mudline Elevation (A-B=C)	<u>5.4 ft</u>	<u>5.4 ft</u>
(D) Calculated Core Length (PD+OD-C=D)	<u>9.5 - 5.4 = 4.1 ft</u>	<u>3.6 ft</u>
Estimated Penetration	<u>5.5 ft</u>	<u>4.5 ft</u>
Description of Core Drive	<u>Mild refusal</u>	<u>Mild refusal</u>
Refusal Encountered?	<u>Yes</u>	<u>Yes</u>
Total Core Length Recovered	<u>4.1 ft</u>	<u>3.6 ft</u>

(includes 2-layer) (excludes 2-layer)

**Core Characteristics:**

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		
Comments:		

Recorded By: TF



### Sediment Core Collection Form

**Station ID:** BM - DU 3 - 01 **Date:** 3 / 16 / 2023

**Project Name:** Berkeley Marina **Project No.:** 37289

**Coordinates:**  
Lat/Northing: 37.865979 Long/Easting: 122.316354

**Vertical Datum:** MLLW MLW Other:

**Depth Measurement:** Sounder Leadline

**Project Depth:** 8 ft **Overdredge:** 1 ft

**Site Characteristics:**

+0.5 z-layer

	Attempt 1	Attempt 2
<b>Time:</b>	1220	1235
(A) Measured Water Depth	8.2 ft	7.9 ft
(B) Tide Height	0.9 ft	0.6 ft
(C) Mudline Elevation (A-B=C)	7.3 ft	7.3 ft
(D) Calculated Core Length (PD+OD-C=D)	9.5 - 7.3 = 2.2 ft	2.7 ft
Estimated Penetration	3.5 ft	3.5 ft
Description of Core Drive	Smooth	Smooth
Refusal Encountered?	N	N
Total Core Length Recovered	2.2 ft	1.7 ft

(includes z-layer)

(excludes z-layer)

**Core Characteristics:**

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		

Comments:

Recorded By:

TF



### Sediment Core Collection Form

Station ID: BM - DU 3 - 02 Date: 3 / 16 / 2023

Project Name: Berkeley Marina Project No.: 37289

Coordinates: 37.865107 Long/Easting: -122.316458

Vertical Datum: MLLW MLW Other: \_\_\_\_\_

Depth Measurement: Leadline Sounder \_\_\_\_\_

Project Depth: 10 ft Overdredge: 1 ft

**Site Characteristics:**

+0.5 z-layer

	Attempt 1	Attempt 2
Time:	<u>1300</u>	<u>1315</u>
(A) Measured Water Depth	<u>8.8 ft</u>	<u>8.6 ft</u>
(B) Tide Height	<u>0.3 ft</u>	<u>0.1 ft</u>
(C) Mudline Elevation (A-B=C)	<u>8.5 ft</u>	<u>8.5 ft</u>
(D) Calculated Core Length (PD+OD-C=D)	<u>11.5 - 8.5 = 3.0 ft</u>	<u>2.5 ft</u>
Estimated Penetration	<u>2.9 - 3.0 = 3.5 ft</u>	<u>3.5 ft</u>
Description of Core Drive	<u>Smooth</u>	<u>Smooth-ish</u>
Refusal Encountered?	<u>N</u>	<u>N</u>
Total Core Length Recovered	<u>3.0 ft</u>	<u>2.5 ft</u>

(includes z-layer)

(excludes z-layer)

**Core Characteristics:**

Sediment Type	<u>cobble, gravel, sand C M F, silt clay, organic matter</u>	<u>cobble, gravel, sand C M F, silt clay, organic matter</u>
Sediment Color	<u>gray, black, brown, brown surface, olivine</u>	<u>gray, black, brown, brown surface, olivine</u>
Sediment Odor	<u>None, slight, mod, strong H<sub>2</sub>S, petroleum, septic</u>	<u>None, slight, mod, strong H<sub>2</sub>S, petroleum, septic</u>
Layering		

Comments:

Recorded By:

TF





### Sediment Core Collection Form

Station ID: BM - DU 3 - 03 Date: 3 / 16 / 2023

Project Name: Berkeley Marina Project No.: 37289

Coordinates: Lat/Northing: 37.864532 Long/Easting: -122.314948

Vertical Datum: MLLW MLW Other: \_\_\_\_\_

Depth Measurement: Sounder Leadline

Project Depth: 8 ft Overdredge: 1 ft

Site Characteristics: 0.5 z-layer

	Attempt 1	Attempt 2
Time:	<u>1345</u>	<u>1355</u>
(A) Measured Water Depth	<u>6.8 ft</u>	<u>6.7 ft</u>
(B) Tide Height	<u>-0.2 ft</u>	<u>-0.3 ft</u>
(C) Mudline Elevation (A-B=C)	<u>7.0 ft</u>	<u>7.0 ft</u>
(D) Calculated Core Length (PD+OD-C=D)	<u>9.5 - 7.0 = 2.5 ft</u>	<u>2.0 ft</u>
Estimated Penetration	<u>3.5 ft</u>	<u>4.0 ft</u>
Description of Core Drive	<u>Smooth</u>	<u>Smooth</u>
Refusal Encountered?	<u>N</u>	<u>N</u>
Total Core Length Recovered	<u>2.5 ft</u>	<u>2.0 ft</u>

(includes z-layer)

(excludes z-layer)

Core Characteristics:

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		

Comments:

Recorded By: TF



**Sediment Core Collection Form**

Station ID: BM - DU 3.04 Date: 3/16/2023

Project Name: Berkeley Marina Project No.: 37289

Coordinates: 37.865503 Long/Easting: -122.312214

Vertical Datum: 37.865308 MLLW MLW Other: -122.312181

Depth Measurement: Sounder Leadline

Project Depth: 8 ft Overdredge: 1 ft

**Site Characteristics:**

*f0.5 2-layer (37.865532 -122.312181)*

	Attempt 1	Attempt 2
Time:	1450	1525
(A) Measured Water Depth	<del>8.0</del> 8.0 ft	8.6 ft
(B) Tide Height	-0.4 ft	-0.2 ft
(C) Mudline Elevation (A-B=C)	8.6 8.4 ft	8.6 ft
(D) Calculated Core Length (PD+OD-C=D)	9.5 - 8.4 = 1.1 ft	9.0 - 8.6 = 0.4 ft
Estimated Penetration	3 ft	3.0 ft
Description of Core Drive	Smooth	Smooth
Refusal Encountered?	N	N
Total Core Length Recovered	1.1 ft	0.4 ft

(includes 2-layer) (excludes 2-layer)

**Core Characteristics:**

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic	None, slight, mod, strong H <sub>2</sub> S, petroleum, septic
Layering		

Comments: Forced to move & reposit from due to slip renters having right of way.

Recorded By:

*TF*



**Sediment Core Collection Form**

17

Station ID: BM - DU 3 - ~~05~~ 05 Date: 3 / ~~16~~ 2023

Project Name: Berkeley Marina Project No.: 37289

Coordinates: Lat/Northing: 37.866 295 Long/Easting: -122.33195

Vertical Datum: MLLW MLW Other:

Depth Measurement: Sounder Leadline

Project Depth: 12 ft Overdredge: 1 ft

Site Characteristics:

40.5 z-layer

	Attempt 1	Attempt 2
Time:	0740	0800
(A) Measured Water Depth	16.9 ft	16.9 ft
(B) Tide Height	5.9 ft	5.9 ft
(C) Mudline Elevation (A-B=C)	16.9 - 5.9 = 11.0 ft	16.9 - 5.9 = 11.0 ft
(D) Calculated Core Length (PD+OD-C=D)	13.5 - 11 = 2.5 ft	2.0 ft
Estimated Penetration	3.0 ft	2.5 ft
Description of Core Drive	Smooth	Smooth
Refusal Encountered?	N	N
Total Core Length Recovered	2.5 ft	2.0 ft

(includes z-layer)

(excludes z-layer)

Core Characteristics:

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H <sub>2</sub> S petroleum, septic	None, slight, mod, strong H <sub>2</sub> S petroleum, septic
Layering	1.2 ft brown, rest black	//

Comments:

Recorded By:

TF

## **Appendix B**

### **Eurofins Data Report for the Sediment Analyses**

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# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jeff Cotsifas  
Pacific EcoRisk Inc  
2250 Cordelia Rd  
Fairfield, California 94534

Generated 5/3/2023 9:58:36 AM

## JOB DESCRIPTION

Berkley Marina (Sediment)

## JOB NUMBER

570-133080-1

## Job Notes

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The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Calscience Project Manager.

## Authorization



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5/3/2023 9:58:36 AM

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Authorized for release by  
Carla Hollowell, Project Manager I  
[Carla.Hollowell@et.eurofinsus.com](mailto:Carla.Hollowell@et.eurofinsus.com)  
(714)895-5494



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Client Sample Results . . . . .	6
Surrogate Summary . . . . .	28
QC Sample Results . . . . .	30
QC Association Summary . . . . .	43
Lab Chronicle . . . . .	47
Certification Summary . . . . .	49
Method Summary . . . . .	52
Sample Summary . . . . .	53
Subcontract Data . . . . .	54
Chain of Custody . . . . .	102
Receipt Checklists . . . . .	116

# Definitions/Glossary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### GC Semi VOA

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count



# Case Narrative

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

**Job ID: 570-133080-1**

**Laboratory: Eurofins Calscience**

## Narrative

### Job Narrative 570-133080-1

#### Receipt

The samples were received on 3/29/2023 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.8°C.

The samples were frozen after collection (prior to holding time expiration and/or pursuant to information obtained from the client) at -18C, and remained frozen until the laboratory was ready to prepare the samples for analysis. Eurofins Calscience, Inc. follows SWAMP criteria and the Puget Sound Protocol (USEPA/PSWQAT, 1997, Table 2) for holding times in marine tissues and / or sediment samples, which states holding times may be extended up to six months to one year (two years for metals) if stored frozen at -18C after collection. Therefore, the sample results have not been flagged as exceeding the EPA Method recommended holding times.

#### SUBCONTRACTING

The following analysis was subcontracted to McCampbell Analytical, Inc.: EPA 9060 / General Subcontract Method

#### **GC/MS Semi VOA**

Method 8270C\_SIM\_PAH: The following sample was diluted due to the nature of the sample matrix: BM-DU1-Comp (570-133080-1). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### **PCBs**

Method 8270C\_SIM\_CON: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-317359 and analytical batch 570-319311 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### **Pesticides**

Method 8081A: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 570-317364 and analytical batch 570-320263 recovered outside control limits for the following analytes: Endrin aldehyde.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### **Metals**

Method 6020: The method blank for preparation batch 570-316396 and analytical batch 570-317008 contained Copper above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### **General Chemistry**

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### **Geotechnical**

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### **Subcontract Lab non-Sister Lab**

See attached subcontract report.

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS)

**Client Sample ID: BM-DU1-Comp**  
**Date Collected: 03/15/23 09:25**  
**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-1**  
**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.88	0.25	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-18	ND		0.44	0.21	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-28	ND		0.44	0.22	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-31	ND		0.44	0.19	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-33	ND		0.44	0.10	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-44	ND		0.44	0.26	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-49	ND		0.44	0.24	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-52	ND		0.44	0.17	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-56	ND		0.44	0.10	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-60	ND		0.44	0.28	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-66	ND		0.44	0.24	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-70	ND		0.44	0.20	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-74	ND		0.44	0.23	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-87	ND		0.44	0.27	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-95	ND		0.44	0.14	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-97	ND		0.44	0.30	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
<b>PCB-99</b>	<b>0.96</b>		0.44	0.19	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
<b>PCB-101</b>	<b>1.3</b>		0.44	0.24	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-105	ND		0.44	0.23	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
<b>PCB-110</b>	<b>2.3</b>		0.44	0.20	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
<b>PCB-118</b>	<b>2.6</b>		0.44	0.17	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-128	ND		0.44	0.30	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
<b>PCB-132/153</b>	<b>2.1</b>		0.88	0.53	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
<b>PCB-138/158</b>	<b>1.2</b>		0.88	0.53	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-141	ND		0.44	0.14	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-149	ND		0.44	0.24	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-151	ND		0.44	0.20	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-156	ND		0.44	0.21	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-170	ND		0.44	0.23	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-174	ND		0.44	0.13	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-177	ND		0.44	0.21	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
<b>PCB-180</b>	<b>1.4</b>		0.44	0.18	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-183	ND		0.44	0.27	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-187	ND		0.44	0.20	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-194	ND		0.44	0.24	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-195	ND		0.44	0.14	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-201	ND		0.44	0.30	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1
PCB-203	ND		0.44	0.15	ug/Kg	✱	04/04/23 20:56	04/13/23 20:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	77		20 - 139	04/04/23 20:56	04/13/23 20:33	1
p-Terphenyl-d14	129		37 - 165	04/04/23 20:56	04/13/23 20:33	1

**Client Sample ID: BM-DU2-Comp**  
**Date Collected: 03/15/23 15:05**  
**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-2**  
**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.74	0.21	ug/Kg	✱	04/05/23 19:46	04/13/23 20:55	1
PCB-18	ND		0.37	0.17	ug/Kg	✱	04/05/23 19:46	04/13/23 20:55	1
PCB-28	ND		0.37	0.18	ug/Kg	✱	04/05/23 19:46	04/13/23 20:55	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: BM-DU2-Comp

Date Collected: 03/15/23 15:05

Date Received: 03/29/23 09:45

Lab Sample ID: 570-133080-2

Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-31	ND		0.37	0.16	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-33	ND		0.37	0.087	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-44	ND		0.37	0.22	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-49	ND		0.37	0.20	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
<b>PCB-52</b>	<b>0.32</b>	<b>J</b>	0.37	0.15	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-56	ND		0.37	0.087	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-60	ND		0.37	0.24	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-66	ND		0.37	0.20	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-70	ND		0.37	0.17	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-74	ND		0.37	0.19	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-87	ND		0.37	0.23	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-95	ND		0.37	0.12	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-97	ND		0.37	0.26	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
<b>PCB-99</b>	<b>0.69</b>		0.37	0.16	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
<b>PCB-101</b>	<b>0.88</b>		0.37	0.20	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-105	ND		0.37	0.19	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
<b>PCB-110</b>	<b>0.55</b>		0.37	0.16	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
<b>PCB-118</b>	<b>0.52</b>		0.37	0.15	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-128	ND		0.37	0.25	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
<b>PCB-132/153</b>	<b>1.6</b>		0.74	0.44	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
<b>PCB-138/158</b>	<b>1.7</b>		0.74	0.45	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-141	ND		0.37	0.12	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
<b>PCB-149</b>	<b>0.96</b>		0.37	0.20	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
<b>PCB-151</b>	<b>0.20</b>	<b>J</b>	0.37	0.17	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-156	ND		0.37	0.17	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-170	ND		0.37	0.19	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-174	ND		0.37	0.11	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-177	ND		0.37	0.17	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-180	ND		0.37	0.15	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-183	ND		0.37	0.22	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-187	ND		0.37	0.16	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-194	ND		0.37	0.21	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-195	ND		0.37	0.11	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-201	ND		0.37	0.26	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
PCB-203	ND		0.37	0.13	ug/Kg	☼	04/05/23 19:46	04/13/23 20:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	77		20 - 139				04/05/23 19:46	04/13/23 20:55	1
p-Terphenyl-d14	129		37 - 165				04/05/23 19:46	04/13/23 20:55	1

Client Sample ID: BM-DU3-Comp

Date Collected: 03/16/23 12:20

Date Received: 03/29/23 09:45

Lab Sample ID: 570-133080-3

Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.97	0.28	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-18	ND		0.49	0.23	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
<b>PCB-28</b>	<b>3.6</b>		0.49	0.24	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
<b>PCB-31</b>	<b>1.7</b>		0.49	0.22	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-33	ND		0.49	0.11	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
<b>PCB-44</b>	<b>5.2</b>		0.49	0.29	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1

Eurofins Calscience

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: BM-DU3-Comp

Date Collected: 03/16/23 12:20

Date Received: 03/29/23 09:45

Lab Sample ID: 570-133080-3

Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-49	5.0		0.49	0.27	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-52	4.8		0.49	0.19	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-56	1.2		0.49	0.11	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-60	ND		0.49	0.31	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-66	6.0		0.49	0.27	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-70	4.4		0.49	0.23	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-74	2.0		0.49	0.25	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-87	ND		0.49	0.30	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-95	4.8		0.49	0.16	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-97	0.94		0.49	0.34	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-99	4.9		0.49	0.21	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-101	7.1		0.49	0.26	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-105	ND		0.49	0.26	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-110	7.2		0.49	0.22	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-118	6.2		0.49	0.19	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-128	ND		0.49	0.33	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-132/153	9.1		0.97	0.58	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-138/158	9.0		0.97	0.59	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-141	ND		0.49	0.16	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-149	5.7		0.49	0.26	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-151	2.7		0.49	0.22	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-156	ND		0.49	0.23	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-170	ND		0.49	0.25	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-174	ND		0.49	0.14	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-177	1.2		0.49	0.23	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-180	3.9		0.49	0.20	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-183	1.4		0.49	0.30	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-187	3.2		0.49	0.22	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-194	ND		0.49	0.27	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-195	ND		0.49	0.15	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-201	ND		0.49	0.34	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
PCB-203	ND		0.49	0.17	ug/Kg	☼	04/05/23 19:46	04/13/23 21:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	75		20 - 139				04/05/23 19:46	04/13/23 21:16	1
p-Terphenyl-d14	141		37 - 165				04/05/23 19:46	04/13/23 21:16	1

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: SW846 8270C SIM - PAHs (GC/MS SIM)

**Client Sample ID: BM-DU2-Comp**

**Date Collected: 03/15/23 15:05**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-2**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		92	40	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
Acenaphthylene	ND		92	39	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
<b>Anthracene</b>	<b>57</b>	<b>J</b>	92	35	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
<b>Benzo[a]anthracene</b>	<b>100</b>		92	41	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
<b>Benzo[a]pyrene</b>	<b>150</b>		92	55	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
<b>Benzo[b]fluoranthene</b>	<b>140</b>		92	63	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
<b>Benzo[e]pyrene</b>	<b>90</b>	<b>J</b>	92	23	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
Benzo[g,h,i]perylene	ND		92	60	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
<b>Benzo[k]fluoranthene</b>	<b>130</b>		92	68	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
Biphenyl	ND		92	27	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
<b>Chrysene</b>	<b>190</b>		92	31	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
Dibenz(a,h)anthracene	ND		92	36	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
Dibenzothiophene	ND		92	52	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
2,6-Dimethylnaphthalene	ND		92	24	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
<b>Fluoranthene</b>	<b>160</b>		92	52	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
Fluorene	ND		92	41	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
Indeno[1,2,3-cd]pyrene	ND		92	66	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
1-Methylnaphthalene	ND		92	36	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
2-Methylnaphthalene	ND		92	34	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
1-Methylphenanthrene	ND		92	40	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
Naphthalene	ND		92	26	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
Perylene	ND		92	50	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
<b>Phenanthrene</b>	<b>71</b>	<b>J</b>	92	40	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
<b>Pyrene</b>	<b>250</b>		92	59	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5
1,6,7-Trimethylnaphthalene	ND		92	35	ug/Kg	☼	04/05/23 19:46	04/08/23 19:02	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	90		22 - 130	04/05/23 19:46	04/08/23 19:02	5
Nitrobenzene-d5	67		20 - 145	04/05/23 19:46	04/08/23 19:02	5
p-Terphenyl-d14	107		33 - 147	04/05/23 19:46	04/08/23 19:02	5

**Client Sample ID: BM-DU3-Comp**

**Date Collected: 03/16/23 12:20**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-3**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		120	53	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
Acenaphthylene	ND		120	51	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
<b>Anthracene</b>	<b>53</b>	<b>J</b>	120	47	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
<b>Benzo[a]anthracene</b>	<b>130</b>		120	55	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
<b>Benzo[a]pyrene</b>	<b>140</b>		120	72	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
<b>Benzo[b]fluoranthene</b>	<b>180</b>		120	84	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
<b>Benzo[e]pyrene</b>	<b>89</b>	<b>J</b>	120	30	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
Benzo[g,h,i]perylene	ND		120	80	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
<b>Benzo[k]fluoranthene</b>	<b>150</b>		120	90	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
Biphenyl	ND		120	35	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
<b>Chrysene</b>	<b>230</b>		120	40	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
Dibenz(a,h)anthracene	ND		120	47	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
Dibenzothiophene	ND		120	68	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
2,6-Dimethylnaphthalene	ND		120	31	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
<b>Fluoranthene</b>	<b>250</b>		120	68	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: SW846 8270C SIM - PAHs (GC/MS SIM) (Continued)

**Client Sample ID: BM-DU3-Comp**

**Date Collected: 03/16/23 12:20**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-3**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	ND		120	54	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
Indeno[1,2,3-cd]pyrene	ND		120	87	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
1-Methylnaphthalene	ND		120	48	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
2-Methylnaphthalene	ND		120	45	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
1-Methylphenanthrene	ND		120	53	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
Naphthalene	ND		120	35	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
Perylene	ND		120	66	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
<b>Phenanthrene</b>	<b>100</b>	<b>J</b>	120	53	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
<b>Pyrene</b>	<b>360</b>		120	78	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5
1,6,7-Trimethylnaphthalene	ND		120	46	ug/Kg	☼	04/05/23 19:46	04/08/23 19:23	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	88		22 - 130	04/05/23 19:46	04/08/23 19:23	5
Nitrobenzene-d5	63		20 - 145	04/05/23 19:46	04/08/23 19:23	5
p-Terphenyl-d14	109		33 - 147	04/05/23 19:46	04/08/23 19:23	5

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: SW846 8270C SIM - PAHs (GC/MS SIM) - DL

**Client Sample ID: BM-DU1-Comp**

**Date Collected: 03/15/23 09:25**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-1**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		110	47	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
Acenaphthylene	ND		110	46	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
Anthracene	ND		110	42	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
<b>Benzo[a]anthracene</b>	<b>63</b>	<b>J</b>	110	49	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
Benzo[a]pyrene	ND		110	65	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
Benzo[b]fluoranthene	ND		110	75	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
<b>Benzo[e]pyrene</b>	<b>31</b>	<b>J</b>	110	27	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
Benzo[g,h,i]perylene	ND		110	72	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
Benzo[k]fluoranthene	ND		110	81	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
Biphenyl	ND		110	32	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
<b>Chrysene</b>	<b>57</b>	<b>J</b>	110	36	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
Dibenz(a,h)anthracene	ND		110	42	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
Dibenzothiophene	ND		110	61	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
2,6-Dimethylnaphthalene	ND		110	28	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
<b>Fluoranthene</b>	<b>200</b>		110	61	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
Fluorene	ND		110	48	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
Indeno[1,2,3-cd]pyrene	ND		110	78	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
1-Methylnaphthalene	ND		110	43	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
2-Methylnaphthalene	ND		110	41	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
1-Methylphenanthrene	ND		110	48	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
Naphthalene	ND		110	31	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
Perylene	ND		110	59	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
<b>Phenanthrene</b>	<b>75</b>	<b>J</b>	110	48	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
<b>Pyrene</b>	<b>240</b>		110	70	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
1,6,7-Trimethylnaphthalene	ND		110	41	ug/Kg	✳	04/04/23 20:56	04/12/23 14:43	5
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2-Fluorobiphenyl (Surr)	73		22 - 130				04/04/23 20:56	04/12/23 14:43	5
Nitrobenzene-d5	74		20 - 145				04/04/23 20:56	04/12/23 14:43	5
p-Terphenyl-d14	106		33 - 147				04/04/23 20:56	04/12/23 14:43	5

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: Lab SOP Organotins SIM - Organotins (GC/MS SIM)

**Client Sample ID: BM-DU1-Comp**

**Date Collected: 03/15/23 09:25**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-1**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		6.6	3.5	ug/Kg	☼	04/05/23 10:58	04/07/23 17:40	1
Tributyltin	ND		6.6	3.0	ug/Kg	☼	04/05/23 10:58	04/07/23 17:40	1
Dibutyltin	ND		6.6	2.8	ug/Kg	☼	04/05/23 10:58	04/07/23 17:40	1
Monobutyltin	ND		6.6	1.2	ug/Kg	☼	04/05/23 10:58	04/07/23 17:40	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Tripentyltin	137		39 - 150				04/05/23 10:58	04/07/23 17:40	1

**Client Sample ID: BM-DU2-Comp**

**Date Collected: 03/15/23 15:05**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-2**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.5	3.0	ug/Kg	☼	04/05/23 10:58	04/07/23 17:59	1
Tributyltin	ND		5.5	2.6	ug/Kg	☼	04/05/23 10:58	04/07/23 17:59	1
<b>Dibutyltin</b>	<b>4.3</b>	<b>J</b>	5.5	2.3	ug/Kg	☼	04/05/23 10:58	04/07/23 17:59	1
Monobutyltin	ND		5.5	0.99	ug/Kg	☼	04/05/23 10:58	04/07/23 17:59	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Tripentyltin	143		39 - 150				04/05/23 10:58	04/07/23 17:59	1

**Client Sample ID: BM-DU3-Comp**

**Date Collected: 03/16/23 12:20**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-3**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		7.3	3.9	ug/Kg	☼	04/05/23 10:58	04/07/23 18:17	1
Tributyltin	ND		7.3	3.4	ug/Kg	☼	04/05/23 10:58	04/07/23 18:17	1
<b>Dibutyltin</b>	<b>12</b>		7.3	3.1	ug/Kg	☼	04/05/23 10:58	04/07/23 18:17	1
Monobutyltin	ND		7.3	1.3	ug/Kg	☼	04/05/23 10:58	04/07/23 18:17	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Tripentyltin	128		39 - 150				04/05/23 10:58	04/07/23 18:17	1



# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: SW846 8081A - Organochlorine Pesticides (GC)

**Client Sample ID: BM-DU1-Comp**

**Date Collected: 03/15/23 09:25**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-1**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		2.2	0.14	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
2,4'-DDE	ND		4.4	2.3	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
2,4'-DDT	ND		2.2	0.20	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
4,4'-DDD	ND		2.2	1.1	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
<b>4,4'-DDE</b>	<b>1.6</b>	<b>J</b>	2.2	0.59	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
4,4'-DDT	ND		2.2	0.68	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
Aldrin	ND		2.2	0.80	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
alpha-BHC	ND		2.2	0.18	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
beta-BHC	ND		2.2	0.42	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
Chlordane	ND		11	1.6	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
delta-BHC	ND		2.2	0.33	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
Dieldrin	ND		0.44	0.15	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
Endosulfan I	ND		2.2	0.26	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
Endosulfan II	ND		2.2	0.50	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
<b>Endosulfan sulfate</b>	<b>0.34</b>	<b>J p</b>	2.2	0.24	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
Endrin	ND		2.2	0.42	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
Endrin aldehyde	ND	*1	2.2	2.1	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
gamma-BHC	ND		2.2	0.23	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
Heptachlor	ND		2.2	0.13	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
Heptachlor epoxide	ND		2.2	0.19	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
Toxaphene	ND		11	2.2	ug/Kg	☼	04/04/23 20:57	04/20/23 01:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	88		20 - 131				04/04/23 20:57	04/20/23 01:53	1
DCB Decachlorobiphenyl (Surr)	120		20 - 180				04/04/23 20:57	04/20/23 01:53	1

**Client Sample ID: BM-DU2-Comp**

**Date Collected: 03/15/23 15:05**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-2**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.8	0.12	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
2,4'-DDE	ND		3.7	1.9	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
2,4'-DDT	ND		1.8	0.17	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
4,4'-DDD	ND		1.8	0.92	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
4,4'-DDE	ND		1.8	0.50	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
4,4'-DDT	ND		1.8	0.56	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
Aldrin	ND		1.8	0.67	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
alpha-BHC	ND		1.8	0.15	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
beta-BHC	ND		1.8	0.35	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
Chlordane	ND		9.2	1.3	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
delta-BHC	ND		1.8	0.28	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
Dieldrin	ND		0.37	0.12	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
Endosulfan I	ND		1.8	0.21	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
Endosulfan II	ND		1.8	0.42	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
Endosulfan sulfate	ND		1.8	0.20	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
Endrin	ND		1.8	0.35	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
Endrin aldehyde	ND	*1	1.8	1.8	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
gamma-BHC	ND		1.8	0.19	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
Heptachlor	ND		1.8	0.11	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1
Heptachlor epoxide	ND		1.8	0.16	ug/Kg	☼	04/05/23 19:47	04/20/23 02:07	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: SW846 8081A - Organochlorine Pesticides (GC) (Continued)

**Client Sample ID: BM-DU2-Comp**

**Date Collected: 03/15/23 15:05**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-2**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toxaphene	ND		9.2	1.8	ug/Kg	✳	04/05/23 19:47	04/20/23 02:07	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Tetrachloro-m-xylene	85		20 - 131				04/05/23 19:47	04/20/23 02:07	1
DCB Decachlorobiphenyl (Surr)	113		20 - 180				04/05/23 19:47	04/20/23 02:07	1

**Client Sample ID: BM-DU3-Comp**

**Date Collected: 03/16/23 12:20**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-3**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		2.4	0.16	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
2,4'-DDE	ND		4.9	2.5	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
2,4'-DDT	ND		2.4	0.22	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
4,4'-DDD	ND		2.4	1.2	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
4,4'-DDE	ND		2.4	0.66	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
4,4'-DDT	ND		2.4	0.75	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
Aldrin	ND		2.4	0.89	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
alpha-BHC	ND		2.4	0.20	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
beta-BHC	ND		2.4	0.46	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
Chlordane	ND		12	1.7	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
delta-BHC	ND		2.4	0.37	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
Dieldrin	ND		0.49	0.16	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
Endosulfan I	ND		2.4	0.28	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
Endosulfan II	ND		2.4	0.55	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
Endosulfan sulfate	ND		2.4	0.26	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
Endrin	ND		2.4	0.46	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
Endrin aldehyde	ND	*1	2.4	2.4	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
gamma-BHC	ND		2.4	0.26	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
Heptachlor	ND		2.4	0.14	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
Heptachlor epoxide	ND		2.4	0.21	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
Toxaphene	ND		12	2.4	ug/Kg	✳	04/05/23 19:47	04/20/23 02:22	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Tetrachloro-m-xylene	89		20 - 131				04/05/23 19:47	04/20/23 02:22	1
DCB Decachlorobiphenyl (Surr)	76	p	20 - 180				04/05/23 19:47	04/20/23 02:22	1

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: SW846 6020 - Metals (ICP/MS)

**Client Sample ID: BM-DU1-Comp**

**Date Collected: 03/15/23 09:25**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-1**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	8.71		1.09	0.199	mg/Kg	☼	03/31/23 07:18	04/03/23 12:40	20
Chromium	79.3		2.17	0.226	mg/Kg	☼	03/31/23 07:18	04/03/23 12:40	20
Copper	45.2	B	2.17	0.246	mg/Kg	☼	03/31/23 07:18	04/03/23 12:40	20
Nickel	74.7		2.17	0.206	mg/Kg	☼	03/31/23 07:18	04/03/23 12:40	20
Lead	27.8		1.09	0.142	mg/Kg	☼	03/31/23 07:18	04/03/23 12:40	20
Zinc	116		21.7	1.20	mg/Kg	☼	03/31/23 07:18	04/03/23 12:40	20

**Client Sample ID: BM-DU2-Comp**

**Date Collected: 03/15/23 15:05**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-2**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	8.45		0.922	0.169	mg/Kg	☼	03/31/23 07:18	04/03/23 12:50	20
Chromium	66.7		1.84	0.192	mg/Kg	☼	03/31/23 07:18	04/03/23 12:50	20
Copper	49.3	B	1.84	0.209	mg/Kg	☼	03/31/23 07:18	04/03/23 12:50	20
Nickel	61.3		1.84	0.175	mg/Kg	☼	03/31/23 07:18	04/03/23 12:50	20
Lead	22.4		0.922	0.121	mg/Kg	☼	03/31/23 07:18	04/03/23 12:50	20
Zinc	106		18.4	1.02	mg/Kg	☼	03/31/23 07:18	04/03/23 12:50	20

**Client Sample ID: BM-DU3-Comp**

**Date Collected: 03/16/23 12:20**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-3**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	10.7		1.23	0.225	mg/Kg	☼	03/31/23 07:18	04/03/23 12:52	20
Chromium	91.6		2.46	0.256	mg/Kg	☼	03/31/23 07:18	04/03/23 12:52	20
Copper	88.9	B	2.46	0.279	mg/Kg	☼	03/31/23 07:18	04/03/23 12:52	20
Nickel	71.7		2.46	0.234	mg/Kg	☼	03/31/23 07:18	04/03/23 12:52	20
Lead	55.2		1.23	0.161	mg/Kg	☼	03/31/23 07:18	04/03/23 12:52	20
Zinc	170		24.6	1.37	mg/Kg	☼	03/31/23 07:18	04/03/23 12:52	20

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: SW846 7471A - Mercury (CVAA)

Client Sample ID: BM-DU1-Comp

Date Collected: 03/15/23 09:25

Date Received: 03/29/23 09:45

Lab Sample ID: 570-133080-1

Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.335		0.180	0.0692	mg/Kg	☼	03/31/23 19:36	04/03/23 13:44	1

Client Sample ID: BM-DU2-Comp

Date Collected: 03/15/23 15:05

Date Received: 03/29/23 09:45

Lab Sample ID: 570-133080-2

Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.307		0.151	0.0579	mg/Kg	☼	03/31/23 19:36	04/03/23 16:07	1

Client Sample ID: BM-DU3-Comp

Date Collected: 03/16/23 12:20

Date Received: 03/29/23 09:45

Lab Sample ID: 570-133080-3

Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.900		0.199	0.0765	mg/Kg	☼	03/31/23 19:36	04/03/23 16:08	1

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## General Chemistry

**Client Sample ID: BM-DU1-Comp**

**Date Collected: 03/15/23 09:25**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-1**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sample Homogenized (None Homogenization)	yes				NONE			04/03/23 14:33	1
Percent Solids (EPA Moisture)	45.4		0.1	0.1	%			03/30/23 17:26	1

**Client Sample ID: BM-DU2-Comp**

**Date Collected: 03/15/23 15:05**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-2**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sample Homogenized (None Homogenization)	yes				NONE			04/03/23 14:33	1
Percent Solids (EPA Moisture)	54.2		0.1	0.1	%			03/30/23 18:50	1

**Client Sample ID: BM-DU3-Comp**

**Date Collected: 03/16/23 12:20**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-3**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sample Homogenized (None Homogenization)	yes				NONE			04/03/23 14:33	1
Percent Solids (EPA Moisture)	41.0		0.1	0.1	%			03/30/23 18:50	1

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: ASTM D4464 - Particle Size Distribution of Catalytic Material ( Laser light scattering)

**Client Sample ID: BM-DU1-Comp**

**Date Collected: 03/15/23 09:25**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-1**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Clay (less than 0.00391 mm)</b>	<b>22.31</b>		0.01	0.01	%			04/14/23 15:04	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			04/14/23 15:04	1
<b>Fine Sand (0.125 to 0.25mm)</b>	<b>1.01</b>		0.01	0.01	%			04/14/23 15:04	1
<b>Gravel (greater than 2 mm)</b>	<b>5.57</b>		0.01	0.01	%			04/14/23 15:04	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			04/14/23 15:04	1
<b>Silt (0.00391 to 0.0625mm)</b>	<b>59.20</b>		0.01	0.01	%			04/14/23 15:04	1
<b>Total Silt and Clay (0 to 0.0626mm)</b>	<b>81.51</b>		0.01	0.01	%			04/14/23 15:04	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			04/14/23 15:04	1
<b>Very Fine Sand (0.0625 to 0.125 mm)</b>	<b>11.91</b>		0.01	0.01	%			04/14/23 15:04	1

**Client Sample ID: BM-DU2-Comp**

**Date Collected: 03/15/23 15:05**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-2**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Clay (less than 0.00391 mm)</b>	<b>19.93</b>		0.01	0.01	%			04/14/23 15:15	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			04/14/23 15:15	1
<b>Fine Sand (0.125 to 0.25mm)</b>	<b>8.83</b>		0.01	0.01	%			04/14/23 15:15	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			04/14/23 15:15	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			04/14/23 15:15	1
<b>Silt (0.00391 to 0.0625mm)</b>	<b>49.84</b>		0.01	0.01	%			04/14/23 15:15	1
<b>Total Silt and Clay (0 to 0.0626mm)</b>	<b>69.77</b>		0.01	0.01	%			04/14/23 15:15	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			04/14/23 15:15	1
<b>Very Fine Sand (0.0625 to 0.125 mm)</b>	<b>21.40</b>		0.01	0.01	%			04/14/23 15:15	1

**Client Sample ID: BM-DU3-Comp**

**Date Collected: 03/16/23 12:20**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-3**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Clay (less than 0.00391 mm)</b>	<b>22.45</b>		0.01	0.01	%			04/14/23 15:24	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			04/14/23 15:24	1
<b>Fine Sand (0.125 to 0.25mm)</b>	<b>1.37</b>		0.01	0.01	%			04/14/23 15:24	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			04/14/23 15:24	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			04/14/23 15:24	1
<b>Silt (0.00391 to 0.0625mm)</b>	<b>67.17</b>		0.01	0.01	%			04/14/23 15:24	1
<b>Total Silt and Clay (0 to 0.0626mm)</b>	<b>89.62</b>		0.01	0.01	%			04/14/23 15:24	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			04/14/23 15:24	1
<b>Very Fine Sand (0.0625 to 0.125 mm)</b>	<b>9.01</b>		0.01	0.01	%			04/14/23 15:24	1

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## PARTICLE SIZE SUMMARY

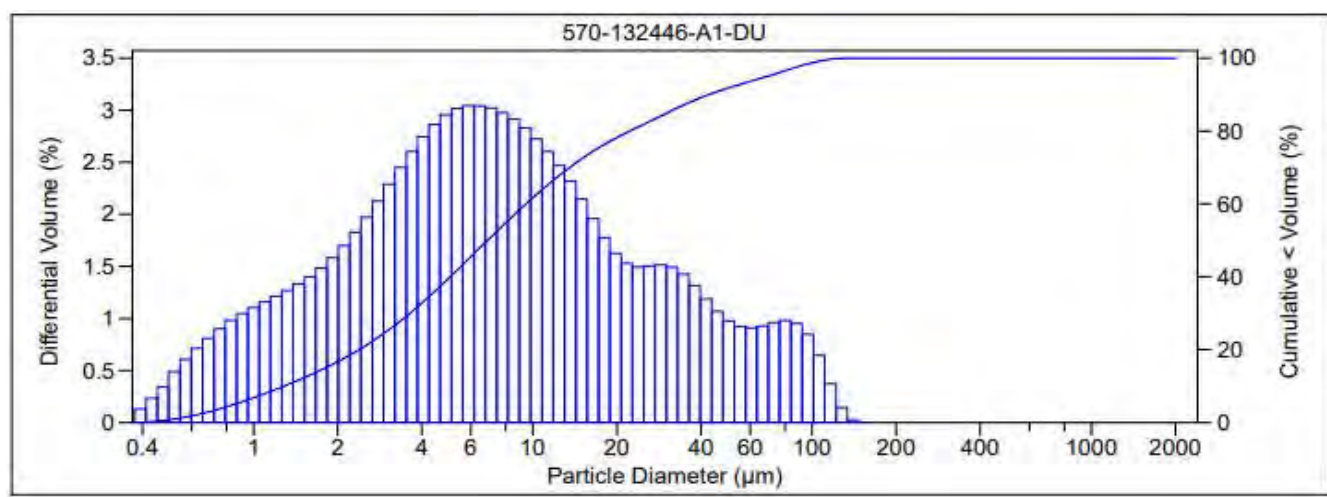
(ASTM D422 / D4464M)

Pacific EcoRisk Inc	Date Sampled:	01/18/23
	Date Received:	03/24/23
	Work Order No:	570-132446
	Date Analyzed:	04/14/23
	Method:	ASTM D4464M

Project: USACE: Redwood City Harbor (Sediments)

Sample ID	Depth ft	Description	Mean Grain Size mm
RED-2022-7-Z-Layer-Comp		Silt	0.053

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
1.24	0.00	0.00	0.00	0.04	5.55	60.50	32.68	93.18



v3.0

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## PARTICLE SIZE SUMMARY

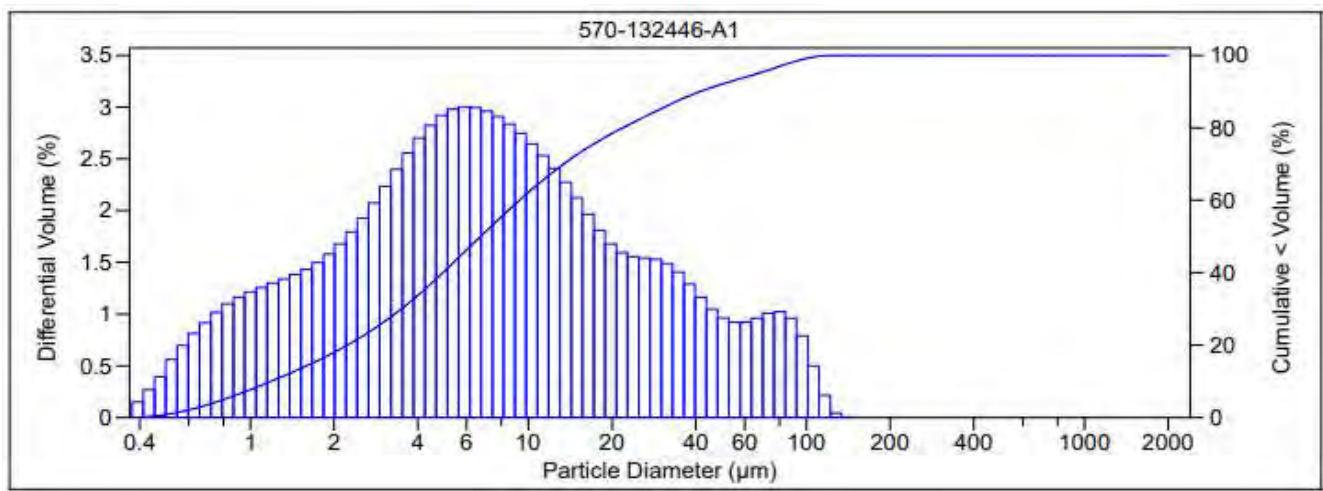
(ASTM D422 / D4464M)

Pacific EcoRisk Inc	Date Sampled:	01/18/23
	Date Received:	03/24/23
	Work Order No:	570-132446
	Date Analyzed:	04/14/23
	Method:	ASTM D4464M

Project: USACE: Redwood City Harbor (Sediments)

Sample ID	Depth ft	Description	Mean Grain Size mm
RED-2022-7-Z-Layer-Comp		Silt	0.052

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
1.24	0.00	0.00	0.00	0.04	5.55	60.50	32.68	93.18



v3.0



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## PARTICLE SIZE SUMMARY

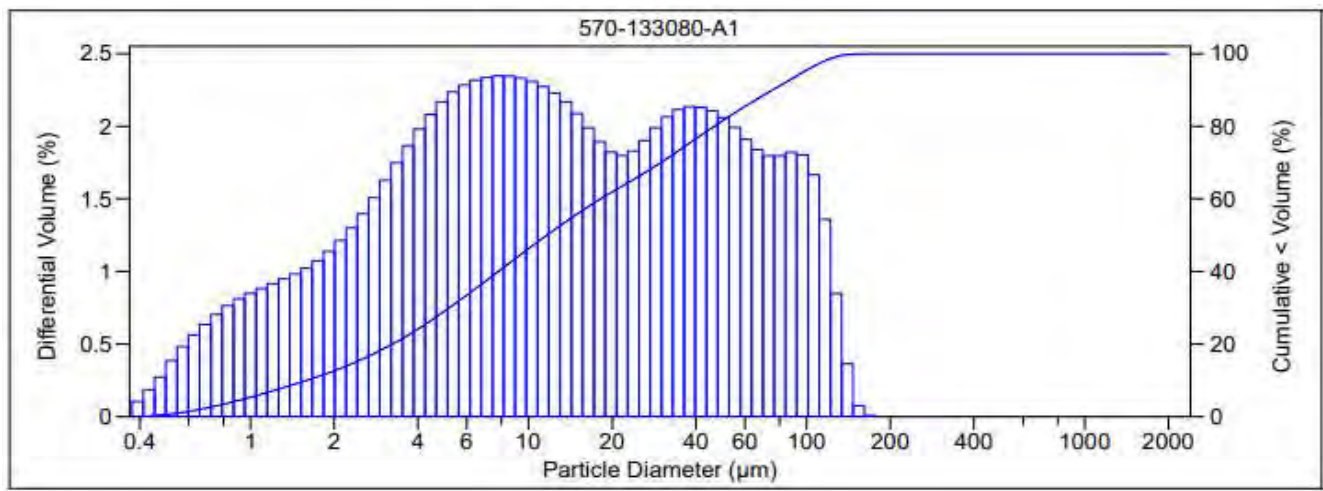
(ASTM D422 / D4464M)

Pacific EcoRisk Inc	Date Sampled:	03/15/23
	Date Received:	03/29/23
	Work Order No:	570-133080
	Date Analyzed:	04/14/23
	Method:	ASTM D4464M

Project: Berkley Marina (Sediment)

Sample ID	Depth ft	Description	Mean Grain Size mm
BM-DU1-Comp		Silt	0.193

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
5.57	0.00	0.00	0.00	1.01	11.91	59.20	22.31	81.51



v3.0

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## PARTICLE SIZE SUMMARY

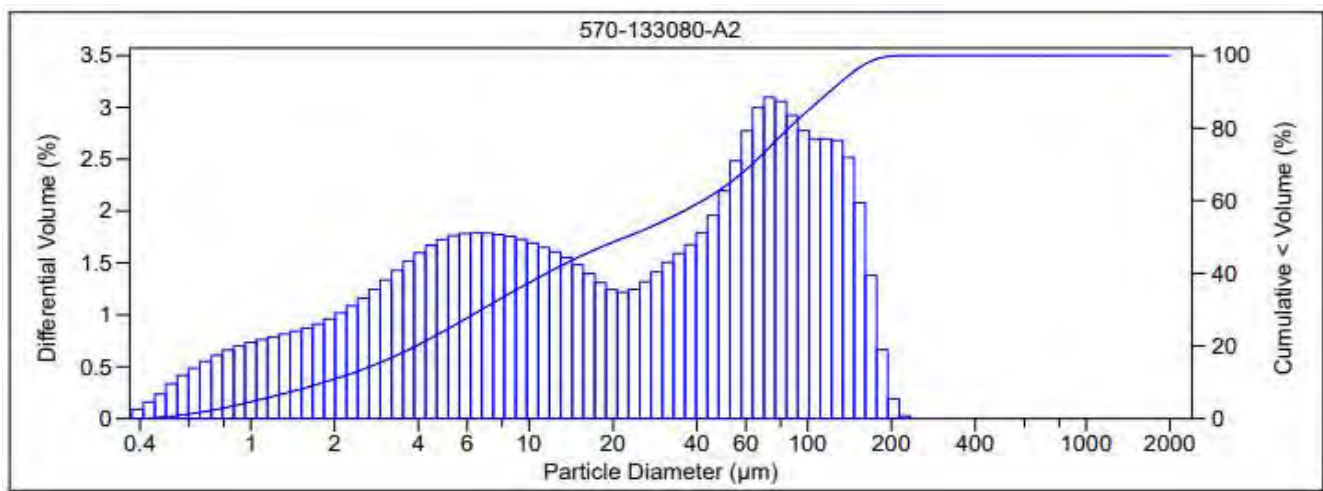
(ASTM D422 / D4464M)

Pacific EcoRisk Inc	Date Sampled:	03/15/23
	Date Received:	03/29/23
	Work Order No:	570-133080
	Date Analyzed:	04/14/23
	Method:	ASTM D4464M

Project: Berkley Marina (Sediment)

Sample ID	Depth ft	Description	Mean Grain Size mm
BM-DU2-Comp		Silt	0.044

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	0.00	0.00	8.83	21.40	49.84	19.93	69.77



v3.0

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## PARTICLE SIZE SUMMARY

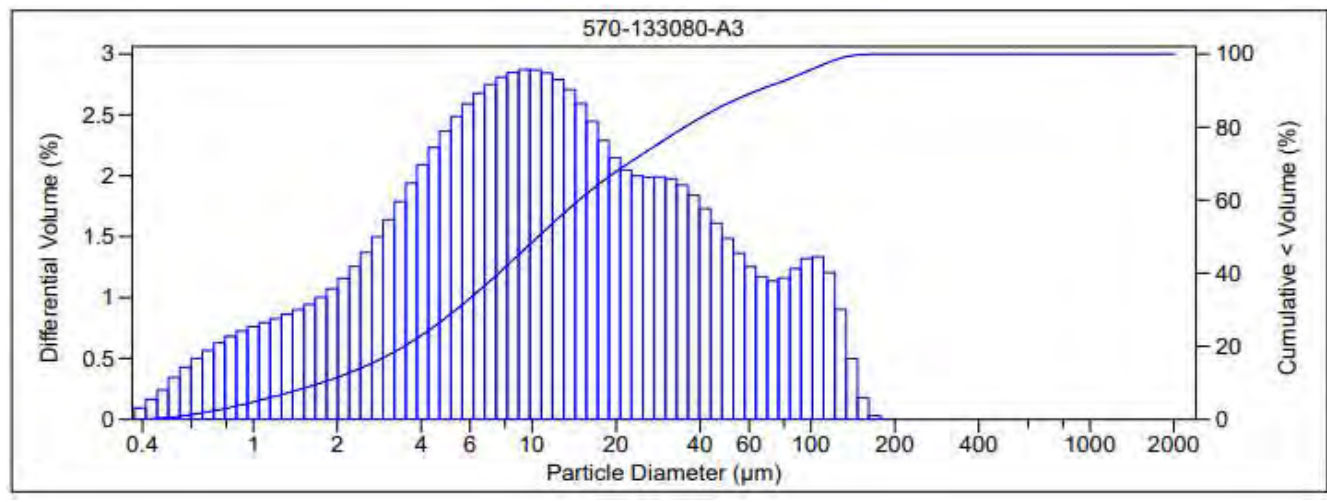
(ASTM D422 / D4464M)

Pacific EcoRisk Inc	Date Sampled:	03/16/23
	Date Received:	03/29/23
	Work Order No:	570-133080
	Date Analyzed:	04/14/23
	Method:	ASTM D4464M

Project: Berkley Marina (Sediment)

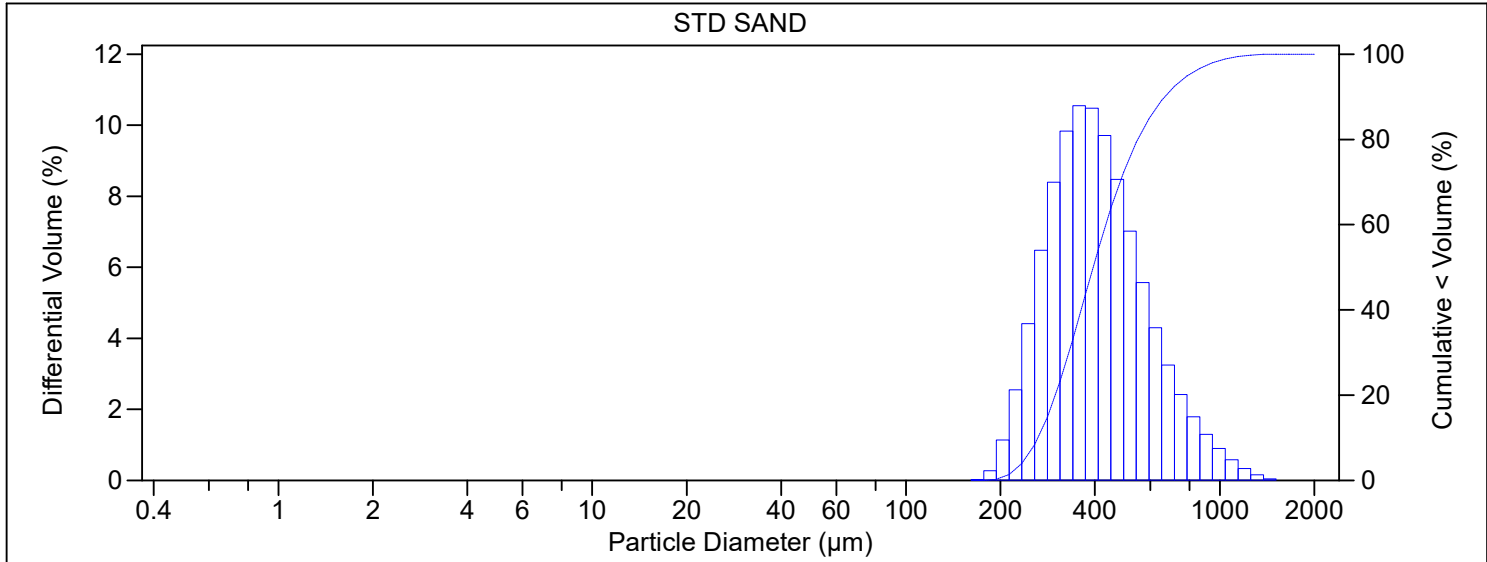
Sample ID	Depth ft	Description	Mean Grain Size mm
BM-DU3-Comp		Silt	0.023

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	0.00	0.00	1.37	9.01	67.17	22.45	89.62



v3.0

File name:	C:\LS13320\STD SAND_14 Apr 2023_18.53.28.\$ls		
	STD SAND_14 Apr 2023_18.53.28.\$ls		
File ID:	STD SAND		
Sample ID:	STD SAND		
Operator:	C6FB		
Run number:	19		
	Control Sample		
Comment 1:	ASTM D4464M, LPSA1		
Comment 2:	1986948		
Optical model:	Fraunhofer.rf780d		
Residual:	0.69%		
LS 13 320	Aqueous Liquid Module		
Start time:	18:52 14 Apr 2023	Run length:	60 seconds
Pump speed:	49		
Obscuration:	10%		
Fluid:	Water		
Software:	6.01	Firmware:	4.00



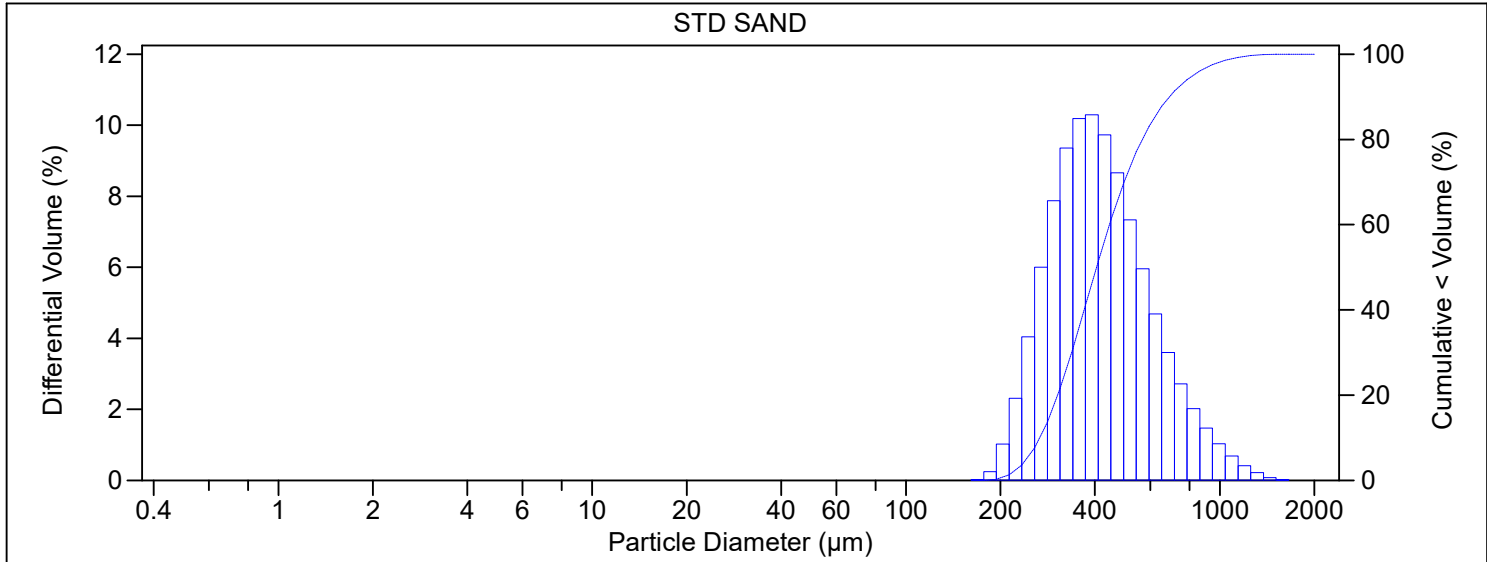
Volume Statistics (Arithmetic)		STD SAND_14 Apr 2023_18.53.28.\$ls					
Calculations from 0.375 µm to 2000 µm							
Volume:	100%						
Mean:	437.6 µm	S.D.:	176.6 µm				
Median:	395.3 µm	Variance:	31198 µm <sup>2</sup>				
Mean/Median ratio:	1.107	Skewness:	1.599 Right skewed				
Mode:	356.1 µm	Kurtosis:	3.448 Leptokurtic				
d <sub>10</sub> :	263.2 µm	d <sub>50</sub> :	395.3 µm	d <sub>90</sub> :	668.7 µm		
Folk and Ward Statistics (Phi)							
Mean:	1.31	Median:	1.34	Deviation:	0.52		
Skewness:	-0.13	Kurtosis:	1.01				
<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
239.3 µm	285.8 µm	315.0 µm	361.7 µm	395.3 µm	512.1 µm	586.3 µm	792.5 µm

Particle Diameter µm	STD SAND _14 Apr 2023_18.53 .28.\$ls Volume %
0.04	0
0.4	0
1.95	0
3.91	0
62.5	0
125	7.06
250	66.2
500	25.2
1000	1.54
2000	

STD SAND_14 Apr 2023_18.53.28.\$ls					
Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.375	0	20.71	0	1143	0.34
0.412	0	22.73	0	1255	0.16
0.452	0	24.95	0	1377	0.048
0.496	0	27.39	0	1512	0.0035
0.545	0	30.07	0	1660	0
0.598	0	33.01	0	1822	0
0.657	0	36.24	0	2000	
0.721	0	39.78	0		
0.791	0	43.67	0		
0.869	0	47.94	0		
0.954	0	52.63	0		
1.047	0	57.77	0		
1.149	0	63.42	0		
1.261	0	69.62	0		
1.385	0	76.43	0		
1.520	0	83.90	0		
1.669	0	92.10	0		
1.832	0	101.1	0		
2.011	0	111.0	0		
2.208	0	121.8	0		
2.423	0	133.7	0		
2.660	0	146.8	0		
2.920	0	161.2	0.016		
3.206	0	176.9	0.28		
3.519	0	194.2	1.14		
3.863	0	213.2	2.55		
4.241	0	234.1	4.41		
4.656	0	256.9	6.48		
5.111	0	282.1	8.39		
5.611	0	309.6	9.83		
6.159	0	339.9	10.5		
6.761	0	373.1	10.5		
7.422	0	409.6	9.71		
8.148	0	449.7	8.47		
8.944	0	493.6	7.02		
9.819	0	541.9	5.57		
10.78	0	594.9	4.30		
11.83	0	653.0	3.25		
12.99	0	716.9	2.42		
14.26	0	786.9	1.79		
15.65	0	863.9	1.30		
17.18	0	948.3	0.90		
18.86	0	1041	0.59		



File name:	C:\LS13320\STD SAND_14 Apr 2023_19.26.06.\$ls		
	STD SAND_14 Apr 2023_19.26.06.\$ls		
File ID:	STD SAND		
Sample ID:	STD SAND		
Operator:	C6FB		
Run number:	21		
	Control Sample		
Comment 1:	ASTM D4464M, LPSA1		
Comment 2:	1986948		
Optical model:	Fraunhofer.rf780d		
Residual:	0.66%		
LS 13 320	Aqueous Liquid Module		
Start time:	19:24 14 Apr 2023	Run length:	60 seconds
Pump speed:	49		
Obscuration:	10%		
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic)		STD SAND_14 Apr 2023_19.26.06.\$ls					
Calculations from 0.375 µm to 2000 µm							
Volume:	100%						
Mean:	449.6 µm	S.D.:	184.6 µm				
Median:	404.8 µm	Variance:	34066 µm <sup>2</sup>				
Mean/Median ratio:	1.111	Skewness:	1.583 Right skewed				
Mode:	391.0 µm	Kurtosis:	3.376 Leptokurtic				
d <sub>10</sub> :	266.8 µm	d <sub>50</sub> :	404.8 µm	d <sub>90</sub> :	693.1 µm		
Folk and Ward Statistics (Phi)							
Mean:	1.27	Median:	1.30	Deviation:	0.53		
Skewness:	-0.13	Kurtosis:	1.01				
<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
242.0 µm	290.3 µm	320.9 µm	369.7 µm	404.8 µm	528.1 µm	606.6 µm	822.9 µm

Particle Diameter µm	STD SAND _14 Apr 2023_19.26 .06.\$ls Volume %
0.04	0
0.4	0
1.95	0
3.91	0
62.5	0
125	6.42
250	64.3
500	27.4
1000	1.87
2000	

STD SAND_14 Apr 2023_19.26.06.\$ls					
Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.375	0	20.71	0	1143	0.41
0.412	0	22.73	0	1255	0.22
0.452	0	24.95	0	1377	0.084
0.496	0	27.39	0	1512	0.015
0.545	0	30.07	0	1660	0.00059
0.598	0	33.01	0	1822	0
0.657	0	36.24	0	2000	
0.721	0	39.78	0		
0.791	0	43.67	0		
0.869	0	47.94	0		
0.954	0	52.63	0		
1.047	0	57.77	0		
1.149	0	63.42	0		
1.261	0	69.62	0		
1.385	0	76.43	0		
1.520	0	83.90	0		
1.669	0	92.10	0		
1.832	0	101.1	0		
2.011	0	111.0	0		
2.208	0	121.8	0		
2.423	0	133.7	0		
2.660	0	146.8	0		
2.920	0	161.2	0.015		
3.206	0	176.9	0.25		
3.519	0	194.2	1.02		
3.863	0	213.2	2.32		
4.241	0	234.1	4.04		
4.656	0	256.9	6.00		
5.111	0	282.1	7.88		
5.611	0	309.6	9.35		
6.159	0	339.9	10.2		
6.761	0	373.1	10.3		
7.422	0	409.6	9.73		
8.148	0	449.7	8.66		
8.944	0	493.6	7.34		
9.819	0	541.9	5.96		
10.78	0	594.9	4.69		
11.83	0	653.0	3.60		
12.99	0	716.9	2.72		
14.26	0	786.9	2.02		
15.65	0	863.9	1.47		
17.18	0	948.3	1.04		
18.86	0	1041	0.69		



# Surrogate Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 8270C SIM - PAHs (GC/MS SIM)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		FBP (22-130)	NBZ (20-145)	TPHd14 (33-147)
570-133080-1 - DL	BM-DU1-Comp	73	74	106
570-133080-2	BM-DU2-Comp	90	67	107
570-133080-3	BM-DU3-Comp	88	63	109
570-133242-A-1-A MS	Matrix Spike	94	75	108
570-133242-A-1-B MSD	Matrix Spike Duplicate	97	78	111
LCS 570-317354/2-A	Lab Control Sample	98	75	104
LCS 570-317354/3-A	Lab Control Sample Dup	96	78	106
MB 570-317354/1-A	Method Blank	52	47	55

**Surrogate Legend**  
 FBP = 2-Fluorobiphenyl (Surr)  
 NBZ = Nitrobenzene-d5  
 TPHd14 = p-Terphenyl-d14

## Method: 8270C SIM CON - PCB Congeners (GC/MS)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		FBP (20-139)	TPHd14 (37-165)
570-133080-1	BM-DU1-Comp	77	129
570-133080-2	BM-DU2-Comp	77	129
570-133080-3	BM-DU3-Comp	75	141
570-133242-A-1-D MS	Matrix Spike	80	92
570-133242-A-1-E MSD	Matrix Spike Duplicate	76	100
LCS 570-317359/2-A	Lab Control Sample	84	115
LCS 570-317359/3-A	Lab Control Sample Dup	82	118
MB 570-317359/1-A	Method Blank	78	111

**Surrogate Legend**  
 FBP = 2-Fluorobiphenyl (Surr)  
 TPHd14 = p-Terphenyl-d14

## Method: Organotins SIM - Organotins (GC/MS SIM)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		TPTT (39-150)
570-133080-1	BM-DU1-Comp	137
570-133080-2	BM-DU2-Comp	143
570-133080-3	BM-DU3-Comp	128
570-133242-B-1-B MS	Matrix Spike	48
570-133242-B-1-C MSD	Matrix Spike Duplicate	48
LCS 570-318018/2-A	Lab Control Sample	40
LCS 570-318018/3-A	Lab Control Sample Dup	43
MB 570-318018/1-A	Method Blank	100

**Surrogate Legend**  
 TPTT = Triphenyltin



# Surrogate Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCX1 (20-131)	DCB1 (20-180)
570-133080-1	BM-DU1-Comp	88	120
570-133080-1 MS	BM-DU1-Comp	89	108

#### Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl (Surr)

## Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCX2 (20-131)	DCB1 (20-180)
570-133080-1 MSD	BM-DU1-Comp	91	119
570-133080-2	BM-DU2-Comp	85	113
LCS 570-317364/2-A	Lab Control Sample	100	114
LCS 570-317364/4-A	Lab Control Sample	101	90
LCSD 570-317364/5-A	Lab Control Sample Dup	101	88

#### Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl (Surr)

## Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCX1 (20-131)	DCB2 (20-180)
570-133080-3	BM-DU3-Comp	89	76 p

#### Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl (Surr)

## Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCX2 (20-131)	DCB2 (20-180)
LCSD 570-317364/3-A	Lab Control Sample Dup	107	122
MB 570-317364/1-A	Method Blank	114	130

#### Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl (Surr)

# QC Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 8270C SIM - PAHs (GC/MS SIM)

Lab Sample ID: MB 570-317354/1-A

Matrix: Solid

Analysis Batch: 318652

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 317354

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acenaphthene	ND		10	4.3	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Acenaphthylene	ND		10	4.2	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Anthracene	ND		10	3.8	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Benzo[a]anthracene	ND		10	4.5	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Benzo[a]pyrene	ND		10	6.0	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Benzo[b]fluoranthene	ND		10	6.9	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Benzo[e]pyrene	ND		10	2.5	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Benzo[g,h,i]perylene	ND		10	6.6	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Benzo[k]fluoranthene	ND		10	7.4	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Biphenyl	ND		10	2.9	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Chrysene	ND		10	3.3	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Dibenz(a,h)anthracene	ND		10	3.9	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Dibenzothiophene	ND		10	5.6	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
2,6-Dimethylnaphthalene	ND		10	2.6	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Fluoranthene	ND		10	5.6	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Fluorene	ND		10	4.4	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Indeno[1,2,3-cd]pyrene	ND		10	7.1	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
1-Methylnaphthalene	ND		10	3.9	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
2-Methylnaphthalene	ND		10	3.7	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
1-Methylphenanthrene	ND		10	4.4	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Naphthalene	ND		10	2.8	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Perylene	ND		10	5.4	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Phenanthrene	ND		10	4.3	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
Pyrene	ND		10	6.4	ug/Kg		04/04/23 20:56	04/08/23 14:47	1
1,6,7-Trimethylnaphthalene	ND		10	3.8	ug/Kg		04/04/23 20:56	04/08/23 14:47	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2-Fluorobiphenyl (Surr)	52		22 - 130	04/04/23 20:56	04/08/23 14:47	1
Nitrobenzene-d5	47		20 - 145	04/04/23 20:56	04/08/23 14:47	1
p-Terphenyl-d14	55		33 - 147	04/04/23 20:56	04/08/23 14:47	1

Lab Sample ID: LCS 570-317354/2-A

Matrix: Solid

Analysis Batch: 318652

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 317354

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Acenaphthene	100	92.60		ug/Kg		93	53 - 125
Acenaphthylene	100	107.4		ug/Kg		107	50 - 123
Anthracene	100	102.1		ug/Kg		102	50 - 132
Benzo[a]anthracene	100	96.18		ug/Kg		96	50 - 133
Benzo[a]pyrene	100	90.90		ug/Kg		91	50 - 134
Benzo[b]fluoranthene	100	93.81		ug/Kg		94	50 - 142
Benzo[g,h,i]perylene	100	99.88		ug/Kg		100	50 - 130
Benzo[k]fluoranthene	100	102.0		ug/Kg		102	49 - 150
Chrysene	100	105.2		ug/Kg		105	51 - 129
Dibenz(a,h)anthracene	100	98.85		ug/Kg		99	50 - 133
Fluoranthene	100	87.95		ug/Kg		88	55 - 127
Fluorene	100	88.41		ug/Kg		88	55 - 127

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# QC Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: LCS 570-317354/2-A

Matrix: Solid

Analysis Batch: 318652

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 317354

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Indeno[1,2,3-cd]pyrene	100	92.93		ug/Kg		93	50 - 148
1-Methylnaphthalene	100	88.69		ug/Kg		89	54 - 132
2-Methylnaphthalene	100	84.66		ug/Kg		85	50 - 127
Naphthalene	100	85.83		ug/Kg		86	51 - 129
Phenanthrene	100	94.45		ug/Kg		94	50 - 122
Pyrene	100	96.33		ug/Kg		96	50 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl (Surr)	98		22 - 130
Nitrobenzene-d5	75		20 - 145
p-Terphenyl-d14	104		33 - 147

Lab Sample ID: LCSD 570-317354/3-A

Matrix: Solid

Analysis Batch: 318652

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 317354

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Acenaphthene	100	94.71		ug/Kg		95	53 - 125	2	20
Acenaphthylene	100	108.6		ug/Kg		109	50 - 123	1	20
Anthracene	100	103.1		ug/Kg		103	50 - 132	1	20
Benzo[a]anthracene	100	98.86		ug/Kg		99	50 - 133	3	20
Benzo[a]pyrene	100	91.78		ug/Kg		92	50 - 134	1	20
Benzo[b]fluoranthene	100	94.64		ug/Kg		95	50 - 142	1	20
Benzo[g,h,i]perylene	100	102.8		ug/Kg		103	50 - 130	3	20
Benzo[k]fluoranthene	100	104.9		ug/Kg		105	49 - 150	3	20
Chrysene	100	103.7		ug/Kg		104	51 - 129	1	20
Dibenz(a,h)anthracene	100	100.3		ug/Kg		100	50 - 133	1	20
Fluoranthene	100	88.45		ug/Kg		88	55 - 127	1	20
Fluorene	100	91.40		ug/Kg		91	55 - 127	3	20
Indeno[1,2,3-cd]pyrene	100	93.68		ug/Kg		94	50 - 148	1	20
1-Methylnaphthalene	100	90.62		ug/Kg		91	54 - 132	2	20
2-Methylnaphthalene	100	86.31		ug/Kg		86	50 - 127	2	20
Naphthalene	100	88.45		ug/Kg		88	51 - 129	3	20
Phenanthrene	100	95.36		ug/Kg		95	50 - 122	1	20
Pyrene	100	100.9		ug/Kg		101	50 - 134	5	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2-Fluorobiphenyl (Surr)	96		22 - 130
Nitrobenzene-d5	78		20 - 145
p-Terphenyl-d14	106		33 - 147

Lab Sample ID: 570-133242-A-1-A MS

Matrix: Solid

Analysis Batch: 318652

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 317354

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthene	ND		130	122.0		ug/Kg	⊛	94	29 - 137
Acenaphthylene	ND		130	138.6		ug/Kg	⊛	107	29 - 131

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# QC Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-133242-A-1-A MS

Matrix: Solid

Analysis Batch: 318652

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 317354

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec
	Result	Qualifier		Added	Result				
Anthracene	8.6	J	130	148.7		ug/Kg	☼	108	26 - 134
Benzo[a]anthracene	12	J	130	151.2		ug/Kg	☼	108	24 - 150
Benzo[a]pyrene	11	J	130	148.1		ug/Kg	☼	106	29 - 149
Benzo[b]fluoranthene	ND		130	141.4		ug/Kg	☼	109	21 - 153
Benzo[g,h,i]perylene	ND		130	132.7		ug/Kg	☼	102	20 - 148
Benzo[k]fluoranthene	ND		130	153.7		ug/Kg	☼	119	28 - 148
Chrysene	11	J	130	163.8		ug/Kg	☼	118	25 - 145
Dibenz(a,h)anthracene	ND		130	126.4		ug/Kg	☼	98	20 - 132
Fluoranthene	16		130	148.9		ug/Kg	☼	102	20 - 151
Fluorene	ND		130	120.4		ug/Kg	☼	93	36 - 132
Indeno[1,2,3-cd]pyrene	ND		130	125.2		ug/Kg	☼	97	20 - 154
1-Methylnaphthalene	ND		130	117.2		ug/Kg	☼	90	34 - 136
2-Methylnaphthalene	ND		130	110.5		ug/Kg	☼	85	29 - 137
Naphthalene	ND		130	116.1		ug/Kg	☼	90	20 - 150
Phenanthrene	14		130	157.8		ug/Kg	☼	111	20 - 144
Pyrene	25		130	183.5		ug/Kg	☼	122	20 - 150

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	94		22 - 130
Nitrobenzene-d5	75		20 - 145
p-Terphenyl-d14	108		33 - 147

Lab Sample ID: 570-133242-A-1-B MSD

Matrix: Solid

Analysis Batch: 318652

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 317354

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	Limit
	Result	Qualifier		Added	Result						
Acenaphthene	ND		130	123.5		ug/Kg	☼	95	29 - 137	1	28
Acenaphthylene	ND		130	144.0		ug/Kg	☼	111	29 - 131	4	32
Anthracene	8.6	J	130	156.3		ug/Kg	☼	114	26 - 134	5	27
Benzo[a]anthracene	12	J	130	156.5		ug/Kg	☼	112	24 - 150	3	24
Benzo[a]pyrene	11	J	130	152.9		ug/Kg	☼	109	29 - 149	3	22
Benzo[b]fluoranthene	ND		130	147.2		ug/Kg	☼	113	21 - 153	4	26
Benzo[g,h,i]perylene	ND		130	136.7		ug/Kg	☼	105	20 - 148	3	27
Benzo[k]fluoranthene	ND		130	160.4		ug/Kg	☼	123	28 - 148	4	26
Chrysene	11	J	130	169.5		ug/Kg	☼	122	25 - 145	3	28
Dibenz(a,h)anthracene	ND		130	128.5		ug/Kg	☼	99	20 - 132	2	26
Fluoranthene	16		130	154.5		ug/Kg	☼	106	20 - 151	4	26
Fluorene	ND		130	122.5		ug/Kg	☼	94	36 - 132	2	27
Indeno[1,2,3-cd]pyrene	ND		130	129.2		ug/Kg	☼	99	20 - 154	3	25
1-Methylnaphthalene	ND		130	119.6		ug/Kg	☼	92	34 - 136	2	29
2-Methylnaphthalene	ND		130	115.1		ug/Kg	☼	89	29 - 137	4	31
Naphthalene	ND		130	118.5		ug/Kg	☼	91	20 - 150	2	33
Phenanthrene	14		130	160.7		ug/Kg	☼	113	20 - 144	2	27
Pyrene	25		130	193.5		ug/Kg	☼	129	20 - 150	5	32

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	97		22 - 130

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# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

**Lab Sample ID: 570-133242-A-1-B MSD**  
**Matrix: Solid**  
**Analysis Batch: 318652**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 317354**

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Nitrobenzene-d5	78		20 - 145
p-Terphenyl-d14	111		33 - 147

## Method: 8270C SIM CON - PCB Congeners (GC/MS)

**Lab Sample ID: MB 570-317359/1-A**  
**Matrix: Solid**  
**Analysis Batch: 319311**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 317359**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
PCB-5/8	ND		0.40	0.11	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-18	ND		0.20	0.094	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-28	ND		0.20	0.10	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-31	ND		0.20	0.089	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-33	ND		0.20	0.047	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-44	ND		0.20	0.12	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-49	ND		0.20	0.11	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-52	ND		0.20	0.079	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-56	ND		0.20	0.047	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-60	ND		0.20	0.13	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-66	ND		0.20	0.11	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-70	ND		0.20	0.093	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-74	ND		0.20	0.10	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-87	ND		0.20	0.12	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-95	ND		0.20	0.066	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-97	ND		0.20	0.14	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-99	ND		0.20	0.086	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-101	ND		0.20	0.11	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-105	ND		0.20	0.11	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-110	ND		0.20	0.089	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-118	ND		0.20	0.080	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-128	ND		0.20	0.14	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-132/153	ND		0.40	0.24	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-138/158	ND		0.40	0.24	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-141	ND		0.20	0.066	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-149	ND		0.20	0.11	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-151	ND		0.20	0.092	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-156	ND		0.20	0.095	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-170	ND		0.20	0.10	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-174	ND		0.20	0.057	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-177	ND		0.20	0.094	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-180	ND		0.20	0.083	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-183	ND		0.20	0.12	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-187	ND		0.20	0.089	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-194	ND		0.20	0.11	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-195	ND		0.20	0.062	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-201	ND		0.20	0.14	ug/Kg		04/04/23 20:56	04/11/23 16:15	1
PCB-203	ND		0.20	0.070	ug/Kg		04/04/23 20:56	04/11/23 16:15	1

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Lab Sample ID: MB 570-317359/1-A**  
**Matrix: Solid**  
**Analysis Batch: 319311**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 317359**

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2-Fluorobiphenyl (Surr)	78		20 - 139	04/04/23 20:56	04/11/23 16:15	1
p-Terphenyl-d14	111		37 - 165	04/04/23 20:56	04/11/23 16:15	1

**Lab Sample ID: LCS 570-317359/2-A**  
**Matrix: Solid**  
**Analysis Batch: 319311**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 317359**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits	
PCB-5/8	50.0	40.18		ug/Kg		80	50 - 150	
PCB-18	50.0	38.36		ug/Kg		77	33 - 114	
PCB-28	50.0	46.00		ug/Kg		92	40 - 132	
PCB-44	50.0	49.15		ug/Kg		98	38 - 131	
PCB-52	50.0	44.25		ug/Kg		89	38 - 131	
PCB-66	50.0	52.80		ug/Kg		106	42 - 141	
PCB-101	50.0	48.80		ug/Kg		98	40 - 132	
PCB-105	50.0	50.53		ug/Kg		101	39 - 135	
PCB-118	50.0	44.98		ug/Kg		90	38 - 131	
PCB-128	50.0	52.51		ug/Kg		105	43 - 149	
PCB-132/153	50.0	49.28		ug/Kg		99	37 - 164	
PCB-138/158	50.0	45.95		ug/Kg		92	36 - 124	
PCB-170	50.0	47.39		ug/Kg		95	35 - 134	
PCB-180	50.0	58.07		ug/Kg		116	38 - 159	
PCB-187	50.0	54.63		ug/Kg		109	41 - 147	
PCB-195	50.0	41.48		ug/Kg		83	44 - 128	
PCB-201	50.0	67.53		ug/Kg		135	40 - 156	

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	84		20 - 139
p-Terphenyl-d14	115		37 - 165

**Lab Sample ID: LCSD 570-317359/3-A**  
**Matrix: Solid**  
**Analysis Batch: 319311**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 317359**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits		RPD Limit	
									RPD	Limit
PCB-5/8	50.0	39.66		ug/Kg		79	50 - 150	1	25	
PCB-18	50.0	38.93		ug/Kg		78	33 - 114	1	29	
PCB-28	50.0	46.41		ug/Kg		93	40 - 132	1	29	
PCB-44	50.0	47.94		ug/Kg		96	38 - 131	2	32	
PCB-52	50.0	43.90		ug/Kg		88	38 - 131	1	32	
PCB-66	50.0	54.24		ug/Kg		108	42 - 141	3	34	
PCB-101	50.0	48.64		ug/Kg		97	40 - 132	0	34	
PCB-105	50.0	50.06		ug/Kg		100	39 - 135	1	37	
PCB-118	50.0	47.11		ug/Kg		94	38 - 131	5	35	
PCB-128	50.0	53.30		ug/Kg		107	43 - 149	2	37	
PCB-132/153	50.0	48.61		ug/Kg		97	37 - 164	1	38	
PCB-138/158	50.0	48.02		ug/Kg		96	36 - 124	4	40	
PCB-170	50.0	48.21		ug/Kg		96	35 - 134	2	31	

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# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Lab Sample ID: LCSD 570-317359/3-A**  
**Matrix: Solid**  
**Analysis Batch: 319311**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 317359**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
PCB-180	50.0	56.08		ug/Kg		112	38 - 159	3	40	
PCB-187	50.0	52.01		ug/Kg		104	41 - 147	5	40	
PCB-195	50.0	41.71		ug/Kg		83	44 - 128	1	28	
PCB-201	50.0	66.36		ug/Kg		133	40 - 156	2	40	

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
p-Terphenyl-d14	118		37 - 165

**Lab Sample ID: 570-133242-A-1-D MS**  
**Matrix: Solid**  
**Analysis Batch: 319311**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 317359**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec	
									Limits	RPD
PCB-5/8	ND	F1	65.2	14.25	F1	ug/Kg	☼	22	50 - 150	
PCB-18	ND	F1	65.2	13.96	F1	ug/Kg	☼	21	29 - 127	
PCB-28	ND	F1	65.2	17.23	F1	ug/Kg	☼	26	29 - 170	
PCB-44	ND	F1	65.2	16.62	F1	ug/Kg	☼	25	33 - 150	
PCB-52	ND		65.2	15.84		ug/Kg	☼	24	23 - 159	
PCB-66	ND	F1	65.2	17.38	F1	ug/Kg	☼	27	29 - 166	
PCB-101	ND	F1	65.2	14.33	F1	ug/Kg	☼	22	30 - 159	
PCB-105	ND		65.2	15.40		ug/Kg	☼	24	22 - 173	
PCB-118	ND	F1	65.2	14.42	F1	ug/Kg	☼	22	24 - 162	
PCB-128	ND		65.2	15.95		ug/Kg	☼	24	18 - 180	
PCB-132/153	ND	F1	65.2	14.58	F1	ug/Kg	☼	22	27 - 180	
PCB-138/158	ND		65.2	13.72		ug/Kg	☼	21	18 - 160	
PCB-170	ND		65.2	16.13		ug/Kg	☼	25	25 - 165	
PCB-180	ND		65.2	15.52		ug/Kg	☼	24	20 - 180	
PCB-187	ND		65.2	15.83		ug/Kg	☼	24	14 - 180	
PCB-195	ND	F1	65.2	14.08	F1	ug/Kg	☼	22	44 - 128	
PCB-201	ND		65.2	18.30		ug/Kg	☼	28	17 - 180	

Surrogate	MS %Recovery	MS Qualifier	Limits
p-Terphenyl-d14	92		37 - 165

**Lab Sample ID: 570-133242-A-1-E MSD**  
**Matrix: Solid**  
**Analysis Batch: 319311**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 317359**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
									Limits	RPD		
PCB-5/8	ND	F1	65.1	14.73	F1	ug/Kg	☼	23	50 - 150	3	25	
PCB-18	ND	F1	65.1	14.45	F1	ug/Kg	☼	22	29 - 127	3	40	
PCB-28	ND	F1	65.1	16.77	F1	ug/Kg	☼	26	29 - 170	3	32	
PCB-44	ND	F1	65.1	17.37	F1	ug/Kg	☼	27	33 - 150	4	40	
PCB-52	ND		65.1	15.79		ug/Kg	☼	24	23 - 159	0	40	
PCB-66	ND	F1	65.1	20.07		ug/Kg	☼	31	29 - 166	14	40	
PCB-101	ND	F1	65.1	16.11	F1	ug/Kg	☼	25	30 - 159	12	40	

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# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Lab Sample ID: 570-133242-A-1-E MSD

Matrix: Solid

Analysis Batch: 319311

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 317359

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
PCB-105	ND		65.1	16.69		ug/Kg	☼	26	22 - 173	8	40
PCB-118	ND	F1	65.1	14.86	F1	ug/Kg	☼	23	24 - 162	3	40
PCB-128	ND		65.1	16.08		ug/Kg	☼	25	18 - 180	1	40
PCB-132/153	ND	F1	65.1	14.95	F1	ug/Kg	☼	23	27 - 180	3	40
PCB-138/158	ND		65.1	14.72		ug/Kg	☼	23	18 - 160	7	40
PCB-170	ND		65.1	18.44		ug/Kg	☼	28	25 - 165	13	22
PCB-180	ND		65.1	16.33		ug/Kg	☼	25	20 - 180	5	40
PCB-187	ND		65.1	16.83		ug/Kg	☼	26	14 - 180	6	40
PCB-195	ND	F1	65.1	15.32	F1	ug/Kg	☼	24	44 - 128	8	28
PCB-201	ND		65.1	19.10		ug/Kg	☼	29	17 - 180	4	40
<b>MSD MSD</b>											
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>								
2-Fluorobiphenyl (Surr)	76		20 - 139								
p-Terphenyl-d14	100		37 - 165								

## Method: Organotins SIM - Organotins (GC/MS SIM)

Lab Sample ID: MB 570-318018/1-A

Matrix: Solid

Analysis Batch: 321500

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 318018

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Tetrabutyltin	ND		3.0	1.6	ug/Kg		04/05/23 10:58	04/18/23 18:37	1
Tributyltin	ND		3.0	1.4	ug/Kg		04/05/23 10:58	04/18/23 18:37	1
Dibutyltin	ND		3.0	1.3	ug/Kg		04/05/23 10:58	04/18/23 18:37	1
Monobutyltin	ND		3.0	0.54	ug/Kg		04/05/23 10:58	04/18/23 18:37	1
<b>MB MB</b>									
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>		<b>Prepared</b>		<b>Analyzed</b>		<b>Dil Fac</b>
Tripentyltin	100		39 - 150		04/05/23 10:58		04/18/23 18:37		1

Lab Sample ID: LCS 570-318018/2-A

Matrix: Solid

Analysis Batch: 321470

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 318018

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec
		Result	Qualifier				Limits
Tetrabutyltin	20.0	11.63		ug/Kg		58	10 - 153
Tributyltin	17.8	9.801		ug/Kg		55	10 - 126
<b>LCS LCS</b>							
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				
Tripentyltin	40		39 - 150				

Lab Sample ID: LCSD 570-318018/3-A

Matrix: Solid

Analysis Batch: 321470

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 318018

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	%Rec	RPD	Limit
		Result	Qualifier				Limits		
Tetrabutyltin	20.0	14.02		ug/Kg		70	10 - 153	19	30
Tributyltin	17.8	11.81		ug/Kg		66	10 - 126	19	30

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# QC Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: Organotins SIM - Organotins (GC/MS SIM) (Continued)

**Lab Sample ID: LCSD 570-318018/3-A**  
**Matrix: Solid**  
**Analysis Batch: 321470**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 318018**

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
Tripentyltin	43		39 - 150

**Lab Sample ID: 570-133242-B-1-B MS**  
**Matrix: Solid**  
**Analysis Batch: 318410**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 318018**

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier					
Tetrabutyltin	ND		26.0	10.94		ug/Kg	*	42		10 - 140
Tributyltin	ND		23.2	11.21		ug/Kg	*	48		10 - 135
Surrogate	MS		Limits							
%Recovery	Qualifier									
Tripentyltin	48		39 - 150							

**Lab Sample ID: 570-133242-B-1-C MSD**  
**Matrix: Solid**  
**Analysis Batch: 318410**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 318018**

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec	Limits	RPD	
	Result	Qualifier	Added	Result	Qualifier						RPD	Limit
Tetrabutyltin	ND		26.1	11.42		ug/Kg	*	44		10 - 140	4	40
Tributyltin	ND		23.3	11.84		ug/Kg	*	51		10 - 135	6	40
Surrogate	MSD		Limits									
%Recovery	Qualifier											
Tripentyltin	48		39 - 150									

## Method: 8081A - Organochlorine Pesticides (GC)

**Lab Sample ID: MB 570-317364/1-A**  
**Matrix: Solid**  
**Analysis Batch: 320263**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 317364**

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
2,4'-DDD	ND		1.0	0.064	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
2,4'-DDE	ND		2.0	1.0	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
2,4'-DDT	ND		1.0	0.092	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
4,4'-DDD	ND		1.0	0.50	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
4,4'-DDE	ND		1.0	0.27	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
4,4'-DDT	ND		1.0	0.31	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
Aldrin	ND		1.0	0.37	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
alpha-BHC	ND		1.0	0.080	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
beta-BHC	ND		1.0	0.19	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
Chlordane	ND		5.0	0.71	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
delta-BHC	ND		1.0	0.15	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
Dieldrin	ND		0.20	0.066	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
Endosulfan I	ND		1.0	0.12	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
Endosulfan II	ND		1.0	0.23	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
Endosulfan sulfate	ND		1.0	0.11	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
Endrin	ND		1.0	0.19	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
Endrin aldehyde	ND		1.0	0.98	ug/Kg		04/04/23 20:57	04/14/23 01:41	1

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# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 570-317364/1-A

Matrix: Solid

Analysis Batch: 320263

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 317364

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
gamma-BHC	ND		1.0	0.11	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
Heptachlor	ND		1.0	0.060	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
Heptachlor epoxide	ND		1.0	0.085	ug/Kg		04/04/23 20:57	04/14/23 01:41	1
Toxaphene	ND		5.0	1.0	ug/Kg		04/04/23 20:57	04/14/23 01:41	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	114		20 - 131	04/04/23 20:57	04/14/23 01:41	1
DCB Decachlorobiphenyl (Surr)	130		20 - 180	04/04/23 20:57	04/14/23 01:41	1

Lab Sample ID: LCS 570-317364/2-A

Matrix: Solid

Analysis Batch: 320263

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 317364

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
4,4'-DDD	5.00	5.391		ug/Kg		108	54 - 150
4,4'-DDE	5.00	5.959		ug/Kg		119	49 - 146
4,4'-DDT	5.00	5.538		ug/Kg		111	52 - 147
Aldrin	5.00	4.447		ug/Kg		89	28 - 116
alpha-BHC	5.00	5.361		ug/Kg		107	44 - 123
beta-BHC	5.00	4.369		ug/Kg		87	48 - 127
delta-BHC	5.00	2.232		ug/Kg		45	10 - 149
Dieldrin	5.00	5.586		ug/Kg		112	48 - 132
Endosulfan I	5.00	4.918		ug/Kg		98	44 - 125
Endosulfan II	5.00	5.495		ug/Kg		110	47 - 136
Endosulfan sulfate	5.00	4.722		ug/Kg		94	46 - 133
Endrin	5.00	3.463		ug/Kg		69	43 - 142
Endrin aldehyde	5.00	4.627		ug/Kg		93	29 - 141
gamma-BHC	5.00	5.343		ug/Kg		107	44 - 126
Heptachlor	5.00	5.632		ug/Kg		113	50 - 123
Heptachlor epoxide	5.00	5.398		ug/Kg		108	49 - 125

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	100		20 - 131
DCB Decachlorobiphenyl (Surr)	114		20 - 180

Lab Sample ID: LCS 570-317364/4-A

Matrix: Solid

Analysis Batch: 321882

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 317364

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
2,4'-DDD	5.00	5.025		ug/Kg		100	28 - 150
2,4'-DDE	5.00	5.042		ug/Kg		101	25 - 156
2,4'-DDT	5.00	4.673		ug/Kg		93	24 - 165

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	101		20 - 131
DCB Decachlorobiphenyl (Surr)	90		20 - 180

# QC Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCSD 570-317364/3-A

Matrix: Solid

Analysis Batch: 320263

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 317364

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
4,4'-DDD	5.00	5.532		ug/Kg		111	54 - 150	3	29	
4,4'-DDE	5.00	6.024		ug/Kg		120	49 - 146	1	28	
4,4'-DDT	5.00	5.574		ug/Kg		111	52 - 147	1	32	
Aldrin	5.00	4.479		ug/Kg		90	28 - 116	1	30	
alpha-BHC	5.00	5.477		ug/Kg		110	44 - 123	2	27	
beta-BHC	5.00	4.441		ug/Kg		89	48 - 127	2	28	
delta-BHC	5.00	2.215		ug/Kg		44	10 - 149	1	27	
Dieldrin	5.00	5.619		ug/Kg		112	48 - 132	1	28	
Endosulfan I	5.00	4.999		ug/Kg		100	44 - 125	2	29	
Endosulfan II	5.00	5.450		ug/Kg		109	47 - 136	1	29	
Endosulfan sulfate	5.00	4.790		ug/Kg		96	46 - 133	1	28	
Endrin	5.00	3.511		ug/Kg		70	43 - 142	1	27	
Endrin aldehyde	5.00	2.596	*1	ug/Kg		52	29 - 141	56	40	
gamma-BHC	5.00	5.403		ug/Kg		108	44 - 126	1	28	
Heptachlor	5.00	5.694		ug/Kg		114	50 - 123	1	28	
Heptachlor epoxide	5.00	5.414		ug/Kg		108	49 - 125	0	28	

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Tetrachloro-m-xylene	107		20 - 131
DCB Decachlorobiphenyl (Surr)	122		20 - 180

Lab Sample ID: LCSD 570-317364/5-A

Matrix: Solid

Analysis Batch: 321882

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 317364

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
2,4'-DDD	5.00	5.059		ug/Kg		101	28 - 150	1	30	
2,4'-DDE	5.00	5.090		ug/Kg		102	25 - 156	1	42	
2,4'-DDT	5.00	4.690		ug/Kg		94	24 - 165	0	31	

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Tetrachloro-m-xylene	101		20 - 131
DCB Decachlorobiphenyl (Surr)	88		20 - 180

Lab Sample ID: 570-133080-1 MS

Matrix: Solid

Analysis Batch: 321882

Client Sample ID: BM-DU1-Comp

Prep Type: Total/NA

Prep Batch: 317364

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec	
				Result	Qualifier				Limits	RPD
2,4'-DDD	ND		11.0	9.573		ug/Kg	⊛	87	13 - 178	
2,4'-DDE	ND		11.0	10.20		ug/Kg	⊛	93	10 - 180	
2,4'-DDT	ND		11.0	9.186		ug/Kg	⊛	84	10 - 180	

Surrogate	MS %Recovery	MS Qualifier	Limits
Tetrachloro-m-xylene	89		20 - 131
DCB Decachlorobiphenyl (Surr)	108		20 - 180

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 570-133080-1 MSD

Matrix: Solid

Analysis Batch: 321882

Client Sample ID: BM-DU1-Comp

Prep Type: Total/NA

Prep Batch: 317364

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
2,4'-DDD	ND		11.0	9.565		ug/Kg	*	87	13 - 178	0	40
2,4'-DDE	ND		11.0	9.505		ug/Kg	*	86	10 - 180	7	40
2,4'-DDT	ND		11.0	9.093		ug/Kg	*	83	10 - 180	1	40
<b>MSD MSD</b>											
Surrogate	%Recovery	Qualifier	Limits								
Tetrachloro-m-xylene	91		20 - 131								
DCB Decachlorobiphenyl (Surr)	119		20 - 180								

## Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 570-316396/1-A ^20

Matrix: Solid

Analysis Batch: 317008

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 316396

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		0.490	0.0896	mg/Kg		03/31/23 07:18	04/03/23 12:33	20
Chromium	ND		0.980	0.102	mg/Kg		03/31/23 07:18	04/03/23 12:33	20
Copper	0.1461	J	0.980	0.111	mg/Kg		03/31/23 07:18	04/03/23 12:33	20
Nickel	ND		0.980	0.0932	mg/Kg		03/31/23 07:18	04/03/23 12:33	20
Lead	ND		0.490	0.0641	mg/Kg		03/31/23 07:18	04/03/23 12:33	20
Zinc	ND		9.80	0.544	mg/Kg		03/31/23 07:18	04/03/23 12:33	20

Lab Sample ID: LCS 570-316396/2-A ^20

Matrix: Solid

Analysis Batch: 317008

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 316396

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec	RPD	Limit
							Result		
Arsenic	49.8	48.04		mg/Kg		97	80 - 120		
Chromium	49.8	48.09		mg/Kg		97	80 - 120		
Copper	49.8	48.68		mg/Kg		98	80 - 120		
Nickel	49.8	48.59		mg/Kg		98	80 - 120		
Lead	49.8	46.01		mg/Kg		92	80 - 120		
Zinc	49.8	46.42		mg/Kg		93	80 - 120		

Lab Sample ID: LCSD 570-316396/3-A ^20

Matrix: Solid

Analysis Batch: 317008

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 316396

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	%Rec	RPD	Limit
							Result		
Arsenic	49.3	47.11		mg/Kg		96	80 - 120	2	20
Chromium	49.3	47.51		mg/Kg		96	80 - 120	1	20
Copper	49.3	47.64		mg/Kg		97	80 - 120	2	20
Nickel	49.3	47.73		mg/Kg		97	80 - 120	2	20
Lead	49.3	45.93		mg/Kg		93	80 - 120	0	20
Zinc	49.3	45.42		mg/Kg		92	80 - 120	2	20

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 6020 - Metals (ICP/MS) (Continued)

**Lab Sample ID: 570-133080-1 MS**  
**Matrix: Solid**  
**Analysis Batch: 317008**

**Client Sample ID: BM-DU1-Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 316396**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec	
	Result	Qualifier	Added	Result	Qualifier				Limits	
Arsenic	8.71		110	113.1		mg/Kg	☼	95	72 - 132	
Chromium	79.3		110	186.5		mg/Kg	☼	97	20 - 182	
Copper	45.2	B	110	145.6		mg/Kg	☼	91	25 - 157	
Nickel	74.7		110	176.4		mg/Kg	☼	92	46 - 154	
Lead	27.8		110	130.6		mg/Kg	☼	93	62 - 134	
Zinc	116		110	225.2		mg/Kg	☼	99	23 - 173	

**Lab Sample ID: 570-133080-1 MSD**  
**Matrix: Solid**  
**Analysis Batch: 317008**

**Client Sample ID: BM-DU1-Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 316396**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec		RPD	
	Result	Qualifier	Added	Result	Qualifier				Limits		RPD	Limit
Arsenic	8.71		111	110.7		mg/Kg	☼	92	72 - 132		2	13
Chromium	79.3		111	182.3		mg/Kg	☼	92	20 - 182		2	15
Copper	45.2	B	111	148.9		mg/Kg	☼	93	25 - 157		2	22
Nickel	74.7		111	173.0		mg/Kg	☼	88	46 - 154		2	15
Lead	27.8		111	128.2		mg/Kg	☼	90	62 - 134		2	23
Zinc	116		111	231.2		mg/Kg	☼	104	23 - 173		3	18

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 570-316667/1-A**  
**Matrix: Solid**  
**Analysis Batch: 317012**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 316667**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.0850	0.0327	mg/Kg		03/31/23 19:36	04/03/23 13:38	1

**Lab Sample ID: LCS 570-316667/2-A**  
**Matrix: Solid**  
**Analysis Batch: 317012**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 316667**

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec	
							Result	Qualifier
Mercury	0.408	0.4120		mg/Kg		101	80 - 120	

**Lab Sample ID: LCSD 570-316667/3-A**  
**Matrix: Solid**  
**Analysis Batch: 317012**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 316667**

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	%Rec		RPD	
							Result	Qualifier	Limits	
Mercury	0.408	0.4117		mg/Kg		101	80 - 120		0	10

**Lab Sample ID: 570-133080-1 MS**  
**Matrix: Solid**  
**Analysis Batch: 317012**

**Client Sample ID: BM-DU1-Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 316667**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec	
	Result	Qualifier	Added	Result	Qualifier				Limits	
Mercury	0.335		0.882	1.126		mg/Kg	☼	90	80 - 120	

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Method: 7471A - Mercury (CVAA) (Continued)

Lab Sample ID: 570-133080-1 MSD  
 Matrix: Solid  
 Analysis Batch: 317012

Client Sample ID: BM-DU1-Comp  
 Prep Type: Total/NA  
 Prep Batch: 316667

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		Limit
Mercury	0.335		0.882	1.154		mg/Kg	✱	93	80 - 120	2	20

## Method: Homogenization - Homogenization

Lab Sample ID: 570-133080-1 DU  
 Matrix: Solid  
 Analysis Batch: 317031

Client Sample ID: BM-DU1-Comp  
 Prep Type: Total/NA

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	RPD
	Result	Qualifier	Result	Qualifier				Limit
Sample Homogenized	yes		yes		NONE			

## Method: Moisture - Percent Moisture

Lab Sample ID: 570-133080-1 DU  
 Matrix: Solid  
 Analysis Batch: 316235

Client Sample ID: BM-DU1-Comp  
 Prep Type: Total/NA

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	RPD
	Result	Qualifier	Result	Qualifier				Limit
Percent Solids	45.4		45.8		%		1	10

## Method: D4464 - Particle Size Distribution of Catalytic Material ( Laser light scattering)

Lab Sample ID: 570-132446-A-1 DU  
 Matrix: Solid  
 Analysis Batch: 320460

Client Sample ID: Duplicate  
 Prep Type: Total/NA

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	RPD
	Result	Qualifier	Result	Qualifier				Limit
Clay (less than 0.00391 mm)	32.68		32.68		%		0	20
Coarse Sand (0.5mm to 1mm)	ND		ND		%		NC	20
Fine Sand (0.125 to 0.25mm)	0.04		0.04		%		0	20
Gravel (greater than 2 mm)	1.24		1.24		%		0	20
Medium Sand (0.25 to 0.5 mm)	ND		ND		%		NC	20
Silt (0.00391 to 0.0625mm)	60.50		60.50		%		0	20
Total Silt and Clay (0 to 0.0626mm)	93.18		93.18		%		0	20
Very Coarse Sand (1 to 2mm)	ND		ND		%		NC	20
Very Fine Sand (0.0625 to 0.125 mm)	5.55		5.55		%		0	20

# QC Association Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## GC/MS Semi VOA

### Prep Batch: 317354

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1 - DL	BM-DU1-Comp	Total/NA	Solid	3541	
570-133080-2	BM-DU2-Comp	Total/NA	Solid	3541	
570-133080-3	BM-DU3-Comp	Total/NA	Solid	3541	
MB 570-317354/1-A	Method Blank	Total/NA	Solid	3541	
LCS 570-317354/2-A	Lab Control Sample	Total/NA	Solid	3541	
LCSD 570-317354/3-A	Lab Control Sample Dup	Total/NA	Solid	3541	
570-133242-A-1-A MS	Matrix Spike	Total/NA	Solid	3541	
570-133242-A-1-B MSD	Matrix Spike Duplicate	Total/NA	Solid	3541	

### Prep Batch: 317359

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	3541	
570-133080-2	BM-DU2-Comp	Total/NA	Solid	3541	
570-133080-3	BM-DU3-Comp	Total/NA	Solid	3541	
MB 570-317359/1-A	Method Blank	Total/NA	Solid	3541	
LCS 570-317359/2-A	Lab Control Sample	Total/NA	Solid	3541	
LCSD 570-317359/3-A	Lab Control Sample Dup	Total/NA	Solid	3541	
570-133242-A-1-D MS	Matrix Spike	Total/NA	Solid	3541	
570-133242-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	3541	

### Prep Batch: 318018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	Organotin Prep	
570-133080-2	BM-DU2-Comp	Total/NA	Solid	Organotin Prep	
570-133080-3	BM-DU3-Comp	Total/NA	Solid	Organotin Prep	
MB 570-318018/1-A	Method Blank	Total/NA	Solid	Organotin Prep	
LCS 570-318018/2-A	Lab Control Sample	Total/NA	Solid	Organotin Prep	
LCSD 570-318018/3-A	Lab Control Sample Dup	Total/NA	Solid	Organotin Prep	
570-133242-B-1-B MS	Matrix Spike	Total/NA	Solid	Organotin Prep	
570-133242-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	Organotin Prep	

### Analysis Batch: 318410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	Organotins SIM	318018
570-133080-2	BM-DU2-Comp	Total/NA	Solid	Organotins SIM	318018
570-133080-3	BM-DU3-Comp	Total/NA	Solid	Organotins SIM	318018
570-133242-B-1-B MS	Matrix Spike	Total/NA	Solid	Organotins SIM	318018
570-133242-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	Organotins SIM	318018

### Analysis Batch: 318652

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-2	BM-DU2-Comp	Total/NA	Solid	8270C SIM	317354
570-133080-3	BM-DU3-Comp	Total/NA	Solid	8270C SIM	317354
MB 570-317354/1-A	Method Blank	Total/NA	Solid	8270C SIM	317354
LCS 570-317354/2-A	Lab Control Sample	Total/NA	Solid	8270C SIM	317354
LCSD 570-317354/3-A	Lab Control Sample Dup	Total/NA	Solid	8270C SIM	317354
570-133242-A-1-A MS	Matrix Spike	Total/NA	Solid	8270C SIM	317354
570-133242-A-1-B MSD	Matrix Spike Duplicate	Total/NA	Solid	8270C SIM	317354

# QC Association Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## GC/MS Semi VOA

### Analysis Batch: 319311

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 570-317359/1-A	Method Blank	Total/NA	Solid	8270C SIM CON	317359
LCS 570-317359/2-A	Lab Control Sample	Total/NA	Solid	8270C SIM CON	317359
LCSD 570-317359/3-A	Lab Control Sample Dup	Total/NA	Solid	8270C SIM CON	317359
570-133242-A-1-D MS	Matrix Spike	Total/NA	Solid	8270C SIM CON	317359
570-133242-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8270C SIM CON	317359

### Analysis Batch: 319611

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1 - DL	BM-DU1-Comp	Total/NA	Solid	8270C SIM	317354

### Analysis Batch: 319808

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	8270C SIM CON	317359
570-133080-2	BM-DU2-Comp	Total/NA	Solid	8270C SIM CON	317359
570-133080-3	BM-DU3-Comp	Total/NA	Solid	8270C SIM CON	317359

### Analysis Batch: 321470

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 570-318018/2-A	Lab Control Sample	Total/NA	Solid	Organotins SIM	318018
LCSD 570-318018/3-A	Lab Control Sample Dup	Total/NA	Solid	Organotins SIM	318018

### Analysis Batch: 321500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 570-318018/1-A	Method Blank	Total/NA	Solid	Organotins SIM	318018

## GC Semi VOA

### Prep Batch: 317364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	3541	
570-133080-2	BM-DU2-Comp	Total/NA	Solid	3541	
570-133080-3	BM-DU3-Comp	Total/NA	Solid	3541	
MB 570-317364/1-A	Method Blank	Total/NA	Solid	3541	
LCS 570-317364/2-A	Lab Control Sample	Total/NA	Solid	3541	
LCS 570-317364/4-A	Lab Control Sample	Total/NA	Solid	3541	
LCSD 570-317364/3-A	Lab Control Sample Dup	Total/NA	Solid	3541	
LCSD 570-317364/5-A	Lab Control Sample Dup	Total/NA	Solid	3541	
570-133080-1 MS	BM-DU1-Comp	Total/NA	Solid	3541	
570-133080-1 MSD	BM-DU1-Comp	Total/NA	Solid	3541	

### Analysis Batch: 320263

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 570-317364/1-A	Method Blank	Total/NA	Solid	8081A	317364
LCS 570-317364/2-A	Lab Control Sample	Total/NA	Solid	8081A	317364
LCSD 570-317364/3-A	Lab Control Sample Dup	Total/NA	Solid	8081A	317364

### Analysis Batch: 321882

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	8081A	317364
570-133080-2	BM-DU2-Comp	Total/NA	Solid	8081A	317364
570-133080-3	BM-DU3-Comp	Total/NA	Solid	8081A	317364

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# QC Association Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## GC Semi VOA (Continued)

### Analysis Batch: 321882 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 570-317364/4-A	Lab Control Sample	Total/NA	Solid	8081A	317364
LCSD 570-317364/5-A	Lab Control Sample Dup	Total/NA	Solid	8081A	317364
570-133080-1 MS	BM-DU1-Comp	Total/NA	Solid	8081A	317364
570-133080-1 MSD	BM-DU1-Comp	Total/NA	Solid	8081A	317364

## Metals

### Prep Batch: 316396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	3050B	
570-133080-2	BM-DU2-Comp	Total/NA	Solid	3050B	
570-133080-3	BM-DU3-Comp	Total/NA	Solid	3050B	
MB 570-316396/1-A ^20	Method Blank	Total/NA	Solid	3050B	
LCS 570-316396/2-A ^20	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 570-316396/3-A ^20	Lab Control Sample Dup	Total/NA	Solid	3050B	
570-133080-1 MS	BM-DU1-Comp	Total/NA	Solid	3050B	
570-133080-1 MSD	BM-DU1-Comp	Total/NA	Solid	3050B	

### Prep Batch: 316667

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	7471A	
570-133080-2	BM-DU2-Comp	Total/NA	Solid	7471A	
570-133080-3	BM-DU3-Comp	Total/NA	Solid	7471A	
MB 570-316667/1-A	Method Blank	Total/NA	Solid	7471A	
LCS 570-316667/2-A	Lab Control Sample	Total/NA	Solid	7471A	
LCSD 570-316667/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	
570-133080-1 MS	BM-DU1-Comp	Total/NA	Solid	7471A	
570-133080-1 MSD	BM-DU1-Comp	Total/NA	Solid	7471A	

### Analysis Batch: 317008

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	6020	316396
570-133080-2	BM-DU2-Comp	Total/NA	Solid	6020	316396
570-133080-3	BM-DU3-Comp	Total/NA	Solid	6020	316396
MB 570-316396/1-A ^20	Method Blank	Total/NA	Solid	6020	316396
LCS 570-316396/2-A ^20	Lab Control Sample	Total/NA	Solid	6020	316396
LCSD 570-316396/3-A ^20	Lab Control Sample Dup	Total/NA	Solid	6020	316396
570-133080-1 MS	BM-DU1-Comp	Total/NA	Solid	6020	316396
570-133080-1 MSD	BM-DU1-Comp	Total/NA	Solid	6020	316396

### Analysis Batch: 317012

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	7471A	316667
570-133080-2	BM-DU2-Comp	Total/NA	Solid	7471A	316667
570-133080-3	BM-DU3-Comp	Total/NA	Solid	7471A	316667
MB 570-316667/1-A	Method Blank	Total/NA	Solid	7471A	316667
LCS 570-316667/2-A	Lab Control Sample	Total/NA	Solid	7471A	316667
LCSD 570-316667/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	316667
570-133080-1 MS	BM-DU1-Comp	Total/NA	Solid	7471A	316667
570-133080-1 MSD	BM-DU1-Comp	Total/NA	Solid	7471A	316667

# QC Association Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## General Chemistry

### Analysis Batch: 316235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	Moisture	
570-133080-2	BM-DU2-Comp	Total/NA	Solid	Moisture	
570-133080-3	BM-DU3-Comp	Total/NA	Solid	Moisture	
570-133080-1 DU	BM-DU1-Comp	Total/NA	Solid	Moisture	

### Analysis Batch: 317031

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	Homogenization	
570-133080-2	BM-DU2-Comp	Total/NA	Solid	Homogenization	
570-133080-3	BM-DU3-Comp	Total/NA	Solid	Homogenization	
570-133080-1 MS	BM-DU1-Comp	Total/NA	Solid	Homogenization	
570-133080-1 MSD	BM-DU1-Comp	Total/NA	Solid	Homogenization	
570-133080-1 DU	BM-DU1-Comp	Total/NA	Solid	Homogenization	

## Geotechnical

### Analysis Batch: 320460

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	D4464	
570-133080-2	BM-DU2-Comp	Total/NA	Solid	D4464	
570-133080-3	BM-DU3-Comp	Total/NA	Solid	D4464	
LCS 570-320460/19	Lab Control Sample	Total/NA	Solid	D4464	
LCSD 570-320460/21	Lab Control Sample Dup	Total/NA	Solid	D4464	
570-132446-A-1 DU	Duplicate	Total/NA	Solid	D4464	

# Lab Chronicle

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Client Sample ID: BM-DU1-Comp

## Lab Sample ID: 570-133080-1

Date Collected: 03/15/23 09:25

Matrix: Solid

Date Received: 03/29/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541	DL		20.12 g	2 mL	317354	04/04/23 20:56	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM	DL	5	1 mL	1 mL	319611	04/12/23 14:43	UFLE	EET CAL 4
Instrument ID: GCMSMM										
Total/NA	Prep	3541			20.12 g	2 mL	317359	04/04/23 20:56	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM CON		1	1 mL	1 mL	319808	04/13/23 20:33	J7WE	EET CAL 4
Instrument ID: GCMSHHH										
Total/NA	Prep	Organotin Prep			20.1 g	2 mL	318018	04/05/23 10:58	UWEZ	EET CAL 4
Total/NA	Analysis	Organotins SIM		1	1 mL	1 mL	318410	04/07/23 17:40	UFLE	EET CAL 4
Instrument ID: GCMSY										
Total/NA	Prep	3541			20.04 g	2 mL	317364	04/04/23 20:57	UM1W	EET CAL 4
Total/NA	Analysis	8081A		1	1 mL	1 mL	321882	04/20/23 01:53	N5Y3	EET CAL 4
Instrument ID: GC52A										
Total/NA	Prep	3050B			2.03 g	50 mL	316396	03/31/23 07:18	GYR8	EET CAL 4
Total/NA	Analysis	6020		20			317008	04/03/23 12:40	Y2WS	EET CAL 4
Instrument ID: ICPMS10										
Total/NA	Prep	7471A			0.51 g	50 mL	316667	03/31/23 19:36	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			317012	04/03/23 13:44	C0YH	EET CAL 4
Instrument ID: HG7										
Total/NA	Analysis	Homogenization		1			317031	04/03/23 14:33	H2HS	EET CAL 4
Instrument ID: NOEQUIP										
Total/NA	Analysis	Moisture		1			316235	03/30/23 17:26	U7UR	EET CAL 4
Instrument ID: BAL87										
Total/NA	Analysis	D4464		1			320460	04/14/23 15:04	C6FB	EET CAL 4
Instrument ID: NOEQUIP										

## Client Sample ID: BM-DU2-Comp

## Lab Sample ID: 570-133080-2

Date Collected: 03/15/23 15:05

Matrix: Solid

Date Received: 03/29/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.02 g	2 mL	317354	04/05/23 19:46	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM		5	1 mL	1 mL	318652	04/08/23 19:02	UJ3K	EET CAL 4
Instrument ID: GCMSAAA										
Total/NA	Prep	3541			20.02 g	2 mL	317359	04/05/23 19:46	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM CON		1	1 mL	1 mL	319808	04/13/23 20:55	J7WE	EET CAL 4
Instrument ID: GCMSHHH										
Total/NA	Prep	Organotin Prep			20.0 g	2 mL	318018	04/05/23 10:58	UWEZ	EET CAL 4
Total/NA	Analysis	Organotins SIM		1	1 mL	1 mL	318410	04/07/23 17:59	UFLE	EET CAL 4
Instrument ID: GCMSY										
Total/NA	Prep	3541			20.12 g	2 mL	317364	04/05/23 19:47	UM1W	EET CAL 4
Total/NA	Analysis	8081A		1	1 mL	1 mL	321882	04/20/23 02:07	N5Y3	EET CAL 4
Instrument ID: GC52A										
Total/NA	Prep	3050B			2.00 g	50 mL	316396	03/31/23 07:18	GYR8	EET CAL 4
Total/NA	Analysis	6020		20			317008	04/03/23 12:50	Y2WS	EET CAL 4
Instrument ID: ICPMS10										

Eurolins Calscience

# Lab Chronicle

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Client Sample ID: BM-DU2-Comp

## Lab Sample ID: 570-133080-2

Date Collected: 03/15/23 15:05

Matrix: Solid

Date Received: 03/29/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			0.51 g	50 mL	316667	03/31/23 19:36	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			317012	04/03/23 16:07	C0YH	EET CAL 4
Instrument ID: HG7										
Total/NA	Analysis	Homogenization		1			317031	04/03/23 14:33	H2HS	EET CAL 4
Instrument ID: NOEQUIP										
Total/NA	Analysis	Moisture		1			316235	03/30/23 18:50	U7UR	EET CAL 4
Instrument ID: BAL87										
Total/NA	Analysis	D4464		1			320460	04/14/23 15:15	C6FB	EET CAL 4
Instrument ID: NOEQUIP										

## Client Sample ID: BM-DU3-Comp

## Lab Sample ID: 570-133080-3

Date Collected: 03/16/23 12:20

Matrix: Solid

Date Received: 03/29/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.03 g	2 mL	317354	04/05/23 19:46	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM		5	1 mL	1 mL	318652	04/08/23 19:23	UJ3K	EET CAL 4
Instrument ID: GCMSAAA										
Total/NA	Prep	3541			20.03 g	2 mL	317359	04/05/23 19:46	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM CON		1	1 mL	1 mL	319808	04/13/23 21:16	J7WE	EET CAL 4
Instrument ID: GCMSHHH										
Total/NA	Prep	Organotin Prep			20.0 g	2 mL	318018	04/05/23 10:58	UWEZ	EET CAL 4
Total/NA	Analysis	Organotins SIM		1	1 mL	1 mL	318410	04/07/23 18:17	UFLE	EET CAL 4
Instrument ID: GCMSY										
Total/NA	Prep	3541			20.05 g	2 mL	317364	04/05/23 19:47	UM1W	EET CAL 4
Total/NA	Analysis	8081A		1	1 mL	1 mL	321882	04/20/23 02:22	N5Y3	EET CAL 4
Instrument ID: GC52A										
Total/NA	Prep	3050B			1.98 g	50 mL	316396	03/31/23 07:18	GYR8	EET CAL 4
Total/NA	Analysis	6020		20			317008	04/03/23 12:52	Y2WS	EET CAL 4
Instrument ID: ICPMS10										
Total/NA	Prep	7471A			0.51 g	50 mL	316667	03/31/23 19:36	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			317012	04/03/23 16:08	C0YH	EET CAL 4
Instrument ID: HG7										
Total/NA	Analysis	Homogenization		1			317031	04/03/23 14:33	H2HS	EET CAL 4
Instrument ID: NOEQUIP										
Total/NA	Analysis	Moisture		1			316235	03/30/23 18:50	U7UR	EET CAL 4
Instrument ID: BAL87										
Total/NA	Analysis	D4464		1			320460	04/14/23 15:24	C6FB	EET CAL 4
Instrument ID: NOEQUIP										

### Laboratory References:

Brooks = Brooks Applied Labs LLC, 13751 Lake City Way NE, Suite 108, Seattle, WA 98125  
 EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494  
 McCampbell = McCampbell Analytical, Inc., 1534 Willow Pass Road, Pittsburg, CA 94565, TEL (925)252-9262

# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Laboratory: Eurofins Calscience

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	Los Angeles County Sanitation Districts	10109	07-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
6020	3050B	Solid	Arsenic
6020	3050B	Solid	Chromium
6020	3050B	Solid	Copper
6020	3050B	Solid	Lead
6020	3050B	Solid	Nickel
6020	3050B	Solid	Zinc
7471A	7471A	Solid	Mercury
8081A	3541	Solid	2,4'-DDD
8081A	3541	Solid	2,4'-DDE
8081A	3541	Solid	2,4'-DDT
8081A	3541	Solid	4,4'-DDD
8081A	3541	Solid	4,4'-DDE
8081A	3541	Solid	4,4'-DDT
8081A	3541	Solid	Aldrin
8081A	3541	Solid	alpha-BHC
8081A	3541	Solid	beta-BHC
8081A	3541	Solid	Chlordane
8081A	3541	Solid	delta-BHC
8081A	3541	Solid	Dieldrin
8081A	3541	Solid	Endosulfan I
8081A	3541	Solid	Endosulfan II
8081A	3541	Solid	Endosulfan sulfate
8081A	3541	Solid	Endrin
8081A	3541	Solid	Endrin aldehyde
8081A	3541	Solid	gamma-BHC
8081A	3541	Solid	Heptachlor
8081A	3541	Solid	Heptachlor epoxide
8081A	3541	Solid	Toxaphene
8270C SIM	3541	Solid	1,6,7-Trimethylnaphthalene
8270C SIM	3541	Solid	1-Methylnaphthalene
8270C SIM	3541	Solid	1-Methylphenanthrene
8270C SIM	3541	Solid	2,6-Dimethylnaphthalene
8270C SIM	3541	Solid	2-Methylnaphthalene
8270C SIM	3541	Solid	Acenaphthene
8270C SIM	3541	Solid	Acenaphthylene
8270C SIM	3541	Solid	Anthracene
8270C SIM	3541	Solid	Benzo[a]anthracene
8270C SIM	3541	Solid	Benzo[a]pyrene
8270C SIM	3541	Solid	Benzo[b]fluoranthene
8270C SIM	3541	Solid	Benzo[e]pyrene
8270C SIM	3541	Solid	Benzo[g,h,i]perylene
8270C SIM	3541	Solid	Benzo[k]fluoranthene
8270C SIM	3541	Solid	Biphenyl
8270C SIM	3541	Solid	Chrysene
8270C SIM	3541	Solid	Dibenz(a,h)anthracene

# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Laboratory: Eurofins Calscience (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
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The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8270C SIM	3541	Solid	Dibenzothiophene
8270C SIM	3541	Solid	Fluoranthene
8270C SIM	3541	Solid	Fluorene
8270C SIM	3541	Solid	Indeno[1,2,3-cd]pyrene
8270C SIM	3541	Solid	Naphthalene
8270C SIM	3541	Solid	Perylene
8270C SIM	3541	Solid	Phenanthrene
8270C SIM	3541	Solid	Pyrene
8270C SIM CON	3541	Solid	PCB-101
8270C SIM CON	3541	Solid	PCB-105
8270C SIM CON	3541	Solid	PCB-110
8270C SIM CON	3541	Solid	PCB-118
8270C SIM CON	3541	Solid	PCB-128
8270C SIM CON	3541	Solid	PCB-132/153
8270C SIM CON	3541	Solid	PCB-138/158
8270C SIM CON	3541	Solid	PCB-141
8270C SIM CON	3541	Solid	PCB-149
8270C SIM CON	3541	Solid	PCB-151
8270C SIM CON	3541	Solid	PCB-156
8270C SIM CON	3541	Solid	PCB-170
8270C SIM CON	3541	Solid	PCB-174
8270C SIM CON	3541	Solid	PCB-177
8270C SIM CON	3541	Solid	PCB-18
8270C SIM CON	3541	Solid	PCB-180
8270C SIM CON	3541	Solid	PCB-183
8270C SIM CON	3541	Solid	PCB-187
8270C SIM CON	3541	Solid	PCB-194
8270C SIM CON	3541	Solid	PCB-195
8270C SIM CON	3541	Solid	PCB-201
8270C SIM CON	3541	Solid	PCB-203
8270C SIM CON	3541	Solid	PCB-28
8270C SIM CON	3541	Solid	PCB-31
8270C SIM CON	3541	Solid	PCB-33
8270C SIM CON	3541	Solid	PCB-44
8270C SIM CON	3541	Solid	PCB-49
8270C SIM CON	3541	Solid	PCB-5/8
8270C SIM CON	3541	Solid	PCB-52
8270C SIM CON	3541	Solid	PCB-56
8270C SIM CON	3541	Solid	PCB-60
8270C SIM CON	3541	Solid	PCB-66
8270C SIM CON	3541	Solid	PCB-70
8270C SIM CON	3541	Solid	PCB-74
8270C SIM CON	3541	Solid	PCB-87
8270C SIM CON	3541	Solid	PCB-95
8270C SIM CON	3541	Solid	PCB-97
8270C SIM CON	3541	Solid	PCB-99
D4464		Solid	Clay (less than 0.00391 mm)

# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

## Laboratory: Eurofins Calscience (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
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The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
D4464		Solid	Coarse Sand (0.5mm to 1mm)
D4464		Solid	Fine Sand (0.125 to 0.25mm)
D4464		Solid	Gravel (greater than 2 mm)
D4464		Solid	Medium Sand (0.25 to 0.5 mm)
D4464		Solid	Silt (0.00391 to 0.0625mm)
D4464		Solid	Total Silt and Clay (0 to 0.0626mm)
D4464		Solid	Very Coarse Sand (1 to 2mm)
D4464		Solid	Very Fine Sand (0.0625 to 0.125 mm)
Homogenization		Solid	Sample Homogenized
Moisture		Solid	Percent Solids
Organotins SIM	Organotin Prep	Solid	Dibutyltin
Organotins SIM	Organotin Prep	Solid	Monobutyltin
Organotins SIM	Organotin Prep	Solid	Tetrabutyltin
Organotins SIM	Organotin Prep	Solid	Tributyltin



# Method Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

Method	Method Description	Protocol	Laboratory
8270C SIM	PAHs (GC/MS SIM)	SW846	EET CAL 4
8270C SIM CON	PCB Congeners (GC/MS)	SW846	EET CAL 4
Organotins SIM	Organotins (GC/MS SIM)	Lab SOP	EET CAL 4
8081A	Organochlorine Pesticides (GC)	SW846	EET CAL 4
6020	Metals (ICP/MS)	SW846	EET CAL 4
7471A	Mercury (CVAA)	SW846	EET CAL 4
Homogenization	Homogenization	None	EET CAL 4
Moisture	Percent Moisture	EPA	EET CAL 4
D4464	Particle Size Distribution of Catalytic Material ( Laser light scattering)	ASTM	EET CAL 4
6020	SW846 6020 Metals by ICPMS	SW846	Brooks
9060	SW846 9060 Total Organic Carbon	SW846	McC Campbell
3050B	Preparation, Metals	SW846	EET CAL 4
3541	Automated Soxhlet Extraction	SW846	EET CAL 4
7471A	Preparation, Mercury	SW846	EET CAL 4
Organotin Prep	Extraction (Organotins)	None	EET CAL 4

**Protocol References:**

- ASTM = ASTM International
- EPA = US Environmental Protection Agency
- Lab SOP = Laboratory Standard Operating Procedure
- None = None
- SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

- Brooks = Brooks Applied Labs LLC, 13751 Lake City Way NE, Suite 108, Seattle, WA 98125
- EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494
- McC Campbell = McC Campbell Analytical, Inc., 1534 Willow Pass Road, Pittsburg, CA 94565, TEL (925)252-9262





# Sample Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-133080-1	BM-DU1-Comp	Solid	03/15/23 09:25	03/29/23 09:45
570-133080-2	BM-DU2-Comp	Solid	03/15/23 15:05	03/29/23 09:45
570-133080-3	BM-DU3-Comp	Solid	03/16/23 12:20	03/29/23 09:45

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# McC Campbell Analytical, Inc.

"When Quality Counts"

## Analytical Report

**WorkOrder:** 2304367

**Report Created for:** Eurofins Calscience, Inc.

2841 Dow Avenue, Suite 100  
Tustin, CA 92780

**Project Contact:** Carla Hollowell

**Project P.O.:**

**Project:** 57000505; Berkley Marina (Sediment)

**Project Received:** 04/05/2023

Analytical Report reviewed & approved for release on 04/13/2023 by:

Yen Cao  
Project Manager

*The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in a case narrative.*





## Glossary of Terms & Qualifier Definitions

**Client:** Eurofins Calscience, Inc.

**WorkOrder:** 2304367

**Project:** 57000505; Berkley Marina (Sediment)

### Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LQL	Lowest Quantitation Level
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit <sup>1</sup>
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting limit <sup>2</sup>
RPD	Relative Percent Difference
RRT	Relative Retention Time
RSD	Relative Standard Deviation
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure

<sup>1</sup> MDL is the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. Definition and Procedure for the Determination of the Method Detection Limit, Revision 2, 40CFR, Part 136, Appendix B, EPA 821-R-16-006, December 2016.

<sup>2</sup> RL is the lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions. (The RL cannot be lower than the lowest calibration standard used in the initial calibration of the instrument and must be greater than the MDL.)



## Glossary of Terms & Qualifier Definitions

**Client:** Eurofins Calscience, Inc.

**WorkOrder:** 2304367

**Project:** 57000505; Berkley Marina (Sediment)

TEQ                      Toxicity Equivalent

TZA                      TimeZone Net Adjustment for sample collected outside of MAI's UTC.

WET (STLC)            Waste Extraction Test (Soluble Threshold Limit Concentration)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15



## Case Narrative

**Client:** Eurofins Calscience, Inc.  
**Project:** 57000505; Berkley Marina (Sediment)

**Work Order:** 2304367  
April 13, 2023

Percent Moisture

In accordance with SW-846, 8000, percent moisture is reported as:

$$[\text{Moisture Weight (g)}] / [\text{Sample Wet Weight (g)}] \times 100$$

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15



# Analytical Report

**Client:** Eurofins Calscience, Inc.  
**Date Received:** 04/05/2023 10:06  
**Date Prepared:** 04/11/2023  
**Project:** 57000505; Berkley Marina (Sediment)

**WorkOrder:** 2304367  
**Extraction Method:** ASTM D2216  
**Analytical Method:** SW8000  
**Unit:** wet wt%

## Percent Moisture

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BM-DU1-Comp (570-133080-1)	2304367-001A	Soil	03/15/2023 09:25	WetChem	267473

Analytes	Result	RL	DF	Date Analyzed
% Moisture	53.2	0.100	1	04/12/2023 13:35

Analyst(s): JME



# Analytical Report

**Client:** Eurofins Calscience, Inc.  
**Date Received:** 04/05/2023 10:06  
**Date Prepared:** 04/10/2023  
**Project:** 57000505; Berkley Marina (Sediment)

**WorkOrder:** 2304367  
**Extraction Method:** SM5310 Bm  
**Analytical Method:** SM5310Bm  
**Unit:** %-dry

## Total Organic Carbon (TOC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BM-DU1-Comp (570-133080-1)	2304367-001A	Soil	03/15/2023 09:25	WC_CNS F041023-1_1012_12	267353

Analytes	Result	RL	DF	Date Analyzed
TOC	1.3	0.043	1	04/10/2023 19:45

Analyst(s): DMA



# Quality Control Report

**Client:** Eurofins Calscience, Inc.  
**Date Prepared:** 04/11/2023  
**Date Analyzed:** 04/12/2023  
**Instrument:** WetChem  
**Matrix:** Soil  
**Project:** 57000505; Berkley Marina (Sediment)

**WorkOrder:** 2304367  
**BatchID:** 267473  
**Extraction Method:** ASTM D2216  
**Analytical Method:** SW8000  
**Unit:** wet wt%  
**Sample ID:** MB-267473  
2304367-001A

## QC Summary Report for Percent Moisture

Analyte	MB Result	MDL	RL			
% Moisture	ND	0.100	0.100	-	-	-

Analyte	SAMP Result	DUP Result	RPD	RPD Limit
% Moisture	53.2	53.6	0.599	15





# Quality Control Report

<b>Client:</b>	Eurofins Calscience, Inc.	<b>WorkOrder:</b>	2304367
<b>Date Prepared:</b>	04/10/2023	<b>BatchID:</b>	267353
<b>Date Analyzed:</b>	04/10/2023	<b>Extraction Method:</b>	SM5310 Bm
<b>Instrument:</b>	WC_CNS	<b>Analytical Method:</b>	SM5310Bm
<b>Matrix:</b>	Soil	<b>Unit:</b>	mg/kg
<b>Project:</b>	57000505; Berkley Marina (Sediment)	<b>Sample ID:</b>	MB/LCS/LCSD-267353

## QC Summary Report for SM5310Bm

Analyte	MB Result	MDL	RL
TOC	ND	130	200

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TOC	8200	8200	8200	100	100	80-120	0.283	20



1534 Willow Pass Rd  
Pittsburg, CA 94565-1701  
(925) 252-9262

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 2304367

ClientCode: CSEL

- WaterTrax   
  CLIP   
  EDF   
  EQuIS   
 Dry-Weight   
 Email   
 HardCopy   
 ThirdParty   
 J-flag  
 Detection Summary   
 Excel

**Report to:**

Carla Hollowell  
Eurofins Calscience, Inc.  
2841 Dow Avenue, Suite 100  
Tustin, CA 92780  
(714) 895-5494    FAX: (714) 894-7501

Email: carla.hollowell@eurofinsET.com  
cc/3rd Party:  
PO:  
Project: 57000505; Berkley Marina (Sediment)

**Bill to:**

Accounts Payable  
Eurofins Calscience, Inc.  
2841 Dow Avenue, Suite 100  
Tustin, CA 92780  
US26\_AP@eurofinsus.com; Cynthia.Jih

Requested TAT: 5 days;

Date Received: 04/05/2023

Date Logged: 04/07/2023

Lab ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
2304367-001	BM-DU1-Comp (570-133080-1)	Soil	3/15/2023 09:25	<input type="checkbox"/>	A	A	A										

**Test Legend:**

1	cnsTOC_S(%)	2	PERmoist_S	3	PRDisposal Fee	4	
5		6		7		8	
9		10		11		12	

Prepared by: Tina Perez

**Comments:**

NOTE: Soil samples are discarded 60 days after receipt unless other arrangements are made (Water samples are 30 days).  
Hazardous samples will be returned to client or disposed of at client expense.



### WORK ORDER SUMMARY

**Client Name:** EUROFINS CALSCIENCE, INC.

**Project:** 57000505; Berkley Marina (Sediment)

**Work Order:** 2304367

**Client Contact:** Carla Hollowell

**QC Level:** LEVEL 2

**Contact's Email:** carla.hollowell@eurofinsET.com

**Comments:**

**Date Logged:** 4/7/2023

WaterTrax   
  CLIP   
  EDF   
  Excel   
  EQUIS   
  Email   
  HardCopy   
  ThirdParty   
  J-flag

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	U**	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	Sub Out
001A	BM-DU1-Comp (570-133080-1)	Soil	SW 8000 (Percent Moisture)	1	2OZ GJ, Unpres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/15/2023 9:25	5 days	4/12/2023		<input type="checkbox"/>	<input type="checkbox"/>
			SM5310Bm (TOC)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/13/2023		<input type="checkbox"/>	<input type="checkbox"/>

**NOTES:** \* STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- Organic extracts are held for 40 days before disposal; Inorganic extract are held for 30 days.

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

U\*\* = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.



ICOC No:  
570-214827

**Containers**

Count                      Container Type  
1                              Soil jar 4oz (split from parent)

Preservative  
None

**Subcontract Method Instructions**

Sample IDs	Method	Method Description	Method Comments
1	SUBCONTRACT	SUB (General Subcontract Method)	TOC; NTAT; % dw units; DMMO EDD



### Sample Receipt Checklist

Client Name: Eurofins Calscience, Inc.  
Project: 57000505; Berkley Marina (Sediment)  
WorkOrder No: 2304367 Matrix: Soil  
Carrier: FedEx

Date and Time Received: 4/5/2023 10:06  
Date Logged: 4/7/2023  
Received by: Tina Perez  
Logged by: Tina Perez

#### Chain of Custody (COC) Information

- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Sample IDs noted by Client on COC? Yes  No
- Date and Time of collection noted by Client on COC? Yes  No
- Sampler's name noted on COC? Yes  No
- COC agrees with Quote? Yes  No  NA

#### Sample Receipt Information

- Custody seals intact on shipping container/cooler? Yes  No  NA
- Custody seals intact on sample bottles? Yes  No  NA
- Shipping container/cooler in good condition? Yes  No
- Samples in proper containers/bottles? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No

#### Sample Preservation and Hold Time (HT) Information

- All samples received within holding time? Yes  No  NA
- Samples Received on Ice? Yes  No

(Ice Type: WET ICE )

- Sample/Temp Blank temperature Temp: 4.6°C NA
- ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)? Yes  No  NA
- Sample labels checked for correct preservation? Yes  No
- pH acceptable upon receipt (Metal: <2; Nitrate 353.2/4500NO3: <2; 522: <4; 218.7: >8)? Yes  No  NA

#### UCMR Samples:

- pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)? Yes  No  NA
- Free Chlorine tested and acceptable upon receipt (<0.1mg/L [not applicable to 200.7])? Yes  No  NA

-----  
Comments:



# McC Campbell Analytical, Inc.

"When Quality Counts"

## Analytical Report

**WorkOrder:** 2304483

**Report Created for:** Eurofins Calscience, Inc.

2841 Dow Avenue, Suite 100  
Tustin, CA 92780

**Project Contact:** Carla Hollowell

**Project P.O.:**

**Project:** 57000505; Berkley Marina (Sediment)

**Project Received:** 04/07/2023

Analytical Report reviewed & approved for release on 04/13/2023 by:

Christine Askari  
Project Manager

*The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in a case narrative.*





## Glossary of Terms & Qualifier Definitions

**Client:** Eurofins Calscience, Inc.

**WorkOrder:** 2304483

**Project:** 57000505; Berkley Marina (Sediment)

### Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LQL	Lowest Quantitation Level
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit <sup>1</sup>
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting limit <sup>2</sup>
RPD	Relative Percent Difference
RRT	Relative Retention Time
RSD	Relative Standard Deviation
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure

<sup>1</sup> MDL is the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. Definition and Procedure for the Determination of the Method Detection Limit, Revision 2, 40CFR, Part 136, Appendix B, EPA 821-R-16-006, December 2016.

<sup>2</sup> RL is the lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions. (The RL cannot be lower than the lowest calibration standard used in the initial calibration of the instrument and must be greater than the MDL.)





## Glossary of Terms & Qualifier Definitions

**Client:** Eurofins Calscience, Inc.

**WorkOrder:** 2304483

**Project:** 57000505; Berkley Marina (Sediment)

TEQ                      Toxicity Equivalents

TZA                      TimeZone Net Adjustment for sample collected outside of MAI's UTC.

WET (STLC)            Waste Extraction Test (Soluble Threshold Limit Concentration)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15



## Case Narrative

**Client:** Eurofins Calscience, Inc.  
**Project:** 57000505; Berkley Marina (Sediment)

**Work Order:** 2304483  
April 12, 2023

Percent Moisture

In accordance with SW-846, 8000, percent moisture is reported as:

$$[\text{Moisture Weight (g)}] / [\text{Sample Wet Weight (g)}] \times 100$$

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15



# Analytical Report

**Client:** Eurofins Calscience, Inc.  
**Date Received:** 04/07/2023 10:05  
**Date Prepared:** 04/12/2023  
**Project:** 57000505; Berkley Marina (Sediment)

**WorkOrder:** 2304483  
**Extraction Method:** ASTM D2216  
**Analytical Method:** SW8000  
**Unit:** wet wt%

## Percent Moisture

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BM-DU2-Comp (570-133080-2)	2304483-001A	Soil	03/15/2023 15:05	WetChem	267554

Analytes	Result	RL	DF	Date Analyzed
% Moisture	46.6	0.100	1	04/12/2023 14:15

Analyst(s): JME

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BM-DU3-Comp (570-133080-3)	2304483-002A	Soil	03/16/2023 12:20	WetChem	267555

Analytes	Result	RL	DF	Date Analyzed
% Moisture	58.7	0.100	1	04/12/2023 14:15

Analyst(s): JME



# Analytical Report

**Client:** Eurofins Calscience, Inc.  
**Date Received:** 04/07/2023 10:05  
**Date Prepared:** 04/10/2023  
**Project:** 57000505; Berkley Marina (Sediment)

**WorkOrder:** 2304483  
**Extraction Method:** SM5310 Bm  
**Analytical Method:** SM5310Bm  
**Unit:** %-dry

## Total Organic Carbon (TOC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BM-DU2-Comp (570-133080-2)	2304483-001A	Soil	03/15/2023 15:05	WC_CNS F041023-1_1012_16	267353

Analytes	Result	RL	DF	Date Analyzed
TOC	1.3	0.037	1	04/10/2023 20:42

Analyst(s): DMA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BM-DU3-Comp (570-133080-3)	2304483-002A	Soil	03/16/2023 12:20	WC_CNS F041023-1_1012_17	267353

Analytes	Result	RL	DF	Date Analyzed
TOC	1.6	0.048	1	04/10/2023 20:59

Analyst(s): DMA



# Quality Control Report

**Client:** Eurofins Calscience, Inc.  
**Date Prepared:** 04/12/2023  
**Date Analyzed:** 04/12/2023  
**Instrument:** WetChem  
**Matrix:** Soil  
**Project:** 57000505; Berkley Marina (Sediment)

**WorkOrder:** 2304483  
**BatchID:** 267554  
**Extraction Method:** ASTM D2216  
**Analytical Method:** SW8000  
**Unit:** wet wt%  
**Sample ID:** MB-267554

## QC Summary Report for Percent Moisture

Analyte	MB Result	MDL	RL			
% Moisture	ND	0.100	0.100	-	-	-

(Cont.)





# Quality Control Report

**Client:** Eurofins Calscience, Inc.  
**Date Prepared:** 04/12/2023  
**Date Analyzed:** 04/12/2023  
**Instrument:** WetChem  
**Matrix:** Soil  
**Project:** 57000505; Berkley Marina (Sediment)

**WorkOrder:** 2304483  
**BatchID:** 267555  
**Extraction Method:** ASTM D2216  
**Analytical Method:** SW8000  
**Unit:** wet wt%  
**Sample ID:** MB-267555

## QC Summary Report for Percent Moisture

Analyte	MB Result	MDL	RL			
% Moisture	ND	0.100	0.100	-	-	-





# Quality Control Report

<b>Client:</b>	Eurofins Calscience, Inc.	<b>WorkOrder:</b>	2304483
<b>Date Prepared:</b>	04/10/2023	<b>BatchID:</b>	267353
<b>Date Analyzed:</b>	04/10/2023	<b>Extraction Method:</b>	SM5310 Bm
<b>Instrument:</b>	WC_CNS	<b>Analytical Method:</b>	SM5310Bm
<b>Matrix:</b>	Soil	<b>Unit:</b>	mg/kg
<b>Project:</b>	57000505; Berkley Marina (Sediment)	<b>Sample ID:</b>	MB/LCS/LCSD-267353

## QC Summary Report for SM5310Bm

Analyte	MB Result	MDL	RL
TOC	ND	130	200

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TOC	8200	8200	8200	100	100	80-120	0.283	20

1534 Willow Pass Rd  
Pittsburg, CA 94565-1701  
(925) 252-9262

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 2304483

ClientCode: CSEL

QuoteID: 232535

WaterTrax

CLIP

EDF

EQuIS

Dry-Weight

Email

HardCopy

ThirdParty

J-flag

Detection Summary

Excel

**Report to:**

Carla Hollowell  
Eurofins Calscience, Inc.  
2841 Dow Avenue, Suite 100  
Tustin, CA 92780  
(714) 895-5494 FAX: (714) 894-7501

Email: carla.hollowell@eurofinsET.com  
cc/3rd Party:  
PO:  
Project: 57000505; Berkley Marina (Sediment)

**Bill to:**

Accounts Payable  
Eurofins Calscience, Inc.  
2841 Dow Avenue, Suite 100  
Tustin, CA 92780  
US26\_AP@eurofinsus.com; Cynthia.Jih

**Requested TAT: 3 days;**

*Date Received:* 04/07/2023

*Date Logged:* 04/07/2023

Lab ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
2304483-001	BM-DU2-Comp (570-133080-2)	Soil	3/15/2023 15:05	<input type="checkbox"/>	A	A	A										
2304483-002	BM-DU3-Comp (570-133080-3)	Soil	3/16/2023 12:20	<input type="checkbox"/>	A	A	A										

**Test Legend:**

1	cnsTOC_S(%)	2	PERmoist_S	3	PRDisposal Fee	4	
5		6		7		8	
9		10		11		12	

**Project Manager: Jennifer Lagerbom**

**Prepared by: Adrianna Cardoza**

**Comments:**

NOTE: Soil samples are discarded 60 days after receipt unless other arrangements are made (Water samples are 30 days).  
Hazardous samples will be returned to client or disposed of at client expense.





### WORK ORDER SUMMARY

**Client Name:** EUROFINS CALSCIENCE, INC.

**Project:** 57000505; Berkley Marina (Sediment)

**Work Order:** 2304483

**Client Contact:** Carla Hollowell

**QC Level:** LEVEL 2

**Contact's Email:** carla.hollowell@eurofinsET.com

**Comments:**

**Date Logged:** 4/7/2023

WaterTrax     CLIP     EDF     Excel     EQUIS     Email     HardCopy     ThirdParty     J-flag

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	U**	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	Sub Out
001A	BM-DU2-Comp (570-133080-2)	Soil	SW 8000 (Percent Moisture)	1	2OZ GJ, Unpres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/15/2023 15:05	3 days	4/12/2023		<input type="checkbox"/>	<input type="checkbox"/>
			SM5310Bm (TOC)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		3 days	4/13/2023		<input type="checkbox"/>	<input type="checkbox"/>
002A	BM-DU3-Comp (570-133080-3)	Soil	SW 8000 (Percent Moisture)	1	2OZ GJ, Unpres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/16/2023 12:20	3 days	4/12/2023		<input type="checkbox"/>	<input type="checkbox"/>
			SM5310Bm (TOC)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		3 days	4/13/2023		<input type="checkbox"/>	<input type="checkbox"/>

**NOTES:** \* STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- Organic extracts are held for 40 days before disposal; Inorganic extract are held for 30 days.

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

U\*\* = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.



**ICOC No:**  
570-215668

**Containers**  
Count                      Container Type  
2                                      Soil jar 2oz - clear glass

Preservative  
None

**Subcontract Method Instructions**

Sample IDs	Method	Method Description	Method Comments
3	SUBCONTRACT	SUB (General Subcontract Method)	TOC - NTAT - DW/% - DMMO EDD



### Sample Receipt Checklist

Client Name: Eurofins Calscience, Inc.  
Project: 57000505; Berkley Marina (Sediment)  
WorkOrder No: 2304483 Matrix: Soil  
Carrier: FedEx

Date and Time Received: 4/7/2023 10:05  
Date Logged: 4/7/2023  
Received by: Adrianna Cardoza  
Logged by: Adrianna Cardoza

#### Chain of Custody (COC) Information

- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Sample IDs noted by Client on COC? Yes  No
- Date and Time of collection noted by Client on COC? Yes  No
- Sampler's name noted on COC? Yes  No
- COC agrees with Quote? Yes  No  NA

#### Sample Receipt Information

- Custody seals intact on shipping container/cooler? Yes  No  NA
- Custody seals intact on sample bottles? Yes  No  NA
- Shipping container/cooler in good condition? Yes  No
- Samples in proper containers/bottles? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No

#### Sample Preservation and Hold Time (HT) Information

- All samples received within holding time? Yes  No  NA
- Samples Received on Ice? Yes  No

(Ice Type: WET ICE )

- Sample/Temp Blank temperature Temp: 2°C NA
- ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)? Yes  No  NA
- Sample labels checked for correct preservation? Yes  No
- pH acceptable upon receipt (Metal: <2; Nitrate 353.2/4500NO3: <2; 522: <4; 218.7: >8)? Yes  No  NA

#### UCMR Samples:

- pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)? Yes  No  NA
- Free Chlorine tested and acceptable upon receipt (<0.1mg/L) [not applicable to 200.7]? Yes  No  NA

-----  
Comments:





13751 Lake City Way NE, Ste 108, Seattle, WA 98125 • USA • T:206-632-6206 • info@brooksapplied.com

April 20, 2023

Eurofins Calscience  
ATTN: Carla Lee Hollowell  
7440 Lincoln Way  
Garden Grove, CA  
carlahollowell@eurofinsus.com

RE: Project CEL-GG2002

Client Project: Job#570-133080-1

Dear Carla Lee Hollowell,

On April 5, 2023, Brooks Applied Labs (BAL) received one (1) solid sample. The sample was logged-in for the analyses of total recoverable silver (Ag), cadmium (Cd), selenium (Se), and percent total solids (%TS) according to the chain-of-custody forms. All samples were received and stored according to BAL SOPs and EPA methodology.

#### Total Metals Quantitation by ICP-QQQ-MS

All solids were digested via modified EPA Method 3050B with a mixture of concentrated nitric acid, hydrochloric acid, and hydrogen peroxide. Trace metals were analyzed using inductively coupled plasma triple quadrupole mass spectrometry (ICP-QQQ-MS). The ICP-QQQ-MS uses advanced interference removal techniques to ensure accuracy of the sample results. For more information, please visit the *Interference Reduction Technology* section on our website, [www.brooksapplied.com](http://www.brooksapplied.com).

#### Total Solids

Solid samples were homogenized, and an aliquot of each sample was measured into a pre-weighed vessel and dried in an oven for at least 12 hours. The vessels were removed from the oven, weighed again, and the percent of dried solid material was calculated.

The absolute value of the blanks was greater than the MRL. All samples had results greater than 10x the absolute value of the highest blank and no further action was required.

The results were not method blank corrected, as described in the calculations section of the relevant BAL SOP(s), and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BAL verifies that the reported results of all analyses for which the laboratory is accredited meet the requirements of the accrediting body, unless otherwise noted in the report narrative. For more information regarding accreditations please see the *Report Information* and *Batch Summary* pages. This report must be used in its entirety for interpretation of results.

- 1
- 2
- 3
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Please feel free to contact us if you have any questions regarding this report.

Sincerely,



Amy Goodall  
Project Manager  
Brooks Applied Labs  
amy@brooksapplied.com



## Report Information

### General Disclaimers

Test results are based solely upon the sample submitted to Brooks Applied Labs in the condition it was received. This report shall not be reproduced or copied, except in full, without written approval of the laboratory. Brooks Applied Labs is not responsible for the consequences arising from the use of a partial report.

### Laboratory Accreditation

BAL maintains accreditation with various state and national agencies for select test methods. For a current list of BAL accreditations, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/>. The reported analyte/matrix/method combination shall be considered outside BAL's scopes of accreditation unless otherwise identified as ISO, TNI, or ISO,TNI in the tables. It is the responsibility of the client to verify whether a specific accreditation is required for the intended data use.

**ISO:** ISO/IEC 17025:2017 accredited test method. Issued by ANSI National Accreditation Board (ANAB), #ADE-1447.02.

**TNI:** NELAP accredited test method. Issued by the State of Florida Department of Health, #E87982.

**ISO,TNI:** Test method is accredited under both the ISO/IEC 17025:2017 and NELAP accreditations referenced above.

### Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

### Common Abbreviations

<b>AR</b>	as received	<b>MS</b>	matrix spike
<b>BAL</b>	Brooks Applied Labs	<b>MSD</b>	matrix spike duplicate
<b>BLK</b>	method blank	<b>ND</b>	non-detect
<b>BS</b>	blank spike	<b>NR</b>	non-reportable
<b>CAL</b>	calibration standard	<b>N/C</b>	not calculated
<b>CCB</b>	continuing calibration blank	<b>PS</b>	post preparation spike
<b>CCV</b>	continuing calibration verification	<b>REC</b>	percent recovery
<b>COC</b>	chain of custody record	<b>RPD</b>	relative percent difference
<b>D</b>	dissolved fraction	<b>SCV</b>	secondary calibration verification
<b>DUP</b>	duplicate	<b>SOP</b>	standard operating procedure
<b>IBL</b>	instrument blank	<b>SRM</b>	reference material
<b>ICV</b>	initial calibration verification	<b>T</b>	total fraction
<b>MDL</b>	method detection limit	<b>TR</b>	total recoverable fraction
<b>MRL</b>	method reporting limit		

### Definition of Data Qualifiers

<b>E</b>	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
<b>H</b>	Holding time and/or preservation requirements not met. Please see narrative for explanation.
<b>J</b>	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
<b>J-1</b>	Estimated value. A full explanation is presented in the narrative.
<b>M</b>	Duplicate precision (RPD) was not within acceptance criteria. Please see narrative for explanation.
<b>N</b>	Spike recovery was not within acceptance criteria. Please see narrative for explanation.
<b>R</b>	Rejected, unusable value. A full explanation is presented in the narrative.
<b>U</b>	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
<b>X</b>	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.
<b>Z</b>	Holding time and/or preservation requirements not established for this method; however, BAL recommendations for holding time were not followed. Please see narrative for explanation.

Project ID: CEL-GG2002  
 PM: Amy Goodall



BAL Report 2304110  
 Client PM: Carla Lee Hollowell  
 Client Project: 570-133080-1

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- 3
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## Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
BM-DU1-Comp (570-133080-1)	2304110-01	Solid	Sample	03/15/2023	04/05/2023

## Batch Summary

Analyte	Lab Matrix	Method	Accred.	Prepared	Analyzed	Batch	Sequence
%TS	Soil/Sediment	SOP BAL-0501	ISO	04/11/23	04/11/23	B230874	N/A
Ag	Soil/Sediment	EPA 6020B Mod	ISO,TNI	04/12/23	04/13/23	B230862	S230367
Cd	Soil/Sediment	EPA 6020B Mod	ISO,TNI	04/12/23	04/13/23	B230862	S230367
Se	Soil/Sediment	EPA 6020B Mod	ISO,TNI	04/12/23	04/13/23	B230862	S230367

## Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
<b>BM-DU1-Comp (570-133080-1)</b>										
2304110-01	%TS	Solid	NA	45.42		0.01	0.04	%	B230874	N/A
2304110-01	Ag	Solid	dry	0.256		0.032	0.096	mg/kg	B230862	S230367
2304110-01	Cd	Solid	dry	0.175		0.043	0.096	mg/kg	B230862	S230367
2304110-01	Se	Solid	dry	0.449		0.203	0.407	mg/kg	B230862	S230367





## Accuracy & Precision Summary

Batch: B230862  
 Lab Matrix: Soil/Sediment  
 Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B230862-BS1	Blank Spike, (2240063)						
	Ag		5.000	4.560	mg/kg	91% 75-125	
	Cd		5.000	4.425	mg/kg	88% 75-125	
	Se		50.00	46.89	mg/kg	94% 75-125	
B230862-SRM1	Reference Material (2224038, CRM052-50G Loamy Clay)						
	Cd		212.0	185.7	mg/kg	88% 75-125	
B230862-SRM2	Reference Material (2224038, CRM052-50G Loamy Clay)						
	Ag		34.00	33.73	mg/kg	99% 75-125	
	Se		54.40	56.84	mg/kg	104% 75-125	
B230862-DUP1	Duplicate, (2304110-01)						
	Ag	0.256		0.257	mg/kg		0.7% 30
	Cd	0.175		0.150	mg/kg		15% 30
	Se	0.449		0.411	mg/kg		9% 30
B230862-MS1	Matrix Spike, (2304110-01)						
	Ag	0.256	8.801	8.484	mg/kg	93% 70-130	
	Cd	0.175	8.801	8.275	mg/kg	92% 70-130	
	Se	0.449	88.01	83.68	mg/kg	95% 70-130	
B230862-MSD1	Matrix Spike Duplicate, (2304110-01)						
	Ag	0.256	10.50	9.978	mg/kg	93% 70-130	0.9% 30
	Cd	0.175	10.50	9.591	mg/kg	90% 70-130	3% 30
	Se	0.449	105.0	97.03	mg/kg	92% 70-130	3% 30

**Project ID:** CEL-GG2002  
**PM:** Amy Goodall



BAL Report 2304110  
**Client PM:** Carla Lee Hollowell  
**Client Project:** 570-133080-1

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## Accuracy & Precision Summary

**Batch:** B230874  
**Lab Matrix:** Soil/Sediment  
**Method:** SOP BAL-0501

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B230874-DUP1	Duplicate, (2304110-01) %TS	45.42		45.62	%		0.4% 15



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## Method Blanks & Reporting Limits

**Batch:** B230862  
**Matrix:** Soil/Sediment  
**Method:** EPA 6020B Mod  
**Analyte:** Ag

Sample	Result	Units	
B230862-BLK1	0.004	mg/kg	
B230862-BLK2	0.004	mg/kg	
B230862-BLK3	0.003	mg/kg	
B230862-BLK4	0.002	mg/kg	
<b>Average:</b> 0.003			<b>MDL:</b> 0.015
<b>Limit:</b> 0.045			<b>MRL:</b> 0.045

**Analyte:** Cd

Sample	Result	Units	
B230862-BLK1	0.001	mg/kg	
B230862-BLK2	0.001	mg/kg	
B230862-BLK3	-0.0006	mg/kg	
B230862-BLK4	0.0008	mg/kg	
<b>Average:</b> 0.001			<b>MDL:</b> 0.020
<b>Limit:</b> 0.045			<b>MRL:</b> 0.045

**Analyte:** Se

Sample	Result	Units	
B230862-BLK1	0.013	mg/kg	
B230862-BLK2	-0.003	mg/kg	
B230862-BLK3	-0.001	mg/kg	
B230862-BLK4	0.0003	mg/kg	
<b>Average:</b> 0.002			<b>MDL:</b> 0.095
<b>Limit:</b> 0.190			<b>MRL:</b> 0.190

**Project ID:** CEL-GG2002  
**PM:** Amy Goodall



BAL Report 2304110  
**Client PM:** Carla Lee Hollowell  
**Client Project:** 570-133080-1

- 1
- 2
- 3
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- 13
- 14
- 15

## Method Blanks & Reporting Limits

**Batch:** B230874  
**Matrix:** Soil/Sediment  
**Method:** SOP BAL-0501  
**Analyte:** %TS

Sample	Result	Units
B230874-BLK1	-0.15	%
B230874-BLK2	-0.16	%

**Average:** -0.16  
**Limit:** 0.10

**MDL:** 0.03  
**MRL:** 0.10

**Project ID:** CEL-GG2002  
**PM:** Amy Goodall



BAL Report 2304110  
**Client PM:** Carla Lee Hollowell  
**Client Project:** 570-133080-1

- 1
- 2
- 3
- 4
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- 6
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- 11
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## Sample Containers

<b>Lab ID:</b> 2304110-01	<b>Report Matrix:</b> Solid	<b>Collected:</b> 03/15/2023			
<b>Sample:</b> BM-DU1-Comp (570-133080-1)	<b>Sample Type:</b> Sample	<b>Received:</b> 04/05/2023			
<b>Des Container</b>	<b>Lot</b>	<b>Preservation</b>	<b>P-Lot</b>	<b>pH</b>	<b>Ship. Cont.</b>
A Client-Provided	n/a	none	n/a	n/a	Cooler - 2304110

## Shipping Containers

<b>Cooler - 2304110</b>	<b>Description:</b> Cooler	<b>Custody seals present?</b> Yes
<b>Received:</b> April 5, 2023 10:04	<b>Damaged in transit?</b> No	<b>Custody seals intact?</b> Yes
<b>Tracking No:</b> 6420 9834 5083 via FedEx	<b>Returned to client?</b> No	<b>COC present?</b> Yes
<b>Coolant Type:</b> Ice	<b>Comments:</b> R-IR-4	
<b>Temperature:</b> 1.6 °C		





13751 Lake City Way NE, Ste 108, Seattle, WA 98125 • USA • T:206-632-6206 • info@brooksapplied.com

April 20, 2023

Eurofins Calscience  
ATTN: Carla Lee Hollowell  
7440 Lincoln Way  
Garden Grove, CA  
carlahollowell@eurofinsus.com

RE: Project CEL-GG2002

Client Project: Job#570-133080-1

Dear Carla Lee Hollowell,

On April 7, 2023, Brooks Applied Labs (BAL) received two (2) solid samples. The samples were logged-in for the analyses of total recoverable silver (Ag), cadmium (Cd), selenium (Se), and percent total solids (%TS) according to the chain-of-custody forms. All samples were received and stored according to BAL SOPs and EPA methodology.

#### Total Metals Quantitation by ICP-QQQ-MS

All solids were digested via modified EPA Method 3050B with a mixture of concentrated nitric acid, hydrochloric acid, and hydrogen peroxide. Trace metals were analyzed using inductively coupled plasma triple quadrupole mass spectrometry (ICP-QQQ-MS). The ICP-QQQ-MS uses advanced interference removal techniques to ensure accuracy of the sample results. For more information, please visit the *Interference Reduction Technology* section on our website, [www.brooksapplied.com](http://www.brooksapplied.com).

#### Total Solids

Solid samples were homogenized, and an aliquot of each sample was measured into a pre-weighed vessel and dried in an oven for at least 12 hours. The vessels were removed from the oven, weighed again, and the percent of dried solid material was calculated.

The absolute value of the blanks was greater than the MRL. All samples had results greater than 10x the absolute value of the highest blank and no further action was required.

The results were not method blank corrected, as described in the calculations section of the relevant BAL SOP(s), and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

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Please feel free to contact us if you have any questions regarding this report.

Sincerely,



Amy Goodall  
Project Manager  
Brooks Applied Labs  
amy@brooksapplied.com





## Report Information

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**TNI:** NELAP accredited test method. Issued by the State of Florida Department of Health, #E87982.

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### Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

### Common Abbreviations

<b>AR</b>	as received	<b>MS</b>	matrix spike
<b>BAL</b>	Brooks Applied Labs	<b>MSD</b>	matrix spike duplicate
<b>BLK</b>	method blank	<b>ND</b>	non-detect
<b>BS</b>	blank spike	<b>NR</b>	non-reportable
<b>CAL</b>	calibration standard	<b>N/C</b>	not calculated
<b>CCB</b>	continuing calibration blank	<b>PS</b>	post preparation spike
<b>CCV</b>	continuing calibration verification	<b>REC</b>	percent recovery
<b>COC</b>	chain of custody record	<b>RPD</b>	relative percent difference
<b>D</b>	dissolved fraction	<b>SCV</b>	secondary calibration verification
<b>DUP</b>	duplicate	<b>SOP</b>	standard operating procedure
<b>IBL</b>	instrument blank	<b>SRM</b>	reference material
<b>ICV</b>	initial calibration verification	<b>T</b>	total fraction
<b>MDL</b>	method detection limit	<b>TR</b>	total recoverable fraction
<b>MRL</b>	method reporting limit		

### Definition of Data Qualifiers

<b>E</b>	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
<b>H</b>	Holding time and/or preservation requirements not met. Please see narrative for explanation.
<b>J</b>	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
<b>J-1</b>	Estimated value. A full explanation is presented in the narrative.
<b>M</b>	Duplicate precision (RPD) was not within acceptance criteria. Please see narrative for explanation.
<b>N</b>	Spike recovery was not within acceptance criteria. Please see narrative for explanation.
<b>R</b>	Rejected, unusable value. A full explanation is presented in the narrative.
<b>U</b>	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
<b>X</b>	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.
<b>Z</b>	Holding time and/or preservation requirements not established for this method; however, BAL recommendations for holding time were not followed. Please see narrative for explanation.

**Project ID:** CEL-GG2002  
**PM:** Amy Goodall



BAL Report 2304130  
**Client PM:** Carla Lee Hollowell  
**Client Project:** 570-133080-1

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- 3
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## Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
BM-DU2-Comp (570-133080-2)	2304130-01	Solid	Sample	03/15/2023	04/07/2023
BM-DU3-Comp (570-133080-3)	2304130-02	Solid	Sample	03/16/2023	04/07/2023

## Batch Summary

Analyte	Lab Matrix	Method	Accred.	Prepared	Analyzed	Batch	Sequence
%TS	Soil/Sediment	SOP BAL-0501	ISO	04/11/23	04/11/23	B230874	N/A
Ag	Soil/Sediment	EPA 6020B Mod	ISO,TNI	04/12/23	04/13/23	B230862	S230367
Cd	Soil/Sediment	EPA 6020B Mod	ISO,TNI	04/12/23	04/13/23	B230862	S230367
Se	Soil/Sediment	EPA 6020B Mod	ISO,TNI	04/12/23	04/13/23	B230862	S230367



## Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
<b>BM-DU2-Comp (570-133080-2)</b>										
2304130-01	%TS	Solid	NA	52.03		0.01	0.04	%	B230874	N/A
2304130-01	Ag	Solid	dry	0.212		0.023	0.068	mg/kg	B230862	S230367
2304130-01	Cd	Solid	dry	0.227		0.030	0.068	mg/kg	B230862	S230367
2304130-01	Se	Solid	dry	0.374		0.144	0.288	mg/kg	B230862	S230367
<b>BM-DU3-Comp (570-133080-3)</b>										
2304130-02	%TS	Solid	NA	41.46		0.01	0.05	%	B230874	N/A
2304130-02	Ag	Solid	dry	0.488		0.028	0.085	mg/kg	B230862	S230367
2304130-02	Cd	Solid	dry	0.477		0.038	0.085	mg/kg	B230862	S230367
2304130-02	Se	Solid	dry	0.627		0.179	0.358	mg/kg	B230862	S230367





## Accuracy & Precision Summary

Batch: B230862  
 Lab Matrix: Soil/Sediment  
 Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B230862-BS1	Blank Spike, (2240063)						
	Ag		5.000	4.560	mg/kg	91% 75-125	
	Cd		5.000	4.425	mg/kg	88% 75-125	
	Se		50.00	46.89	mg/kg	94% 75-125	
B230862-SRM1	Reference Material (2224038, CRM052-50G Loamy Clay)						
	Cd		212.0	185.7	mg/kg	88% 75-125	
B230862-SRM2	Reference Material (2224038, CRM052-50G Loamy Clay)						
	Ag		34.00	33.73	mg/kg	99% 75-125	
	Se		54.40	56.84	mg/kg	104% 75-125	
B230862-DUP1	Duplicate, (2304110-01)						
	Ag	0.256		0.257	mg/kg		0.7% 30
	Cd	0.175		0.150	mg/kg		15% 30
B230862-MS1	Matrix Spike, (2304110-01)						
	Ag	0.256	8.801	8.484	mg/kg	93% 70-130	
	Cd	0.175	8.801	8.275	mg/kg	92% 70-130	
B230862-MSD1	Matrix Spike Duplicate, (2304110-01)						
	Ag	0.256	10.50	9.978	mg/kg	93% 70-130	0.9% 30
	Cd	0.175	10.50	9.591	mg/kg	90% 70-130	3% 30
B230862-MSD1	Matrix Spike Duplicate, (2304110-01)						
	Se	0.449	105.0	97.03	mg/kg	92% 70-130	3% 30

**Project ID:** CEL-GG2002  
**PM:** Amy Goodall



BAL Report 2304130  
**Client PM:** Carla Lee Hollowell  
**Client Project:** 570-133080-1

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## Accuracy & Precision Summary

**Batch:** B230874  
**Lab Matrix:** Soil/Sediment  
**Method:** SOP BAL-0501

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B230874-DUP1	Duplicate, (2304110-01) %TS	45.42		45.62	%		0.4% 15



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- 14
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## Method Blanks & Reporting Limits

**Batch:** B230862  
**Matrix:** Soil/Sediment  
**Method:** EPA 6020B Mod  
**Analyte:** Ag

Sample	Result	Units	
B230862-BLK1	0.004	mg/kg	
B230862-BLK2	0.004	mg/kg	
B230862-BLK3	0.003	mg/kg	
B230862-BLK4	0.002	mg/kg	
	<b>Average:</b> 0.003		<b>MDL:</b> 0.015
	<b>Limit:</b> 0.045		<b>MRL:</b> 0.045

**Analyte:** Cd

Sample	Result	Units	
B230862-BLK1	0.001	mg/kg	
B230862-BLK2	0.001	mg/kg	
B230862-BLK3	-0.0006	mg/kg	
B230862-BLK4	0.0008	mg/kg	
	<b>Average:</b> 0.001		<b>MDL:</b> 0.020
	<b>Limit:</b> 0.045		<b>MRL:</b> 0.045

**Analyte:** Se

Sample	Result	Units	
B230862-BLK1	0.013	mg/kg	
B230862-BLK2	-0.003	mg/kg	
B230862-BLK3	-0.001	mg/kg	
B230862-BLK4	0.0003	mg/kg	
	<b>Average:</b> 0.002		<b>MDL:</b> 0.095
	<b>Limit:</b> 0.190		<b>MRL:</b> 0.190

**Project ID:** CEL-GG2002  
**PM:** Amy Goodall



BAL Report 2304130  
**Client PM:** Carla Lee Hollowell  
**Client Project:** 570-133080-1

- 1
- 2
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- 4
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- 13
- 14
- 15

## Method Blanks & Reporting Limits

**Batch:** B230874  
**Matrix:** Soil/Sediment  
**Method:** SOP BAL-0501  
**Analyte:** %TS

Sample	Result	Units
B230874-BLK1	-0.15	%
B230874-BLK2	-0.16	%

**Average:** -0.16  
**Limit:** 0.10

**MDL:** 0.03  
**MRL:** 0.10







### Chain of Custody Record

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- 2
- 3
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Sampler:	Lab PM: Hollowell, Carla
Client Information (Sub Contract Lab)	Shipping/Receiving
Client Contact:	Company:
Phone:	Brooks Applied Labs LLC
E-Mail: Carla.Hollowell@et.eurofinsus.com	Address:
State of Origin: California	13751 Lake City Way NE, Suite 108,
Page: Page 1 of 1	Seattle
Job #: 570-133080-1	WA, zip: WA, 98125
COC No: 570-215653.1	City: Seattle

Due Date Requested:	4/12/2023
TAT Requested (days):	
City:	Seattle
State, zip:	WA, 98125
Phone:	
PO #:	
Email:	
WO #:	
Project #:	5700505
Project Name:	Berkeley Marina (Sediment)
Site:	
SSOW#:	

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (Water, Solid, Overbail, Grab)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (General Subcontract Method)	Total Number of Containers	Special Instructions/Note:
BM-DU2-Comp (570-133080-2)	3/15/23	15:05	Solid					1	
BM-DU3-Comp (570-133080-3)	3/16/23	12:20 Pacific	Solid					1	See Attached Instructions

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analytes/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.

**Possible Hazard Identification**  
 Unconfirmed  
 Deliverable Requested: I, II, III, IV, Other (specify) \_\_\_\_\_  
 Primary Deliverable Rank: 2  
 Special Instructions/QC Requirements: \_\_\_\_\_  
 Return To Client  
 Disposal By Lab  
 Archive For \_\_\_\_\_ Months  
**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: <i>[Signature]</i>	4/16/23 1635		
Relinquished by: _____	Date/Time: _____	Company: _____	Received by: _____
Relinquished by: _____	Date/Time: _____	Company: _____	Received by: _____
Relinquished by: _____	Date/Time: _____	Company: _____	Received by: _____
Custody Seal Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:	

137080



**Pacific EcoRisk**

ENVIRONMENTAL CONSULTING & TESTING

2250 Cordelia Rd., Fairfield, CA 94534  
(707)207-7760

**Eurofins Calscience CHAIN-OF-CUSTODY RECORD**

<b>Client Name:</b>		Pacific EcoRisk					<b>REQUESTED ANALYSIS</b>														
<b>Client Address:</b>		2250 Cordelia Rd. Fairfield, CA 94534					* See Analyte List	Grain Size Analysis													
<b>Sampled By:</b>		PER																			
<b>Phone:</b>		(707) 207-7760																			
<b>FAX:</b>		(707) 207-7916																			
<b>Project Manager:</b>		Jeff Cotsifas																			
<b>Project Name:</b>		BerkeleyMarina																			
<b>PO Number:</b>		37289																			
Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container		* See Analyte List	Grain Size Analysis													
					Number	Type															
1	BM-DU1	BM-DU1-Comp	3/15/23	925	Sed	2	glass jar	X													
2	BM-DU1	BM-DU1-Comp	3/15/23	925	Sed	1	poly bag		X												
3	BM-DU2	BM-DU2-Comp	3/15/23	1505	Sed	2	glass jar	X													
4	BM-DU2	BM-DU2-Comp	3/15/23	1505	Sed	1	poly bag		X												
5	BM-DU3	BM-DU3-Comp	3/16/23	1220	Sed	2	glass jar	X													
6	BM-DU3	BM-DU3-Comp	3/16/23	1220	Sed	1	poly bag		X												
7																					
8																					
9																					
10																					
<b>Correct Containers:</b>		Yes	No			<b>RELINQUISHED BY</b>															
<b>Sample Temperature:</b>		Ambient	Cold	Warm		<b>Signature</b> <i>M. McElroy</i>				<b>Signature:</b>											
<b>Sample Preservative:</b>		Yes	No			<b>Print:</b> M. McElroy				<b>Print:</b>											
<b>Turnaround Time:</b>		STD	<b>Specify:</b>		<b>Organization:</b> PER				<b>Organization:</b>												
<b>DATE:</b> 3/28/23		<b>TIME:</b> 1600		<b>DATE:</b>				<b>TIME:</b>													
<b>Comments:</b>		<b>RECEIVED BY</b>																			
<b>Standard TAT for Calscience Results.</b>						<b>Signature</b> <i>Almeida</i>				<b>Signature:</b>											
						<b>Print:</b> Almeida				<b>Print:</b>											
						<b>Organization:</b> EC				<b>Organization:</b>											
<b>DATE:</b> 3/29/23		<b>TIME:</b> 0945		<b>DATE:</b>				<b>TIME:</b>													



\*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

3.9/3.8 SC12

133080

**ANALYTE LIST**

Pacific EcoRisk  
2250 Cordelia Rd.  
Fairfield, CA 94534

Project Proponent:  
Project #:  
Site #:

Berkley/Martina  
37289

BM-DU1-Comp, BM-DU2-Comp, & BM-DU3-Comp

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Solids, Total	SM 2540B	0.10%	X
Total Organic Carbon	EPA 9060A	0.10%	X
Grain Size	ASTM D4464	0.10%	X
Arsenic	EPA 6020	2 mg/kg	X
Cadmium	EPA 6020	0.3 mg/kg	X
Chromium	EPA 6020	5 mg/kg	X
Copper	EPA 6020	5 mg/kg	X
Lead	EPA 6020	5 mg/kg	X
Mercury	EPA 7471B	0.02 mg/kg	X
Nickel	EPA 6020	0.1 mg/kg	X
Selenium	EPA 7742 or EPA 6020B Mod	0.2 mg/kg	X
Silver	EPA 6020	1 mg/kg	X
Zinc	EPA 6020	2 µg/kg	X
2,4-DDD	EPA 8081B	2 µg/kg	X
2,4-DDE	EPA 8081B	2 µg/kg	X
2,4-DDT	EPA 8081B	2 µg/kg	X
4,4'-DDD	EPA 8081B	2 µg/kg	X
4,4'-DDE	EPA 8081B	2 µg/kg	X
4,4'-DDT	EPA 8081B	2 µg/kg	X
Total DDT's	EPA 8081B	2 µg/kg	X
Aldrin	EPA 8081B	2 µg/kg	X
alpha-BHC	EPA 8081B	2 µg/kg	X
beta-BHC	EPA 8081B	2 µg/kg	X
gamma-BHC (Lindane)	EPA 8081B	2 µg/kg	X
delta-BHC	EPA 8081B	2 µg/kg	X
Total BHCs	EPA 8081B	2 µg/kg	X
Chlordane	EPA 8081B	20 µg/kg	X
Dieldrin	EPA 8081B	2 µg/kg	X
Endosulfan I	EPA 8081B	2 µg/kg	X
Endosulfan II	EPA 8081B	2 µg/kg	X
Endosulfan sulfate	EPA 8081B	2 µg/kg	X
Ethrin	EPA 8081B	2 µg/kg	X
Ethrin aldehyde	EPA 8081B	2 µg/kg	X
Hepachlor	EPA 8081B	2 µg/kg	X
Hepachlor epoxide	EPA 8081B	2 µg/kg	X
Toxaphene	EPA 8081B	20 µg/kg	X
PCB 008	EPA 8270C	0.5 µg/kg	X
PCB 018	EPA 8270C	0.5 µg/kg	X
PCB 028	EPA 8270C	0.5 µg/kg	X
PCB 031	EPA 8270C	0.5 µg/kg	X
PCB 033	EPA 8270C	0.5 µg/kg	X
PCB 044	EPA 8270C	0.5 µg/kg	X
PCB 049	EPA 8270C	0.5 µg/kg	X
PCB 052	EPA 8270C	0.5 µg/kg	X
PCB 056	EPA 8270C	0.5 µg/kg	X
PCB 060	EPA 8270C	0.5 µg/kg	X
PCB 066	EPA 8270C	0.5 µg/kg	X
PCB 070	EPA 8270C	0.5 µg/kg	X
PCB 074	EPA 8270C	0.5 µg/kg	X
PCB 087	EPA 8270C	0.5 µg/kg	X
PCB 095	EPA 8270C	0.5 µg/kg	X
PCB 097	EPA 8270C	0.5 µg/kg	X
PCB 099	EPA 8270C	0.5 µg/kg	X
PCB 101	EPA 8270C	0.5 µg/kg	X
PCB 105	EPA 8270C	0.5 µg/kg	X
PCB 110	EPA 8270C	0.5 µg/kg	X
PCB 118	EPA 8270C	0.5 µg/kg	X
PCB 128	EPA 8270C	0.5 µg/kg	X
PCB 132	EPA 8270C	0.5 µg/kg	X
PCB 138/158	EPA 8270C	0.5 µg/kg	X
PCB 141	EPA 8270C	0.5 µg/kg	X
PCB 149	EPA 8270C	0.5 µg/kg	X
PCB 151	EPA 8270C	0.5 µg/kg	X

133080

ANALYTE LIST

Pacific Ecolink  
2250 Cordelia Rd.  
Fairfield, CA 94534

Project Proponent: Berkeley/Marina  
Project #: 37289  
Site #: BM-DU1-Comp, BM-DU2-Comp, & BM-DU3-Comp

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
PCB 153	EPA 8270C	0.5 µg/kg	X
PCB 156	EPA 8270C	0.5 µg/kg	X
PCB 170	EPA 8270C	0.5 µg/kg	X
PCB 174	EPA 8270C	0.5 µg/kg	X
PCB 177	EPA 8270C	0.5 µg/kg	X
PCB 180	EPA 8270C	0.5 µg/kg	X
PCB 183	EPA 8270C	0.5 µg/kg	X
PCB 187	EPA 8270C	0.5 µg/kg	X
PCB 194	EPA 8270C	0.5 µg/kg	X
PCB 195	EPA 8270C	0.5 µg/kg	X
PCB 201	EPA 8270C	0.5 µg/kg	X
PCB 203	EPA 8270C	0.5 µg/kg	X
Total PCBs	EPA 8270C	-	X
Acenaphthalene	EPA 8270C	20 µg/kg	X
Acenaphthylene	EPA 8270C	20 µg/kg	X
Anthracene	EPA 8270C	20 µg/kg	X
Benz(a)anthracene	EPA 8270C	20 µg/kg	X
Benz(b)pyrene	EPA 8270C	20 µg/kg	X
Benz(e)pyrene	EPA 8270C	20 µg/kg	X
Benzofluoranthene	EPA 8270C	20 µg/kg	X
Benzofluoranthene	EPA 8270C	20 µg/kg	X
Benzo(k)fluoranthene	EPA 8270C	20 µg/kg	X
Biphenyl	EPA 8270C	20 µg/kg	X
Chrysene	EPA 8270C	20 µg/kg	X
Dibenz(a,h)anthracene	EPA 8270C	20 µg/kg	X
Dibenzofluophtene	EPA 8270C	20 µg/kg	X
Dimethylnaphthalene 2, 6-	EPA 8270C	20 µg/kg	X
Fluoranthene	EPA 8270C	20 µg/kg	X
Fluorene	EPA 8270C	20 µg/kg	X
Indenol 1,2,3-cd)pyrene	EPA 8270C	20 µg/kg	X
Methylnaphthalene, 1-	EPA 8270C	20 µg/kg	X
Methylnaphthalene, 2-	EPA 8270C	20 µg/kg	X
Methylphenanthrene, 1-	EPA 8270C	20 µg/kg	X
Naphthalene	EPA 8270C	20 µg/kg	X
Perylene	EPA 8270C	20 µg/kg	X
Phenanthrene	EPA 8270C	20 µg/kg	X
Pyrene	EPA 8270C	20 µg/kg	X
Trimethylnaphthalene, 2, 3, 5-	EPA 8270C	20 µg/kg	X
Total PAHs	EPA 8270C	-	X
Mono-Buyltin	Krone 1989	10 µg/kg	X
Di-buyltin	Krone 1989	10 µg/kg	X
Tri-buyltin	Krone 1989	10 µg/kg	X
Tetra-buyltin	Krone 1989	10 µg/kg	X
Total Butyltins	Krone 1989	10 µg/kg	X
Dioxins/Furans	EPA 8290	1 ng/kg	X

Standard TAT for Calciscence Results. 10-day Rush TAT from sub-lab (Brooks Rand) on As, Cd, and Se + total solids.  
QAQC  
Samples frozen (except TOC & grain size)  
Submitted with ECVH and EEC samples. Perform QAQC on SYH-DU1-Comp sample on sample run with ECVH and EEC samples.  
If you have any questions regarding this request as checked, please call Jeff Costas at (707)207-7760







**Eurofins Calscience**

2841 Dow Avenue, Suite 100  
Tustin, CA 92780  
Phone: 714-895-5494

**Chain of Custody Record**



Environment Testing

<b>Client Information (Sub Contract Lab)</b>			Sampler:			Lab PM:			Carrier Tracking No(s):			COC No:								
Client Contact: Shipping/Receiving			Phone:			Hollowell, Carla			E-Mail: Carla.Hollowell@et.eurofins.com			State of Origin: California			570-215542.1					
Company: Eurofins Lancaster Laboratories Environm			Address: 2425 New Holland Pike,			Due Date Requested: 4/20/2023			Accreditations Required (See note): Los Angeles County Sanitation Di - California			Job #: 570-133080-1			Page: Page 1 of 1					
City: Lancaster			State, Zip: PA, 17601			TAT Requested (days):			Analysis Requested			Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)			Other:					
Phone: 717-656-2300(Tel)			Email:			PO #:												WO #:		
Project Name: Berkley Marina (Sediment)			Site:			Project #: 57000505			SSOW#:			Field Filtered Sample (Yes or No)			Perform MS/MSD (Yes or No)					
Sample Identification - Client ID (Lab ID)			Sample Date			Sample Time			Sample Type (C=comp, G=grab)			Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)			Total Number of containers			Special Instructions/Note:		
BM-DU2-Comp (570-133080-2)			3/15/23			15:05 Pacific			Solid			X			1					
BM-DU3-Comp (570-133080-3)			3/16/23			12:20 Pacific			Solid			X			1			Sediment HT = 6 mo from collection date; remove H qualifier from data before		
Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.																				
<b>Possible Hazard Identification</b>						<b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b>														
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For						Months								
Deliverable Requested: I, II, III, IV, Other (specify)						Primary Deliverable Rank: 2						Special Instructions/QC Requirements:								
Empty Kit Relinquished by:			Date:			Time:			Method of Shipment:											
Relinquished by:			Date/Time:			Company:			Received by:			Date/Time:			Company:					
Relinquished by:			Date/Time:			Company:			Received by:			Date/Time:			Company:					
Relinquished by:			Date/Time:			Company:			Received by:			Date/Time:			Company:					
Custody Seals Intact: Δ Yes Δ No			Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks:														

1  
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15



**Eurofins Calscience**

2841 Dow Avenue, Suite 100  
Tustin, CA 92780  
Phone: 714-895-5494

**Chain of Custody Record**



Environment Testing

<b>Client Information (Sub Contract Lab)</b>		Sampler:		Lab PM:		Carrier Tracking No(s):		COC No:			
Client Contact: Shipping/Receiving		Phone:		Hollowell, Carla E-Mail: Carla.Hollowell@et.eurofinsus.com		State of Origin: California		570-215653.1			
Company: Brooks Applied Labs LLC		Address: 13751 Lake City Way NE, Suite 108, City: Seattle State, Zip: WA, 98125 Phone: Email:		Due Date Requested: 4/12/2023 TAT Requested (days):		Accreditations Required (See note): Los Angeles County Sanitation Di - California		Job #: 570-133080-1			
Project Name: Berkley Marina (Sediment) Site:		Project #: 57000505 SSOW#:		Analysis Requested		Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Y - Trizma Z - other (specify) Other:		Special Instructions/Note:			
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=water/soil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (General Subcontract Method)		Total Number of containers	Special Instructions/Note:
BM-DU2-Comp (570-133080-2)		3/15/23	15:05 Pacific		Solid		X			1	
BM-DU3-Comp (570-133080-3)		3/16/23	12:20 Pacific		Solid		X			1	See Attached Instructions
<p>Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte &amp; accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.</p>											
<b>Possible Hazard Identification</b>						<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>					
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)						Primary Deliverable Rank: 2					
Empty Kit Relinquished by:						Special Instructions/QC Requirements:					
Relinquished by: <i>J.P. Park</i>				Date/Time: 4/16/23 1635		Company:		Received by:		Date/Time:	
Relinquished by:				Date/Time:		Company:		Received by:		Date/Time:	
Relinquished by:				Date/Time:		Company:		Received by:		Date/Time:	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:				Cooler Temperature(s) °C and Other Remarks:					

ICOC No:  
570-215653

**Containers**

<u>Count</u>	<u>Container Type</u>	<u>Preservative</u>
2	Soil jar 2oz - clear glass	None

**Subcontract Method Instructions**

Sample IDs	Method	Method Description	Method Comments
3	SUBCONTRACT	SUB (General Subcontract Method)	As, Cd, Se - 10 day TAT - J Flags - dw mg/kg - DMMO EDD





ICOC No:  
570-215668

**Containers**

<u>Count</u>	<u>Container Type</u>	<u>Preservative</u>
2	Soil jar 2oz - clear glass	None

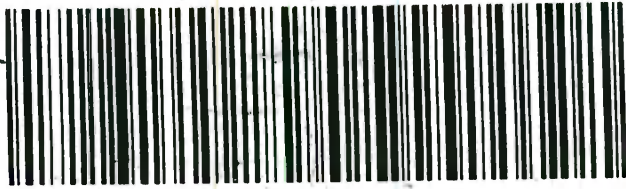
**Subcontract Method Instructions**

Sample IDs	Method	Method Description	Method Comments
3	SUBCONTRACT	SUB (General Subcontract Method)	TOC - NTAT - DW% - DMMO EDD



FedEx  
TRK# 7716 8426 5644  
0201

92 DTHA

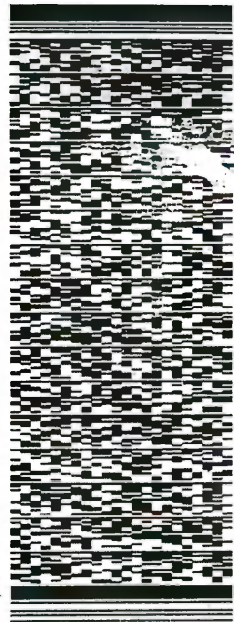


05472138 03/28 581J2/105E/FE2D

WED - 29 MAR AA  
PRIORITY OVERNIGHT

92780  
CA-US SNA

Package 16937435 BBOB2 EXP 02/24



PO 37283

REF: 37194

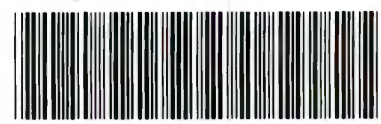
DEPT:

REF: 37194

TO CARLA HOLLOWELL  
CALIFORNIA ENVIRONMENTAL LABS  
2841 JEFFERSON AVE  
SUITE 300  
TUSTIN CA 92780

ORIGIN ID: CCRA (707) 207-7760  
CHARLENE DERHEIM  
PACIFIC ECO RISK  
2250 CORDELLA ROAD  
FAIRFIELD, CA 94504  
UNITED STATES

SHIP DATE: 28MAR23  
ACTWTGT: 29.00 LB  
CAD: 2548479/NET74580  
DIMMS: 20x14x14 IN  
BILL RECIPIENT



570-133080 Waybill



**Eurofins Calscience**

2841 Dow Avenue, Suite 100  
Tustin, CA 92780  
Phone: 714-895-5494

**Chain of Custody Record**



<b>Client Information (Sub Contract Lab)</b>		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:					
Client Contact: Shipping/Receiving		Phone:	Hollowell, Carla		570-214807.1					
Company: Eurofins Lancaster Laboratories Environm			E-Mail: Carla.Hollowell@et.eurofinsus.com	State of Origin: California	Page: Page 1 of 1					
Address: 2425 New Holland Pike, City: Lancaster State, Zip: PA, 17601 Phone: 717-656-2300(Tel) Email:		Due Date Requested: 4/20/2023 TAT Requested (days):	Accreditations Required (See note): Los Angeles County Sanitation Di - California		Job #: 570-133080-1					
Project Name: Berkley Marina (Sediment) Site:		PO #: WO #:	<b>Analysis Requested</b>		<b>Preservation Codes:</b> A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)					
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=water/soil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8290A/8290_P_Sox 8290 17 + Totals	Total Number of containers	Special Instructions/Note:
BM-DU1-Comp (570-133080-1)		3/15/23	09:25 Pacific		Solid		X		1	Sediment HT = 6 mo from collection date; remove H qualifier from data before
<p>Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte &amp; accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.</p>										
<b>Possible Hazard Identification</b>					<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>					
Unconfirmed					<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)					Primary Deliverable Rank: 2		Special Instructions/QC Requirements:			
Empty Kit Relinquished by:			Date:	Time:	Method of Shipment:					
Relinquished by: <i>[Signature]</i>			Date/Time: 4/4/23 13:50	Company:	Received by:			Date/Time:	Company:	
Relinquished by:			Date/Time:	Company:	Received by:			Date/Time:	Company:	
Relinquished by:			Date/Time:	Company:	Received by: <i>[Signature]</i>			Date/Time: 4/15/23 9:55	Company: <i>[Signature]</i>	
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 5.9						





## Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-133080-1

**Login Number: 133080**

**List Source: Eurofins Calscience**

**List Number: 1**

**Creator: Patel, Jayesh**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Jeff Cotsifas  
Pacific EcoRisk Inc  
2250 Cordelia Rd  
Fairfield, California 94534

Generated 5/8/2023 3:42:56 PM

**JOB DESCRIPTION**

Berkley Marina (Sediment)

**JOB NUMBER**

570-133080-2

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Calscience Project Manager.

## Authorization



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Authorized for release by  
Carla Hollowell, Project Manager I  
[Carla.Hollowell@et.eurofinsus.com](mailto:Carla.Hollowell@et.eurofinsus.com)  
(714)895-5494



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Client Sample Results . . . . .	6
Isotope Dilution Summary . . . . .	9
QC Association Summary . . . . .	10
Lab Chronicle . . . . .	11
Certification Summary . . . . .	12
Method Summary . . . . .	14
Sample Summary . . . . .	15
Chain of Custody . . . . .	16
Receipt Checklists . . . . .	28

# Definitions/Glossary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-2

## Qualifiers

### Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-2

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**Job ID: 570-133080-2**

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**Laboratory: Eurofins Calscience**

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**Narrative**

**Job Narrative**  
**570-133080-2**

**Receipt**

The samples were received on 3/29/2023 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.8°C

**Dioxin**

Method 8290A: Any peak area that is the result of interferences from poly-chlorinated diphenyl ethers observed in the sample has been removed from the calculated results prior to reporting the data for totals.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.



# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-2

## Method: SW846 8290A - Dioxins and Furans (HRGC/HRMS)

**Client Sample ID: BM-DU1-Comp**

**Date Collected: 03/15/23 09:25**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-1**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	51	B	11	0.26	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
1,2,3,4,6,7,8-HpCDF	14	B	11	0.29	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
1,2,3,4,7,8-HxCDD	1.0	J	11	0.083	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
1,2,3,4,7,8-HxCDF	2.3	J IB	11	0.10	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
1,2,3,4,7,8,9-HpCDF	1.1	J IB	11	0.33	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
1,2,3,6,7,8-HxCDD	3.2	J	11	0.090	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
1,2,3,6,7,8-HxCDF	1.2	J B	11	0.11	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
1,2,3,7,8-PeCDD	1.0	J IB	11	0.058	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
1,2,3,7,8-PeCDF	0.74	J IB	11	0.096	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
1,2,3,7,8,9-HxCDD	2.6	J IB	11	0.090	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
1,2,3,7,8,9-HxCDF	0.38	J IB	11	0.12	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
2,3,4,6,7,8-HxCDF	1.7	J B	11	0.094	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
2,3,4,7,8-PeCDF	2.6	J B	11	0.071	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
2,3,7,8-TCDD	0.19	J I	2.1	0.010	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
2,3,7,8-TCDF	1.6	J IB	2.1	0.13	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
OCDD	390	B	21	0.23	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
OCDF	24	B	21	0.096	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
Total HxCDD	46	IB	11	0.088	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
Total HxCDF	24	IB	11	0.11	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
Total HpCDD	160	B	11	0.26	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
Total HpCDF	33	IB	11	0.31	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
Total PeCDD	5.8	J IB	11	0.058	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
Total PeCDF	32	IB	11	0.083	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
Total TCDD	4.6	IB	2.1	0.010	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
Total TCDF	11	IB	2.1	0.13	ng/Kg	☼	05/03/23 13:24	05/08/23 00:20	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-OCDF	56		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-OCDD	48		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-2,3,7,8-TCDF	82		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-2,3,7,8-TCDD	80		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-2,3,4,7,8-PeCDF	68		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-2,3,4,6,7,8-HxCDF	75		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-1,2,3,7,8,9-HxCDF	83		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-1,2,3,7,8,9-HxCDD	72		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-1,2,3,7,8-PeCDF	64		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-1,2,3,7,8-PeCDD	56		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-1,2,3,6,7,8-HxCDF	81		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-1,2,3,6,7,8-HxCDD	72		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-1,2,3,4,7,8,9-HpCDF	78		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-1,2,3,4,7,8-HxCDF	77		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-1,2,3,4,7,8-HxCDD	69		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-1,2,3,4,6,7,8-HpCDF	59		40 - 135				05/03/23 13:24	05/08/23 00:20	1
13C-1,2,3,4,6,7,8-HpCDD	62		40 - 135				05/03/23 13:24	05/08/23 00:20	1

**Client Sample ID: BM-DU2-Comp**

**Date Collected: 03/15/23 15:05**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-2**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	60	B	9.2	0.24	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1

Eurofins Calscience

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-2

## Method: SW846 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Client Sample ID: BM-DU2-Comp**

**Date Collected: 03/15/23 15:05**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-2**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDF	7.0	J B	9.2	0.057	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
1,2,3,4,7,8-HxCDD	0.63	J I	9.2	0.042	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
1,2,3,4,7,8-HxCDF	0.82	J I B	9.2	0.071	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
1,2,3,4,7,8,9-HpCDF	0.50	J I B	9.2	0.065	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
1,2,3,6,7,8-HxCDD	2.4	J	9.2	0.041	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
1,2,3,6,7,8-HxCDF	0.56	J B	9.2	0.065	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
1,2,3,7,8-PeCDD	0.38	J I B	9.2	0.033	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
1,2,3,7,8-PeCDF	0.87	J I B	9.2	0.060	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
1,2,3,7,8,9-HxCDD	1.2	J I B	9.2	0.043	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
1,2,3,7,8,9-HxCDF	0.59	J I B	9.2	0.074	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
2,3,4,6,7,8-HxCDF	0.94	J I B	9.2	0.057	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
2,3,4,7,8-PeCDF	2.1	J I B	9.2	0.049	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
2,3,7,8-TCDD	ND		1.8	0.025	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
2,3,7,8-TCDF	1.0	J I B	1.8	0.14	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
OCDD	480	B	18	0.14	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
OCDF	16	J B	18	0.030	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
Total HxCDD	49	I B	9.2	0.042	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
Total HxCDF	19	I B	9.2	0.067	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
Total HpCDD	470	B	9.2	0.24	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
Total HpCDF	23	I B	9.2	0.061	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
Total PeCDD	4.1	J I B	9.2	0.033	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
Total PeCDF	9.8	I B	9.2	0.054	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
Total TCDD	2.4	I B	1.8	0.025	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1
Total TCDF	6.8	I B	1.8	0.14	ng/Kg	☼	05/03/23 13:24	05/08/23 01:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-OCDF	80		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-OCDD	68		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-2,3,7,8-TCDF	91		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-2,3,7,8-TCDD	86		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-2,3,4,7,8-PeCDF	78		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-2,3,4,6,7,8-HxCDF	95		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-1,2,3,7,8,9-HxCDF	91		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-1,2,3,7,8,9-HxCDD	86		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-1,2,3,7,8-PeCDF	79		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-1,2,3,7,8-PeCDD	66		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-1,2,3,6,7,8-HxCDF	96		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-1,2,3,6,7,8-HxCDD	90		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-1,2,3,4,7,8,9-HpCDF	88		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-1,2,3,4,7,8-HxCDF	88		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-1,2,3,4,7,8-HxCDD	86		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-1,2,3,4,6,7,8-HpCDF	73		40 - 135	05/03/23 13:24	05/08/23 01:08	1
13C-1,2,3,4,6,7,8-HpCDD	73		40 - 135	05/03/23 13:24	05/08/23 01:08	1

**Client Sample ID: BM-DU3-Comp**

**Date Collected: 03/16/23 12:20**

**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-3**

**Matrix: Solid**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	200	B	12	0.55	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
1,2,3,4,6,7,8-HpCDF	47	B	12	0.19	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-2

## Method: SW846 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Client Sample ID: BM-DU3-Comp

Date Collected: 03/16/23 12:20

Date Received: 03/29/23 09:45

Lab Sample ID: 570-133080-3

Matrix: Solid

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDD	2.7	J	12	0.13	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
1,2,3,4,7,8-HxCDF	4.2	J IB	12	0.21	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
1,2,3,4,7,8,9-HpCDF	2.3	J B	12	0.25	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
1,2,3,6,7,8-HxCDD	8.5	J I	12	0.14	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
1,2,3,6,7,8-HxCDF	2.9	J IB	12	0.21	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
1,2,3,7,8-PeCDD	2.3	J IB	12	0.10	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
1,2,3,7,8-PeCDF	1.7	J IB	12	0.15	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
1,2,3,7,8,9-HxCDD	5.2	J B	12	0.14	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
1,2,3,7,8,9-HxCDF	1.4	J IB	12	0.26	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
2,3,4,6,7,8-HxCDF	5.4	J IB	12	0.20	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
2,3,4,7,8-PeCDF	8.2	J B	12	0.11	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
2,3,7,8-TCDD	0.18	J I	2.4	0.029	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
2,3,7,8-TCDF	ND		2.4	0.57	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
OCDD	1500	B	24	0.44	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
OCDF	110	B	24	0.15	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
Total HxCDD	140	IB	12	0.13	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
Total HxCDF	79	IB	12	0.22	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
Total HpCDD	840	B	12	0.55	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
Total HpCDF	140	B	12	0.22	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
Total PeCDD	24	IB	12	0.10	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
Total PeCDF	33	IB	12	0.13	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
Total TCDD	5.3	IB	2.4	0.029	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
Total TCDF	23	IB	2.4	0.57	ng/Kg	☼	05/03/23 13:24	05/08/23 01:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-OCDF	62		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-OCDD	55		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-2,3,7,8-TCDF	77		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-2,3,7,8-TCDD	75		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-2,3,4,7,8-PeCDF	68		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-2,3,4,6,7,8-HxCDF	74		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-1,2,3,7,8,9-HxCDF	75		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-1,2,3,7,8,9-HxCDD	71		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-1,2,3,7,8-PeCDF	64		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-1,2,3,7,8-PeCDD	56		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-1,2,3,6,7,8-HxCDF	80		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-1,2,3,6,7,8-HxCDD	70		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-1,2,3,4,7,8,9-HpCDF	72		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-1,2,3,4,7,8-HxCDF	74		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-1,2,3,4,7,8-HxCDD	70		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-1,2,3,4,6,7,8-HpCDF	62		40 - 135				05/03/23 13:24	05/08/23 01:57	1
13C-1,2,3,4,6,7,8-HpCDD	61		40 - 135				05/03/23 13:24	05/08/23 01:57	1



# Isotope Dilution Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-2

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Solid

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	OCDF (40-135)	OCDD (40-135)	TCDF (40-135)	TCDD (40-135)	PeCF (40-135)	13CHxCF (40-135)	HxCF (40-135)	13CHxCD (40-135)
570-133080-1	BM-DU1-Comp	56	48	82	80	68	75	83	72
570-133080-2	BM-DU2-Comp	80	68	91	86	78	95	91	86
570-133080-3	BM-DU3-Comp	62	55	77	75	68	74	75	71

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCDF (40-135)	PeCDD (40-135)	HxDF (40-135)	HxDD (40-135)	HpCDF2 (40-135)	HxCDF (40-135)	HxCDD (40-135)	HpCDF (40-135)
570-133080-1	BM-DU1-Comp	64	56	81	72	78	77	69	59
570-133080-2	BM-DU2-Comp	79	66	96	90	88	88	86	73
570-133080-3	BM-DU3-Comp	64	56	80	70	72	74	70	62

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (40-135)							
570-133080-1	BM-DU1-Comp	62							
570-133080-2	BM-DU2-Comp	73							
570-133080-3	BM-DU3-Comp	61							

### Surrogate Legend

- OCDF = 13C-OCDF
- OCDD = 13C-OCDD
- TCDF = 13C-2,3,7,8-TCDF
- TCDD = 13C-2,3,7,8-TCDD
- PeCF = 13C-2,3,4,7,8-PeCDF
- 13CHxCF = 13C-2,3,4,6,7,8-HxCDF
- HxCF = 13C-1,2,3,7,8,9-HxCDF
- 13CHxCD = 13C-1,2,3,7,8,9-HxCDD
- PeCDF = 13C-1,2,3,7,8-PeCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- HxDF = 13C-1,2,3,6,7,8-HxCDF
- HxDD = 13C-1,2,3,6,7,8-HxCDD
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- HxCDF = 13C-1,2,3,4,7,8-HxCDF
- HxCDD = 13C-1,2,3,4,7,8-HxCDD
- HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

# QC Association Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-2

## Specialty Organics

### Prep Batch: 371675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	8290A	
570-133080-2	BM-DU2-Comp	Total/NA	Solid	8290A	
570-133080-3	BM-DU3-Comp	Total/NA	Solid	8290A	

### Analysis Batch: 372978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-1	BM-DU1-Comp	Total/NA	Solid	8290A	371675
570-133080-2	BM-DU2-Comp	Total/NA	Solid	8290A	371675
570-133080-3	BM-DU3-Comp	Total/NA	Solid	8290A	371675

# Lab Chronicle

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-2

## Client Sample ID: BM-DU1-Comp

Lab Sample ID: 570-133080-1

Date Collected: 03/15/23 09:25

Matrix: Solid

Date Received: 03/29/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8290A			10.42 g	20 uL	371675	05/03/23 13:24	RGA5	ELLE
Total/NA	Analysis	8290A		1	20 uL	20 uL	372978	05/08/23 00:20	DZ6A	ELLE

Instrument ID: DF18471

## Client Sample ID: BM-DU2-Comp

Lab Sample ID: 570-133080-2

Date Collected: 03/15/23 15:05

Matrix: Solid

Date Received: 03/29/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8290A			10.01 g	20 uL	371675	05/03/23 13:24	RGA5	ELLE
Total/NA	Analysis	8290A		1	20 uL	20 uL	372978	05/08/23 01:08	DZ6A	ELLE

Instrument ID: DF18471

## Client Sample ID: BM-DU3-Comp

Lab Sample ID: 570-133080-3

Date Collected: 03/16/23 12:20

Matrix: Solid

Date Received: 03/29/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8290A			10.20 g	20 uL	371675	05/03/23 13:24	RGA5	ELLE
Total/NA	Analysis	8290A		1	20 uL	20 uL	372978	05/08/23 01:57	DZ6A	ELLE

Instrument ID: DF18471

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-2

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-24
A2LA	ISO/IEC 17025	0001.01	11-30-24
Alaska	State	PA00009	06-30-23
Alaska (UST)	State	17-027	02-28-24
Arizona	State	AZ0780	03-12-24
Arkansas DEQ	State	88-00660	08-09-23
California	State	2792	11-30-23
Colorado	State	PA00009	06-30-23
Connecticut	State	PH-0746	06-30-23
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-24
Delaware (DW)	State	N/A	01-31-24
Florida	NELAP	E87997	07-02-23
Georgia (DW)	State	C048	01-31-24
Hawaii	State	N/A	01-31-24
Illinois	NELAP	200027	01-31-24
Iowa	State	361	03-01-24
Kansas	NELAP	E-10151	10-31-23
Kentucky (DW)	State	KY90088	12-31-23
Kentucky (UST)	State	0001.01	11-30-24
Kentucky (WW)	State	KY90088	12-31-23
Louisiana (All)	NELAP	02055	06-30-23
Maine	State	2019012	03-12-25
Maryland	State	100	06-30-23
Massachusetts	State	M-PA009	06-30-23
Michigan	State	9930	01-31-24
Minnesota	NELAP	042-999-487	12-31-23
Mississippi	State	023	01-31-24
Missouri	State	450	01-31-25
Montana (DW)	State	0098	01-01-24
Nebraska	State	NE-OS-32-17	01-31-24
New Hampshire	NELAP	2730	01-10-24
New Jersey	NELAP	PA011	06-30-23
New York	NELAP	10670	04-01-24
North Carolina (DW)	State	42705	07-31-23
North Carolina (WW/SW)	State	521	12-31-23
North Dakota	State	R-205	01-31-24
Oklahoma	NELAP	R-205	08-31-23
Oregon	NELAP	PA200001	09-11-23
PALA	Canada	1978	09-16-24
Pennsylvania	NELAP	36-00037	01-31-24
Rhode Island	State	LAO00338	12-31-23
South Carolina	State	89002	01-31-24
Tennessee	State	02838	01-31-24
Texas	NELAP	T104704194-22-45	08-31-23
USDA	US Federal Programs	525-22-298-19481	10-25-25
Vermont	State	VT - 36037	10-28-23
Virginia	NELAP	460182	06-14-23
West Virginia (DW)	State	9906 C	12-31-23
West Virginia DEP	State	055	07-31-23
Wyoming	State	8TMS-L	01-31-24

# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-2

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wyoming (UST)	A2LA	0001.01	11-30-24

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# Method Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-2

Method	Method Description	Protocol	Laboratory
8290A	Dioxins and Furans (HRGC/HRMS)	SW846	ELLE
8290A	Soxhlet Extraction of Dioxins and Furans	SW846	ELLE

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300



# Sample Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-2

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-133080-1	BM-DU1-Comp	Solid	03/15/23 09:25	03/29/23 09:45
570-133080-2	BM-DU2-Comp	Solid	03/15/23 15:05	03/29/23 09:45
570-133080-3	BM-DU3-Comp	Solid	03/16/23 12:20	03/29/23 09:45

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137080



**Pacific EcoRisk**

ENVIRONMENTAL CONSULTING & TESTING

2250 Cordelia Rd., Fairfield, CA 94534  
(707)207-7760

**Eurofins Calscience CHAIN-OF-CUSTODY RECORD**

<b>Client Name:</b>		Pacific EcoRisk					<b>REQUESTED ANALYSIS</b>																
<b>Client Address:</b>		2250 Cordelia Rd. Fairfield, CA 94534																					
<b>Sampled By:</b>		PER																					
<b>Phone:</b>		(707) 207-7760																					
<b>FAX:</b>		(707) 207-7916																					
<b>Project Manager:</b>		Jeff Cotsifas																					
<b>Project Name:</b>		BerkeleyMarina																					
<b>PO Number:</b>		37289																					
Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container		* See Analyte List	Grain Size Analysis															
					Number	Type																	
1	BM-DU1	BM-DU1-Comp	3/15/23	925	Sed	2	glass jar	X															
2	BM-DU1	BM-DU1-Comp	3/15/23	925	Sed	1	poly bag		X														
3	BM-DU2	BM-DU2-Comp	3/15/23	1505	Sed	2	glass jar	X															
4	BM-DU2	BM-DU2-Comp	3/15/23	1505	Sed	1	poly bag		X														
5	BM-DU3	BM-DU3-Comp	3/16/23	1220	Sed	2	glass jar	X															
6	BM-DU3	BM-DU3-Comp	3/16/23	1220	Sed	1	poly bag		X														
7																							
8																							
9																							
10																							
<b>Correct Containers:</b>		Yes	No		<b>RELINQUISHED BY</b>																		
<b>Sample Temperature:</b>		Ambient	Cold	Warm	<b>Signature:</b> <i>M. McElroy</i>					<b>Signature:</b>													
<b>Sample Preservative:</b>		Yes	No		<b>Print:</b> M. McElroy					<b>Print:</b>													
<b>Turnaround Time:</b>		STD	Specify:		<b>Organization:</b> PER					<b>Organization:</b>													
<b>Comments:</b>  Standard TAT for Calscience Results.  Composite samples frozen <14 days from collection.				<b>DATE:</b> 3/28/23					<b>TIME:</b> 1600					<b>DATE:</b>					<b>TIME:</b>				
				<b>RECEIVED BY</b>																			
				<b>Signature:</b> <i>[Signature]</i>					<b>Signature:</b>														
				<b>Print:</b> <i>Almeida</i>					<b>Print:</b>														
				<b>Organization:</b> EC					<b>Organization:</b>														
<b>DATE:</b> 3/29/23					<b>TIME:</b> 0945					<b>DATE:</b>					<b>TIME:</b>								



570-133080 Chain of Custody

\*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

3.9 / 3.8 SC12

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133080

**ANALYTE LIST**

Pacific EcoRisk  
2250 Cordelia Rd.  
Fairfield, CA 94534

Project Proponent:  
Project #:  
Site #:

Berkeley/Martina  
37289  
BM-DU1-Comp, BM-DU2-Comp, & BM-DU3-Comp

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Solids, Total	SM 2540B	0.10%	X
Total Organic Carbon	EPA 9060A	0.10%	X
Grain Size	ASTM D4464	0.10%	X
Arsenic	EPA 6020	2 mg/kg	X
Cadmium	EPA 6020	0.3 mg/kg	X
Chromium	EPA 6020	5 mg/kg	X
Copper	EPA 6020	5 mg/kg	X
Lead	EPA 6020	5 mg/kg	X
Mercury	EPA 7471B	0.02 mg/kg	X
Nickel	EPA 6020	5 mg/kg	X
Selenium	EPA 7742 or EPA 6020B Mod	0.1 mg/kg	X
Silver	EPA 6020	0.2 mg/kg	X
Zinc	EPA 6020	1 mg/kg	X
2,4-D,DD	EPA 8081B	2 µg/kg	X
2,4-D,DE	EPA 8081B	2 µg/kg	X
2,4-DDT	EPA 8081B	2 µg/kg	X
4,4'-D,DD	EPA 8081B	2 µg/kg	X
4,4'-D,DE	EPA 8081B	2 µg/kg	X
4,4'-D,DT	EPA 8081B	2 µg/kg	X
Total DDT's	EPA 8081B	2 µg/kg	X
Aldrin	EPA 8081B	2 µg/kg	X
alpha-BHC	EPA 8081B	2 µg/kg	X
beta-BHC	EPA 8081B	2 µg/kg	X
gamma-BHC (Lindane)	EPA 8081B	2 µg/kg	X
delta-BHC	EPA 8081B	2 µg/kg	X
Total BHCs	EPA 8081B	2 µg/kg	X
Chlordane	EPA 8081B	20 µg/kg	X
Dieldrin	EPA 8081B	2 µg/kg	X
Endosulfan I	EPA 8081B	2 µg/kg	X
Endosulfan II	EPA 8081B	2 µg/kg	X
Endosulfan sulfate	EPA 8081B	2 µg/kg	X
Ethrin	EPA 8081B	2 µg/kg	X
Ethrin aldehyde	EPA 8081B	2 µg/kg	X
Hepachlor	EPA 8081B	2 µg/kg	X
Hepachlor epoxide	EPA 8081B	2 µg/kg	X
Toxaphene	EPA 8081B	20 µg/kg	X
PCB 008	EPA 8270C	0.5 µg/kg	X
PCB 018	EPA 8270C	0.5 µg/kg	X
PCB 028	EPA 8270C	0.5 µg/kg	X
PCB 031	EPA 8270C	0.5 µg/kg	X
PCB 033	EPA 8270C	0.5 µg/kg	X
PCB 044	EPA 8270C	0.5 µg/kg	X
PCB 049	EPA 8270C	0.5 µg/kg	X
PCB 052	EPA 8270C	0.5 µg/kg	X
PCB 056	EPA 8270C	0.5 µg/kg	X
PCB 060	EPA 8270C	0.5 µg/kg	X
PCB 066	EPA 8270C	0.5 µg/kg	X
PCB 070	EPA 8270C	0.5 µg/kg	X
PCB 074	EPA 8270C	0.5 µg/kg	X
PCB 087	EPA 8270C	0.5 µg/kg	X
PCB 095	EPA 8270C	0.5 µg/kg	X
PCB 097	EPA 8270C	0.5 µg/kg	X
PCB 099	EPA 8270C	0.5 µg/kg	X
PCB 101	EPA 8270C	0.5 µg/kg	X
PCB 105	EPA 8270C	0.5 µg/kg	X
PCB 110	EPA 8270C	0.5 µg/kg	X
PCB 118	EPA 8270C	0.5 µg/kg	X
PCB 128	EPA 8270C	0.5 µg/kg	X
PCB 132	EPA 8270C	0.5 µg/kg	X
PCB 138/158	EPA 8270C	0.5 µg/kg	X
PCB 141	EPA 8270C	0.5 µg/kg	X
PCB 149	EPA 8270C	0.5 µg/kg	X
PCB 151	EPA 8270C	0.5 µg/kg	X

173080

**ANALYTE LIST**

Pacific EcolRisk  
2250 Cordelia Rd.  
Fairfield, CA 94534

Berkeley/Marinna

Project #: 37289  
Site #: BM-DU1-Comp, BM-DU2-Comp, & BM-DU3-Comp

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
PCB 153	EPA 8270C	0.5 µg/kg	X
PCB 156	EPA 8270C	0.5 µg/kg	X
PCB 170	EPA 8270C	0.5 µg/kg	X
PCB 174	EPA 8270C	0.5 µg/kg	X
PCB 177	EPA 8270C	0.5 µg/kg	X
PCB 180	EPA 8270C	0.5 µg/kg	X
PCB 183	EPA 8270C	0.5 µg/kg	X
PCB 187	EPA 8270C	0.5 µg/kg	X
PCB 194	EPA 8270C	0.5 µg/kg	X
PCB 195	EPA 8270C	0.5 µg/kg	X
PCB 201	EPA 8270C	0.5 µg/kg	X
PCB 203	EPA 8270C	0.5 µg/kg	X
Total PCBs	EPA 8270C	-	X
Acenaphthalene	EPA 8270C	20 µg/kg	X
Acenaphthylene	EPA 8270C	20 µg/kg	X
Anthracene	EPA 8270C	20 µg/kg	X
Benz(a)anthracene	EPA 8270C	20 µg/kg	X
Benz(a)pyrene	EPA 8270C	20 µg/kg	X
Benz(b)fluoranthene	EPA 8270C	20 µg/kg	X
Benz(g,h,i)perylene	EPA 8270C	20 µg/kg	X
Benzok(f)fluoranthene	EPA 8270C	20 µg/kg	X
Biphenyl	EPA 8270C	20 µg/kg	X
Chrysene	EPA 8270C	20 µg/kg	X
Dibenz(a,h)anthracene	EPA 8270C	20 µg/kg	X
Dibenzofluophene	EPA 8270C	20 µg/kg	X
Dimethylanthracene 2, 6-	EPA 8270C	20 µg/kg	X
Fluorene	EPA 8270C	20 µg/kg	X
Indenol 1,2,3-cd)pyrene	EPA 8270C	20 µg/kg	X
Methylanthracene, 1-	EPA 8270C	20 µg/kg	X
Methylanthracene, 2-	EPA 8270C	20 µg/kg	X
Methylphenanthrene, 1-	EPA 8270C	20 µg/kg	X
Naphthalene	EPA 8270C	20 µg/kg	X
Perylene	EPA 8270C	20 µg/kg	X
Phenanthrene	EPA 8270C	20 µg/kg	X
Pyrene	EPA 8270C	20 µg/kg	X
Trimethylanthracene, 2, 3, 5-	EPA 8270C	20 µg/kg	X
Total PAHs	EPA 8270C	-	X
Mono-Butyltin	Krone 1989	10 µg/kg	X
Di-butyltin	Krone 1989	10 µg/kg	X
Tri-butyltin	Krone 1989	10 µg/kg	X
Tetra-butyltin	Krone 1989	10 µg/kg	X
Total Butyltins	Krone 1989	10 µg/kg	X
Dioxins/Furans	EPA 8290	1 ng/kg	X

**QAQC**

Standard TAT for Calscience Results, 10-day Rush TAT from sub-lab (Brooks Rand) on As, Cd, and Se + total solids.

Samples frozen (except TOC & grain size)

Submitted with ECVH and EEC samples. Perform QAQC on SYH-DU1-Comp sample on sample run with ECVH and EEC samples.

If you have any questions regarding this request as checked,

please call Jeff Costas at (707)207-7760







**Eurofins Calscience**

2841 Dow Avenue, Suite 100  
Tustin, CA 92780  
Phone: 714-895-5494

**Chain of Custody Record**



eurofins

Environment Testing


<b>Client Information (Sub Contract Lab)</b>				Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:							
Client Contact: Shipping/Receiving				Phone:	Hollowell, Carla		570-215542.1							
Company: Eurofins Lancaster Laboratories Environm				E-Mail: Carla.Hollowell@et.eurofinsus.com			Page: Page 1 of 1							
Address: 2425 New Holland Pike,				Accreditations Required (See note): Los Angeles County Sanitation Di - California			Job #: 570-133080-1							
City: Lancaster		Due Date Requested: 4/20/2023		<b>Analysis Requested</b>			<b>Preservation Codes:</b> A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)							
State, Zip: PA, 17601		TAT Requested (days):												
Phone: 717-656-2300(Tel)		PO #:												
Email:		WO #:												
Project Name: Berkley Marina (Sediment)		Project #: 57000505												
Site:		SSOW#:		Field Filtered Sample (Yes or No)			Total Number of containers							
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil)		Perform MS/MSD (Yes or No)		Special Instructions/Note:		
BM-DU2-Comp (570-133080-2)		3/15/23		15:05 Pacific		Solid				X		1 Sediment HT = 6 mo from collection date; remove H qualifier from data before		
BM-DU3-Comp (570-133080-3)		3/16/23		12:20 Pacific		Solid				X		1 Sediment HT = 6 mo from collection date; remove H qualifier from data before		
<p>Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte &amp; accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.</p>														
<b>Possible Hazard Identification</b>						<b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b>								
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For            Months								
Deliverable Requested: I, II, III, IV, Other (specify)						Primary Deliverable Rank: 2						Special Instructions/QC Requirements:		
Empty Kit Relinquished by:				Date:		Time:		Method of Shipment:						
Relinquished by: <i>J. Perkins</i>				Date/Time: 4/6/23 1421		Company:		Received by:		Date/Time:		Company:		
Relinquished by:				Date/Time:		Company:		Received by:		Date/Time:		Company:		
Relinquished by:				Date/Time:		Company:		Received by:		Date/Time:		Company:		
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:				Cooler Temperature(s) °C and Other Remarks:								

**Eurofins Calscience**

2841 Dow Avenue, Suite 100  
Tustin, CA 92780  
Phone: 714-895-5494

**Chain of Custody Record**



<b>Client Information (Sub Contract Lab)</b>				Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:			
Client Contact Shipping/Receiving				Phone:	Hollowell, Carla	570-215653.1	570-215653.1			
Company: Brooks Applied Labs LLC				Accreditations Required (See note): Los Angeles County Sanitation Di - California			Page: Page 1 of 1			
Address: 13751 Lake City Way NE, Suite 108,				Due Date Requested: 4/12/2023	<b>Analysis Requested</b>		Job #: 570-133080-1			
City: Seattle				TAT Requested (days):			<b>Preservation Codes:</b> A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Y - Trizma Z - other (specify)			
State, Zip: WA, 98125				PO #:						
Phone:				WO #:						
Project Name: Berkley Marina (Sediment)				Project #: 57000505	Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) SUB (General Subcontract Method)		Total Number of containers			
Site:				SSOW#:						
<b>Sample Identification - Client ID (Lab ID)</b>				Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/soil, BT=Tissue, A=Air)			
				Preservation Code:				Special Instructions/Note:		
BM-DU2-Comp (570-133080-2)				3/15/23	15:05 Pacific		Solid	X	1	
BM-DU3-Comp (570-133080-3)				3/16/23	12:20 Pacific		Solid	X	1	See Attached Instructions
<p>Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte &amp; accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.</p>										
<b>Possible Hazard Identification</b>						<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>				
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Deliverable Requested: I, II, III, IV, Other (specify)						Primary Deliverable Rank: 2				
Empty Kit Relinquished by:						Special Instructions/QC Requirements:				
Date:						Time:				
Relinquished by:						Method of Shipment:				
						Date/Time: 4/16/23 1635				
Relinquished by:						Company:				
Relinquished by:						Received by:				
Relinquished by:						Date/Time:				
Relinquished by:						Company:				
Custody Seals Intact:						Cooler Temperature(s) °C and Other Remarks:				
<input type="checkbox"/> Yes <input type="checkbox"/> No										



ICOC No:  
570-215653

**Containers**

<u>Count</u>	<u>Container Type</u>	<u>Preservative</u>
2	Soil jar 2oz - clear glass	None

**Subcontract Method Instructions**

Sample IDs	Method	Method Description	Method Comments
3	SUBCONTRACT	SUB (General Subcontract Method)	As, Cd, Se - 10 day TAT - J Flags - dw mg/kg - DMMO EDD





**Eurofins Calscience**

2841 Dow Avenue, Suite 100  
Tustin, CA 92780  
Phone: 714-895-5494

**Chain of Custody Record**



Environment Testing

<b>Client Information (Sub Contract Lab)</b>		Sampler:		Lab PM: Hollowell, Carla		Carrier Tracking No(s):		COC No: 570-215668.1							
Client Contact: Shipping/Receiving		Phone:		E-Mail: Carla.Hollowell@et.eurofinsus.com		State of Origin: California		Page: Page 1 of 1							
Company: McCampbell Analytical, Inc.		Due Date Requested: 4/12/2023		Accreditations Required (See note): Los Angeles County Sanitation Di - California		Job #: 570-133080-1									
Address: 1534 Willow Pass Road, City: Pittsburg		TAT Requested (days):		<b>Analysis Requested</b>						<b>Preservation Codes:</b>					
State, Zip: CA, 94565		PO #:		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		SUB (General Subcontract Method)		Total Number of containers		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)	
Phone: 925-252-9262(Tel)		WO #:										Other:			
Email:		Project #: 57000505		SSOW#:											
Project Name: Berkley Marina (Sediment)		Site:		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)									
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Preservation Code:						Special Instructions/Note:			
BM-DU2-Comp (570-133080-2)		3/15/23		15:05 Pacific		Solid		X		1					
BM-DU3-Comp (570-133080-3)		3/16/23		12:20 Pacific		Solid		X		1		See Attached Instructions			
<p>Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte &amp; accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.</p>															
Possible Hazard Identification								Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)							
Unconfirmed								<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months							
Deliverable Requested: I, II, III, IV, Other (specify)				Primary Deliverable Rank: 2				Special Instructions/QC Requirements:							
Empty Kit Relinquished by:				Date:				Time:				Method of Shipment:			
Relinquished by:				Date/Time:				Company				Received by:			
Relinquished by:				Date/Time:				Company				Received by:			
Relinquished by:				Date/Time:				Company				Received by:			
Custody Seals Intact:		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:											
Δ Yes Δ No															

1  
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ICOC No:  
570-215668

**Containers**

<u>Count</u>	<u>Container Type</u>	<u>Preservative</u>
2	Soil jar 2oz - clear glass	None

**Subcontract Method Instructions**

Sample IDs	Method	Method Description	Method Comments
3	SUBCONTRACT	SUB (General Subcontract Method)	TOC - NTAT - DW% - DMMO EDD



FedEx  
TRK# 7716 8426 5644  
0201

92 DTHA

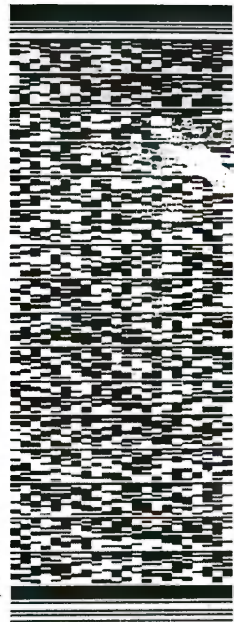


05472138 03/28 581J2/105E/FE2D

WED - 29 MAR AA  
PRIORITY OVERNIGHT

92780  
CA-US SNA

Package 16937435 BBOB2 EXP 02/24



PO 37283

DEPT

(714) 895-5494

REF: 37194

TUSTIN CA 9 2780  
SUITE 30

REFE2D

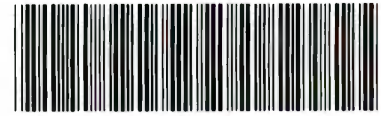
TO CARLA HOLLOWELL  
CALIFORNIA ENVIRONMENTAL LABS  
2841 JEFFERSON AVENUE

FAIRFIELD, CA 945  
UNITED STATES

ORIGIN ID: CCRA (707) 207-7760  
CHARLENE DERHEIM  
PACIFIC ECO RISK  
2250 CORDELLA ROAD

BILL RECIPIENT

SHIP DATE: 28MAR23  
ACTWGT: 29.00 LB  
CAD: 2548479/NET74580  
DIM3: 20x14x14 IN



570-133080 Waybill



## Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-133080-2

**Login Number: 133080**

**List Source: Eurofins Calscience**

**List Number: 1**

**Creator: Patel, Jayesh**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-133080-2

**Login Number: 133080**

**List Source: Eurofins Lancaster Laboratories Environment Testing, LLC**

**List Number: 2**

**List Creation: 04/05/23 02:27 PM**

**Creator: McBeth, Jessica**

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (<math>\leq 6^{\circ}\text{C}</math>, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (<math>\leq 6^{\circ}\text{C}</math>, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	



## Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-133080-2

**Login Number: 133080**

**List Source: Eurofins Lancaster Laboratories Environment Testing, LLC**

**List Number: 3**

**List Creation: 04/07/23 10:46 AM**

**Creator: McBeth, Jessica**

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (<math>\leq 6^{\circ}\text{C}</math>, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (<math>\leq 6^{\circ}\text{C}</math>, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	



## **Appendix C**

### **Eurofins Data Reports for the Z-Layer Composite and Individual Core Sediment Analyses**

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# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jeff Cotsifas  
Pacific EcoRisk Inc  
2250 Cordelia Rd  
Fairfield, California 94534

Generated 6/14/2023 3:00:53 PM

## JOB DESCRIPTION

Berkeley Marina (Sediment)

## JOB NUMBER

570-140024-1



# Eurofins Calscience

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Calscience Project Manager.

## Authorization



Generated  
6/14/2023 3:00:53 PM

Authorized for release by  
Carla Hollowell, Project Manager I  
[Carla.Hollowell@et.eurofinsus.com](mailto:Carla.Hollowell@et.eurofinsus.com)  
(714)895-5494



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Client Sample Results . . . . .	6
Surrogate Summary . . . . .	13
QC Sample Results . . . . .	14
Lab Chronicle . . . . .	18
Certification Summary . . . . .	20
Method Summary . . . . .	22
Sample Summary . . . . .	23
Chain of Custody . . . . .	24
Receipt Checklists . . . . .	29

# Definitions/Glossary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

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**Job ID: 570-140024-1**

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**Laboratory: Eurofins Calscience**

## Narrative

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### Job Narrative 570-140024-1

#### Receipt

The samples were received on 5/31/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.0°C

#### Receipt Exceptions

The samples were frozen after collection (prior to holding time expiration and/or pursuant to information obtained from the client) at -18C, and remained frozen until the laboratory was ready to prepare the samples for analysis. Eurofins Calscience, Inc. follows SWAMP criteria and the Puget Sound Protocol (USEPA/PSWQAT, 1997, Table 2) for holding times in marine tissues and / or sediment samples, which states holding times may be extended up to six months to one year (two years for metals) if stored frozen at -18C after collection. Therefore, the sample results have not been flagged as exceeding the EPA Method recommended holding times: BM-DU3-Z-Layer-Comp (570-140024-1), BM-DU3-01 (570-140024-2), BM-DU3-02 (570-140024-3), BM-DU3-03 (570-140024-4), BM-DU3-04 (570-140024-5) and BM-DU3-05 (570-140024-6)

#### PCBs

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.



# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS)

**Client Sample ID: BM-DU3-Z-Layer-Comp**

**Date Collected: 03/16/23 12:20**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-1**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	1.1		0.97	0.28	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-18	1.9		0.48	0.23	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-28	2.9		0.48	0.24	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-31	3.0		0.48	0.21	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-33	ND		0.48	0.11	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-44	5.4		0.48	0.29	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-49	5.0		0.48	0.26	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-52	8.1		0.48	0.19	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-56	ND		0.48	0.11	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-60	ND		0.48	0.31	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-66	7.6		0.48	0.27	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-70	6.3		0.48	0.22	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-74	2.9		0.48	0.25	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-87	3.6		0.48	0.30	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-95	7.7		0.48	0.16	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-97	2.1		0.48	0.34	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-99	6.7		0.48	0.21	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-101	14		0.48	0.26	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-105	7.5		0.48	0.25	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-110	12		0.48	0.21	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-118	15		0.48	0.19	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-128	ND		0.48	0.33	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-132/153	18		0.97	0.58	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-138/158	16		0.97	0.59	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-141	2.3		0.48	0.16	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-149	13		0.48	0.26	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-151	5.4		0.48	0.22	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-156	ND		0.48	0.23	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-170	3.5		0.48	0.25	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-174	1.7		0.48	0.14	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-177	1.8		0.48	0.23	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-180	7.8		0.48	0.20	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-183	2.5		0.48	0.29	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-187	5.0		0.48	0.21	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-194	ND		0.48	0.27	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-195	ND		0.48	0.15	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-201	ND		0.48	0.34	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1
PCB-203	ND		0.48	0.17	ug/Kg	✳	06/06/23 16:05	06/09/23 23:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	75		20 - 139	06/06/23 16:05	06/09/23 23:51	1
p-Terphenyl-d14	136		37 - 165	06/06/23 16:05	06/09/23 23:51	1

**Client Sample ID: BM-DU3-01**

**Date Collected: 03/16/23 12:20**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-2**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	0.68	J	0.82	0.23	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
PCB-18	ND		0.41	0.19	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
PCB-28	0.83		0.41	0.20	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Client Sample ID: BM-DU3-01**  
**Date Collected: 03/16/23 12:20**  
**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-2**  
**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-31	ND		0.41	0.18	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-33</b>	<b>1.1</b>		0.41	0.096	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-44</b>	<b>2.5</b>		0.41	0.24	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-49</b>	<b>2.0</b>		0.41	0.22	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-52</b>	<b>4.6</b>		0.41	0.16	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
PCB-56	ND		0.41	0.096	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
PCB-60	ND		0.41	0.26	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-66</b>	<b>3.2</b>		0.41	0.22	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-70</b>	<b>2.5</b>		0.41	0.19	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-74</b>	<b>1.1</b>		0.41	0.21	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
PCB-87	ND		0.41	0.25	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-95</b>	<b>4.6</b>		0.41	0.13	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-97</b>	<b>1.7</b>		0.41	0.28	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-99</b>	<b>5.1</b>		0.41	0.18	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-101</b>	<b>7.1</b>		0.41	0.22	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-105</b>	<b>1.3</b>		0.41	0.21	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-110</b>	<b>7.1</b>		0.41	0.18	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-118</b>	<b>5.6</b>		0.41	0.16	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
PCB-128	ND		0.41	0.28	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-132/153</b>	<b>11</b>		0.82	0.49	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-138/158</b>	<b>9.5</b>		0.82	0.49	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
PCB-141	ND		0.41	0.13	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-149</b>	<b>7.4</b>		0.41	0.22	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-151</b>	<b>2.8</b>		0.41	0.19	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
PCB-156	ND		0.41	0.19	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-170</b>	<b>3.2</b>		0.41	0.21	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-174</b>	<b>1.7</b>		0.41	0.12	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-177</b>	<b>1.7</b>		0.41	0.19	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-180</b>	<b>4.2</b>		0.41	0.17	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-183</b>	<b>1.6</b>		0.41	0.25	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
<b>PCB-187</b>	<b>3.8</b>		0.41	0.18	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
PCB-194	ND		0.41	0.23	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
PCB-195	ND		0.41	0.13	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
PCB-201	ND		0.41	0.28	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1
PCB-203	ND		0.41	0.14	ug/Kg	✳	06/06/23 16:05	06/10/23 00:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	79		20 - 139	06/06/23 16:05	06/10/23 00:13	1
p-Terphenyl-d14	120		37 - 165	06/06/23 16:05	06/10/23 00:13	1

**Client Sample ID: BM-DU3-02**  
**Date Collected: 03/16/23 13:00**  
**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-3**  
**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>PCB-5/8</b>	<b>0.59</b>	<b>J</b>	0.97	0.28	ug/Kg	✳	06/06/23 16:05	06/10/23 00:35	1
<b>PCB-18</b>	<b>1.5</b>		0.48	0.23	ug/Kg	✳	06/06/23 16:05	06/10/23 00:35	1
<b>PCB-28</b>	<b>2.1</b>		0.48	0.24	ug/Kg	✳	06/06/23 16:05	06/10/23 00:35	1
<b>PCB-31</b>	<b>1.2</b>		0.48	0.21	ug/Kg	✳	06/06/23 16:05	06/10/23 00:35	1
PCB-33	ND		0.48	0.11	ug/Kg	✳	06/06/23 16:05	06/10/23 00:35	1
<b>PCB-44</b>	<b>2.8</b>		0.48	0.29	ug/Kg	✳	06/06/23 16:05	06/10/23 00:35	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Client Sample ID: BM-DU3-02**  
**Date Collected: 03/16/23 13:00**  
**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-3**  
**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-49	2.4		0.48	0.26	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-52	2.8		0.48	0.19	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-56	ND		0.48	0.11	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-60	ND		0.48	0.31	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-66	2.8		0.48	0.27	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-70	2.0		0.48	0.22	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-74	1.1		0.48	0.25	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-87	ND		0.48	0.30	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-95	2.7		0.48	0.16	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-97	ND		0.48	0.34	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-99	2.7		0.48	0.21	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-101	4.6		0.48	0.26	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-105	ND		0.48	0.26	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-110	4.7		0.48	0.22	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-118	5.4		0.48	0.19	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-128	ND		0.48	0.33	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-132/153	6.6		0.97	0.58	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-138/158	6.1		0.97	0.59	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-141	ND		0.48	0.16	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-149	3.3		0.48	0.26	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-151	1.1		0.48	0.22	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-156	ND		0.48	0.23	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-170	ND		0.48	0.25	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-174	ND		0.48	0.14	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-177	ND		0.48	0.23	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-180	3.0		0.48	0.20	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-183	1.0		0.48	0.30	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-187	2.3		0.48	0.22	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-194	ND		0.48	0.27	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-195	ND		0.48	0.15	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-201	ND		0.48	0.34	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1
PCB-203	ND		0.48	0.17	ug/Kg	☼	06/06/23 16:05	06/10/23 00:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	64		20 - 139	06/06/23 16:05	06/10/23 00:35	1
p-Terphenyl-d14	108		37 - 165	06/06/23 16:05	06/10/23 00:35	1

**Client Sample ID: BM-DU3-03**  
**Date Collected: 03/16/23 13:45**  
**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-4**  
**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	2.1		0.95	0.27	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-18	3.5		0.48	0.22	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-28	4.9		0.48	0.24	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-31	2.9		0.48	0.21	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-33	2.9		0.48	0.11	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-44	8.8		0.48	0.28	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-49	6.8		0.48	0.26	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-52	11		0.48	0.19	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-56	2.2		0.48	0.11	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Client Sample ID: BM-DU3-03**  
**Date Collected: 03/16/23 13:45**  
**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-4**  
**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-60	ND		0.48	0.31	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-66</b>	<b>9.0</b>		0.48	0.26	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-70</b>	<b>8.2</b>		0.48	0.22	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-74</b>	<b>4.3</b>		0.48	0.25	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-87</b>	<b>1.8</b>		0.48	0.29	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-95</b>	<b>7.4</b>		0.48	0.16	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-97</b>	<b>1.9</b>		0.48	0.33	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-99</b>	<b>6.5</b>		0.48	0.21	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-101</b>	<b>11</b>		0.48	0.26	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-105</b>	<b>1.2</b>		0.48	0.25	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-110</b>	<b>8.4</b>		0.48	0.21	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-118</b>	<b>8.0</b>		0.48	0.19	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-128	ND		0.48	0.33	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-132/153</b>	<b>9.6</b>		0.95	0.57	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-138/158</b>	<b>9.1</b>		0.95	0.58	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-141	ND		0.48	0.16	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-149</b>	<b>7.4</b>		0.48	0.26	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-151</b>	<b>3.3</b>		0.48	0.22	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-156	ND		0.48	0.23	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-170	ND		0.48	0.25	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-174	ND		0.48	0.14	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-177	ND		0.48	0.22	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-180</b>	<b>4.3</b>		0.48	0.20	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-183</b>	<b>1.5</b>		0.48	0.29	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
<b>PCB-187</b>	<b>2.9</b>		0.48	0.21	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-194	ND		0.48	0.27	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-195	ND		0.48	0.15	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-201	ND		0.48	0.33	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1
PCB-203	ND		0.48	0.17	ug/Kg	☼	06/06/23 16:05	06/10/23 00:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	68		20 - 139	06/06/23 16:05	06/10/23 00:56	1
p-Terphenyl-d14	117		37 - 165	06/06/23 16:05	06/10/23 00:56	1

**Client Sample ID: BM-DU3-04**  
**Date Collected: 03/16/23 14:50**  
**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-5**  
**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.93	0.27	ug/Kg	☼	06/06/23 16:05	06/10/23 01:18	1
PCB-18	ND		0.47	0.22	ug/Kg	☼	06/06/23 16:05	06/10/23 01:18	1
PCB-28	ND		0.47	0.23	ug/Kg	☼	06/06/23 16:05	06/10/23 01:18	1
PCB-31	ND		0.47	0.21	ug/Kg	☼	06/06/23 16:05	06/10/23 01:18	1
PCB-33	ND		0.47	0.11	ug/Kg	☼	06/06/23 16:05	06/10/23 01:18	1
PCB-44	ND		0.47	0.28	ug/Kg	☼	06/06/23 16:05	06/10/23 01:18	1
PCB-49	ND		0.47	0.25	ug/Kg	☼	06/06/23 16:05	06/10/23 01:18	1
PCB-52	ND		0.47	0.18	ug/Kg	☼	06/06/23 16:05	06/10/23 01:18	1
PCB-56	ND		0.47	0.11	ug/Kg	☼	06/06/23 16:05	06/10/23 01:18	1
PCB-60	ND		0.47	0.30	ug/Kg	☼	06/06/23 16:05	06/10/23 01:18	1
PCB-66	ND		0.47	0.26	ug/Kg	☼	06/06/23 16:05	06/10/23 01:18	1
PCB-70	ND		0.47	0.22	ug/Kg	☼	06/06/23 16:05	06/10/23 01:18	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Client Sample ID: BM-DU3-04**  
**Date Collected: 03/16/23 14:50**  
**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-5**  
**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-74	ND		0.47	0.24	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-87	ND		0.47	0.29	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-95	ND		0.47	0.15	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-97	ND		0.47	0.32	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-99	ND		0.47	0.20	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
<b>PCB-101</b>	<b>0.59</b>		0.47	0.25	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-105	ND		0.47	0.25	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-110	ND		0.47	0.21	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-118	ND		0.47	0.19	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-128	ND		0.47	0.32	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-132/153	ND		0.93	0.56	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
<b>PCB-138/158</b>	<b>1.5</b>		0.93	0.57	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-141	ND		0.47	0.15	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
<b>PCB-149</b>	<b>1.4</b>		0.47	0.25	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-151	ND		0.47	0.21	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-156	ND		0.47	0.22	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-170	ND		0.47	0.24	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-174	ND		0.47	0.13	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-177	ND		0.47	0.22	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-180	ND		0.47	0.19	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-183	ND		0.47	0.28	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-187	ND		0.47	0.21	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-194	ND		0.47	0.26	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-195	ND		0.47	0.15	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-201	ND		0.47	0.32	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1
PCB-203	ND		0.47	0.16	ug/Kg	✳	06/06/23 16:05	06/10/23 01:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	69		20 - 139	06/06/23 16:05	06/10/23 01:18	1
p-Terphenyl-d14	98		37 - 165	06/06/23 16:05	06/10/23 01:18	1

**Client Sample ID: BM-DU3-05**  
**Date Collected: 03/17/23 07:40**  
**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-6**  
**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		1.1	0.33	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-18	ND		0.57	0.27	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-28	ND		0.57	0.29	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-31	ND		0.57	0.25	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-33	ND		0.57	0.13	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-44	ND		0.57	0.34	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-49	ND		0.57	0.31	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-52	ND		0.57	0.23	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-56	ND		0.57	0.13	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-60	ND		0.57	0.37	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-66	ND		0.57	0.31	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-70	ND		0.57	0.26	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-74	ND		0.57	0.29	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-87	ND		0.57	0.35	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-95	ND		0.57	0.19	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Client Sample ID: BM-DU3-05**  
**Date Collected: 03/17/23 07:40**  
**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-6**  
**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-97	ND		0.57	0.40	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-99	ND		0.57	0.25	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-101	ND		0.57	0.31	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-105	ND		0.57	0.30	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
<b>PCB-110</b>	<b>0.76</b>		0.57	0.25	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
<b>PCB-118</b>	<b>0.65</b>		0.57	0.23	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-128	ND		0.57	0.39	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
<b>PCB-132/153</b>	<b>2.4</b>		1.1	0.68	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
<b>PCB-138/158</b>	<b>1.3</b>		1.1	0.69	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-141	ND		0.57	0.19	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
<b>PCB-149</b>	<b>1.5</b>		0.57	0.31	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-151	ND		0.57	0.26	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-156	ND		0.57	0.27	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-170	ND		0.57	0.30	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-174	ND		0.57	0.16	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-177	ND		0.57	0.27	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-180	ND		0.57	0.24	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-183	ND		0.57	0.35	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
<b>PCB-187</b>	<b>0.84</b>		0.57	0.25	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-194	ND		0.57	0.32	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-195	ND		0.57	0.18	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-201	ND		0.57	0.40	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
PCB-203	ND		0.57	0.20	ug/Kg	✳	06/06/23 16:05	06/10/23 01:40	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2-Fluorobiphenyl (Surr)	58		20 - 139				06/06/23 16:05	06/10/23 01:40	1
p-Terphenyl-d14	89		37 - 165				06/06/23 16:05	06/10/23 01:40	1

# Client Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## General Chemistry

**Client Sample ID: BM-DU3-Z-Layer-Comp**

**Date Collected: 03/16/23 12:20**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-1**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon (SW846 9060A)	1.43		0.400	0.0902	%	☼		06/14/23 10:56	1
Percent Solids (EPA Moisture)	41.4		0.1	0.1	%			06/01/23 15:05	1

**Client Sample ID: BM-DU3-01**

**Date Collected: 03/16/23 12:20**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-2**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon (SW846 9060A)	1.07		0.400	0.0902	%	☼		06/14/23 11:05	1
Percent Solids (EPA Moisture)	48.9		0.1	0.1	%			06/01/23 15:05	1

**Client Sample ID: BM-DU3-02**

**Date Collected: 03/16/23 13:00**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-3**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon (SW846 9060A)	1.49		0.400	0.0902	%	☼		06/14/23 11:17	1
Percent Solids (EPA Moisture)	41.2		0.1	0.1	%			06/01/23 15:05	1

**Client Sample ID: BM-DU3-03**

**Date Collected: 03/16/23 13:45**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-4**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon (SW846 9060A)	1.34		0.400	0.0902	%	☼		06/14/23 11:45	1
Percent Solids (EPA Moisture)	41.7		0.1	0.1	%			06/01/23 15:05	1

**Client Sample ID: BM-DU3-04**

**Date Collected: 03/16/23 14:50**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-5**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon (SW846 9060A)	1.60		0.400	0.0902	%	☼		06/14/23 12:08	1
Percent Solids (EPA Moisture)	42.7		0.1	0.1	%			06/01/23 15:05	1

**Client Sample ID: BM-DU3-05**

**Date Collected: 03/17/23 07:40**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-6**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon (SW846 9060A)	1.40		0.400	0.0902	%	☼		06/14/23 12:21	1
Percent Solids (EPA Moisture)	34.8		0.1	0.1	%			06/01/23 15:05	1

# Surrogate Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Method: 8270C SIM CON - PCB Congeners (GC/MS)

Matrix: Sediment

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		FBP (20-139)	TPHd14 (37-165)
570-140024-1	BM-DU3-Z-Layer-Comp	75	136
570-140024-2	BM-DU3-01	79	120
570-140024-2 MS	BM-DU3-01	82	115
570-140024-2 MSD	BM-DU3-01	72	112
570-140024-3	BM-DU3-02	64	108
570-140024-4	BM-DU3-03	68	117
570-140024-5	BM-DU3-04	69	98
570-140024-6	BM-DU3-05	58	89

#### Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)

TPHd14 = p-Terphenyl-d14

## Method: 8270C SIM CON - PCB Congeners (GC/MS)

Matrix: Solid

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		FBP (20-139)	TPHd14 (37-165)
LCS 570-334938/2-A	Lab Control Sample	86	100
LCSD 570-334938/3-A	Lab Control Sample Dup	82	97
MB 570-334938/1-A	Method Blank	80	101

#### Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)

TPHd14 = p-Terphenyl-d14

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Method: 8270C SIM CON - PCB Congeners (GC/MS)

**Lab Sample ID: MB 570-334938/1-A**  
**Matrix: Solid**  
**Analysis Batch: 336125**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 334938**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.40	0.11	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-18	ND		0.20	0.094	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-28	ND		0.20	0.10	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-31	ND		0.20	0.089	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-33	ND		0.20	0.047	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-44	ND		0.20	0.12	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-49	ND		0.20	0.11	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-52	ND		0.20	0.079	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-56	ND		0.20	0.047	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-60	ND		0.20	0.13	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-66	ND		0.20	0.11	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-70	ND		0.20	0.093	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-74	ND		0.20	0.10	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-87	ND		0.20	0.12	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-95	ND		0.20	0.066	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-97	ND		0.20	0.14	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-99	ND		0.20	0.086	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-101	ND		0.20	0.11	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-105	ND		0.20	0.11	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-110	ND		0.20	0.089	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-118	ND		0.20	0.080	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-128	ND		0.20	0.14	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-132/153	ND		0.40	0.24	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-138/158	ND		0.40	0.24	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-141	ND		0.20	0.066	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-149	ND		0.20	0.11	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-151	ND		0.20	0.092	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-156	ND		0.20	0.095	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-170	ND		0.20	0.10	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-174	ND		0.20	0.057	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-177	ND		0.20	0.094	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-180	ND		0.20	0.083	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-183	ND		0.20	0.12	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-187	ND		0.20	0.089	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-194	ND		0.20	0.11	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-195	ND		0.20	0.062	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-201	ND		0.20	0.14	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
PCB-203	ND		0.20	0.070	ug/Kg		06/06/23 16:05	06/09/23 20:58	1
	<b>MB</b>	<b>MB</b>							
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	80		20 - 139				06/06/23 16:05	06/09/23 20:58	1
p-Terphenyl-d14	101		37 - 165				06/06/23 16:05	06/09/23 20:58	1

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Lab Sample ID: LCS 570-334938/2-A**  
**Matrix: Solid**  
**Analysis Batch: 336125**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 334938**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
PCB-5/8	50.0	43.08		ug/Kg		86	50 - 150
PCB-18	50.0	37.59		ug/Kg		75	33 - 114
PCB-28	50.0	40.28		ug/Kg		81	40 - 132
PCB-44	50.0	41.90		ug/Kg		84	38 - 131
PCB-52	50.0	39.89		ug/Kg		80	38 - 131
PCB-66	50.0	47.77		ug/Kg		96	42 - 141
PCB-101	50.0	41.61		ug/Kg		83	40 - 132
PCB-105	50.0	43.88		ug/Kg		88	39 - 135
PCB-118	50.0	42.19		ug/Kg		84	38 - 131
PCB-128	50.0	50.33		ug/Kg		101	43 - 149
PCB-132/153	50.0	49.19		ug/Kg		98	37 - 164
PCB-138/158	50.0	39.66		ug/Kg		79	36 - 124
PCB-170	50.0	41.29		ug/Kg		83	35 - 134
PCB-180	50.0	50.41		ug/Kg		101	38 - 159
PCB-187	50.0	45.89		ug/Kg		92	41 - 147
PCB-195	50.0	43.19		ug/Kg		86	44 - 128
PCB-201	50.0	51.33		ug/Kg		103	40 - 156

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl (Surr)	86		20 - 139
p-Terphenyl-d14	100		37 - 165

**Lab Sample ID: LCSD 570-334938/3-A**  
**Matrix: Solid**  
**Analysis Batch: 336125**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 334938**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
PCB-5/8	50.0	40.71		ug/Kg		81	50 - 150	6	25
PCB-18	50.0	35.96		ug/Kg		72	33 - 114	4	29
PCB-28	50.0	38.50		ug/Kg		77	40 - 132	5	29
PCB-44	50.0	39.73		ug/Kg		79	38 - 131	5	32
PCB-52	50.0	35.64		ug/Kg		71	38 - 131	11	32
PCB-66	50.0	46.22		ug/Kg		92	42 - 141	3	34
PCB-101	50.0	41.74		ug/Kg		83	40 - 132	0	34
PCB-105	50.0	42.02		ug/Kg		84	39 - 135	4	37
PCB-118	50.0	39.93		ug/Kg		80	38 - 131	5	35
PCB-128	50.0	49.10		ug/Kg		98	43 - 149	2	37
PCB-132/153	50.0	46.64		ug/Kg		93	37 - 164	5	38
PCB-138/158	50.0	38.28		ug/Kg		77	36 - 124	4	40
PCB-170	50.0	39.49		ug/Kg		79	35 - 134	4	31
PCB-180	50.0	49.87		ug/Kg		100	38 - 159	1	40
PCB-187	50.0	44.06		ug/Kg		88	41 - 147	4	40
PCB-195	50.0	42.78		ug/Kg		86	44 - 128	1	28
PCB-201	50.0	48.75		ug/Kg		98	40 - 156	5	40

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2-Fluorobiphenyl (Surr)	82		20 - 139
p-Terphenyl-d14	97		37 - 165

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Method: 8270C SIM CON - PCB Congeners (GC/MS)

**Lab Sample ID: 570-140024-2 MS**

**Matrix: Sediment**

**Analysis Batch: 336125**

**Client Sample ID: BM-DU3-01**

**Prep Type: Total/NA**

**Prep Batch: 334938**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier					
PCB-5/8	0.68	J	102	84.14		ug/Kg	☼	82		50 - 150
PCB-18	ND		102	75.11		ug/Kg	☼	74		29 - 127
PCB-28	0.83		102	94.65		ug/Kg	☼	92		29 - 170
PCB-44	2.5		102	99.58		ug/Kg	☼	95		33 - 150
PCB-52	4.6		102	101.9		ug/Kg	☼	96		23 - 159
PCB-66	3.2		102	107.8		ug/Kg	☼	103		29 - 166
PCB-101	7.1		102	101.7		ug/Kg	☼	93		30 - 159
PCB-105	1.3		102	109.2		ug/Kg	☼	106		22 - 173
PCB-118	5.6		102	115.9		ug/Kg	☼	108		24 - 162
PCB-128	ND		102	121.8		ug/Kg	☼	120		18 - 180
PCB-132/153	11		102	121.9		ug/Kg	☼	109		27 - 180
PCB-138/158	9.5		102	103.6		ug/Kg	☼	92		18 - 160
PCB-170	3.2		102	96.76		ug/Kg	☼	92		25 - 165
PCB-180	4.2		102	121.6		ug/Kg	☼	115		20 - 180
PCB-187	3.8		102	106.1		ug/Kg	☼	100		14 - 180
PCB-195	ND		102	95.20		ug/Kg	☼	93		44 - 128
PCB-201	ND		102	116.3		ug/Kg	☼	114		17 - 180

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	82		20 - 139
p-Terphenyl-d14	115		37 - 165

**Lab Sample ID: 570-140024-2 MSD**

**Matrix: Sediment**

**Analysis Batch: 336125**

**Client Sample ID: BM-DU3-01**

**Prep Type: Total/NA**

**Prep Batch: 334938**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
PCB-5/8	0.68	J	102	83.41		ug/Kg	☼	81		50 - 150	1	25
PCB-18	ND		102	69.55		ug/Kg	☼	68		29 - 127	8	40
PCB-28	0.83		102	89.86		ug/Kg	☼	87		29 - 170	5	32
PCB-44	2.5		102	97.51		ug/Kg	☼	93		33 - 150	2	40
PCB-52	4.6		102	105.6		ug/Kg	☼	99		23 - 159	4	40
PCB-66	3.2		102	105.7		ug/Kg	☼	100		29 - 166	2	40
PCB-101	7.1		102	99.25		ug/Kg	☼	90		30 - 159	2	40
PCB-105	1.3		102	112.8		ug/Kg	☼	109		22 - 173	3	40
PCB-118	5.6		102	114.5		ug/Kg	☼	107		24 - 162	1	40
PCB-128	ND		102	113.9		ug/Kg	☼	112		18 - 180	7	40
PCB-132/153	11		102	117.3		ug/Kg	☼	104		27 - 180	4	40
PCB-138/158	9.5		102	97.38		ug/Kg	☼	86		18 - 160	6	40
PCB-170	3.2		102	94.45		ug/Kg	☼	89		25 - 165	2	22
PCB-180	4.2		102	113.7		ug/Kg	☼	107		20 - 180	7	40
PCB-187	3.8		102	101.1		ug/Kg	☼	95		14 - 180	5	40
PCB-195	ND		102	92.45		ug/Kg	☼	91		44 - 128	3	28
PCB-201	ND		102	114.2		ug/Kg	☼	112		17 - 180	2	40

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	72		20 - 139
p-Terphenyl-d14	112		37 - 165

Eurofins Calscience

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Method: 9060A - Organic Carbon, Total (TOC)

**Lab Sample ID: MB 280-616115/66**  
**Matrix: Solid**  
**Analysis Batch: 616115**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		0.400	0.0902	%	☼		06/13/23 13:59	1

**Lab Sample ID: LCS 280-616115/65**  
**Matrix: Solid**  
**Analysis Batch: 616115**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon	0.579	0.4197		%	☼	72	46 - 130

**Lab Sample ID: 280-177218-A-12 MS**  
**Matrix: Solid**  
**Analysis Batch: 616115**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon	ND		1.18	1.278		%	☼	108	46 - 130

**Lab Sample ID: 280-177218-A-12 MSD**  
**Matrix: Solid**  
**Analysis Batch: 616115**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Organic Carbon	ND		1.18	1.454		%	☼	123	46 - 130	13	20

## Method: Moisture - Solids Total

**Lab Sample ID: 570-140024-2 DU**  
**Matrix: Sediment**  
**Analysis Batch: 333836**

**Client Sample ID: BM-DU3-01**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Solids	48.9		47.0		%		4	10



# Lab Chronicle

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Client Sample ID: BM-DU3-Z-Layer-Comp

## Lab Sample ID: 570-140024-1

Date Collected: 03/16/23 12:20

Matrix: Sediment

Date Received: 05/31/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.00 g	2 mL	334938	06/06/23 16:05	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM CON Instrument ID: GCMShHH		1	1 mL	1 mL	336125	06/09/23 23:51	J7WE	EET CAL 4
Total/NA	Analysis	9060A Instrument ID: WC_SHI6		1	101.8 mg	101.8 mg	616115	06/14/23 10:56	KEG	EET DEN
Total/NA	Analysis	Moisture Instrument ID: MOI4		1			333836	06/01/23 15:05	B4QL	EET CAL 4

## Client Sample ID: BM-DU3-01

## Lab Sample ID: 570-140024-2

Date Collected: 03/16/23 12:20

Matrix: Sediment

Date Received: 05/31/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.06 g	2 mL	334938	06/06/23 16:05	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM CON Instrument ID: GCMShHH		1	1 mL	1 mL	336125	06/10/23 00:13	J7WE	EET CAL 4
Total/NA	Analysis	9060A Instrument ID: WC_SHI6		1	100.9 mg	100.9 mg	616115	06/14/23 11:05	KEG	EET DEN
Total/NA	Analysis	Moisture Instrument ID: MOI4		1			333836	06/01/23 15:05	B4QL	EET CAL 4

## Client Sample ID: BM-DU3-02

## Lab Sample ID: 570-140024-3

Date Collected: 03/16/23 13:00

Matrix: Sediment

Date Received: 05/31/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.03 g	2 mL	334938	06/06/23 16:05	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM CON Instrument ID: GCMShHH		1	1 mL	1 mL	336125	06/10/23 00:35	J7WE	EET CAL 4
Total/NA	Analysis	9060A Instrument ID: WC_SHI6		1	99.7 mg	99.7 mg	616115	06/14/23 11:17	KEG	EET DEN
Total/NA	Analysis	Moisture Instrument ID: MOI4		1			333836	06/01/23 15:05	B4QL	EET CAL 4

## Client Sample ID: BM-DU3-03

## Lab Sample ID: 570-140024-4

Date Collected: 03/16/23 13:45

Matrix: Sediment

Date Received: 05/31/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.12 g	2 mL	334938	06/06/23 16:05	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM CON Instrument ID: GCMShHH		1	1 mL	1 mL	336125	06/10/23 00:56	J7WE	EET CAL 4
Total/NA	Analysis	9060A Instrument ID: WC_SHI6		1	100.1 mg	100.1 mg	616115	06/14/23 11:45	KEG	EET DEN
Total/NA	Analysis	Moisture Instrument ID: MOI4		1			333836	06/01/23 15:05	B4QL	EET CAL 4

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# Lab Chronicle

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

**Client Sample ID: BM-DU3-04**

**Lab Sample ID: 570-140024-5**

**Date Collected: 03/16/23 14:50**

**Matrix: Sediment**

**Date Received: 05/31/23 09:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.09 g	2 mL	334938	06/06/23 16:05	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM CON		1	1 mL	1 mL	336125	06/10/23 01:18	J7WE	EET CAL 4
Instrument ID: GCMSHHH										
Total/NA	Analysis	9060A		1	101.5 mg	101.5 mg	616115	06/14/23 12:08	KEG	EET DEN
Instrument ID: WC_SHI6										
Total/NA	Analysis	Moisture		1			333836	06/01/23 15:05	B4QL	EET CAL 4
Instrument ID: MOI4										

**Client Sample ID: BM-DU3-05**

**Lab Sample ID: 570-140024-6**

**Date Collected: 03/17/23 07:40**

**Matrix: Sediment**

**Date Received: 05/31/23 09:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.11 g	2 mL	334938	06/06/23 16:05	UM1W	EET CAL 4
Total/NA	Analysis	8270C SIM CON		1	1 mL	1 mL	336125	06/10/23 01:40	J7WE	EET CAL 4
Instrument ID: GCMSHHH										
Total/NA	Analysis	9060A		1	100.5 mg	100.5 mg	616115	06/14/23 12:21	KEG	EET DEN
Instrument ID: WC_SHI6										
Total/NA	Analysis	Moisture		1			333836	06/01/23 15:05	B4QL	EET CAL 4
Instrument ID: MOI4										

**Laboratory References:**

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Laboratory: Eurofins Calscience

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State	3082	07-31-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8270C SIM CON	3541	Sediment	PCB-101
8270C SIM CON	3541	Sediment	PCB-105
8270C SIM CON	3541	Sediment	PCB-110
8270C SIM CON	3541	Sediment	PCB-118
8270C SIM CON	3541	Sediment	PCB-128
8270C SIM CON	3541	Sediment	PCB-132/153
8270C SIM CON	3541	Sediment	PCB-138/158
8270C SIM CON	3541	Sediment	PCB-141
8270C SIM CON	3541	Sediment	PCB-149
8270C SIM CON	3541	Sediment	PCB-151
8270C SIM CON	3541	Sediment	PCB-156
8270C SIM CON	3541	Sediment	PCB-170
8270C SIM CON	3541	Sediment	PCB-174
8270C SIM CON	3541	Sediment	PCB-177
8270C SIM CON	3541	Sediment	PCB-18
8270C SIM CON	3541	Sediment	PCB-180
8270C SIM CON	3541	Sediment	PCB-183
8270C SIM CON	3541	Sediment	PCB-187
8270C SIM CON	3541	Sediment	PCB-194
8270C SIM CON	3541	Sediment	PCB-195
8270C SIM CON	3541	Sediment	PCB-201
8270C SIM CON	3541	Sediment	PCB-203
8270C SIM CON	3541	Sediment	PCB-28
8270C SIM CON	3541	Sediment	PCB-31
8270C SIM CON	3541	Sediment	PCB-33
8270C SIM CON	3541	Sediment	PCB-44
8270C SIM CON	3541	Sediment	PCB-49
8270C SIM CON	3541	Sediment	PCB-5/8
8270C SIM CON	3541	Sediment	PCB-52
8270C SIM CON	3541	Sediment	PCB-56
8270C SIM CON	3541	Sediment	PCB-60
8270C SIM CON	3541	Sediment	PCB-66
8270C SIM CON	3541	Sediment	PCB-70
8270C SIM CON	3541	Sediment	PCB-74
8270C SIM CON	3541	Sediment	PCB-87
8270C SIM CON	3541	Sediment	PCB-95
8270C SIM CON	3541	Sediment	PCB-97
8270C SIM CON	3541	Sediment	PCB-99
Moisture		Sediment	Percent Solids

## Laboratory: Eurofins Denver

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-23
A2LA	ISO/IEC 17025	2907.01	10-31-23

# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

## Laboratory: Eurofins Denver (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alabama	State Program	40730	09-30-12 *
Alaska (UST)	State	18-001	02-10-24
Arizona	State	AZ0713	12-20-24
Arkansas DEQ	State	19-047-0	05-31-23 *
California	State	2513	01-09-24
Connecticut	State	PH-0686	09-30-24
Florida	NELAP	E87667-57	06-30-23
Georgia	State	4025-011	01-08-24
Illinois	NELAP	2000172019-1	04-30-24
Iowa	State	IA#370	12-01-24
Kansas	NELAP	E-10166	04-30-24
Kentucky (WW)	State	KY98047	12-31-23
Louisiana	NELAP	30785	06-30-14 *
Louisiana	NELAP	30785	06-30-23
Louisiana (All)	NELAP	30785	06-30-23
Minnesota	NELAP	1788752	12-31-23
Nevada	State	CO000262020-1	07-31-23
New Hampshire	NELAP	205319	04-28-24
New Jersey	NELAP	190002	06-30-23
New York	NELAP	59923	03-31-24
North Carolina (WW/SW)	State	358	12-31-23
North Dakota	State	R-034	01-08-24
Oklahoma	NELAP	8614	08-31-23
Oklahoma	State	2018-006	08-31-23
Oregon	NELAP	4025-011	01-10-24
Pennsylvania	NELAP	013	07-31-23
South Carolina	State	72002001	01-08-24
Texas	NELAP	TX104704183-08-TX	09-30-09 *
Texas	NELAP	T104704183-21-19	09-30-23
US Fish & Wildlife	US Federal Programs	058448	07-31-23
USDA	US Federal Programs	P330-20-00065	12-19-25
Utah	NELAP	QUAN5	06-30-13 *
Utah	NELAP	CO000262019-11	07-31-23
Virginia	NELAP	12037	06-14-23
Washington	State	C583-19	08-03-23
West Virginia DEP	State	354	11-30-23
Wisconsin	State	999615430	08-31-23
Wyoming (UST)	A2LA	2907.01	10-31-22 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Method Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

Method	Method Description	Protocol	Laboratory
8270C SIM CON	PCB Congeners (GC/MS)	SW846	EET CAL 4
9060A	Organic Carbon, Total (TOC)	SW846	EET DEN
Moisture	Solids Total	EPA	EET CAL 4
3541	Automated Soxhlet Extraction	SW846	EET CAL 4

#### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100



# Sample Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-140024-1	BM-DU3-Z-Layer-Comp	Sediment	03/16/23 12:20	05/31/23 09:30
570-140024-2	BM-DU3-01	Sediment	03/16/23 12:20	05/31/23 09:30
570-140024-3	BM-DU3-02	Sediment	03/16/23 13:00	05/31/23 09:30
570-140024-4	BM-DU3-03	Sediment	03/16/23 13:45	05/31/23 09:30
570-140024-5	BM-DU3-04	Sediment	03/16/23 14:50	05/31/23 09:30
570-140024-6	BM-DU3-05	Sediment	03/17/23 07:40	05/31/23 09:30

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**Pacific EcoRisk**

ENVIRONMENTAL CONSULTING & TESTING

2250 Cordelia Rd., Fairfield, CA 94534  
(707)207-7760

**Eurofins Calscience CHAIN-OF-CUSTODY RECORD**

<b>Client Name:</b>		Pacific EcoRisk					<b>REQUESTED ANALYSIS</b>														
<b>Client Address:</b>		2250 Cordelia Rd. Fairfield, CA 94534																			
<b>Sampled By:</b>		PER					See Analyte List (% solids, TOC, dioxins/furans, PCBs, & mercury)	See Analyte List (% solids, TOC, PCBs, & mercury)													
<b>Phone:</b>		(707) 207-7760																			
<b>FAX:</b>		(707) 207-7916																			
<b>Project Manager:</b>		Jeff Cotsifas																			
<b>Project Name:</b>		Berkeley Marina																			
<b>PO Number:</b>		37289																			
Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container		X	X													
					Number	Type															
1	BM-DU3	BM-DU3-Z-Layer-Comp	3/16/23	12:20	Sed	1	glass jar	X													
2	BM-DU3	BM-DU3-01	3/16/23	12:20	Sed	1	glass jar		X												
3	BM-DU3	BM-DU3-02	3/16/23	13:00	Sed	1	glass jar		X												
4	BM-DU3	BM-DU3-03	3/16/23	13:45	Sed	1	glass jar		X												
5	BM-DU3	BM-DU3-04	3/16/23	14:50	Sed	1	glass jar		X												
6	BM-DU3	BM-DU3-05	3/17/23	7:40	Sed	1	glass jar		X												
7																					
8																					
9																					
10																					



570-140024 Chain of Custody

<b>Correct Containers:</b>	Yes	No		<b>RELINQUISHED BY</b>							
<b>Sample Temperature:</b>	Ambient	Cold	Warm								
<b>Sample Preservative:</b>	Yes	No		<b>Signature:</b>	<i>[Signature]</i>		<b>Signature:</b>	<i>[Signature]</i>			
<b>Turnaround Time:</b>	STD	Specify:		<b>Print:</b>	Hannah Thompson		<b>Print:</b>				
Comments:				<b>Organization:</b>	PER		<b>Organization:</b>				
				<b>DATE:</b>	5/30/23	<b>TIME:</b>	1125	<b>DATE:</b>	5/30/23	<b>TIME:</b>	1600
				<b>RECEIVED BY</b>							
				<b>Signature:</b>	<i>[Signature]</i>		<b>Signature:</b>	<i>[Signature]</i>			
			<b>Print:</b>	Mark Valentin		<b>Print:</b>	Alma S.				
			<b>Organization:</b>	EC		<b>Organization:</b>	EC				
			<b>DATE:</b>	5/30/23	<b>TIME:</b>	1125	<b>DATE:</b>	5/31/23	<b>TIME:</b>	0930	

\*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

1.1/1.0  
5012

140024

**ANALYTE LIST**

Pacific EcoRisk  
2250 Cordelia Rd.  
Fairfield, CA 94534

Project Proponent:  
Project #:  
Site #:

**Berkeley Marina**  
37289

BM-DU3-01, BM-DU3-02, BM-DU3-03, BM-DU3-04, & BM-DU3-05

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Solids, Total	SM 2540B	0.10%	X
Total Organic Carbon	EPA 9060A	0.10%	X
Mercury	EPA 7471B	0.02 mg/kg	X
PCB 008	EPA 8270C	0.5 µg/kg	X
PCB 018	EPA 8270C	0.5 µg/kg	X
PCB 028	EPA 8270C	0.5 µg/kg	X
PCB 031	EPA 8270C	0.5 µg/kg	X
PCB 033	EPA 8270C	0.5 µg/kg	X
PCB 044	EPA 8270C	0.5 µg/kg	X
PCB 049	EPA 8270C	0.5 µg/kg	X
PCB 052	EPA 8270C	0.5 µg/kg	X
PCB 056	EPA 8270C	0.5 µg/kg	X
PCB 060	EPA 8270C	0.5 µg/kg	X
PCB 066	EPA 8270C	0.5 µg/kg	X
PCB 070	EPA 8270C	0.5 µg/kg	X
PCB 074	EPA 8270C	0.5 µg/kg	X
PCB 087	EPA 8270C	0.5 µg/kg	X
PCB 095	EPA 8270C	0.5 µg/kg	X
PCB 097	EPA 8270C	0.5 µg/kg	X
PCB 099	EPA 8270C	0.5 µg/kg	X
PCB 101	EPA 8270C	0.5 µg/kg	X
PCB 105	EPA 8270C	0.5 µg/kg	X
PCB 110	EPA 8270C	0.5 µg/kg	X
PCB 118	EPA 8270C	0.5 µg/kg	X
PCB 128	EPA 8270C	0.5 µg/kg	X
PCB 132	EPA 8270C	0.5 µg/kg	X
PCB 138/158	EPA 8270C	0.5 µg/kg	X
PCB 141	EPA 8270C	0.5 µg/kg	X
PCB 149	EPA 8270C	0.5 µg/kg	X
PCB 151	EPA 8270C	0.5 µg/kg	X
PCB 153	EPA 8270C	0.5 µg/kg	X
PCB 156	EPA 8270C	0.5 µg/kg	X
PCB 170	EPA 8270C	0.5 µg/kg	X
PCB 174	EPA 8270C	0.5 µg/kg	X
PCB 177	EPA 8270C	0.5 µg/kg	X
PCB 180	EPA 8270C	0.5 µg/kg	X
PCB 183	EPA 8270C	0.5 µg/kg	X
PCB 187	EPA 8270C	0.5 µg/kg	X
PCB 194	EPA 8270C	0.5 µg/kg	X
PCB 195	EPA 8270C	0.5 µg/kg	X
PCB 201	EPA 8270C	0.5 µg/kg	X
PCB 203	EPA 8270C	0.5 µg/kg	X
Total PCBs	EPA 8270C	-	X
<b>QA/QC</b>			
Standard TAT for Calscience Results:			

If you have any questions regarding this request as checked, please call Jeff Colisfas at (707)207-7760



140024

**ANALYTE LIST**

Pacific BookRisk  
2250 Cordelia Rd.  
Fairfield, CA 94534

Project Proponent: Berkeley Marina  
Project #: 37289  
Site #: BM-DU3-Z-Layer-Comp

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Solids, Total	SM 2540B	0.10%	X
Total Organic Carbon	EPA 9060A	0.10%	X
Mercury	EPA 7471B	0.02 mg/kg	X
PCB 008	EPA 8270C	0.5 µg/kg	X
PCB 018	EPA 8270C	0.5 µg/kg	X
PCB 028	EPA 8270C	0.5 µg/kg	X
PCB 031	EPA 8270C	0.5 µg/kg	X
PCB 033	EPA 8270C	0.5 µg/kg	X
PCB 044	EPA 8270C	0.5 µg/kg	X
PCB 049	EPA 8270C	0.5 µg/kg	X
PCB 052	EPA 8270C	0.5 µg/kg	X
PCB 056	EPA 8270C	0.5 µg/kg	X
PCB 060	EPA 8270C	0.5 µg/kg	X
PCB 066	EPA 8270C	0.5 µg/kg	X
PCB 070	EPA 8270C	0.5 µg/kg	X
PCB 074	EPA 8270C	0.5 µg/kg	X
PCB 087	EPA 8270C	0.5 µg/kg	X
PCB 095	EPA 8270C	0.5 µg/kg	X
PCB 097	EPA 8270C	0.5 µg/kg	X
PCB 099	EPA 8270C	0.5 µg/kg	X
PCB 101	EPA 8270C	0.5 µg/kg	X
PCB 105	EPA 8270C	0.5 µg/kg	X
PCB 110	EPA 8270C	0.5 µg/kg	X
PCB 118	EPA 8270C	0.5 µg/kg	X
PCB 128	EPA 8270C	0.5 µg/kg	X
PCB 132	EPA 8270C	0.5 µg/kg	X
PCB 138/158	EPA 8270C	0.5 µg/kg	X
PCB 141	EPA 8270C	0.5 µg/kg	X
PCB 149	EPA 8270C	0.5 µg/kg	X
PCB 151	EPA 8270C	0.5 µg/kg	X
PCB 153	EPA 8270C	0.5 µg/kg	X
PCB 156	EPA 8270C	0.5 µg/kg	X
PCB 170	EPA 8270C	0.5 µg/kg	X
PCB 174	EPA 8270C	0.5 µg/kg	X
PCB 177	EPA 8270C	0.5 µg/kg	X
PCB 180	EPA 8270C	0.5 µg/kg	X
PCB 183	EPA 8270C	0.5 µg/kg	X
PCB 187	EPA 8270C	0.5 µg/kg	X
PCB 194	EPA 8270C	0.5 µg/kg	X
PCB 195	EPA 8270C	0.5 µg/kg	X
PCB 201	EPA 8270C	0.5 µg/kg	X
PCB 203	EPA 8270C	0.5 µg/kg	X
Total PCBs	EPA 8270C	-	X
Dioxins/Furans	EPA 8290	1 ng/kg	X

Standard TAT for Calscience Results.

If you have any questions regarding this request as checked, please call Jeff Colstias at (707)207-7760

Loc: 570  
140024



570-140024 Waybill

ORIGIN ID:CCRA (925) 786-8606  
EUROFINS CONCORD  
EUROFINS SOUTHWEST CONCORD  
5063 COMMERCIAL CIR  
SUITE H  
CONCORD, CA 94520  
UNITED STATES US

SHIP DATE: 30MAY23  
ACTWGT: 5.00 LB  
CAD: 258088030/NET4610

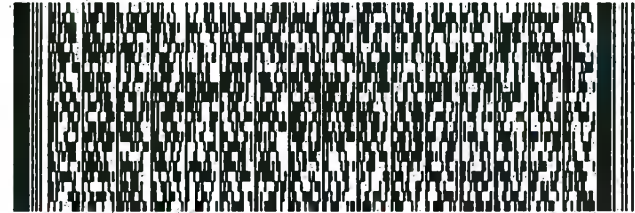
BILL RECIPIENT

TO **SAMPLE CONTROL**  
**EUROFINS CALSCIENCE**  
**2841 DOW AVENUE**  
**SUITE 300**  
**TUSTIN CA 92780**

(714) 895-5494 REF: PACIFIC EGO RISK  
INV: DEPT:  
PO:

583JZ29ABFE2D

FedEx Ship Manager - Print Your Label(s)



WED - 31 MAY 10:30A  
PRIORITY OVERNIGHT

TRK# 7722 9273 5693  
0201

**92 DTHA**

92780  
CA-US SNA



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- 12
- 13

**Eurofins Calscience**

2841 Dow Avenue, Suite 100  
Tustin, CA 92780  
Phone: 714-895-5494

**Chain of Custody Record**



Environment Testing

<b>Client Information (Sub Contract Lab)</b>		Sampler:		Lab PM:		Carrier Tracking No(s):		COC No:			
Client Contact: Shipping/Receiving		Phone:		E-Mail: Carla.Hollowell@et.eurofinsus.com		State of Origin: California		Page: Page 1 of 1			
Company: TestAmerica Laboratories, Inc.				Accreditations Required (See note): State - California				Job #: 570-140024-1			
Address: 4955 Yarrow Street, City: Arvada State, Zip: CO, 80002 Phone: 303-736-0100(Tel) 303-431-7171(Fax) Email:		Due Date Requested: 6/12/2023 TAT Requested (days): PO #: WO #:		<b>Analysis Requested</b>						<b>Preservation Codes:</b> A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Y - Trizma Z - other (specify)  Other:	
Project Name: Berkeley Marina (Sediment) Site:		Project #: 57003214 SSOW#:									
<b>Sample Identification - Client ID (Lab ID)</b>		<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type (C=Comp, G=grab)</b>	<b>Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)</b>	<b>Field Filtered Sample (Yes or No)</b>	<b>Perform MS/MSD (Yes or No)</b>	9060A/ Solids - TOC	<b>Total Number of containers</b>	<b>Special Instructions/Note:</b>	
<b>Preservation Code:</b>											
BM-DU3-Z-Layer-Comp (570-140024-1)		3/16/23	12:20 Pacific	Solid	Solid		X		1		
BM-DU3-01 (570-140024-2)		3/16/23	12:20 Pacific	Solid	Solid		X		1		
BM-DU3-02 (570-140024-3)		3/16/23	13:00 Pacific	Solid	Solid		X		1		
BM-DU3-03 (570-140024-4)		3/16/23	13:45 Pacific	Solid	Solid		X		1		
BM-DU3-04 (570-140024-5)		3/16/23	14:50 Pacific	Solid	Solid		X		1		
BM-DU3-05 (570-140024-6)		3/17/23	07:40 Pacific	Solid	Solid		X		1		
<p>Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte &amp; accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.</p>											
<b>Possible Hazard Identification</b>					<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>						
Unconfirmed					<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months						
Deliverable Requested: I, II, III, IV, Other (specify)				Primary Deliverable Rank: 2		Special Instructions/QC Requirements:					
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:					
Relinquished by: <i>[Signature]</i>		Date/Time: 06/01/23 10:55		Company: <i>[Signature]</i>		Received by: <i>[Signature]</i>		Date/Time: 6/5/23 09:50		Company: <i>[Signature]</i>	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:				Cooler Temperature(s) °C and Other Remarks: 4.4 10TU: CFO.0					

Page 28 of 30

6/14/2023



# Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-140024-1

**Login Number: 140024**

**List Source: Eurofins Calscience**

**List Number: 1**

**Creator: Gutierrez, Rebecca**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-140024-1

**Login Number: 140024**

**List Number: 3**

**Creator: Rystrom, Joshua R**

**List Source: Eurofins Denver**

**List Creation: 06/02/23 04:39 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jeff Cotsifas  
Pacific EcoRisk Inc  
2250 Cordelia Rd  
Fairfield, California 94534

Generated 6/27/2023 3:28:28 PM

## JOB DESCRIPTION

Berkeley Marina (Sediment)

## JOB NUMBER

570-140024-2

# Eurofins Calscience

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Calscience Project Manager.

## Authorization



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6/27/2023 3:28:28 PM

Authorized for release by  
Carla Hollowell, Project Manager I  
[Carla.Hollowell@et.eurofinsus.com](mailto:Carla.Hollowell@et.eurofinsus.com)  
(714)895-5494



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Client Sample Results . . . . .	6
QC Sample Results . . . . .	7
Lab Chronicle . . . . .	8
Certification Summary . . . . .	10
Method Summary . . . . .	11
Sample Summary . . . . .	12
Chain of Custody . . . . .	13
Receipt Checklists . . . . .	14



# Definitions/Glossary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-2

## Qualifiers

### Metals

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
H3	Sample was received and analyzed past holding time. This does not meet regulatory requirements.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-2

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**Job ID: 570-140024-2**

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**Laboratory: Eurofins Calscience**

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**Narrative**

**Job Narrative**  
**570-140024-2**

**Receipt**

The samples were received on 5/31/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.0°C

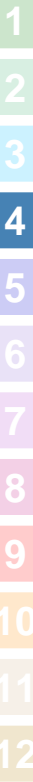
**Receipt Exceptions**

The samples were frozen after collection (prior to holding time expiration and/or pursuant to information obtained from the client) at -18C, and remained frozen until the laboratory was ready to prepare the samples for analysis. Eurofins Calscience, Inc. follows SWAMP criteria and the Puget Sound Protocol (USEPA/PSWQAT, 1997, Table 2) for holding times in marine tissues and / or sediment samples, which states holding times may be extended up to six months to one year (two years for metals) if stored frozen at -18C after collection. Therefore, the sample results have not been flagged as exceeding the EPA Method recommended holding times: BM-DU3-Z-Layer-Comp (570-140024-1), BM-DU3-01 (570-140024-2), BM-DU3-02 (570-140024-3), BM-DU3-03 (570-140024-4), BM-DU3-04 (570-140024-5) and BM-DU3-05 (570-140024-6)

**Metals**

Method 7471A: The following samples were received outside of holding time: BM-DU3-Z-Layer-Comp (570-140024-1), BM-DU3-01 (570-140024-2), BM-DU3-02 (570-140024-3), BM-DU3-03 (570-140024-4), BM-DU3-04 (570-140024-5) and BM-DU3-05 (570-140024-6).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.



# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-2

## Method: SW846 7471A - Mercury (CVAA)

**Client Sample ID: BM-DU3-Z-Layer-Comp**

**Date Collected: 03/16/23 12:20**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-1**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	2.05	H H3	0.194	0.0743	mg/Kg	☼	06/15/23 22:19	06/16/23 12:35	1

**Client Sample ID: BM-DU3-01**

**Date Collected: 03/16/23 12:20**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-2**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	1.01	H H3	0.164	0.0629	mg/Kg	☼	06/15/23 22:19	06/16/23 12:37	1

**Client Sample ID: BM-DU3-02**

**Date Collected: 03/16/23 13:00**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-3**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.961	H H3	0.194	0.0747	mg/Kg	☼	06/15/23 22:19	06/16/23 12:39	1

**Client Sample ID: BM-DU3-03**

**Date Collected: 03/16/23 13:45**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-4**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	1.20	H H3	0.196	0.0752	mg/Kg	☼	06/15/23 22:19	06/16/23 12:41	1

**Client Sample ID: BM-DU3-04**

**Date Collected: 03/16/23 14:50**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-5**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.381	H H3	0.199	0.0765	mg/Kg	☼	06/15/23 22:19	06/16/23 12:43	1

**Client Sample ID: BM-DU3-05**

**Date Collected: 03/17/23 07:40**

**Date Received: 05/31/23 09:30**

**Lab Sample ID: 570-140024-6**

**Matrix: Sediment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.401	H H3	0.235	0.0902	mg/Kg	☼	06/15/23 22:19	06/16/23 12:45	1

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-2

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 570-337846/1-A**  
**Matrix: Solid**  
**Analysis Batch: 338129**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 337846**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0850	0.0327	mg/Kg		06/15/23 22:19	06/16/23 12:12	1

**Lab Sample ID: LCS 570-337846/2-A**  
**Matrix: Solid**  
**Analysis Batch: 338129**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 337846**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.408	0.3880		mg/Kg		95	80 - 120

**Lab Sample ID: LCSD 570-337846/3-A**  
**Matrix: Solid**  
**Analysis Batch: 338129**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 337846**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.385	0.3675		mg/Kg		96	80 - 120	5	10

# Lab Chronicle

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-2

**Client Sample ID: BM-DU3-Z-Layer-Comp**

**Lab Sample ID: 570-140024-1**

Date Collected: 03/16/23 12:20

Matrix: Sediment

Date Received: 05/31/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			0.52 g	50 mL	337846	06/15/23 22:19	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			338129	06/16/23 12:35	C0YH	EET CAL 4
Instrument ID: HG7										

**Client Sample ID: BM-DU3-01**

**Lab Sample ID: 570-140024-2**

Date Collected: 03/16/23 12:20

Matrix: Sediment

Date Received: 05/31/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			0.52 g	50 mL	337846	06/15/23 22:19	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			338129	06/16/23 12:37	C0YH	EET CAL 4
Instrument ID: HG7										

**Client Sample ID: BM-DU3-02**

**Lab Sample ID: 570-140024-3**

Date Collected: 03/16/23 13:00

Matrix: Sediment

Date Received: 05/31/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			0.52 g	50 mL	337846	06/15/23 22:19	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			338129	06/16/23 12:39	C0YH	EET CAL 4
Instrument ID: HG7										

**Client Sample ID: BM-DU3-03**

**Lab Sample ID: 570-140024-4**

Date Collected: 03/16/23 13:45

Matrix: Sediment

Date Received: 05/31/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			0.51 g	50 mL	337846	06/15/23 22:19	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			338129	06/16/23 12:41	C0YH	EET CAL 4
Instrument ID: HG7										

**Client Sample ID: BM-DU3-04**

**Lab Sample ID: 570-140024-5**

Date Collected: 03/16/23 14:50

Matrix: Sediment

Date Received: 05/31/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			0.49 g	50 mL	337846	06/15/23 22:19	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			338129	06/16/23 12:43	C0YH	EET CAL 4
Instrument ID: HG7										

# Lab Chronicle

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-2

**Client Sample ID: BM-DU3-05**

**Lab Sample ID: 570-140024-6**

**Date Collected: 03/17/23 07:40**

**Matrix: Sediment**

**Date Received: 05/31/23 09:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			0.51 g	50 mL	337846	06/15/23 22:19	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			338129	06/16/23 12:45	C0YH	EET CAL 4

Instrument ID: HG7

**Laboratory References:**

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494



# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-2

## Laboratory: Eurofins Calscience

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	3082	07-31-24

- 1
- 2
- 3
- 4
- 5
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# Method Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-2

Method	Method Description	Protocol	Laboratory
7471A	Mercury (CVAA)	SW846	EET CAL 4
7471A	Preparation, Mercury	SW846	EET CAL 4

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494





# Sample Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-140024-1	BM-DU3-Z-Layer-Comp	Sediment	03/16/23 12:20	05/31/23 09:30
570-140024-2	BM-DU3-01	Sediment	03/16/23 12:20	05/31/23 09:30
570-140024-3	BM-DU3-02	Sediment	03/16/23 13:00	05/31/23 09:30
570-140024-4	BM-DU3-03	Sediment	03/16/23 13:45	05/31/23 09:30
570-140024-5	BM-DU3-04	Sediment	03/16/23 14:50	05/31/23 09:30
570-140024-6	BM-DU3-05	Sediment	03/17/23 07:40	05/31/23 09:30

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## Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-140024-2

**Login Number: 140024**

**List Source: Eurofins Calscience**

**List Number: 1**

**Creator: Gutierrez, Rebecca**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Jeff Cotsifas  
Pacific EcoRisk Inc  
2250 Cordelia Rd  
Fairfield, California 94534

Generated 7/12/2023 9:29:47 AM

**JOB DESCRIPTION**

Berkeley Marina (Sediment)

**JOB NUMBER**

570-140024-3

# Eurofins Calscience

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Calscience Project Manager.

## Authorization



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Authorized for release by  
Carla Hollowell, Project Manager I  
[Carla.Hollowell@et.eurofinsus.com](mailto:Carla.Hollowell@et.eurofinsus.com)  
(714)895-5494



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Client Sample Results . . . . .	6
Isotope Dilution Summary . . . . .	7
QC Sample Results . . . . .	9
Lab Chronicle . . . . .	11
Certification Summary . . . . .	12
Method Summary . . . . .	14
Sample Summary . . . . .	15
Receipt Checklists . . . . .	16

# Definitions/Glossary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-3

## Qualifiers

### Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-3

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**Job ID: 570-140024-3**

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**Laboratory: Eurofins Calscience**

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**Narrative**

**Job Narrative  
570-140024-3**

**Receipt**

The samples were received on 5/31/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.0°C

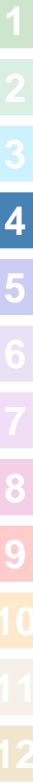
**Receipt Exceptions**

The samples were frozen after collection (prior to holding time expiration and/or pursuant to information obtained from the client) at -18C, and remained frozen until the laboratory was ready to prepare the samples for analysis. Eurofins Calscience, Inc. follows SWAMP criteria and the Puget Sound Protocol (USEPA/PSWQAT, 1997, Table 2) for holding times in marine tissues and / or sediment samples, which states holding times may be extended up to six months to one year (two years for metals) if stored frozen at -18C after collection. Therefore, the sample results have not been flagged as exceeding the EPA Method recommended holding times: BM-DU3-Z-Layer-Comp (570-140024-1), BM-DU3-01 (570-140024-2), BM-DU3-02 (570-140024-3), BM-DU3-03 (570-140024-4), BM-DU3-04 (570-140024-5) and BM-DU3-05 (570-140024-6)

**Dioxin**

Method 8290A: Any peak area that is the result of interferences from poly-chlorinated diphenyl ethers observed in the sample has been removed from the calculated results prior to reporting the data for totals.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.





# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-3

## Method: SW846 8290A - Dioxins and Furans (HRGC/HRMS)

Client Sample ID: BM-DU3-Z-Layer-Comp

Lab Sample ID: 570-140024-1

Date Collected: 03/16/23 12:20

Matrix: Sediment

Date Received: 05/31/23 09:30

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	350	B	12	0.22	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
1,2,3,4,6,7,8-HpCDF	130	B	12	0.52	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
1,2,3,4,7,8-HxCDD	3.5	J	12	0.17	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
1,2,3,4,7,8-HxCDF	7.7	J	12	0.27	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
1,2,3,4,7,8,9-HpCDF	8.1	J IB	12	0.56	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
1,2,3,6,7,8-HxCDD	16	B	12	0.17	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
1,2,3,6,7,8-HxCDF	7.9	J B	12	0.27	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
1,2,3,7,8-PeCDD	4.2	J I	12	0.15	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
1,2,3,7,8-PeCDF	5.2	J IB	12	0.73	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
1,2,3,7,8,9-HxCDD	7.7	J B	12	0.17	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
1,2,3,7,8,9-HxCDF	2.1	J	12	0.26	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
2,3,4,6,7,8-HxCDF	10	J	12	0.27	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
2,3,4,7,8-PeCDF	19	B	12	0.57	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
2,3,7,8-TCDD	0.74	J	2.4	0.016	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
2,3,7,8-TCDF	5.5		2.4	0.57	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
OCDD	2400	B	24	0.23	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
OCDF	270	B	24	0.15	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
Total HxCDD	230	B	12	0.17	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
Total HxCDF	180	B	12	0.27	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
Total HpCDD	1200	B	12	0.22	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
Total HpCDF	370	J B	12	0.54	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
Total PeCDD	45	J B	12	0.15	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
Total PeCDF	190	J B	12	0.65	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
Total TCDD	13	J B	2.4	0.016	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1
Total TCDF	130	J B	2.4	0.57	ng/Kg	☼	07/07/23 12:30	07/11/23 17:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-OCDF	60		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-OCDD	55		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-2,3,7,8-TCDF	65		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-2,3,7,8-TCDD	68		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-2,3,4,7,8-PeCDF	67		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-2,3,4,6,7,8-HxCDF	58		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-1,2,3,7,8,9-HxCDF	63		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-1,2,3,7,8,9-HxCDD	59		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-1,2,3,7,8-PeCDF	66		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-1,2,3,7,8-PeCDD	61		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-1,2,3,6,7,8-HxCDF	60		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-1,2,3,6,7,8-HxCDD	59		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-1,2,3,4,7,8,9-HpCDF	63		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-1,2,3,4,7,8-HxCDF	60		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-1,2,3,4,7,8-HxCDD	62		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-1,2,3,4,6,7,8-HpCDF	50		40 - 135	07/07/23 12:30	07/11/23 17:50	1
13C-1,2,3,4,6,7,8-HpCDD	60		40 - 135	07/07/23 12:30	07/11/23 17:50	1

# Isotope Dilution Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-3

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Sediment

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	OCDF (40-135)	OCDD (40-135)	TCDF (40-135)	TCDD (40-135)	PeCF (40-135)	13CHxCF (40-135)	HxCF (40-135)	13CHxCD (40-135)
570-140024-1	BM-DU3-Z-Layer-Comp	60	55	65	68	67	58	63	59
		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCDF (40-135)	PeCDD (40-135)	HxDF (40-135)	HxDD (40-135)	HpCDF2 (40-135)	HxCDF (40-135)	HxCDD (40-135)	HpCDF (40-135)
570-140024-1	BM-DU3-Z-Layer-Comp	66	61	60	59	63	60	62	50
		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (40-135)							
570-140024-1	BM-DU3-Z-Layer-Comp	60							
Surrogate Legend									
OCDF = 13C-OCDF									
OCDD = 13C-OCDD									
TCDF = 13C-2,3,7,8-TCDF									
TCDD = 13C-2,3,7,8-TCDD									
PeCF = 13C-2,3,4,7,8-PeCDF									
13CHxCF = 13C-2,3,4,6,7,8-HxCDF									
HxCF = 13C-1,2,3,7,8,9-HxCDF									
13CHxCD = 13C-1,2,3,7,8,9-HxCDD									
PeCDF = 13C-1,2,3,7,8-PeCDF									
PeCDD = 13C-1,2,3,7,8-PeCDD									
HxDF = 13C-1,2,3,6,7,8-HxCDF									
HxDD = 13C-1,2,3,6,7,8-HxCDD									
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF									
HxCDF = 13C-1,2,3,4,7,8-HxCDF									
HxCDD = 13C-1,2,3,4,7,8-HxCDD									
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF									
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD									

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Solid

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	OCDF (40-135)	OCDD (40-135)	TCDF (40-135)	TCDD (40-135)	PeCF (40-135)	13CHxCF (40-135)	HxCF (40-135)	13CHxCD (40-135)
LCS 410-394670/2-A	Lab Control Sample	98	104	79	87	85	91	86	91
MB 410-394670/1-A	Method Blank	93	97	78	83	81	88	86	85
		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCDF (40-135)	PeCDD (40-135)	HxDF (40-135)	HxDD (40-135)	HpCDF2 (40-135)	HxCDF (40-135)	HxCDD (40-135)	HpCDF (40-135)
LCS 410-394670/2-A	Lab Control Sample	82	84	93	87	94	91	88	87
MB 410-394670/1-A	Method Blank	78	82	89	84	90	87	84	85
		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (40-135)							
LCS 410-394670/2-A	Lab Control Sample	81							
MB 410-394670/1-A	Method Blank	81							
Surrogate Legend									
OCDF = 13C-OCDF									

Eurofins Calscience

# Isotope Dilution Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-3

OCDD = 13C-OCDD  
TCDF = 13C-2,3,7,8-TCDF  
TCDD = 13C-2,3,7,8-TCDD  
PeCF = 13C-2,3,4,7,8-PeCDF  
13CHxCF = 13C-2,3,4,6,7,8-HxCDF  
HxCF = 13C-1,2,3,7,8,9-HxCDF  
13CHxCD = 13C-1,2,3,7,8,9-HxCDD  
PeCDF = 13C-1,2,3,7,8-PeCDF  
PeCDD = 13C-1,2,3,7,8-PeCDD  
HxDF = 13C-1,2,3,6,7,8-HxCDF  
HxDD = 13C-1,2,3,6,7,8-HxCDD  
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF  
HxCDF = 13C-1,2,3,4,7,8-HxCDF  
HxCDD = 13C-1,2,3,4,7,8-HxCDD  
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF  
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

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# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-3

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

**Lab Sample ID: MB 410-394670/1-A**  
**Matrix: Solid**  
**Analysis Batch: 395174**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 394670**

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,2,3,4,6,7,8-HpCDD	0.1515	J	5.0	0.051	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
1,2,3,4,6,7,8-HpCDF	0.1126	J	5.0	0.0093	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
1,2,3,4,7,8-HxCDD	ND		5.0	0.0099	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
1,2,3,4,7,8-HxCDF	ND		5.0	0.012	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
1,2,3,4,7,8,9-HpCDF	0.05758	J I	5.0	0.012	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
1,2,3,6,7,8-HxCDD	0.07639	J I	5.0	0.0097	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
1,2,3,6,7,8-HxCDF	0.06183	J I	5.0	0.012	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
1,2,3,7,8-PeCDD	ND		5.0	0.014	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
1,2,3,7,8-PeCDF	0.1380	J	5.0	0.015	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
1,2,3,7,8,9-HxCDD	0.03579	J	5.0	0.0092	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
1,2,3,7,8,9-HxCDF	ND		5.0	0.013	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
2,3,4,6,7,8-HxCDF	ND		5.0	0.011	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
2,3,4,7,8-PeCDF	0.07660	J	5.0	0.012	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
2,3,7,8-TCDD	ND		1.0	0.0084	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
2,3,7,8-TCDF	ND		1.0	0.0070	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
OCDD	0.3622	J I	10	0.0077	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
OCDF	0.2459	J I	10	0.018	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
Total HxCDD	0.3606	J I	5.0	0.0096	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
Total HxCDF	0.06183	J I	5.0	0.012	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
Total HpCDD	0.1515	J	5.0	0.051	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
Total HpCDF	0.1701	J I	5.0	0.010	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
Total PeCDD	0.08498	J I	5.0	0.014	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
Total PeCDF	0.2586	J I	5.0	0.014	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
Total TCDD	0.04010	J I	1.0	0.0084	ng/Kg		07/07/23 12:30	07/11/23 10:15	1
Total TCDF	0.04012	J I	1.0	0.0070	ng/Kg		07/07/23 12:30	07/11/23 10:15	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-OCDF	93		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-OCDD	97		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-2,3,7,8-TCDF	78		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-2,3,7,8-TCDD	83		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-2,3,4,7,8-PeCDF	81		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-2,3,4,6,7,8-HxCDF	88		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-1,2,3,7,8,9-HxCDF	86		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-1,2,3,7,8,9-HxCDD	85		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-1,2,3,7,8-PeCDF	78		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-1,2,3,7,8-PeCDD	82		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-1,2,3,6,7,8-HxCDF	89		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-1,2,3,6,7,8-HxCDD	84		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-1,2,3,4,7,8,9-HpCDF	90		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-1,2,3,4,7,8-HxCDF	87		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-1,2,3,4,7,8-HxCDD	84		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-1,2,3,4,6,7,8-HpCDF	85		40 - 135	07/07/23 12:30	07/11/23 10:15	1
13C-1,2,3,4,6,7,8-HpCDD	81		40 - 135	07/07/23 12:30	07/11/23 10:15	1

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-3

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 410-394670/2-A

Matrix: Solid

Analysis Batch: 395174

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 394670

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2,3,4,6,7,8-HpCDD	100	100.5		ng/Kg		101	77 - 127
1,2,3,4,6,7,8-HpCDF	100	96.34		ng/Kg		96	77 - 127
1,2,3,4,7,8-HxCDD	100	105.0		ng/Kg		105	77 - 127
1,2,3,4,7,8-HxCDF	100	102.0		ng/Kg		102	77 - 129
1,2,3,4,7,8,9-HpCDF	100	98.34		ng/Kg		98	77 - 127
1,2,3,6,7,8-HxCDD	100	107.7		ng/Kg		108	76 - 127
1,2,3,6,7,8-HxCDF	100	102.3		ng/Kg		102	77 - 129
1,2,3,7,8-PeCDD	100	106.2		ng/Kg		106	77 - 127
1,2,3,7,8-PeCDF	100	105.1		ng/Kg		105	75 - 129
1,2,3,7,8,9-HxCDD	100	104.9		ng/Kg		105	76 - 127
1,2,3,7,8,9-HxCDF	100	102.4		ng/Kg		102	76 - 126
2,3,4,6,7,8-HxCDF	100	100.9		ng/Kg		101	78 - 128
2,3,4,7,8-PeCDF	100	105.0		ng/Kg		105	75 - 131
2,3,7,8-TCDD	20.0	19.70		ng/Kg		99	68 - 142
2,3,7,8-TCDF	20.0	22.01		ng/Kg		110	70 - 133
OCDD	200	196.3		ng/Kg		98	77 - 125
OCDF	200	212.0		ng/Kg		106	75 - 128

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-OCDF	98		40 - 135
13C-OCDD	104		40 - 135
13C-2,3,7,8-TCDF	79		40 - 135
13C-2,3,7,8-TCDD	87		40 - 135
13C-2,3,4,7,8-PeCDF	85		40 - 135
13C-2,3,4,6,7,8-HxCDF	91		40 - 135
13C-1,2,3,7,8,9-HxCDF	86		40 - 135
13C-1,2,3,7,8,9-HxCDD	91		40 - 135
13C-1,2,3,7,8-PeCDF	82		40 - 135
13C-1,2,3,7,8-PeCDD	84		40 - 135
13C-1,2,3,6,7,8-HxCDF	93		40 - 135
13C-1,2,3,6,7,8-HxCDD	87		40 - 135
13C-1,2,3,4,7,8,9-HpCDF	94		40 - 135
13C-1,2,3,4,7,8-HxCDF	91		40 - 135
13C-1,2,3,4,7,8-HxCDD	88		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	87		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	81		40 - 135

# Lab Chronicle

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-3

**Client Sample ID: BM-DU3-Z-Layer-Comp**

**Lab Sample ID: 570-140024-1**

**Date Collected: 03/16/23 12:20**

**Matrix: Sediment**

**Date Received: 05/31/23 09:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8290A			10.24 g	20 uL	394670	07/07/23 12:30	TJK2	ELLE
Total/NA	Analysis	8290A		1	20 uL	20 uL	395580	07/11/23 17:50	DZ6A	ELLE

Instrument ID: DF18471

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300



# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-3

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-24
A2LA	ISO/IEC 17025	0001.01	11-30-24
Alabama	State	43200	01-31-24
Alaska	State	PA00009	06-30-24
Alaska (UST)	State	17-027	02-28-24
Arizona	State	AZ0780	03-12-24
Arkansas DEQ	State	88-00660	08-09-23
California	State	2792	11-30-23
Colorado	State	PA00009	06-30-24
Connecticut	State	PH-0746	06-30-25
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-24
Delaware (DW)	State	N/A	01-31-24
Florida	NELAP	E87997	06-30-24
Georgia (DW)	State	C048	01-31-24
Hawaii	State	N/A	01-31-24
Illinois	NELAP	200027	01-31-24
Iowa	State	361	03-01-24
Kansas	NELAP	E-10151	10-31-23
Kentucky (DW)	State	KY90088	12-31-23
Kentucky (UST)	State	0001.01	11-30-24
Kentucky (WW)	State	KY90088	12-31-23
Louisiana (All)	NELAP	02055	06-30-24
Maine	State	2019012	03-12-25
Maryland	State	100	06-30-24
Massachusetts	State	M-PA009	06-30-24
Michigan	State	9930	01-31-24
Minnesota	NELAP	042-999-487	12-31-23
Mississippi	State	023	01-31-24
Missouri	State	450	01-31-25
Montana (DW)	State	0098	01-01-24
Nebraska	State	NE-OS-32-17	01-31-24
New Hampshire	NELAP	2730	01-10-24
New Jersey	NELAP	PA011	06-30-24
New York	NELAP	10670	04-01-24
North Carolina (DW)	State	42705	07-31-23
North Carolina (WW/SW)	State	521	12-31-23
North Dakota	State	R-205	01-31-24
Oklahoma	NELAP	9804	08-31-23
Oregon	NELAP	PA200001	09-11-23
PALA	Canada	1978	09-16-24
Pennsylvania	NELAP	36-00037	01-31-24
Rhode Island	State	LAO00338	12-31-23
South Carolina	State	89002	01-31-24
Tennessee	State	02838	01-31-24
Texas	NELAP	T104704194-23-46	08-31-23
USDA	US Federal Programs	525-22-298-19481	10-25-25
Vermont	State	VT - 36037	10-28-23
Virginia	NELAP	460182	06-14-24
Washington	State	C457	04-11-24
West Virginia (DW)	State	9906 C	12-31-23

# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-3

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
West Virginia DEP	State	055	07-31-24
Wyoming	State	8TMS-L	01-31-24
Wyoming (UST)	A2LA	0001.01	11-30-24

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12



# Method Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-3

Method	Method Description	Protocol	Laboratory
8290A	Dioxins and Furans (HRGC/HRMS)	SW846	ELLE
8290A	Soxhlet Extraction of Dioxins and Furans	SW846	ELLE

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300



# Sample Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Sediment)

Job ID: 570-140024-3

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-140024-1	BM-DU3-Z-Layer-Comp	Sediment	03/16/23 12:20	05/31/23 09:30

1

2

3

4

5

6

7

8

9

10

11

12

## Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-140024-3

**Login Number: 140024**

**List Source: Eurofins Calscience**

**List Number: 1**

**Creator: Gutierrez, Rebecca**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-140024-3

**Login Number: 140024**

**List Source: Eurofins Lancaster Laboratories Environment Testing, LLC**

**List Number: 2**

**List Creation: 06/02/23 02:25 PM**

**Creator: Ballard, Megan**

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (<math>\leq 6^{\circ}\text{C}</math>, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (<math>\leq 6^{\circ}\text{C}</math>, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	



## **Appendix D**

### **Eurofins Data Reports for the Sediment MET Elutriate Analyses Reports**

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# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jeff Cotsifas  
Pacific EcoRisk Inc  
2250 Cordelia Rd  
Fairfield, California 94534

Generated 4/28/2023 5:33:09 PM

## JOB DESCRIPTION

Berkley Marina (MET)

## JOB NUMBER

570-133325-1

## Job Notes

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The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Calscience Project Manager.

## Authorization



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4/28/2023 5:33:09 PM

Authorized for release by  
Carla Hollowell, Project Manager I  
[Carla.Hollowell@et.eurofinsus.com](mailto:Carla.Hollowell@et.eurofinsus.com)  
(714)895-5494



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Client Sample Results . . . . .	6
QC Sample Results . . . . .	9
QC Association Summary . . . . .	15
Lab Chronicle . . . . .	18
Certification Summary . . . . .	20
Method Summary . . . . .	21
Sample Summary . . . . .	22
Chain of Custody . . . . .	23
Receipt Checklists . . . . .	25



# Definitions/Glossary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

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**Job ID: 570-133325-1**

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**Laboratory: Eurofins Calscience**

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**Narrative**

**Job Narrative**  
**570-133325-1**

**Receipt**

The samples were received on 3/31/2023 10:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.2°C

**Metals**

Method 1640: The following samples are associated with a bracket of 13 samples, while the method requirement is no more than 10 samples: BM-DU1-Comp MET (570-133325-1), BM-DU2-Comp MET (570-133325-2) and BM-DU3-Comp MET (570-133325-3). As all continuing calibration verifications for these samples passed for analytes reported, the data have been reported.

Method 1640: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 580-422269 and 580-422543 and analytical batch 580-422759 was outside control limits. Sample matrix interference is suspected. Laboratory control samples / laboratory control samples duplicate (LCS/LCSD) precision is in control for affected analytes.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.



# Client Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Method: EPA 1631E - Mercury, Low Level (CVAFS)

Client Sample ID: BM-DU1-Comp MET

Date Collected: 03/30/23 12:45

Date Received: 03/31/23 10:30

Lab Sample ID: 570-133325-1

Matrix: MET

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	4.09	B	0.495	0.0792	ng/L			04/10/23 12:34	1

Client Sample ID: BM-DU2-Comp MET

Date Collected: 03/30/23 12:45

Date Received: 03/31/23 10:30

Lab Sample ID: 570-133325-2

Matrix: MET

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	3.42		0.495	0.0792	ng/L			04/17/23 17:27	1

Client Sample ID: BM-DU3-Comp MET

Date Collected: 03/30/23 12:45

Date Received: 03/31/23 10:30

Lab Sample ID: 570-133325-3

Matrix: MET

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	5.18		0.495	0.0792	ng/L			04/17/23 17:31	1

# Client Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Method: EPA 1640 - Metals (ICPMS)

Client Sample ID: BM-DU1-Comp MET

Date Collected: 03/30/23 12:45

Date Received: 03/31/23 10:30

Lab Sample ID: 570-133325-1

Matrix: MET

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		1.00	0.390	ug/L		04/26/23 00:00	04/27/23 09:44	1

Client Sample ID: BM-DU2-Comp MET

Date Collected: 03/30/23 12:45

Date Received: 03/31/23 10:30

Lab Sample ID: 570-133325-2

Matrix: MET

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		1.00	0.390	ug/L		04/26/23 00:00	04/27/23 04:44	1

Client Sample ID: BM-DU3-Comp MET

Date Collected: 03/30/23 12:45

Date Received: 03/31/23 10:30

Lab Sample ID: 570-133325-3

Matrix: MET

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		1.00	0.390	ug/L		04/26/23 00:00	04/27/23 04:59	1

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Method: EPA 1640 - Metals (ICPMS) - Dissolved

**Client Sample ID: BM-DU1-Comp MET**

**Date Collected: 03/30/23 12:45**

**Date Received: 03/31/23 10:30**

**Lab Sample ID: 570-133325-1**

**Matrix: MET**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	8.87	F2	0.600	0.420	ug/L		04/07/23 00:00	04/08/23 08:28	1
Cadmium	0.0300	J	0.0400	0.0110	ug/L		04/26/23 00:00	04/27/23 09:01	1
Chromium	ND		0.500	0.340	ug/L		04/26/23 00:00	04/27/23 09:01	1
Copper	0.690	B	0.100	0.0200	ug/L		04/26/23 00:00	04/27/23 09:01	1
Lead	0.0547	B	0.0250	0.00400	ug/L		04/26/23 00:00	04/27/23 09:01	1
Nickel	1.20		0.300	0.110	ug/L		04/26/23 00:00	04/27/23 09:01	1
Silver	ND		1.00	0.500	ug/L		04/07/23 00:00	04/08/23 08:28	1
Zinc	1.50	B	0.500	0.0700	ug/L		04/26/23 00:00	04/27/23 09:01	1

**Client Sample ID: BM-DU2-Comp MET**

**Date Collected: 03/30/23 12:45**

**Date Received: 03/31/23 10:30**

**Lab Sample ID: 570-133325-2**

**Matrix: MET**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.55		0.600	0.420	ug/L		04/07/23 00:00	04/08/23 08:42	1
Cadmium	0.0315	J	0.0400	0.0110	ug/L		04/26/23 00:00	04/27/23 09:15	1
Chromium	ND		0.500	0.340	ug/L		04/26/23 00:00	04/27/23 09:15	1
Copper	0.565	B	0.100	0.0200	ug/L		04/26/23 00:00	04/27/23 09:15	1
Lead	0.0400	B	0.0250	0.00400	ug/L		04/26/23 00:00	04/27/23 09:15	1
Nickel	1.17		0.300	0.110	ug/L		04/26/23 00:00	04/27/23 09:15	1
Silver	ND		1.00	0.500	ug/L		04/07/23 00:00	04/08/23 08:42	1
Zinc	1.35	B	0.500	0.0700	ug/L		04/26/23 00:00	04/27/23 09:15	1

**Client Sample ID: BM-DU3-Comp MET**

**Date Collected: 03/30/23 12:45**

**Date Received: 03/31/23 10:30**

**Lab Sample ID: 570-133325-3**

**Matrix: MET**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	21.2		0.600	0.420	ug/L		04/07/23 00:00	04/08/23 08:56	1
Cadmium	0.0494		0.0400	0.0110	ug/L		04/26/23 00:00	04/27/23 09:30	1
Chromium	0.385	J	0.500	0.340	ug/L		04/26/23 00:00	04/27/23 09:30	1
Copper	0.483	B	0.100	0.0200	ug/L		04/26/23 00:00	04/27/23 09:30	1
Lead	0.0919	B	0.0250	0.00400	ug/L		04/26/23 00:00	04/27/23 09:30	1
Nickel	0.892		0.300	0.110	ug/L		04/26/23 00:00	04/27/23 09:30	1
Silver	ND		1.00	0.500	ug/L		04/07/23 00:00	04/08/23 08:56	1
Zinc	1.58	B	0.500	0.0700	ug/L		04/26/23 00:00	04/27/23 09:30	1

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Method: 1631E - Mercury, Low Level (CVAFS)

**Lab Sample ID: MB 580-422925/23**  
**Matrix: Water**  
**Analysis Batch: 422925**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.08515	J	0.495	0.0792	ng/L			04/10/23 13:20	1

**Lab Sample ID: MB 580-422925/24**  
**Matrix: Water**  
**Analysis Batch: 422925**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.495	0.0792	ng/L			04/10/23 13:24	1

**Lab Sample ID: MB 580-422925/25**  
**Matrix: Water**  
**Analysis Batch: 422925**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.495	0.0792	ng/L			04/10/23 13:28	1

**Lab Sample ID: LCS 580-422925/29**  
**Matrix: Water**  
**Analysis Batch: 422925**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	5.00	4.659		ng/L		93	77 - 123

**Lab Sample ID: LCSD 580-422925/30**  
**Matrix: Water**  
**Analysis Batch: 422925**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	5.00	4.898		ng/L		98	77 - 123	5	24

**Lab Sample ID: 570-133325-1 MS**  
**Matrix: MET**  
**Analysis Batch: 422925**

**Client Sample ID: BM-DU1-Comp MET**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	4.09	B	5.00	8.888		ng/L		96	71 - 125

**Lab Sample ID: 570-133325-1 MSD**  
**Matrix: MET**  
**Analysis Batch: 422925**

**Client Sample ID: BM-DU1-Comp MET**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	4.09	B	5.00	8.836		ng/L		95	71 - 125	1	24

**Lab Sample ID: 580-125619-A-3 MS**  
**Matrix: Water**  
**Analysis Batch: 422925**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	4.52	B	5.00	9.563		ng/L		101	71 - 125

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Method: 1631E - Mercury, Low Level (CVAFS)

**Lab Sample ID: 580-125619-A-3 MSD**  
**Matrix: Water**  
**Analysis Batch: 422925**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	4.52	B	5.00	9.498		ng/L		99	71 - 125	1	24

**Lab Sample ID: MB 580-423500/14**  
**Matrix: Water**  
**Analysis Batch: 423500**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.495	0.0792	ng/L			04/17/23 13:00	1

**Lab Sample ID: MB 580-423500/15**  
**Matrix: Water**  
**Analysis Batch: 423500**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.495	0.0792	ng/L			04/17/23 13:04	1

**Lab Sample ID: MB 580-423500/16**  
**Matrix: Water**  
**Analysis Batch: 423500**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.495	0.0792	ng/L			04/17/23 13:08	1

**Lab Sample ID: LCS 580-423500/17**  
**Matrix: Water**  
**Analysis Batch: 423500**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	5.00	5.035		ng/L		101	77 - 123

**Lab Sample ID: LCSD 580-423500/18**  
**Matrix: Water**  
**Analysis Batch: 423500**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	5.00	5.017		ng/L		100	77 - 123	0	24

**Lab Sample ID: 580-125961-A-1 MS**  
**Matrix: Water**  
**Analysis Batch: 423500**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	2.11		5.00	6.928		ng/L		96	71 - 125

**Lab Sample ID: 580-125961-A-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 423500**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	2.11		5.00	6.835		ng/L		94	71 - 125	1	24

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# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Method: 1631E - Mercury, Low Level (CVAFS)

**Lab Sample ID: 580-125962-E-1 MS**  
**Matrix: Water**  
**Analysis Batch: 423500**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	5.38		10.0	14.78		ng/L		94	71 - 125

**Lab Sample ID: 580-125962-E-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 423500**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	5.38		10.0	14.74		ng/L		94	71 - 125	0	24

**Lab Sample ID: 580-125965-A-1 MS**  
**Matrix: Water**  
**Analysis Batch: 423500**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	25.6		30.0	55.82		ng/L		101	71 - 125

**Lab Sample ID: 580-125965-A-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 423500**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	25.6		30.0	56.49		ng/L		103	71 - 125	1	24

## Method: 1640 - Metals (ICPMS)

**Lab Sample ID: MB 580-422543/1-A**  
**Matrix: Water**  
**Analysis Batch: 422759**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 422543**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.600	0.420	ug/L		04/07/23 00:00	04/08/23 01:34	1
Silver	ND		1.00	0.500	ug/L		04/07/23 00:00	04/08/23 01:34	1

**Lab Sample ID: MB 580-422543/2-A**  
**Matrix: Water**  
**Analysis Batch: 422759**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 422543**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.600	0.420	ug/L		04/07/23 00:00	04/08/23 01:48	1
Silver	ND		1.00	0.500	ug/L		04/07/23 00:00	04/08/23 01:48	1

**Lab Sample ID: LCS 580-422543/4-A**  
**Matrix: Water**  
**Analysis Batch: 422759**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 422543**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	12.5	12.42		ug/L		99	70 - 130
Silver	8.25	8.424		ug/L		102	70 - 130



# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Method: 1640 - Metals (ICPMS) (Continued)

**Lab Sample ID: LCSD 580-422543/5-A**  
**Matrix: Water**  
**Analysis Batch: 422759**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 422543**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	
								RPD	Limit
Arsenic	12.5	12.29		ug/L		98	70 - 130	1	20
Silver	8.25	8.415		ug/L		102	70 - 130	0	20

**Lab Sample ID: MB 580-424036/1-A**  
**Matrix: Water**  
**Analysis Batch: 424466**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 424036**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.500	0.340	ug/L		04/26/23 00:00	04/27/23 00:56	1
Copper	ND		0.100	0.0200	ug/L		04/26/23 00:00	04/27/23 00:56	1
Lead	0.004740	J	0.0250	0.00400	ug/L		04/26/23 00:00	04/27/23 00:56	1
Nickel	ND		0.300	0.110	ug/L		04/26/23 00:00	04/27/23 00:56	1
Zinc	ND		0.500	0.0700	ug/L		04/26/23 00:00	04/27/23 00:56	1
Selenium	ND		1.00	0.390	ug/L		04/26/23 00:00	04/27/23 00:56	1

**Lab Sample ID: MB 580-424036/2-A**  
**Matrix: Water**  
**Analysis Batch: 424466**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 424036**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.500	0.340	ug/L		04/26/23 00:00	04/27/23 01:10	1
Copper	0.02024	J	0.100	0.0200	ug/L		04/26/23 00:00	04/27/23 01:10	1
Lead	ND		0.0250	0.00400	ug/L		04/26/23 00:00	04/27/23 01:10	1
Nickel	ND		0.300	0.110	ug/L		04/26/23 00:00	04/27/23 01:10	1
Zinc	ND		0.500	0.0700	ug/L		04/26/23 00:00	04/27/23 01:10	1
Selenium	ND		1.00	0.390	ug/L		04/26/23 00:00	04/27/23 01:10	1

**Lab Sample ID: LCS 580-424036/3-A**  
**Matrix: Water**  
**Analysis Batch: 424466**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 424036**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chromium	12.5	12.56		ug/L		100	70 - 130
Copper	12.5	12.87		ug/L		103	70 - 130
Lead	2.50	2.344		ug/L		94	70 - 130
Nickel	12.5	12.60		ug/L		101	70 - 130
Zinc	12.5	13.19		ug/L		106	70 - 130
Selenium	12.5	11.47		ug/L		92	70 - 130

**Lab Sample ID: LCSD 580-424036/4-A**  
**Matrix: Water**  
**Analysis Batch: 424466**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 424036**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	
								RPD	Limit
Cadmium	1.25	1.255		ug/L		100	70 - 130	1	20
Chromium	12.5	12.61		ug/L		101	70 - 130	0	20

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# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Method: 1640 - Metals (ICPMS) (Continued)

**Lab Sample ID: LCSD 580-424036/4-A**  
**Matrix: Water**  
**Analysis Batch: 424466**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 424036**

Analyte	Spike Added	LCSD		Unit	D	%Rec	%Rec		RPD	Limit
		Result	Qualifier				Limits	RPD		
Copper	12.5	12.84		ug/L		103	70 - 130	0	20	
Lead	2.50	2.368		ug/L		95	70 - 130	1	20	
Nickel	12.5	12.60		ug/L		101	70 - 130	0	20	
Zinc	12.5	13.02		ug/L		104	70 - 130	1	20	
Selenium	12.5	11.53		ug/L		92	70 - 130	1	20	

**Lab Sample ID: 570-133325-1 MS**  
**Matrix: MET**  
**Analysis Batch: 424483**

**Client Sample ID: BM-DU1-Comp MET**  
**Prep Type: Total/NA**  
**Prep Batch: 424036**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec		RPD	Limit
				Result	Qualifier				Limits	RPD		
Selenium	ND		125	113.2		ug/L		91	50 - 150			

**Lab Sample ID: 570-133325-1 MSD**  
**Matrix: MET**  
**Analysis Batch: 424483**

**Client Sample ID: BM-DU1-Comp MET**  
**Prep Type: Total/NA**  
**Prep Batch: 424036**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD		Unit	D	%Rec	%Rec		RPD	Limit
				Result	Qualifier				Limits	RPD		
Selenium	ND		125	111.8		ug/L		89	50 - 150	3	20	

**Lab Sample ID: MB 580-422269/1-C**  
**Matrix: Water**  
**Analysis Batch: 422759**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 422543**

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Arsenic	ND		0.600	0.420	ug/L		04/07/23 00:00	04/08/23 02:02		1
Silver	ND		1.00	0.500	ug/L		04/07/23 00:00	04/08/23 02:02		1

**Lab Sample ID: 570-133325-1 MS**  
**Matrix: MET**  
**Analysis Batch: 422759**

**Client Sample ID: BM-DU1-Comp MET**  
**Prep Type: Dissolved**  
**Prep Batch: 422543**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec		RPD	Limit
				Result	Qualifier				Limits	RPD		
Arsenic	8.87	F2	12.5	20.06		ug/L		89	50 - 150			
Silver	ND		8.25	8.331	J	ug/L		101	50 - 150			

**Lab Sample ID: 570-133325-1 MSD**  
**Matrix: MET**  
**Analysis Batch: 422759**

**Client Sample ID: BM-DU1-Comp MET**  
**Prep Type: Dissolved**  
**Prep Batch: 422543**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD		Unit	D	%Rec	%Rec		RPD	Limit
				Result	Qualifier				Limits	RPD		
Arsenic	8.87	F2	12.5	24.82	F2	ug/L		128	50 - 150	21	20	
Silver	ND		8.25	8.545	J	ug/L		104	50 - 150	3	20	

**Lab Sample ID: MB 580-422269/1-E**  
**Matrix: Water**  
**Analysis Batch: 424466**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 424036**

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Cadmium	ND		0.0400	0.0110	ug/L		04/26/23 00:00	04/27/23 01:39		1

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# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Method: 1640 - Metals (ICPMS) (Continued)

Lab Sample ID: MB 580-422269/1-E

Matrix: Water

Analysis Batch: 424466

Client Sample ID: Method Blank

Prep Type: Dissolved

Prep Batch: 424036

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chromium	ND		0.500	0.340	ug/L		04/26/23 00:00	04/27/23 01:39	1
Copper	ND		0.100	0.0200	ug/L		04/26/23 00:00	04/27/23 01:39	1
Lead	ND		0.0250	0.00400	ug/L		04/26/23 00:00	04/27/23 01:39	1
Nickel	ND		0.300	0.110	ug/L		04/26/23 00:00	04/27/23 01:39	1
Zinc	0.1633	J	0.500	0.0700	ug/L		04/26/23 00:00	04/27/23 01:39	1

Lab Sample ID: 570-133325-1 MS

Matrix: MET

Analysis Batch: 424466

Client Sample ID: BM-DU1-Comp MET

Prep Type: Dissolved

Prep Batch: 424036

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec	Limits
	Result	Qualifier		Result	Qualifier					
Cadmium	0.0300	J	12.5	12.45		ug/L		99		50 - 150
Chromium	ND		125	127.6		ug/L		102		50 - 150
Copper	0.690	B	125	127.0		ug/L		101		50 - 150
Lead	0.0547	B	25.0	23.82		ug/L		95		50 - 150
Nickel	1.20		125	125.4		ug/L		99		50 - 150
Zinc	1.50	B	125	133.1		ug/L		105		50 - 150

Lab Sample ID: 570-133325-1 MSD

Matrix: MET

Analysis Batch: 424466

Client Sample ID: BM-DU1-Comp MET

Prep Type: Dissolved

Prep Batch: 424036

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	Limits	RPD	
	Result	Qualifier		Result	Qualifier						RPD	Limit
Cadmium	0.0300	J	12.5	12.82		ug/L		102		50 - 150	3	20
Chromium	ND		125	130.2		ug/L		104		50 - 150	2	20
Copper	0.690	B	125	128.5		ug/L		102		50 - 150	1	20
Lead	0.0547	B	25.0	24.21		ug/L		97		50 - 150	2	20
Nickel	1.20		125	126.4		ug/L		100		50 - 150	1	20
Zinc	1.50	B	125	136.0		ug/L		108		50 - 150	2	20

# QC Association Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Metals

### Filtration Batch: 422269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133325-1	BM-DU1-Comp MET	Dissolved	MET	Filtration	
570-133325-2	BM-DU2-Comp MET	Dissolved	MET	Filtration	
570-133325-3	BM-DU3-Comp MET	Dissolved	MET	Filtration	
MB 580-422269/1-C	Method Blank	Dissolved	Water	Filtration	
MB 580-422269/1-E	Method Blank	Dissolved	Water	Filtration	
570-133325-1 MS	BM-DU1-Comp MET	Dissolved	MET	Filtration	
570-133325-1 MSD	BM-DU1-Comp MET	Dissolved	MET	Filtration	

### Prep Batch: 422543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133325-1	BM-DU1-Comp MET	Dissolved	MET	1640	422269
570-133325-2	BM-DU2-Comp MET	Dissolved	MET	1640	422269
570-133325-3	BM-DU3-Comp MET	Dissolved	MET	1640	422269
MB 580-422269/1-C	Method Blank	Dissolved	Water	1640	422269
MB 580-422543/1-A	Method Blank	Total/NA	Water	1640	
MB 580-422543/2-A	Method Blank	Total/NA	Water	1640	
LCS 580-422543/4-A	Lab Control Sample	Total/NA	Water	1640	
LCSD 580-422543/5-A	Lab Control Sample Dup	Total/NA	Water	1640	
570-133325-1 MS	BM-DU1-Comp MET	Dissolved	MET	1640	422269
570-133325-1 MSD	BM-DU1-Comp MET	Dissolved	MET	1640	422269

### Analysis Batch: 422759

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133325-1	BM-DU1-Comp MET	Dissolved	MET	1640	422543
570-133325-2	BM-DU2-Comp MET	Dissolved	MET	1640	422543
570-133325-3	BM-DU3-Comp MET	Dissolved	MET	1640	422543
MB 580-422269/1-C	Method Blank	Dissolved	Water	1640	422543
MB 580-422543/1-A	Method Blank	Total/NA	Water	1640	422543
MB 580-422543/2-A	Method Blank	Total/NA	Water	1640	422543
LCS 580-422543/4-A	Lab Control Sample	Total/NA	Water	1640	422543
LCSD 580-422543/5-A	Lab Control Sample Dup	Total/NA	Water	1640	422543
570-133325-1 MS	BM-DU1-Comp MET	Dissolved	MET	1640	422543
570-133325-1 MSD	BM-DU1-Comp MET	Dissolved	MET	1640	422543

### Analysis Batch: 422925

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133325-1	BM-DU1-Comp MET	Total/NA	MET	1631E	
MB 580-422925/23	Method Blank	Total/NA	Water	1631E	
MB 580-422925/24	Method Blank	Total/NA	Water	1631E	
MB 580-422925/25	Method Blank	Total/NA	Water	1631E	
LCS 580-422925/29	Lab Control Sample	Total/NA	Water	1631E	
LCSD 580-422925/30	Lab Control Sample Dup	Total/NA	Water	1631E	
570-133325-1 MS	BM-DU1-Comp MET	Total/NA	MET	1631E	
570-133325-1 MSD	BM-DU1-Comp MET	Total/NA	MET	1631E	
580-125619-A-3 MS	Matrix Spike	Total/NA	Water	1631E	
580-125619-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	1631E	

### Analysis Batch: 423500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133325-2	BM-DU2-Comp MET	Total/NA	MET	1631E	
570-133325-3	BM-DU3-Comp MET	Total/NA	MET	1631E	

# QC Association Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Metals (Continued)

### Analysis Batch: 423500 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 580-423500/14	Method Blank	Total/NA	Water	1631E	
MB 580-423500/15	Method Blank	Total/NA	Water	1631E	
MB 580-423500/16	Method Blank	Total/NA	Water	1631E	
LCS 580-423500/17	Lab Control Sample	Total/NA	Water	1631E	
LCSD 580-423500/18	Lab Control Sample Dup	Total/NA	Water	1631E	
580-125961-A-1 MS	Matrix Spike	Total/NA	Water	1631E	
580-125961-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	1631E	
580-125962-E-1 MS	Matrix Spike	Total/NA	Water	1631E	
580-125962-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	1631E	
580-125965-A-1 MS	Matrix Spike	Total/NA	Water	1631E	
580-125965-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	1631E	

### Prep Batch: 424036

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133325-1	BM-DU1-Comp MET	Dissolved	MET	1640	422269
570-133325-1	BM-DU1-Comp MET	Total/NA	MET	1640	
570-133325-2	BM-DU2-Comp MET	Dissolved	MET	1640	422269
570-133325-2	BM-DU2-Comp MET	Total/NA	MET	1640	
570-133325-3	BM-DU3-Comp MET	Dissolved	MET	1640	422269
570-133325-3	BM-DU3-Comp MET	Total/NA	MET	1640	
MB 580-422269/1-E	Method Blank	Dissolved	Water	1640	422269
MB 580-424036/1-A	Method Blank	Total/NA	Water	1640	
MB 580-424036/2-A	Method Blank	Total/NA	Water	1640	
LCS 580-424036/3-A	Lab Control Sample	Total/NA	Water	1640	
LCSD 580-424036/4-A	Lab Control Sample Dup	Total/NA	Water	1640	
570-133325-1 MS	BM-DU1-Comp MET	Dissolved	MET	1640	422269
570-133325-1 MS	BM-DU1-Comp MET	Total/NA	MET	1640	
570-133325-1 MSD	BM-DU1-Comp MET	Dissolved	MET	1640	422269
570-133325-1 MSD	BM-DU1-Comp MET	Total/NA	MET	1640	

### Analysis Batch: 424466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133325-1	BM-DU1-Comp MET	Dissolved	MET	1640	424036
570-133325-2	BM-DU2-Comp MET	Dissolved	MET	1640	424036
570-133325-3	BM-DU3-Comp MET	Dissolved	MET	1640	424036
MB 580-422269/1-E	Method Blank	Dissolved	Water	1640	424036
MB 580-424036/1-A	Method Blank	Total/NA	Water	1640	424036
MB 580-424036/2-A	Method Blank	Total/NA	Water	1640	424036
LCS 580-424036/3-A	Lab Control Sample	Total/NA	Water	1640	424036
LCSD 580-424036/4-A	Lab Control Sample Dup	Total/NA	Water	1640	424036
570-133325-1 MS	BM-DU1-Comp MET	Dissolved	MET	1640	424036
570-133325-1 MSD	BM-DU1-Comp MET	Dissolved	MET	1640	424036

### Analysis Batch: 424483

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133325-1	BM-DU1-Comp MET	Total/NA	MET	1640	424036
570-133325-2	BM-DU2-Comp MET	Total/NA	MET	1640	424036
570-133325-3	BM-DU3-Comp MET	Total/NA	MET	1640	424036
MB 580-424036/1-A	Method Blank	Total/NA	Water	1640	424036
MB 580-424036/2-A	Method Blank	Total/NA	Water	1640	424036
LCS 580-424036/3-A	Lab Control Sample	Total/NA	Water	1640	424036

# QC Association Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Metals (Continued)

### Analysis Batch: 424483 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 580-424036/4-A	Lab Control Sample Dup	Total/NA	Water	1640	424036
570-133325-1 MS	BM-DU1-Comp MET	Total/NA	MET	1640	424036
570-133325-1 MSD	BM-DU1-Comp MET	Total/NA	MET	1640	424036

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# Lab Chronicle

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Client Sample ID: BM-DU1-Comp MET

Lab Sample ID: 570-133325-1

Date Collected: 03/30/23 12:45

Matrix: MET

Date Received: 03/31/23 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1			422925	04/10/23 12:34	D1C	EET SEA
Instrument ID: 2600-3										
Dissolved	Filtration	Filtration			250 mL	250 mL	422269	04/04/23 13:29	DRM	EET SEA
Dissolved	Prep	1640			10 mL	10 mL	422543	04/07/23 00:00	V1R	EET SEA
Dissolved	Analysis	1640		1			422759	04/08/23 08:28	V1R	EET SEA
Instrument ID: ICPMS9										
Dissolved	Filtration	Filtration			250 mL	250 mL	422269	04/04/23 13:29	DRM	EET SEA
Dissolved	Prep	1640			10 mL	10 mL	424036	04/26/23 00:00	V1R	EET SEA
Dissolved	Analysis	1640		1			424466	04/27/23 09:01	V1R	EET SEA
Instrument ID: ICPMS9										
Total/NA	Prep	1640			10 mL	10 mL	424036	04/26/23 00:00	V1R	EET SEA
Total/NA	Analysis	1640		1			424483	04/27/23 09:44	V1R	EET SEA
Instrument ID: ICPMS9										

## Client Sample ID: BM-DU2-Comp MET

Lab Sample ID: 570-133325-2

Date Collected: 03/30/23 12:45

Matrix: MET

Date Received: 03/31/23 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1			423500	04/17/23 17:27	COW	EET SEA
Instrument ID: 2600-4										
Dissolved	Filtration	Filtration			250 mL	250 mL	422269	04/04/23 13:29	DRM	EET SEA
Dissolved	Prep	1640			10 mL	10 mL	422543	04/07/23 00:00	V1R	EET SEA
Dissolved	Analysis	1640		1			422759	04/08/23 08:42	V1R	EET SEA
Instrument ID: ICPMS9										
Dissolved	Filtration	Filtration			250 mL	250 mL	422269	04/04/23 13:29	DRM	EET SEA
Dissolved	Prep	1640			10 mL	10 mL	424036	04/26/23 00:00	V1R	EET SEA
Dissolved	Analysis	1640		1			424466	04/27/23 09:15	V1R	EET SEA
Instrument ID: ICPMS9										
Total/NA	Prep	1640			10 mL	10 mL	424036	04/26/23 00:00	V1R	EET SEA
Total/NA	Analysis	1640		1			424483	04/27/23 04:44	V1R	EET SEA
Instrument ID: ICPMS9										

## Client Sample ID: BM-DU3-Comp MET

Lab Sample ID: 570-133325-3

Date Collected: 03/30/23 12:45

Matrix: MET

Date Received: 03/31/23 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1			423500	04/17/23 17:31	COW	EET SEA
Instrument ID: 2600-4										
Dissolved	Filtration	Filtration			250 mL	250 mL	422269	04/04/23 13:29	DRM	EET SEA
Dissolved	Prep	1640			10 mL	10 mL	422543	04/07/23 00:00	V1R	EET SEA
Dissolved	Analysis	1640		1			422759	04/08/23 08:56	V1R	EET SEA
Instrument ID: ICPMS9										

# Lab Chronicle

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

**Client Sample ID: BM-DU3-Comp MET**

**Lab Sample ID: 570-133325-3**

Date Collected: 03/30/23 12:45

Matrix: MET

Date Received: 03/31/23 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	Filtration			250 mL	250 mL	422269	04/04/23 13:29	DRM	EET SEA
Dissolved	Prep	1640			10 mL	10 mL	424036	04/26/23 00:00	V1R	EET SEA
Dissolved	Analysis	1640		1			424466	04/27/23 09:30	V1R	EET SEA
Instrument ID: ICPMS9										
Total/NA	Prep	1640			10 mL	10 mL	424036	04/26/23 00:00	V1R	EET SEA
Total/NA	Analysis	1640		1			424483	04/27/23 04:59	V1R	EET SEA
Instrument ID: ICPMS9										

**Laboratory References:**

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310





# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

## Laboratory: Eurofins Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-25
ANAB	Dept. of Defense ELAP	L2236	01-19-25
ANAB	Dept. of Energy	L2236	01-19-25
ANAB	ISO/IEC 17025	L2236	01-19-25
Arkansas DEQ	State	8801526	05-23-23
California	State	2954	07-07-23
Florida	NELAP	E87575	06-30-23
Louisiana	NELAP	03073	06-30-23
Louisiana (All)	NELAP	03073	06-30-23
Maine	State	WA01273	05-02-24
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-23
New York	NELAP	11662	03-31-24
Oregon	NELAP	4167	07-07-23
US Fish & Wildlife	US Federal Programs	A20571	06-30-23
USDA	US Federal Programs	525-23-4-22573	01-04-26
Washington	State	C788	07-13-23
Wisconsin	State	399133460	08-31-23

# Method Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

Method	Method Description	Protocol	Laboratory
1631E	Mercury, Low Level (CVAFS)	EPA	EET SEA
1640	Metals (ICPMS)	EPA	EET SEA
1640	Preparation, Total Recoverable Metals	EPA	EET SEA
Filtration	Sample Filtration	None	EET SEA

**Protocol References:**

EPA = US Environmental Protection Agency  
None = None

**Laboratory References:**

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310



# Sample Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (MET)

Job ID: 570-133325-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-133325-1	BM-DU1-Comp MET	MET	03/30/23 12:45	03/31/23 10:30
570-133325-2	BM-DU2-Comp MET	MET	03/30/23 12:45	03/31/23 10:30
570-133325-3	BM-DU3-Comp MET	MET	03/30/23 12:45	03/31/23 10:30

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**Eurofins Calscience**

2841 Dow Avenue, Suite 100  
Tustin, CA 92780  
Phone: 714-895-5494

**Chain of Custody Record**



Environment Testing

<b>Client Information (Sub Contract Lab)</b>				Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:																																																																																				
Client Contact: Shipping/Receiving				Phone:	Hollowell, Carla		570-214798.1																																																																																				
Company: Eurofins Environment Testing Northwest,				Address:	E-Mail:	State of Origin:	Page:																																																																																				
5755 8th Street East,				Due Date Requested:	Carla.Hollowell@et.eurofinsus.com	California	Page 1 of 1																																																																																				
City: Tacoma				TAT Requested (days):	Accreditations Required (See note): Los Angeles County Sanitation Di - California		Job #:																																																																																				
State, Zip: WA, 98424				PO #:	<b>Analysis Requested</b> A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)		570-133325-1																																																																																				
Phone: 253-922-2310(Tel)				WO #:																																																																																							
Email:																																																																																											
Project Name: Berkley Marina (MET)				Project #:	Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 1631E/ Mercury, Total 1640/1640_Prep (MOD) 1640 Metals 1640/Filtration_ME (MOD) 1640 Metals		Total Number of containers																																																																																				
Site:				SSOW#:																																																																																							
<table border="1"> <thead> <tr> <th>Sample Identification - Client ID (Lab ID)</th> <th>Sample Date</th> <th>Sample Time</th> <th>Sample Type (C=Comp, G=grab)</th> <th>Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)</th> <th>Field Filtered Sample (Yes or No)</th> <th>Perform MS/MSD (Yes or No)</th> <th>1631E/ Mercury, Total</th> <th>1640/1640_Prep (MOD) 1640 Metals</th> <th>1640/Filtration_ME (MOD) 1640 Metals</th> <th>Total Number of containers</th> <th>Special Instructions/Note:</th> </tr> </thead> <tbody> <tr> <td colspan="12">Preservation Code:</td> </tr> <tr> <td>BM-DU1-Comp MET (570-133325-1)</td> <td>3/30/23</td> <td>12:45 Pacific</td> <td></td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td>3</td> <td></td> </tr> <tr> <td>BM-DU1-Comp MET (570-133325-1MS)</td> <td>3/30/23</td> <td>12:45 Pacific</td> <td>MS</td> <td>Water</td> <td></td> <td></td> <td>X</td> <td>X</td> <td>X</td> <td>3</td> <td></td> </tr> <tr> <td>BM-DU1-Comp MET (570-133325-1MSD)</td> <td>3/30/23</td> <td>12:45 Pacific</td> <td>MSD</td> <td>Water</td> <td></td> <td></td> <td>X</td> <td>X</td> <td>X</td> <td>3</td> <td></td> </tr> <tr> <td>BM-DU2-Comp MET (570-133325-2)</td> <td>3/30/23</td> <td>12:45 Pacific</td> <td></td> <td>Water</td> <td></td> <td></td> <td>X</td> <td>X</td> <td>X</td> <td>3</td> <td></td> </tr> <tr> <td>BM-DU3-Comp MET (570-133325-3)</td> <td>3/30/23</td> <td>12:45 Pacific</td> <td></td> <td>Water</td> <td></td> <td></td> <td>X</td> <td>X</td> <td>X</td> <td>3</td> <td></td> </tr> </tbody> </table>				Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1631E/ Mercury, Total	1640/1640_Prep (MOD) 1640 Metals	1640/Filtration_ME (MOD) 1640 Metals	Total Number of containers	Special Instructions/Note:	Preservation Code:												BM-DU1-Comp MET (570-133325-1)	3/30/23	12:45 Pacific		Water	X	X	X			3		BM-DU1-Comp MET (570-133325-1MS)	3/30/23	12:45 Pacific	MS	Water			X	X	X	3		BM-DU1-Comp MET (570-133325-1MSD)	3/30/23	12:45 Pacific	MSD	Water			X	X	X	3		BM-DU2-Comp MET (570-133325-2)	3/30/23	12:45 Pacific		Water			X	X	X	3		BM-DU3-Comp MET (570-133325-3)	3/30/23	12:45 Pacific		Water			X	X	X	3		Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.			
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1631E/ Mercury, Total	1640/1640_Prep (MOD) 1640 Metals	1640/Filtration_ME (MOD) 1640 Metals	Total Number of containers	Special Instructions/Note:																																																																																
Preservation Code:																																																																																											
BM-DU1-Comp MET (570-133325-1)	3/30/23	12:45 Pacific		Water	X	X	X			3																																																																																	
BM-DU1-Comp MET (570-133325-1MS)	3/30/23	12:45 Pacific	MS	Water			X	X	X	3																																																																																	
BM-DU1-Comp MET (570-133325-1MSD)	3/30/23	12:45 Pacific	MSD	Water			X	X	X	3																																																																																	
BM-DU2-Comp MET (570-133325-2)	3/30/23	12:45 Pacific		Water			X	X	X	3																																																																																	
BM-DU3-Comp MET (570-133325-3)	3/30/23	12:45 Pacific		Water			X	X	X	3																																																																																	
<b>Possible Hazard Identification</b>					<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>																																																																																						
Unconfirmed					<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months																																																																																						
Deliverable Requested: I, II, III, IV, Other (specify)					Primary Deliverable Rank: 2		Special Instructions/QC Requirements:																																																																																				
Empty Kit Relinquished by:					Date:		Time:		Method of Shipment:																																																																																		
Relinquished by:					Date/Time:		Company		Received by:		Date/Time:	Company																																																																															
Relinquished by:					Date/Time:		Company		Received by:		Date/Time:	Company																																																																															
Relinquished by:					Date/Time:		Company		Received by:		Date/Time:	Company																																																																															
Custody Seals Intact:		Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks:																																																																																						
Δ Yes Δ No																																																																																											



# Pacific EcoRisk

ENVIRONMENTAL CONSULTING & TESTING

2250 Cordelia Rd., Fairfield, CA 94534  
(707)207-7760

## Eurofins Frontier CHAIN-OF-CUSTODY RECORD

<b>Client Name:</b> Pacific EcoRisk		<b>REQUESTED ANALYSIS</b>				
<b>Client Address:</b> 2250 Cordelia Rd. Fairfield, CA 94534						
<b>Sampled By:</b> PER						
<b>Phone:</b> (707) 207-7760						
<b>Cell:</b> (707) 207-7916						
<b>Project Manager:</b> Jeff Cotsifas						
<b>Project Name:</b> BerkeleyMarina						
<b>PO Number:</b> 37289						
<b>Client Sample ID</b>	<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Matrix*</b>	<b>Container</b>		Dissolved Arsenic - EPA 1640 (RL = 0.5 ug/L ww) Dissolved Cadmium - EPA 1640 (RL = 0.2 ug/L ww) Dissolved Chromium - EPA 1640 (RL = 1 ug/L ww) Dissolved Copper - EPA 1640 (RL = 0.1 ug/L ww) Dissolved Lead - EPA 1640 (RL = 0.02 ug/L ww) Total Mercury - EPA 1631A (RL = 0.005 ug/L ww) Dissolved Nickel - EPA 1640 (RL = 0.2 ug/L ww) Total Selenium - EPA 1604 (RL = 1 ug/L ww) Dissolved Silver - EPA 1640 (RL = 0.02 ug/L ww) Dissolved Zinc - EPA 1640 (RL = 0.5 ug/L ww)
				<b>Number</b>	<b>Type</b>	
1	BM-DU1-Comp MET	3/30/23	1245	MET	9 Multiple	
2	BM-DU2-Comp MET	3/30/23	1245	MET	3 Multiple	
3	BM-DU3-Comp MET	3/30/23	1245	MET	3 Multiple	
4						
5						
6						
7						
8						
9						
10						
<b>Correct Containers:</b>		Yes	No			
<b>Sample Temperature:</b>		Ambient	Cold	Warm		
<b>Sample Preservative:</b>		Yes	No			
<b>Turnaround Time:</b>		STD	Specify:			
Comments: Sample date/time reflects collection date/time of MET after 24-hr settling period.  Perform duplicate, MS/MSD, etc. on BM-DU1-Comp MET.  0.1 D <sub>3</sub> 2 0.3 Med Red 7117 1573 8073						
<b>Signature:</b>		<b>Signature:</b>		<b>Signature:</b>		
<b>Print:</b>		<b>Print:</b>		<b>Print:</b>		
<b>Organization:</b>		<b>Organization:</b>		<b>Organization:</b>		
<b>DATE:</b>		<b>TIME:</b>		<b>DATE:</b>		
<b>DATE:</b>		<b>TIME:</b>		<b>DATE:</b>		
<b>DATE:</b>		<b>TIME:</b>		<b>DATE:</b>		



570-133325 Chain of Custody

\*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

# Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-133325-1

**Login Number: 133325**

**List Source: Eurofins Calscience**

**List Number: 1**

**Creator: Hollowell, Carla**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

## Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-133325-1

**Login Number: 133325**

**List Number: 2**

**Creator: Miller, Darren R**

**List Source: Eurofins Seattle**

**List Creation: 04/06/23 07:25 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## **Appendix E**

### **Eurofins Data Reports for the Sediment DI-WET Elutriate Analyses Reports**

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 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Jeff Cotsifas  
Pacific EcoRisk Inc  
2250 Cordelia Rd  
Fairfield, California 94534

Generated 7/24/2023 12:56:11 PM

**JOB DESCRIPTION**

Berkley Marina (Sediment)

**JOB NUMBER**

570-133080-3

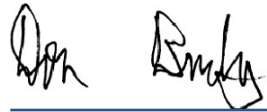
## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Calscience Project Manager.

## Authorization



Generated  
7/24/2023 12:56:11 PM

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Authorized for release by  
Don Burley, Senior Project Manager  
[Donald.Burley@et.eurofinsus.com](mailto:Donald.Burley@et.eurofinsus.com)  
Designee for  
Carla Hollowell, Project Manager I  
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# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Client Sample Results . . . . .	6
QC Sample Results . . . . .	9
QC Association Summary . . . . .	13
Lab Chronicle . . . . .	14
Certification Summary . . . . .	15
Method Summary . . . . .	16
Sample Summary . . . . .	17
Chain of Custody . . . . .	18
Receipt Checklists . . . . .	23

# Definitions/Glossary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Organic Prep

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

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**Job ID: 570-133080-3**

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**Laboratory: Eurofins Calscience**

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**Narrative**

**Job Narrative**  
**570-133080-3**

**Comments**

No additional comments.

**Receipt**

The samples were received on 3/29/2023 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.8° C.

**Metals**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

- 1
- 2
- 3
- 4
- 5
- 6
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- 8
- 9
- 10
- 11
- 12
- 13

# Client Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

## Method: EPA 1631E - Mercury, Low Level (CVAFS)

Client Sample ID: BM-DU3-Comp (DI Wet sample)

Lab Sample ID: 570-133080-4

Date Collected: 03/16/23 00:00

Matrix: Water

Date Received: 03/29/23 09:45

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	9.29		0.495	0.198	ng/L			07/13/23 14:31	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

# Client Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

## Method: EPA 1638 - Metals (ICP/MS) - Total Recoverable

Client Sample ID: BM-DU3-Comp (DI Wet sample)

Date Collected: 03/16/23 00:00

Date Received: 03/29/23 09:45

Lab Sample ID: 570-133080-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.50		0.200	0.0200	ug/L		07/19/23 13:10	07/21/23 02:14	1
Cadmium	0.0215	J	0.0300	0.0180	ug/L		07/19/23 13:10	07/21/23 02:14	1
Chromium	0.534		0.500	0.210	ug/L		07/19/23 13:10	07/21/23 02:14	1
Copper	1.67		0.500	0.400	ug/L		07/19/23 13:10	07/21/23 02:14	1
Lead	0.543		0.0600	0.0270	ug/L		07/19/23 13:10	07/21/23 02:14	1
Nickel	2.04		0.500	0.230	ug/L		07/19/23 13:10	07/21/23 02:14	1
Selenium	0.501	B	0.300	0.0500	ug/L		07/19/23 13:10	07/21/23 02:14	1
Silver	0.0170	J	0.0200	0.00800	ug/L		07/19/23 13:10	07/21/23 02:14	1
Zinc	2.59		1.00	0.820	ug/L		07/19/23 13:10	07/21/23 02:14	1

# Client Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

**Method: CA-WET CA WET DI leach - California - Waste Extraction Test with Deionized Water Leach  
STLC DI**

**Client Sample ID: BM-DU3-Comp**  
**Date Collected: 03/16/23 12:20**  
**Date Received: 03/29/23 09:45**

**Lab Sample ID: 570-133080-3**  
**Matrix: Solid**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Leachate Generated	200	H			No Unit			06/20/23 06:30	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13



# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

## Method: 1631E - Mercury, Low Level (CVAFS)

**Lab Sample ID: MB 580-431640/48**  
**Matrix: Water**  
**Analysis Batch: 431640**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.495	0.198	ng/L			07/13/23 16:27	1

**Lab Sample ID: MB 580-431640/49**  
**Matrix: Water**  
**Analysis Batch: 431640**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.495	0.198	ng/L			07/13/23 16:31	1

**Lab Sample ID: MB 580-431640/50**  
**Matrix: Water**  
**Analysis Batch: 431640**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.495	0.198	ng/L			07/13/23 16:35	1

**Lab Sample ID: LCS 580-431640/51**  
**Matrix: Water**  
**Analysis Batch: 431640**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	5.00	4.598		ng/L		92	77 - 123

**Lab Sample ID: LCSD 580-431640/52**  
**Matrix: Water**  
**Analysis Batch: 431640**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	5.00	4.713		ng/L		94	77 - 123	2	24

**Lab Sample ID: 580-129339-A-3 MS**  
**Matrix: Water**  
**Analysis Batch: 431640**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.701		5.00	5.571		ng/L		97	71 - 125

**Lab Sample ID: 580-129339-A-3 MSD**  
**Matrix: Water**  
**Analysis Batch: 431640**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.701		5.00	5.382		ng/L		94	71 - 125	3	24

**Lab Sample ID: 580-129342-A-1 MS**  
**Matrix: Water**  
**Analysis Batch: 431640**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	4.32		5.00	8.892		ng/L		91	71 - 125

Eurofins Calscience

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

## Method: 1631E - Mercury, Low Level (CVAFS)

**Lab Sample ID: 580-129342-A-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 431640**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	4.32		5.00	8.776		ng/L		89	71 - 125	1	24

## Method: 1638 - Metals (ICP/MS)

**Lab Sample ID: MB 580-431930/1-A**  
**Matrix: Water**  
**Analysis Batch: 432262**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 431930**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.200	0.0200	ug/L		07/19/23 13:10	07/20/23 23:49	1
Cadmium	ND		0.0300	0.0180	ug/L		07/19/23 13:10	07/20/23 23:49	1
Chromium	ND		0.500	0.210	ug/L		07/19/23 13:10	07/20/23 23:49	1
Copper	ND		0.500	0.400	ug/L		07/19/23 13:10	07/20/23 23:49	1
Lead	ND		0.0600	0.0270	ug/L		07/19/23 13:10	07/20/23 23:49	1
Nickel	ND		0.500	0.230	ug/L		07/19/23 13:10	07/20/23 23:49	1
Selenium	ND		0.300	0.0500	ug/L		07/19/23 13:10	07/20/23 23:49	1
Silver	ND		0.0200	0.00800	ug/L		07/19/23 13:10	07/20/23 23:49	1
Zinc	ND		1.00	0.820	ug/L		07/19/23 13:10	07/20/23 23:49	1

**Lab Sample ID: MB 580-431930/2-A**  
**Matrix: Water**  
**Analysis Batch: 432262**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 431930**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.200	0.0200	ug/L		07/19/23 13:10	07/20/23 23:53	1
Cadmium	ND		0.0300	0.0180	ug/L		07/19/23 13:10	07/20/23 23:53	1
Chromium	ND		0.500	0.210	ug/L		07/19/23 13:10	07/20/23 23:53	1
Copper	ND		0.500	0.400	ug/L		07/19/23 13:10	07/20/23 23:53	1
Lead	ND		0.0600	0.0270	ug/L		07/19/23 13:10	07/20/23 23:53	1
Nickel	ND		0.500	0.230	ug/L		07/19/23 13:10	07/20/23 23:53	1
Selenium	0.05216	J	0.300	0.0500	ug/L		07/19/23 13:10	07/20/23 23:53	1
Silver	ND		0.0200	0.00800	ug/L		07/19/23 13:10	07/20/23 23:53	1
Zinc	ND		1.00	0.820	ug/L		07/19/23 13:10	07/20/23 23:53	1

**Lab Sample ID: LCS 580-431930/4-A**  
**Matrix: Water**  
**Analysis Batch: 432262**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 431930**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	50.0	52.43		ug/L		105	85 - 115
Cadmium	10.0	10.55		ug/L		105	85 - 115
Chromium	50.0	50.30		ug/L		101	85 - 115
Copper	50.0	52.28		ug/L		105	85 - 115
Lead	50.0	50.42		ug/L		101	85 - 115
Nickel	50.0	52.85		ug/L		106	85 - 115
Selenium	50.0	49.69		ug/L		99	85 - 115
Silver	10.0	10.32		ug/L		103	85 - 115
Zinc	50.0	52.00		ug/L		104	85 - 115

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

## Method: 1638 - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCSD 580-431930/5-A**  
**Matrix: Water**  
**Analysis Batch: 432262**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total Recoverable**  
**Prep Batch: 431930**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Arsenic	50.0	52.64		ug/L		105	85 - 115	0	20	
Cadmium	10.0	10.39		ug/L		104	85 - 115	2	20	
Chromium	50.0	51.06		ug/L		102	85 - 115	1	20	
Copper	50.0	53.34		ug/L		107	85 - 115	2	20	
Lead	50.0	51.13		ug/L		102	85 - 115	1	20	
Nickel	50.0	53.58		ug/L		107	85 - 115	1	20	
Selenium	50.0	51.49		ug/L		103	85 - 115	4	20	
Silver	10.0	10.57		ug/L		106	85 - 115	2	20	
Zinc	50.0	53.21		ug/L		106	85 - 115	2	20	

**Lab Sample ID: 580-129536-A-14-A MS**  
**Matrix: Water**  
**Analysis Batch: 432262**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total Recoverable**  
**Prep Batch: 431930**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
									Limits	RPD		
Arsenic	2.99		50.0	54.54		ug/L		103	70 - 130			
Cadmium	0.0354		10.0	10.44		ug/L		104	70 - 130			
Chromium	1.37		50.0	52.94		ug/L		103	70 - 130			
Copper	5.12		50.0	57.79		ug/L		105	70 - 130			
Lead	1.26		50.0	52.17		ug/L		102	70 - 130			
Nickel	2.09		50.0	54.60		ug/L		105	70 - 130			
Selenium	0.137	J B	50.0	52.37		ug/L		104	70 - 130			
Silver	0.0217		10.0	10.38		ug/L		104	70 - 130			
Zinc	6.13		50.0	58.30		ug/L		104	70 - 130			

**Lab Sample ID: 580-129536-A-14-B MSD**  
**Matrix: Water**  
**Analysis Batch: 432262**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total Recoverable**  
**Prep Batch: 431930**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
									Limits	RPD		
Arsenic	2.99		50.0	54.49		ug/L		103	70 - 130	0	20	
Cadmium	0.0354		10.0	10.49		ug/L		104	70 - 130	0	20	
Chromium	1.37		50.0	52.00		ug/L		101	70 - 130	2	20	
Copper	5.12		50.0	56.68		ug/L		103	70 - 130	2	20	
Lead	1.26		50.0	51.61		ug/L		101	70 - 130	1	20	
Nickel	2.09		50.0	54.38		ug/L		105	70 - 130	0	20	
Selenium	0.137	J B	50.0	53.01		ug/L		106	70 - 130	1	20	
Silver	0.0217		10.0	10.31		ug/L		103	70 - 130	1	20	
Zinc	6.13		50.0	58.97		ug/L		106	70 - 130	1	20	

**Lab Sample ID: 580-129536-B-14-A MS**  
**Matrix: Water**  
**Analysis Batch: 432262**

**Client Sample ID: Matrix Spike**  
**Prep Type: Dissolved**  
**Prep Batch: 431930**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
									Limits	RPD		
Arsenic	2.97		50.0	55.75		ug/L		106	70 - 130			
Cadmium	0.0281	J	10.0	10.80		ug/L		108	70 - 130			
Chromium	2.18		50.0	53.36		ug/L		102	70 - 130			
Copper	0.745		50.0	53.60		ug/L		106	70 - 130			

Eurofins Calscience

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

## Method: 1638 - Metals (ICP/MS) (Continued)

**Lab Sample ID: 580-129536-B-14-A MS**  
**Matrix: Water**  
**Analysis Batch: 432262**

**Client Sample ID: Matrix Spike**  
**Prep Type: Dissolved**  
**Prep Batch: 431930**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	0.109		50.0	52.22		ug/L		104	70 - 130
Nickel	1.74		50.0	55.56		ug/L		108	70 - 130
Selenium	0.168	J B	50.0	50.96		ug/L		102	70 - 130
Silver	ND		10.0	10.56		ug/L		106	70 - 130
Zinc	6.21		50.0	57.74		ug/L		103	70 - 130

**Lab Sample ID: 580-129536-B-14-B MSD**  
**Matrix: Water**  
**Analysis Batch: 432262**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Dissolved**  
**Prep Batch: 431930**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	2.97		50.0	54.59		ug/L		103	70 - 130	2	20
Cadmium	0.0281	J	10.0	10.48		ug/L		104	70 - 130	3	20
Chromium	2.18		50.0	53.94		ug/L		104	70 - 130	1	20
Copper	0.745		50.0	54.80		ug/L		108	70 - 130	2	20
Lead	0.109		50.0	51.63		ug/L		103	70 - 130	1	20
Nickel	1.74		50.0	53.89		ug/L		104	70 - 130	3	20
Selenium	0.168	J B	50.0	52.36		ug/L		104	70 - 130	3	20
Silver	ND		10.0	10.50		ug/L		105	70 - 130	1	20
Zinc	6.21		50.0	57.14		ug/L		102	70 - 130	1	20

# QC Association Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

## Metals

### Analysis Batch: 431640

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-4	BM-DU3-Comp (DI Wet sample)	Total/NA	Water	1631E	
MB 580-431640/48	Method Blank	Total/NA	Water	1631E	
MB 580-431640/49	Method Blank	Total/NA	Water	1631E	
MB 580-431640/50	Method Blank	Total/NA	Water	1631E	
LCS 580-431640/51	Lab Control Sample	Total/NA	Water	1631E	
LCSD 580-431640/52	Lab Control Sample Dup	Total/NA	Water	1631E	
580-129339-A-3 MS	Matrix Spike	Total/NA	Water	1631E	
580-129339-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	1631E	
580-129342-A-1 MS	Matrix Spike	Total/NA	Water	1631E	
580-129342-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	1631E	

### Prep Batch: 431930

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-4	BM-DU3-Comp (DI Wet sample)	Total Recoverable	Water	1638	
MB 580-431930/1-A	Method Blank	Total Recoverable	Water	1638	
MB 580-431930/2-A	Method Blank	Total Recoverable	Water	1638	
LCS 580-431930/4-A	Lab Control Sample	Total Recoverable	Water	1638	
LCSD 580-431930/5-A	Lab Control Sample Dup	Total Recoverable	Water	1638	
580-129536-A-14-A MS	Matrix Spike	Total Recoverable	Water	1638	
580-129536-A-14-B MSD	Matrix Spike Duplicate	Total Recoverable	Water	1638	
580-129536-B-14-A MS	Matrix Spike	Dissolved	Water	1638	
580-129536-B-14-B MSD	Matrix Spike Duplicate	Dissolved	Water	1638	

### Analysis Batch: 432262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-4	BM-DU3-Comp (DI Wet sample)	Total Recoverable	Water	1638	431930
MB 580-431930/1-A	Method Blank	Total Recoverable	Water	1638	431930
MB 580-431930/2-A	Method Blank	Total Recoverable	Water	1638	431930
LCS 580-431930/4-A	Lab Control Sample	Total Recoverable	Water	1638	431930
LCSD 580-431930/5-A	Lab Control Sample Dup	Total Recoverable	Water	1638	431930
580-129536-A-14-A MS	Matrix Spike	Total Recoverable	Water	1638	431930
580-129536-A-14-B MSD	Matrix Spike Duplicate	Total Recoverable	Water	1638	431930
580-129536-B-14-A MS	Matrix Spike	Dissolved	Water	1638	431930
580-129536-B-14-B MSD	Matrix Spike Duplicate	Dissolved	Water	1638	431930

## Organic Prep

### Analysis Batch: 338730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-133080-3	BM-DU3-Comp	STLC DI	Solid	CA WET DI leach	

# Lab Chronicle

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

**Client Sample ID: BM-DU3-Comp**

**Lab Sample ID: 570-133080-3**

**Date Collected: 03/16/23 12:20**

**Matrix: Solid**

**Date Received: 03/29/23 09:45**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
STLC DI	Analysis	CA WET DI leach		1	50.09 g	500 mL	338730	06/20/23 06:30	ECX6	EET CAL 4
Instrument ID: NOEQUIP										

**Client Sample ID: BM-DU3-Comp (DI Wet sample)**

**Lab Sample ID: 570-133080-4**

**Date Collected: 03/16/23 00:00**

**Matrix: Water**

**Date Received: 03/29/23 09:45**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1			431640	07/13/23 14:31	D1C	EET SEA
Instrument ID: 2600-4										
Total Recoverable	Prep	1638			25 mL	50 mL	431930	07/19/23 13:10	V1R	EET SEA
Total Recoverable	Analysis	1638		1			432262	07/21/23 02:14	V1R	EET SEA
Instrument ID: ICPMS9										

**Laboratory References:**

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

## Laboratory: Eurofins Calscience

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	Los Angeles County Sanitation Districts	10109	07-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
CA WET DI leach		Solid	Leachate Generated

## Laboratory: Eurofins Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-25
ANAB	Dept. of Defense ELAP	L2236	01-19-25
ANAB	Dept. of Energy	L2236	01-19-25
ANAB	ISO/IEC 17025	L2236	01-19-25
California	State	2954	07-07-23 *
Florida	NELAP	E87575	06-30-23 *
Louisiana (All)	NELAP	03073	07-01-24
Maine	State	WA01273	05-02-24
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-24
New York	NELAP	11662	03-31-24
Oregon	NELAP	4167	07-07-23 *
US Fish & Wildlife	US Federal Programs	A20571	06-30-23 *
USDA	US Federal Programs	525-23-4-22573	01-04-26
Washington	State	C788	07-13-23 *
Wisconsin	State	399133460	08-31-23

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Method Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

Method	Method Description	Protocol	Laboratory
1631E	Mercury, Low Level (CVAFS)	EPA	EET SEA
1638	Metals (ICP/MS)	EPA	EET SEA
CA WET DI leach	California - Waste Extraction Test with Deionized Water Leach	CA-WET	EET CAL 4
1638	Preparation, Total Recoverable Metals	EPA	EET SEA

#### Protocol References:

CA-WET = California Waste Extraction Test, from Title 22  
EPA = US Environmental Protection Agency

#### Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494  
EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

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# Sample Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkley Marina (Sediment)

Job ID: 570-133080-3

---

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
570-133080-3	BM-DU3-Comp	Solid	03/16/23 12:20	03/29/23 09:45
570-133080-4	BM-DU3-Comp (DI Wet sample)	Water	03/16/23 00:00	03/29/23 09:45

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# Eurofins Calscience CHAIN-OF-CUSTODY RECORD

<b>Client Name:</b>		Pacific EcoRisk					<b>REQUESTED ANALYSIS</b>										
<b>Client Address:</b>		2250 Cordelia Rd. Fairfield, CA 94534															
<b>Sampled By:</b>		PER															
<b>Phone:</b>		(707) 207-7760															
<b>FAX:</b>		(707) 207-7916															
<b>Project Manager:</b>		Jeff Cotsifas															
<b>Project Name:</b>		Berkeley Marina															
<b>PO Number:</b>		37289															
Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container		Arsenic - EPA 1638 (RL = 1 ug/L ww)	Cadmium - EPA 1638 (RL = 0.25 ug/L ww)	Chromium - EPA 1638 (RL = 1 ug/L ww)	Copper - EPA 1638 (RL = 1 ug/L ww)	Lead - EPA 1638 (RL = 0.25 ug/L ww)	Mercury - EPA 1631A (RL = 0.005 ug/L ww)	Nickel - EPA 1638 (RL = 5 ug/L ww)	Selenium - EPA 1638 (RL = 0.5 ug/L ww)	Silver - EPA 1638 (RL = 0.02 ug/L ww)	Zinc - EPA 1638 (RL = 10 ug/L ww)	
					Number	Type											
1	BM-DU3	BM-DU3-Comp	3/16/23	12:20	DI WET	2	glass jar	X	X	X	X	X	X	X	X	X	X
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
<b>Correct Containers:</b>		<b>Yes</b>	<b>No</b>		<b>RELINQUISHED BY</b>												
<b>Sample Temperature:</b>		<b>Ambient</b>	<b>Cold</b>	<b>Warm</b>													
<b>Sample Preservative:</b>		<b>Yes</b>	<b>No</b>														
<b>Turnaround Time:</b>		<b>STD</b>	<b>Specify:</b>														
Comments:  <b>Please use archived sample volume received on 3/29/23 (Job Number 570-133080-1).</b>  <b>Standard TAT</b>					<b>Signature</b>	<i>M. McElroy</i>	<b>Signature:</b>										
					<b>Print:</b>	M. McElroy	<b>Print:</b>										
					<b>Organization: PER</b>		<b>Organization:</b>										
					<b>DATE: 6/7/23</b>	<b>TIME: 1006</b>	<b>DATE:</b>	<b>TIME</b>									
					<b>RECEIVED BY</b>												
					<b>Signature</b>		<b>Signature:</b>										
					<b>Print:</b>		<b>Print:</b>										
					<b>Organization:</b>		<b>Organization:</b>										
<b>DATE:</b>	<b>TIME:</b>	<b>DATE:</b>	<b>TIME</b>														

\*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)







[Virendra.Patel@ET.EurofinsUS.com](mailto:Virendra.Patel@ET.EurofinsUS.com)  
[www.EurofinsUS.com/Env](http://www.EurofinsUS.com/Env)

Follow Us! [Facebook](#) | [LinkedIn](#)

**From:** Cody Phan <[Cody.Phan@et.eurofinsus.com](mailto:Cody.Phan@et.eurofinsus.com)>  
**Sent:** Wednesday, June 21, 2023 2:50 PM  
**To:** Virendra Patel <[Virendra.Patel@et.eurofinsus.com](mailto:Virendra.Patel@et.eurofinsus.com)>; Adriana Schow <[Adriana.Schow@et.eurofinsus.com](mailto:Adriana.Schow@et.eurofinsus.com)>  
**Cc:** Cuong Hoang <[Cuong.Hoang@et.eurofinsus.com](mailto:Cuong.Hoang@et.eurofinsus.com)>  
**Subject:** DI\_SA 133080-3

Hello Virendra,

For 133080-3 did the client want 100mL HCL and HN03 or one over the other.

Thanks,  
Cody Phan

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Adriana -- Carla is checking emails when she can, so let me verify with her again. But I provided the direction after checking with Carla.

Carla – Hi. Please see Adrianna's see below. Can you clarify for Adriana? Thank you!

Virendra

**From:** Adriana Schow <[Adriana.Schow@et.eurofinsus.com](mailto:Adriana.Schow@et.eurofinsus.com)>  
**Sent:** Wednesday, June 21, 2023 4:21 PM  
**To:** Virendra Patel <[Virendra.Patel@et.eurofinsus.com](mailto:Virendra.Patel@et.eurofinsus.com)>; Cody Phan <[Cody.Phan@et.eurofinsus.com](mailto:Cody.Phan@et.eurofinsus.com)>  
**Cc:** Cuong Hoang <[Cuong.Hoang@et.eurofinsus.com](mailto:Cuong.Hoang@et.eurofinsus.com)>  
**Subject:** RE: DL\_SA 133080-3

We usually submit two containers for Carla, 100ml HCl preserved, and 100ml HNO3 preserved.

But Cody can provide the following: One glass 100ml with HCL and one poly unpreserved (200 ml if possible).

Thanks!

Adriana

**From:** Virendra Patel <[Virendra.Patel@et.eurofinsus.com](mailto:Virendra.Patel@et.eurofinsus.com)>  
**Sent:** Wednesday, June 21, 2023 3:06 PM  
**To:** Cody Phan <[Cody.Phan@et.eurofinsus.com](mailto:Cody.Phan@et.eurofinsus.com)>; Adriana Schow <[Adriana.Schow@et.eurofinsus.com](mailto:Adriana.Schow@et.eurofinsus.com)>  
**Cc:** Cuong Hoang <[Cuong.Hoang@et.eurofinsus.com](mailto:Cuong.Hoang@et.eurofinsus.com)>  
**Subject:** RE: DL\_SA 133080-3

Cody –

Carla provided the following response:  
For 1631 and 1640 Dissolved + 1640 Se total: one glass 100ml with HCL and one poly unpreserved (200 ml if possible).

Does the above get you what you needed? If not, please let me know. I can reach out to Carla again.

Best Regards,

**Virendra Patel (He/His)**  
Team Lead / Project Manager



Eurofins Environment Testing Southwest, LLC  
2841 Dow Avenue, Suite 100  
Tustin, CA 92780

Phone: 714-895 5494  
Direct: 657-210-6327  
Mobile: 714-887-9901

**Jayesh Patel**

---

**From:** Cody Phan  
**Sent:** Thursday, June 22, 2023 2:39 PM  
**To:** Jayesh Patel  
**Subject:** FW: DL\_SA 133080-3

**From:** Adriana Schow <Adriana.Schow@et.eurofinsus.com>  
**Sent:** Wednesday, June 21, 2023 5:58 PM  
**To:** Carla Hollowell <Carla.Hollowell@et.eurofinsus.com>; Virendra Patel <Virendra.Patel@et.eurofinsus.com>; Cody Phan <Cody.Phan@et.eurofinsus.com>  
**Cc:** Cuong Hoang <Cuong.Hoang@et.eurofinsus.com>  
**Subject:** RE: DL\_SA 133080-3

Hi Carla and Virendra,  
  
Thanks for the response. We will give the containers to sample control tomorrow then.

Adriana

**From:** Carla Hollowell <Carla.Hollowell@et.eurofinsus.com>  
**Sent:** Wednesday, June 21, 2023 5:28 PM  
**To:** Virendra Patel <Virendra.Patel@et.eurofinsus.com>; Adriana Schow <Adriana.Schow@et.eurofinsus.com>; Cody Phan <Cody.Phan@et.eurofinsus.com>  
**Cc:** Cuong Hoang <Cuong.Hoang@et.eurofinsus.com>  
**Subject:** RE: DL\_SA 133080-3

Hi Adriana –  
Thanks for checking.  
For this one specifically we will need one HCl glass container for 1631 and one HNO3 poly for the 1638.  
((Sorry for the confusion. I assumed we were running Total and Dissolved 1640).

**Carla Lee Hollowell**  
Project Manager  
Eurofins Calscience  
  
714-895-5494 office  
714-904-1892 mobile

**From:** Virendra Patel <Virendra.Patel@et.eurofinsus.com>  
**Sent:** Wednesday, June 21, 2023 4:57 PM  
**To:** Adriana Schow <Adriana.Schow@et.eurofinsus.com>; Cody Phan <Cody.Phan@et.eurofinsus.com>; Carla Hollowell <Carla.Hollowell@et.eurofinsus.com>  
**Cc:** Cuong Hoang <Cuong.Hoang@et.eurofinsus.com>  
**Subject:** RE: DL\_SA 133080-3

# Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-133080-3

**Login Number: 133080**

**List Source: Eurofins Calscience**

**List Number: 1**

**Creator: Patel, Jayesh**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-133080-3

**Login Number: 133080**

**List Number: 4**

**Creator: Miller, Darren R**

**List Source: Eurofins Seattle**

**List Creation: 06/27/23 08:58 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





## **Appendix F**

### **Results for Ammonia and Sulfide Analyses Performed in Support of Bioassay Testing**

**Table F-1. Sediment Porewater Test Initiation Water Quality Characteristics for *Leptocheirus plumulosus* Toxicity Tests.**

Sample ID	pH	Salinity (ppt)	Total Ammonia (mg/L N)	Total Sulfide (mg/L)
Lab Control	7.14	27.4	<1.00	0.121
BM-DU1-Comp	8.05	23.9	6.56	0.160
BM-DU2-Comp	7.99	24.2	3.07	0.110
BM-DU3-Comp	8.09	25.5	6.19	0.142

**Table F-2. Sediment Porewater Test Termination Water Quality Characteristics for *Leptocheirus plumulosus* Toxicity Tests.**

Sample ID	pH	Salinity (ppt)	Total Ammonia (mg/L N)	Total Sulfide (mg/L)
Lab Control	6.93	24.5	<1.00	0.050
BM-DU1-Comp	7.71	23.5	1.54	0.070
BM-DU2-Comp	7.82	23.0	1.25	0.085
BM-DU3-Comp	7.75	25.6	1.24	0.141

**Table F-3. Sediment Overlying Water Total Ammonia Levels for *Leptocheirus plumulosus* Tests.**

Sample ID	Total Ammonia (mg/L N)	
	Test Initiation	Test Termination
Lab Control	<1.00	<1.00
BM-DU1-Comp	<1.00	<1.00
BM-DU2-Comp	<1.00	<1.00
BM-DU3-Comp	<1.00	<1.00

**Table F-4. Sediment Porewater Test Initiation Water Quality Characteristics for *Neanthes arenacoedentata* Tests.**

Sample ID	pH	Salinity (ppt)	Total Ammonia (mg/L N)	Total Sulfide (mg/L)
Lab Control	7.13	29.9	<1.00	0.085
BM-DU1-Comp	7.99	27.4	6.25	0.130
BM-DU2-Comp	7.99	28.1	3.62	0.262
BM-DU3-Comp	8.08	28.5	5.73	0.223

**Table F-5. Sediment Porewater Test Termination Water Quality Characteristics for *Neanthes arenacoedentata* Tests.**

Sample ID	pH	Salinity (ppt)	Total Ammonia (mg/L N)	Total Sulfide (mg/L)
Lab Control	7.14	32.9	<1.00	0.113
BM-DU1-Comp	7.94	29.3	1.88	0.161
BM-DU2-Comp	7.93	29.6	1.47	0.198
BM-DU3-Comp	7.95	31.9	1.58	0.359

**Table F-6. Sediment Overlying Water Total Ammonia Levels for *Neanthes arenacoedentata* Tests.**

Sample ID	Total Ammonia (mg/L N)	
	Test Initiation	Test Termination
Lab Control	<1.00	<1.00
BM-DU1-Comp	1.12	<1.00
BM-DU2-Comp	<1.00	<1.00
BM-DU3-Comp	1.13	<1.00

**Table F-7. Total Ammonia Levels for Standard Elutriate Test (SET) Samples.**

Sample ID	Total Ammonia (mg/L N)
BM-DU1-Comp	3.47
BM-DU2-Comp	2.15
BM-DU3-Comp	3.39

**Table F-8. Total Ammonia Levels for Modified Elutriate Test (MET) Samples.**

Sample ID	Total Ammonia (mg/L N)
BM-DU1-Comp	3.06
BM-DU2-Comp	1.35
BM-DU3-Comp	3.42

**Table F-9. Sediment overlying water total ammonia levels for *Macoma nasuta* bioaccumulation tests.**

Sample ID	Total Ammonia (mg/L N)				
	Day 0	Day 7	Day 14	Day 21	Day 28
Lab Control	<1.00	2.63	4.03	1.18	1.17
BM-DU3-Comp	1.31	4.44	4.39	2.44	9.35

**Table F-10. Sediment overlying water total ammonia levels for *Nereis virens* bioaccumulation tests.**

Sample ID	Total Ammonia (mg/L N)				
	Day 0	Day 7	Day 14	Day 21	Day 28
Lab Control	<1.00	<1.00	<2.00	<1.00	<1.00
BM-DU3-Comp	1.31	3.05	<2.00	<1.00	<1.00

## **Appendix G**

### **Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Berkeley Marina Sediments to the Amphipod, *Leptocheirus plumulosus***

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# CETIS Summary Report

Report Date: 10 May-23 16:29 (p 1 of 1)  
 Test Code/ID: BM\_0423LP\_C1 / 04-7014-6947

## 10 Day Marine/Estuarine Sediment Test

Pacific EcoRisk

<b>Batch ID:</b> 05-6181-4501	<b>Test Type:</b> Survival	<b>Analyst:</b> Robert Gee
<b>Start Date:</b> 03 Apr-23 08:02	<b>Protocol:</b> ASTM E1367-99 (Amphipod)	<b>Diluent:</b> Not Applicable
<b>Ending Date:</b> 13 Apr-23 08:26	<b>Species:</b> Leptocheirus plumulosus	<b>Brine:</b> Not Applicable
<b>Test Length:</b> 10d 0h	<b>Taxon:</b> Malacostraca	<b>Source:</b> Aquatic Research Organism <b>Age:</b> NA

<b>Sample ID:</b> 18-0307-8740	<b>Code:</b> BM_0423LP_C1	<b>Project:</b> 37289
<b>Sample Date:</b> 03 Apr-23 08:02	<b>Material:</b> Control Sediment	<b>Source:</b> Berkeley Marina (BERKELEY M)
<b>Receipt Date:</b> 03 Apr-23 08:02	<b>CAS (PC):</b>	<b>Station:</b> LABQA
<b>Sample Age:</b> --- (24.1 °C)	<b>Client:</b> Berkeley Marina	

Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
BM_0423LP_C1	18-0307-8740	03 Apr-23 08:02	03 Apr-23 08:02	--- (24.1 °C)	Berkeley Marina	37289
BM-DU1-Comp	10-6136-6990	15 Mar-23 09:25	16 Mar-23 08:15	18d 23h (2.3 °C)		
BM-DU2-Comp	05-7072-0263	15 Mar-23 15:05	16 Mar-23 08:15	18d 17h (2.3 °C)		
BM-DU3-Comp	02-0636-7271	16 Mar-23 12:20	17 Mar-23 08:20	17d 20h (3.1 °C)		

Sample Code	Material Type	Sample Source	Station Location	Lat/Long
BM_0423LP_C1	Control Sediment	Berkeley Marina	LABQA	
BM-DU1-Comp	Sediment	Berkeley Marina	BM-DU1-Comp	
BM-DU2-Comp	Sediment	Berkeley Marina	BM-DU2-Comp	
BM-DU3-Comp	Sediment	Berkeley Marina	BM-DU3-Comp	

Single Comparison Summary					
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
05-6481-9019	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.7778	BM-DU1-Comp passed survival rate	1
05-7060-4967	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.7778	BM-DU2-Comp passed survival rate	1
13-8214-4673	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.7778	BM-DU3-Comp passed survival rate	1

Survival Rate Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
BM_0423LP_C1	CS	5	0.990	0.962	1.020	0.950	1.000	0.010	0.022	2.26%	0.00%
BM-DU1-Comp		5	0.990	0.962	1.020	0.950	1.000	0.010	0.022	2.26%	0.00%
BM-DU2-Comp		5	0.990	0.962	1.020	0.950	1.000	0.010	0.022	2.26%	0.00%
BM-DU3-Comp		5	0.990	0.962	1.020	0.950	1.000	0.010	0.022	2.26%	0.00%

Survival Rate Detail							MD5: DCECE18A2D05D9BC48BE852A500C449C
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
BM_0423LP_C1	CS	1.000	1.000	0.950	1.000	1.000	
BM-DU1-Comp		1.000	0.950	1.000	1.000	1.000	
BM-DU2-Comp		1.000	1.000	1.000	0.950	1.000	
BM-DU3-Comp		0.950	1.000	1.000	1.000	1.000	

Survival Rate Binomials						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
BM_0423LP_C1	CS	20/20	20/20	19/20	20/20	20/20
BM-DU1-Comp		20/20	19/20	20/20	20/20	20/20
BM-DU2-Comp		20/20	20/20	20/20	19/20	20/20
BM-DU3-Comp		19/20	20/20	20/20	20/20	20/20

### 10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: Berkeley Marina Test ID#: - Date (Day 0): 4/3/23  
 Species: Leptocheirus plumulosus Project #: 37289 Organism Supplier: ARO  
 Organism Log #: 13675

Day of Test	Test Replicate	Lab Control					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	24.1	7.92	7.2	21.1	20	Date: 4/3/23
	Rep B	24.0	7.87	7.0	20.4	20	Time: 0802
	Rep C	24.2	7.88	6.9	21.7	20	WQ: HD
	Rep D	24.4	7.92	7.1	21.3	20	Scientist Initiation: RL
	Rep E	24.2	7.96	7.2	21.3	20	Scientist Confirmation: RL
Day 1	Rep A	24.4	7.88	7.4	21.1		Date: 4/4/23 Time: 1000 WQ: RL
Day 2	Rep B	23.72 24.1	7.72	7.4	21.9		Date: 4/5/23 Time: 1300 WQ: RL
Day 3	Rep C	24.2	7.83	7.0	20.7		Date: 4/6/23 Time: 0900 WQ: RL
Day 4	Rep D	24.7	7.66	7.1	21.0		Date: 4/7/23 Time: 1320 WQ: RL
Day 5	Rep E	25.3	7.95	7.2	19.8		Date: 4/8/23 Time: 0930 WQ: RL
Day 6	Rep A	24.2	7.79	7.8	21.3		Date: 4/9/23 Time: 1149 WQ: RL
Day 7	Rep B	24.6	7.84	7.4	19.9		Date: 4/10/23 Time: 0817 WQ: RL
Day 8	Rep C	24.2	7.84	7.5	21.6		Date: 4/11/23 Time: 1232 WQ: RL
Day 9	Rep D	24.1	7.85	7.6	21.8		Date: 4/12/23 Time: 1145 WQ: RL
Day 10	Rep A	25.0	7.70	7.2	21.2	20	Date: 4/13/23
	Rep B	24.8	7.68	7.3	20.9	20	Time: 0826
	Rep C	24.3	7.83	7.5	21.1	19	WQ: RL
	Rep D	24.2	7.87	7.5	21.1	20	Scientist Counts: RL
	Rep E	24.4	7.83	7.5	20.5	20	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.14	6.1	27.4	0.121	41.00	Date: 4/3/23 Time: 0910 WQ: HD
	Overlying Water					4.00	Date: 4/3/23 Time: 0900 WQ: HD
	Meter ID	PH30	RD12	EC13	DR3900	DR3800	
Day 10	Porewater	6.93	6.3	24.5	0.020	41.00	Date: 4/13/23 Time: 1039 WQ: RL
	Overlying Water					41.00	Date: 4/13/23 Time: 0918 WQ: RL
	Meter ID	PH6	RD12	EC13	DR3900	DR3800	

<b>10 Day Marine/Estuarine Sediment Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 05-6481-9019	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 10 May-23 16:21	<b>Analysis:</b> Nonparametric-Two Sample	<b>Status Level:</b> 1			
<b>Edit Date:</b> 10 May-23 16:20	<b>MD5 Hash:</b> 1E878E270FEFA75D71FD3A720CAEB40A	<b>Editor ID:</b> 006-243-107-9			

<b>Data Transform</b>	<b>Alt Hyp</b>	<b>Comparison Result</b>	<b>PMSD</b>
Angular (Corrected)	C > T	BM-DU1-Comp passed survival rate endpoint	2.76%

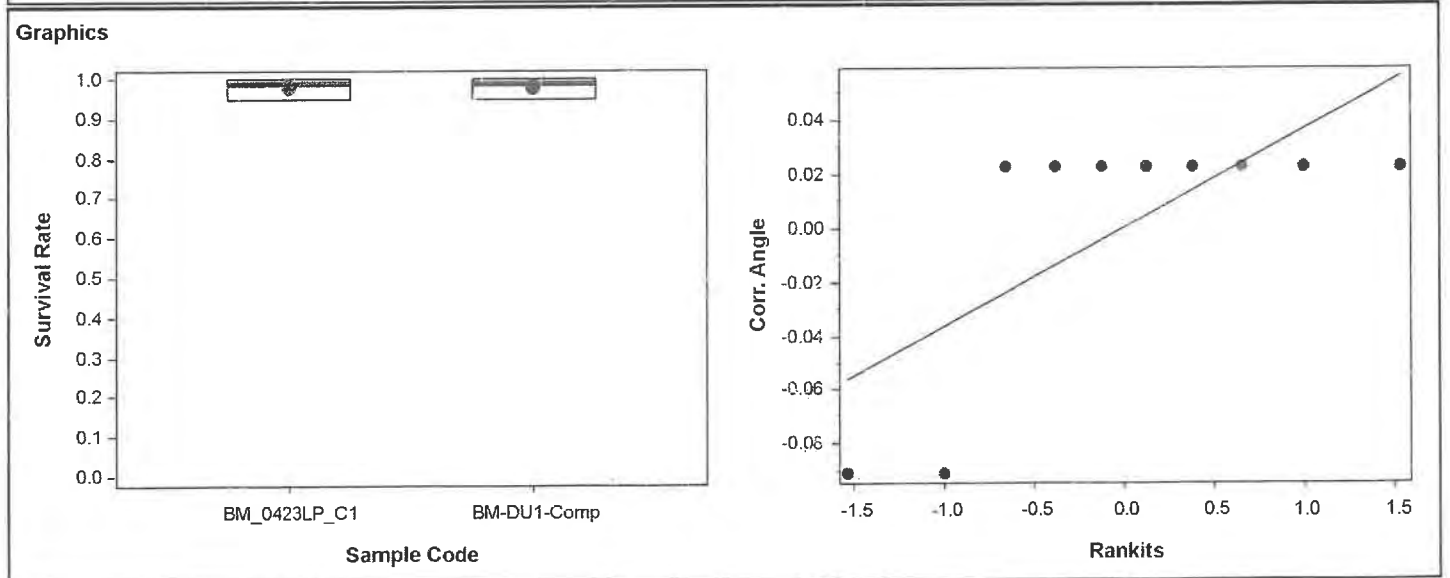
<b>Wilcoxon Rank Sum Two-Sample Test</b>									
<b>Sample I</b>	<b>vs</b>	<b>Sample II</b>	<b>df</b>	<b>Test Stat</b>	<b>Critical</b>	<b>Ties</b>	<b>P-Type</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Control Sed		BM-DU1-Comp	8	27.5	---	2	Exact	0.7778	Non-Significant Effect

<b>ANOVA Table</b>						
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Between	0	0	1	0	1.0000	Non-Significant Effect
Error	0.0206028	0.00257535	8			
Total	0.0206028		9			

<b>ANOVA Assumptions Tests</b>						
<b>Attribute</b>	<b>Test</b>	<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:1%)</b>	
Variance	Variance Ratio F Test	1	23.2	1.0000	Equal Variances	
Distribution	Shapiro-Wilk W Normality Test	0.509	0.741	<1.0E-05	Non-Normal Distribution	

<b>Survival Rate Summary</b>												
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>	
BM_0423LP_C1	CS	5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%	
BM-DU1-Comp		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%	

<b>Angular (Corrected) Transformed Summary</b>												
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>	
BM_0423LP_C1	CS	5	1.440	1.370	1.500	1.460	1.350	1.460	0.023	3.53%	0.00%	
BM-DU1-Comp		5	1.440	1.370	1.500	1.460	1.350	1.460	0.023	3.53%	0.00%	





### 10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: Berkeley Marina Test ID#: 99526 Date (Day 0): 4/3/23  
 Species: Leptocheirus plumulosus Project #: 37289 Organism Supplier: ARO  
 Organism Log #: 13679

Day of Test	Test Replicate	BM-DU1-Comp					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	24.3	8.03	7.2	20.9	20	Date: 4/3/23
	Rep B	24.2	8.01	7.1	21.8	20	Time: 0802
	Rep C	24.1	8.01	7.1	21.7	20	WQ: HD
	Rep D	24.2	8.00	6.9	21.0	20	Scientist Initiation: <i>[Signature]</i>
	Rep E	24.0	8.00	6.9	21.9	20	Scientist Confirmation: <i>[Signature]</i>
Day 1	Rep A	24.2	7.98	7.5	21.2		Date: 4/4/23 Time: 1000 WQ: <i>[Signature]</i>
Day 2	Rep B	23.4 24.0	7.88	7.5	20.8		Date: 4/5/23 Time: 1300 WQ: <i>[Signature]</i>
Day 3	Rep C	24.0	7.98	7.5	21.0		Date: 4/6/23 Time: 0902 WQ: <i>[Signature]</i>
Day 4	Rep D	24.1	7.79	7.2	21.1		Date: 4-7-23 Time: 1330 WQ: <i>[Signature]</i>
Day 5	Rep E	25.1	8.00	7.4	20.9		Date: 4/8/23 Time: 0930 WQ: <i>[Signature]</i>
Day 6	Rep A	24.2	7.95	7.6	20.9		Date: 4/9/23 Time: 1152 WQ: <i>[Signature]</i>
Day 7	Rep B	24.6	7.97	7.3	20.4		Date: 4/10/23 Time: 0818 WQ: <i>[Signature]</i>
Day 8	Rep C	24.0	7.95	7.3	21.1		Date: 4/11/23 Time: 1234 WQ: <i>[Signature]</i>
Day 9	Rep D	24.0	8.00	7.6	21.0		Date: 4/14/23 Time: 1146 WQ: <i>[Signature]</i>
Day 10	Rep A	24.5	8.06	7.4	21.0	20	Date: 4/13/23
	Rep B	24.5	8.01	7.3	21.3	19	Time: 0826
	Rep C	24.3	8.02	7.4	21.2	20	WQ: <i>[Signature]</i>
	Rep D	24.0	8.01	7.5	21.8	20	Scientist Counts: R6
	Rep E	24.3	8.07	7.4	21.1	20	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	8.05	6.2	23.9	0.160	6.56	Date: 4/3/23 Time: 0910 WQ: <i>[Signature]</i>
	Overlying Water					41.00	Date: 4/3/23 Time: 0900 WQ: <i>[Signature]</i>
	Meter ID	PH30	RD12	EC13	DR3900	DR3800	
Day 10	Porewater	7.71	6.4	23.5	0.070	1.54	Date: 4/10/23 Time: 1039 WQ: <i>[Signature]</i>
	Overlying Water					41.00	Date: 4/10/23 Time: 0948 WQ: <i>[Signature]</i>
	Meter ID	PH26	RD12	EC13	DR3900	DR3800	

<b>10 Day Marine/Estuarine Sediment Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 05-7060-4967	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 10 May-23 16:21	<b>Analysis:</b> Nonparametric-Two Sample	<b>Status Level:</b> 1			
<b>Edit Date:</b> 10 May-23 16:20	<b>MD5 Hash:</b> 88255CD64D2119A9AA43BB4CB77A2C53	<b>Editor ID:</b> 006-243-107-9			

<b>Data Transform</b>	<b>Alt Hyp</b>	<b>Comparison Result</b>	<b>PMSD</b>
Angular (Corrected)	C > T	BM-DU2-Comp passed survival rate endpoint	2.76%

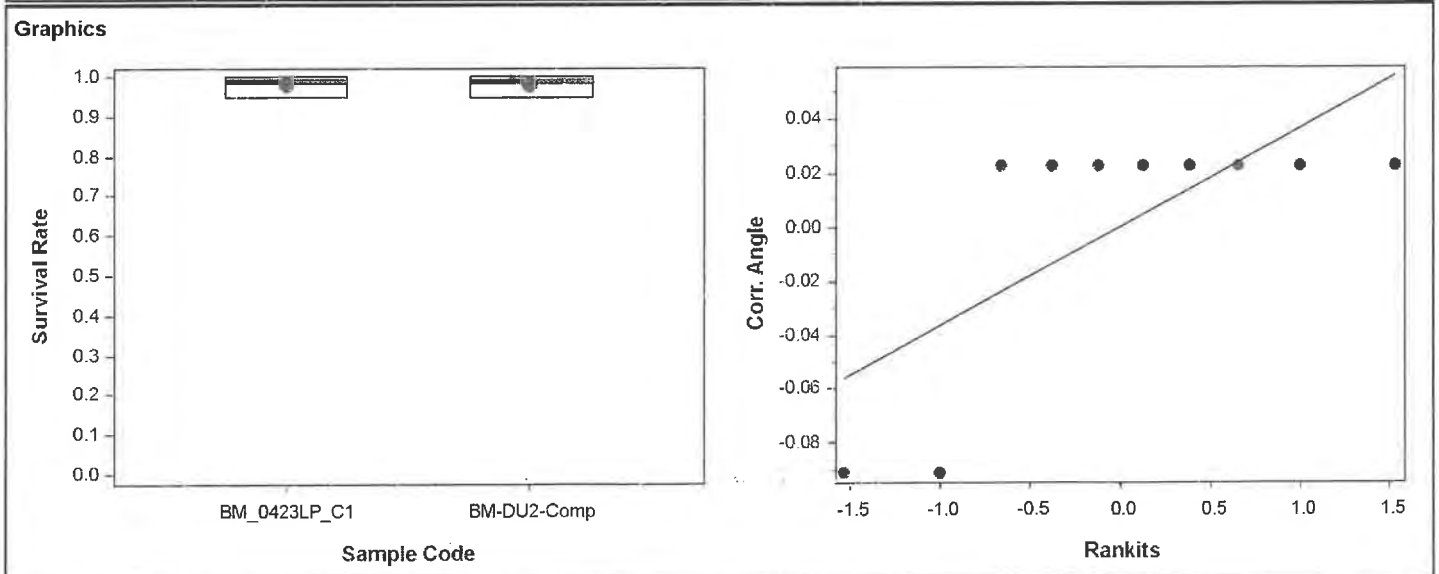
<b>Wilcoxon Rank Sum Two-Sample Test</b>									
<b>Sample I</b>	<b>vs</b>	<b>Sample II</b>	<b>df</b>	<b>Test Stat</b>	<b>Critical</b>	<b>Ties</b>	<b>P-Type</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Control Sed		BM-DU2-Comp	8	27.5	---	2	Exact	0.7778	Non-Significant Effect

<b>ANOVA Table</b>							
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>	
Between	0	0	1	0	1.0000	Non-Significant Effect	
Error	0.0206028	0.00257535	8				
Total	0.0206028		9				

<b>ANOVA Assumptions Tests</b>						
<b>Attribute</b>	<b>Test</b>	<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:1%)</b>	
Variance	Variance Ratio F Test	1	23.2	1.0000	Equal Variances	
Distribution	Shapiro-Wilk W Normality Test	0.509	0.741	<1.0E-05	Non-Normal Distribution	

<b>Survival Rate Summary</b>											
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
BM_0423LP_C1	CS	5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
BM-DU2-Comp		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%

<b>Angular (Corrected) Transformed Summary</b>											
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
BM_0423LP_C1	CS	5	1.440	1.370	1.500	1.460	1.350	1.460	0.023	3.53%	0.00%
BM-DU2-Comp		5	1.440	1.370	1.500	1.460	1.350	1.460	0.023	3.53%	0.00%



### 10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: Berkeley Marina Test ID#: 99527 Date (Day 0): 4/3/23  
 Species: Leptocheirus plumulosus Project #: 37289 Organism Supplier: ARO  
 Organism Log #: 13675

Day of Test	Test Replicate	BM-DU2-Comp					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	24.0	7.92	6.7	20.7	20	Date: 4/3/23
	Rep B	24.3	7.93	6.9	21.9	20	Time: 0802
	Rep C	24.1	7.83	6.4	21.6	20	WQ: HD
	Rep D	24.2	7.93	7.0	21.7	20	Scientist Initiation: JK
	Rep E	24.2	7.92	7.0	21.9	20	Scientist Confirmation: [Signature]
Day 1	Rep A	24.4	7.94	7.5	21.11		Date: 4/4/23 Time: 1600 WQ: [Signature]
Day 2	Rep B	<del>23.7</del> 24.3	7.84	7.5	21.4		Date: 4/5/23 Time: 1300 WQ: [Signature]
Day 3	Rep C	24.1	7.60	4.4	20.6		Date: 4/6/23 Time: 0906 WQ: [Signature]
Day 4	Rep D	23.9	7.78	7.3	20.3		Date: 4-7-23 Time: 1330 WQ: [Signature]
Day 5	Rep E	<del>24.4</del> 24.2	7.98	7.2	21.9		Date: 4-8-23 Time: 1330 WQ: [Signature]
Day 6	Rep A	24.5	7.93	7.4	21.3		Date: 4/9/23 Time: 1156 WQ: [Signature]
Day 7	Rep B	24.7	7.78	5.9	21.5		Date: 4/10/23 Time: 0820 WQ: [Signature]
Day 8	Rep C	24.0	7.93	7.3	21.0		Date: 4/11/23 Time: 1236 WQ: [Signature]
Day 9	Rep D	24.3	8.15	7.7	21.4		Date: 4/12/23 Time: 1258 WQ: [Signature]
Day 10	Rep A	24.6	8.13	7.4	21.5	20	Date: 4/12/23
	Rep B	24.5	8.10	7.5	20.5	20	Time: 0848
	Rep C	24.1	8.08	7.6	20.7	20	WQ: [Signature]
	Rep D	24.0	8.07	7.6	20.8	19	Scientist Counts: R.6
	Rep E	24.1	8.12	7.6	21.3	20	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.99	6.2	24.2	0.110	3.07	Date: 4/3/23 Time: 0910 WQ: [Signature]
	Overlying Water					4.00	Date: 4/3/23 Time: 0900 WQ: [Signature]
	Meter ID	PH30	RD12	EC13	DP3900	DP3800	
Day 10	Porewater	7.82	6.3	23.0	0.085	1.25	Date: 4/12/23 Time: 1034 WQ: [Signature]
	Overlying Water					1.00	Date: 4/12/23 Time: 0948 WQ: [Signature]
	Meter ID	PH26	RD12	EC13	DP3700	DP3800	

<b>10 Day Marine/Estuarine Sediment Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 13-8214-4673	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 10 May-23 16:21	<b>Analysis:</b> Nonparametric-Two Sample	<b>Status Level:</b> 1			
<b>Edit Date:</b> 10 May-23 16:20	<b>MD5 Hash:</b> E682E87FDA758D89B4E715EA730B5B33	<b>Editor ID:</b> 006-243-107-9			

<b>Data Transform</b>	<b>Alt Hyp</b>	<b>Comparison Result</b>	<b>PMSD</b>
Angular (Corrected)	C > T	BM-DU3-Comp passed survival rate endpoint	2.76%

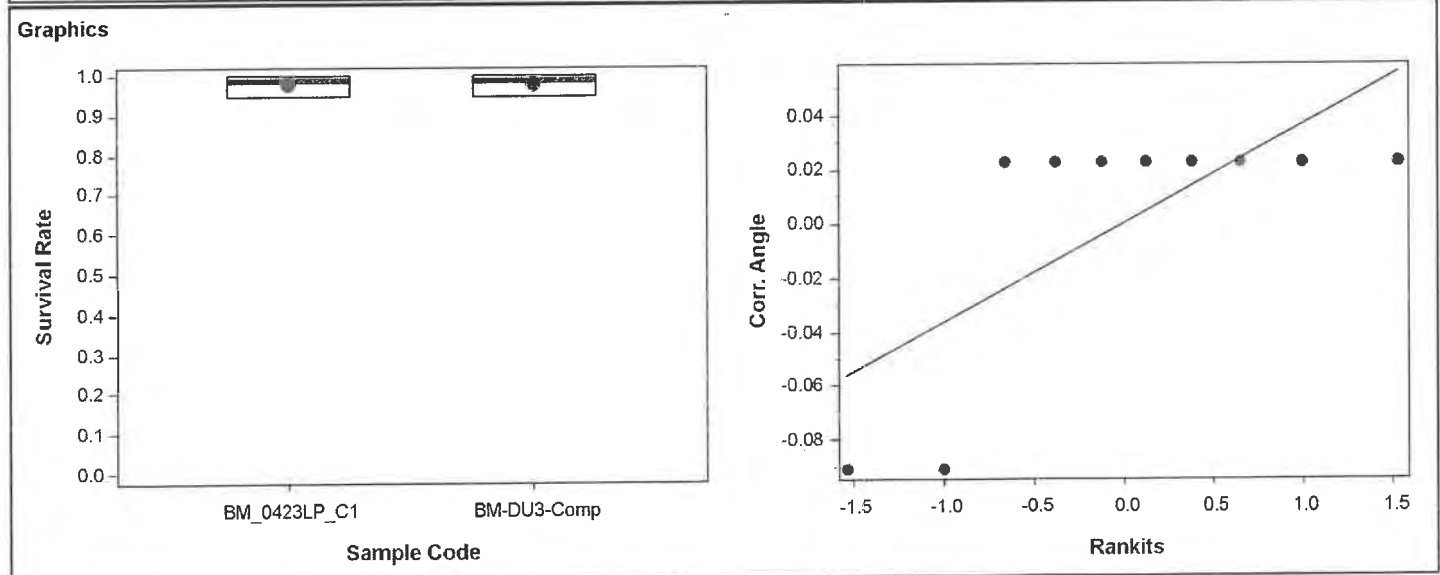
<b>Wilcoxon Rank Sum Two-Sample Test</b>									
<b>Sample I</b>	<b>vs</b>	<b>Sample II</b>	<b>df</b>	<b>Test Stat</b>	<b>Critical</b>	<b>Ties</b>	<b>P-Type</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Control Sed		BM-DU3-Comp	8	27.5	---	2	Exact	0.7778	Non-Significant Effect

<b>ANOVA Table</b>						
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Between	0	0	1	0	1.0000	Non-Significant Effect
Error	0.0206028	0.00257535	8			
Total	0.0206028		9			

<b>ANOVA Assumptions Tests</b>						
<b>Attribute</b>	<b>Test</b>	<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:1%)</b>	
Variance	Variance Ratio F Test	1	23.2	1.0000	Equal Variances	
Distribution	Shapiro-Wilk W Normality Test	0.509	0.741	<1.0E-05	Non-Normal Distribution	

<b>Survival Rate Summary</b>												
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>	
BM_0423LP_C1	CS	5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%	
BM-DU3-Comp		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%	

<b>Angular (Corrected) Transformed Summary</b>												
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>	
BM_0423LP_C1	CS	5	1.440	1.370	1.500	1.460	1.350	1.460	0.023	3.53%	0.00%	
BM-DU3-Comp		5	1.440	1.370	1.500	1.460	1.350	1.460	0.023	3.53%	0.00%	



### 10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: Berkeley Marina Test ID#: 99528 Date (Day 0): 4/3/23  
 Species: Leptocheirus plumulosus Project #: 37289 Organism Supplier: ARO  
 Organism Log #: 13075

Day of Test	Test Replicate	BM-DU3-Comp					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	24.2	8.04	7.2	20.7	20	Date: 4/3/23
	Rep B	24.0	7.97	7.0	21.1	20	Time: 0802
	Rep C	24.0	8.02	6.9	20.7	20	WQ: HD
	Rep D	24.1	7.99	6.9	21.9	20	Scientist Initiation: JR
	Rep E	24.0	7.98	6.9	21.3	20	Scientist Confirmation: JSL
Day 1	Rep A	24.0	7.94	7.6	21.6		Date: 4/4/23 Time: 1000 WQ: AEL
Day 2	Rep B	23.9 24.0	7.80	7.5	21.2		Date: 4/5/23 Time: 1300 WQ: MHL
Day 3	Rep C	24.2	7.87	7.4	21.7		Date: 4/6/23 Time: 0907 WQ: JR
Day 4	Rep D	24.4	7.78	7.2	21.4		Date: 4-7-23 Time: 1340 WQ: MHL
Day 5	Rep E	25.4	8.00	7.0	21.1		Date: 4/8/23 Time: 0940 WQ: AEL
Day 6	Rep A	24.4	8.01	7.5	21.2		Date: 4/9/23 Time: 1158 WQ: JR
Day 7	Rep B	24.7	8.15	7.5	20.7		Date: 4/10/23 Time: 0824 WQ: JR
Day 8	Rep C	24.4	8.22	7.3	21.6		Date: 4/11/23 Time: 1238 WQ: JR
Day 9	Rep D	24.3	8.24	5.4	21.7		Date: 4/12/23 Time: 1211 WQ: JR
Day 10	Rep A	24.8	8.43	7.4	21.3	19	Date: 4/13/23 Time: 0845
	Rep B	24.6	8.32	7.5	21.7	20	Time: 0845
	Rep C	24.3	8.40	7.5	20.8	20	WQ: JR
	Rep D	24.3	8.35	7.5	20.6	20	Scientist Counts: R6
	Rep E	24.4	8.44	7.5	20.9	20	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	8.09	6.8	25.5	0.42	6.19	Date: 4/3/23 Time: 0910 WQ: HD
	Overlying Water					41.00	Date: 4/3/23 Time: 0900 WQ: HD
	Meter ID	PH30	RD12	EC13	DR3900	DR3800	
Day 10	Porewater	7.75	6.3	25.6	0.141	1.24	Date: 4/13/23 Time: 1039 WQ: JR
	Overlying Water					41.00	Date: 4/13/23 Time: 0948 WQ: JR
	Meter ID	PH26	RD12	EC13	DR3900	DR3800	

## **Appendix H**

### **Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Amphipod, *Leptocheirus plumulosus***

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# CETIS Summary Report

Report Date: 02 May-23 11:53 (p 1 of 1)  
 Test Code/ID: 100064 / 06-3608-4162

## Acute Amphipod Survival Test

Pacific EcoRisk

<b>Batch ID:</b> 03-3939-4362	<b>Test Type:</b> Survival (96h)	<b>Analyst:</b> Mike McElroy
<b>Start Date:</b> 03 Apr-23 13:35	<b>Protocol:</b> EPA/600/R-94/025 (1994)	<b>Diluent:</b> Diluted Seawater
<b>Ending Date:</b> 07 Apr-23 14:15	<b>Species:</b> Leptocheirus plumulosus	<b>Brine:</b> Not Applicable
<b>Test Length:</b> 4d 1h	<b>Taxon:</b> Malacostraca	<b>Source:</b> Aquatic Research Organism Age: NA

<b>Sample ID:</b> 06-5968-9794	<b>Code:</b> KCI	<b>Project:</b> 37567
<b>Sample Date:</b> 03 Apr-23 13:35	<b>Material:</b> Potassium chloride	<b>Source:</b> Reference Toxicant
<b>Receipt Date:</b> 03 Apr-23 13:35	<b>CAS (PC):</b>	<b>Station:</b> In House
<b>Sample Age:</b> --- (25 °C)	<b>Client:</b> Reference Toxicant	

## Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	S
10-0772-2431	96h Survival Rate	Dunnett Multiple Comparison Test	1	2	1.414	33.3%	1

## Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	g/L	95% LCL	95% UCL	S
20-7483-0278	96h Survival Rate	Spearman-Kärber	EC50	1.47	1.37	1.57	1

## 96h Survival Rate Summary

Conc-g/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	2	0.900	0.900	0.900	0.900	0.900	0.000	0.000	0.00%	0.00%
0.25		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%
0.5		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%
1		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%
2		2	0.050	-0.585	0.685	0.000	0.100	0.050	0.071	141.42%	94.44%
4		2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	---	100.00%

## 96h Survival Rate Detail

MD5: E2B69AEF1370BE9806B19B9A2AC69DD1

Conc-g/L	Code	Rep 1	Rep 2
0	LW	0.900	0.900
0.25		1.000	1.000
0.5		1.000	1.000
1		1.000	1.000
2		0.100	0.000
4		0.000	0.000

## 96h Survival Rate Binomials

Conc-g/L	Code	Rep 1	Rep 2
0	LW	9/10	9/10
0.25		10/10	10/10
0.5		20/20	10/10
1		1/1	10/10
2		1/10	0/10
4		0/10	0/10





# 96 Hour *Leptocheirus plumulosus* Marine Reference Toxicant Test Data

Client: Reference Toxicant  
 Test Material: Potassium Chloride  
 Test ID#: 100064-10064 Project # 37567

Organism Log #: 13675  
 Control/Diluent: 20 ppt Seawater (+/-1 ppt)  
 Test Date: 4/3/23  
 Randomization: 2.C.5

Treatment (g KCl /L)	Temp (°C)	pH		D.O. (mg/L)		Salinity (ppt)		# Live Organisms		SIGN-OFF
		new	old	new	old	new	old	A	B	
Control	25.0	7.82		7.6		20.9		10	10	Date: 4/3/23
0.25	24.8	7.87		7.6		21.3		10	10	Test Solution Prep: <i>JK</i>
0.5	25.2	7.88		7.6		21.5		10	10	New WQ: <i>MD</i>
1	25.2	7.88		7.8		21.8		10	10	Initiation Time: 1335
2	24.8	7.86		8.1		22.6		10	10	Initiation Signoff: <i>JK</i>
4	24.8	7.80		9.0		24.1		10	10	RT Stock Batch #: 42
Meter ID:	86A	PH30		RD12		EC13				+1hr Inspection: <i>JK</i>
Control	24.3		7.62		9.2	21.5				Date: 4/4/23
0.25	24.7		7.78		8.7	21.7				Count Time: 0912
0.5	24.1		7.83		8.6	21.8				Count Signoff: <i>ES</i>
1	24.7		7.83		8.6	22.2				Old WQ: <i>ACL</i>
2	24.7		7.83		8.7	23.1				PM Inspection: <i>ES</i>
4	24.8		7.80		8.6	24.5				
Meter ID:	86A	PH30		RD10		243				
Control	24.1		7.76		7.4	22.4				Date: 4/5/23
0.25	24.8		7.75		7.1	22.3				Count Time: 1045
0.5	25.0		7.74		7.2	22.6				Count Signoff: <i>JK</i>
1	25.0		7.75		7.3	23.3				Old WQ: <i>DO</i>
2	24.8		7.76		7.4	23.5				PM Inspection: <i>JK</i>
4	24.8		7.75		7.6	25.3				
Meter ID:	146A	PH21		RD12		EC15				
Control	24.6		7.74		7.6	23.2				Date: 4/6/23
0.25	24.7		7.76		7.5	22.9				Count Time: 1550
0.5	24.7		7.76		7.6	23.1				Count Signoff: <i>JK</i>
1	24.8		7.77		7.7	23.0				Old WQ: <i>CA</i>
2	24.8		7.76		7.7	23.9				PM Inspection: <i>RL</i>
4	24.9		7.75		7.8	25.6				
Meter ID:	144A	PH24		RD15		EC16				
Control	24.0		7.72		8.07	23.7		9	9	Date: 4/7/23
0.25	24.6		7.74		7.4	23.0		10	10	Termination Time: 1418
0.5	24.5		7.70		7.4	23.8		20	10	Termination Signoff: <i>RL</i>
1	24.4		7.72		7.4	25.1		1	10	Old WQ: <i>MT</i>
2	24.5		7.74		7.4	24.8		1	0	
4	24.6		7.74		7.5	26.0		0	0	
Meter ID:	136A	PH24		RD15		EC16				

## **Appendix I**

### **Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Berkeley Marina Sediments to the Polychaete, *Neanthes arenaceodentata***

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# CETIS Summary Report

Report Date: 10 May-23 16:28 (p 1 of 1)  
 Test Code/ID: BM\_0423NA\_C1 / 00-9064-0474

## 10 Day Marine/Estuarine Sediment Test

Pacific EcoRisk

<b>Batch ID:</b> 06-9002-9107	<b>Test Type:</b> Survival	<b>Analyst:</b> Robert Gee
<b>Start Date:</b> 04 Apr-23 09:15	<b>Protocol:</b> ASTM E1611-00 (2007)	<b>Diluent:</b> Not Applicable
<b>Ending Date:</b> 14 Apr-23 09:35	<b>Species:</b> Neanthes arenaceodentata	<b>Brine:</b> Not Applicable
<b>Test Length:</b> 10d 0h	<b>Taxon:</b> Polychaeta	<b>Source:</b> Aquatic Tox. Sup. <b>Age:</b> NA

<b>Sample ID:</b> 08-2702-6507	<b>Code:</b> BM_0423NA_C1	<b>Project:</b> 37289
<b>Sample Date:</b> 04 Apr-23 09:15	<b>Material:</b> Control Sediment	<b>Source:</b> Berkeley Marina (BERKELEY M)
<b>Receipt Date:</b> 04 Apr-23 09:15	<b>CAS (PC):</b>	<b>Station:</b> LABQA
<b>Sample Age:</b> --- (20.1 °C)	<b>Client:</b> Berkeley Marina	

Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
BM_0423NA_C1	08-2702-6507	04 Apr-23 09:15	04 Apr-23 09:15	--- (20.1 °C)	Berkeley Marina	37289
BM-DU1-Comp	10-6136-6990	15 Mar-23 09:25	16 Mar-23 08:15	20d (2.3 °C)		
BM-DU2-Comp	05-7072-0263	15 Mar-23 15:05	16 Mar-23 08:15	19d 18h (2.3 °C)		
BM-DU3-Comp	02-0636-7271	16 Mar-23 12:20	17 Mar-23 08:20	18d 21h (3.1 °C)		

Sample Code	Material Type	Sample Source	Station Location	Lat/Long
BM_0423NA_C1	Control Sediment	Berkeley Marina	LABQA	
BM-DU1-Comp	Sediment	Berkeley Marina	BM-DU1-Comp	
BM-DU2-Comp	Sediment	Berkeley Marina	BM-DU2-Comp	
BM-DU3-Comp	Sediment	Berkeley Marina	BM-DU3-Comp	

### Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
07-2430-7820	Survival Rate	Unequal Variance t Two-Sample Test	0.0889	BM-DU1-Comp passed survival rate	1
00-4149-2138	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	BM-DU2-Comp passed survival rate	1
19-9320-5078	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.5000	BM-DU3-Comp passed survival rate	1

### Survival Rate Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
BM_0423NA_C1	CS	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
BM-DU1-Comp		5	0.960	0.892	1.030	0.900	1.000	0.025	0.055	5.71%	4.00%
BM-DU2-Comp		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
BM-DU3-Comp		5	0.980	0.924	1.040	0.900	1.000	0.020	0.045	4.56%	2.00%

### Survival Rate Detail

MD5: 1374B796EC3D6949D7D9C748F4D93F28

Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
BM_0423NA_C1	CS	1.000	1.000	1.000	1.000	1.000
BM-DU1-Comp		0.900	1.000	0.900	1.000	1.000
BM-DU2-Comp		1.000	1.000	1.000	1.000	1.000
BM-DU3-Comp		1.000	1.000	0.900	1.000	1.000

### Survival Rate Binomials

Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
BM_0423NA_C1	CS	10/10	10/10	10/10	10/10	10/10
BM-DU1-Comp		9/10	10/10	9/10	10/10	10/10
BM-DU2-Comp		10/10	10/10	10/10	10/10	10/10
BM-DU3-Comp		10/10	10/10	9/10	10/10	10/10

### 10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: Berkeley Marina Test ID#: - Date (Day 0): 4/13/23  
 Species: Neanthes arenaceodentata Project #: 37289 Organism Supplier: ATS  
13675

Day of Test	Test Replicate	Lab Control					Sign-Off
		Sample ID:	Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	
Day 0	Rep A	20.1	7.95	7.3	29.4	10	Date: 4/14/23
	Rep B	20.3	7.98	7.2	29.4	10	Time: 0915
	Rep C	20.3	7.96	7.1	29.4	10	WQ: AEL
	Rep D	20.2	7.98	7.2	29.4	10	Scientist Initiation: ESS
	Rep E	20.4	8.00	7.3	30.1	10	Scientist Confirmation: K
Day 1	Rep A	20.3	7.81	7.8	30.0		Date: 4/5/23 Time: 1130 WQ: MH
Day 2	Rep B	20.5	7.71	7.2	30.6		Date: 4/6/23 Time: 0851 WQ: SH
Day 3	Rep C	20.5	7.64	7.6	30.6		Date: 4-7-23 Time: 1350 WQ: MH
Day 4	Rep D	20.3	7.85	7.6	31.8		Date: 4/8/23 Time: 915 WQ: AEL
Day 5	Rep E	19.6	7.89	8.2	30.5		Date: 4/9/23 Time: 1209 WQ: ME
Day 6	Rep A	19.6	7.96	7.4	29.9		Date: 4/10/23 Time: 0829 WQ: AEL
Day 7	Rep B	19.3	7.89	7.0	31.6		Date: 4/11/23 Time: 1230 WQ: SH
Day 8	Rep C	19.4	7.86	8.1	31.3		Date: 4/12/23 Time: 1216 WQ: SH
Day 9	Rep D	19.8	7.88	7.6	31.2		Date: 4/13/23 Time: 900 WQ: SH
Day 10	Rep A	19.3	7.78	7.2	30.6	10	Date: 4/14/23
	Rep B	19.4	7.83	7.3	31.3	10	Time: 0935
	Rep C	19.6	7.79	7.2	30.9	10	WQ: CD
	Rep D	19.6	7.79	7.2	31.2	10	Scientist Counts: CD
	Rep E	19.7	7.80	7.3	31.1	10	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.13	6.5	29.9	0.085	<1.00	Date: 4/14/23 Time: 1020 WQ: AEL
	Overlying Water					<1.00	Date: 4/14/23 Time: 1050 WQ: AEL
	Meter ID	PH26	R012	EC15	DR3900	DR3800	
Day 10	Porewater	7.14	6.5	32.9	0.113	<1.00	Date: 4/14/23 Time: 0959 WQ: CD 0920
	Overlying Water					<1.00	Date: 4/14/23 Time: 0920 WQ: CD
	Meter ID	PH29	R012	EC15	DR3900	DR3800	

**CETIS Analytical Report**

Report Date: 10 May-23 16:28 (p 1 of 3)  
 Test Code/ID: BM\_0423NA\_C1 / 00-9064-0474

<b>10 Day Marine/Estuarine Sediment Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 07-2430-7820	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 10 May-23 16:28	<b>Analysis:</b> Parametric-Two Sample	<b>Status Level:</b> 1			
<b>Edit Date:</b> 10 May-23 16:27	<b>MD5 Hash:</b> E41DD9722E2E7B9ED7AA56408E9F34C4	<b>Editor ID:</b> 006-243-107-9			

<b>Data Transform</b>	<b>Alt Hyp</b>	<b>Comparison Result</b>	<b>PMSD</b>
Angular (Corrected)	C > T	BM-DU1-Comp passed survival rate endpoint	5.83%

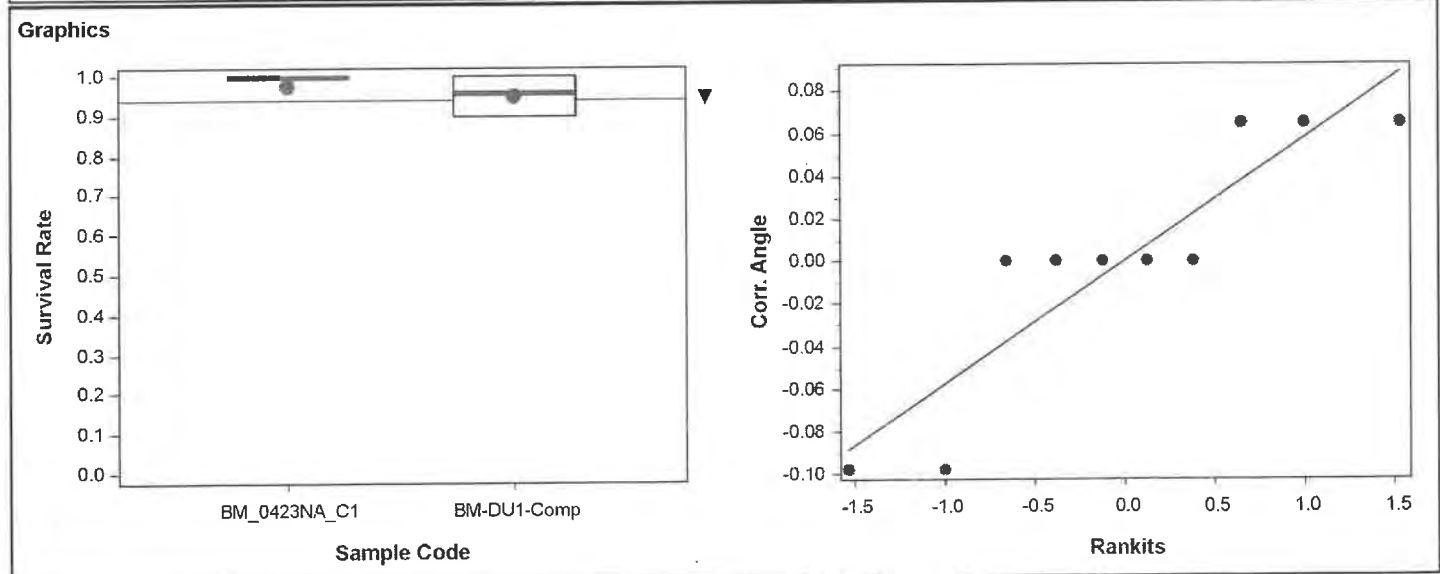
<b>Unequal Variance t Two-Sample Test</b>									
<b>Sample I</b>	<b>vs</b>	<b>Sample II</b>	<b>df</b>	<b>Test Stat</b>	<b>Critical</b>	<b>MSD</b>	<b>P-Type</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Control Sed		BM-DU1-Comp	4	1.63	2.13	0.0851	CDF	0.0889	Non-Significant Effect

<b>ANOVA Table</b>						
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Between	0.0106237	0.0106237	1	2.67	0.1411	Non-Significant Effect
Error	0.0318712	0.0039839	8			
Total	0.0424949		9			

<b>ANOVA Assumptions Tests</b>						
<b>Attribute</b>	<b>Test</b>	<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:1%)</b>	
Variance	Variance Ratio F Test				Indeterminate	
Distribution	Shapiro-Wilk W Normality Test	0.814	0.741	0.0215	Normal Distribution	

<b>Survival Rate Summary</b>												
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>	
BM_0423NA_C1	CS	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%	
BM-DU1-Comp		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	4.00%	

<b>Angular (Corrected) Transformed Summary</b>												
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>	
BM_0423NA_C1	CS	5	1.410	1.410	1.410	1.410	1.410	1.410	0.000	0.00%	0.00%	
BM-DU1-Comp		5	1.350	1.240	1.460	1.410	1.250	1.410	0.040	6.63%	4.62%	



### 10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: Berkeley Marina Test ID#: 99529 Date (Day 0): 4/4/23  
 Species: Neanthes arenaceodentata Project #: 37289 Organism Supplier: ATS  
13673

Day of Test	Test Replicate	Sample ID: <b>BM-DU1-Comp</b>					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	20.0	8.03	7.3	29.0	10	Date: 4/4/23 Time: 0915 WQ: AEL Scientist Initiation: [Signature] Scientist Confirmation: [Signature]
	Rep B	20.1	8.06	7.3	28.9	10	
	Rep C	20.4	7.92	7.1	29.1	10	
	Rep D	20.2	7.99	7.0	28.9	10	
	Rep E	20.1	7.95	7.1	29.7	10	
Day 1	Rep A	20.1	7.88	7.6	29.6		Date: 4/5/23 Time: 1140 WQ: [Signature]
Day 2	Rep B	20.5	7.89	7.3	30.0		Date: 4/6/23 Time: 0853 WQ: [Signature]
Day 3	Rep C	20.4	7.70	7.4	30.7		Date: 4-7-23 Time: 1410 WQ: [Signature]
Day 4	Rep D	20.1	7.96	7.5	28.0		Date: 4/8/23 Time: 915 WQ: [Signature]
Day 5	Rep E	19.3	7.89	7.9	31.0		Date: 4/9/23 Time: 1213 WQ: [Signature]
Day 6	Rep A	19.6	8.03	7.6	31.0		Date: 4/10/23 Time: 0830 WQ: [Signature]
Day 7	Rep B	19.1	8.00	7.6	30.7		Date: 4/11/23 Time: 1230 WQ: [Signature]
Day 8	Rep C	19.1	7.96	8.0	30.2		Date: 4/12/23 Time: 1217 WQ: [Signature]
Day 9	Rep D	19.7	8.02	7.6	28.1		Date: 4/13/23 Time: 902 WQ: [Signature]
Day 10	Rep A	19.6	7.92	7.3	31.4	9	Date: 4/14/23 Time: 0935 WQ: CD Scientist Counts: CD
	Rep B	19.5	7.92	7.2	31.5	10	
	Rep C	19.5	7.85	7.1	31.3	9	
	Rep D	19.5	7.91	7.1	28.2	10	
	Rep E	19.6	7.87	7.2	30.4	10	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.99	6.0	27.4	0.130	6.25	Date: 4/4/23 Time: 1030 WQ: AEL
	Overlying Water					1.12	Date: 4/4/23 Time: 1030 WQ: AEL
	Meter ID	PH26	RD12	EC15	DR3900	DR3800	
Day 10	Porewater	7.94	6.7	29.3	0.161	1.88	Date: 4/14/23 Time: 0959 WQ: CD
	Overlying Water					1.06	Date: 4/14/23 Time: 0920 WQ: CD
	Meter ID	PH29	RD12	EC15	DR3900	DR3800	

**CETIS Analytical Report**

Report Date: 10 May-23 16:28 (p 2 of 3)  
 Test Code/ID: BM\_0423NA\_C1 / 00-9064-0474

<b>10 Day Marine/Estuarine Sediment Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 00-4149-2138	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 10 May-23 16:28	<b>Analysis:</b> Nonparametric-Two Sample	<b>Status Level:</b> 1			
<b>Edit Date:</b> 10 May-23 16:27	<b>MD5 Hash:</b> A52021A954ED68027F1BEE9A830DECF0	<b>Editor ID:</b> 006-243-107-9			

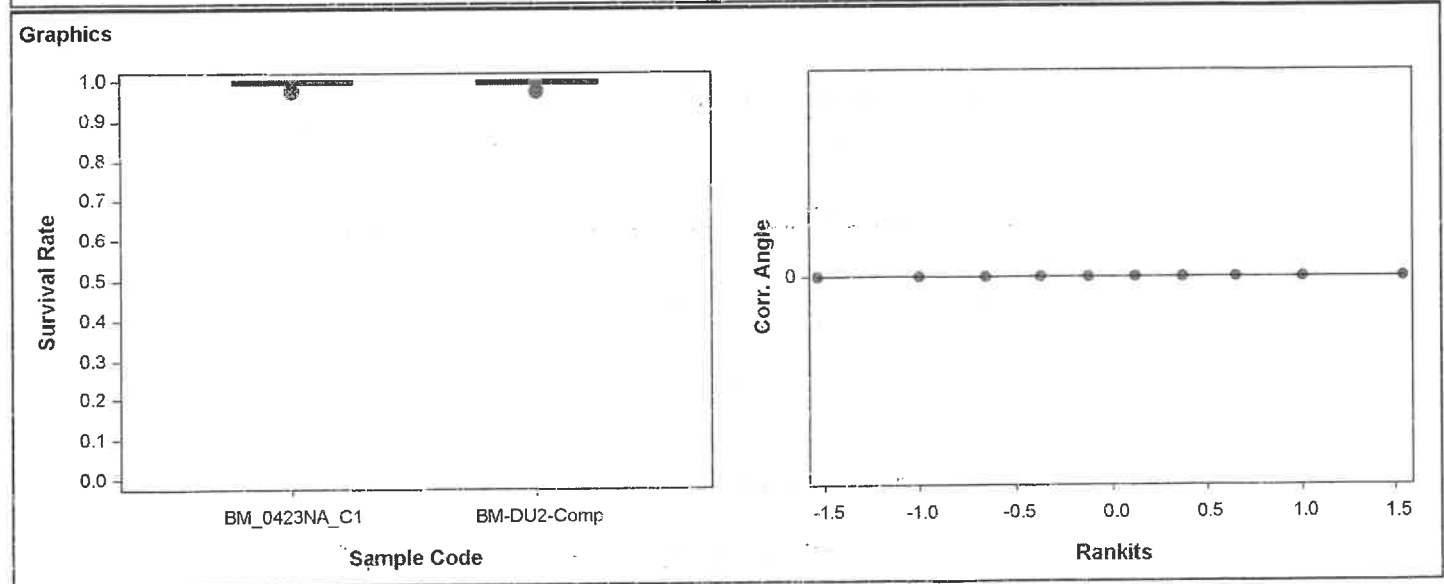
<b>Wilcoxon Rank Sum Two-Sample Test</b>										
<b>Sample I</b>	<b>vs</b>	<b>Sample II</b>	<b>df</b>	<b>Test Stat</b>	<b>Critical</b>	<b>Ties</b>	<b>P-Type</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>	
Control Sed		BM-DU2-Comp	8	27.5	--	1	Exact	1.0000	Non-Significant Effect	

<b>ANOVA Table</b>							
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>	
Between	0	0	1			Indeterminate	
Error	0	0	8				
Total	0		9				

<b>ANOVA Assumptions Tests</b>						
<b>Attribute</b>	<b>Test</b>	<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:1%)</b>	
Variance	Variance Ratio F Test				Indeterminate	
Distribution	Shapiro-Wilk W Normality Test				Indeterminate	

<b>Survival Rate Summary</b>											
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
BM_0423NA_C1	CS	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
BM-DU2-Comp		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

<b>Angular (Corrected) Transformed Summary</b>											
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
BM_0423NA_C1	CS	5	1.410	1.410	1.410	1.410	1.410	1.410	0.000	0.00%	0.00%
BM-DU2-Comp		5	1.410	1.410	1.410	1.410	1.410	1.410	0.000	0.00%	0.00%



### 10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: Berkeley Marina Test ID#: 99530 Date (Day 0): 4/4/23  
 Species: Neanthes arenaceodentata Project #: 37289 Organism Supplier: ATS  
0673

Day of Test	Test Replicate	Sample ID: <b>BM-DU2-Comp</b>					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	20.2	7.92	7.0	29.0	10	Date: 4/4/23 Time: 0915 WQ: AEL Scientist Initiation: EJS Scientist Confirmation: JK
	Rep B	20.1	7.98	7.1	29.2	10	
	Rep C	20.1	7.98	7.1	29.0	10	
	Rep D	20.3	7.93	7.1	29.0	10	
	Rep E	20.0	7.99	7.1	29.7	10	
Day 1	Rep A	20.1	7.82	7.6	29.8		Date: 4/5/23 Time: 1140 WQ: MH
Day 2	Rep B	20.4	7.90	7.3	30.2		Date: 4/6/23 Time: 0853 WQ: EJS
Day 3	Rep C	20.3	7.70	7.6	30.7		Date: 4-7-23 Time: 1410 WQ: MH
Day 4	Rep D	20.1	7.89	7.3	30.0		Date: 4/8/23 Time: 0915 WQ: AEL
Day 5	Rep E	19.1	7.91	7.7	30.9		Date: 4/9/23 Time: 1214 WQ: EJS
Day 6	Rep A	19.6	7.97	7.4	31.1		Date: 4/10/23 Time: 0832 WQ: EJS
Day 7	Rep B	19.2	7.99	7.5	31.5		Date: 4/11/23 Time: 1230 WQ: EJS
Day 8	Rep C	19.1	7.99	8.0	30.4		Date: 4/12/23 Time: 1219 WQ: EJS
Day 9	Rep D	19.6	7.95	7.6	30.6		Date: 4/13/23 Time: 0903 WQ: EJS
Day 10	Rep A	19.5	7.85	7.1	30.9	10	Date: 4/14/23 Time: 0935 WQ: CD Scientist Counts: CD
	Rep B	19.5	7.89	7.1	31.7	10	
	Rep C	19.5	7.88	7.2	31.8	10	
	Rep D	19.5	7.84	7.2	30.7	10	
	Rep E	19.5	7.89	7.1	31.7	10	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.99	5.9	28.1	0.262	3.62	Date: 4/4/23 Time: 1030 WQ: AEL
	Overlying Water					<1.00	Date: 4/4/23 Time: 1630 WQ: AEL
	Meter ID	PH26	RD2	EJS	DR3900	DR3900	
Day 10	Porewater	7.93	6.5	29.6	0.198	1.47	Date: 4/14/23 Time: 0959 WQ: CD
	Overlying Water					<1.00	Date: 4/14/23 Time: 0920 WQ: CD
	Meter ID	PH29	RD12	EJS	DR3900	DR3800	



<b>10 Day Marine/Estuarine Sediment Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 19-9320-5078	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 10 May-23 16:28	<b>Analysis:</b> Nonparametric-Two Sample	<b>Status Level:</b> 1			
<b>Edit Date:</b> 10 May-23 16:27	<b>MD5 Hash:</b> A263151716FD97920951563380D87C35	<b>Editor ID:</b> 006-243-107-9			

<b>Data Transform</b>	<b>Alt Hyp</b>	<b>Comparison Result</b>	<b>PMSD</b>
Angular (Corrected)	C > T	BM-DU3-Comp passed survival rate endpoint	4.74%

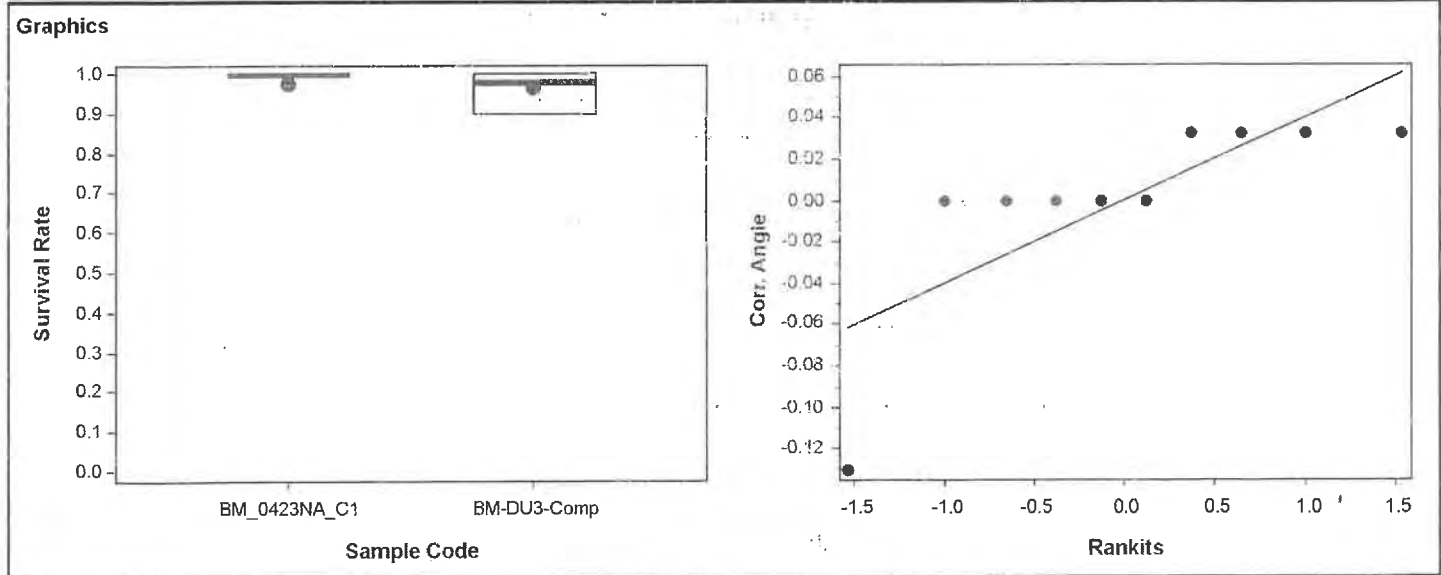
<b>Wilcoxon Rank Sum Two-Sample Test</b>									
<b>Sample I</b>	<b>vs</b>	<b>Sample II</b>	<b>df</b>	<b>Test Stat</b>	<b>Critical</b>	<b>Ties</b>	<b>P-Type</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Control Sed		BM-DU3-Comp	8	25	---	1	Exact	0.5000	Non-Significant Effect

<b>ANOVA Table</b>							
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>	
Between	0.00265593	0.00265593	1	1	0.3466	Non-Significant Effect	
Error	0.0212475	0.00265593	8				
Total	0.0239034		9				

<b>ANOVA Assumptions Tests</b>						
<b>Attribute</b>	<b>Test</b>	<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:1%)</b>	
Variance	Variance Ratio F Test				Indeterminate	
Distribution	Shapiro-Wilk W Normality Test	0.625	0.741	0.0001	Non-Normal Distribution	

<b>Survival Rate Summary</b>												
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>	
BM_0423NA_C1	CS	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%	
BM-DU3-Comp		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	2.00%	

<b>Angular (Corrected) Transformed Summary</b>												
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>	
BM_0423NA_C1	CS	5	1.410	1.410	1.410	1.410	1.410	1.410	0.000	0.00%	0.00%	
BM-DU3-Comp		5	1.380	1.290	1.470	1.410	1.250	1.410	0.033	5.28%	2.31%	



### 10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: Berkeley Marina Test ID#: 99531 Date (Day 0): 4/4/23  
 Species: Neanthes arenaceodentata Project #: 37289 Organism Supplier: ATS  
13673

Day of Test	Test Replicate	Sample ID: <b>BM-DU3-Comp</b>					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	20.0	8.03	7.3	29.4	10	Date: 4/4/23
	Rep B	20.1	8.01	7.3	29.1	10	Time: 0915
	Rep C	20.2	8.00	7.3	29.2	10	WQ: AEL
	Rep D	20.3	8.00	7.3	29.1	10	Scientist Initiation: ETS
	Rep E	20.2	8.01	7.5	29.7	10	Scientist Confirmation: K
Day 1	Rep A	20.0	7.89	7.5	30.0		Date: 4/5/23 Time: 1138 WQ: MH
Day 2	Rep B	20.3	7.90	7.3	30.3		Date: 4/6/23 Time: 0854 WQ: PE
Day 3	Rep C	20.4	7.70	7.6	30.3		Date: 4-7-23 Time: 1410 WQ: MH
Day 4	Rep D	20.1	7.94	7.5	28.2		Date: 4/8/23 Time: 0915 WQ: AEL
Day 5	Rep E	19.1	7.93	7.7	30.7		Date: 4/9/23 Time: 1215 WQ: ZD
Day 6	Rep A	19.7	8.06	7.7	29.4		Date: 4/10/23 Time: 0833 WQ: PE
Day 7	Rep B	19.5	7.98	7.5	31.6		Date: 4/12/23 Time: 1230 WQ: SA
Day 8	Rep C	19.6	7.99	8.0	30.7		Date: 4/12/23 Time: 1221 WQ: SA
Day 9	Rep D	19.5	8.01	7.5	29.8		Date: 4/13/23 Time: 0904 WQ: ZD
Day 10	Rep A	19.4	7.97	7.2	29.6	10	Date: 4/14/23
	Rep B	19.4	7.96	7.2	31.6	10	Time: 0935
	Rep C	19.4	7.94	7.0	31.5	9	WQ: CD
	Rep D	19.3	7.97	7.0	29.6	10	Scientist Counts: CD
	Rep E	19.3	7.93	6.9	31.9	10	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	8.08	9.8	28.5	0.223	5.72	Date: 4/4/23 Time: 1030 WQ: AEL
	Overlying Water					1.13	Date: 4/4/23 Time: 1630 WQ: AEL
	Meter ID	PH26	R02	EC15	DR3900	DR3800	
Day 10	Porewater	7.95	6.6	31.9	0.359	1.58	Date: 4/14/23 Time: 0959 WQ: CD
	Overlying Water					41.00	Date: 4/14/23 Time: 0920 WQ: CD
	Meter ID	PH29	R012	EC15	DR3900	DR3800	

## **Appendix J**

### **Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Polychaete, *Neanthes arenaceodentata***





# 96 Hour *Neanthes arenaceodentata* Marine Reference Toxicant Test Data

Client: Reference Toxicant Organism Log #: 13673  
 Test Material: Potassium Chloride Control/Diluent: 30 ppt Seawater (+/-2 ppt)  
 Test ID#: 100065 Project # 37568 Test Date: 4/4/23  
 Randomization: 26.4

Treatment (g KCl / L)	Temp (°C)	pH		D.O. (mg/L)		Salinity (ppt)		# Live Organisms		SIGN-OFF
		new	old	new	old	new	old	A	B	
Control	20.0	7.98		7.8		28.9		5	5	Date: 4/4/23
0.5	20.0	7.96		7.8		29.8		5	5	Test Solution Prep: ESS
1	20.0	7.93		7.9		30.2		5	5	New WQ: RB
2	20.0	7.86		7.9		31.2		5	5	Initiation Time: 1400
3	20.1	7.91		8.1		33.1		5	5	Initiation Signoff: ESS
4	20.0	7.90		8.3		34.3		5	5	RT Stock Batch #: 7172
Meter ID:	86A	PH30		RD10		EC13				
Control	21.0		7.63		6.4	30.0		5	5	Date: 4/5/23
0.5	21.0		7.67		6.5	30.3		5	5	Count Time: 1107
1	20.9		7.64		6.4	30.8		5	5	Count Signoff: M
2	20.9		7.63		6.6	31.6		5	5	Old WQ: RB
3	20.9		7.68		6.5	33.5		0	0	
4	20.9		7.73		6.9	34.6		0	0	
Meter ID:	146A		PH27		RD12	EC15				
Control	20.9		7.78		6.9	29.2		5	5	Date: 4/6/23
0.5	20.9		7.79		7.0	29.9		5	5	Count Time: 1530
1	20.9		7.80		6.9	30.4		5	5	Count Signoff: JK
2	20.9		7.77		6.8	31.5		5	5	Old WQ: RB
3	-		-		-	-		-	-	
4	-		-		-	-		-	-	
Meter ID:	147A		PH30		RD14	EC15				
Control	20.9		7.82		7.4	29.4		5	5	Date: 4/7/23
0.5	21.0		7.82		7.4	30.1		5	5	Count Time: 1502
1	20.7		7.79		7.4	30.5		5	5	Count Signoff: RB
2	20.8		7.75		7.3	31.6		4	5	Old WQ: MH
3	-		-		-	-		-	-	
4	-		-		-	-		-	-	
Meter ID:	136A		PH24		RD15	EC16				
Control	20.0		7.85		7.5	29.0		5	5	Date: 4/18/23
0.5	20.1		7.87		7.4	29.9		5	5	Termination Time: 1344
1	20.2		7.87		7.4	30.4		5	5	Termination Signoff: RB
2	20.2		7.82		7.3	31.4		3	1	Old WQ: RB
3	-		-		-	-		-	-	
4	-		-		-	-		-	-	
Meter ID:	136A		PH30		RD14	EC15				

## **Appendix K**

### **Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Berkeley Marina Sediment Elutriates to Bivalve (*Mytilus galloprovincialis*) Embryos**

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# CETIS Summary Report

Report Date: 29 May-23 11:34 (p 1 of 2)  
 Test Code/ID: 99532 / 16-9863-0665

## Bivalve Larval Survival and Development Test

Pacific EcoRisk

<b>Batch ID:</b> 03-0688-5268	<b>Test Type:</b> Development-Survival	<b>Analyst:</b> Mike McElroy
<b>Start Date:</b> 06 Apr-23 15:25	<b>Protocol:</b> ASTM E724-98 (Bivalve)	<b>Diluent:</b> Filtered Seawater
<b>Ending Date:</b> 08 Apr-23 14:31	<b>Species:</b> Mytilus galloprovincialis	<b>Brine:</b> Crystal Sea
<b>Test Length:</b> 47h	<b>Taxon:</b>	<b>Source:</b> M Rep <span style="float: right;"><b>Age:</b> NA</span>

<b>Sample ID:</b> 17-1460-4748	<b>Code:</b> Elutriate	<b>Project:</b> 37289
<b>Sample Date:</b> 15 Mar-23 09:25	<b>Material:</b> Elutriate	<b>Source:</b> Berkeley Marina (BERKELEY M)
<b>Receipt Date:</b> 16 Mar-23 08:15	<b>CAS (PC):</b>	<b>Station:</b> BM-DU1-Comp
<b>Sample Age:</b> 22d 6h (2.3 °C)	<b>Client:</b> Berkeley Marina	

### Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
13-7629-3986	Development Rate	Equal Variance t Two-Sample Test	0.2131	Site Water passed development rate	1
14-9592-4067	Development Rate	Equal Variance t Two-Sample Test	0.8737	Salt Control passed development rate	1
10-7316-3825	Survival Rate	Equal Variance t Two-Sample Test	0.0896	Salt Control passed survival rate	1
17-1521-9442	Survival Rate	Equal Variance t Two-Sample Test	0.0714	Site Water passed survival rate	1

### Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
10-8006-0076	Development Rate	Dunnett Multiple Comparison Test	100	>100	---	1.66%	1	1
05-5226-5848	Survival Rate	Dunnett Multiple Comparison Test	100	>100	---	14.4%	1	1

### Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
01-2865-8796	Development Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
08-7686-0326	Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	

### Development Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.966	0.958	0.973	0.960	0.973	0.003	0.006	0.59%	0.00%
0	SA	5	0.972	0.959	0.986	0.961	0.990	0.005	0.011	1.09%	-0.70%
0	SW	5	0.963	0.958	0.968	0.960	0.970	0.002	0.004	0.42%	0.27%
1		5	0.964	0.957	0.972	0.956	0.973	0.003	0.006	0.64%	0.13%
10		5	0.966	0.948	0.985	0.943	0.980	0.007	0.015	1.54%	-0.09%
50		5	0.979	0.971	0.987	0.972	0.989	0.003	0.006	0.64%	-1.42%
100		5	0.960	0.943	0.976	0.941	0.975	0.006	0.013	1.40%	0.60%

### Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.828	0.749	0.907	0.736	0.901	0.028	0.064	7.67%	0.00%
0	SA	5	0.783	0.741	0.824	0.731	0.818	0.015	0.034	4.30%	5.49%
0	SW	5	0.775	0.725	0.825	0.711	0.806	0.018	0.040	5.20%	6.39%
1		5	0.712	0.532	0.891	0.471	0.839	0.065	0.144	20.28%	14.07%
10		5	0.808	0.701	0.916	0.678	0.901	0.039	0.087	10.70%	2.40%
50		5	0.809	0.747	0.871	0.736	0.872	0.022	0.050	6.16%	2.30%
100		5	0.709	0.640	0.779	0.653	0.769	0.025	0.056	7.89%	14.37%



**CETIS Summary Report**

Report Date: 29 May-23 11:34 (p 2 of 2)  
 Test Code/ID: 99532 / 16-9863-0665

**Bivalve Larval Survival and Development Test**

Pacific EcoRisk

Development Rate Detail							MD5: 50E2140ACCECF71EBFE574EAABF96E2F
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	LW	0.973	0.971	0.960	0.961	0.963	
0	SA	0.969	0.961	0.973	0.969	0.990	
0	SW	0.961	0.961	0.963	0.970	0.960	
1		0.973	0.965	0.962	0.956	0.966	
10		0.943	0.968	0.978	0.964	0.980	
50		0.980	0.989	0.975	0.980	0.972	
100		0.975	0.969	0.954	0.941	0.960	

Survival Rate Detail							MD5: A48926C0BB3570B4FD6FF795B174C72C
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	LW	0.736	0.822	0.901	0.810	0.872	
0	SA	0.773	0.818	0.731	0.785	0.806	
0	SW	0.806	0.711	0.760	0.798	0.802	
1		0.731	0.806	0.839	0.711	0.471	
10		0.678	0.868	0.901	0.781	0.814	
50		0.831	0.736	0.810	0.798	0.872	
100		0.653	0.769	0.764	0.657	0.702	

Development Rate Binomials						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	178/183	199/205	218/227	196/204	211/219
0	SA	187/193	198/206	177/182	190/196	195/197
0	SW	195/203	172/179	184/191	193/199	194/202
1		177/182	195/202	203/211	172/180	114/118
10		164/174	210/217	218/223	189/196	197/201
50		201/205	178/180	196/201	193/197	211/217
100		158/162	186/192	185/194	159/169	170/177

Survival Rate Binomials						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	178/242	199/242	218/242	196/242	211/242
0	SA	187/242	198/242	177/242	190/242	195/242
0	SW	195/242	172/242	184/242	193/242	194/242
1		177/242	195/242	203/242	172/242	114/242
10		164/242	210/242	218/242	189/242	197/242
50		201/242	178/242	196/242	193/242	211/242
100		158/242	186/242	185/242	159/242	170/242



**CETIS Analytical Report**

Report Date: 29 May-23 11:32 (p 1 of 8)  
 Test Code/ID: 99532 / 16-9863-0665

<b>Bivalve Larval Survival and Development Test</b>				<b>Pacific EcoRisk</b>			
<b>Analysis ID:</b> 10-8006-0076	<b>Endpoint:</b> Development Rate	<b>CETIS Version:</b> CETISv2.1.3					
<b>Analyzed:</b> 17 Apr-23 11:20	<b>Analysis:</b> Parametric-Control vs Treatments	<b>Status Level:</b> 1					
<b>Edit Date:</b> 17 Apr-23 11:17	<b>MD5 Hash:</b> B23B2256D3A6F63F169602F0FEFB9A39	<b>Editor ID:</b> 006-243-107-9					

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	100	>100	---	1	0.016	1.66%

<b>Dunnett Multiple Comparison Test</b>									
Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Lab Water Control		1	8	0.197	2.3	0.0404	CDF	0.7302	Non-Significant Effect
		10	8	-0.291	2.3	0.0404	CDF	0.8806	Non-Significant Effect
		50	8	-2.47	2.3	0.0404	CDF	0.9997	Non-Significant Effect
		100	8	0.781	2.3	0.0404	CDF	0.4769	Non-Significant Effect

<b>ANOVA Table</b>						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0094794	0.0023699	4	3.09	0.0392	Significant Effect
Error	0.0153383	0.0007669	20			
Total	0.0248177		24			

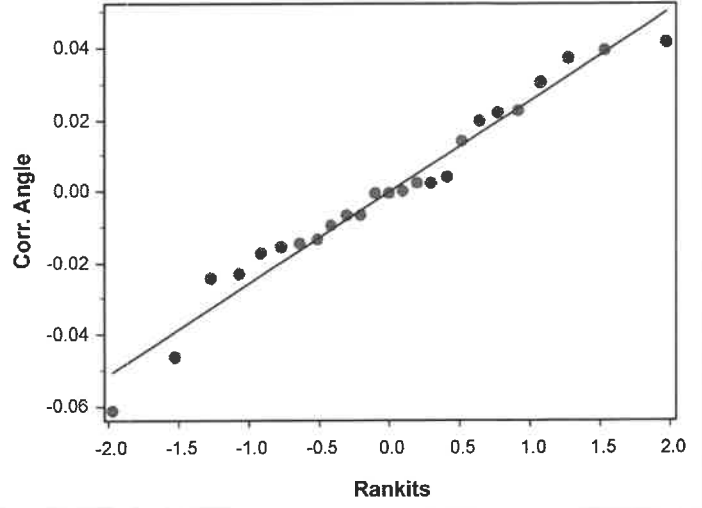
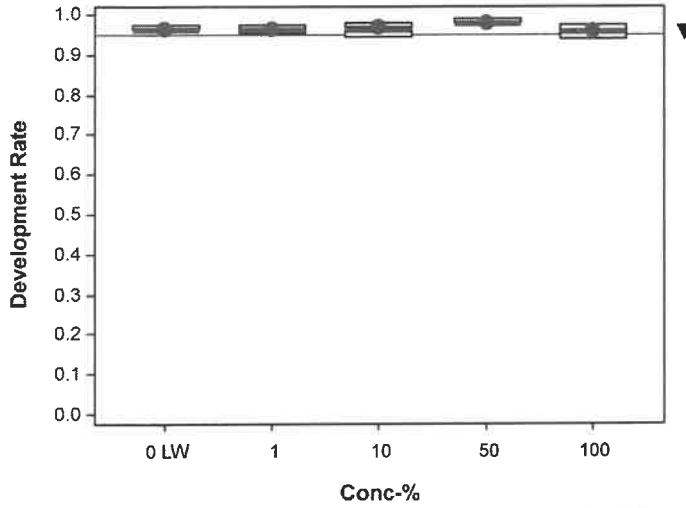
<b>ANOVA Assumptions Tests</b>						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variance	Bartlett Equality of Variance Test	4.69	13.3	0.3207	Equal Variances	
Distribution	Shapiro-Wilk W Normality Test	0.966	0.888	0.5472	Normal Distribution	

<b>Development Rate Summary</b>											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.966	0.958	0.973	0.963	0.960	0.973	0.003	0.59%	0.00%
1		5	0.964	0.957	0.972	0.965	0.956	0.973	0.003	0.64%	0.13%
10		5	0.966	0.948	0.985	0.968	0.943	0.980	0.007	1.54%	-0.09%
50		5	0.979	0.971	0.987	0.980	0.972	0.989	0.003	0.64%	-1.42%
100		5	0.960	0.943	0.976	0.960	0.941	0.975	0.006	1.40%	0.60%

<b>Angular (Corrected) Transformed Summary</b>											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.380	1.360	1.400	1.380	1.370	1.400	0.007	1.15%	0.00%
1		5	1.380	1.360	1.400	1.380	1.360	1.400	0.007	1.21%	0.25%
10		5	1.390	1.340	1.440	1.390	1.330	1.430	0.018	2.86%	-0.37%
50		5	1.430	1.400	1.460	1.430	1.400	1.470	0.011	1.65%	-3.12%
100		5	1.370	1.330	1.410	1.370	1.330	1.410	0.015	2.49%	0.99%

<b>Bivalve Larval Survival and Development Test</b>			<b>Pacific EcoRisk</b>
<b>Analysis ID:</b> 10-8006-0076	<b>Endpoint:</b> Development Rate	<b>CETIS Version:</b> CETISv2.1.3	
<b>Analyzed:</b> 17 Apr-23 11:20	<b>Analysis:</b> Parametric-Control vs Treatments	<b>Status Level:</b> 1	
<b>Edit Date:</b> 17 Apr-23 11:17	<b>MD5 Hash:</b> B23B2256D3A6F63F169602F0FEFB9A39	<b>Editor ID:</b> 006-243-107-9	

Graphics



**CETIS Analytical Report**

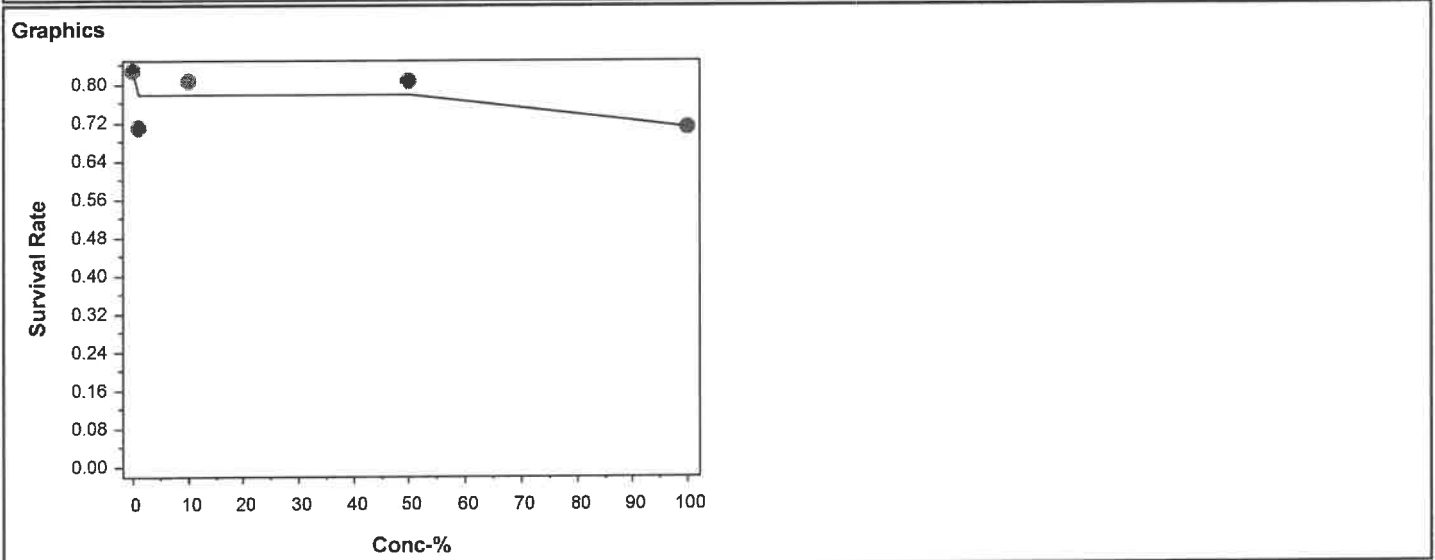
Report Date: 29 May-23 11:33 (p 2 of 2)  
 Test Code/ID: 99532 / 16-9863-0665

<b>Bivalve Larval Survival and Development Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 08-7686-0326	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 17 Apr-23 11:20	<b>Analysis:</b> Linear Interpolation (ICPIN)	<b>Status Level:</b> 1			
<b>Edit Date:</b> 17 Apr-23 11:17	<b>MD5 Hash:</b> B093514940372DBB3556657FE32D8185	<b>Editor ID:</b> 006-243-107-9			

<b>Linear Interpolation Options</b>					
<b>X Transform</b>	<b>Y Transform</b>	<b>Seed</b>	<b>Resamples</b>	<b>Exp 95% CL</b>	<b>Method</b>
Linear	Linear	810925	200	Yes	Two-Point Interpolation

<b>Point Estimates</b>						
<b>Level</b>	<b>%</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Tox Units</b>	<b>95% LCL</b>	<b>95% UCL</b>
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

<b>Survival Rate Summary</b>			<b>Calculated Variate(A/B)</b>						<b>Isotonic Variate</b>		
<b>Conc-%</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>CV%</b>	<b>%Effect</b>	<b>ΣA/ΣB</b>	<b>Mean</b>	<b>%Effect</b>
0	LW	5	0.828	0.822	0.736	0.901	7.67%	0.00%	1002/1210	0.828	0.00%
1		5	0.712	0.731	0.471	0.839	20.28%	14.07%	861/1210	0.776	6.28%
10		5	0.808	0.814	0.678	0.901	10.70%	2.40%	978/1210	0.776	6.28%
50		5	0.809	0.810	0.736	0.872	6.16%	2.30%	979/1210	0.776	6.28%
100		5	0.709	0.702	0.653	0.769	7.89%	14.37%	858/1210	0.709	14.37%



**CETIS Analytical Report**

Report Date: 29 May-23 11:33 (p 5 of 8)  
 Test Code/ID: 99532 / 16-9863-0665

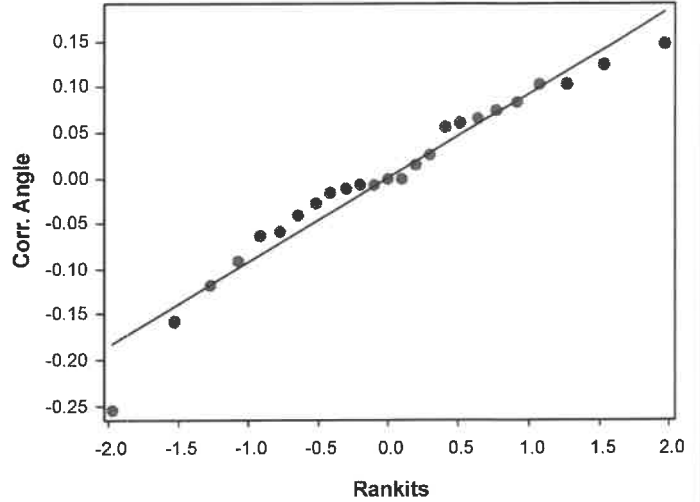
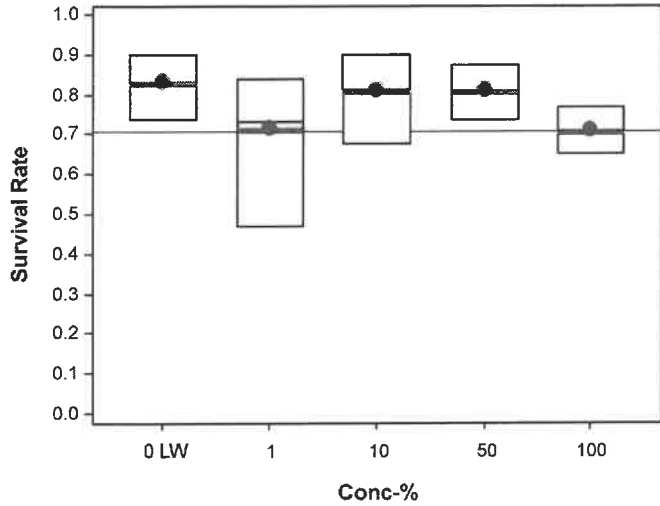
Bivalve Larval Survival and Development Test										Pacific EcoRisk	
Analysis ID: 05-5226-5848		Endpoint: Survival Rate			CETIS Version: CETISv2.1.3						
Analyzed: 17 Apr-23 11:20		Analysis: Parametric-Control vs Treatments			Status Level: 1						
Edit Date: 17 Apr-23 11:17		MD5 Hash: B093514940372DBB3556657FE32D8185			Editor ID: 006-243-107-9						
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD				
Angular (Corrected)	C > T	100	>100	---	1	0.119	14.42%				
Dunnett Multiple Comparison Test											
Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)		
Lab Water Control		1	8	2.14	2.3	0.148	CDF	0.0688	Non-Significant Effect		
		10	8	0.363	2.3	0.148	CDF	0.6629	Non-Significant Effect		
		50	8	0.423	2.3	0.148	CDF	0.6374	Non-Significant Effect		
		100	8	2.27	2.3	0.148	CDF	0.0529	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0952335	0.0238084	4	2.32	0.0919	Non-Significant Effect					
Error	0.205039	0.010252	20								
Total	0.300273		24								
ANOVA Assumptions Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variance	Bartlett Equality of Variance Test	4.59	13.3	0.3317	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.955	0.888	0.3188	Normal Distribution						
Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.828	0.749	0.907	0.822	0.736	0.901	0.028	7.67%	0.00%
1		5	0.712	0.532	0.891	0.731	0.471	0.839	0.065	20.28%	14.07%
10		5	0.808	0.701	0.916	0.814	0.678	0.901	0.039	10.70%	2.40%
50		5	0.809	0.747	0.871	0.810	0.736	0.872	0.022	6.16%	2.30%
100		5	0.709	0.640	0.779	0.702	0.653	0.769	0.025	7.89%	14.37%
Angular (Corrected) Transformed Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.150	1.040	1.250	1.140	1.030	1.250	0.038	7.34%	0.00%
1		5	1.010	0.818	1.210	1.030	0.756	1.160	0.070	15.42%	11.91%
10		5	1.120	0.989	1.260	1.120	0.967	1.250	0.049	9.72%	2.03%
50		5	1.120	1.040	1.200	1.120	1.030	1.200	0.028	5.66%	2.36%
100		5	1.000	0.926	1.080	0.994	0.941	1.070	0.028	6.19%	12.69%

Bivalve Larval Survival and Development Test

Pacific EcoRisk

Analysis ID: 05-5226-5848      Endpoint: Survival Rate      CETIS Version: CETISv2.1.3  
Analyzed: 17 Apr-23 11:20      Analysis: Parametric-Control vs Treatments      Status Level: 1  
Edit Date: 17 Apr-23 11:17      MD5 Hash: B093514940372DBB3556657FE32D8185      Editor ID: 006-243-107-9

Graphics



***Mytilus sp. Development Toxicity Test Count Data***

Client: Berkeley Marina  
 Test Material: BM-DU1-Comp SET  
 Test ID #: 99532  
 Project #: 37289  
 Sample Salinity adjusted with: Cykel Sea

Test Start Date: 4/6/23  
 Test End Date: 4/8/23  
 Enumeration Date: 4/11/23  
 Investigator/Scope ID: JF / Invert #2  
 Inoculation Count: 242

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development	Percent Survival
Control	A	178	5	183		
	B	199	6	205		
	C	218	9	227		
	D	196	8	204		
	E	211	8	219		
1.0%	A	177	5	182		
	B	195	7	202		
	C	203	8	211		
	D	172	8	180		
	E	114	4	118		
10%	A	164	10	174		
	B	210	7	217		
	C	218	5	223		
	D	189	7	196		
	E	197	4	201		
50%	A	201	4	205		
	B	178	2	180		
	C	196	5	201		
	D	193	4	197		
	E	211	6	217		
100%	A	158	4	162		
	B	186	6	192		
	C	185	9	194		
	D	159	10	169		
	E	170	7	177		



### Mytilus sp. Development Toxicity Test Water Chemistry Data

Client: Berkeley Marina  
 Test Material: BM-DU1-Comp SET  
 Test ID#: 99532 Project #: 37289  
 Test Date: 4/6/23 Randomization: -  
 Sample Salinity adjusted with: Coyote Sea

Organism Log#: 13678 Age: N/A  
 Organism Supplier: MPer  
 Control/Diluent: 30 ppt FSW

Day 0						
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	NH <sub>3</sub>	Signoff
Control	15.5	7.86	8.9	29.0		Test Solution Prep: <u>NR</u>
1.0%	15.7	7.89	9.0	28.8		New WQ: <u>MH</u>
10%	15.9	7.94	9.0	29.0		Innoculation Date: <u>4/6/23</u>
50%	15.8	8.06	8.8	29.2		Innoculation Time: <u>1525</u>
100%	15.9	8.13	8.0	29.4	3.47	Innoculation Signoff: <u>RB</u>
Meter ID	142A	PH24	RDIS	EC16	WR380	

Day 1						
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)		Signoff
Control	<del>14.9</del> 15.0					Date: <u>4/7/23</u>
1.0%	15.5					Signoff: <u>RB</u>
10%	15.5					
50%	15.5					
100%	15.5					
Meter ID	136A					

Day 2						
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)		Signoff
Control	15.2	7.45	7.5	28.9		Termination Signoff: <u>4/8/23 RB</u>
1.0%	15.4	7.99	7.5	29.1		Termination Date: <u>4/8/23</u>
10%	15.5	7.97	7.5	29.2		Termination Time: <u>1431</u>
50%	15.6	8.05	7.5	29.4		Old WQ: <u>JR</u>
100%	15.6	8.14	7.6	29.8		Termination Spot Signoff: <u>SE</u>
Meter ID	136A	PH30	RDU4	EC15		

### *Mytilus sp. Development Toxicity Test Count Data*

Client: Berkeley Marina  
 Test Material: Salt Control  
 Test ID #: -  
 Project #: 37289  
 Sample Salinity adjusted with: 6741 Sea

Test Start Date: 4/6/23  
 Test End Date: 4/8/23  
 Enumeration Date: 4/11/23  
 Investigator/Scope ID: TF / Invert #2  
 Inoculation Counts: 242

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development	Percent Survival
<b>Lab Control</b>	A	178	5	183		
	B	199	6	205		
	C	218	9	227		
	D	196	8	204		
	E	211	8	219		
<b>Salt Control</b>	A	187	6	193		
	B	198	8	206		
	C	177	5	182		
	D	190	6	196		
	E	195	2	197		

### Mytilus sp. Development Toxicity Test Water Chemistry Data

Client: Berkeley Marina Organism Log#: 13678 Age: N/A  
 Test Material: Salt Control Organism Supplier: hRep  
 Test ID#: - Project #: 37289 Control/Diluent: FSW @ 30±2 ppt  
 Test Date: 4/6/23 Sample Salinity adjusted with: Crystal Sea

Day 0					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Water Control	15.5	7.86	9.0	28.7	Date & Inoculation Time: <u>4/6/23 15:24:15</u> <sup>RG</sup> <sub>4/6/23</sub> <sup>25</sup>
Salt Control	15.4	8.25	8.4	29.3	Solution Prep/Inoculation: <u>RG</u>
Meter ID	142A	PH24	RD15	EC16	New WQ: <u>MH</u>

Day 1					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Water Control	<sup>RG</sup> <u>14.9</u> <sub>4/7/23</sub> 15.0				Date: <u>4/7/23</u>
Salt Control	<sup>RG</sup> <u>14.8</u> <sub>4/7/23</sub> 15.0				Old WQ: <u>RG</u>
Meter ID	136A				

Day 2					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Water Control	15.2	7.95	7.5	28.9	Date & Termination Time: <u>4/8/23 14:31</u>
Salt Control	15.1	7.98	7.6	29.6	Termination Signoff: <u>RG</u>
					Old WQ: <u>JR</u>
Meter ID	136A	PH30	RD14	EC15	Termination Spot Signoff: <u>JR</u>

<b>Bivalve Larval Survival and Development Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 14-9592-4067	<b>Endpoint:</b> Development Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 17 Apr-23 11:20	<b>Analysis:</b> Parametric-Two Sample	<b>Status Level:</b> 1			
<b>Edit Date:</b> 17 Apr-23 11:17	<b>MD5 Hash:</b> 5547E4CDD7C6785FADF549E4A05C1263	<b>Editor ID:</b> 006-243-107-9			

<b>Data Transform</b>	<b>Alt Hyp</b>	<b>Comparison Result</b>	<b>PMSD</b>
Angular (Corrected)	C > T	Salt Control passed development rate endpoint	1.35%

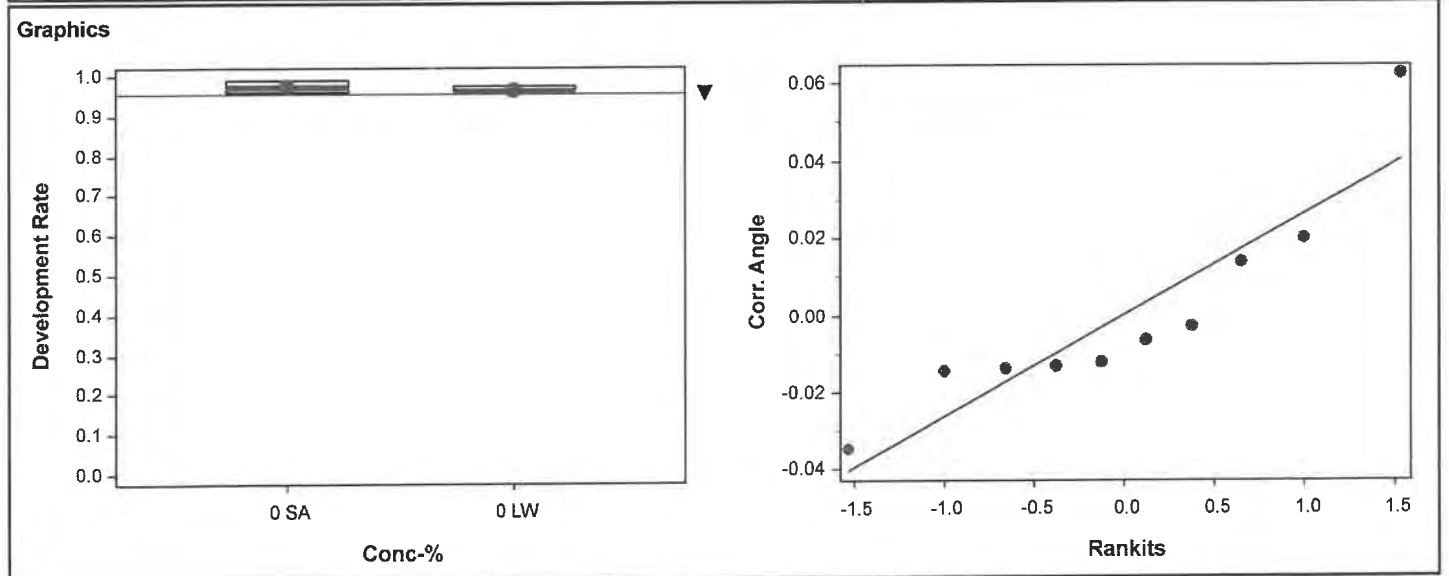
<b>Equal Variance t Two-Sample Test</b>									
<b>Control I</b>	<b>vs</b>	<b>Control II</b>	<b>df</b>	<b>Test Stat</b>	<b>Critical</b>	<b>MSD</b>	<b>P-Type</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Lab Water Control		Salt Control	8	-1.23	1.86	0.0335	CDF	0.8737	Non-Significant Effect

<b>ANOVA Table</b>							
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>	
Between	0.0012359	0.0012359	1	1.52	0.2526	Non-Significant Effect	
Error	0.0065039	0.000813	8				
Total	0.0077399		9				

<b>ANOVA Assumptions Tests</b>						
<b>Attribute</b>	<b>Test</b>	<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:1%)</b>	
Variance	Variance Ratio F Test	5.36	23.2	0.1328	Equal Variances	
Distribution	Shapiro-Wilk W Normality Test	0.857	0.741	0.0702	Normal Distribution	

<b>Development Rate Summary</b>											
<b>Conc-%</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
0	LW	5	0.966	0.958	0.973	0.963	0.960	0.973	0.003	0.59%	0.00%
0	SA	5	0.972	0.959	0.986	0.969	0.961	0.990	0.005	1.09%	-0.70%

<b>Angular (Corrected) Transformed Summary</b>											
<b>Conc-%</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
0	LW	5	1.380	1.360	1.400	1.380	1.370	1.400	0.007	1.15%	0.00%
0	SA	5	1.410	1.360	1.450	1.390	1.370	1.470	0.017	2.63%	-1.61%





**CETIS Analytical Report**

Report Date: 29 May-23 11:33 (p 4 of 8)  
 Test Code/ID: 99532 / 16-9863-0665

<b>Bivalve Larval Survival and Development Test</b>			<b>Pacific EcoRisk</b>
<b>Analysis ID:</b> 13-7629-3986	<b>Endpoint:</b> Development Rate	<b>CETIS Version:</b> CETISv2.1.3	
<b>Analyzed:</b> 17 Apr-23 11:20	<b>Analysis:</b> Parametric-Two Sample	<b>Status Level:</b> 1	
<b>Edit Date:</b> 17 Apr-23 11:17	<b>MD5 Hash:</b> 6AC4BE78B494369B70A9C8CDFD889904	<b>Editor ID:</b> 006-243-107-9	

<b>Data Transform</b>	<b>Alt Hyp</b>	<b>Comparison Result</b>	<b>PMSD</b>
Angular (Corrected)	C > T	Site Water passed development rate endpoint	0.61%

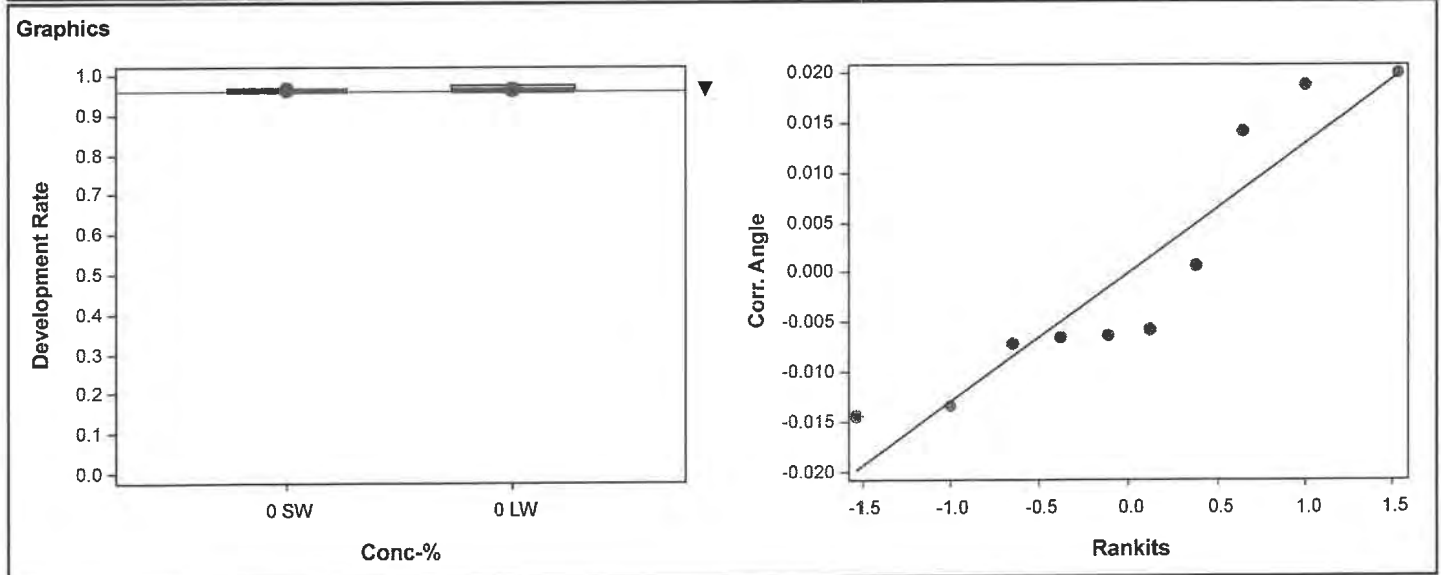
<b>Equal Variance t Two-Sample Test</b>									
<b>Control I</b>	<b>vs</b>	<b>Control II</b>	<b>df</b>	<b>Test Stat</b>	<b>Critical</b>	<b>MSD</b>	<b>P-Type</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Lab Water Control		Site Water	8	0.838	1.86	0.0161	CDF	0.2131	Non-Significant Effect

<b>ANOVA Table</b>						
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Between	0.0001318	0.0001318	1	0.702	0.4263	Non-Significant Effect
Error	0.0015015	0.0001877	8			
Total	0.0016333		9			

<b>ANOVA Assumptions Tests</b>						
<b>Attribute</b>	<b>Test</b>	<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:1%)</b>	
Variance	Variance Ratio F Test	2.14	23.2	0.4802	Equal Variances	
Distribution	Shapiro-Wilk W Normality Test	0.85	0.741	0.0587	Normal Distribution	

<b>Development Rate Summary</b>											
<b>Conc-%</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
0	LW	5	0.966	0.958	0.973	0.963	0.960	0.973	0.003	0.59%	0.00%
0	SW	5	0.963	0.958	0.968	0.961	0.960	0.970	0.002	0.42%	0.27%

<b>Angular (Corrected) Transformed Summary</b>											
<b>Conc-%</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
0	LW	5	1.380	1.360	1.400	1.380	1.370	1.400	0.007	1.15%	0.00%
0	SW	5	1.380	1.360	1.390	1.370	1.370	1.400	0.005	0.79%	0.52%



**CETIS Analytical Report**

Report Date: 29 May-23 11:33 (p 8 of 8)  
 Test Code/ID: 99532 / 16-9863-0665

<b>Bivalve Larval Survival and Development Test</b>			<b>Pacific EcoRisk</b>
<b>Analysis ID:</b> 17-1521-9442	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv2.1.3	
<b>Analyzed:</b> 17 Apr-23 11:20	<b>Analysis:</b> Parametric-Two Sample	<b>Status Level:</b> 1	
<b>Edit Date:</b> 17 Apr-23 11:17	<b>MD5 Hash:</b> 29C7CCFE72D83EB871EB37736CD9D579	<b>Editor ID:</b> 006-243-107-9	

<b>Data Transform</b>	<b>Alt Hyp</b>	<b>Comparison Result</b>	<b>PMSD</b>
Angular (Corrected)	C > T	Site Water passed survival rate endpoint	7.30%

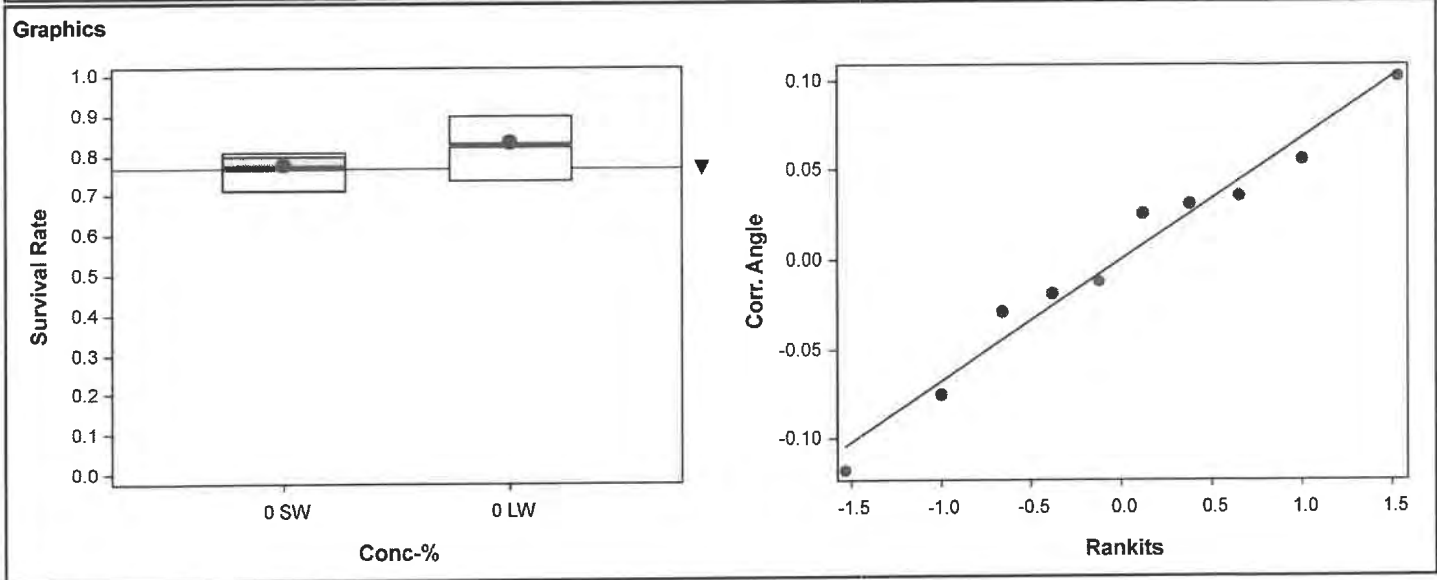
<b>Equal Variance t Two-Sample Test</b>									
<b>Control I</b>	<b>vs</b>	<b>Control II</b>	<b>df</b>	<b>Test Stat</b>	<b>Critical</b>	<b>MSD</b>	<b>P-Type</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Lab Water Control		Site Water	8	1.62	1.86	0.0804	CDF	0.0714	Non-Significant Effect

<b>ANOVA Table</b>							
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>	
Between	0.0123433	0.0123433	1	2.64	0.1429	Non-Significant Effect	
Error	0.0374058	0.0046757	8				
Total	0.0497491		9				

<b>ANOVA Assumptions Tests</b>						
<b>Attribute</b>	<b>Test</b>	<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:1%)</b>	
Variance	Variance Ratio F Test	3.17	23.2	0.2897	Equal Variances	
Distribution	Shapiro-Wilk W Normality Test	0.975	0.741	0.9346	Normal Distribution	

<b>Survival Rate Summary</b>											
<b>Conc-%</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
0	LW	5	0.828	0.749	0.907	0.822	0.736	0.901	0.028	7.67%	0.00%
0	SW	5	0.775	0.725	0.825	0.798	0.711	0.806	0.018	5.20%	6.39%

<b>Angular (Corrected) Transformed Summary</b>											
<b>Conc-%</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
0	LW	5	1.150	1.040	1.250	1.140	1.030	1.250	0.038	7.34%	0.00%
0	SW	5	1.080	1.020	1.140	1.100	1.000	1.110	0.021	4.39%	6.12%



### *Mytilus sp. Development Toxicity Test Count Data*

Client: Berkeley Marina  
 Test Material: Site Water  
 Test ID #: -  
 Project #: 37289  
 Sample Salinity adjusted with: Coyote 1 Seaw

Test Start Date: 4/6/23  
 Test End Date: 4/18/23  
 Enumeration Date: 4/11/23  
 Investigator/Scope ID: JF / Invert #2  
 Inoculation Counts: 242

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development	Percent Survival
<b>Lab Control</b>	A	178	5	183		
	B	199	6	205		
	C	218	9	227		
	D	196	8	204		
	E	211	8	219		
<b>Site Water</b>	A	195	8	203		
	B	172	7	179		
	C	184	7	191		
	D	193	6	199		
	E	194	8	202		



### Mytilus sp. Development Toxicity Test Water Chemistry Data

Client: Berkeley Marina  
 Test Material: Site Water  
 Test ID#: - Project #: 37289  
 Test Date: 4/6/23 Randomization: -  
 Sample Salinity adjusted with: Cycle 1 Sea

Organism Log#: 13678 Age: N/A  
 Organism Supplier: M-Rep  
 Control/Diluent: 30 ppt FSW

Day 0					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Control	15.5	7.86	8.9	29.0	Date & Inoculation Time: <u>4/6/23 15:41</u> <span style="float: right;">525</span>
Site Water	15.4	8.19	9.4	29.6	Test Solution Prep: <u>[Signature]</u>
					Innoculation Signoff: <u>R6</u>
Meter ID	142A	PH24	RD15	EC16	New WQ: <u>MH</u>

Day 1					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Control	<sup>M</sup> <u>4/7/23</u> <del>14.9</del> 15.0				Date: <u>4/7/23</u>
Site Water	15.4				Old WQ: <u>R6</u>
Meter ID	136A				

Day 2					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Control	15.2	7.95	7.5	28.9	Date: <u>4/8/23 14:31</u>
Site Water	15.4	8.09	7.6	29.8	Termination: <u>R6</u>
					Old WQ: <u>JR</u>
Meter ID	136A	PH30	RD14	EC15	Termination Spot Signoff: <u>JR</u>

**CETIS Summary Report**

**Report Date:** 26 May-23 11:04 (p 1 of 2)  
**Test Code/ID:** 99533 / 08-2199-7035

**Bivalve Larval Survival and Development Test**

**Pacific EcoRisk**

<b>Batch ID:</b> 16-6460-9042	<b>Test Type:</b> Development-Survival	<b>Analyst:</b> Mike McElroy
<b>Start Date:</b> 06 Apr-23 15:24	<b>Protocol:</b> ASTM E724-98 (Bivalve)	<b>Diluent:</b> Filtered Seawater
<b>Ending Date:</b> 08 Apr-23 14:32	<b>Species:</b> Mytilus galloprovincialis	<b>Brine:</b> Crystal Sea
<b>Test Length:</b> 47h	<b>Taxon:</b>	<b>Source:</b> M Rep <b>Age:</b> NA
<b>Sample ID:</b> 09-7760-9325	<b>Code:</b> Elutriate	<b>Project:</b> 37289
<b>Sample Date:</b> 15 Mar-23 15:05	<b>Material:</b> Elutriate	<b>Source:</b> Berkeley Marina (BERKELEY M)
<b>Receipt Date:</b> 16 Mar-23 08:15	<b>CAS (PC):</b>	<b>Station:</b> BM-DU2-Comp
<b>Sample Age:</b> 22d 0h (2.3 °C)	<b>Client:</b> Berkeley Marina	

<b>Multiple Comparison Summary</b>									
Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	PMSD	TU	S
17-1461-0395	Development Rate	Dunnett Multiple Comparison Test		100	>100	---	1.4%	1	1
07-9283-1281	Survival Rate	Dunnett Multiple Comparison Test		100	>100	---	14.7%	1	1

<b>Point Estimate Summary</b>									
Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
05-0038-5731	Development Rate	Linear Interpolation (ICPIN)		EC15	>100	---	---	<1	1
				EC20	>100	---	---	<1	
				EC25	>100	---	---	<1	
				EC40	>100	---	---	<1	
				EC50	>100	---	---	<1	
09-4693-1300	Survival Rate	Linear Interpolation (ICPIN)		EC15	>100	---	---	<1	1
				EC20	>100	---	---	<1	
				EC25	>100	---	---	<1	
				EC40	>100	---	---	<1	
				EC50	>100	---	---	<1	

<b>Development Rate Summary</b>											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.965	0.956	0.974	0.957	0.976	0.003	0.007	0.76%	0.00%
1		5	0.945	0.931	0.959	0.931	0.959	0.005	0.011	1.19%	2.04%
10		5	0.952	0.945	0.960	0.944	0.959	0.003	0.006	0.62%	1.33%
50		5	0.943	0.926	0.960	0.919	0.953	0.006	0.014	1.45%	2.24%
100		5	0.971	0.959	0.984	0.954	0.979	0.005	0.010	1.04%	-0.62%

<b>Survival Rate Summary</b>											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.745	0.664	0.827	0.678	0.835	0.029	0.066	8.80%	0.00%
1		5	0.741	0.614	0.869	0.607	0.872	0.046	0.103	13.84%	0.55%
10		5	0.710	0.637	0.783	0.669	0.814	0.026	0.059	8.31%	4.77%
50		5	0.713	0.629	0.797	0.612	0.785	0.030	0.068	9.51%	4.32%
100		5	0.722	0.648	0.797	0.653	0.739	0.027	0.060	8.29%	3.10%

**CETIS Summary Report**

Report Date: 26 May-23 11:04 (p 2 of 2)  
 Test Code/ID: 99533 / 08-2199-7035

**Bivalve Larval Survival and Development Test**

Pacific EcoRisk

Development Rate Detail							MD5: 91E413BDA739BD37A6033F3B280F1443
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	LW	0.960	0.968	0.976	0.964	0.957	
1		0.949	0.950	0.931	0.959	0.936	
10		0.956	0.954	0.949	0.959	0.944	
50		0.948	0.953	0.947	0.919	0.950	
100		0.969	0.979	0.975	0.977	0.954	

Survival Rate Detail							MD5: 760A7AEEFC04BFD23AC40E4990D73141
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	LW	0.690	0.740	0.678	0.785	0.835	
1		0.777	0.872	0.674	0.777	0.607	
10		0.814	0.682	0.690	0.669	0.694	
50		0.682	0.748	0.740	0.612	0.785	
100		0.781	0.789	0.653	0.698	0.690	

Development Rate Binomials						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	167/174	179/185	164/168	190/197	202/211
1		188/198	211/222	163/175	188/196	147/157
10		197/206	165/173	167/176	162/169	168/178
50		165/174	181/190	179/189	148/161	190/200
100		189/195	191/195	158/162	169/173	167/175

Survival Rate Binomials						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	167/242	179/242	164/242	190/242	202/242
1		188/242	211/242	163/242	188/242	147/242
10		197/242	165/242	167/242	162/242	168/242
50		165/242	181/242	179/242	148/242	190/242
100		189/242	191/242	158/242	169/242	167/242

**CETIS Analytical Report**

Report Date: 26 May-23 11:05 (p 1 of 2)  
 Test Code/ID: 99533 / 08-2199-7035

<b>Bivalve Larval Survival and Development Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 17-1461-0395	<b>Endpoint:</b> Development Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 26 May-23 11:03	<b>Analysis:</b> Parametric-Control vs Treatments	<b>Status Level:</b> 1			
<b>Edit Date:</b> 26 May-23 11:03	<b>MD5 Hash:</b> 91E413BDA739BD37A6033F3B280F1443	<b>Editor ID:</b> 007-325-763-7			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	100	>100	---	1	0.0135	1.40%

<b>Dunnett Multiple Comparison Test</b>									
Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Lab Water Control		1*	8	3.17	2.3	0.0347	CDF	0.0082	Significant Effect
		10	8	2.18	2.3	0.0347	CDF	0.0635	Non-Significant Effect
		50*	8	3.44	2.3	0.0347	CDF	0.0045	Significant Effect
		100	8	-1.19	2.3	0.0347	CDF	0.9855	Non-Significant Effect

<b>ANOVA Table</b>						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0187264	0.0046816	4	8.25	0.0004	Significant Effect
Error	0.0113437	0.0005672	20			
Total	0.0300701		24			

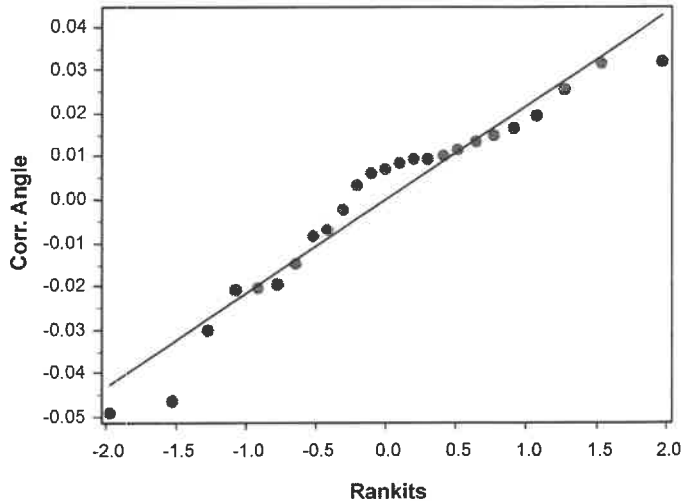
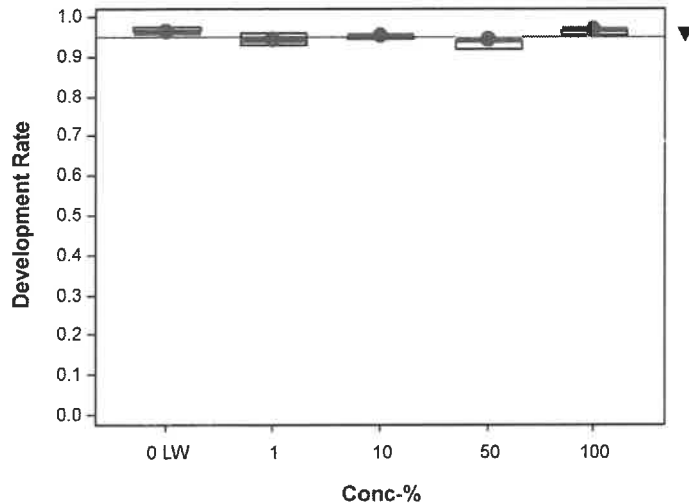
<b>ANOVA Assumptions Tests</b>						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variance	Bartlett Equality of Variance Test	2.15	13.3	0.7085	Equal Variances	
Distribution	Shapiro-Wilk W Normality Test	0.937	0.888	0.1290	Normal Distribution	

<b>Development Rate Summary</b>											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.965	0.956	0.974	0.964	0.957	0.976	0.003	0.76%	0.00%
1		5	0.945	0.931	0.959	0.949	0.931	0.959	0.005	1.19%	2.04%
10		5	0.952	0.945	0.960	0.954	0.944	0.959	0.003	0.62%	1.33%
50		5	0.943	0.926	0.960	0.948	0.919	0.953	0.006	1.45%	2.24%
100		5	0.971	0.959	0.984	0.975	0.954	0.979	0.005	1.04%	-0.62%

<b>Angular (Corrected) Transformed Summary</b>											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.380	1.360	1.410	1.380	1.360	1.420	0.009	1.51%	0.00%
1		5	1.340	1.300	1.370	1.340	1.310	1.370	0.011	1.86%	3.46%
10		5	1.350	1.330	1.370	1.350	1.330	1.370	0.006	1.02%	2.37%
50		5	1.330	1.300	1.370	1.340	1.280	1.350	0.013	2.10%	3.74%
100		5	1.400	1.370	1.440	1.410	1.360	1.430	0.013	2.03%	-1.30%

<b>Bivalve Larval Survival and Development Test</b>		<b>Pacific EcoRisk</b>	
<b>Analysis ID:</b> 17-1461-0395	<b>Endpoint:</b> Development Rate	<b>CETIS Version:</b> CETISv2.1.3	
<b>Analyzed:</b> 26 May-23 11:03	<b>Analysis:</b> Parametric-Control vs Treatments	<b>Status Level:</b> 1	
<b>Edit Date:</b> 26 May-23 11:03	<b>MD5 Hash:</b> 91E413BDA739BD37A6033F3B280F1443	<b>Editor ID:</b> 007-325-763-7	

Graphics





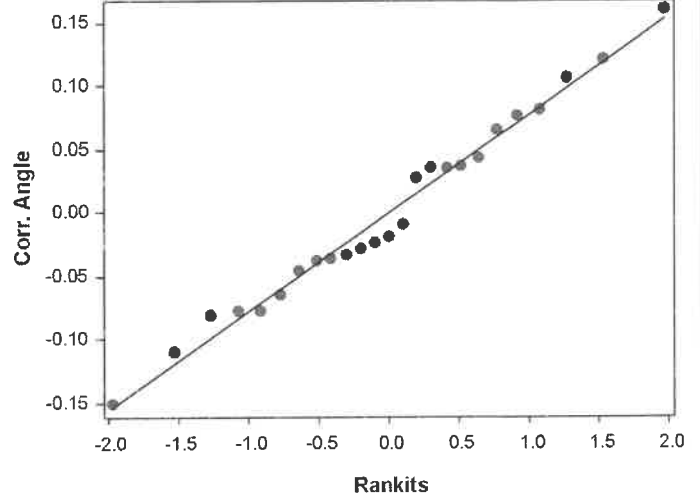
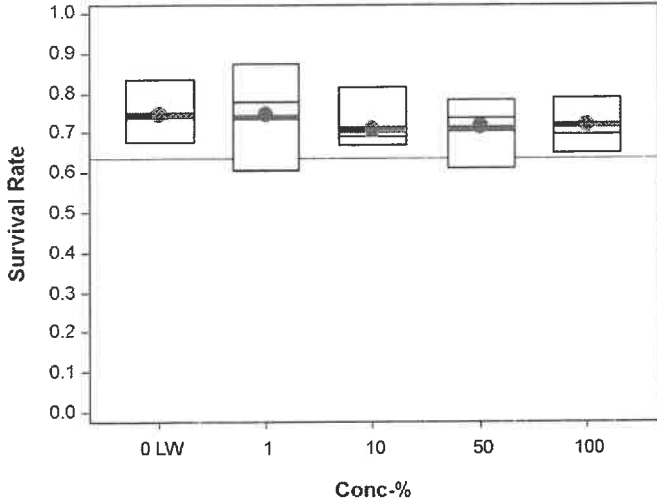
Bivalve Larval Survival and Development Test										Pacific EcoRisk	
<b>Analysis ID:</b> 07-9283-1281		<b>Endpoint:</b> Survival Rate			<b>CETIS Version:</b> CETISv2.1.3						
<b>Analyzed:</b> 02 May-23 17:16		<b>Analysis:</b> Parametric-Control vs Treatments			<b>Status Level:</b> 1						
<b>Edit Date:</b> 02 May-23 17:14		<b>MD5 Hash:</b> 760A7AEEFC04BFD23AC40E4990D73141			<b>Editor ID:</b> 006-243-107-9						
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD				
Angular (Corrected)	C > T	100	>100	---	1	0.11	14.74%				
Dunnnett Multiple Comparison Test											
Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)		
Lab Water Control		1	8	0.0189	2.3	0.122	CDF	0.7938	Non-Significant Effect		
		10	8	0.769	2.3	0.122	CDF	0.4822	Non-Significant Effect		
		50	8	0.7	2.3	0.122	CDF	0.5137	Non-Significant Effect		
		100	8	0.512	2.3	0.122	CDF	0.5984	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.00763337	0.00190834	4	0.272	0.8925	Non-Significant Effect					
Error	0.140288	0.00701438	20								
Total	0.147921	24									
ANOVA Assumptions Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variance	Bartlett Equality of Variance Test	1.9	13.3	0.7535	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.982	0.888	0.9276	Normal Distribution						
Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.745	0.664	0.827	0.740	0.678	0.835	0.029	8.80%	0.00%
1		5	0.741	0.614	0.869	0.777	0.607	0.872	0.046	13.84%	0.55%
10		5	0.710	0.637	0.783	0.690	0.669	0.814	0.026	8.31%	4.77%
50		5	0.713	0.629	0.797	0.740	0.612	0.785	0.030	9.51%	4.32%
100		5	0.722	0.648	0.797	0.698	0.653	0.789	0.027	8.29%	3.10%
Angular (Corrected) Transformed Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.040	0.949	1.140	1.040	0.967	1.150	0.034	7.37%	0.00%
1		5	1.040	0.895	1.190	1.080	0.894	1.200	0.054	11.49%	0.10%
10		5	1.000	0.919	1.090	0.980	0.958	1.120	0.031	6.81%	3.90%
50		5	1.010	0.915	1.100	1.040	0.898	1.090	0.033	7.37%	3.55%
100		5	1.020	0.934	1.100	0.989	0.941	1.090	0.030	6.64%	2.59%

Bivalve Larval Survival and Development Test

Pacific EcoRisk

<b>Analysis ID:</b> 07-9283-1281	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv2.1.3
<b>Analyzed:</b> 02 May-23 17:16	<b>Analysis:</b> Parametric-Control vs Treatments	<b>Status Level:</b> 1
<b>Edit Date:</b> 02 May-23 17:14	<b>MD5 Hash:</b> 760A7AEEFC04BFD23AC40E4990D73141	<b>Editor ID:</b> 006-243-107-9

Graphics





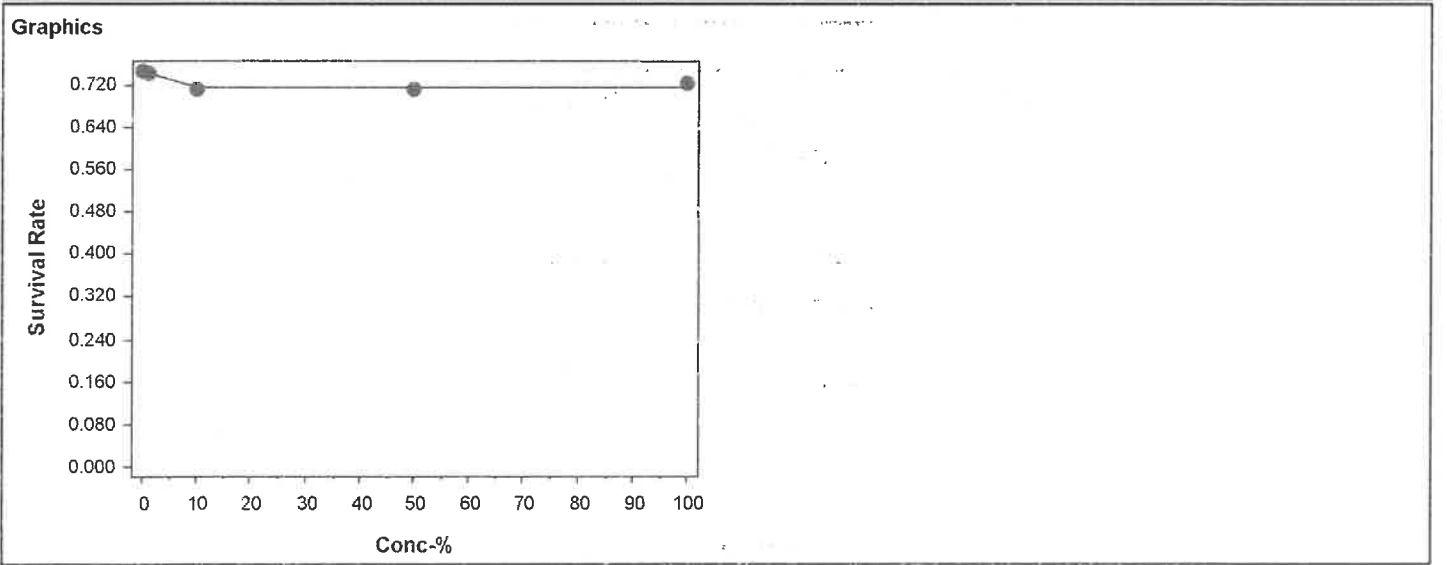
**Bivalve Larval Survival and Development Test** Pacific EcoRisk

<b>Analysis ID:</b> 09-4693-1300	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv2.1.3
<b>Analyzed:</b> 02 May-23 17:16	<b>Analysis:</b> Linear Interpolation (ICPIN)	<b>Status Level:</b> 1
<b>Edit Date:</b> 02 May-23 17:14	<b>MD5 Hash:</b> 760A7AEFFC04BFD23AC40E4990D73141	<b>Editor ID:</b> 006-243-107-9

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1748083	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

Survival Rate Summary			Calculated Variate(A/B)						Isotonic Variate		
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	LW	5	0.745	0.740	0.678	0.835	8.80%	0.00%	902/1210	0.745	0.00%
1		5	0.741	0.777	0.607	0.872	13.84%	0.55%	897/1210	0.741	0.54%
10		5	0.710	0.690	0.669	0.814	8.31%	4.77%	859/1210	0.715	4.03%
50		5	0.713	0.740	0.612	0.785	9.51%	4.32%	863/1210	0.715	4.03%
100		5	0.722	0.698	0.653	0.789	8.29%	3.10%	874/1210	0.715	4.03%



*RCG*

### Mytilus sp. Development Toxicity Test Water Chemistry Data

Client: Berkeley Marina      Organism Log#: 13678      Age: N/A  
 Test Material: BM-DU2-Comp SET      Organism Supplier: M Rep  
 Test ID#: 99533      Project #: 37289      Control/Diluent: 30 ppt FSW  
 Test Date: 4/6/23      Randomization: -  
 Sample Salinity adjusted with: Cy 8.1 Sea

Day 0						
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	NH <sub>3</sub>	Signoff
Control	15.5	7.86	9.0	28.7		Test Solution Prep: <u>RZ</u>
1.0%	15.1	7.89	8.6	28.7		New WQ: <u>MH</u>
10%	15.0	7.94	8.9	29.1		Innoculation Date: <u>4/6/23</u>
50%	15.6	8.05	8.6	29.1		Innoculation Time: <u>1524</u>
100%	15.2	8.15	7.9	29.3	2.15	Innoculation Signoff: <u>RB</u>
Meter ID	142A	PH24	RD15	EC16	UR1801	

Day 1					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Control	15.1				Date: <u>4/7/23</u>
1.0%	15.2				Signoff: <u>RB</u>
10%	15.2				
50%	15.2				
100%	15.1				
Meter ID	136A				

Day 2					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Control	15.1 <del>15.0</del> <sup>no</sup> <sub>4/11/23</sub>	7.85	7.3	28.3	Termination Signoff: <u>RB</u>
1.0%	15.1 <del>15.0</del> <sup>no</sup> <sub>4/11/23</sub>	7.89	7.2	29.0	Termination Date: <u>4/18/23</u>
10%	15.0 <del>15.0</del> <sup>no</sup> <sub>4/11/23</sub>	7.91	7.3	29.0	Termination Time: <u>1432</u>
50%	15.0 <del>15.0</del> <sup>no</sup> <sub>4/11/23</sub>	7.98	7.3	29.1	Old WQ: <u>JR</u>
100%	15.0 <del>15.2</del> <sup>no</sup> <sub>4/11/23</sub>	8.08	7.5	29.1	Termination Spot Signoff: <u>JR</u>
Meter ID	136A <del>136A</del> <sup>no</sup> <sub>4/11/23</sub>	PH30	RD14	EC15	

***Mytilus sp. Development Toxicity Test Count Data***

Client: Berkeley Marina  
 Test Material: BM-DU2-Comp SET  
 Test ID #: 99533  
 Project #: 37289  
 Sample Salinity adjusted with: Longsight Sea

Test Start Date: 4/6/23  
 Test End Date: 4/18/23  
 Enumeration Date: 5/2/23  
 Investigator/Scope ID: MM / Zovest #1  
 Inoculation Count: 242

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development	Percent Survival
Control	A	<sup>mm 5/1/23</sup> 156	<sup>mm 5/1/23</sup> 107	<sup>mm 5/1/23</sup> 166	174	
	B	<sup>mm 5/1/23</sup> 156	6	<sup>mm 5/1/23</sup> 164	185	
	C	164	4	168		
	D	190	7	197		
	E	202	9	211		
1.0%	A	188	10	198		
	B	211	11	<del>222</del> <sup>mm 5/1/23</sup> 222		
	C	163	12	175		
	D	188	8	196		
	E	147	10	157		
10%	A	197	9	206		
	B	165	8	173		
	C	167	9	176		
	D	162	7	169		
	E	168	10	178		
50%	A	165	9	174		
	B	181	9	190		
	C	179	10	189		
	D	148	13	161		
	E	190	10	200		
100%	A	189	6	195		
	B	191	4	195		
	C	158	4	162		
	D	169	4	173		
	E	167	8	175		

**CETIS Summary Report**

**Report Date:** 10 May-23 16:09 (p 1 of 2)  
**Test Code/ID:** 99534 / 07-0591-3159

**Bivalve Larval Survival and Development Test**

**Pacific EcoRisk**

<b>Batch ID:</b> 08-8719-6750	<b>Test Type:</b> Development-Survival	<b>Analyst:</b> Robert Gee
<b>Start Date:</b> 06 Apr-23 15:23	<b>Protocol:</b> ASTM E724-98 (Bivalve)	<b>Diluent:</b> Filtered Seawater
<b>Ending Date:</b> 08 Apr-23 14:33	<b>Species:</b> Mytilus galloprovincialis	<b>Brine:</b> Crystal Sea
<b>Test Length:</b> 47h	<b>Taxon:</b>	<b>Source:</b> M Rep <span style="float: right;"><b>Age:</b> NA</span>
<b>Sample ID:</b> 01-9701-2705	<b>Code:</b> Elutriate	<b>Project:</b> 37289
<b>Sample Date:</b> 16 Mar-23 12:20	<b>Material:</b> Elutriate	<b>Source:</b> Berkeley Marina (BERKELEY M)
<b>Receipt Date:</b> 17 Mar-23 08:20	<b>CAS (PC):</b>	<b>Station:</b> BM-DU3-Comp
<b>Sample Age:</b> 21d 3h (3.1 °C)	<b>Client:</b> Berkeley Marina	

**Multiple Comparison Summary**

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
19-5763-4678	Development Rate	Dunnett Multiple Comparison Test	100	>100	---	1.8%	1	1
21-0930-5093	Survival Rate	Dunnett Multiple Comparison Test	100	>100	---	12.9%	1	1

**Point Estimate Summary**

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
02-6300-7930	Development Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
17-6443-8308	Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	

**Development Rate Summary**

Conc.-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.969	0.951	0.988	0.944	0.980	0.007	0.015	1.54%	0.00%
1		5	0.948	0.927	0.969	0.926	0.968	0.008	0.017	1.81%	2.20%
10		5	0.952	0.940	0.964	0.943	0.965	0.004	0.010	1.02%	1.78%
50		5	0.959	0.954	0.964	0.952	0.964	0.002	0.004	0.44%	1.06%
100		5	0.975	0.959	0.992	0.956	0.989	0.006	0.013	1.36%	-0.61%

**Survival Rate Summary**

Conc.-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.826	0.800	0.851	0.802	0.843	0.009	0.020	2.46%	0.00%
1		5	0.836	0.747	0.926	0.764	0.942	0.032	0.072	8.65%	-1.30%
10		5	0.817	0.715	0.919	0.727	0.950	0.037	0.082	10.06%	1.10%
50		5	0.874	0.834	0.914	0.826	0.905	0.014	0.032	3.69%	-5.81%
100		5	0.826	0.735	0.916	0.740	0.888	0.033	0.073	8.86%	0.00%

**CETIS Summary Report**

**Report Date:** 10 May-23 16:09 (p 2 of 2)  
**Test Code/ID:** 99534 / 07-0591-3159

**Bivalve Larval Survival and Development Test**

**Pacific EcoRisk**

Development Rate Detail							MD5: 572B723970028005A026DD3089F7EEB1
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	LW	0.944	0.976	0.980	0.980	0.967	
1		0.935	0.926	0.954	0.958	0.968	
10		0.965	0.947	0.960	0.943	0.946	
50		0.960	0.959	0.961	0.952	0.964	
100		0.972	0.989	0.973	0.956	0.986	

Survival Rate Detail							MD5: EE00F3D95D81BCBC3E34EDC97DACF238
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	LW	0.843	0.843	0.806	0.802	0.835	
1		0.831	0.777	0.764	0.942	0.868	
10		0.789	0.950	0.798	0.818	0.727	
50		0.901	0.860	0.905	0.826	0.876	
100		0.872	0.740	0.752	0.888	0.876	

Development Rate Binomials						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	204/216	204/209	195/199	194/198	202/209
1		201/215	188/203	185/194	228/238	210/217
10		191/198	230/243	193/201	198/210	176/186
50		218/227	208/217	219/228	200/210	212/220
100		211/217	179/181	182/187	215/225	212/215

Survival Rate Binomials						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	204/242	204/242	195/242	194/242	202/242
1		201/242	188/242	185/242	228/242	210/242
10		191/242	230/242	193/242	198/242	176/242
50		218/242	208/242	219/242	200/242	212/242
100		211/242	179/242	182/242	215/242	212/242

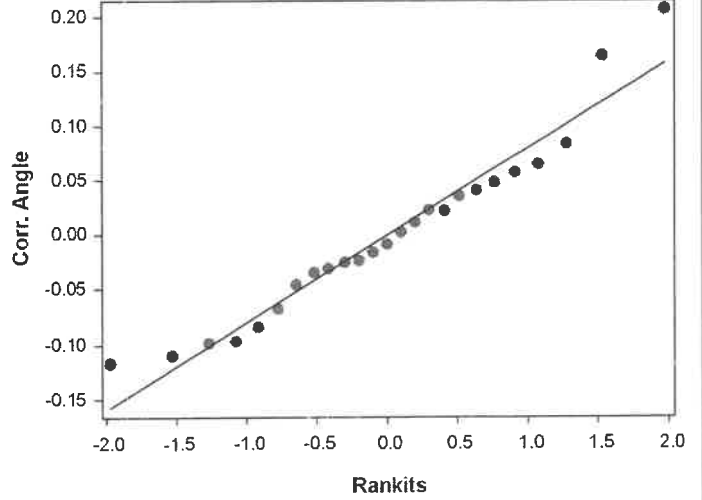
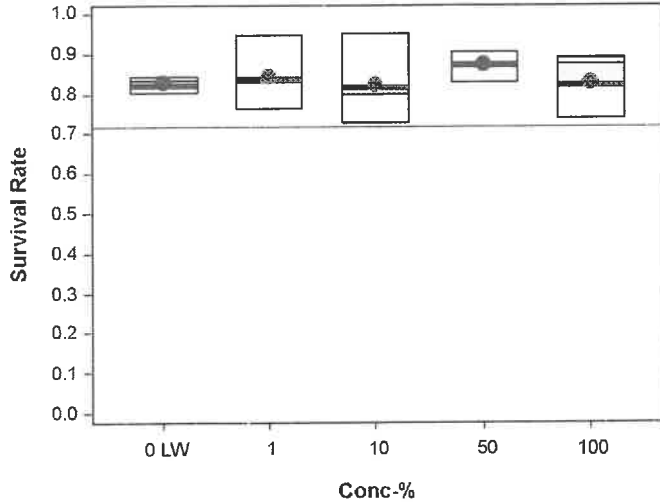
Bivalve Larval Survival and Development Test										Pacific EcoRisk	
Analysis ID: 21-0930-5093		Endpoint: Survival Rate		CETIS Version: CETISv2.1.3							
Analyzed: 10 May-23 16:08		Analysis: Parametric-Control vs Treatments		Status Level: 1							
Edit Date: 10 May-23 16:05		MD5 Hash: EE00F3D95D81BCBC3E34EDC97DACF238		Editor ID: 006-243-107-9							
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD				
Angular (Corrected)	C > T	100	>100	---	1	0.106	12.86%				
Dunnett Multiple Comparison Test											
Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)		
Lab Water Control		1	8	-0.409	2.3	0.128	CDF	0.9056	Non-Significant Effect		
		10	8	0.0241	2.3	0.128	CDF	0.7921	Non-Significant Effect		
		50	8	-1.24	2.3	0.128	CDF	0.9873	Non-Significant Effect		
		100	8	-0.103	2.3	0.128	CDF	0.8316	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0172318		0.00430795		4	0.559	0.6948	Non-Significant Effect			
Error	0.154057		0.00770285		20						
Total	0.171289				24						
ANOVA Assumptions Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variance	Bartlett Equality of Variance Test		8.62	13.3	0.0713	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.948	0.888	0.2318	Normal Distribution					
Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.826	0.800	0.851	0.835	0.802	0.843	0.009	2.46%	0.00%
1		5	0.836	0.747	0.926	0.831	0.764	0.942	0.032	8.65%	-1.30%
10		5	0.817	0.715	0.919	0.798	0.727	0.950	0.037	10.06%	1.10%
50		5	0.874	0.834	0.914	0.876	0.826	0.905	0.014	3.69%	-5.81%
100		5	0.826	0.735	0.916	0.872	0.740	0.888	0.033	8.86%	0.00%
Angular (Corrected) Transformed Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.140	1.110	1.170	1.150	1.110	1.160	0.012	2.34%	0.00%
1		5	1.160	1.030	1.300	1.150	1.060	1.330	0.048	9.18%	-1.99%
10		5	1.140	0.987	1.290	1.100	1.020	1.350	0.055	10.76%	0.12%
50		5	1.210	1.150	1.270	1.210	1.140	1.260	0.021	3.96%	-6.03%
100		5	1.150	1.030	1.260	1.200	1.040	1.230	0.043	8.31%	-0.50%

Bivalve Larval Survival and Development Test

Pacific EcoRisk

<b>Analysis ID:</b> 21-0930-5093	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv2.1.3
<b>Analyzed:</b> 10 May-23 16:08	<b>Analysis:</b> Parametric-Control vs Treatments	<b>Status Level:</b> 1
<b>Edit Date:</b> 10 May-23 16:05	<b>MD5 Hash:</b> EE00F3D95D81BCBC3E34EDC97DACF238	<b>Editor ID:</b> 006-243-107-9

Graphics

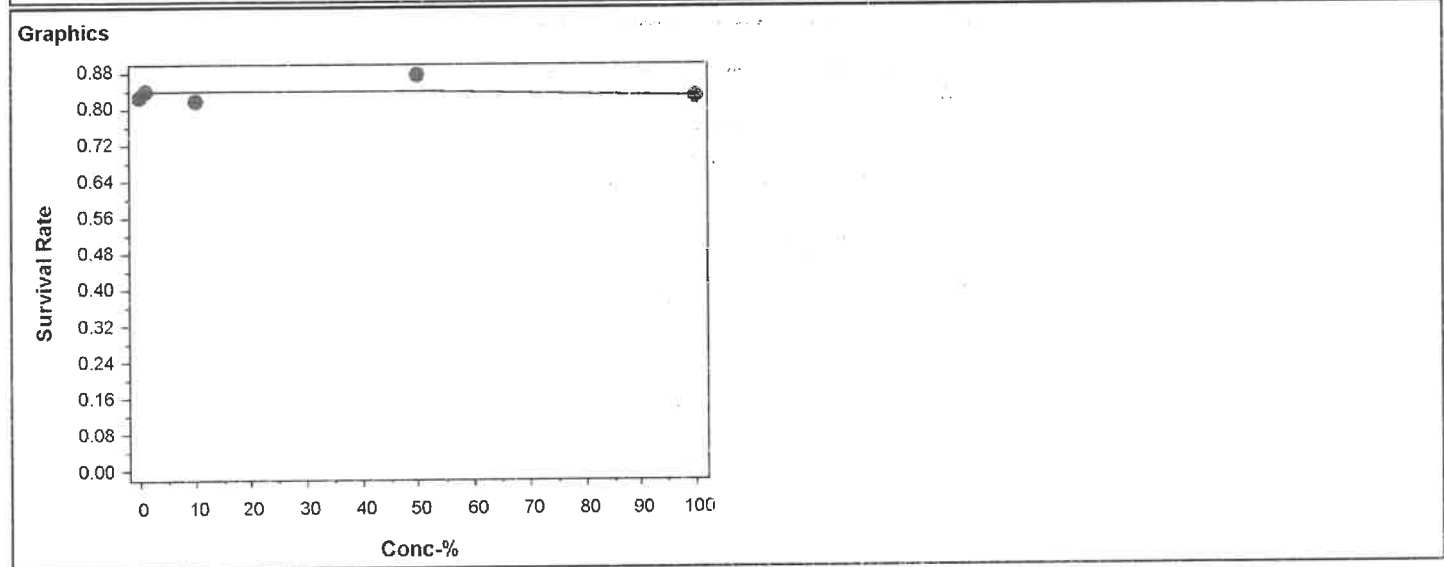


<b>Bivalve Larval Survival and Development Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 17-6443-8308	<b>Endpoint:</b> Survival Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 10 May-23 16:08	<b>Analysis:</b> Linear Interpolation (ICPIN)	<b>Status Level:</b> 1			
<b>Edit Date:</b> 10 May-23 16:05	<b>MD5 Hash:</b> EE00F3D95D81BCBC3E34EDC97DACF238	<b>Editor ID:</b> 006-243-107-9			

<b>Linear Interpolation Options</b>					
<b>X Transform</b>	<b>Y Transform</b>	<b>Seed</b>	<b>Resamples</b>	<b>Exp 95% CL</b>	<b>Method</b>
Linear	Linear	279988	200	Yes	Two-Point Interpolation

<b>Point Estimates</b>						
<b>Level</b>	<b>%</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Tox Units</b>	<b>95% LCL</b>	<b>95% UCL</b>
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

<b>Survival Rate Summary</b>			<b>Calculated Variate(A/B)</b>						<b>Isotonic Variate</b>		
<b>Conc-%</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>CV%</b>	<b>%Effect</b>	<b>ΣA/ΣB</b>	<b>Mean</b>	<b>%Effect</b>
0	LW	5	0.826	0.835	0.802	0.843	2.46%	0.00%	999/1210	0.838	0.00%
1		5	0.836	0.831	0.764	0.942	8.65%	-1.30%	1012/1210	0.838	0.00%
10		5	0.817	0.798	0.727	0.950	10.06%	1.10%	988/1210	0.838	0.00%
50		5	0.874	0.876	0.826	0.905	3.69%	-5.81%	1057/1210	0.838	0.00%
100		5	0.826	0.872	0.740	0.888	8.86%	0.00%	999/1210	0.826	1.43%



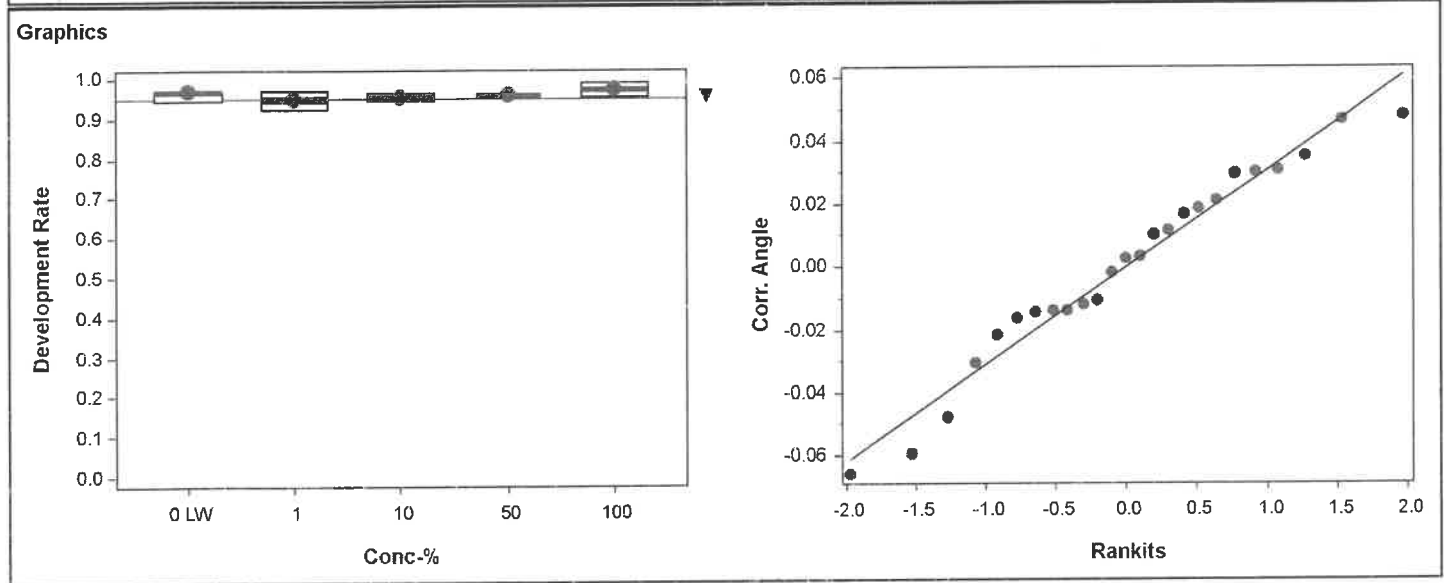


**CETIS Analytical Report**

**Report Date:** 10 May-23 16:08 (p 1 of 4)  
**Test Code/ID:** 99534 / 07-0591-3159

Bivalve Larval Survival and Development Test										Pacific EcoRisk	
<b>Analysis ID:</b> 19-5763-4678		<b>Endpoint:</b> Development Rate			<b>CETIS Version:</b> CETISv2.1.3						
<b>Analyzed:</b> 10 May-23 16:07		<b>Analysis:</b> Parametric-Control vs Treatments			<b>Status Level:</b> 1						
<b>Edit Date:</b> 10 May-23 16:05		<b>MD5 Hash:</b> 572B723970028005A026DD3089F7EEB1			<b>Editor ID:</b> 006-243-107-9						
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD				
Angular (Corrected)	C > T	100	>100	---	1	0.0175	1.80%				
Dunnett Multiple Comparison Test											
Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)		
Lab Water Control	1*		8	2.6	2.3	0.0488	CDF	0.0277	Significant Effect		
	10		8	2.24	2.3	0.0488	CDF	0.0570	Non-Significant Effect		
	50		8	1.47	2.3	0.0488	CDF	0.2089	Non-Significant Effect		
	100		8	-0.895	2.3	0.0488	CDF	0.9687	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0198626		0.00496565		4	4.43	0.0100	Significant Effect			
Error	0.0223953		0.00111976		20						
Total	0.0422579				24						
ANOVA Assumptions Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variance	Bartlett Equality of Variance Test				6.98	13.3	0.1369	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.963	0.888	0.4680	Normal Distribution			
Development Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.969	0.951	0.988	0.976	0.944	0.980	0.007	1.54%	0.00%
1		5	0.948	0.927	0.969	0.954	0.926	0.968	0.008	1.81%	2.20%
10		5	0.952	0.940	0.964	0.947	0.943	0.965	0.004	1.02%	1.78%
50		5	0.959	0.954	0.964	0.960	0.952	0.964	0.002	0.44%	1.06%
100		5	0.975	0.959	0.992	0.973	0.956	0.989	0.006	1.36%	-0.61%
Angular (Corrected) Transformed Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.400	1.350	1.450	1.420	1.330	1.430	0.018	2.89%	0.00%
1		5	1.340	1.300	1.390	1.350	1.300	1.390	0.017	2.88%	3.94%
10		5	1.350	1.320	1.380	1.340	1.330	1.380	0.010	1.72%	3.38%
50		5	1.370	1.350	1.380	1.370	1.350	1.380	0.005	0.76%	2.22%
100		5	1.420	1.360	1.470	1.410	1.360	1.470	0.019	3.02%	-1.35%

<b>Bivalve Larval Survival and Development Test</b>			<b>Pacific EcoRisk</b>
<b>Analysis ID:</b> 19-5763-4678	<b>Endpoint:</b> Development Rate	<b>CETIS Version:</b> CETISv2.1.3	
<b>Analyzed:</b> 10 May-23 16:07	<b>Analysis:</b> Parametric-Control vs Treatments	<b>Status Level:</b> 1	
<b>Edit Date:</b> 10 May-23 16:05	<b>MD5 Hash:</b> 572B723970028005A026DD3089F7EEB1	<b>Editor ID:</b> 006-243-107-9	

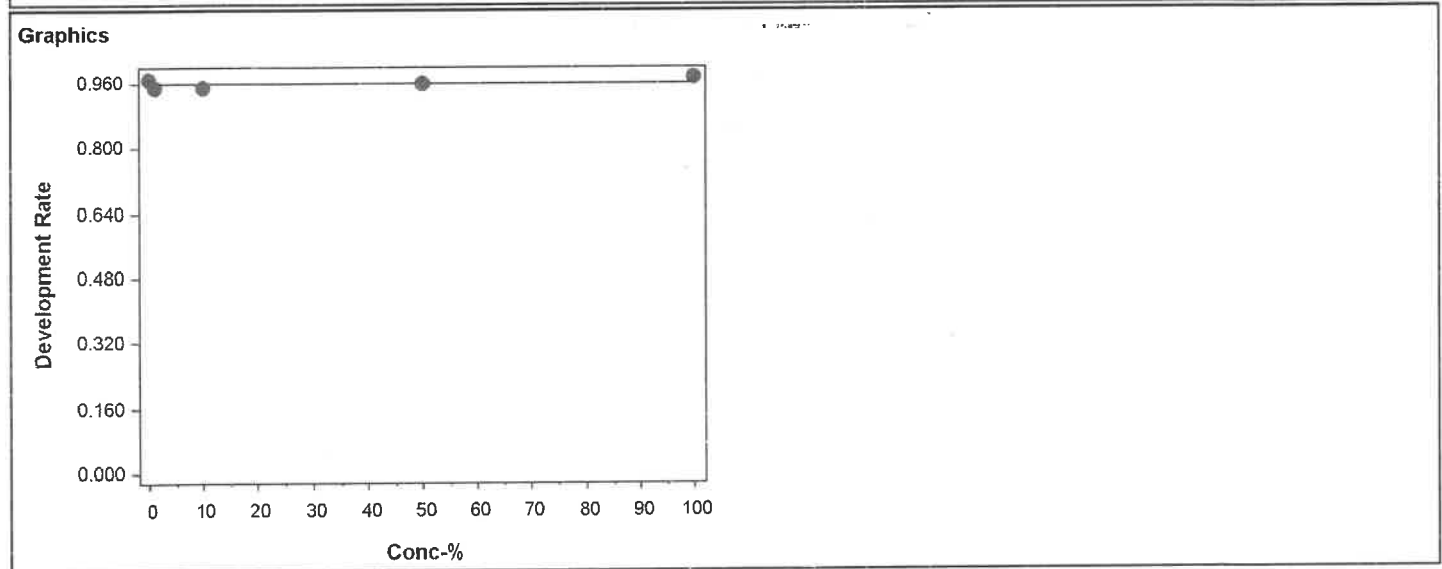


<b>Bivalve Larval Survival and Development Test</b>				<b>Pacific EcoRisk</b>	
<b>Analysis ID:</b> 02-6300-7930	<b>Endpoint:</b> Development Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 10 May-23 16:08	<b>Analysis:</b> Linear Interpolation (ICPIN)	<b>Status Level:</b> 1			
<b>Edit Date:</b> 10 May-23 16:05	<b>MD5 Hash:</b> 572B723970028005A026DD3089F7EEB1	<b>Editor ID:</b> 006-243-107-9			

<b>Linear Interpolation Options</b>					
<b>X Transform</b>	<b>Y Transform</b>	<b>Seed</b>	<b>Resamples</b>	<b>Exp 95% CL</b>	<b>Method</b>
Linear	Linear	440574	200	Yes	Two-Point Interpolation

<b>Point Estimates</b>						
<b>Level</b>	<b>%</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Tox Units</b>	<b>95% LCL</b>	<b>95% UCL</b>
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

<b>Development Rate Summary</b>			<b>Calculated Variate(A/B)</b>						<b>Isotonic Variate</b>		
<b>Conc-%</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>CV%</b>	<b>%Effect</b>	<b>ΣA/ΣB</b>	<b>Mean</b>	<b>%Effect</b>
0	LW	5	0.969	0.976	0.944	0.980	1.54%	0.00%	999/1031	0.969	0.00%
1		5	0.948	0.954	0.926	0.968	1.81%	2.20%	1012/1067	0.959	1.03%
10		5	0.952	0.947	0.943	0.965	1.02%	1.78%	988/1038	0.959	1.03%
50		5	0.959	0.960	0.952	0.964	0.44%	1.06%	1057/1102	0.959	1.03%
100		5	0.975	0.973	0.956	0.989	1.36%	-0.61%	999/1025	0.959	1.03%



### *Mytilus sp. Development Toxicity Test Count Data*

Client: Berkeley Marina  
 Test Material: BM-DU3-Comp SET  
 Test ID #: 99534  
 Project #: 37289  
 Sample Salinity adjusted with: Cayrol Sea

Test Start Date: 4/6/23  
 Test End Date: 4/8/23  
 Enumeration Date: 5/9/23  
 Investigator/Scope ID: OP / Invert #2  
 Inoculation Count: 242

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development	Percent Survival
Control	A	204	12	216		
	B	204	5	209		
	C	195	4	199		
	D	194	4	198		
	E	202	7	209		
1.0%	A	201	14	215		
	B	188	15	203		
	C	185	9	194		
	D	228	10	238		
	E	210	7	217		
10%	A	191	7	198		
	B	230	13	243		
	C	193	8	201		
	D	198	12	210		
	E	176	10	186		
50%	A	218	9	227		
	B	208	9	217		
	C	219	9	228		
	D	200	10	210		
	E	212	8	220		
100%	A	211	6	217		
	B	179	2	181		
	C	182	5	187		
	D	215	10	225		
	E	212	3	215		

### Mytilus sp. Development Toxicity Test Water Chemistry Data

Client: Berkeley Marina Organism Log#: 13678 Age: N/A  
 Test Material: BM-DU3-Comp SET Organism Supplier: MRep  
 Test ID#: 99534 Project #: 37289 Control/Diluent: 30 ppt FSW  
 Test Date: 4/6/23 Randomization: —  
 Sample Salinity adjusted with: Cryst 1 Sea

Day 0						
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	NH <sub>3</sub>	Signoff
Control	15.0	7.86	8.8	28.7		Test Solution Prep: <u>KR</u>
1.0%	15.0	7.89	8.8	29.1		New WQ: <u>MH</u>
10%	15.0	7.96	8.8	29.3		Innoculation Date: <u>4/6/23</u>
50%	15.0	8.15	8.7	30.0		Innoculation Time: <u>1523</u>
100%	15.0	8.29	7.7	30.7	3.39	Innoculation Signoff: <u>R6</u>
Meter ID	142A	PH24	RD15	EC16	002406	

Day 1					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Control	15.0				Date: <u>4/7/23</u>
1.0%	15.0				Signoff: <u>R6</u>
10%	15.0				
50%	15.0				
100%	15.0				
Meter ID	136A				

Day 2					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Control	<del>15.0</del> 15.0	7.92	7.6	28.5	Termination Signoff: <u>R6</u>
1.0%	<del>15.0</del> 15.0	7.92	7.5	29.0	Termination Date: <u>4/8/23</u>
10%	15.0	7.94	7.4	29.3	Termination Time: <u>1433</u>
50%	15.0	8.06	7.5	29.8	Old WQ: <u>SR</u>
100%	15.0	8.20	7.7	30.7	Termination Spot Signoff: <u>SR</u>
Meter ID	136A	PH30	RD14	EC15	

## **Appendix L**

### **Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Bivalve (*Mytilus galloprovincialis*) Embryos**

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**CETIS Summary Report**

**Report Date:** 16 May-23 12:06 (p 1 of 1)  
**Test Code/ID:** 100244 / 10-3237-2870

**Bivalve Larval Survival and Development Test**

**Pacific EcoRisk**

<b>Batch ID:</b> 11-9281-5987	<b>Test Type:</b> Development-Survival	<b>Analyst:</b> Riyan Lacara
<b>Start Date:</b> 06 Apr-23 15:22	<b>Protocol:</b> EPA/600/R-95/136 (1995)	<b>Diluent:</b> Diluted Seawater
<b>Ending Date:</b> 08 Apr-23 14:30	<b>Species:</b> Mytilus galloprovincialis	<b>Brine:</b> Not Applicable
<b>Test Length:</b> 47h	<b>Taxon:</b>	<b>Source:</b> M Rep <b>Age:</b> N/A

<b>Sample ID:</b> 04-6354-2243	<b>Code:</b> KCl	<b>Project:</b> 37644
<b>Sample Date:</b> 06 Apr-23 15:22	<b>Material:</b> Potassium chloride	<b>Source:</b> Reference Toxicant
<b>Receipt Date:</b> 06 Apr-23 15:22	<b>CAS (PC):</b>	<b>Station:</b> In House
<b>Sample Age:</b> --- (17.6 °C)	<b>Client:</b> Reference Toxicant	

**Multiple Comparison Summary**

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	PMSD	S
12-2980-4864	Development Rate	Dunnett Multiple Comparison Test		1	2	1.414	1.8%	1

**Point Estimate Summary**

Analysis ID	Endpoint	Point Estimate Method	✓	Level	g/L	95% LCL	95% UCL	S
15-2178-4087	Development Rate	GLM: Log-Normal (Probit)		EC5	1.69	1.64	1.74	1
				EC10	1.78	1.74	1.82	
				EC15	1.84	1.8	1.88	
				EC20	1.89	1.86	1.93	
				EC25	1.94	1.91	1.97	
				EC40	2.06	2.03	2.08	
				EC50	2.13	2.1	2.16	

**Development Rate Summary**

Conc-g/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	4	0.959	0.940	0.978	0.948	0.971	0.006	0.012	1.27%	0.00%
0.5		4	0.956	0.941	0.972	0.947	0.968	0.005	0.010	1.02%	0.28%
1		4	0.959	0.951	0.968	0.954	0.966	0.003	0.005	0.57%	-0.05%
2		4	0.647	0.597	0.697	0.615	0.689	0.016	0.031	4.83%	32.51%
3		4	0.006	-0.001	0.014	0.000	0.012	0.002	0.005	77.85%	99.35%
4		4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	---	100.00%

**Development Rate Detail**

MD5: 5240D6966EED35321BBBA7ACF5E60BAF

Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LW	0.968	0.971	0.948	0.949
0.5		0.960	0.947	0.968	0.950
1		0.954	0.966	0.956	0.962
2		0.689	0.615	0.650	0.634
3		0.012	0.000	0.007	0.006
4		0.000	0.000	0.000	0.000

**Development Rate Binomials**

Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LW	180/186	168/173	182/192	186/196
0.5		218/227	195/206	211/218	190/200
1		165/173	197/204	217/227	203/211
2		124/180	120/195	106/163	123/194
3		2/170	0/137	1/137	1/170
4		0/158	0/148	0/189	0/195

Bivalve Larval Survival and Development Test

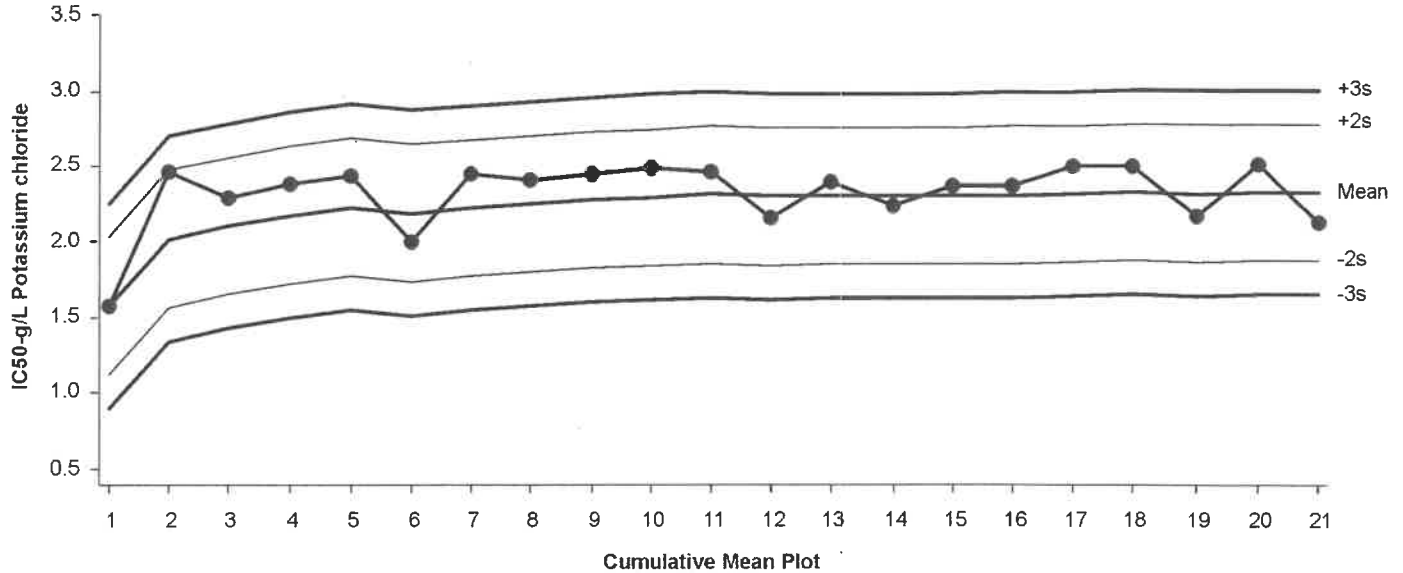
Pacific EcoRisk

Test Type: Development-Survival  
 Protocol: EPA/600/R-95/136 (1995)

Organism: Mytilus galloprovincialis  
 Endpoint: Development Rate

Material: Potassium chloride  
 Source: Reference Toxicant-REF

Bivalve Larval Survival and Development Test  
 Development Rate Endpoint



Mean: 2.334      Count: 20      -2s Warning Limit: 1.88      -3s Action Limit: 1.65  
 Sigma: 0.2265      CV: 9.70%      +2s Warning Limit: 2.79      +3s Action Limit: 3.01

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2022	Apr	14	15:04	1.572	-0.7623	-3.365	(-)	(-)	07-1382-1278	02-8592-3464
2			27	15:29	2.464	0.1304	0.5756			10-0391-1771	08-8153-4853
3		Jun	24	15:14	2.29	-0.04408	-0.1946			15-2076-1667	08-1866-8914
4		Jul	8	14:56	2.384	0.04995	0.2205			08-3051-7131	07-7103-7544
5			15	15:38	2.443	0.1094	0.4832			01-8539-4562	12-8322-5052
6			28	13:15	1.994	-0.3397	-1.5			11-3526-4708	02-2445-0076
7		Aug	3	16:04	2.452	0.1182	0.5219			03-4891-9781	15-9281-6548
8			9	15:58	2.41	0.07615	0.3362			15-2080-5963	02-9949-4813
9			31	13:20	2.456	0.122	0.5387			16-7834-9233	12-9137-5543
10		Sep	22	14:44	2.495	0.1608	0.7102			11-3832-6920	13-6636-9941
11		Oct	13	15:56	2.465	0.1311	0.5787			18-5244-0054	18-6862-9688
12			20	16:06	2.164	-0.1696	-0.7488			18-5547-5979	10-6915-3083
13			27	16:40	2.402	0.06835	0.3018			13-1842-7711	10-3880-4423
14		Nov	10	15:34	2.237	-0.09653	-0.4262			09-1412-0898	20-6246-4991
15		Dec	8	15:50	2.37	0.0358	0.158			20-1722-4407	14-0857-5398
16			20	12:43	2.37	0.03583	0.1582			15-9351-8450	00-1660-8211
17	2023	Jan	25	15:08	2.507	0.1729	0.7633			03-6074-6219	01-0794-0416
18		Feb	15	14:56	2.504	0.1696	0.7489			11-8920-8206	16-9414-3202
19		Mar	1	15:05	2.169	-0.1651	-0.7288			18-1003-6941	17-3540-8707
20			8	16:30	2.523	0.1886	0.8325			02-8027-9494	13-3892-5899
21		Apr	6	15:22	2.13	-0.2044	-0.9025			10-3237-2870	15-2178-4087



**Mytilus sp. Development Toxicity Test Water Chemistry Data**

Client: Reference Toxicant  
 Test Material: Potassium Chloride  
 Test ID#: 100244 Project #: 37644  
 Test Date: 4/6/23

Organism Log#: 13678 Age: N/A  
 Organism Supplier: Alexi/MRep  
 Control/Diluent: FSW @ 30±2 ppt  
c6 4/6/23

Day 0					
Treatment (g/L)	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Water Control	17.6	7.85	8.9	28.9	Date: 4/6/23
0.5	17.6	7.86	9.0	29.5	Ref Tox Stock # —
1	17.6	7.87	9.1	30.2	Test Solution Prep: R6
2	17.6	7.86	8.9	31.2	New WQ: MH
3	17.6	7.86	8.9	32.2	Innoculation Time: 1522
4	17.6	7.87	8.8	33.2	Innoculation Signoff: R6
Meter ID	142A	PH24	RD15	EC16	

Day 1					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Water Control	18.5				Date: 4/7/23
0.5	18.4				Old WQ: R6
1	18.3				
2	18.3				
3	18.3				
4	18.3				
Meter ID	86A				

Day 2					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Water Control	17.8	7.88	7.3	28.9	Date: 4/8/23
0.5	17.7	7.92	7.3	29.4	Termination Time: 1430
1	17.6	7.95	7.2	29.8	Termination Signoff: R6
2	17.6	7.96	7.4	30.9	Old WQ: JR
3	17.6	7.96	7.4	32.0	Termination Signoff: JR
4	17.5	7.97	7.5	33.0	
Meter ID	136A	PH30	RD14	EC15	

***Mytilus sp.* Development Toxicity Test Count Data**

Client: Reference Toxicant  
 Test Material: Potassium Chloride  
 Test ID #: 100244  
 Project #: 37644

Test Start Date: 4/6/23  
 Test End Date: 4/8/23  
 Enumeration Date: 5/9/23  
 Investigator/Scope ID: AP/Fuvertz

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development
Lab Water Control	A	180	6	186	
	B	168	5	173	
	C	182	10	192	
	D	186	10	196	
0.5	A	218	9	227	
	B	195	11	206	
	C	211	7	218	
	D	190	10	200	
1	A	165	8	173	
	B	197	7	204	
	C	217	10	227	
	D	203	8	211	
2	A	124	56	180	
	B	120	75	195	
	C	106	57	163	
	D	123	71	194	
3	A	2	168	170	
	B	0	137	137	
	C	1	136	137	
	D	1	169	170	
4	A	0	158	158	
	B	0	148	148	
	C	0	189	189	
	D	0	195	195	

## **Appendix M**

### **Test Data and Summary of Statistics for the Toxicity Evaluation of the Berkeley Marina Modified Elutriate Test Sediment Elutriates to *Americamysis bahia***

# CETIS Summary Report

Report Date: 10 May-23 15:58 (p 1 of 1)  
 Test Code/ID: BM\_0323AB\_C1\_Me / 13-8192-8972

## Acute Mysid Survival Test

Pacific EcoRisk

<b>Batch ID:</b> 02-1884-7754	<b>Test Type:</b> Survival (96h)	<b>Analyst:</b> Robert Gee
<b>Start Date:</b> 30 Mar-23 15:52	<b>Protocol:</b> EPA-821-R-02-012 (2002)	<b>Diluent:</b> Not Applicable
<b>Ending Date:</b> 03 Apr-23 13:50	<b>Species:</b> Americamysis bahia	<b>Brine:</b> Not Applicable
<b>Test Length:</b> 94h	<b>Taxon:</b>	<b>Source:</b> Aquatic Indicators, FL <b>Age:</b> 5

<b>Sample ID:</b> 00-1921-0875	<b>Code:</b> BM_0323AB_C1_Me	<b>Project:</b> 37289
<b>Sample Date:</b> 30 Mar-23 15:52	<b>Material:</b> Lab Water	<b>Source:</b> Berkeley Marina (BERKELEY M)
<b>Receipt Date:</b> 30 Mar-23 15:52	<b>CAS (PC):</b>	<b>Station:</b> LABQA
<b>Sample Age:</b> --- (19.2 °C)	<b>Client:</b> Berkeley Marina	

Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
BM_0323AB_C1_Me	00-1921-0875	30 Mar-23 15:52	30 Mar-23 15:52	--- (19.2 °C)	Berkeley Marina	37289
Site Water	08-4268-2806	17 Mar-23 08:15	17 Mar-23 10:11	13d 8h (7.5 °C)		
BM-DU1-Comp MET	03-7132-9661	15 Mar-23 09:25	16 Mar-23 08:15	15d 6h (2.3 °C)		
BM-DU2-Comp MET	10-5203-2261	15 Mar-23 15:05	16 Mar-23 08:15	15d 1h (2.3 °C)		
BM-DU3-Comp MET	08-5489-5378	16 Mar-23 12:20	17 Mar-23 08:20	14d 4h (3.1 °C)		

Sample Code	Material Type	Sample Source	Station Location	Lat/Long
BM_0323AB_C1_Me	Lab Water	Berkeley Marina	LABQA	
Site Water	Site Water	Berkeley Marina	Site Water	
BM-DU1-Comp MET	Elutriate	Berkeley Marina	BM-DU1-Comp MET	
BM-DU2-Comp MET	Elutriate	Berkeley Marina	BM-DU2-Comp MET	
BM-DU3-Comp MET	Elutriate	Berkeley Marina	BM-DU3-Comp MET	

Single Comparison Summary					
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
14-1175-0715	96h Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.2222	Site Water passed 96h survival rate	1
02-0054-3677	96h Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	BM-DU1-Comp MET passed 96h survival rat	1
01-5066-6088	96h Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	BM-DU2-Comp MET passed 96h survival rat	1
03-1630-5848	96h Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	BM-DU3-Comp MET passed 96h survival rat	1

96h Survival Rate Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
BM_0323AB_C1_Me	LW	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
Site Water	SW	5	0.920	0.758	1.080	0.700	1.000	0.058	0.130	14.17%	8.00%
BM-DU1-Comp MET		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
BM-DU2-Comp MET		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
BM-DU3-Comp MET		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

96h Survival Rate Detail							MD5: 522733EA8E2D72805809C0ACDD7C89C1
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
BM_0323AB_C1_Me	LW	1.000	1.000	1.000	1.000	1.000	
Site Water	SW	0.700	1.000	1.000	0.900	1.000	
BM-DU1-Comp MET		1.000	1.000	1.000	1.000	1.000	
BM-DU2-Comp MET		1.000	1.000	1.000	1.000	1.000	
BM-DU3-Comp MET		1.000	1.000	1.000	1.000	1.000	

96h Survival Rate Binomials						
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
BM_0323AB_C1_Me	LW	10/10	10/10	10/10	10/10	10/10
Site Water	SW	7/10	10/10	10/10	9/10	10/10
BM-DU1-Comp MET		10/10	10/10	10/10	10/10	10/10
BM-DU2-Comp MET		10/10	10/10	10/10	10/10	10/10
BM-DU3-Comp MET		10/10	10/10	10/10	10/10	10/10

**CETIS Analytical Report**

Report Date: 10 May-23 15:56 (p 1 of 4)  
 Test Code/ID: BM\_0323AB\_C1\_Me / 13-8192-8972

<b>Acute Mysid Survival Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 14-1175-0715	<b>Endpoint:</b> 96h Survival Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 10 May-23 15:55	<b>Analysis:</b> Nonparametric-Two Sample	<b>Status Level:</b> 1			
<b>Edit Date:</b> 10 May-23 15:54	<b>MD5 Hash:</b> 0081AF6444AD7134F8B473755EEBB4E3	<b>Editor ID:</b> 006-243-107-9			

<b>Data Transform</b>	<b>Alt Hyp</b>	<b>Comparison Result</b>	<b>PMSD</b>
Angular (Corrected)	C > T	Site Water passed 96h survival rate endpoint	9.41%

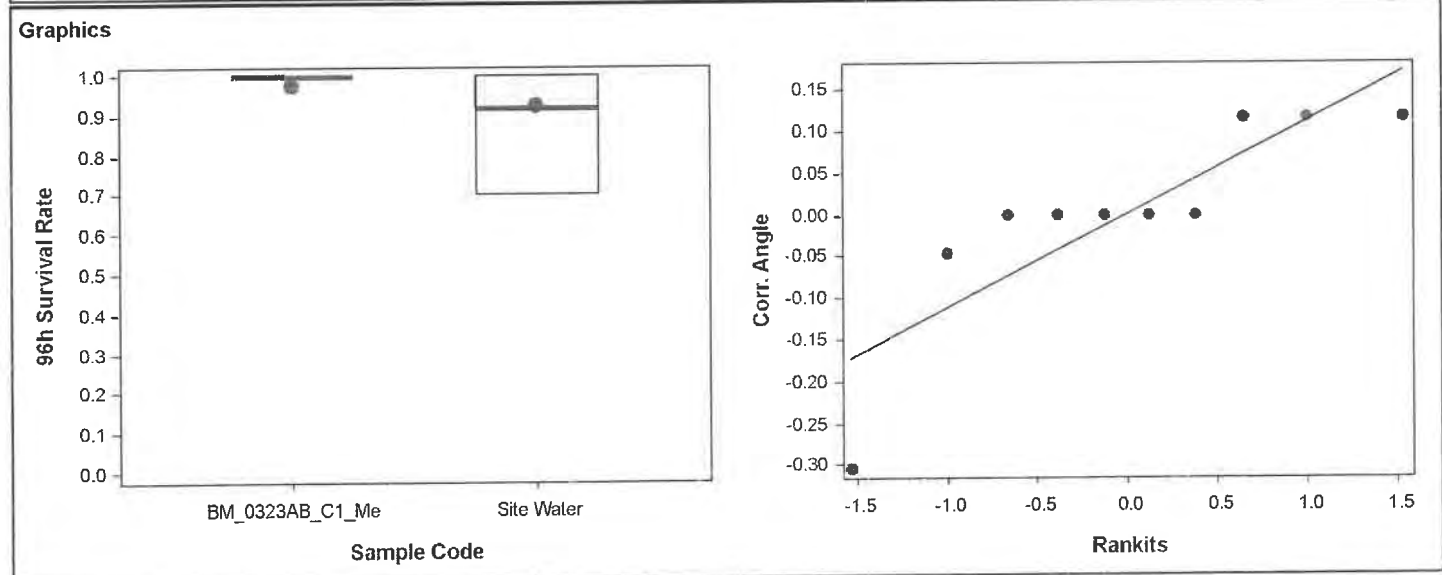
<b>Wilcoxon Rank Sum Two-Sample Test</b>									
<b>Sample I</b>	<b>vs</b>	<b>Sample II</b>	<b>df</b>	<b>Test Stat</b>	<b>Critical</b>	<b>Ties</b>	<b>P-Type</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Lab Water Control		Site Water	8	22.5	---	1	Exact	0.2222	Non-Significant Effect

<b>ANOVA Table</b>						
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Between	0.0340857	0.0340857	1	2.01	0.1938	Non-Significant Effect
Error	0.135511	0.0169388	8			
Total	0.169596		9			

<b>ANOVA Assumptions Tests</b>						
<b>Attribute</b>	<b>Test</b>	<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:1%)</b>	
Variance	Variance Ratio F Test				Indeterminate	
Distribution	Shapiro-Wilk W Normality Test	0.756	0.741	0.0042	Non-Normal Distribution	

<b>96h Survival Rate Summary</b>											
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
BM_0323AB_C1_Me LW	LW	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
Site Water	SW	5	0.920	0.758	1.000	1.000	0.700	1.000	0.058	14.17%	8.00%

<b>Angular (Corrected) Transformed Summary</b>											
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
BM_0323AB_C1_Me LW	LW	5	1.410	1.410	1.410	1.410	1.410	1.410	0.000	0.00%	0.00%
Site Water	SW	5	1.300	1.070	1.520	1.410	0.991	1.410	0.082	14.21%	8.27%



### 96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: Berkeley Marina  
 Test Material: Site Water  
 Test ID#: - Project #: 37289  
 Test Date: 3/30/23 Randomization: 5.5.5

Organism Log #: 13669 Age: 5 days  
 Organism Supplier: Aquatic Indicators  
 Control/Diluent: 25 ppt  
 Sample Salinity adjusted with: Calcium Sulfate

Treatment	Temp (°C)	pH		D.O. (mg/L)		Salinity (ppt)		# Live Organisms					SIGN-OFF
		new	old	new	old	new	old	Rep A	Rep B	Rep C	Rep D	Rep E	
Lab Control	19.2	7.91		7.6		24.8		10	10	10	10	10	Test Solution Prep: <u>TF</u>
Site Water	19.1	8.02		8.4		24.1		10	10	10	10	10	New WQ: <u>DC</u>
													Initiation Date: <u>3/30/23</u>
													Initiation Time: <u>1532</u>
													Initiation Signoff: <u>TF</u>
													a.m. Feeding Signoff: <u>TF</u>
													p.m. Feeding Signoff: <u>TF</u>
Meter ID	<u>148A</u>	<u>PH24</u>		<u>2015</u>		<u>EC16</u>							
Lab Control	20.2	7.91		7.1		25.3		10	10	10	10	10	Count Date: <u>3/31/23</u>
Site Water	20.2	7.96		7.1		25.5		10	10	10	10	10	Count Time: <u>1255</u>
													Count Signoff: <u>TF</u>
													Old WQ: <u>26</u>
													a.m. Feeding Signoff: <u>TF</u>
													p.m. Feeding Signoff: <u>TF</u>
Meter ID	<u>148A</u>	<u>PH19</u>		<u>RD14</u>		<u>EC15</u>							
Lab Control	20.0	7.77		6.7		26.0		10	10	10	10	10	Count Date: <u>4/1/23</u>
Site Water	20.0	7.86		6.7		26.0		10	10	10	10	10	Count Time: <u>1005</u>
													Count Signoff: <u>TF</u>
													Old WQ: <u>26</u>
													a.m. Feeding Signoff: <u>TF</u>
													p.m. Feeding Signoff: <u>TF</u>
Meter ID	<u>136A</u>	<u>PH24</u>		<u>RD15</u>		<u>EC16</u>							
Lab Control	20.0	7.94		7.1		27.9		10	10	10	10	10	Count Date: <u>4/2/23</u>
Site Water	19.9	7.97		7.0		26.6		10	10	10	10	10	Count Time: <u>0825</u>
													Count Signoff: <u>TF</u>
													Old WQ: <u>29</u>
													a.m. Feeding Signoff: <u>TF</u>
													p.m. Feeding Signoff: <u>TF</u>
Meter ID	<u>122A</u>	<u>PH24</u>		<u>RD15</u>		<u>EC16</u>							
Lab Control	19.7	7.89		7.1		29.8		10	10	10	10	10	Termination Date: <u>4/3/23</u>
Site Water	19.9	7.90		7.0		28.0		7	10	10	9	10	Termination Time: <u>1358</u>
													Termination Signoff: <u>TF</u>
													Old WQ: <u>TF</u>
													a.m. Feeding Signoff: <u>TF</u>
Meter ID	<u>133A</u>	<u>PH30</u>		<u>RD10</u>		<u>EC13</u>							

**CETIS Analytical Report**

Report Date: 10 May-23 15:56 (p 2 of 4)  
 Test Code/ID: BM\_0323AB\_C1\_Me / 13-8192-8972

<b>Acute Mysid Survival Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 02-0054-3677	<b>Endpoint:</b> 96h Survival Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 10 May-23 15:55	<b>Analysis:</b> Nonparametric-Two Sample	<b>Status Level:</b> 1			
<b>Edit Date:</b> 10 May-23 15:54	<b>MD5 Hash:</b> A52021A954ED68027F1BEE9A830DECF0	<b>Editor ID:</b> 006-243-107-9			

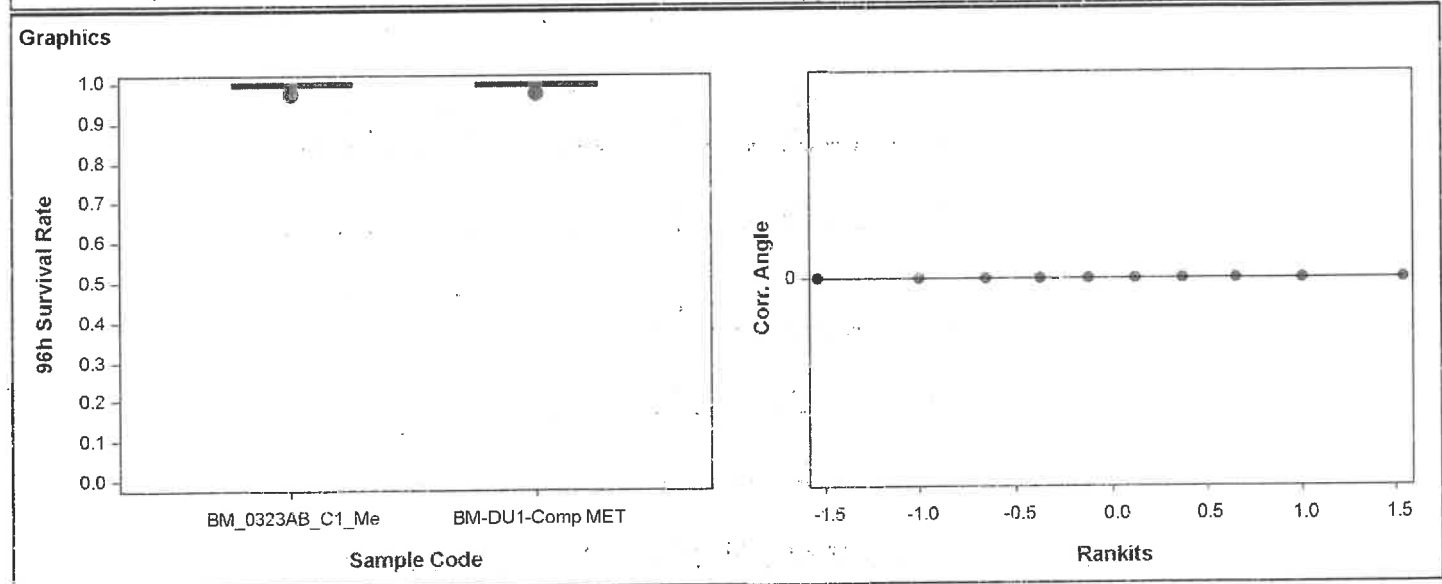
<b>Wilcoxon Rank Sum Two-Sample Test</b>										
<b>Sample I</b>	<b>vs</b>	<b>Sample II</b>	<b>df</b>	<b>Test Stat</b>	<b>Critical</b>	<b>Ties</b>	<b>P-Type</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>	
Lab Water Control		BM-DU1-Comp M	8	27.5	---	1	Exact	1.0000	Non-Significant Effect	

<b>ANOVA Table</b>							
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>	
Between	0	0	1			Indeterminate	
Error	0	0	8				
Total	0		9				

<b>ANOVA Assumptions Tests</b>						
<b>Attribute</b>	<b>Test</b>	<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:1%)</b>	
Variance	Variance Ratio F Test				Indeterminate	
Distribution	Shapiro-Wilk W Normality Test				Indeterminate	

<b>96h Survival Rate Summary</b>											
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
BM_0323AB_C1_Me LW		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
BM-DU1-Comp MET		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

<b>Angular (Corrected) Transformed Summary</b>											
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
BM_0323AB_C1_Me LW		5	1.410	1.410	1.410	1.410	1.410	1.410	0.000	0.00%	0.00%
BM-DU1-Comp MET		5	1.410	1.410	1.410	1.410	1.410	1.410	0.000	0.00%	0.00%



### 96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: Berkeley Marina  
 Test Material: BM-DU1-Comp MET  
 Test ID#: 99535 Project #: 37289  
 Test Date: 3/30/23 Randomization: SSS

Organism Log #: TF 3/30/23 + 399/369 Age: 5 days  
 Organism Supplier: Acquatic Indicators  
 Control: DI + SW at 25 ppt  
 Sample Salinity adjusted with: crystal sea

Treatment (% Elutriate)	Temp (°C)	pH		D.O. (mg/L)		Salinity (ppt)		NH3 (mg/L)	# Live Organisms					SIGN-OFF
		new	old	new	old	new	old		new	Rep A	Rep B	Rep C	Rep D	
Lab Control	19.2	7.91		7.6		24.8			10	10	10	10	10	Test Solution Prep: TF
100%	19.8	8.20		8.1		24.2	3.06		10	10	10	10	10	New WQ: DC
														Initiation Date: 3/30/23
														Initiation Time: 1552
														Initiation Signoff: TF
														a.m. Feeding: DC
														p.m. Feeding: TF
Meter ID	148A	P424		RD15		EC16		DR380						Count Date: 3/31/23
Lab Control	20.2		7.91		7.1		25.3		10	10	10	10	10	Count Time: 1255
100%	20.3		8.08		6.9		24.4		10	10	10	10	10	Count Signoff: M
														Old WQ: R6
														a.m. Feeding: RD
														p.m. Feeding: TF
Meter ID	148A	P429		RD14		EC15								Count Date: 4/1/23
Lab Control	20.0		7.77		6.7		26.0		10	10	10	10	10	Count Time: 1005
100%	20.0		8.01		7.0		26.0		10	10	10	10	10	Count Signoff: M
														Old WQ: R6
														a.m. Feeding: JAC
														p.m. Feeding: ABZ
Meter ID	136A	P424		RD15		EC16								Count Date: 4/2/23
Lab Control	20.0		7.94		7.1		27.9		10	10	10	10	10	Count Time: 0825
100%	19.9		8.13		7.1		25.6		10	10	10	10	10	Count Signoff: M
														Old WQ: M
														a.m. Feeding: MJS
														p.m. Feeding: M
Meter ID	142A	P424		RD15		EC16								Termination Date: 4/3/23
Lab Control	19.7		7.89		7.1		29.8		10	10	10	10	10	Termination Time: 1352
100%	19.9		8.05		6.7		27.5		10	10	10	10	10	Termination Signoff: M
														Old WQ: M
														a.m. Feeding: M
Meter ID	133A	P430		RD15		EC13								



CETIS Analytical Report

Report Date: 10 May-23 15:56 (p 3 of 4)  
 Test Code/ID: BM\_0323AB\_C1\_Me / 13-8192-8972

<b>Acute Mysid Survival Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 01-5066-6088	<b>Endpoint:</b> 96h Survival Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 10 May-23 15:55	<b>Analysis:</b> Nonparametric-Two Sample	<b>Status Level:</b> 1			
<b>Edit Date:</b> 10 May-23 15:54	<b>MD5 Hash:</b> EF87EBAC5ADA111E97B6A789F2EC2E8A	<b>Editor ID:</b> 006-243-107-9			

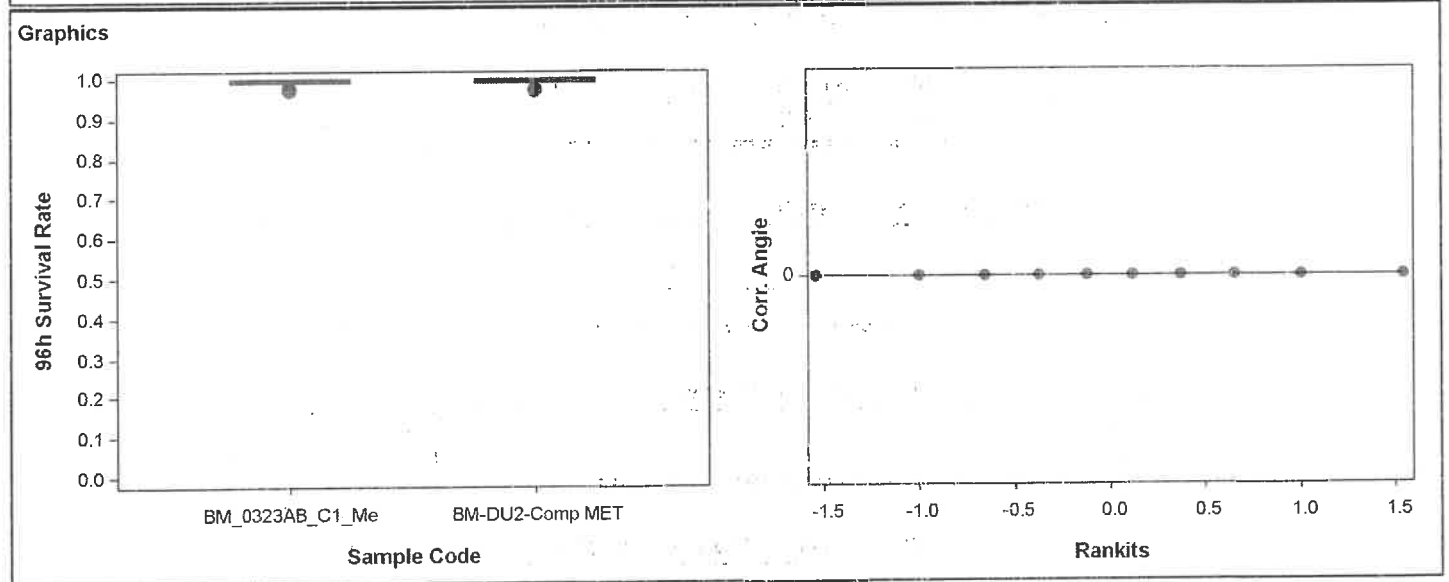
<b>Wilcoxon Rank Sum Two-Sample Test</b>										
<b>Sample I</b>	<b>vs</b>	<b>Sample II</b>	<b>df</b>	<b>Test Stat</b>	<b>Critical</b>	<b>Ties</b>	<b>P-Type</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>	
Lab Water Control		BM-DU2-Comp M	8	27.5	---	1	Exact	1.0000	Non-Significant Effect	

<b>ANOVA Table</b>						
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Between	0	0	1			Indeterminate
Error	0	0	8			
Total	0		9			

<b>ANOVA Assumptions Tests</b>						
<b>Attribute</b>	<b>Test</b>	<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:1%)</b>	
Variance	Variance Ratio F Test				Indeterminate	
Distribution	Shapiro-Wilk W Normality Test				Indeterminate	

<b>96h Survival Rate Summary</b>											
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
BM_0323AB_C1_Me LW		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
BM-DU2-Comp MET		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

<b>Angular (Corrected) Transformed Summary</b>											
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
BM_0323AB_C1_Me LW		5	1.410	1.410	1.410	1.410	1.410	1.410	0.000	0.00%	0.00%
BM-DU2-Comp MET		5	1.410	1.410	1.410	1.410	1.410	1.410	0.000	0.00%	0.00%



### 96 Hour Acute *Americanysis bahia* Water Column Toxicity Test

Client: Berkeley Marina  
 Test Material: BM-DU2-Comp MET  
 Test ID#: 99536 Project #: 37289  
 Test Date: 3/30/23 Randomization: 5-5-5

Organism Log #: 13669 Age: 5 days  
 Organism Supplier: Aquatic Indicators  
 Control: DI + FSW at 21 ppt  
 Sample Salinity adjusted with: crystal sea

Treatment (% Elutriate)	Temp (°C)	pH		D.O. (mg/L)		Salinity (ppt)		NH3 (mg/L)	# Live Organisms					SIGN-OFF
		new	old	new	old	new	old		Rep A	Rep B	Rep C	Rep D	Rep E	
Lab Control	19.2	7.91		7.6		24.8			10	10	10	10	10	Test Solution Prep: <u>TF</u>
100%	19.9	8.25		7.5		24.2		1.35	10	10	10	10	10	New WQ: <u>DC</u>
														Initiation Date: <u>3/30/23</u>
														Initiation Time: <u>1552</u>
														Initiation Signoff: <u>TF</u>
														a.m. Feeding: <u>TF</u>
														p.m. Feeding: <u>TF</u>
Meter ID	48A	PH24		RD15		EC16		DR300						
Lab Control	20.2		7.91		7.3		25.3		10	10	10	10	10	Count Date: <u>3/31/23</u>
100%	20.4		8.07		7.2		25.0		10	10	10	10	10	Count Time: <u>1255</u>
														Count Signoff: <u>TF</u>
														Old WQ: <u>R6</u>
														a.m. Feeding: <u>ND</u>
														p.m. Feeding: <u>ND</u>
Meter ID	148A		PH29		RD14		EC15							
Lab Control	20.0		7.77		6.7		26.0		10	10	10	10	10	Count Date: <u>4/1/23</u>
100%	20.1		7.87		7.0		24.8		10	10	10	10	10	Count Time: <u>1009</u>
														Count Signoff: <u>TF</u>
														Old WQ: <u>R6</u>
														a.m. Feeding: <u>JAL</u>
														p.m. Feeding: <u>JAL</u>
Meter ID	136A		PH24		RD15		EC16							
Lab Control	20.0		7.94		7.1		27.9		10	10	10	10	10	Count Date: <u>4/2/23</u>
100%	19.8		7.99		7.0		26.5		10	10	10	10	10	Count Time: <u>0825</u>
														Count Signoff: <u>TF</u>
														Old WQ: <u>TF</u>
														a.m. Feeding: <u>MD</u>
														p.m. Feeding: <u>MD</u>
Meter ID	142A		PH24		RD15		EC16							
Lab Control	19.7		7.89		7.1		29.8		10	10	10	10	10	Termination Date: <u>4/3/23</u>
100%	19.8		8.00		6.3		28.0		10	10	10	10	10	Termination Time: <u>1358</u>
														Termination Signoff: <u>TF</u>
														Old WQ: <u>TF</u>
														a.m. Feeding: <u>TF</u>
Meter ID	133A		PH30		RD10		EC13							

**CETIS Analytical Report**

Report Date: 10 May-23 15:56 (p 4 of 4)  
 Test Code/ID: BM\_0323AB\_C1\_Me / 13-8192-8972

<b>Acute Mysid Survival Test</b>			<b>Pacific EcoRisk</b>		
<b>Analysis ID:</b> 03-1630-5848	<b>Endpoint:</b> 96h Survival Rate	<b>CETIS Version:</b> CETISv2.1.3			
<b>Analyzed:</b> 10 May-23 15:55	<b>Analysis:</b> Nonparametric-Two Sample	<b>Status Level:</b> 1			
<b>Edit Date:</b> 10 May-23 15:54	<b>MD5 Hash:</b> E4084E2236670944A60D34F73DA290AF	<b>Editor ID:</b> 006-243-107-9			

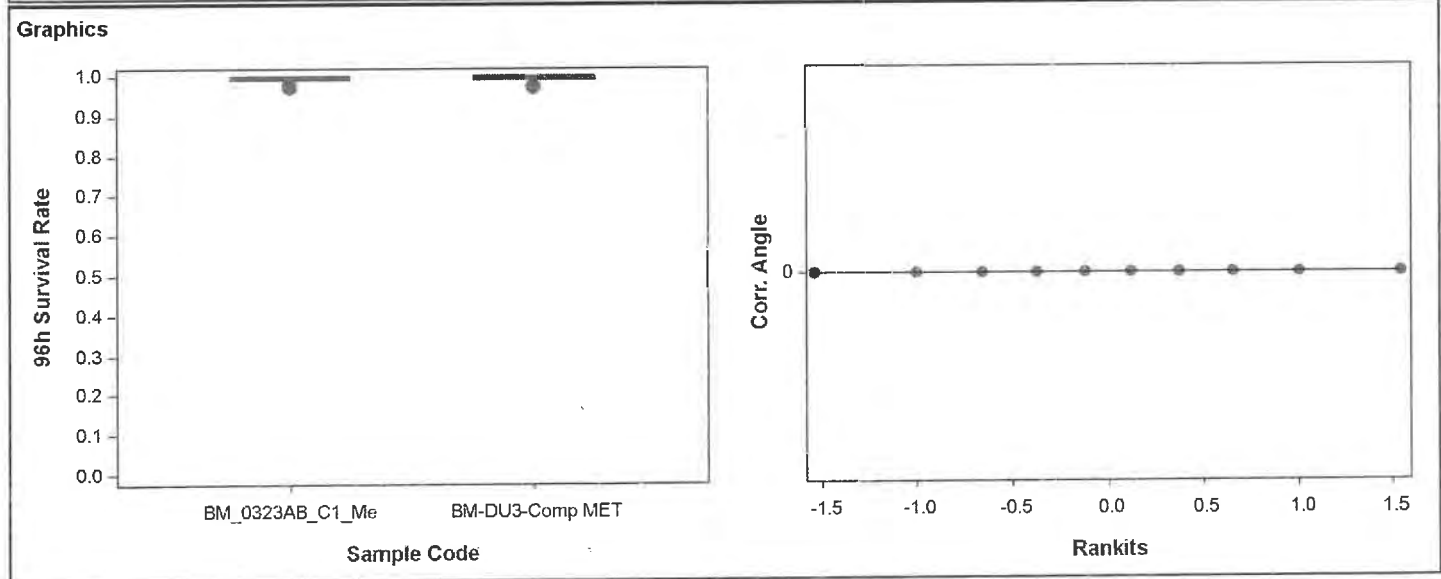
<b>Wilcoxon Rank Sum Two-Sample Test</b>										
<b>Sample I</b>	<b>vs</b>	<b>Sample II</b>	<b>df</b>	<b>Test Stat</b>	<b>Critical</b>	<b>Ties</b>	<b>P-Type</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>	
Lab Water Control		BM-DU3-Comp M	8	27.5	---	1	Exact	1.0000	Non-Significant Effect	

<b>ANOVA Table</b>						
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>
Between	0	0	1			Indeterminate
Error	0	0	8			
Total	0		9			

<b>ANOVA Assumptions Tests</b>						
<b>Attribute</b>	<b>Test</b>	<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:1%)</b>	
Variance	Variance Ratio F Test				Indeterminate	
Distribution	Shapiro-Wilk W Normality Test				Indeterminate	

<b>96h Survival Rate Summary</b>											
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
BM_0323AB_C1_Me LW		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
BM-DU3-Comp MET		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

<b>Angular (Corrected) Transformed Summary</b>											
<b>Sample</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>CV%</b>	<b>%Effect</b>
BM_0323AB_C1_Me LW		5	1.410	1.410	1.410	1.410	1.410	1.410	0.000	0.00%	0.00%
BM-DU3-Comp MET		5	1.410	1.410	1.410	1.410	1.410	1.410	0.000	0.00%	0.00%



### 96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: Berkeley Marina  
 Test Material: BM-DU3-Comp MET  
 Test ID#: 99537 Project #: 37289  
 Test Date: 3/30/23 Randomization: S-S-S

Organism Log #: 13669 Age: 5 days  
 Organism Supplier: Aquatic Indicators  
 Control: DI + FSW at 25 ppt  
 Sample Salinity adjusted with: Crystal Sea

Treatment (% Elutriate)	Temp (°C)	pH		D.O. (mg/L)		Salinity (ppt)		NH3 (mg/L)	# Live Organisms					SIGN-OFF
		new	old	new	old	new	old		new	Rep A	Rep B	Rep C	Rep D	
Lab Control	19.2	7.91		7.6		24.8			10	10	10	10	10	Test Solution Prep: <u>7F</u> New WQ: <u>DC</u> Initiation Date: <u>3/30/23</u> Initiation Time: <u>1552</u> Initiation Signoff: <u>7F</u> a.m. Feeding: <u>PS</u> p.m. Feeding: <u>7F</u>
100%	19.3	8.12		7.2		24.0		3.42	10	10	10	10	10	
Meter ID	148A	PH24		R015		EC16		DR3802						
Lab Control	20.2		7.91		7.1		25.3		10	10	10	10	10	Count Date: <u>3/31/23</u> Count Time: <u>1255</u> Count Signoff: <u>RV</u> Old WQ: <u>RV</u> a.m. Feeding: <u>RV</u> p.m. Feeding: <u>RV</u>
100%	20.3		8.15		6.8		24.8		10	10	10	10	10	
Meter ID	148A		PH29		R014		EC15							
Lab Control	20.0		7.77		6.7		26.0		10	10	10	10	10	Count Date: <u>4/1/23</u> Count Time: <u>1003</u> Count Signoff: <u>RV</u> Old WQ: <u>RV</u> a.m. Feeding: <u>JAC</u> p.m. Feeding: <u>RV</u>
100%	20.1		8.07		7.1		25.2		10	10	10	10	10	
Meter ID	136A		PH24		R015		EC16							
Lab Control	20.0		7.94		7.1		27.9		10	10	10	10	10	Count Date: <u>4/2/23</u> Count Time: <u>0825</u> Count Signoff: <u>RV</u> Old WQ: <u>RV</u> a.m. Feeding: <u>RV</u> p.m. Feeding: <u>RV</u>
100%	19.8		8.16		7.0		26.4		10	10	10	10	10	
Meter ID	142A		PH24		R015		EC16							
Lab Control	19.7		7.89		7.1		29.8		10	10	10	10	10	Termination Date: <u>4/3/23</u> Termination Time: <u>1358</u> Termination Signoff: <u>RV</u> Old WQ: <u>RV</u> a.m. Feeding: <u>RV</u>
100%	19.8		8.07		6.4		28.8		10	10	10	10	10	
Meter ID	133A		PH30		R010		EC13							

## **Appendix N**

### **Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Mysid, *Americamysis bahia***

**CETIS Summary Report**

Report Date: 11 Apr-23 10:00 (p 1 of 1)  
 Test Code/ID: 100243 / 04-5884-1728

**Acute Mysid Survival Test**

Pacific EcoRisk

<b>Batch ID:</b> 08-0161-6438	<b>Test Type:</b> Survival (96h)	<b>Analyst:</b> Riyan Lacara
<b>Start Date:</b> 30 Mar-23 15:10	<b>Protocol:</b> EPA-821-R-02-012 (2002)	<b>Diluent:</b> Laboratory Water
<b>Ending Date:</b> 03 Apr-23 13:10	<b>Species:</b> Americamysis bahia	<b>Brine:</b> Crystal Sea
<b>Test Length:</b> 94h	<b>Taxon:</b>	<b>Source:</b> Aquatic Indicators, FL <b>Age:</b> 5
<b>Sample ID:</b> 04-2933-1232	<b>Code:</b> KCI	<b>Project:</b> 37643
<b>Sample Date:</b> 30 Mar-23 15:10	<b>Material:</b> Potassium chloride	<b>Source:</b> Reference Toxicant
<b>Receipt Date:</b> 30 Mar-23 15:10	<b>CAS (PC):</b>	<b>Station:</b> In House
<b>Sample Age:</b> --- (19.5 °C)	<b>Client:</b> Reference Toxicant	

**Multiple Comparison Summary**

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	S
16-3977-3750	96h Survival Rate	Steel Many-One Rank Sum Test	0.25	0.5	0.3536	15.5%	1

**Point Estimate Summary**

Analysis ID	Endpoint	Point Estimate Method	✓ Level	g/L	95% LCL	95% UCL	S
01-2444-2990	96h Survival Rate	GLM: Log-Normal (Probit)	EC5	0.253	0.176	0.309	1
			EC10	0.29	0.215	0.346	
			EC15	0.319	0.245	0.374	
			EC20	0.343	0.271	0.398	
			EC25	0.366	0.296	0.421	
			EC40	0.43	0.365	0.488	
			EC50	0.473	0.41	0.539	

**96h Survival Rate Summary**

Conc-g/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	4	0.975	0.895	1.050	0.900	1.000	0.025	0.050	5.13%	0.00%
0.125		4	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.56%
0.25		4	0.900	0.675	1.130	0.700	1.000	0.071	0.141	15.71%	7.69%
0.5		4	0.519	0.134	0.904	0.200	0.778	0.121	0.242	46.58%	46.72%
1		4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	---	100.00%
2		4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	---	100.00%

**96h Survival Rate Detail**

MD5: 25963F41B536211F024D29EE8672C6FA

Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LW	1.000	1.000	1.000	0.900
0.125		1.000	1.000	1.000	1.000
0.25		0.900	1.000	0.700	1.000
0.5		0.200	0.600	0.500	0.778
1		0.000	0.000	0.000	0.000
2		0.000	0.000	0.000	0.000

**96h Survival Rate Binomials**

Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LW	10/10	10/10	10/10	9/10
0.125		10/10	10/10	10/10	10/10
0.25		9/10	10/10	7/10	10/10
0.5		2/10	6/10	5/10	7/9
1		0/10	0/10	0/10	0/10
2		0/10	0/10	0/10	0/10

Acute Mysid Survival Test

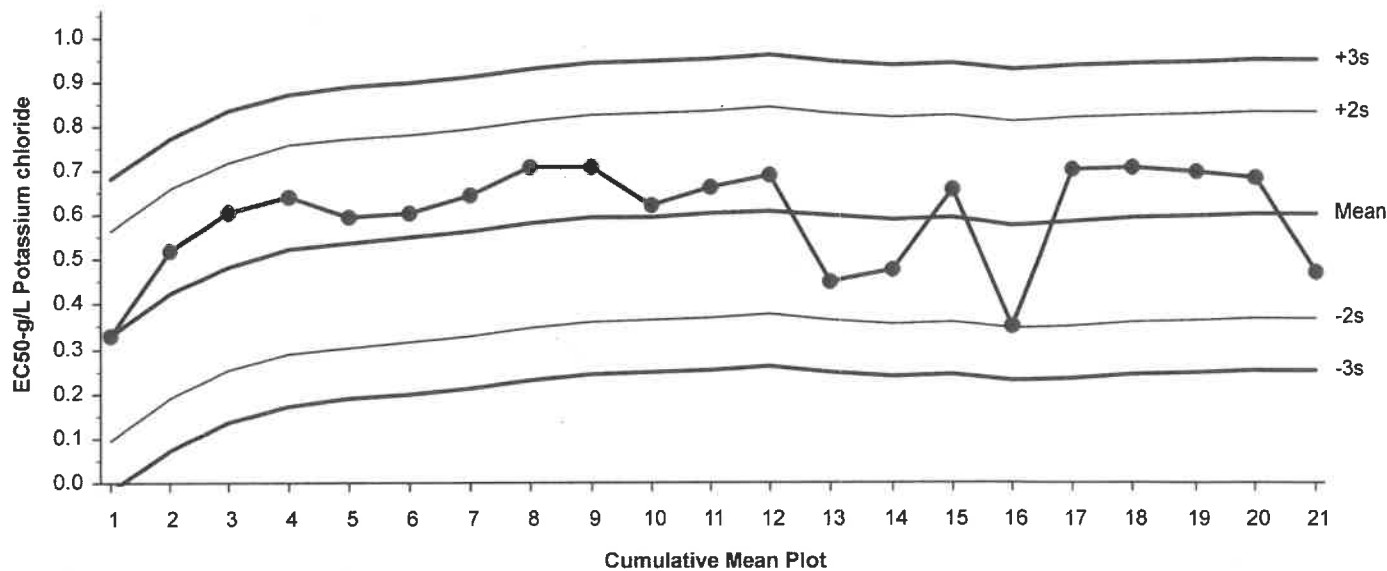
Pacific EcoRisk

Test Type: Survival (96h)  
 Protocol: EPA-821-R-02-012 (2002)

Organism: Americamysis bahia  
 Endpoint: 96h Survival Rate

Material: Potassium chloride  
 Source: Reference Toxicant-REF

Acute Mysid Survival Test  
 96h Survival Rate Endpoint



Mean: 0.6036      Count: 20      -2s Warning Limit: 0.37      -3s Action Limit: 0.253  
 Sigma: 0.1167      CV: 19.30%      +2s Warning Limit: 0.837      +3s Action Limit: 0.954

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2021	Dec	14	18:05	0.3299	-0.2737	-2.346	(-)		15-7678-7516	01-8058-0189
2	2022	Jan	20	14:01	0.5176	-0.08597	-0.7367			02-8903-5760	20-3293-1186
3		Feb	3	15:10	0.605	0.001397	0.01197			03-1298-5867	11-0687-6466
4			10	12:40	0.6404	0.03684	0.3157			09-9892-7937	01-1079-5086
5		Apr	14	16:20	0.5946	-0.009	-0.07709			05-9261-8796	10-6699-4864
6			28	10:49	0.6057	0.002127	0.01823			09-7471-5899	18-8035-5819
7		May	11	16:44	0.6477	0.04411	0.378			17-5050-0960	07-5573-4854
8		Jun	30	14:20	0.7071	0.1035	0.8869			07-4692-5072	19-1612-4685
9		Jul	7	18:04	0.7071	0.1035	0.8869			19-5567-3491	08-0978-3038
10			28	17:42	0.6214	0.01778	0.1524			06-4185-6988	11-6992-6899
11		Aug	4	15:25	0.6632	0.05962	0.5109			04-5043-7215	00-1233-4025
12			11	17:25	0.6905	0.0869	0.7446			15-5187-9326	20-2006-9298
13		Nov	9	12:26	0.4534	-0.1502	-1.287			03-5631-1630	21-3859-8573
14		Dec	7	17:00	0.4795	-0.1241	-1.064			12-1160-0148	16-8928-7305
15	2023	Jan	11	17:00	0.6598	0.05615	0.4812			01-2110-7834	10-4130-5117
16		Feb	9	16:45	0.3536	-0.25	-2.143	(-)		13-3785-3735	10-6382-5328
17			16	17:21	0.703	0.09937	0.8515			13-3520-4745	16-7381-6948
18		Mar	1	18:00	0.7071	0.1035	0.8869			13-3563-5622	19-2898-5480
19			2	14:54	0.7006	0.09697	0.831			09-1186-2332	01-9871-7088
20			9	16:15	0.6848	0.08119	0.6957			06-0445-5661	03-9102-1138
21			30	15:10	0.4733	-0.1303	-1.117			04-5884-1728	01-2444-2990

### 96 Hour Acute *Americamysis bahia* Reference Toxicant Test

Client: Reference Toxicant Organism Log #: 13669 Age: 5 days  
 Test Material: Potassium Chloride Organism Supplier: AI  
 Test ID#: 100243 Project #: 37643 Control/Diluent: DI + Crystal Sea @ 25 ppt  
 Test Date: 3/30/23 Randomization: 0,4,5 Control Water Batch: 1542

Treatment (g/L KCl)	Temp (°C)	pH		D.O. (mg/L)		Salinity (ppt)		# Live Organisms				SIGN-OFF
		new	old	new	old	new	old	Rep A	Rep B	Rep C	Rep D	
Control	19.5	7.98		7.7		25.2		10	10	10	10	Test Solution Prep: <u>RA</u>
0.125	19.5	8.03		7.8		25.5		10	10	10	10	New WQ: <u>70</u>
0.25	19.6	8.06		7.9		25.6		10	10	10	10	Initiation Date: <u>3/20/23</u>
0.5	19.5	8.09		8.1		25.8		10	10	10	10	Initiation Time: <u>1510</u>
1	19.5	8.14		8.2		26.2		10	10	10	10	Initiation Signoff: <u>RA</u>
2	19.6	8.22		8.5		27.0		10	10	10	10	RT Batch #: <u>67</u>
Meter ID	133A	PH29		RD12		EC13						a.m. Feeding Signoff: <u>RA</u>
												p.m. Feeding Signoff: <u>RA</u>
Control	20.6		7.63		5.4		24.8	10	10	10	10	Count Date: <u>3/31/23</u>
0.125	20.7		7.63		5.6		25.7	10	10	10	10	Count Time: <u>1043</u>
0.25	20.7		7.68		5.7		25.8	10	10	10	10	Count Signoff: <u>RA</u>
0.5	20.8		7.76		6.1		26.1	4	9	7	9	Old WQ: <u>R6</u>
1	20.7		7.80		6.3		26.5	0	0	0	0	a.m. Feeding Signoff: <u>RA</u>
2	20.4		7.84		6.4		27.4	0	0	0	0	p.m. Feeding Signoff: <u>RA</u>
Meter ID	133A	PH29		RD14		EC15						
Control	20.1	8.03	7.52	8.4	5.3	24.2	25.9	10	10	10	10	Test Solution Prep: <u>RA</u>
0.125	20.8	8.06	7.58	8.3	5.4	24.8	26.2	10	10	10	10	New WQ: <u>R6</u>
0.25	20.6	8.08	7.58	8.2	5.4	24.9	25.8	10	10	9	10	Renewal Date: <u>4/1/23</u>
0.5	20.1	8.11	7.68	8.3	5.5	25.2	26.6	4	6	6	7	Renewal Time: <u>1355</u>
1	-	-	-	-	-	-	-	-	-	-	-	Renewal Signoff: <u>RA</u>
2	-	-	-	-	-	-	-	-	-	-	-	Old WQ: <u>R6</u>
Meter ID	132A	PH24	PH24	RD15	RD15	EC16	EC16					a.m. Feeding Signoff: <u>RA</u>
												p.m. Feeding Signoff: <u>RA</u>
												RT Batch #: <u>67</u>
Control	20.6		7.64		6.0		25.2	10	10	10	10	Count Date: <u>4/2/23</u>
0.125	20.7		7.67		6.0		25.4	10	10	10	10	Count Time: <u>0815</u>
0.25	20.8		7.67		6.0		25.4	9	10	8	10	Count Signoff: <u>RA</u>
0.5	20.8		7.81		6.5		25.6	3	6	6	8	Old WQ: <u>70</u>
1	-	-	-	-	-	-	-	-	-	-	-	a.m. Feeding Signoff: <u>RA</u>
2	-	-	-	-	-	-	-	-	-	-	-	p.m. Feeding Signoff: <u>RA</u>
Meter ID	146A		PH30		RD14		EC13					
Control	20.6		7.42		4.5		25.4	10	10	10	9	Termination Date: <u>4/3/23</u>
0.125	20.8		7.48		4.7		25.7	10	10	10	10	Termination Time: <u>1310</u>
0.25	20.8		7.47		4.7		25.8	9	10	7	10	Termination Signoff: <u>RA</u>
0.5	20.9		7.53		4.7		25.9	2	6	5	7*	Old WQ: <u>RA</u>
1	-	-	-	-	-	-	-	-	-	-	-	a.m. Feeding Signoff: <u>RA</u>
2	-	-	-	-	-	-	-	-	-	-	-	
Meter ID	147A		PH30		RD12		EC13					

\* 1 org dried to side of beaker above water, remove from statistical analysis.



## **Appendix O**

### **Test Data for the Berkeley Marina Bioaccumulation Test with the Bivalve, *Macoma nasuta***

28-day *Macoma nasuta* Sediment Bioaccumulation Test Data

Client: Berkeley Marina Test Material: Lab Control Test ID: 100996 Project #: 37289  
 Organism Log#: 13745 Adult Adult Organism Supplier: J&G Gunstone Sample ID: -

		Water Quality Measurements					Observed Mortality					Sign-Off			
Day	Date	Temp. (°C)	NH <sub>3</sub> (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Rep E	Initiation time:	Initials:	Confirmation:	
		Day 0 # Live Organisms					7	7	7	7	7		Time: 1440	Initials: JT	Confirmation:
0	5/11/23	14.1	21.00	8.01	8.4	33.4	0	0	0	0	0	Time: 1440	Initials: JT		
1	5/12/23	15.4			7.9	33.8	0	0	0	0	0	Time: 1436	Initials: DC		
2	5/13/23	14.0			7.8	32.3	0	0	0	0	0	Time: 1440	Initials: MH		
3	5/14/23	15.5			8.1	33.2	0	0	0	0	0	Time: 0949	Initials: JT		
4	5/15/23	14.8			8.2	32.9	0	0	0	0	0	Time: 1511	Initials: JT		
5	5/16/23	15.9			7.3	34.5	0	0	0	0	0	Time: 945	Initials: AEL		
6	5/17/23	14.4			7.8	34.3	0	0	0	0	0	Time: 0837	Initials: SB		
7	5/18/23	15.7	2.63	7.89	7.9	34.8	0	0	0	0	0	Time: 0959	Initials: AS		
8	5/19/23	15.0			7.8	33.8	0	0	0	0	0	Time: 0831	Initials: SJ		
9	5/20/23	15.0			7.5	34.1	0	0	0	0	0	Time: 0926	Initials: JD		
10	5/21/23	14.9			8.4	34.0	0	0	0	0	0	Time: 0833	Initials: ZR		
11	5/22/23	15.8			7.8	34.3	0	0	0	0	0	Time: 1011	Initials: CLP		
12	5/23/23	15.2			7.9	34.2	0	0	0	0	0	Time: 0837	Initials: AS		
13	5/24/23	15.7			8.1	34.0	0	0	0	0	0	Time: 1334	Initials: TK		
14	5/25/23	14.7	4.03	7.87	8.0	35.2	0	0	0	0	0	Time: 0905	Initials: DC		
15	5/26/23	16.0			8.0	34.3	0	0	0	0	0	Time: 0846	Initials: SJ		
16	5/27/23	14.5			7.8	34.3	0	0	0	0	0	Time: 1315	Initials: DC		
17	5/28/23	16.0			7.9	34.0	0	0	0	0	0	Time: 0950	Initials: ZR		
18	5/29/23	14.7			8.0	34.3	0	0	0	0	0	Time: 1610	Initials: JTS		
19	5/30/23	NM			NM	NM	NM	NM	NM	NM	NM	Time: NM	Initials: NM		
20	5/31/23	15.5			7.7	33.9	0	0	0	0	0	Time: 1653	Initials: JK		
21	6/1/23	15.9	1.18	7.97	7.9	34.5	0	0	0	0	0	Time: 0825	Initials: DC		
22	6/2/23	15.3			8.3	35.1	0	0	0	0	0	Time: 1030	Initials: MLP		
23	6/3/23	15.5			8.1	34.6	0	0	0	0	0	Time: 0822	Initials: JD		
24	6/4/23	14.6			8.3	32.312	0	0	0	0	0	Time: 1045	Initials: CT		
25	6/5/23	15.5			7.4	34.3	0	0	0	0	0	Time: 1200	Initials: MLP		
26	6/6/23	14.4			8.0	33.2	0	0	0	0	0	Time: 1433	Initials: CLP		
27	6/7/23	15.9			8.1	34.4	0	0	0	0	0	Time: 0900	Initials: MLP		
28	6/18/23	14.9	1.17	7.99	7.8	33.6	0	0	0	0	0	Time: 1210	Initials: CT		
		Day 28 # Live Organisms					7	7	7	7	7		Initials: JT		

28-day *Macoma nasuta* Sediment Bioaccumulation Test Data

Client: Berkeley Marina Test Material: BM-DU3-Comp Test ID: 100996 Project #: 37289  
 Organism Log#: 13745 Adult Adult Organism Supplier: J&G Gunstone Sample ID: 37289

		Day 0 # Live Organisms					Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off	
							7	7	7	7	7	Initials: <u>TF</u>	Confirmation:
Day	Date	Water Quality Measurements					Observed Mortality					Initiation time: <u>1440</u>	
		Temp. (°C)	NH <sub>3</sub> (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Rep E		
0	5/11/23	14.5	1.31	8.01	8.3	33.9	0	0	0	0	0	Time: <u>1440</u> Initials: <u>TF</u>	
1	5/12/23	15.9			7.7	33.9	0	0	0	0	0	Time: <u>1436</u> Initials: <u>DC</u>	
2	5/13/23	14.8			7.8	32.5	0	0	0	0	0	Time: <u>1440</u> Initials: <u>MH</u>	
3	5/14/23	15.9			8.1	33.1	0	0	0	0	0	Time: <u>0948</u> Initials: <u>DC</u>	
4	5/15/23	15.2			8.2	32.8	0	0	0	0	0	Time: <u>1513</u> Initials: <u>DC</u>	
5	5/16/23	15.6			8.1	34.7	0	0	0	0	0	Time: <u>0945</u> Initials: <u>LR</u>	
6	5/17/23	14.3			<del>7.7</del> <sup>4.2/11.5</sup> 7.8	34.7	0	0	0	0	0	Time: <u>0838</u> Initials: <u>SA</u>	
7	5/18/23	15.7	4.44	<del>7.7</del> <sup>7.7</sup> 7.9	<del>7.7</del> <sup>7.7</sup> 7.7	34.8	0	0	0	0	0	Time: <u>0958</u> Initials: <u>DC</u>	
8	5/19/23	14.8			8.0	33.8	0	0	0	0	0	Time: <u>0832</u> Initials: <u>DC</u>	
9	5/20/23	15.0			7.6	33.0	0	0	0	0	0	Time: <u>0930</u> Initials: <u>JD</u>	
10	5/21/23	14.6			8.1	33.9	0	0	0	0	0	Time: <u>0844</u> Initials: <u>DC</u>	
11	5/22/23	15.8			7.7	34.3	0	0	0	0	0	Time: <u>1011</u> Initials: <u>CLP</u>	
12	5/23/23	15.4			7.8	34.3	0	0	0	0	0	Time: <u>0839</u> Initials: <u>DC</u>	
13	5/24/23	15.8			8.2	34.1	0	0	0	0	0	Time: <u>1330</u> Initials: <u>TK</u>	
14	5/23/23	14.9	4.39	7.92	8.0	34.8	0	0	0	0	0	Time: <u>0905</u> Initials: <u>DC</u>	
15	5/26/23	16.0			8.0	34.4	0	0	0	0	0	Time: <u>0847</u> Initials: <u>DC</u>	
16	5/27/23	15.4			<del>7.7</del> <sup>7.7</sup> 7.6	34.3	0	0	0	0	0	Time: <u>1335</u> Initials: <u>DC</u>	
17	5/28/23	16.0			7.4	34.1	0	0	0	1	0	Time: <u>0954</u> Initials: <u>DC</u>	
18	5/29/23	15.4			7.8	34.5	0	0	0	0	0	Time: <u>1610</u> Initials: <u>JD</u>	
19	5/30/23	NM			NM	NM	NM	NM	NM	NM	NM	Time: <u>NM</u> Initials: <u>NM</u>	
20	5/31/23	15.4			7.8	34.5	0	0	0	0	0	Time: <u>1653</u> Initials: <u>TK</u>	
21	6/1/23	15.6	2.44	8.00	8.0	34.5	0	0	0	0	0	Time: <u>0825</u> Initials: <u>DC</u>	
22	6/2/23	15.2			5.9	34.7	0	0	0	0	0	Time: <u>1015</u> Initials: <u>MP</u>	
23	6/3/23	15.6			7.7	34.2	0	0	0	0	0	Time: <u>0824</u> Initials: <u>JD</u>	
24	6/4/23	14.1			8.0	34.1	0	0	0	0	0	Time: <u>1045</u> Initials: <u>CT</u>	
25	6/5/23	15.8			7.7	33.6	0	0	0	0	0	Time: <u>1205</u> Initials: <u>MP</u>	
26	6/6/23	14.2			8.0	33.4	0	0	0	0	0	Time: <u>1433</u> Initials: <u>CLP</u>	
27	6/7/23	15.8			7.9	<del>34.1</del> <sup>34.1</sup> 34.2	0	0	0	0	0	Time: <u>0900</u> Initials: <u>MP</u>	
28	6/8/23	14.9	9.35	7.91	7.8	33.8	0	0	0	0	0	Time: <u>1210</u> Initials: <u>CT</u>	
		Day 28 # Live Organisms					6	7	5	0	7	Initials: <u>DC</u>	

### 28-day *Macoma* Sediment Bioaccumulation Initial Water Quality Data

Client: Berkeley Marina

Project: Episode 1

Project #: 100996

Date (Day 0): 5/11/23

Treatment	Replicate	Temp. (°C)	pH	DO (mg/L)	Salinity (ppt)	Date	Time	Initials
Lab Control	A	14.1	8.01	8.4	33.4	5/11/23	1150	SR
	B	14.2	8.03	8.3	33.4			
	C	14.1	8.07	8.4	33.3			
	D	14.2	8.00	8.4	33.8			
	E	14.2	8.06	8.2	33.9			
BM-DU3-Comp	A	14.5	8.01	8.3	33.9	5/11/23	1155	SR
	B	14.6	8.01	8.3	33.9			
	C	14.6	8.08	8.2	33.8			
	D	14.4	8.06	8.3	33.9			
	E	14.5	8.03	8.2	33.8			

### 28-day *Macoma* Sediment Bioaccumulation Final Water Quality Data

Client: Berkeley Marina      Project: Episode 1      Project #: 100996      Date (Day 28): 6/8/23

Treatment	Replicate	Temp. (°C)	pH	DO (mg/L)	Salinity (ppt)	Date	Time	Initials
<b>Lab Control</b>	A	14.9	7.99	8.0	33.6	6/8/23	1210	GA
	B	NM	NM	NM	NM			
	C	NM	NM	NM	NM			
	D	NM	NM	NM	NM			
	E	NM	NM	NM	NM			
<b>BM-DU3-Comp</b>	A	14.9	7.91	7.8	33.8	6/8/23	1210	GA
	B	NM	NM	NM	NM			
	C	NM	NM	NM	NM			
	D	NM	NM	NM	NM			
	E	NM	NM	NM	NM			

## **Appendix P**

### **Test Data for the Berkeley Marina Sediment Bioaccumulation Test with the Polychaete, *Nereis virens***

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28-day *Nereis virens* Sediment Bioaccumulation Test Data

Client: Berkeley Marina Test Material: Lab Control Test ID: 100997 Project #: 37289  
 Organism Log#: 13746 Age: Adult Organism Supplier: ARO Sample ID: -

		Day 0 # Live Organisms					Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
							5	5	5	5	5	Initials: JR Confirmation: MV
Day	Date	Water Quality Measurements					Observed Mortality					
		Temp. (°C)	NH <sub>3</sub> (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Rep E	
0	5/11/23	14.8	21.00	7.91	8.0	32.8	0	0	0	0	0	Time: 1130 Initials: JR
1	5/12/23	15.6			7.5	30.8	0	0	0	0	0	Time: 1349 Initials: DC
2	5/13/23	14.9			6.7	31.4	0	0	0	0	0	Time: 1434 Initials: MH
3	5/14/23	15.8			7.8	31.7	0	0	0	0	0	Time: 0953 Initials: ZR
4	5/15/23	15.4			8.1	31.5	0	0	0	0	0	Time: 1507 Initials: ZR
5	5/16/23	14.8			8.1	34.6	0	0	0	0	0	Time: 945 Initials: HR
6	5/17/23	14.2			7.9	34.5	0	0	0	0	0	Time: 0821 Initials: SJ
7	5/18/23	15.3	21.00	7.75	8.0	34.6	0	0	0	0	0	Time: 0954 Initials: ZR
8	5/19/23	15.2			7.6	34.1	0	0	0	0	0	Time: 0817 Initials: SJ
9	5/20/23	15.3			7.9	34.2	0	0	0	0	0	Time: 0950 Initials: JD
10	5/21/23	15.1			8.0	34.3	0	0	0	0	0	Time: 0947 Initials: ZR
11	5/22/23	15.5			7.7	34.35 <sup>2</sup>	0	0	0	0	0	Time: 1032 Initials: CLP
12	5/23/23	15.4			7.9	33.8	0	0	0	0	0	Time: 0820 Initials: ZR
13	5/24/23	15.6			8.0	33.2	0	0	0	0	0	Time: 1330 Initials: TK
14	5/25/23	14.6	22.00	7.32	7.8	34.0	0	0	0	0	0	Time: 0902 Initials: DC
15	5/26/23	15.6			8.5	35.0	0	0	0	0	0	Time: 0834 Initials: SJ
16	5/27/23	15.5			7.9	34.4	0	0	0	0	0	Time: 1330 Initials: DC
17	5/28/23	15.9			8.1	34.9	0	0	0	0	0	Time: 0957 Initials: ZR
18	5/29/23	15.9			7.7	34.0	0	0	0	0	0	Time: 1620 Initials: JTD
19	5/30/23	NM			NM	NM	NM	NM	NM	NM	NM	Time: NM Initials: NM
20	5/31/23	15.7			8.0	35.2	0	0	0	0	0	Time: 1653 Initials: JK
21	6/1/23	15.3	21.00	7.98	7.8	34.5	0	0	0	0	0	Time: 0825 Initials: DC
22	6/2/23	15.0			8.1	34.8	0	0	0	0	0	Time: 0930 Initials: MP
23	6/3/23	15.5			8.1	34.6	0	0	0	0	0	Time: 0915 Initials: JD
24	6/4/23	14.7			8.1	35.1	0	0	0	0	0	Time: 1028 Initials: CLP
25	6/5/23	16.1			8.0	35.2	0	0	0	0	0	Time: 1215 Initials: MP
26	6/6/23	15.7			8.2	33.9	0	0	0	0	0	Time: 1433 Initials: CLP
27	6/7/23	16.1			8.1	33.4	0	0	0	0	0	Time: 0850 Initials: MP
28	6/8/23	14.9	21.00	7.77	8.2	34.6	0	0	0	0	0	Time: 1140 Initials: CLP
		Day 28 # Live Organisms					3	5	5	5	5	Initials: MP

28-day *Nereis virens* Sediment Bioaccumulation Test Data

Client: Berkeley Marina Test Material: BM-DU3-Comp Test ID: 100997 Project #: 37289  
 Organism Log#: 13746 Age: Adult Organism Supplier: ARO Sample ID: 37289

		Day 0 # Live Organisms					Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off	
							5	5	5	5	5	Initials: <u>SR</u>	Confirmation: <u>ML</u>
Day	Date	Water Quality Measurements					Observed Mortality						
		Temp. (°C)	NH <sub>3</sub> (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Rep E		
0	5/11/23	14.4	1.31	8.04	8.1	33.7	0	0	0	0	0	Time: 1145	Initials: <u>SR</u>
1	5/12/23	15.7			7.6	32.9	0	0	0	0	0	Time: 1309	Initials: <u>DC</u>
2	5/13/23	14.7			7.5	32.3	0	0	0	0	0	Time: 1434	Initials: <u>MH</u>
3	5/14/23	15.9			7.5	30.6	0	0	0	0	0	Time: 0955	Initials: <u>JS</u>
4	5/15/23	15.4			8.1	32.2	0	0	0	0	0	Time: 1509	Initials: <u>SR</u>
5	5/16/23	14.8			8.0	34.6	0	0	0	0	0	Time: 945	Initials: <u>AK</u>
6	5/17/23	14.7			7.8	34.4	0	0	0	0	0	Time: 0820	Initials: <u>SR</u>
7	5/18/23	15.6	3.05	7.81	8.1	34.8	0	0	0	0	0	Time: 0956	Initials: <u>SR</u>
8	5/19/23	15.1			7.7	34.0	0	0	0	0	0	Time: 0818	Initials: <u>SR</u>
9	5/20/23	15.3			8.0	33.9	0	0	0	0	0	Time: 0955	Initials: <u>JD</u>
10	5/21/23	15.2			8.0	34.3	0	0	0	0	0	Time: 0848	Initials: <u>SR</u>
11	5/22/23	15.9			7.6	34.6	0	0	0	0	0	Time: 1032	Initials: <u>CLP</u>
12	5/23/23	15.4			8.0	33.9	0	0	0	0	0	Time: 0836	Initials: <u>SR</u>
13	5/24/23	15.7			8.2	33.6	0	0	0	0	0	Time: 1330	Initials: <u>TK</u>
14	5/25/23	14.6	2.00	7.89	7.8	34.8	0	0	0	0	0	Time: 0902	Initials: <u>DC</u>
15	5/26/23	15.8			8.5	34.6	0	0	0	0	0	Time: 0835	Initials: <u>SR</u>
16	5/27/23	14.8			7.6	33.8	0	0	0	0	0	Time: 1330	Initials: <u>DC</u>
17	5/28/23	16.1			7.9	34.5	0	0	0	0	0	Time: 0958	Initials: <u>SR</u>
18	5/29/23	15.4			8.0	34.6	0	0	0	0	0	Time: 1620	Initials: <u>JTD</u>
19	5/30/23	NM			NM	NM	NM	NM	NM	NM	NM	Time: NM	Initials: <u>NM</u>
20	5/31/23	15.2			7.9	34.6	0	0	0	0	0	Time: 1653	Initials: <u>M</u>
21	6/1/23	15.9	21.00	8.11	7.4	34.7	0	0	0	0	0	Time: 0825	Initials: <u>DC</u>
22	6/2/23	19.9			7.5	34.8	0	0	0	0	0	Time: 0900	Initials: <u>MP</u>
23	6/3/23	15.5			7.8	34.0	0	0	0	0	0	Time: 0820	Initials: <u>SR</u>
24	6/4/23	14.7			7.8	34.8	0	0	0	0	0	Time: 1028	Initials: <u>CLP</u>
25	6/5/23	16.3			7.9	34.0	0	0	0	0	0	Time: 1215	Initials: <u>MLP</u>
26	6/6/23	15.2			8.1	34.2	0	0	0	0	0	Time: 1433	Initials: <u>CLP</u>
27	6/7/23	15.7			8.0	33.5	0	0	0	0	0	Time: 0845	Initials: <u>MP</u>
28	6/8/23	15.4	<1.00	7.84	8.0	34.1	0	0	0	0	0	Time: 1140	Initials: <u>CLP</u>
		Day 28 # Live Organisms					5	5	5	5	5	Initials: <u>MP</u>	



### 28-day *Nereis virens* Sediment Bioaccumulation Initial Water Quality Data

Client: Berkeley Marina

Project: Episode 1

Project #: 100996

Date (Day 0): 5/11/23

Treatment	Replicate	Temp. (°C)	pH	DO (mg/L)	Salinity (ppt)	Date	Time	Initials
Lab Control	A	14.8	7.91	8.0	32.8	5/11/23	1130	SE
	B	14.7	7.96	8.1	33.0			
	C	15.0	8.03	8.1	33.0			
	D	14.9	8.02	8.2	32.7			
	E	15.3	7.82	7.8	32.9			
BM-DU3-Comp	A	14.4	8.04	8.1	33.7	5/11/23	1145	JR
	B	14.6	8.08	8.2	33.9			
	C	14.9	8.04	8.1	33.7			
	D	14.8	8.05	8.2	33.6			
	E	15.0	8.06	8.1	33.6			

### 28-day *Nereis virens* Sediment Bioaccumulation Final Water Quality Data

Client: Berkeley Marina Project: Episode I Project #: 100996 Date (Day 28): 6/8/23

Treatment	Replicate	Temp. (°C)	pH	DO (mg/L)	Salinity (ppt)	Date	Time	Initials
Lab Control	A	14.9	7.95	8.2	34.6	6/8/23	1140	CA
	B	NM	NM	NM	NM			
	C	NM	NM	NM	NM			
	D	NM	NM	NM	NM			
	E	NM	NM	NM	NM			
BM-DU3-Comp	A	15.4	7.89	8.0	34.1	6/8/23	1140	CA
	B	NM	NM	NM	NM			
	C	NM	NM	NM	NM			
	D	NM	NM	NM	NM			
	E	NM	NM	NM	NM			

## **Appendix Q**

### **Bioassay Standard Test Conditions**

---

Summary of Test Conditions and Acceptability Criteria for the Amphipod ( <i>Leptocheirus plumulosus</i> ) 10-Day Sediment Toxicity Test	
1. Test type	Static non-renewal
2. Test duration	10 d
3. Temperature	25 ± 1°C
4. Salinity	20 ± 2 ppt
5. Light quality	Ambient Laboratory
6. Light intensity	50 – 100 ft c.
7. Photoperiod	Continuous
8. Test chamber size	1 L
9. Seawater volume	800 mL
10. Sediment depth	20 mm
11. Renewal of seawater	None
12. Age of test organisms	Young adults, 2-4 mm
13. # of organisms per test chamber	20
14. # of replicate chambers/concentration	5
15. # of organisms per sediment type	100
16. Feeding regime	None
17. Test chamber cleaning	Lab washing prior to test
18. Test solution aeration	Low bubble (~100/minute)
19. Overlying water	1 µm-filtered seawater (at test salinity)
20. Test materials	Test sites, reference and control
21. Dilution series	None
22. Endpoint	% Survival
23. Sample holding requirements	< 8 weeks
24. Sample volume required	4 L
25. Test acceptability criteria	≥ 90% survival in the Control treatment
26. Reference toxicant results	Within 2 SD of laboratory mean

Summary of Test Conditions and Acceptability Criteria for the Marine Polychaete ( <i>Neanthes arenaceodentata</i> ) 10-Day Sediment Toxicity Test.	
1. Test type	Static-renewal
2. Test duration	10 d
3. Temperature	20 ± 1°C
4. Salinity	30 ± 2 ppt
5. Light quality	Ambient Laboratory
6. Light intensity	50 – 100 ft c.
7. Photoperiod	12L/12D
8. Test chamber size	1 L glass beakers
9. Test solution volume	800 mL
10. Sediment depth	25 mm (~200mL)
11. Renewal of seawater	None
12. Age of test organisms	2-3 weeks
13. # of organisms per test chamber	10
14. # of replicate chambers/concentration	5
15. # of organisms per sediment type	50
16. Feeding regime	None
17. Test chamber cleaning	Lab washing prior to test
18. Test solution aeration	Low bubble (~100/minute)
19. Overlying water	1 µm-filtered seawater, at test salinity
20. Test concentrations	Test sites, reference and Control
21. Dilution series	None
22. Endpoint	Survival
23. Sample holding requirements	< 8 weeks
24. Sample volume required	4 L
25. Test acceptability criteria	≥ 90% survival in the Control treatment
26. Reference toxicant results	Within 2 SD of laboratory mean

Summary of Test Conditions and Acceptability Criteria for the Mussel ( <i>Mytilus galloprovinciales</i> ) Water Column Toxicity Test	
1. Test type	Static non-renewal
2. Test duration	48 hours
3. Salinity	30 ±1 ppt
4. Temperature	16 ± 1°C (mussels)
5. Light quality	Ambient Laboratory
6. Light intensity	50 –100 ft c.
7. Photoperiod	16L/8D
8. Test chamber size	20 mL vials
9. Test solution volume	10 mL
10. Renewal of seawater	None
11. Age of test organisms	Embryo ≤ 4h old
12. # of organisms per test chamber	150 – 300
13. # of replicate chambers/concentration	5
14. # of organisms per concentration	750 – 1,500
15. Feeding regime	None
16. Test chamber cleaning	Lab washing prior to test
17. Test chamber aeration	None
18. Elutriate preparation water	Site water
19. Test concentrations	Test sites, and Lab Control
20. Dilution series	Four concentrations (1, 10, 50, 100%) and a Lab Control.
21. Dilution water	1 µm-filtered seawater, at test salinity
22. Endpoints	% survival and % normal development
23. Sampling holding requirements	< 8 weeks
24. Sample volume required	2L
25. Test acceptability criteria	≥70% survival and normal development in the Lab Controls, <10% abnormal in Lab Control

Summary of Test Conditions and Acceptability Criteria for the Mysid ( <i>Americamysis bahia</i> ) Water Column Toxicity Test	
1. Test type	Static non-renewal
2. Test duration	96 hours
3. Salinity	25-30 ppt $\pm$ 10 ppt
4. Temperature	20 $\pm$ 1°C
5. Light quality	Ambient Laboratory
6. Light intensity	50 –100 ft c.
7. Photoperiod	16L/8D
8. Test chamber size	400 mL beaker
9. Test solution volume	200 mL
10. Renewal of seawater	None
11. Age of test organisms	1-5 days; 24-hour range in age
12. # of organisms per test chamber	10
13. # of replicate chambers per concentration	5
14. # of organisms per concentration	50
15. Feeding regime	Daily
16. Test chamber cleaning	Lab washing prior to test
17. Test chamber aeration	If needed to maintain >40% saturation
18. Elutriate preparation water	Site water or Clean sea water
19. Test concentrations	Test sites, and Lab Control
20. Dilution series	100% modified elutriate, Site Water, and a Lab Control.
21. Dilution water	Natural seawater/artificial seawater
22. Endpoints	% Survival
23. Sampling holding requirements	< 8 weeks
24. Sample volume required	2L
25. Test acceptability criteria	$\geq$ 90% survival in the Lab Controls

Summary of Test Conditions and Acceptability Criteria for the Bioaccumulation Testing Using <i>Macoma nasuta</i> and <i>Nereis virens</i>	
1. Test type	Static-renewal
2. Test duration	28-days
3. Salinity	>25 ppt
4. Temperature	12-16 ± 1°C
5. Light quality	Ambient Laboratory
6. Light intensity	50 –100 ft c.
7. Photoperiod	16L/8D
8. Test chamber size	19-L tank
9. Test sediment/test solution volume	4-L sediment/12-L water
10. Renewal of seawater	3x per week
11. Age of test organisms	<i>Macoma</i> 2-4 years, 28-45 mm shell length; <i>Nereis</i> large adults
12. # of organisms per test chamber	7 <i>Macoma</i> /5 <i>Nereis</i> (or as needed)
13. # of replicate chambers per concentration	5
14. # of organisms per concentration	35 <i>Macoma</i> /25 <i>Nereis</i> (or as needed)
15. Feeding regime	None
16. Test chamber cleaning	As needed
17. Test chamber aeration	Moderate as needed
18. Elutriate preparation water	Site water or Clean sea water
19. Test concentrations	Test sediment, reference sediment, and a Lab Control sediment
20. Dilution series	N/A
21. Dilution water	Natural seawater/artificial seawater
22. Endpoints	Bioaccumulation
23. Sampling holding requirements	< 8 weeks
24. Sample volume required	≥25-L
25. Test acceptability criteria	Adequate mass of organisms at test completion for detection of target analytes



## **Appendix R**

### **Results of *Macoma nasuta* and *Nereis virens* Tissue Analyses: Laboratory Data Report Submitted by Eurofins**

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# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jeff Cotsifas  
Pacific EcoRisk Inc  
2250 Cordelia Rd  
Fairfield, California 94534

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## JOB DESCRIPTION

Berkeley Marina (Tissue)

## JOB NUMBER

570-143339-1

# Eurofins Calscience

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# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Client Sample Results . . . . .	6
Surrogate Summary . . . . .	14
QC Sample Results . . . . .	15
QC Association Summary . . . . .	19
Lab Chronicle . . . . .	21
Certification Summary . . . . .	23
Method Summary . . . . .	24
Sample Summary . . . . .	25
Chain of Custody . . . . .	26
Receipt Checklists . . . . .	30

# Definitions/Glossary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Metals

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

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**Job ID: 570-143339-1**

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**Laboratory: Eurofins Calscience**

## Narrative

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**Job Narrative  
570-143339-1**

### Receipt

The samples were received on 6/29/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was -13.5°C

The samples were frozen after collection (prior to holding time expiration and/or pursuant to information obtained from the client) at -18C, and remained frozen until the laboratory was ready to prepare the samples for analysis. Eurofins Calscience, Inc. follows SWAMP criteria and the Puget Sound Protocol (USEPA/PSWQAT, 1997, Table 2) for holding times in marine tissues and / or sediment samples, which states holding times may be extended up to six months to one year (two years for metals) if stored frozen at -18C after collection. Therefore, the sample results have not been flagged as exceeding the EPA Method recommended holding times (where applicable).

### PCBs

Method 8270C\_SIM\_CON: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-343678 and 570-342453 and analytical batch 570-345452 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

### Metals

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

### General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

# Client Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS)

**Client Sample ID: Composite (Nereis-T0-A,B,C,D,E)**

**Date Collected: 05/11/23 12:00**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-31**

**Matrix: Tissue**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.40	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-18	ND		0.20	0.094	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-28	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-31	ND		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-33	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-44	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-49	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-52	ND		0.20	0.079	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-56	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-60	ND		0.20	0.13	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-66	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-70	ND		0.20	0.093	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-74	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-87	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-95	ND		0.20	0.066	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-97	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-99	ND		0.20	0.086	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-101	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-105	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-110	ND		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-118	ND		0.20	0.080	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-128	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
<b>PCB-132/153</b>	<b>0.94</b>		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-138/158	ND		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-141	ND		0.20	0.066	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
<b>PCB-149</b>	<b>0.14</b>	<b>J</b>	0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-151	ND		0.20	0.092	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-156	ND		0.20	0.095	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-170	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-174	ND		0.20	0.057	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-177	ND		0.20	0.094	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-180	ND		0.20	0.083	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-183	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
<b>PCB-187</b>	<b>0.65</b>		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-194	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-195	ND		0.20	0.062	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-201	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 02:01	1
PCB-203	ND		0.20	0.070	ug/Kg		07/02/23 18:54	07/14/23 02:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	102		20 - 139	07/02/23 18:54	07/14/23 02:01	1
p-Terphenyl-d14	68		37 - 165	07/02/23 18:54	07/14/23 02:01	1

**Client Sample ID: Composite (Control-A,B,C,D,E-Nereis-Day 28)**

**Date Collected: 06/08/23 12:00**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-32**

**Matrix: Tissue**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.40	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-18	ND		0.20	0.094	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-28	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 02:22	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Client Sample ID: Composite (Control-A,B,C,D,E-Nereis-Day 28)**

**Lab Sample ID: 570-143339-32**

**Date Collected: 06/08/23 12:00**

**Matrix: Tissue**

**Date Received: 06/29/23 09:30**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-31	ND		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-33	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-44	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-49	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-52	ND		0.20	0.079	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-56	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-60	ND		0.20	0.13	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-66	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-70	ND		0.20	0.093	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-74	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-87	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-95	ND		0.20	0.066	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-97	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-99	ND		0.20	0.086	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-101	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-105	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-110	ND		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-118	ND		0.20	0.080	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-128	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-132/153	ND		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-138/158	ND		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-141	ND		0.20	0.066	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-149	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-151	ND		0.20	0.092	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-156	ND		0.20	0.095	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-170	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-174	ND		0.20	0.057	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-177	ND		0.20	0.094	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-180	ND		0.20	0.083	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-183	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-187	ND		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-194	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-195	ND		0.20	0.062	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-201	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
PCB-203	ND		0.20	0.070	ug/Kg		07/02/23 18:54	07/14/23 02:22	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2-Fluorobiphenyl (Surr)	78		20 - 139				07/02/23 18:54	07/14/23 02:22	1
p-Terphenyl-d14	123		37 - 165				07/02/23 18:54	07/14/23 02:22	1

**Client Sample ID: Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)**

**Lab Sample ID: 570-143339-33**

**Date Collected: 06/08/23 12:01**

**Matrix: Tissue**

**Date Received: 06/29/23 09:30**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.40	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
<b>PCB-18</b>	<b>0.18</b>	<b>J</b>	0.20	0.093	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-28	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-31	ND		0.20	0.088	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-33	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-44	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 02:43	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Client Sample ID: Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)**

**Date Collected: 06/08/23 12:01**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-33**

**Matrix: Tissue**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-49	0.43		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-52	1.1		0.20	0.079	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-56	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-60	ND		0.20	0.13	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-66	0.84		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-70	ND		0.20	0.092	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-74	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-87	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-95	1.1		0.20	0.066	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-97	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-99	0.67		0.20	0.086	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-101	1.3		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-105	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-110	0.82		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-118	0.63		0.20	0.079	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-128	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-132/153	1.7		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-138/158	1.3		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-141	ND		0.20	0.066	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-149	0.82		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-151	ND		0.20	0.091	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-156	ND		0.20	0.094	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-170	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-174	ND		0.20	0.057	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-177	ND		0.20	0.094	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-180	0.57		0.20	0.082	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-183	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-187	1.2		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-194	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-195	ND		0.20	0.062	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-201	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 02:43	1
PCB-203	ND		0.20	0.069	ug/Kg		07/02/23 18:54	07/14/23 02:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	89		20 - 139	07/02/23 18:54	07/14/23 02:43	1
p-Terphenyl-d14	92		37 - 165	07/02/23 18:54	07/14/23 02:43	1

**Client Sample ID: Composite (Macoma-T0-A,B,C,D,E)**

**Date Collected: 05/11/23 12:00**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-34**

**Matrix: Tissue**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.40	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-18	ND		0.20	0.094	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-28	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-31	ND		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-33	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-44	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-49	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-52	ND		0.20	0.079	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-56	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 03:04	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Client Sample ID: Composite (Macoma-T0-A,B,C,D,E)**

**Date Collected: 05/11/23 12:00**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-34**

**Matrix: Tissue**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-60	ND		0.20	0.13	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-66	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-70	ND		0.20	0.093	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-74	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-87	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-95	ND		0.20	0.066	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-97	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-99	ND		0.20	0.086	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-101	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-105	ND	F1	0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-110	ND		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-118	ND		0.20	0.080	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-128	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-132/153	ND		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-138/158	ND		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-141	ND		0.20	0.066	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-149	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-151	ND		0.20	0.092	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-156	ND		0.20	0.095	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-170	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-174	ND		0.20	0.057	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-177	ND		0.20	0.094	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-180	ND		0.20	0.083	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-183	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-187	ND		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-194	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-195	ND		0.20	0.062	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-201	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 03:04	1
PCB-203	ND		0.20	0.070	ug/Kg		07/02/23 18:54	07/14/23 03:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	83		20 - 139	07/02/23 18:54	07/14/23 03:04	1
p-Terphenyl-d14	79		37 - 165	07/02/23 18:54	07/14/23 03:04	1

**Client Sample ID: Composite (Control-A,B,C,D,E-Macoma-Day 28)**

**Date Collected: 06/08/23 12:00**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-35**

**Matrix: Tissue**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.40	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-18	ND		0.20	0.093	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-28	ND		0.20	0.099	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-31	ND		0.20	0.088	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-33	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-44	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
<b>PCB-49</b>	<b>0.62</b>		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
<b>PCB-52</b>	<b>0.53</b>		0.20	0.078	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-56	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-60	ND		0.20	0.13	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
<b>PCB-66</b>	<b>0.58</b>		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
<b>PCB-70</b>	<b>0.37</b>		0.20	0.092	ug/Kg		07/02/23 18:54	07/14/23 03:25	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Client Sample ID: Composite (Control-A,B,C,D,E-Macoma-Day 28)**

**Lab Sample ID: 570-143339-35**

**Date Collected: 06/08/23 12:00**

**Matrix: Tissue**

**Date Received: 06/29/23 09:30**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-74	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-87	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
<b>PCB-95</b>	<b>0.48</b>		0.20	0.065	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-97	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
<b>PCB-99</b>	<b>0.67</b>		0.20	0.085	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
<b>PCB-101</b>	<b>0.94</b>		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-105	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
<b>PCB-110</b>	<b>0.82</b>		0.20	0.088	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-118	ND		0.20	0.079	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-128	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
<b>PCB-132/153</b>	<b>1.2</b>		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
<b>PCB-138/158</b>	<b>0.60</b>		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-141	ND		0.20	0.065	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
<b>PCB-149</b>	<b>0.52</b>		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
<b>PCB-151</b>	<b>0.26</b>		0.20	0.091	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-156	ND		0.20	0.094	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-170	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-174	ND		0.20	0.057	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-177	ND		0.20	0.093	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-180	ND		0.20	0.082	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-183	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-187	ND		0.20	0.088	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-194	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-195	ND		0.20	0.062	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-201	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 03:25	1
PCB-203	ND		0.20	0.069	ug/Kg		07/02/23 18:54	07/14/23 03:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	84		20 - 139	07/02/23 18:54	07/14/23 03:25	1
p-Terphenyl-d14	95		37 - 165	07/02/23 18:54	07/14/23 03:25	1

**Client Sample ID: Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)**

**Lab Sample ID: 570-143339-36**

**Date Collected: 06/08/23 12:01**

**Matrix: Tissue**

**Date Received: 06/29/23 09:30**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.40	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-18	ND		0.20	0.093	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-28	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-31	ND		0.20	0.088	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-33	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-44	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-49	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-52	ND		0.20	0.079	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-56	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-60	ND		0.20	0.13	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-66	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-70	ND		0.20	0.092	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-74	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-87	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-95	ND		0.20	0.066	ug/Kg		07/02/23 18:54	07/14/23 03:47	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Method: SW846 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Client Sample ID: Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28**  
**Date Collected: 06/08/23 12:01**  
**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-36**  
**Matrix: Tissue**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-97	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-99	ND		0.20	0.086	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-101	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-105	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-110	ND		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-118	ND		0.20	0.079	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-128	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-132/153	ND		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-138/158	ND		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-141	ND		0.20	0.066	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-149	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-151	ND		0.20	0.091	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-156	ND		0.20	0.094	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-170	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-174	ND		0.20	0.057	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-177	ND		0.20	0.094	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-180	ND		0.20	0.082	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-183	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-187	ND		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-194	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-195	ND		0.20	0.062	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-201	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
PCB-203	ND		0.20	0.069	ug/Kg		07/02/23 18:54	07/14/23 03:47	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2-Fluorobiphenyl (Surr)	68		20 - 139				07/02/23 18:54	07/14/23 03:47	1
p-Terphenyl-d14	64		37 - 165				07/02/23 18:54	07/14/23 03:47	1

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Method: SW846 7471A - Mercury (CVAA)

**Client Sample ID: Composite (Nereis-T0-A,B,C,D,E)**

**Date Collected: 05/11/23 12:00**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-31**

**Matrix: Tissue**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0150	J H	0.0490	0.0147	mg/Kg		07/18/23 17:00	07/19/23 13:37	1

**Client Sample ID: Composite (Control-A,B,C,D,E-Nereis-Day 28)**

**Date Collected: 06/08/23 12:00**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-32**

**Matrix: Tissue**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	H	0.0490	0.0147	mg/Kg		07/18/23 17:00	07/19/23 13:43	1

**Client Sample ID: Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)**

**Date Collected: 06/08/23 12:01**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-33**

**Matrix: Tissue**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	H	0.0500	0.0150	mg/Kg		07/18/23 17:00	07/19/23 13:45	1

**Client Sample ID: Composite (Macoma-T0-A,B,C,D,E)**

**Date Collected: 05/11/23 12:00**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-34**

**Matrix: Tissue**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	H	0.0495	0.0149	mg/Kg		07/18/23 17:00	07/19/23 13:47	1

**Client Sample ID: Composite (Control-A,B,C,D,E-Macoma-Day 28)**

**Date Collected: 06/08/23 12:00**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-35**

**Matrix: Tissue**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	H	0.0495	0.0149	mg/Kg		07/18/23 17:00	07/19/23 13:49	1

**Client Sample ID: Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)**

**Date Collected: 06/08/23 12:01**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-36**

**Matrix: Tissue**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	H	0.0500	0.0150	mg/Kg		07/18/23 17:00	07/19/23 13:51	1

# Client Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## General Chemistry

Client Sample ID: Composite (Nereis-T0-A,B,C,D,E)

Date Collected: 05/11/23 12:00

Date Received: 06/29/23 09:30

Lab Sample ID: 570-143339-31

Matrix: Tissue

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Lipids (Lab SOP Lipids)	0.700		0.100	0.100	%		07/03/23 09:48	07/03/23 09:57	1

Client Sample ID: Composite (Macoma-T0-A,B,C,D,E)

Date Collected: 05/11/23 12:00

Date Received: 06/29/23 09:30

Lab Sample ID: 570-143339-34

Matrix: Tissue

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Lipids (Lab SOP Lipids)	0.770		0.100	0.100	%		07/03/23 09:48	07/03/23 09:57	1

# Surrogate Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Method: 8270C SIM CON - PCB Congeners (GC/MS)

Matrix: Tissue

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		FBP (20-139)	TPHd14 (37-165)
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	102	68
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	78	123
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	89	92
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	83	79
570-143339-34 MS	Composite (Macoma-T0-A,B,C,D,E)	93	96
570-143339-34 MSD	Composite (Macoma-T0-A,B,C,D,E)	77	84
570-143339-35	Composite (Control-A,B,C,D,E-Macoma-Day 28)	84	95
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)	68	64
LCS 570-342453/2-A	Lab Control Sample	96	92
LCSD 570-342453/3-A	Lab Control Sample Dup	98	100
MB 570-342453/1-A	Method Blank	91	96

### Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)

TPHd14 = p-Terphenyl-d14

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Method: 8270C SIM CON - PCB Congeners (GC/MS)

**Lab Sample ID: MB 570-342453/1-A**  
**Matrix: Tissue**  
**Analysis Batch: 345452**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 342453**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.40	0.11	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-18	ND		0.20	0.094	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-28	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-31	ND		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-33	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-44	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-49	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-52	ND		0.20	0.079	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-56	ND		0.20	0.047	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-60	ND		0.20	0.13	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-66	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-70	ND		0.20	0.093	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-74	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-87	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-95	ND		0.20	0.066	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-97	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-99	ND		0.20	0.086	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-101	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-105	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-110	ND		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-118	ND		0.20	0.080	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-128	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-132/153	ND		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-138/158	ND		0.40	0.24	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-141	ND		0.20	0.066	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-149	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-151	ND		0.20	0.092	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-156	ND		0.20	0.095	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-170	ND		0.20	0.10	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-174	ND		0.20	0.057	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-177	ND		0.20	0.094	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-180	ND		0.20	0.083	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-183	ND		0.20	0.12	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-187	ND		0.20	0.089	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-194	ND		0.20	0.11	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-195	ND		0.20	0.062	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-201	ND		0.20	0.14	ug/Kg		07/02/23 18:54	07/14/23 00:15	1
PCB-203	ND		0.20	0.070	ug/Kg		07/02/23 18:54	07/14/23 00:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	91		20 - 139	07/02/23 18:54	07/14/23 00:15	1
p-Terphenyl-d14	96		37 - 165	07/02/23 18:54	07/14/23 00:15	1



# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

**Lab Sample ID: LCS 570-342453/2-A**  
**Matrix: Tissue**  
**Analysis Batch: 345452**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 342453**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
PCB-5/8	50.0	39.03		ug/Kg		78	50 - 150
PCB-18	50.0	40.01		ug/Kg		80	33 - 114
PCB-28	50.0	50.27		ug/Kg		101	40 - 132
PCB-44	50.0	49.10		ug/Kg		98	38 - 131
PCB-52	50.0	44.12		ug/Kg		88	38 - 131
PCB-66	50.0	53.97		ug/Kg		108	42 - 141
PCB-101	50.0	50.36		ug/Kg		101	40 - 132
PCB-105	50.0	53.21		ug/Kg		106	39 - 135
PCB-118	50.0	50.54		ug/Kg		101	38 - 131
PCB-128	50.0	58.44		ug/Kg		117	43 - 149
PCB-132/153	50.0	47.82		ug/Kg		96	37 - 164
PCB-138/158	50.0	49.41		ug/Kg		99	36 - 124
PCB-170	50.0	54.44		ug/Kg		109	35 - 134
PCB-180	50.0	61.29		ug/Kg		123	38 - 159
PCB-187	50.0	54.68		ug/Kg		109	41 - 147
PCB-195	50.0	44.55		ug/Kg		89	44 - 128
PCB-201	50.0	63.78		ug/Kg		128	40 - 156

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl (Surr)	96		20 - 139
p-Terphenyl-d14	92		37 - 165

**Lab Sample ID: LCSD 570-342453/3-A**  
**Matrix: Tissue**  
**Analysis Batch: 345452**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 342453**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
PCB-5/8	50.0	40.52		ug/Kg		81	50 - 150	4	25
PCB-18	50.0	43.81		ug/Kg		88	33 - 114	9	29
PCB-28	50.0	51.67		ug/Kg		103	40 - 132	3	29
PCB-44	50.0	50.57		ug/Kg		101	38 - 131	3	32
PCB-52	50.0	45.15		ug/Kg		90	38 - 131	2	32
PCB-66	50.0	56.90		ug/Kg		114	42 - 141	5	34
PCB-101	50.0	50.89		ug/Kg		102	40 - 132	1	34
PCB-105	50.0	54.73		ug/Kg		109	39 - 135	3	37
PCB-118	50.0	51.87		ug/Kg		104	38 - 131	3	35
PCB-128	50.0	58.66		ug/Kg		117	43 - 149	0	37
PCB-132/153	50.0	47.93		ug/Kg		96	37 - 164	0	38
PCB-138/158	50.0	49.24		ug/Kg		98	36 - 124	0	40
PCB-170	50.0	51.68		ug/Kg		103	35 - 134	5	31
PCB-180	50.0	58.47		ug/Kg		117	38 - 159	5	40
PCB-187	50.0	56.26		ug/Kg		113	41 - 147	3	40
PCB-195	50.0	45.22		ug/Kg		90	44 - 128	1	28
PCB-201	50.0	63.10		ug/Kg		126	40 - 156	1	40

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2-Fluorobiphenyl (Surr)	98		20 - 139
p-Terphenyl-d14	100		37 - 165

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Method: 8270C SIM CON - PCB Congeners (GC/MS)

**Lab Sample ID: 570-143339-34 MS**

**Matrix: Tissue**

**Analysis Batch: 345452**

**Client Sample ID: Composite (Macoma-T0-A,B,C,D,E)**

**Prep Type: Total/NA**

**Prep Batch: 342453**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier					
PCB-5/8	ND		49.8	41.05		ug/Kg		83		50 - 150
PCB-18	ND		49.8	42.06		ug/Kg		85		29 - 127
PCB-28	ND		49.8	56.16		ug/Kg		113		29 - 170
PCB-44	ND		49.8	54.46		ug/Kg		109		33 - 150
PCB-52	ND		49.8	47.91		ug/Kg		96		23 - 159
PCB-66	ND		49.8	74.02		ug/Kg		149		29 - 166
PCB-101	ND		49.8	54.82		ug/Kg		110		30 - 159
PCB-105	ND	F1	49.8	60.52		ug/Kg		122		22 - 173
PCB-118	ND		49.8	64.55		ug/Kg		130		24 - 162
PCB-128	ND		49.8	66.72		ug/Kg		134		18 - 180
PCB-132/153	ND		49.8	53.89		ug/Kg		108		27 - 180
PCB-138/158	ND		49.8	54.71		ug/Kg		110		18 - 160
PCB-170	ND		49.8	58.78		ug/Kg		118		25 - 165
PCB-180	ND		49.8	69.66		ug/Kg		140		20 - 180
PCB-187	ND		49.8	66.76		ug/Kg		134		14 - 180
PCB-195	ND		49.8	48.15		ug/Kg		97		44 - 128
PCB-201	ND		49.8	72.72		ug/Kg		146		17 - 180

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	93		20 - 139
p-Terphenyl-d14	96		37 - 165

**Lab Sample ID: 570-143339-34 MSD**

**Matrix: Tissue**

**Analysis Batch: 345452**

**Client Sample ID: Composite (Macoma-T0-A,B,C,D,E)**

**Prep Type: Total/NA**

**Prep Batch: 342453**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
PCB-5/8	ND		50.0	34.13		ug/Kg		68		50 - 150	18	25
PCB-18	ND		50.0	33.86		ug/Kg		68		29 - 127	22	40
PCB-28	ND		50.0	47.01		ug/Kg		94		29 - 170	18	32
PCB-44	ND		50.0	45.20		ug/Kg		90		33 - 150	19	40
PCB-52	ND		50.0	40.90		ug/Kg		82		23 - 159	16	40
PCB-66	ND		50.0	63.17		ug/Kg		126		29 - 166	16	40
PCB-101	ND		50.0	47.50		ug/Kg		95		30 - 159	14	40
PCB-105	ND	F1	50.0	87.61	F1	ug/Kg		175		22 - 173	37	40
PCB-118	ND		50.0	57.01		ug/Kg		114		24 - 162	12	40
PCB-128	ND		50.0	56.41		ug/Kg		113		18 - 180	17	40
PCB-132/153	ND		50.0	51.31		ug/Kg		103		27 - 180	5	40
PCB-138/158	ND		50.0	43.76		ug/Kg		88		18 - 160	22	40
PCB-170	ND		50.0	47.44		ug/Kg		95		25 - 165	21	22
PCB-180	ND		50.0	55.72		ug/Kg		111		20 - 180	22	40
PCB-187	ND		50.0	54.04		ug/Kg		108		14 - 180	21	40
PCB-195	ND		50.0	39.22		ug/Kg		78		44 - 128	20	28
PCB-201	ND		50.0	58.35		ug/Kg		117		17 - 180	22	40

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	77		20 - 139
p-Terphenyl-d14	84		37 - 165

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# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 570-346308/1-A**  
**Matrix: Tissue**  
**Analysis Batch: 347001**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 346308**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0500	0.0150	mg/Kg		07/18/23 17:00	07/19/23 13:27	1

**Lab Sample ID: LCS 570-346308/2-A**  
**Matrix: Tissue**  
**Analysis Batch: 347001**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 346308**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.200	0.2226		mg/Kg		111	80 - 120

**Lab Sample ID: LCSD 570-346308/3-A**  
**Matrix: Tissue**  
**Analysis Batch: 347001**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 346308**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.198	0.2093		mg/Kg		106	80 - 120	6	10

**Lab Sample ID: 570-143339-31 MS**  
**Matrix: Tissue**  
**Analysis Batch: 347001**

**Client Sample ID: Composite (Nereis-T0-A,B,C,D,E)**  
**Prep Type: Total/NA**  
**Prep Batch: 346308**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.0150	J H	0.198	0.1792		mg/Kg		83	80 - 120

**Lab Sample ID: 570-143339-31 MSD**  
**Matrix: Tissue**  
**Analysis Batch: 347001**

**Client Sample ID: Composite (Nereis-T0-A,B,C,D,E)**  
**Prep Type: Total/NA**  
**Prep Batch: 346308**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.0150	J H	0.200	0.2000		mg/Kg		92	80 - 120	11	20

## Method: Lipids - Percent Lipids

**Lab Sample ID: MB 570-342564/1-A**  
**Matrix: Tissue**  
**Analysis Batch: 342567**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 342564**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Lipids	ND		0.100	0.100	%		07/03/23 09:48	07/03/23 09:57	1

**Lab Sample ID: 570-143339-34 DU**  
**Matrix: Tissue**  
**Analysis Batch: 342567**

**Client Sample ID: Composite (Macoma-T0-A,B,C,D,E)**  
**Prep Type: Total/NA**  
**Prep Batch: 342564**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Lipids	0.770		0.8358		%		8	25

# QC Association Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## GC/MS Semi VOA

### Prep Batch: 342453

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	3541	343678
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	3541	343678
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	3541	343678
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	3541	343678
570-143339-35	Composite (Control-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	3541	343678
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	3541	343678
MB 570-342453/1-A	Method Blank	Total/NA	Tissue	3541	
LCS 570-342453/2-A	Lab Control Sample	Total/NA	Tissue	3541	
LCS 570-342453/3-A	Lab Control Sample Dup	Total/NA	Tissue	3541	
570-143339-34 MS	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	3541	343678
570-143339-34 MSD	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	3541	343678

### Pre Prep Batch: 343678

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	In House	
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	In House	
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	In House	
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	In House	
570-143339-35	Composite (Control-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	In House	
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	In House	
570-143339-34 MS	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	In House	
570-143339-34 MSD	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	In House	

### Analysis Batch: 345452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	8270C SIM CON	342453
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	8270C SIM CON	342453
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	8270C SIM CON	342453
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	8270C SIM CON	342453
570-143339-35	Composite (Control-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	8270C SIM CON	342453
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	8270C SIM CON	342453
MB 570-342453/1-A	Method Blank	Total/NA	Tissue	8270C SIM CON	342453
LCS 570-342453/2-A	Lab Control Sample	Total/NA	Tissue	8270C SIM CON	342453
LCS 570-342453/3-A	Lab Control Sample Dup	Total/NA	Tissue	8270C SIM CON	342453
570-143339-34 MS	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	8270C SIM CON	342453
570-143339-34 MSD	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	8270C SIM CON	342453

## Metals

### Pre Prep Batch: 343678

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	In House	
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	In House	
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	In House	
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	In House	
570-143339-35	Composite (Control-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	In House	
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	In House	
570-143339-31 MS	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	In House	
570-143339-31 MSD	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	In House	

# QC Association Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Metals

### Prep Batch: 346308

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	7471A	343678
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	7471A	343678
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	7471A	343678
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	7471A	343678
570-143339-35	Composite (Control-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	7471A	343678
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	7471A	343678
MB 570-346308/1-A	Method Blank	Total/NA	Tissue	7471A	
LCS 570-346308/2-A	Lab Control Sample	Total/NA	Tissue	7471A	
LCSD 570-346308/3-A	Lab Control Sample Dup	Total/NA	Tissue	7471A	
570-143339-31 MS	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	7471A	343678
570-143339-31 MSD	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	7471A	343678

### Analysis Batch: 347001

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	7471A	346308
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	7471A	346308
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	7471A	346308
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	7471A	346308
570-143339-35	Composite (Control-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	7471A	346308
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	7471A	346308
MB 570-346308/1-A	Method Blank	Total/NA	Tissue	7471A	346308
LCS 570-346308/2-A	Lab Control Sample	Total/NA	Tissue	7471A	346308
LCSD 570-346308/3-A	Lab Control Sample Dup	Total/NA	Tissue	7471A	346308
570-143339-31 MS	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	7471A	346308
570-143339-31 MSD	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	7471A	346308

## General Chemistry

### Prep Batch: 342564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	3541	343678
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	3541	343678
MB 570-342564/1-A	Method Blank	Total/NA	Tissue	3541	
570-143339-34 DU	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	3541	343678

### Analysis Batch: 342567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	Lipids	342564
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	Lipids	342564
MB 570-342564/1-A	Method Blank	Total/NA	Tissue	Lipids	342564
570-143339-34 DU	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	Lipids	342564

### Pre Prep Batch: 343678

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	In House	
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	In House	
570-143339-34 DU	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	In House	

# Lab Chronicle

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Client Sample ID: Composite (Nereis-T0-A,B,C,D,E)

Lab Sample ID: 570-143339-31

Date Collected: 05/11/23 12:00

Matrix: Tissue

Date Received: 06/29/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					343678	07/01/23 12:09	USUL	EET CAL 4
Total/NA	Prep	3541			20.0 g	2 mL	342453	07/02/23 18:54	UWEZ	EET CAL 4
Total/NA	Analysis	8270C SIM CON		1	1 mL	1 mL	345452	07/14/23 02:01	J7WE	EET CAL 4
Instrument ID: GCMShHH										
Total/NA	Pre Prep	In House					343678	07/01/23 12:09	USUL	EET CAL 4
Total/NA	Prep	7471A			1.02 g	50 mL	346308	07/18/23 17:00	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			347001	07/19/23 13:37	COYH	EET CAL 4
Instrument ID: HG7										
Total/NA	Pre Prep	In House					343678	07/01/23 12:09	USUL	EET CAL 4
Total/NA	Prep	3541			20.0 g	2 mL	342564	07/03/23 09:48	UWEZ	EET CAL 4
Total/NA	Analysis	Lipids		1			342567	07/03/23 09:57	UWEZ	EET CAL 4
Instrument ID: NOEQUIP										

## Client Sample ID: Composite (Control-A,B,C,D,E-Nereis-Day 28)

Lab Sample ID: 570-143339-32

Date Collected: 06/08/23 12:00

Matrix: Tissue

Date Received: 06/29/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					343678	07/01/23 12:09	USUL	EET CAL 4
Total/NA	Prep	3541			20.0 g	2 mL	342453	07/02/23 18:54	UWEZ	EET CAL 4
Total/NA	Analysis	8270C SIM CON		1	1 mL	1 mL	345452	07/14/23 02:22	J7WE	EET CAL 4
Instrument ID: GCMShHH										
Total/NA	Pre Prep	In House					343678	07/01/23 12:09	USUL	EET CAL 4
Total/NA	Prep	7471A			1.02 g	50 mL	346308	07/18/23 17:00	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			347001	07/19/23 13:43	COYH	EET CAL 4
Instrument ID: HG7										

## Client Sample ID: Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)

Lab Sample ID: 570-143339-33

Date Collected: 06/08/23 12:01

Matrix: Tissue

Date Received: 06/29/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					343678	07/01/23 12:09	USUL	EET CAL 4
Total/NA	Prep	3541			20.1 g	2 mL	342453	07/02/23 18:54	UWEZ	EET CAL 4
Total/NA	Analysis	8270C SIM CON		1	1 mL	1 mL	345452	07/14/23 02:43	J7WE	EET CAL 4
Instrument ID: GCMShHH										
Total/NA	Pre Prep	In House					343678	07/01/23 12:09	USUL	EET CAL 4
Total/NA	Prep	7471A			1.00 g	50 mL	346308	07/18/23 17:00	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			347001	07/19/23 13:45	COYH	EET CAL 4
Instrument ID: HG7										

# Lab Chronicle

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Client Sample ID: Composite (Macoma-T0-A,B,C,D,E)

Lab Sample ID: 570-143339-34

Date Collected: 05/11/23 12:00

Matrix: Tissue

Date Received: 06/29/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					343678	07/01/23 12:09	USUL	EET CAL 4
Total/NA	Prep	3541			20.0 g	2 mL	342453	07/02/23 18:54	UWEZ	EET CAL 4
Total/NA	Analysis	8270C SIM CON		1	1 mL	1 mL	345452	07/14/23 03:04	J7WE	EET CAL 4
Instrument ID: GCMShHH										
Total/NA	Pre Prep	In House					343678	07/01/23 12:09	USUL	EET CAL 4
Total/NA	Prep	7471A			1.01 g	50 mL	346308	07/18/23 17:00	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			347001	07/19/23 13:47	COYH	EET CAL 4
Instrument ID: HG7										
Total/NA	Pre Prep	In House					343678	07/01/23 12:09	USUL	EET CAL 4
Total/NA	Prep	3541			20.0 g	2 mL	342564	07/03/23 09:48	UWEZ	EET CAL 4
Total/NA	Analysis	Lipids		1			342567	07/03/23 09:57	UWEZ	EET CAL 4
Instrument ID: NOEQUIP										

## Client Sample ID: Composite (Control-A,B,C,D,E-Macoma-Day 28)

Lab Sample ID: 570-143339-35

Date Collected: 06/08/23 12:00

Matrix: Tissue

Date Received: 06/29/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					343678	07/01/23 12:09	USUL	EET CAL 4
Total/NA	Prep	3541			20.2 g	2 mL	342453	07/02/23 18:54	UWEZ	EET CAL 4
Total/NA	Analysis	8270C SIM CON		1	1 mL	1 mL	345452	07/14/23 03:25	J7WE	EET CAL 4
Instrument ID: GCMShHH										
Total/NA	Pre Prep	In House					343678	07/01/23 12:09	USUL	EET CAL 4
Total/NA	Prep	7471A			1.01 g	50 mL	346308	07/18/23 17:00	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			347001	07/19/23 13:49	COYH	EET CAL 4
Instrument ID: HG7										

## Client Sample ID: Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)

Lab Sample ID: 570-143339-36

Date Collected: 06/08/23 12:01

Matrix: Tissue

Date Received: 06/29/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					343678	07/01/23 12:12	USUL	EET CAL 4
Total/NA	Prep	3541			20.1 g	2 mL	342453	07/02/23 18:54	UWEZ	EET CAL 4
Total/NA	Analysis	8270C SIM CON		1	1 mL	1 mL	345452	07/14/23 03:47	J7WE	EET CAL 4
Instrument ID: GCMShHH										
Total/NA	Pre Prep	In House					343678	07/01/23 12:12	USUL	EET CAL 4
Total/NA	Prep	7471A			1.00 g	50 mL	346308	07/18/23 17:00	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			347001	07/19/23 13:51	COYH	EET CAL 4
Instrument ID: HG7										

**Laboratory References:**

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

## Laboratory: Eurofins Calscience

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	Los Angeles County Sanitation Districts	10109	07-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7471A	7471A	Tissue	Mercury
8270C SIM CON	3541	Tissue	PCB-101
8270C SIM CON	3541	Tissue	PCB-105
8270C SIM CON	3541	Tissue	PCB-110
8270C SIM CON	3541	Tissue	PCB-118
8270C SIM CON	3541	Tissue	PCB-128
8270C SIM CON	3541	Tissue	PCB-132/153
8270C SIM CON	3541	Tissue	PCB-138/158
8270C SIM CON	3541	Tissue	PCB-141
8270C SIM CON	3541	Tissue	PCB-149
8270C SIM CON	3541	Tissue	PCB-151
8270C SIM CON	3541	Tissue	PCB-156
8270C SIM CON	3541	Tissue	PCB-170
8270C SIM CON	3541	Tissue	PCB-174
8270C SIM CON	3541	Tissue	PCB-177
8270C SIM CON	3541	Tissue	PCB-18
8270C SIM CON	3541	Tissue	PCB-180
8270C SIM CON	3541	Tissue	PCB-183
8270C SIM CON	3541	Tissue	PCB-187
8270C SIM CON	3541	Tissue	PCB-194
8270C SIM CON	3541	Tissue	PCB-195
8270C SIM CON	3541	Tissue	PCB-201
8270C SIM CON	3541	Tissue	PCB-203
8270C SIM CON	3541	Tissue	PCB-28
8270C SIM CON	3541	Tissue	PCB-31
8270C SIM CON	3541	Tissue	PCB-33
8270C SIM CON	3541	Tissue	PCB-44
8270C SIM CON	3541	Tissue	PCB-49
8270C SIM CON	3541	Tissue	PCB-5/8
8270C SIM CON	3541	Tissue	PCB-52
8270C SIM CON	3541	Tissue	PCB-56
8270C SIM CON	3541	Tissue	PCB-60
8270C SIM CON	3541	Tissue	PCB-66
8270C SIM CON	3541	Tissue	PCB-70
8270C SIM CON	3541	Tissue	PCB-74
8270C SIM CON	3541	Tissue	PCB-87
8270C SIM CON	3541	Tissue	PCB-95
8270C SIM CON	3541	Tissue	PCB-97
8270C SIM CON	3541	Tissue	PCB-99
Lipids	3541	Tissue	Percent Lipids



# Method Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

Method	Method Description	Protocol	Laboratory
8270C SIM CON	PCB Congeners (GC/MS)	SW846	EET CAL 4
7471A	Mercury (CVAA)	SW846	EET CAL 4
Lipids	Percent Lipids	Lab SOP	EET CAL 4
3541	Automated Soxhlet Extraction	SW846	EET CAL 4
7471A	Preparation, Mercury	SW846	EET CAL 4
In House	Tissue Handling and Preparation	NOAA	EET CAL 4

#### Protocol References:

Lab SOP = Laboratory Standard Operating Procedure

NOAA = National Marine Fisheries Service, National Oceanic And Atmospheric Administration, Seattle, WA, November 1988

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

# Sample Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	Tissue	05/11/23 12:00	06/29/23 09:30
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	Tissue	06/08/23 12:00	06/29/23 09:30
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	Tissue	06/08/23 12:01	06/29/23 09:30
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	Tissue	05/11/23 12:00	06/29/23 09:30
570-143339-35	Composite (Control-A,B,C,D,E-Macoma-Day 28)	Tissue	06/08/23 12:00	06/29/23 09:30
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)	Tissue	06/08/23 12:01	06/29/23 09:30

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14



# Pacific EcoRisk

ENVIRONMENTAL CONSULTING & TESTING

2250 Cordelia Rd., Fairfield, CA 94534  
(707)207-7760

143339

## Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:		Pacific EcoRisk				REQUESTED ANALYSIS												
Client Address:		2250 Cordelia Rd. Fairfield, CA 94534				% lipids	Mercury (EPA 7471B)	PCBs (EPA 8270C) - see COC										
Sampled By:		PER																
Phone:		(707) 207-7760																
FAX:		(707) 207-7916																
Project Manager:		Jeff Cotsifas																
Project Name:		Berkeley Marina																
PO Number:		37289																
Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container														
				Number	Type													
1 Nereis-T0-A	5/11/23	12:00	Tissue	1	poly bag													
2 Nereis-T0-B	5/11/23	12:00	Tissue	1	poly bag													
3 Nereis-T0-C	5/11/23	12:00	Tissue	1	poly bag	X	X	X										
4 Nereis-T0-D	5/11/23	12:00	Tissue	1	poly bag													
5 Nereis-T0-E	5/11/23	12:00	Tissue	1	poly bag													
6 Control-A-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag													
7 Control-B-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag													
8 Control-C-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag		X	X										
9 Control-D-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag													
10 Control-E-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag													
11 BM-DU3-Comp-A-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag													
12 BM-DU3-Comp-B-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag													
13 BM-DU3-Comp-C-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag		X	X										
14 BM-DU3-Comp-D-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag													
15 BM-DU3-Comp-E-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag													



Correct Containers:	Yes	No	
Sample Temperature:	Ambient	Cold	Warm
Sample Preservative:	Yes	No	
Turnaround Time:	STD	Specify:	

### RELINQUISHED BY

Signature:	<i>[Signature]</i>	Signature:	<i>[Signature]</i>
Print:	Franki Robinson	Print:	
Organization:	PER	Organization:	
DATE:	10/28/23	TIME:	1120
DATE:	6/28/23	TIME:	1600

### RECEIVED BY

Signature:	<i>[Signature]</i>	Signature:	<i>[Signature]</i>
Print:	Mark Valentini	Print:	PRECI VITENTE
Organization:	ECT	Organization:	EC
DATE:	6/28/23	TIME:	1100
DATE:	6/29/23	TIME:	0930

Homogenize each replicate for each sample. Take a subsample for each sample replicate and composite. Perform requested analysis on composite sample.  
Report on a Wet Weight Basis  
Sample date is date tests were terminated, tissues frozen after 24-h depuration.

\*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

- 13.4 / 13.5 SCW



# Pacific EcoRisk

ENVIRONMENTAL CONSULTING & TESTING

2250 Cordelia Rd., Fairfield, CA 94534  
(707)207-7760

## Euofins Calscience CHAIN-OF-CUSTODY RECORD

143339

Client Name:		Pacific EcoRisk					REQUESTED ANALYSIS														
Client Address:		2250 Cordelia Rd. Fairfield, CA 94534					% lipids	Mercury (EPA 7471B)	PCBs (EPA 8270C) - see COC												
Sampled By:		PER																			
Phone:		(707) 207-7760																			
FAX:		(707) 207-7916																			
Project Manager:		Jeff Cotsifas																			
Project Name:		Berkeley Marina																			
PO Number:		37289																			
Client Sample ID		Sample Date	Sample Time	Sample Matrix*	Container																
					Number	Type															
16	4	Macoma-T0-A	5/11/23	12:00	Tissue	1	poly bag														
17	2	Macoma-T0-B	5/11/23	12:00	Tissue	1	poly bag														
18	3	Macoma-T0-C	5/11/23	12:00	Tissue	1	poly bag	X	X	X											
19	4	Macoma-T0-D	5/11/23	12:00	Tissue	1	poly bag														
20	5	Macoma-T0-E	5/11/23	12:00	Tissue	1	poly bag														
21	6	Control-A-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag														
22	7	Control-B-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag														
23	8	Control-C-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag		X	X											
24	9	Control-D-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag														
25	10	Control-E-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag														
26	11	BM-DU3-Comp-A-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag														
27	12	BM-DU3-Comp-B-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag														
28	13	BM-DU3-Comp-C-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag		X	X											
29	14	BM-DU3-Comp-D-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag														
30	15	BM-DU3-Comp-E-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag														
Correct Containers:		Yes	No			RELINQUISHED BY															
Sample Temperature:		Ambient	Cold	Warm		Signature: <i>[Signature]</i>				Signature: <i>[Signature]</i>											
Sample Preservative:		Yes	No			Print: <i>[Print]</i>				Print: <i>[Print]</i>											
Turnaround Time:		STD	Specify:																		
<p>Homogenize each replicate for each sample. Take a subsample for each sample replicate and composite. Perform requested analysis on composite sample.</p> <p>Report on a Wet Weight Basis</p> <p>Sample date is date tests were terminated, tissues frozen after 24-h depuration.</p>																					
						Organization: PER				Organization:											
						DATE: 6/28/23				TIME: 1120				DATE: 6/28/23				TIME: 1600			
RECEIVED BY																					
						Signature: <i>[Signature]</i>				Signature: <i>[Signature]</i>											
						Print: <i>MARK VALENTE</i>				Print: <i>PRECY VIRENTE</i>											
						Organization: <i>ECT</i>				Organization: <i>EC</i>											
						DATE: 6/29/23				TIME: 1120				DATE: 6/29/23				TIME: 0930			

\*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)





**ANALYTE LIST**

Pacific EcoRisk  
 2250 Cordelia Rd.  
 Fairfield, CA 94534

**Berkeley Marina**

37289

Project Proponent:

Project #:

Macoma-T0, Nereis-T0, Control-Macoma, Control-Nereis, BM4-DU3-Comp-Macoma, BM4-DU3-Nereis

Site #:

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
% Lipids	EPA 7471B		X*
Mercury	EPA 8270C		X
PCB 008	EPA 8270C		X
PCB 018	EPA 8270C		X
PCB 028	EPA 8270C		X
PCB 031	EPA 8270C		X
PCB 033	EPA 8270C		X
PCB 044	EPA 8270C		X
PCB 049	EPA 8270C		X
PCB 052	EPA 8270C		X
PCB 056	EPA 8270C		X
PCB 060	EPA 8270C		X
PCB 066	EPA 8270C		X
PCB 070	EPA 8270C		X
PCB 074	EPA 8270C		X
PCB 087	EPA 8270C		X
PCB 095	EPA 8270C		X
PCB 097	EPA 8270C		X
PCB 099	EPA 8270C		X
PCB 101	EPA 8270C		X
PCB 105	EPA 8270C		X
PCB 110	EPA 8270C		X
PCB 118	EPA 8270C		X
PCB 128	EPA 8270C		X
PCB 132	EPA 8270C		X
PCB 138/158	EPA 8270C		X
PCB 141	EPA 8270C		X
PCB 149	EPA 8270C		X
PCB 151	EPA 8270C		X
PCB 153	EPA 8270C		X
PCB 156	EPA 8270C		X
PCB 170	EPA 8270C		X
PCB 174	EPA 8270C		X
PCB 177	EPA 8270C		X
PCB 180	EPA 8270C		X
PCB 183	EPA 8270C		X
PCB 187	EPA 8270C		X
PCB 194	EPA 8270C		X
PCB 195	EPA 8270C		X
PCB 201	EPA 8270C		X
PCB 203	EPA 8270C		X
Total PCBs	EPA 8270C		X
<b>QA/QC</b>			
Standard T.A.T.			X

\* % Lipid analysis to be performed on Nereis-T0 and Macoma-T0 samples only.  
 If you have any questions regarding this request as checked,  
 please call Jeff Costifas at (707)207-7760

ORIGIN ID:CCRA (925) 786-8606  
EUROFINS CONCORD  
EUROFINS SOUTHWEST CONCORD  
5063 COMMERCIAL CIR  
SUITE H  
CONCORD, CA 94520  
UNITED STATES US

SHIP DATE: 28JUN23  
ACTWGT: 5.00 LB  
CAD: 258088030/INET4610

BILL RECIPIENT



570-143339 Waybill

TO **SAMPLE CONTROL**  
**EUROFINS CALSCIENCE**  
**2841 DOW AVENUE**  
**SUITE 300**  
**TUSTIN CA 92780**

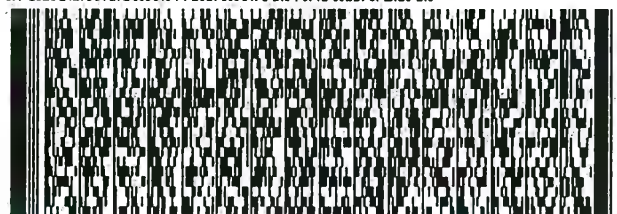
583JZ29ABFE2D

(714) 895-5494

REF: PAC ECORISK

INV:  
PO:

DEPT:



**FedEx**  
Express



J222023400391us

FedEx Ship Manager - Print Your Label(s)

THU - 29 JUN 10:30A  
PRIORITY OVERNIGHT

TRK# 7725 9215 5860  
0201

**92 DTHA**

92780  
CA-US SNA



# Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-143339-1

**Login Number: 143339**

**List Source: Eurofins Calscience**

**List Number: 1**

**Creator: Patel, Jayesh**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jeff Cotsifas  
Pacific EcoRisk Inc  
2250 Cordelia Rd  
Fairfield, California 94534  
Generated 8/18/2023 10:59:03 AM

## JOB DESCRIPTION

Berkeley Marina (Tissue)

## JOB NUMBER

570-143339-2



# Eurofins Calscience

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Calscience Project Manager.

## Authorization



Generated  
8/18/2023 10:59:03 AM

Authorized for release by  
Carla Hollowell, Project Manager I  
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(714)895-5494



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Client Sample Results . . . . .	6
Isotope Dilution Summary . . . . .	11
QC Sample Results . . . . .	13
QC Association Summary . . . . .	17
Lab Chronicle . . . . .	18
Certification Summary . . . . .	20
Method Summary . . . . .	22
Sample Summary . . . . .	23
Chain of Custody . . . . .	24
Receipt Checklists . . . . .	31

# Definitions/Glossary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Qualifiers

### Dioxin

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
B	Compound was found in the blank and sample.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

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**Job ID: 570-143339-2**

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**Laboratory: Eurofins Calscience**

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**Narrative**

**Job Narrative  
570-143339-2**

**Receipt**

The samples were received on 6/29/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was -13.5°C

**Dioxin**

Method 8290A: The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: Composite (Macoma-T0-A,B,C,D,E) (570-143339-34). Signal-to-noise ratios are within method recommended limits.

Method 8290A: Elevated reporting limits are provided for the following samples due to insufficient sample provided for preparation/analysis: Composite (Nereis-T0-A,B,C,D,E) (570-143339-31).

Method 8290A: The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28) (570-143339-36). Re-extraction and re-analysis were performed, and IDA recoveries were again below the method recommended limits.

Method 8290A: The Isotope Dilution Analyte (IDA) recovery associated with the following Quality Control sample is below the method recommended limit: (LCS 410-408863/2-A). The associated native analyte recoveries are within the method recommended limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.



# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Method: SW846 8290A - Dioxins and Furans (HRGC/HRMS)

**Client Sample ID: Composite (Nereis-T0-A,B,C,D,E)**

**Lab Sample ID: 570-143339-31**

**Date Collected: 05/11/23 12:00**

**Matrix: Tissue**

**Date Received: 06/29/23 09:30**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>0.98</b>	<b>J</b>	5.6	0.069	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>0.39</b>	<b>J B</b>	5.6	0.010	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
1,2,3,4,7,8-HxCDD	ND		5.6	0.014	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
1,2,3,4,7,8-HxCDF	ND		5.6	0.031	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
1,2,3,4,7,8,9-HpCDF	ND		5.6	0.013	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
<b>1,2,3,6,7,8-HxCDD</b>	<b>0.061</b>	<b>J</b>	5.6	0.014	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
1,2,3,6,7,8-HxCDF	ND		5.6	0.030	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
1,2,3,7,8-PeCDD	ND		5.6	0.049	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
1,2,3,7,8-PeCDF	ND		5.6	0.023	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
1,2,3,7,8,9-HxCDD	ND		5.6	0.014	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
1,2,3,7,8,9-HxCDF	ND		5.6	0.035	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
2,3,4,6,7,8-HxCDF	ND		5.6	0.028	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
<b>2,3,4,7,8-PeCDF</b>	<b>0.33</b>	<b>J I</b>	5.6	0.019	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
2,3,7,8-TCDD	ND		1.1	0.021	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
<b>2,3,7,8-TCDF</b>	<b>0.16</b>	<b>J I</b>	1.1	0.042	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
<b>OCDD</b>	<b>6.7</b>	<b>J</b>	11	0.050	ng/Kg		08/16/23 09:49	08/18/23 06:25	1
<b>OCDF</b>	<b>0.30</b>	<b>J I</b>	11	0.034	ng/Kg		08/16/23 09:49	08/18/23 06:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	49		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-1,2,3,4,6,7,8-HpCDF	50		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-1,2,3,4,7,8-HxCDD	49		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-1,2,3,4,7,8-HxCDF	51		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-1,2,3,4,7,8,9-HpCDF	51		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-1,2,3,6,7,8-HxCDD	52		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-1,2,3,6,7,8-HxCDF	54		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-1,2,3,7,8-PeCDD	48		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-1,2,3,7,8-PeCDF	46		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-1,2,3,7,8,9-HxCDD	51		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-1,2,3,7,8,9-HxCDF	50		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-2,3,4,6,7,8-HxCDF	50		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-2,3,4,7,8-PeCDF	49		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-2,3,7,8-TCDD	52		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-2,3,7,8-TCDF	48		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-OCDD	53		40 - 135	08/16/23 09:49	08/18/23 06:25	1
13C-OCDF	50		40 - 135	08/16/23 09:49	08/18/23 06:25	1

**Client Sample ID: Composite (Control-A,B,C,D,E-Nereis-Day 28)**

**Lab Sample ID: 570-143339-32**

**Date Collected: 06/08/23 12:00**

**Matrix: Tissue**

**Date Received: 06/29/23 09:30**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	ND		4.9	0.14	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>0.21</b>	<b>J I B</b>	4.9	0.0098	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
1,2,3,4,7,8-HxCDD	ND		4.9	0.0096	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
1,2,3,4,7,8-HxCDF	ND		4.9	0.023	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
<b>1,2,3,4,7,8,9-HpCDF</b>	<b>0.054</b>	<b>J I B</b>	4.9	0.013	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
1,2,3,6,7,8-HxCDD	ND		4.9	0.0094	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
<b>1,2,3,6,7,8-HxCDF</b>	<b>0.18</b>	<b>J I</b>	4.9	0.021	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
<b>1,2,3,7,8-PeCDD</b>	<b>0.11</b>	<b>J I</b>	4.9	0.020	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
<b>1,2,3,7,8-PeCDF</b>	<b>0.22</b>	<b>J</b>	4.9	0.011	ng/Kg		08/08/23 07:45	08/16/23 12:01	1

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# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Method: SW846 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Client Sample ID: Composite (Control-A,B,C,D,E-Nereis-Day 28)**

**Lab Sample ID: 570-143339-32**

**Date Collected: 06/08/23 12:00**

**Matrix: Tissue**

**Date Received: 06/29/23 09:30**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>1,2,3,7,8,9-HxCDD</b>	<b>0.085</b>	<b>J</b>	4.9	0.0088	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
1,2,3,7,8,9-HxCDF	ND		4.9	0.026	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
<b>2,3,4,6,7,8-HxCDF</b>	<b>0.17</b>	<b>J I</b>	4.9	0.022	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
<b>2,3,4,7,8-PeCDF</b>	<b>0.32</b>	<b>J B</b>	4.9	0.0086	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
2,3,7,8-TCDD	ND		0.99	0.020	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
<b>2,3,7,8-TCDF</b>	<b>0.30</b>	<b>J I</b>	0.99	0.021	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
<b>OCDD</b>	<b>1.3</b>	<b>J I B</b>	9.9	0.015	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
<b>OCDF</b>	<b>0.16</b>	<b>J I B</b>	9.9	0.014	ng/Kg		08/08/23 07:45	08/16/23 12:01	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-1,2,3,4,6,7,8-HpCDD	50		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-1,2,3,4,6,7,8-HpCDF	51		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-1,2,3,4,7,8-HxCDD	51		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-1,2,3,4,7,8-HxCDF	55		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-1,2,3,4,7,8,9-HpCDF	54		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-1,2,3,6,7,8-HxCDD	53		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-1,2,3,6,7,8-HxCDF	58		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-1,2,3,7,8-PeCDD	48		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-1,2,3,7,8-PeCDF	46		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-1,2,3,7,8,9-HxCDD	56		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-1,2,3,7,8,9-HxCDF	49		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-2,3,4,6,7,8-HxCDF	53		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-2,3,4,7,8-PeCDF	48		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-2,3,7,8-TCDD	53		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-2,3,7,8-TCDF	50		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-OCDD	55		40 - 135				08/08/23 07:45	08/16/23 12:01	1
13C-OCDF	52		40 - 135				08/08/23 07:45	08/16/23 12:01	1

**Client Sample ID: Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)**

**Lab Sample ID: 570-143339-33**

**Date Collected: 06/08/23 12:01**

**Matrix: Tissue**

**Date Received: 06/29/23 09:30**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>0.77</b>	<b>J</b>	5.0	0.020	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>0.27</b>	<b>J B</b>	5.0	0.0048	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
1,2,3,4,7,8-HxCDD	ND		5.0	0.0072	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
1,2,3,4,7,8-HxCDF	ND		5.0	0.013	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.0065	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
<b>1,2,3,6,7,8-HxCDD</b>	<b>0.10</b>	<b>J I B</b>	5.0	0.0069	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
1,2,3,6,7,8-HxCDF	ND		5.0	0.013	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
<b>1,2,3,7,8-PeCDD</b>	<b>0.15</b>	<b>J I</b>	5.0	0.023	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
<b>1,2,3,7,8-PeCDF</b>	<b>0.11</b>	<b>J</b>	5.0	0.018	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
<b>1,2,3,7,8,9-HxCDD</b>	<b>0.050</b>	<b>J I</b>	5.0	0.0063	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
1,2,3,7,8,9-HxCDF	ND		5.0	0.014	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
<b>2,3,4,6,7,8-HxCDF</b>	<b>0.075</b>	<b>J I</b>	5.0	0.013	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
<b>2,3,4,7,8-PeCDF</b>	<b>0.55</b>	<b>J B</b>	5.0	0.014	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
2,3,7,8-TCDD	ND		1.0	0.0092	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
<b>2,3,7,8-TCDF</b>	<b>0.34</b>	<b>J</b>	1.0	0.022	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
<b>OCDD</b>	<b>7.5</b>	<b>J B</b>	10	0.031	ng/Kg		08/08/23 07:45	08/11/23 23:00	1
<b>OCDF</b>	<b>0.21</b>	<b>J B</b>	10	0.0068	ng/Kg		08/08/23 07:45	08/11/23 23:00	1

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Method: SW846 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	53		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-1,2,3,4,6,7,8-HpCDF	51		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-1,2,3,4,7,8-HxCDD	53		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-1,2,3,4,7,8-HxCDF	54		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-1,2,3,4,7,8,9-HpCDD	51		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-1,2,3,6,7,8-HxCDD	53		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-1,2,3,6,7,8-HxCDF	54		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-1,2,3,7,8-PeCDD	44		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-1,2,3,7,8-PeCDF	46		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-1,2,3,7,8,9-HxCDD	58		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-1,2,3,7,8,9-HxCDF	51		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-2,3,4,6,7,8-HxCDF	52		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-2,3,4,7,8-PeCDF	50		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-2,3,7,8-TCDD	51		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-2,3,7,8-TCDF	50		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-OCDD	57		40 - 135	08/08/23 07:45	08/11/23 23:00	1
13C-OCDF	55		40 - 135	08/08/23 07:45	08/11/23 23:00	1

**Client Sample ID: Composite (Macoma-T0-A,B,C,D,E)**  
**Date Collected: 05/11/23 12:00**  
**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-34**  
**Matrix: Tissue**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.15	J I	4.9	0.026	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
1,2,3,4,6,7,8-HpCDF	0.051	J I B	4.9	0.0028	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
1,2,3,4,7,8-HxCDD	ND		4.9	0.012	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
1,2,3,4,7,8-HxCDF	ND		4.9	0.013	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
1,2,3,4,7,8,9-HpCDF	0.031	J I B	4.9	0.0037	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
1,2,3,6,7,8-HxCDD	ND		4.9	0.012	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
1,2,3,6,7,8-HxCDF	ND		4.9	0.012	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
1,2,3,7,8-PeCDD	ND		4.9	0.013	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
1,2,3,7,8-PeCDF	0.085	J I	4.9	0.011	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
1,2,3,7,8,9-HxCDD	0.038	J I	4.9	0.011	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
1,2,3,7,8,9-HxCDF	0.057	J I	4.9	0.016	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
2,3,4,6,7,8-HxCDF	ND		4.9	0.013	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
2,3,4,7,8-PeCDF	0.069	J I B	4.9	0.0088	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
2,3,7,8-TCDD	ND		0.98	0.0069	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
2,3,7,8-TCDF	0.027	J	0.98	0.0052	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
OCDD	0.52	J I B	9.8	0.016	ng/Kg		08/08/23 07:45	08/11/23 23:51	1
OCDF	0.059	J I B	9.8	0.0079	ng/Kg		08/08/23 07:45	08/11/23 23:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	46		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-1,2,3,4,6,7,8-HpCDF	44		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-1,2,3,4,7,8-HxCDD	45		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-1,2,3,4,7,8-HxCDF	46		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-1,2,3,4,7,8,9-HpCDD	44		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-1,2,3,6,7,8-HxCDD	46		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-1,2,3,6,7,8-HxCDF	48		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-1,2,3,7,8-PeCDD	37	*5-	40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-1,2,3,7,8-PeCDF	40		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-1,2,3,7,8,9-HxCDD	49		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-1,2,3,7,8,9-HxCDF	44		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-2,3,4,6,7,8-HxCDF	44		40 - 135	08/08/23 07:45	08/11/23 23:51	1

Eurofins Calscience

# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Method: SW846 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Client Sample ID: Composite (Macoma-T0-A,B,C,D,E)**

**Date Collected: 05/11/23 12:00**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-34**

**Matrix: Tissue**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,7,8-PeCDF	40		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-2,3,7,8-TCDD	43		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-2,3,7,8-TCDF	43		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-OCDD	49		40 - 135	08/08/23 07:45	08/11/23 23:51	1
13C-OCDF	46		40 - 135	08/08/23 07:45	08/11/23 23:51	1

**Client Sample ID: Composite (Control-A,B,C,D,E-Macoma-Day 28)**

**Date Collected: 06/08/23 12:00**

**Date Received: 06/29/23 09:30**

**Lab Sample ID: 570-143339-35**

**Matrix: Tissue**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.3	J	4.8	0.021	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
1,2,3,4,6,7,8-HpCDF	0.30	J B	4.8	0.0044	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
1,2,3,4,7,8-HxCDD	0.037	J I B	4.8	0.0045	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
1,2,3,4,7,8-HxCDF	0.081	J	4.8	0.0090	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
1,2,3,4,7,8,9-HpCDF	ND		4.8	0.0061	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
1,2,3,6,7,8-HxCDD	0.12	J I B	4.8	0.0045	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
1,2,3,6,7,8-HxCDF	ND		4.8	0.0081	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
1,2,3,7,8-PeCDD	ND		4.8	0.024	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
1,2,3,7,8-PeCDF	ND		4.8	0.024	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
1,2,3,7,8,9-HxCDD	0.071	J I	4.8	0.0040	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
1,2,3,7,8,9-HxCDF	ND		4.8	0.0098	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
2,3,4,6,7,8-HxCDF	0.079	J I	4.8	0.0085	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
2,3,4,7,8-PeCDF	0.21	J I B	4.8	0.018	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
2,3,7,8-TCDD	ND		0.97	0.0060	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
2,3,7,8-TCDF	0.092	J	0.97	0.029	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
OCDD	12	B	9.7	0.027	ng/Kg		08/08/23 07:45	08/12/23 00:41	1
OCDF	0.99	J B	9.7	0.011	ng/Kg		08/08/23 07:45	08/12/23 00:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	59		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-1,2,3,4,6,7,8-HpCDF	57		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-1,2,3,4,7,8-HxCDD	58		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-1,2,3,4,7,8-HxCDF	59		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-1,2,3,4,7,8,9-HpCDF	57		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-1,2,3,6,7,8-HxCDD	58		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-1,2,3,6,7,8-HxCDF	61		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-1,2,3,7,8-PeCDD	48		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-1,2,3,7,8-PeCDF	52		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-1,2,3,7,8,9-HxCDD	64		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-1,2,3,7,8,9-HxCDF	56		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-2,3,4,6,7,8-HxCDF	56		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-2,3,4,7,8-PeCDF	55		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-2,3,7,8-TCDD	56		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-2,3,7,8-TCDF	54		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-OCDD	62		40 - 135	08/08/23 07:45	08/12/23 00:41	1
13C-OCDF	60		40 - 135	08/08/23 07:45	08/12/23 00:41	1



# Client Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Method: SW846 8290A - Dioxins and Furans (HRGC/HRMS)

**Client Sample ID: Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)**

**Lab Sample ID: 570-143339-36**

**Date Collected: 06/08/23 12:01**

**Matrix: Tissue**

**Date Received: 06/29/23 09:30**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>0.55</b>	<b>J I</b>	4.9	0.076	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>0.13</b>	<b>J I B</b>	4.9	0.0083	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
1,2,3,4,7,8-HxCDD	ND		4.9	0.017	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
1,2,3,4,7,8-HxCDF	ND		4.9	0.029	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
1,2,3,4,7,8,9-HpCDF	ND		4.9	0.011	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
1,2,3,6,7,8-HxCDD	ND		4.9	0.017	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
1,2,3,6,7,8-HxCDF	ND		4.9	0.028	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
<b>1,2,3,7,8-PeCDD</b>	<b>0.056</b>	<b>J I</b>	4.9	0.021	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
1,2,3,7,8-PeCDF	ND		4.9	0.035	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
1,2,3,7,8,9-HxCDD	ND		4.9	0.016	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
1,2,3,7,8,9-HxCDF	ND		4.9	0.038	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
2,3,4,6,7,8-HxCDF	ND		4.9	0.026	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
2,3,4,7,8-PeCDF	ND		4.9	0.027	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
2,3,7,8-TCDD	ND		0.98	0.027	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
2,3,7,8-TCDF	ND		0.98	0.021	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
<b>OCDD</b>	<b>1.6</b>	<b>J</b>	9.8	0.035	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
<b>OCDF</b>	<b>0.071</b>	<b>J</b>	9.8	0.018	ng/Kg		08/16/23 09:49	08/18/23 07:15	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-1,2,3,4,6,7,8-HpCDD	37	*5-	40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-1,2,3,4,6,7,8-HpCDF	39	*5-	40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-1,2,3,4,7,8-HxCDD	37	*5-	40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-1,2,3,4,7,8-HxCDF	40		40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-1,2,3,4,7,8,9-HpCDF	39	*5-	40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-1,2,3,6,7,8-HxCDD	40		40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-1,2,3,6,7,8-HxCDF	42		40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-1,2,3,7,8-PeCDD	35	*5-	40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-1,2,3,7,8-PeCDF	35	*5-	40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-1,2,3,7,8,9-HxCDD	42		40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-1,2,3,7,8,9-HxCDF	37	*5-	40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-2,3,4,6,7,8-HxCDF	39	*5-	40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-2,3,4,7,8-PeCDF	37	*5-	40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-2,3,7,8-TCDD	40		40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-2,3,7,8-TCDF	37	*5-	40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-OCDD	42		40 - 135				08/16/23 09:49	08/18/23 07:15	1
13C-OCDF	39	*5-	40 - 135				08/16/23 09:49	08/18/23 07:15	1

# Isotope Dilution Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Tissue

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		HpCDD (40-135)	HpCDF (40-135)	HxCDD (40-135)	HxCDF (40-135)	HpCDF2 (40-135)	HxDD (40-135)	HxDF (40-135)	PeCDD (40-135)
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	49	50	49	51	51	52	54	48
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	50	51	51	55	54	53	58	48
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	53	51	53	54	51	53	54	44
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	46	44	45	46	44	46	48	37 *5-
570-143339-35	Composite (Control-A,B,C,D,E-Macoma-Day 28)	59	57	58	59	57	58	61	48
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)	37 *5-	39 *5-	37 *5-	40	39 *5-	40	42	35 *5-
LCS 410-405570/2-A	Lab Control Sample	53	52	52	51	53	52	54	42
LCS 410-408863/2-A	Lab Control Sample	26 *5-	23 *5-	24 *5-	24 *5-	22 *5-	25 *5-	23 *5-	24 *5-
MB 410-405570/1-A	Method Blank	52	48	49	50	49	50	52	41
MB 410-408863/1-A	Method Blank	71	67	68	67	61	69	65	65

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PeCDF (40-135)	13CHxCD (40-135)	HxCF (40-135)	13CHxCF (40-135)	PeCF (40-135)	TCDD (40-135)	TCDF (40-135)	OCDD (40-135)
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	46	51	50	50	49	52	48	53
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	46	56	49	53	48	53	50	55
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	46	58	51	52	50	51	50	57
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	40	49	44	44	40	43	43	49
570-143339-35	Composite (Control-A,B,C,D,E-Macoma-Day 28)	52	64	56	56	55	56	54	62
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)	35 *5-	42	37 *5-	39 *5-	37 *5-	40	37 *5-	42
LCS 410-405570/2-A	Lab Control Sample	46	59	50	51	46	51	47	58
LCS 410-408863/2-A	Lab Control Sample	24 *5-	26 *5-	22 *5-	23 *5-	25 *5-	23 *5-	21 *5-	28 *5-
MB 410-405570/1-A	Method Blank	43	54	48	48	43	47	44	56
MB 410-408863/1-A	Method Blank	66	71	61	63	67	64	58	78

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		OCDF (40-135)							
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	50							
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	52							
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	55							
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	46							

# Isotope Dilution Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Tissue

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OCDF (40-135)
570-143339-35	Composite (Control-A,B,C,D,E-Macc	60
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Ma coma-Day 28)	39 *5-
LCS 410-405570/2-A	Lab Control Sample	56
LCS 410-408863/2-A	Lab Control Sample	24 *5-
MB 410-405570/1-A	Method Blank	54
MB 410-408863/1-A	Method Blank	66

#### Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD  
 HpCDF = 13C-1,2,3,4,6,7,8-HpCDF  
 HxCDD = 13C-1,2,3,4,7,8-HxCDD  
 HxCDF = 13C-1,2,3,4,7,8-HxCDF  
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF  
 HxDD = 13C-1,2,3,6,7,8-HxCDD  
 HxDF = 13C-1,2,3,6,7,8-HxCDF  
 PeCDD = 13C-1,2,3,7,8-PeCDD  
 PeCDF = 13C-1,2,3,7,8-PeCDF  
 13CHxCD = 13C-1,2,3,7,8,9-HxCDD  
 HxCF = 13C-1,2,3,7,8,9-HxCDF  
 13CHxCF = 13C-2,3,4,6,7,8-HxCDF  
 PeCF = 13C-2,3,4,7,8-PeCDF  
 TCDD = 13C-2,3,7,8-TCDD  
 TCDF = 13C-2,3,7,8-TCDF  
 OCDD = 13C-OCDD  
 OCDF = 13C-OCDF

# QC Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

**Lab Sample ID: MB 410-405570/1-A**  
**Matrix: Tissue**  
**Analysis Batch: 407343**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 405570**

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,2,3,4,6,7,8-HpCDD	ND		5.0	0.020	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
1,2,3,4,6,7,8-HpCDF	0.05632	J I	5.0	0.0046	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
1,2,3,4,7,8-HxCDD	0.04034	J	5.0	0.0047	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
1,2,3,4,7,8-HxCDF	ND		5.0	0.017	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
1,2,3,4,7,8,9-HpCDF	0.05964	J I	5.0	0.0060	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
1,2,3,6,7,8-HxCDD	0.04654	J I	5.0	0.0050	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
1,2,3,6,7,8-HxCDF	ND		5.0	0.016	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
1,2,3,7,8-PeCDD	ND		5.0	0.011	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
1,2,3,7,8-PeCDF	ND		5.0	0.0058	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
1,2,3,7,8,9-HxCDD	ND		5.0	0.0040	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
1,2,3,7,8,9-HxCDF	ND		5.0	0.021	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
2,3,4,6,7,8-HxCDF	ND		5.0	0.017	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
2,3,4,7,8-PeCDF	0.04357	J I	5.0	0.0047	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
2,3,7,8-TCDD	ND		1.0	0.0092	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
2,3,7,8-TCDF	ND		1.0	0.0071	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
OCDD	0.2352	J I	10	0.039	ng/Kg		08/08/23 07:45	08/11/23 18:49	1
OCDF	0.07788	J I	10	0.0089	ng/Kg		08/08/23 07:45	08/11/23 18:49	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-1,2,3,4,6,7,8-HpCDD	52		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-1,2,3,4,6,7,8-HpCDF	48		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-1,2,3,4,7,8-HxCDD	49		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-1,2,3,4,7,8-HxCDF	50		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-1,2,3,4,7,8,9-HpCDF	49		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-1,2,3,6,7,8-HxCDD	50		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-1,2,3,6,7,8-HxCDF	52		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-1,2,3,7,8-PeCDD	41		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-1,2,3,7,8-PeCDF	43		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-1,2,3,7,8,9-HxCDD	54		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-1,2,3,7,8,9-HxCDF	48		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-2,3,4,6,7,8-HxCDF	48		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-2,3,4,7,8-PeCDF	43		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-2,3,7,8-TCDD	47		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-2,3,7,8-TCDF	44		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-OCDD	56		40 - 135	08/08/23 07:45	08/11/23 18:49	1
13C-OCDF	54		40 - 135	08/08/23 07:45	08/11/23 18:49	1

**Lab Sample ID: LCS 410-405570/2-A**  
**Matrix: Tissue**  
**Analysis Batch: 407343**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 405570**

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
1,2,3,4,6,7,8-HpCDD	100	100.8		ng/Kg		101	77 - 127
1,2,3,4,6,7,8-HpCDF	100	96.41		ng/Kg		96	77 - 127
1,2,3,4,7,8-HxCDD	100	101.0		ng/Kg		101	77 - 127
1,2,3,4,7,8-HxCDF	100	101.6		ng/Kg		102	77 - 129
1,2,3,4,7,8,9-HpCDF	100	100.3		ng/Kg		100	77 - 127
1,2,3,6,7,8-HxCDD	100	102.5		ng/Kg		102	76 - 127
1,2,3,6,7,8-HxCDF	100	100.2		ng/Kg		100	77 - 129

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# QC Sample Results

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 410-405570/2-A

Matrix: Tissue

Analysis Batch: 407343

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 405570

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
1,2,3,7,8-PeCDD	100	112.5		ng/Kg		112	77 - 127
1,2,3,7,8-PeCDF	100	104.9		ng/Kg		105	75 - 129
1,2,3,7,8,9-HxCDD	100	100.4		ng/Kg		100	76 - 127
1,2,3,7,8,9-HxCDF	100	101.3		ng/Kg		101	76 - 126
2,3,4,6,7,8-HxCDF	100	98.56		ng/Kg		99	78 - 128
2,3,4,7,8-PeCDF	100	105.9		ng/Kg		106	75 - 131
2,3,7,8-TCDD	20.0	19.30		ng/Kg		97	68 - 142
2,3,7,8-TCDF	20.0	20.54		ng/Kg		103	70 - 133
OCDD	200	207.0		ng/Kg		103	77 - 125
OCDF	200	200.2		ng/Kg		100	75 - 128

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	53		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	52		40 - 135
13C-1,2,3,4,7,8-HxCDD	52		40 - 135
13C-1,2,3,4,7,8-HxCDF	51		40 - 135
13C-1,2,3,4,7,8,9-HpCDF	53		40 - 135
13C-1,2,3,6,7,8-HxCDD	52		40 - 135
13C-1,2,3,6,7,8-HxCDF	54		40 - 135
13C-1,2,3,7,8-PeCDD	42		40 - 135
13C-1,2,3,7,8-PeCDF	46		40 - 135
13C-1,2,3,7,8,9-HxCDD	59		40 - 135
13C-1,2,3,7,8,9-HxCDF	50		40 - 135
13C-2,3,4,6,7,8-HxCDF	51		40 - 135
13C-2,3,4,7,8-PeCDF	46		40 - 135
13C-2,3,7,8-TCDD	51		40 - 135
13C-2,3,7,8-TCDF	47		40 - 135
13C-OCDD	58		40 - 135
13C-OCDF	56		40 - 135

Lab Sample ID: MB 410-408863/1-A

Matrix: Tissue

Analysis Batch: 409640

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 408863

Analyte	MB MB		RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,2,3,4,6,7,8-HpCDD	ND		5.0	0.020	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
1,2,3,4,6,7,8-HpCDF	0.02696	J	5.0	0.0062	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
1,2,3,4,7,8-HxCDD	ND		5.0	0.0042	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
1,2,3,4,7,8-HxCDF	0.07418	J I	5.0	0.012	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.0084	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
1,2,3,6,7,8-HxCDD	ND		5.0	0.0042	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
1,2,3,6,7,8-HxCDF	0.05177	J I	5.0	0.011	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
1,2,3,7,8-PeCDD	ND		5.0	0.013	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
1,2,3,7,8-PeCDF	ND		5.0	0.018	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
1,2,3,7,8,9-HxCDD	ND		5.0	0.0039	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
1,2,3,7,8,9-HxCDF	ND		5.0	0.014	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
2,3,4,6,7,8-HxCDF	ND		5.0	0.011	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
2,3,4,7,8-PeCDF	ND		5.0	0.015	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
2,3,7,8-TCDD	ND		1.0	0.0069	ng/Kg		08/16/23 09:49	08/17/23 22:03	1

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# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: MB 410-408863/1-A**  
**Matrix: Tissue**  
**Analysis Batch: 409640**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 408863**

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
2,3,7,8-TCDF	ND		1.0	0.0061	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
OCDD	ND		10	0.021	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
OCDF	ND		10	0.0057	ng/Kg		08/16/23 09:49	08/17/23 22:03	1
Isotope Dilution	MB	MB	Limits				Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier							
13C-1,2,3,4,6,7,8-HpCDD	71		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-1,2,3,4,6,7,8-HpCDF	67		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-1,2,3,4,7,8-HxCDD	68		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-1,2,3,4,7,8-HxCDF	67		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-1,2,3,4,7,8,9-HpCDF	61		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-1,2,3,6,7,8-HxCDD	69		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-1,2,3,6,7,8-HxCDF	65		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-1,2,3,7,8-PeCDD	65		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-1,2,3,7,8-PeCDF	66		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-1,2,3,7,8,9-HxCDD	71		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-1,2,3,7,8,9-HxCDF	61		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-2,3,4,6,7,8-HxCDF	63		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-2,3,4,7,8-PeCDF	67		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-2,3,7,8-TCDD	64		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-2,3,7,8-TCDF	58		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-OCDD	78		40 - 135				08/16/23 09:49	08/17/23 22:03	1
13C-OCDF	66		40 - 135				08/16/23 09:49	08/17/23 22:03	1

**Lab Sample ID: LCS 410-408863/2-A**  
**Matrix: Tissue**  
**Analysis Batch: 409640**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 408863**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2,3,4,6,7,8-HpCDF	100	103.5		ng/Kg		104	77 - 127
1,2,3,4,7,8-HxCDD	100	102.5		ng/Kg		103	77 - 127
1,2,3,4,7,8-HxCDF	100	104.1		ng/Kg		104	77 - 129
1,2,3,4,7,8,9-HpCDF	100	102.4		ng/Kg		102	77 - 127
1,2,3,6,7,8-HxCDD	100	106.0		ng/Kg		106	76 - 127
1,2,3,6,7,8-HxCDF	100	103.0		ng/Kg		103	77 - 129
1,2,3,7,8-PeCDD	100	111.9		ng/Kg		112	77 - 127
1,2,3,7,8-PeCDF	100	103.9		ng/Kg		104	75 - 129
1,2,3,7,8,9-HxCDD	100	103.4		ng/Kg		103	76 - 127
1,2,3,7,8,9-HxCDF	100	101.7		ng/Kg		102	76 - 126
2,3,4,6,7,8-HxCDF	100	102.6		ng/Kg		103	78 - 128
2,3,4,7,8-PeCDF	100	104.4		ng/Kg		104	75 - 131
2,3,7,8-TCDD	20.0	20.28		ng/Kg		101	68 - 142
2,3,7,8-TCDF	20.0	20.04		ng/Kg		100	70 - 133
OCDD	200	210.0		ng/Kg		105	77 - 125
OCDF	200	200.8		ng/Kg		100	75 - 128
Isotope Dilution	LCS	LCS	Limits				
	%Recovery	Qualifier					
13C-1,2,3,4,6,7,8-HpCDD	26	*5-	40 - 135				
13C-1,2,3,4,6,7,8-HpCDF	23	*5-	40 - 135				

# QC Sample Results

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 410-408863/2-A

Matrix: Tissue

Analysis Batch: 409640

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 408863

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,7,8-HxCDD	24	*5-	40 - 135
13C-1,2,3,4,7,8-HxCDF	24	*5-	40 - 135
13C-1,2,3,4,7,8,9-HpCDF	22	*5-	40 - 135
13C-1,2,3,6,7,8-HxCDD	25	*5-	40 - 135
13C-1,2,3,6,7,8-HxCDF	23	*5-	40 - 135
13C-1,2,3,7,8-PeCDD	24	*5-	40 - 135
13C-1,2,3,7,8-PeCDF	24	*5-	40 - 135
13C-1,2,3,7,8,9-HxCDD	26	*5-	40 - 135
13C-1,2,3,7,8,9-HxCDF	22	*5-	40 - 135
13C-2,3,4,6,7,8-HxCDF	23	*5-	40 - 135
13C-2,3,4,7,8-PeCDF	25	*5-	40 - 135
13C-2,3,7,8-TCDD	23	*5-	40 - 135
13C-2,3,7,8-TCDF	21	*5-	40 - 135
13C-OCDD	28	*5-	40 - 135
13C-OCDF	24	*5-	40 - 135

# QC Association Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Specialty Organics

### Prep Batch: 405570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	8290A	
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	8290A	
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	8290A	
570-143339-35	Composite (Control-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	8290A	
MB 410-405570/1-A	Method Blank	Total/NA	Tissue	8290A	
LCS 410-405570/2-A	Lab Control Sample	Total/NA	Tissue	8290A	

### Analysis Batch: 407343

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	8290A	405570
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	Total/NA	Tissue	8290A	405570
570-143339-35	Composite (Control-A,B,C,D,E-Macoma-Day 28)	Total/NA	Tissue	8290A	405570
MB 410-405570/1-A	Method Blank	Total/NA	Tissue	8290A	405570
LCS 410-405570/2-A	Lab Control Sample	Total/NA	Tissue	8290A	405570

### Analysis Batch: 408765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	Total/NA	Tissue	8290A	405570

### Prep Batch: 408863

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	8290A	
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day)	Total/NA	Tissue	8290A	
MB 410-408863/1-A	Method Blank	Total/NA	Tissue	8290A	
LCS 410-408863/2-A	Lab Control Sample	Total/NA	Tissue	8290A	

### Analysis Batch: 409327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	Total/NA	Tissue	8290A	408863
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day)	Total/NA	Tissue	8290A	408863

### Analysis Batch: 409640

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 410-408863/1-A	Method Blank	Total/NA	Tissue	8290A	408863
LCS 410-408863/2-A	Lab Control Sample	Total/NA	Tissue	8290A	408863



# Lab Chronicle

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

**Client Sample ID: Composite (Nereis-T0-A,B,C,D,E)**

**Lab Sample ID: 570-143339-31**

Date Collected: 05/11/23 12:00

Matrix: Tissue

Date Received: 06/29/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8290A			9.00 g	20 uL	408863	08/16/23 09:49	UJSZ	ELLE
Total/NA	Analysis	8290A		1	20 uL	20 uL	409327	08/18/23 06:25	AQ46	ELLE
Instrument ID: DF17280B										

**Client Sample ID: Composite (Control-A,B,C,D,E-Nereis-Day 28)**

**Lab Sample ID: 570-143339-32**

Date Collected: 06/08/23 12:00

Matrix: Tissue

Date Received: 06/29/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8290A			10.13 g	20 uL	405570	08/08/23 07:45	UBKG	ELLE
Total/NA	Analysis	8290A		1	20 uL	20 uL	408765	08/16/23 12:01	AQ46	ELLE
Instrument ID: DF17280B										

**Client Sample ID: Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)**

**Lab Sample ID: 570-143339-33**

Date Collected: 06/08/23 12:01

Matrix: Tissue

Date Received: 06/29/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8290A			10.01 g	20 uL	405570	08/08/23 07:45	UBKG	ELLE
Total/NA	Analysis	8290A		1	20 uL	20 uL	407343	08/11/23 23:00	AQ46	ELLE
Instrument ID: DF18471										

**Client Sample ID: Composite (Macoma-T0-A,B,C,D,E)**

**Lab Sample ID: 570-143339-34**

Date Collected: 05/11/23 12:00

Matrix: Tissue

Date Received: 06/29/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8290A			10.21 g	20 uL	405570	08/08/23 07:45	UBKG	ELLE
Total/NA	Analysis	8290A		1	20 uL	20 uL	407343	08/11/23 23:51	AQ46	ELLE
Instrument ID: DF18471										

**Client Sample ID: Composite (Control-A,B,C,D,E-Macoma-Day 28)**

**Lab Sample ID: 570-143339-35**

Date Collected: 06/08/23 12:00

Matrix: Tissue

Date Received: 06/29/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8290A			10.31 g	20 uL	405570	08/08/23 07:45	UBKG	ELLE
Total/NA	Analysis	8290A		1	20 uL	20 uL	407343	08/12/23 00:41	AQ46	ELLE
Instrument ID: DF18471										

# Lab Chronicle

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

**Client Sample ID: Composite**  
**(BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)**

**Lab Sample ID: 570-143339-36**

**Date Collected: 06/08/23 12:01**

**Matrix: Tissue**

**Date Received: 06/29/23 09:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8290A			10.23 g	20 uL	408863	08/16/23 09:49	UJSZ	ELLE
Total/NA	Analysis	8290A		1	20 uL	20 uL	409327	08/18/23 07:15	AQ46	ELLE

Instrument ID: DF17280B

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

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# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
 Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-24
A2LA	ISO/IEC 17025	0001.01	11-30-24
Alabama	State	43200	01-31-24
Alaska	State	PA00009	06-30-24
Alaska (UST)	State	17-027	02-28-24
Arizona	State	AZ0780	03-12-24
Arkansas DEQ	State	88-00660	08-09-24
California	State	2792	11-30-23
Colorado	State	PA00009	06-30-24
Connecticut	State	PH-0746	06-30-25
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-24
Delaware (DW)	State	N/A	01-31-24
Florida	NELAP	E87997	06-30-24
Georgia (DW)	State	C048	01-31-24
Hawaii	State	N/A	01-31-24
Illinois	NELAP	200027	01-31-24
Iowa	State	361	03-01-24
Kansas	NELAP	E-10151	10-31-23
Kentucky (DW)	State	KY90088	12-31-23
Kentucky (UST)	State	0001.01	11-30-24
Kentucky (WW)	State	KY90088	12-31-23
Louisiana (All)	NELAP	02055	06-30-24
Maine	State	2019012	03-12-25
Maryland	State	100	06-30-24
Massachusetts	State	M-PA009	06-30-24
Michigan	State	9930	01-31-24
Minnesota	NELAP	042-999-487	12-31-23
Mississippi	State	023	01-31-24
Missouri	State	450	01-31-25
Montana (DW)	State	0098	01-01-24
Nebraska	State	NE-OS-32-17	01-31-24
New Hampshire	NELAP	2730	01-10-24
New Jersey	NELAP	PA011	06-30-24
New York	NELAP	10670	04-01-24
North Carolina (DW)	State	42705	07-31-24
North Carolina (WW/SW)	State	521	12-31-23
North Dakota	State	R-205	01-31-24
Oklahoma	NELAP	9804	08-31-23
Oregon	NELAP	PA200001	09-11-23
PALA	Canada	1978	09-16-24
Pennsylvania	NELAP	36-00037	01-31-24
Rhode Island	State	LAO00338	12-31-23
South Carolina	State	89002	01-31-24
Tennessee	State	02838	01-31-24
Texas	NELAP	T104704194-23-46	08-31-23
USDA	US Federal Programs	525-22-298-19481	10-25-25
Vermont	State	VT - 36037	10-28-23
Virginia	NELAP	460182	06-14-25
Washington	State	C457	04-11-24
West Virginia (DW)	State	9906 C	12-31-23

# Accreditation/Certification Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
West Virginia DEP	State	055	07-31-24
Wyoming	State	8TMS-L	01-31-24
Wyoming (UST)	A2LA	0001.01	11-30-24

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# Method Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

Method	Method Description	Protocol	Laboratory
8290A	Dioxins and Furans (HRGC/HRMS)	SW846	ELLE
8290A	Soxhlet Extraction of Dioxins and Furans	SW846	ELLE

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300



# Sample Summary

Client: Pacific EcoRisk Inc  
Project/Site: Berkeley Marina (Tissue)

Job ID: 570-143339-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-143339-31	Composite (Nereis-T0-A,B,C,D,E)	Tissue	05/11/23 12:00	06/29/23 09:30
570-143339-32	Composite (Control-A,B,C,D,E-Nereis-Day 28)	Tissue	06/08/23 12:00	06/29/23 09:30
570-143339-33	Composite (BM-DU3-Comp-A,B,C,D,E-Nereis-Day 28)	Tissue	06/08/23 12:01	06/29/23 09:30
570-143339-34	Composite (Macoma-T0-A,B,C,D,E)	Tissue	05/11/23 12:00	06/29/23 09:30
570-143339-35	Composite (Control-A,B,C,D,E-Macoma-Day 28)	Tissue	06/08/23 12:00	06/29/23 09:30
570-143339-36	Composite (BMM-DU3-Comp-A,B,C,D,E-Macoma-Day 28)	Tissue	06/08/23 12:01	06/29/23 09:30

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# Pacific EcoRisk

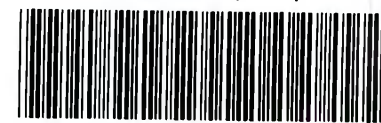
ENVIRONMENTAL CONSULTING & TESTING

2250 Cordelia Rd., Fairfield, CA 94534  
(707)207-7760

143339

## Eurofins Calscience CHAIN-OF-CUSTODY RECORD

<b>Client Name:</b> Pacific EcoRisk		<b>REQUESTED ANALYSIS</b>															
<b>Client Address:</b> 2250 Cordelia Rd. Fairfield, CA 94534																	
<b>Sampled By:</b> PER																	
<b>Phone:</b> (707) 207-7760																	
<b>FAX:</b> (707) 207-7916																	
<b>Project Manager:</b> Jeff Cotsifas																	
<b>Project Name:</b> Berkeley Marina																	
<b>PO Number:</b> 37289																	
Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container		% lipids	Mercury (EPA 7471B)	PCBs (EPA 8270C) - see COC									
				Number	Type												
1 Nereis-T0-A	5/11/23	12:00	Tissue	1	poly bag												
2 Nereis-T0-B	5/11/23	12:00	Tissue	1	poly bag												
3 Nereis-T0-C	5/11/23	12:00	Tissue	1	poly bag	X	X	X									
4 Nereis-T0-D	5/11/23	12:00	Tissue	1	poly bag												
5 Nereis-T0-E	5/11/23	12:00	Tissue	1	poly bag												
6 Control-A-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag												
7 Control-B-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag												
8 Control-C-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag		X	X									
9 Control-D-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag												
10 Control-E-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag												
11 BM-DU3-Comp-A-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag												
12 BM-DU3-Comp-B-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag												
13 BM-DU3-Comp-C-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag		X	X									
14 BM-DU3-Comp-D-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag												
15 BM-DU3-Comp-E-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag												



570-143339 Chain of Custody

<b>Correct Containers:</b>	Yes	No		<b>RELINQUISHED BY</b>			
<b>Sample Temperature:</b>	Ambient	Cold	Warm	<b>Signature:</b>	<i>[Signature]</i>	<b>Signature:</b>	<i>7/22 to Fed ex</i>
<b>Sample Preservative:</b>	Yes	No		<b>Print:</b>	<i>Franki Robinson</i>	<b>Print:</b>	
<b>Turnaround Time:</b>	STD	Specify:		<b>Organization:</b>	PER	<b>Organization:</b>	
<p>Homogenize each replicate for each sample. Take a subsample for each sample replicate and composite. Perform requested analysis on composite sample.</p> <p>Report on a Wet Weight Basis</p> <p>Sample date is date tests were terminated, tissues frozen after 24-h depuration.</p>				<b>DATE:</b>	<i>10/28/23</i>	<b>TIME:</b>	<i>1120</i>
				<b>DATE:</b>	<i>6/28/23</i>	<b>TIME:</b>	<i>1600</i>
				<b>RECEIVED BY</b>			
				<b>Signature:</b>	<i>[Signature]</i>	<b>Signature:</b>	<i>[Signature]</i>
<b>Print:</b>	<i>Mark Valentini</i>	<b>Print:</b>	<i>PRECI VITENTE</i>				
<b>Organization:</b>	<i>ECT</i>	<b>Organization:</b>	<i>EC</i>				
<b>DATE:</b>	<i>6/28/23</i>	<b>TIME:</b>	<i>1100</i>				
<b>DATE:</b>	<i>6/29/23</i>	<b>TIME:</b>	<i>0930</i>				

\*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

- 13.4 / 13.5 SEC



# Pacific EcoRisk

ENVIRONMENTAL CONSULTING & TESTING

2250 Cordelia Rd., Fairfield, CA 94534  
(707)207-7760

## Eurofins Calscience CHAIN-OF-CUSTODY RECORD

143339

<b>Client Name:</b> Pacific EcoRisk		<b>REQUESTED ANALYSIS</b>					% lipids	Mercury (EPA 7471B)	PCBs (EPA 8270C) - see COC										
<b>Client Address:</b> 2250 Cordelia Rd. Fairfield, CA 94534																			
<b>Sampled By:</b> PER																			
<b>Phone:</b> (707) 207-7760																			
<b>FAX:</b> (707) 207-7916																			
<b>Project Manager:</b> Jeff Cotsifas																			
<b>Project Name:</b> Berkeley Marina																			
<b>PO Number:</b> 37289																			
Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container															
				Number	Type														
16 4 Macoma-T0-A	5/11/23	12:00	Tissue	1	poly bag														
17 2 Macoma-T0-B	5/11/23	12:00	Tissue	1	poly bag														
18 3 Macoma-T0-C	5/11/23	12:00	Tissue	1	poly bag	X	X	X											
19 4 Macoma-T0-D	5/11/23	12:00	Tissue	1	poly bag														
20 5 Macoma-T0-E	5/11/23	12:00	Tissue	1	poly bag														
21 6 Control-A-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag														
22 7 Control-B-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag														
23 8 Control-C-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag		X	X											
24 9 Control-D-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag														
25 10 Control-E-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag														
26 11 BM-DU3-Comp-A-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag														
27 12 BM-DU3-Comp-B-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag														
28 13 BM-DU3-Comp-C-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag		X	X											
29 14 BM-DU3-Comp-D-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag														
30 15 BM-DU3-Comp-E-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag														
<b>Correct Containers:</b>		Yes	No			<b>RELINQUISHED BY</b>													
<b>Sample Temperature:</b>		Ambient	Cold	Warm		Signature: <i>[Signature]</i>			Signature: <i>[Signature]</i>										
<b>Sample Preservative:</b>		Yes	No			Print: <i>[Print]</i>			Print: <i>[Print]</i>										
<b>Turnaround Time:</b>		STD	Specify:																
<p>Homogenize each replicate for each sample. Take a subsample for each sample replicate and composite. Perform requested analysis on composite sample.</p> <p>Report on a Wet Weight Basis</p> <p>Sample date is date tests were terminated, tissues frozen after 24-h depuration.</p>						Organization: PER						Organization:							
						DATE: 6/28/23						DATE: 6/28/23							
						TIME: 1120						TIME: 1600							
						<b>RECEIVED BY</b>													
Signature: <i>[Signature]</i>						Signature: <i>[Signature]</i>													
Print: <i>[Print]</i>						Print: <i>[Print]</i>													
Organization: <i>[Print]</i>						Organization: <i>[Print]</i>													
DATE: 6/28/23						DATE: 6/29/23													
TIME: 1120						TIME: 0930													

\*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)





**ANALYTE LIST**

Pacific EcoRisk  
2250 Cordelia Rd.  
Fairfield, CA 94534

**Berkeley Marina**

37289

Project Proponent:

Project #:

Macoma-T0, Nereis-T0, Control-Macoma, Control-Nereis, BM4-DU3-Comp-Macoma, BM4-DU3-Nereis

Site #:

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
% Lipids	EPA 7471B		X*
Mercury	EPA 8270C		X
PCB 008	EPA 8270C		X
PCB 018	EPA 8270C		X
PCB 028	EPA 8270C		X
PCB 031	EPA 8270C		X
PCB 033	EPA 8270C		X
PCB 044	EPA 8270C		X
PCB 049	EPA 8270C		X
PCB 052	EPA 8270C		X
PCB 056	EPA 8270C		X
PCB 060	EPA 8270C		X
PCB 066	EPA 8270C		X
PCB 070	EPA 8270C		X
PCB 074	EPA 8270C		X
PCB 087	EPA 8270C		X
PCB 095	EPA 8270C		X
PCB 097	EPA 8270C		X
PCB 099	EPA 8270C		X
PCB 101	EPA 8270C		X
PCB 105	EPA 8270C		X
PCB 110	EPA 8270C		X
PCB 118	EPA 8270C		X
PCB 128	EPA 8270C		X
PCB 132	EPA 8270C		X
PCB 138/158	EPA 8270C		X
PCB 141	EPA 8270C		X
PCB 149	EPA 8270C		X
PCB 151	EPA 8270C		X
PCB 153	EPA 8270C		X
PCB 156	EPA 8270C		X
PCB 170	EPA 8270C		X
PCB 174	EPA 8270C		X
PCB 177	EPA 8270C		X
PCB 180	EPA 8270C		X
PCB 183	EPA 8270C		X
PCB 187	EPA 8270C		X
PCB 194	EPA 8270C		X
PCB 195	EPA 8270C		X
PCB 201	EPA 8270C		X
PCB 203	EPA 8270C		X
Total PCBs	EPA 8270C		X
<b>QA/QC</b>			
Standard T.A.T.			X

\* % Lipid analysis to be performed on Nereis-T0 and Macoma-T0 samples only.  
If you have any questions regarding this request as checked,  
please call Jeff Costifas at (707)207-7760



# Pacific EcoRisk

ENVIRONMENTAL CONSULTING & TESTING

2250 Cordelia Rd., Fairfield, CA 94534  
(707)207-7760

## Eurofins Calscience CHAIN-OF-CUSTODY RECORD

<b>Client Name:</b> Pacific EcoRisk				<b>REQUESTED ANALYSIS</b>																
<b>Client Address:</b> 2250 Cordelia Rd. Fairfield, CA 94534																				
<b>Sampled By:</b> PER																				
<b>Phone:</b> (707) 207-7760																				
<b>FAX:</b> (707) 207-7916																				
<b>Project Manager:</b> Jeff Cotsifas																				
<b>Project Name:</b> Berkeley Marina																				
<b>PO Number:</b> 37289																				
<b>Container</b>																				
<b>Client Sample ID</b>	<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Matrix*</b>	<b>Number</b>	<b>Type</b>	Dioxins/Furans (EPA 8290)														
1 Nereis-T0-A	5/11/23	12:00	Tissue	1	poly bag		X													
2 Nereis-T0-B	5/11/23	12:00	Tissue	1	poly bag															
3 Nereis-T0-C	5/11/23	12:00	Tissue	1	poly bag															
4 Nereis-T0-D	5/11/23	12:00	Tissue	1	poly bag															
5 Nereis-T0-E	5/11/23	12:00	Tissue	1	poly bag															
6 Control-A-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag		X													
7 Control-B-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag															
8 Control-C-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag															
9 Control-D-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag															
10 Control-E-Nereis-Day 28	6/8/23	12:00	Tissue	1	poly bag															
11 BM-DU3-Comp-A-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag		X													
12 BM-DU3-Comp-B-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag															
13 BM-DU3-Comp-C-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag															
14 BM-DU3-Comp-D-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag															
15 BM-DU3-Comp-E-Nereis-Day 28	6/8/23	12:01	Tissue	1	poly bag															
<b>Correct Containers:</b>			<b>Yes</b>	<b>No</b>	<b>RELINQUISHED BY</b>															
<b>Sample Temperature:</b>			<b>Ambient</b>	<b>Cold</b>														<b>Warm</b>		
<b>Sample Preservative:</b>			<b>Yes</b>	<b>No</b>																
<b>Turnaround Time:</b>			<b>STD</b>	<b>Specify:</b>																
Perform requested analysis on previously composited sample. Report on a Wet Weight Basis  Sample date is date tests were terminated, tissues frozen after 24-h depuration																		<b>Signature:</b>	<i>[Signature]</i>	<b>Signature:</b>
					<b>Print:</b>	M. McElroy	<b>Print:</b>													
					<b>Organization:</b>	PER	<b>Organization:</b>													
					<b>DATE:</b>	7/21/23	<b>TIME:</b>	1600												
					<b>DATE:</b>		<b>TIME:</b>													
<b>RECEIVED BY</b>																				
<b>Signature:</b>		<b>Signature:</b>																		
<b>Print:</b>		<b>Print:</b>																		
<b>Organization:</b>		<b>Organization:</b>																		
<b>DATE:</b>		<b>TIME:</b>																		
<b>DATE:</b>		<b>TIME:</b>																		

\*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)





# Pacific EcoRisk

ENVIRONMENTAL CONSULTING & TESTING

2250 Cordelia Rd., Fairfield, CA 94534  
(707)207-7760

## Eurofins Calscience CHAIN-OF-CUSTODY RECORD

<b>Client Name:</b> Pacific EcoRisk						<b>REQUESTED ANALYSIS</b>											
<b>Client Address:</b> 2250 Cordelia Rd. Fairfield, CA 94534						Dioxins/Furans (EPA 8290)											
<b>Sampled By:</b> PER																	
<b>Phone:</b> (707) 207-7760																	
<b>FAX:</b> (707) 207-7916																	
<b>Project Manager:</b> Jeff Cotsifas																	
<b>Project Name:</b> Berkeley Marina																	
<b>PO Number:</b> 37289																	
Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container													
				Number	Type												
1 Macoma-T0-A	5/11/23	12:00	Tissue	1	poly bag												
2 Macoma-T0-B	5/11/23	12:00	Tissue	1	poly bag	X											
3 Macoma-T0-C	5/11/23	12:00	Tissue	1	poly bag												
4 Macoma-T0-D	5/11/23	12:00	Tissue	1	poly bag												
5 Macoma-T0-E	5/11/23	12:00	Tissue	1	poly bag												
6 Control-A-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag												
7 Control-B-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag												
8 Control-C-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag	X											
9 Control-D-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag												
10 Control-E-Macoma-Day 28	6/8/23	12:00	Tissue	1	poly bag												
11 BM-DU3-Comp-A-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag												
12 BM-DU3-Comp-B-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag												
13 BM-DU3-Comp-C-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag	X											
14 BM-DU3-Comp-D-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag												
15 BM-DU3-Comp-E-Macoma-Day 28	6/8/23	12:01	Tissue	1	poly bag												
<b>Correct Containers:</b>		Yes	No			<b>RELINQUISHED BY</b>											
<b>Sample Temperature:</b>		Ambient	Cold	Warm	Signature: <i>M. McElroy</i>		Signature:										
<b>Sample Preservative:</b>		Yes	No			Print: M. McElroy		Print:									
<b>Turnaround Time:</b>		STD	Specify:			Organization: PER		Organization:									
						DATE: 7/21/23		TIME: 1600		DATE:		TIME					
						<b>RECEIVED BY</b>											
						Signature:		Signature:									
						Print:		Print:									
						Organization:		Organization:									
						DATE:		TIME:		DATE:		TIME					

\*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)



ORIGIN ID:CCRA (925) 786-8606  
EUROFINS CONCORD  
EUROFINS SOUTHWEST CONCORD  
5063 COMMERCIAL CIR  
SUITE H  
CONCORD, CA 94520  
UNITED STATES US

SHIP DATE: 28JUN23  
ACTWGT: 5.00 LB  
CAD: 258088030/INET4610

BILL RECIPIENT



570-143339 Waybill

TO **SAMPLE CONTROL**  
**EUROFINS CALSCIENCE**  
**2841 DOW AVENUE**  
**SUITE 300**  
**TUSTIN CA 92780**

(714) 895-5494

REF: PAC ECORISK

INV:  
PO:

DEPT:



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PRIORITY OVERNIGHT

TRK# 7725 9215 5860  
0201

**92 DTHA**

92780  
CA-US SNA





## Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-143339-2

**Login Number: 143339**

**List Number: 1**

**Creator: Patel, Jayesh**

**List Source: Eurofins Calscience**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-143339-2

**Login Number: 143339**

**List Source: Eurofins Lancaster Laboratories Environment Testing, LLC**

**List Number: 2**

**List Creation: 08/02/23 11:48 AM**

**Creator: Ballard, Megan**

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (<math>\leq 6^{\circ}\text{C}</math>, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (<math>\leq 6^{\circ}\text{C}</math>, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	



## **Appendix S**

### **Bioaccumulation Risk Assessment Modeling System (BRAMS) Trophic Trace Module Input Parameters**

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## **Bioaccumulation Risk Assessment Modeling System (BRAMS) Trophic Trace Module Input Parameters**

The Bioaccumulation Risk Assessment Modeling System (BRAMS) was used to estimate contaminant biomagnification to shiner surf perch and white croaker from ingestion of prey species (i.e., the bivalve *Macoma nasuta* and the polychaete *Nereis virens*) exposed to site sediments. The resulting predicted shiner surf perch and white croaker tissue contaminant concentrations were then compared to the most recent SF Bay ambient shiner surf perch and white croaker contaminant tissue levels or other regulatory agency specified tissue screening benchmarks.

BRAMS is a stand-alone tool for calculating the potential human health and ecological risks associated with bioaccumulation of contaminants in dredged sediments. It contains two separate models, Trophic Trace and the Bioaccumulation Evaluation Screening Tool (BEST), which use separate equations and inputs to calculate risks. Trophic Trace modeling was used to evaluate the potential for sediment-associated chemicals to biomagnify through the aquatic food web and is similar to food web modeling typically used in ecological risk assessments. The program is designed to provide health- and ecologically-protective estimates of potential risk using results from sediment chemistry analysis and/or 28-day bioaccumulation tests. The program calculates the risks based on the characteristics of the site including the environment, species and chemicals involved, and food chain dynamics and contaminant concentrations. Model outputs include total carcinogenic and non-carcinogenic risks to humans and toxicity quotients for ecological receptors as well as risks from specific chemicals and dietary species. The program can also compare risks to specified risk thresholds for easy screening. The algorithms incorporated into BRAMS follow USEPA and USACE risk assessment guidance (USACE/USEPA 2012). The Trophic Trace model was used for all bioaccumulation/biomagnification estimates.

The following sections provide an overview of the model and the input parameters specific to the site.

### **Model Overview**

The Trophic Trace model estimates the expected compound concentration in consumer fish using a sediment-based food web. The model assumes that organic compounds partition from sediment to the lipid fraction of benthic invertebrates, with the compounds then accumulating in fish tissue upon ingestion of the invertebrates. The model can also use site-specific invertebrate tissue burdens, *in lieu* of modeling sediment concentrations, for a more accurate assessment of site-specific conditions.

The main assumptions of Trophic Trace are as follows:

- The model is sediment based; however, modeling can also be performed using 28-day bioaccumulation test tissue concentrations;
- Contaminant water concentrations are estimated by equilibrium partitioning from site-specific measured sediment TOC and temperature;

- Biota-sediment accumulation factors (BSAFs) can be used for hydrophobic organic contaminants following USACE guidelines; and
- To estimate the fish body burden of a particular contaminant, a steady-state uptake model based on the Gobas approach is used.

### Exposure Factors

Site-specific invertebrate tissue burden levels were estimated for the sediment sample chemical concentrations. The sediment's contaminant concentration and TOC concentration were used, along with estimated site water temperature to predict the contaminant concentration in the water column. Upper trophic level receptors (shiner surf perch and white croaker) were used to evaluate potential for bioamplification through the aquatic food web and were selected based on communications with the DMMO.

### Species Specific Parameters

The only invertebrate attribute required for the model is percent lipid (in wet wt); measured percent lipids for *M. nasuta* and *N. virens* exposed to sediments were used. Fish inputs included species weight (in grams, wet wt), lipid content (in wet wt), and the dietary composition (in percentage, which sums to 100).

The following model inputs are used:

- *Macoma nasuta* (bivalve) mean lipid content (%)
- *Nereis virens* (polychaete) mean lipid content (%)
- Shiner surf perch lipid content (%) = 1.52 (Davis et al. 2011);
- Shiner surf perch weight (grams) = 14 (Gobas and Wilcockson 2003);
- White croaker lipid content (%) = 1.22 (Davis et al. 2011);
- White croaker weight (grams) = 240 (Gobas and Wilcockson 2003); and
- Site use factor = 1.

### Abiotic Components

Sediment concentrations are user-specified in the model. In this case, the measured PCBs, and TOC concentration for the sediments were used. Trophic Trace estimates a freely dissolved water concentration from the site-specific sediment concentration assuming equilibrium partitioning; the chemical specific partitioning coefficients are built into the model. Conservative assumptions fundamental in the equilibrium partitioning calculation make this water concentration an upper bound or worst-case scenario. Other abiotic inputs were obtained from Gobas and Wilcockson (2003) and are consistent with abiotic inputs used to parameterize the SF Bay food web model used in the development of the SF Bay PCB TMDL (SFRWQCB 2008).

The following model inputs were used:

- Site-specific sediment contaminant concentration ( $\mu\text{g}/\text{kg}$ , dw);
- Site-specific sediment TOC concentration (%);
- Particulate organic carbon ( $\text{mg}/\text{L}$ ) = 1.85 (Gobas and Wilcockson 2003);

- Bay water temperature ( $^{\circ}\text{C}$ ) = 10 (Gobas and Wilcockson 2003);
- Dissolved organic carbon (mg/L) = 2.4 (Gobas and Wilcockson 2003);
- $\text{Log}(K_{ow})$  = Compound specific;
- $\text{Log}(K_{oc})$  = Compound specific;
- Estimated or measured *Macoma nasuta* steady-state tissue parameter concentration ( $\mu\text{g}/\text{kg}$ , ww); and
- Estimated or measured *Nereis virens* steady-state tissue parameter concentration ( $\mu\text{g}/\text{kg}$ , ww).

**Biotic Components (Dietary Composition)**

The model was executed assuming a diet of 100% bivalves (*M. nasuta*) or 100% polychaetes (*N. virens*).

**References**

Davis JA, Schiff K, Melwani AR, Bezalel SN, Hunt JA, Allen RM, Ichikawa G, Bonnema A, Heim WA, Crane D, Swenson S, Lamerdin C, Stephenson M (2011) Contaminants in Fish from the California Coast, 2009: Summary Report on Year One of a Two-Year Screening Survey. A Report of the Surface Water Ambient Monitoring Program (SWAMP). California State Water Resources Control Board, Sacramento, CA.

Gobas F, Wilcockson J (2003) San Francisco Estuary Monitoring Program for Trace Substances: San Francisco Bay PCB Food-Web Model. Prepared for the San Francisco Estuary Institute.

SFRWQCB (2008) Total Maximum Daily Load for PCBs in San Francisco Bay: Final Staff Report for Proposed Basin Plan Amendment. San Francisco Regional Water Quality Lab Control Board, Oakland, CA.

USACE/USEPA (2012) Bioaccumulation Risk Assessment Modeling System (BRAMS). Prepared for the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency. Prepared by U.S. Army Research and Development Center Environmental Lab.

## **Appendix T**

### **Estimation of Fish Tissue Total Dioxin/Furan Concentrations: Results of Trophic Transfer Modeling Using the Bioaccumulation Risk Assessment Modeling System (BRAMS) Trophic Trace Module**

## **Trophic Trace Modeling: *Macoma nasuta***

Project name: Trophic Trace

Description

### Table Of Contents

<b>Fishes</b>	<b>1</b>
<i>Shiner Surf Perch</i>	1
<i>White Croaker</i>	2
<b>Mammals</b>	<b>3</b>
<i>Harbor Seal</i>	4

### Fishes

**Fish Name** Shiner Surf Perch  
**Body Weight** 14  
**Lipid** 1.52  
**Site Use Factor** 1

### Risk List

hemical Name	alculation Method	NOAELTQ	LOAELTQ	NOAELTQ Eggs	LOAELTQ Eggs
2,3,7,8-TCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8-PeCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,6,7,8-HxCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,4,7,8-HxCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8,9-HxCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,4,6,7,8-HpCDD	Equilibrium Partitioning	0	0	0	0
OCDD	Equilibrium Partitioning	0	0	0	0
2,3,4,7,8-TCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8-PeCDF	Equilibrium Partitioning	0	0	0	0
2,3,4,7,8-PeCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,6,7,8-HxCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8,9-HxCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,4,7,8-HxCDF	Equilibrium Partitioning	0	0	0	0
2,3,4,6,7,8-HxCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,4,6,7,8-HpCDF	Equilibrium Partitioning	0	0	0	0

hemical Name	alculation Method	NOAELTQ	LOAELTQ	NOAELTQ Eggs	LOAELTQ Eggs
1,2,3,4,7,8,9-HpCDF	Equilibrium Partitioning	0	0	0	0
OCDF	Equilibrium Partitioning	0	0	0	0

### Exposure Concentration

Diet Item	Environment	Diet Percent	Chemical	Concentration
Macoma nasuta	BM-DU3-COMP	100.0	2,3,7,8-TCDD	3.07E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,7,8-PeCDD	5.61E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,6,7,8-HxCDD	1.24E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,4,7,8-HxCDD	1.22E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,7,8,9-HxCDD	8.11E-6
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,4,6,7,8-HpCDD	9.65E-4
Macoma nasuta	BM-DU3-COMP	100.0	OCDD	3.14E-3
Macoma nasuta	BM-DU3-COMP	100.0	2,3,4,7,8-TCDF	1.95E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,7,8-PeCDF	2.93E-5
Macoma nasuta	BM-DU3-COMP	100.0	2,3,4,7,8-PeCDF	1.8E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,6,7,8-HxCDF	3.12E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,7,8,9-HxCDF	5.45E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,4,7,8-HxCDF	1.72E-5
Macoma nasuta	BM-DU3-COMP	100.0	2,3,4,6,7,8-HXCDF	1.58E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,4,6,7,8-HpCDF	2.41E-4
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,4,7,8,9-HpCDF	1.22E-5
Macoma nasuta	BM-DU3-COMP	100.0	OCDF	1.72E-4

**Fish Name** White Croaker

**Body Weight** 240

**Lipid** 1.22

**Site Use Factor** 1

### Risk List

hemical Name	alculation Method	NOAELTQ	LOAELTQ	NOAELTQ Eggs	LOAELTQ Eggs
2,3,7,8-TCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8-PeCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,6,7,8-HxCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,4,7,8-HxCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8,9-HxCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,4,6,7,8-HpCDD	Equilibrium Partitioning	0	0	0	0

hemical Name	alculation Method	NOAELTQ	LOAELTQ	NOAELTQ Eggs	LOAELTQ Eggs
OCDD	Equilibrium Partitioning	0	0	0	0
2,3,4,7,8-TCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8-PeCDF	Equilibrium Partitioning	0	0	0	0
2,3,4,7,8-PeCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,6,7,8-HxCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8,9-HxCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,4,7,8-HxCDF	Equilibrium Partitioning	0	0	0	0
2,3,4,6,7,8-HXCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,4,6,7,8-HpCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,4,7,8,9-HpCDF	Equilibrium Partitioning	0	0	0	0
OCDF	Equilibrium Partitioning	0	0	0	0

### Exposure Concentration

Diet Item	Environment	Diet Percent	Chemical	Concentration
Macoma nasuta	BM-DU3-COMP	100.0	2,3,7,8-TCDD	3.07E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,7,8-PeCDD	5.61E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,6,7,8-HxCDD	1.24E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,4,7,8-HxCDD	1.22E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,7,8,9-HxCDD	8.11E-6
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,4,6,7,8-HpCDD	9.65E-4
Macoma nasuta	BM-DU3-COMP	100.0	OCDD	3.14E-3
Macoma nasuta	BM-DU3-COMP	100.0	2,3,4,7,8-TCDF	1.95E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,7,8-PeCDF	2.93E-5
Macoma nasuta	BM-DU3-COMP	100.0	2,3,4,7,8-PeCDF	1.8E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,6,7,8-HxCDF	3.12E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,7,8,9-HxCDF	5.45E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,4,7,8-HxCDF	1.72E-5
Macoma nasuta	BM-DU3-COMP	100.0	2,3,4,6,7,8-HXCDF	1.58E-5
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,4,6,7,8-HpCDF	2.41E-4
Macoma nasuta	BM-DU3-COMP	100.0	1,2,3,4,7,8,9-HpCDF	1.22E-5
Macoma nasuta	BM-DU3-COMP	100.0	OCDF	1.72E-4

### Mammals



**Mammal Name** Harbor Seal

**Body Weight** 80.55

**Ingestion Rate** 6.44

**Migration Factor** 1

**Risk List**

hemical Name	alculation Method	NOAELTQ	LOAELTQ
2,3,7,8-TCDD	Equilibrium Partitioning	0	0
1,2,3,7,8-PeCDD	Equilibrium Partitioning	0	0
1,2,3,6,7,8-HxCDD	Equilibrium Partitioning	0	0
1,2,3,4,7,8-HxCDD	Equilibrium Partitioning	0	0
1,2,3,7,8,9-HxCDD	Equilibrium Partitioning	0	0
1,2,3,4,6,7,8-HpCDD	Equilibrium Partitioning	0	0
OCDD	Equilibrium Partitioning	0	0
2,3,4,7,8-TCDF	Equilibrium Partitioning	0	0
1,2,3,7,8-PeCDF	Equilibrium Partitioning	0	0
2,3,4,7,8-PeCDF	Equilibrium Partitioning	0	0
1,2,3,6,7,8-HxCDF	Equilibrium Partitioning	0	0
1,2,3,7,8,9-HxCDF	Equilibrium Partitioning	0	0
1,2,3,4,7,8-HxCDF	Equilibrium Partitioning	0	0
2,3,4,6,7,8-HXCDF	Equilibrium Partitioning	0	0
1,2,3,4,6,7,8-HpCDF	Equilibrium Partitioning	0	0
1,2,3,4,7,8,9-HpCDF	Equilibrium Partitioning	0	0
OCDF	Equilibrium Partitioning	0	0

**Exposure Concentration**

Diet Item	Environment	Diet Percent	Chemical	Concentration
Shiner Surf Perch	BM-DU3-COMP	50.0	2,3,7,8-TCDD	2.58E-5
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,7,8-PeCDD	4.57E-5
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,6,7,8-HxCDD	3.46E-6
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,4,7,8-HxCDD	6.18E-6
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,7,8,9-HxCDD	2.26E-6
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,4,6,7,8-HpCDD	2.73E-4
Shiner Surf Perch	BM-DU3-COMP	50.0	OCDD	8.9E-4
Shiner Surf Perch	BM-DU3-COMP	50.0	2,3,4,7,8-TCDF	1.53E-5

Diet Item	Environment	Diet Percent	Chemical	Concentration
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,7,8-PeCDF	2.46E-5
Shiner Surf Perch	BM-DU3-COMP	50.0	2,3,4,7,8-PeCDF	1.52E-5
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,6,7,8-HxCDF	1.36E-5
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,7,8,9-HxCDF	3.45E-5
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,4,7,8-HxCDF	7.46E-6
Shiner Surf Perch	BM-DU3-COMP	50.0	2,3,4,6,7,8-HXCDF	6.85E-6
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,4,6,7,8-HpCDF	1.04E-4
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,4,7,8,9-HpCDF	5.3E-6
Shiner Surf Perch	BM-DU3-COMP	50.0	OCDF	2.3E-5
White Croaker	BM-DU3-COMP	50.0	2,3,7,8-TCDD	3.03E-5
White Croaker	BM-DU3-COMP	50.0	1,2,3,7,8-PeCDD	5.45E-5
White Croaker	BM-DU3-COMP	50.0	1,2,3,6,7,8-HxCDD	3.96E-6
White Croaker	BM-DU3-COMP	50.0	1,2,3,4,7,8-HxCDD	7.05E-6
White Croaker	BM-DU3-COMP	50.0	1,2,3,7,8,9-HxCDD	2.59E-6
White Croaker	BM-DU3-COMP	50.0	1,2,3,4,6,7,8-HpCDD	3.13E-4
White Croaker	BM-DU3-COMP	50.0	OCDD	1.02E-3
White Croaker	BM-DU3-COMP	50.0	2,3,4,7,8-TCDF	1.85E-5
White Croaker	BM-DU3-COMP	50.0	1,2,3,7,8-PeCDF	2.89E-5
White Croaker	BM-DU3-COMP	50.0	2,3,4,7,8-PeCDF	1.76E-5
White Croaker	BM-DU3-COMP	50.0	1,2,3,6,7,8-HxCDF	1.55E-5
White Croaker	BM-DU3-COMP	50.0	1,2,3,7,8,9-HxCDF	3.93E-5
White Croaker	BM-DU3-COMP	50.0	1,2,3,4,7,8-HxCDF	8.52E-6
White Croaker	BM-DU3-COMP	50.0	2,3,4,6,7,8-HXCDF	7.83E-6
White Croaker	BM-DU3-COMP	50.0	1,2,3,4,6,7,8-HpCDF	1.19E-4
White Croaker	BM-DU3-COMP	50.0	1,2,3,4,7,8,9-HpCDF	6.06E-6
White Croaker	BM-DU3-COMP	50.0	OCDF	2.65E-5

### Food Chain

Fish	Fish Environment	Invertebrate	Invertebrate Environment	Diet	Diet Environment
Shiner Surf Perch	BM-DU3-COMP			Macoma nasuta	BM-DU3-COMP
White Croaker	BM-DU3-COMP			Macoma nasuta	BM-DU3-COMP

## **Trophic Trace Modeling: *Nereis virens***

Project name: Trophic Trace

Description

### Table Of Contents

<b>Fishes</b>	<b>1</b>
<i>Shiner Surf Perch</i>	1
<i>White Croaker</i>	2
<b>Mammals</b>	<b>3</b>
<i>Harbor Seal</i>	4

### Fishes

**Fish Name** Shiner Surf Perch  
**Body Weight** 14  
**Lipid** 1.52  
**Site Use Factor** 1

### Risk List

hemical Name	alculation Method	NOAELTQ	LOAELTQ	NOAELTQ Eggs	LOAELTQ Eggs
2,3,7,8-TCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8-PeCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,6,7,8-HxCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,4,7,8-HxCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8,9-HxCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,4,6,7,8-HpCDD	Equilibrium Partitioning	0	0	0	0
OCDD	Equilibrium Partitioning	0	0	0	0
2,3,4,7,8-TCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8-PeCDF	Equilibrium Partitioning	0	0	0	0
2,3,4,7,8-PeCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,6,7,8-HxCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8,9-HxCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,4,7,8-HxCDF	Equilibrium Partitioning	0	0	0	0
2,3,4,6,7,8-HxCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,4,6,7,8-HpCDF	Equilibrium Partitioning	0	0	0	0

hemical Name	alculation Method	NOAELTQ	LOAELTQ	NOAELTQ Eggs	LOAELTQ Eggs
1,2,3,4,7,8,9-HpCDF	Equilibrium Partitioning	0	0	0	0
OCDF	Equilibrium Partitioning	0	0	0	0

### Exposure Concentration

Diet Item	Environment	Diet Percent	Chemical	Concentration
Nereis virens	BM-DU3-COMP	100.0	2,3,7,8-TCDD	6.39E-6
Nereis virens	BM-DU3-COMP	100.0	1,2,3,7,8-PeCDD	4.29E-4
Nereis virens	BM-DU3-COMP	100.0	1,2,3,6,7,8-HxCDD	1.34E-4
Nereis virens	BM-DU3-COMP	100.0	1,2,3,4,7,8-HxCDD	9E-5
Nereis virens	BM-DU3-COMP	100.0	1,2,3,7,8,9-HxCDD	1.11E-4
Nereis virens	BM-DU3-COMP	100.0	1,2,3,4,6,7,8-HpCDD	7.79E-4
Nereis virens	BM-DU3-COMP	100.0	OCDD	7.55E-3
Nereis virens	BM-DU3-COMP	100.0	2,3,4,7,8-TCDF	3.47E-4
Nereis virens	BM-DU3-COMP	100.0	1,2,3,7,8-PeCDF	1.56E-4
Nereis virens	BM-DU3-COMP	100.0	2,3,4,7,8-PeCDF	7.17E-4
Nereis virens	BM-DU3-COMP	100.0	1,2,3,6,7,8-HxCDF	6.72E-6
Nereis virens	BM-DU3-COMP	100.0	1,2,3,7,8,9-HxCDF	2E-5
Nereis virens	BM-DU3-COMP	100.0	1,2,3,4,7,8-HxCDF	6.43E-6
Nereis virens	BM-DU3-COMP	100.0	2,3,4,6,7,8-HXCDF	7.49E-5
Nereis virens	BM-DU3-COMP	100.0	1,2,3,4,6,7,8-HpCDF	2.78E-4
Nereis virens	BM-DU3-COMP	100.0	1,2,3,4,7,8,9-HpCDF	3.22E-6
Nereis virens	BM-DU3-COMP	100.0	OCDF	2.17E-4

**Fish Name** White Croaker

**Body Weight** 240

**Lipid** 1.22

**Site Use Factor** 1

### Risk List

hemical Name	alculation Method	NOAELTQ	LOAELTQ	NOAELTQ Eggs	LOAELTQ Eggs
2,3,7,8-TCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8-PeCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,6,7,8-HxCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,4,7,8-HxCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8,9-HxCDD	Equilibrium Partitioning	0	0	0	0
1,2,3,4,6,7,8-HpCDD	Equilibrium Partitioning	0	0	0	0

hemical Name	alculation Method	NOAELTQ	LOAELTQ	NOAELTQ Eggs	LOAELTQ Eggs
OCDD	Equilibrium Partitioning	0	0	0	0
2,3,4,7,8-TCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8-PeCDF	Equilibrium Partitioning	0	0	0	0
2,3,4,7,8-PeCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,6,7,8-HxCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,7,8,9-HxCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,4,7,8-HxCDF	Equilibrium Partitioning	0	0	0	0
2,3,4,6,7,8-HXCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,4,6,7,8-HpCDF	Equilibrium Partitioning	0	0	0	0
1,2,3,4,7,8,9-HpCDF	Equilibrium Partitioning	0	0	0	0
OCDF	Equilibrium Partitioning	0	0	0	0

### Exposure Concentration

Diet Item	Environment	Diet Percent	Chemical	Concentration
Nereis virens	BM-DU3-COMP	100.0	2,3,7,8-TCDD	6.39E-6
Nereis virens	BM-DU3-COMP	100.0	1,2,3,7,8-PeCDD	4.29E-4
Nereis virens	BM-DU3-COMP	100.0	1,2,3,6,7,8-HxCDD	1.34E-4
Nereis virens	BM-DU3-COMP	100.0	1,2,3,4,7,8-HxCDD	9E-5
Nereis virens	BM-DU3-COMP	100.0	1,2,3,7,8,9-HxCDD	1.11E-4
Nereis virens	BM-DU3-COMP	100.0	1,2,3,4,6,7,8-HpCDD	7.79E-4
Nereis virens	BM-DU3-COMP	100.0	OCDD	7.55E-3
Nereis virens	BM-DU3-COMP	100.0	2,3,4,7,8-TCDF	3.47E-4
Nereis virens	BM-DU3-COMP	100.0	1,2,3,7,8-PeCDF	1.56E-4
Nereis virens	BM-DU3-COMP	100.0	2,3,4,7,8-PeCDF	7.17E-4
Nereis virens	BM-DU3-COMP	100.0	1,2,3,6,7,8-HxCDF	6.72E-6
Nereis virens	BM-DU3-COMP	100.0	1,2,3,7,8,9-HxCDF	2E-5
Nereis virens	BM-DU3-COMP	100.0	1,2,3,4,7,8-HxCDF	6.43E-6
Nereis virens	BM-DU3-COMP	100.0	2,3,4,6,7,8-HXCDF	7.49E-5
Nereis virens	BM-DU3-COMP	100.0	1,2,3,4,6,7,8-HpCDF	2.78E-4
Nereis virens	BM-DU3-COMP	100.0	1,2,3,4,7,8,9-HpCDF	3.22E-6
Nereis virens	BM-DU3-COMP	100.0	OCDF	2.17E-4

### Mammals

**Mammal Name** Harbor Seal

**Body Weight** 80.55

**Ingestion Rate** 6.44

**Migration Factor** 1

### Risk List

hemical Name	alculation Method	NOAELTQ	LOAELTQ
2,3,7,8-TCDD	Equilibrium Partitioning	0	0
1,2,3,7,8-PeCDD	Equilibrium Partitioning	0	0
1,2,3,6,7,8-HxCDD	Equilibrium Partitioning	0	0
1,2,3,4,7,8-HxCDD	Equilibrium Partitioning	0	0
1,2,3,7,8,9-HxCDD	Equilibrium Partitioning	0	0
1,2,3,4,6,7,8-HpCDD	Equilibrium Partitioning	0	0
OCDD	Equilibrium Partitioning	0	0
2,3,4,7,8-TCDF	Equilibrium Partitioning	0	0
1,2,3,7,8-PeCDF	Equilibrium Partitioning	0	0
2,3,4,7,8-PeCDF	Equilibrium Partitioning	0	0
1,2,3,6,7,8-HxCDF	Equilibrium Partitioning	0	0
1,2,3,7,8,9-HxCDF	Equilibrium Partitioning	0	0
1,2,3,4,7,8-HxCDF	Equilibrium Partitioning	0	0
2,3,4,6,7,8-HXCDF	Equilibrium Partitioning	0	0
1,2,3,4,6,7,8-HpCDF	Equilibrium Partitioning	0	0
1,2,3,4,7,8,9-HpCDF	Equilibrium Partitioning	0	0
OCDF	Equilibrium Partitioning	0	0

### Exposure Concentration

Diet Item	Environment	Diet Percent	Chemical	Concentration
Shiner Surf Perch	BM-DU3-COMP	50.0	2,3,7,8-TCDD	5.37E-6
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,7,8-PeCDD	3.5E-4
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,6,7,8-HxCDD	3.72E-5
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,4,7,8-HxCDD	4.54E-5
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,7,8,9-HxCDD	3.09E-5
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,4,6,7,8-HpCDD	2.2E-4
Shiner Surf Perch	BM-DU3-COMP	50.0	OCDD	2.14E-3
Shiner Surf Perch	BM-DU3-COMP	50.0	2,3,4,7,8-TCDF	2.72E-4

Diet Item	Environment	Diet Percent	Chemical	Concentration
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,7,8-PeCDF	1.31E-4
Shiner Surf Perch	BM-DU3-COMP	50.0	2,3,4,7,8-PeCDF	6.05E-4
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,6,7,8-HxCDF	2.92E-6
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,7,8,9-HxCDF	1.27E-5
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,4,7,8-HxCDF	2.79E-6
Shiner Surf Perch	BM-DU3-COMP	50.0	2,3,4,6,7,8-HXCDF	3.25E-5
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,4,6,7,8-HpCDF	1.2E-4
Shiner Surf Perch	BM-DU3-COMP	50.0	1,2,3,4,7,8,9-HpCDF	1.4E-6
Shiner Surf Perch	BM-DU3-COMP	50.0	OCDF	2.91E-5
White Croaker	BM-DU3-COMP	50.0	2,3,7,8-TCDD	6.3E-6
White Croaker	BM-DU3-COMP	50.0	1,2,3,7,8-PeCDD	4.17E-4
White Croaker	BM-DU3-COMP	50.0	1,2,3,6,7,8-HxCDD	4.26E-5
White Croaker	BM-DU3-COMP	50.0	1,2,3,4,7,8-HxCDD	5.19E-5
White Croaker	BM-DU3-COMP	50.0	1,2,3,7,8,9-HxCDD	3.54E-5
White Croaker	BM-DU3-COMP	50.0	1,2,3,4,6,7,8-HpCDD	2.53E-4
White Croaker	BM-DU3-COMP	50.0	OCDD	2.45E-3
White Croaker	BM-DU3-COMP	50.0	2,3,4,7,8-TCDF	3.29E-4
White Croaker	BM-DU3-COMP	50.0	1,2,3,7,8-PeCDF	1.54E-4
White Croaker	BM-DU3-COMP	50.0	2,3,4,7,8-PeCDF	7.04E-4
White Croaker	BM-DU3-COMP	50.0	1,2,3,6,7,8-HxCDF	3.33E-6
White Croaker	BM-DU3-COMP	50.0	1,2,3,7,8,9-HxCDF	1.45E-5
White Croaker	BM-DU3-COMP	50.0	1,2,3,4,7,8-HxCDF	3.19E-6
White Croaker	BM-DU3-COMP	50.0	2,3,4,6,7,8-HXCDF	3.71E-5
White Croaker	BM-DU3-COMP	50.0	1,2,3,4,6,7,8-HpCDF	1.38E-4
White Croaker	BM-DU3-COMP	50.0	1,2,3,4,7,8,9-HpCDF	1.6E-6
White Croaker	BM-DU3-COMP	50.0	OCDF	3.34E-5

### Food Chain

Fish	Fish Environment	Invertebrate	Invertebrate Environment	Diet	Diet Environment
Shiner Surf Perch	BM-DU3-COMP			Nereis virens	BM-DU3-COMP
White Croaker	BM-DU3-COMP			Nereis virens	BM-DU3-COMP