

February 2019 Port Gamble Cleanup



Year-1 Post-Construction Monitoring Report – 2018

Prepared for Pope Resources, LP/OPG Properties, LLC

February 2019 Port Gamble Cleanup

Year-1 Post-Construction Monitoring Report

Prepared for

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Prepared by

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ABBREVIATIONS

ARI	Analytical Resources, Inc.
CAD	computer-aided drafting
CAP	cleanup action plan
CD	Consent Decree
cm	centimeter
COC	chemical of concern
сРАН	carcinogenic polycyclic aromatic hydrocarbon
CRM	certified reference material
CSL	cleanup screening level
DGT	diffusive gradient thin sheet
EcoAnalysts	EcoAnalysts, Inc.
Ecology	Washington State Department of Ecology
EDR	engineering design report
EMNR	enhanced monitored natural recovery
eTrac	eTrac, Inc.
H ₂ S	hydrogen sulfide
mg/L	milligram per liter
MNR	monitored natural recovery
Monitoring Poport	Year-1 Post-Construction Monitoring Report
Monitoring Report	real rost-construction monitoring Report
MSS	Marine Sampling Systems, LLC
. .	
MSS	Marine Sampling Systems, LLC
MSS MTCA	Marine Sampling Systems, LLC Model Toxics Control Act
MSS MTCA NAD 83	Marine Sampling Systems, LLC Model Toxics Control Act North American Datum of 1983
MSS MTCA NAD 83 OMMP	Marine Sampling Systems, LLC Model Toxics Control Act North American Datum of 1983 operations, maintenance, and monitoring plan
MSS MTCA NAD 83 OMMP PAH	Marine Sampling Systems, LLC Model Toxics Control Act North American Datum of 1983 operations, maintenance, and monitoring plan polycyclic aromatic hydrocarbon
MSS MTCA NAD 83 OMMP PAH ppt	Marine Sampling Systems, LLC Model Toxics Control Act North American Datum of 1983 operations, maintenance, and monitoring plan polycyclic aromatic hydrocarbon parts per thousand
MSS MTCA NAD 83 OMMP PAH PPT PR/OPG	Marine Sampling Systems, LLC Model Toxics Control Act North American Datum of 1983 operations, maintenance, and monitoring plan polycyclic aromatic hydrocarbon parts per thousand Pope Resources, LP/OPG Properties, LLC
MSS MTCA NAD 83 OMMP PAH PAH PR/OPG PSEP	Marine Sampling Systems, LLC Model Toxics Control Act North American Datum of 1983 operations, maintenance, and monitoring plan polycyclic aromatic hydrocarbon parts per thousand Pope Resources, LP/OPG Properties, LLC Puget Sound Estuary Protocols
MSS MTCA NAD 83 OMMP PAH PAH PR/OPG PSEP QAPP	Marine Sampling Systems, LLC Model Toxics Control Act North American Datum of 1983 operations, maintenance, and monitoring plan polycyclic aromatic hydrocarbon parts per thousand Pope Resources, LP/OPG Properties, LLC Puget Sound Estuary Protocols quality assurance project plan
MSS MTCA NAD 83 OMMP PAH PAH PR/OPG PSEP QAPP QC	Marine Sampling Systems, LLC Model Toxics Control Act North American Datum of 1983 operations, maintenance, and monitoring plan polycyclic aromatic hydrocarbon parts per thousand Pope Resources, LP/OPG Properties, LLC Puget Sound Estuary Protocols quality assurance project plan quality control
MSS MTCA NAD 83 OMMP PAH PAH PR/OPG PSEP QAPP QC SAP	Marine Sampling Systems, LLC Model Toxics Control Act North American Datum of 1983 operations, maintenance, and monitoring plan polycyclic aromatic hydrocarbon parts per thousand Pope Resources, LP/OPG Properties, LLC Puget Sound Estuary Protocols quality assurance project plan quality control sampling and analysis plan
MSS MTCA NAD 83 OMMP PAH PR/OPG PSEP QAPP QC SAP SCO	Marine Sampling Systems, LLC Model Toxics Control Act North American Datum of 1983 operations, maintenance, and monitoring plan polycyclic aromatic hydrocarbon parts per thousand Pope Resources, LP/OPG Properties, LLC Puget Sound Estuary Protocols quality assurance project plan quality control sampling and analysis plan sediment cleanup objective
MSS MTCA NAD 83 OMMP PAH PAH PR/OPG PSEP QAPP QC SAP SCO Site	Marine Sampling Systems, LLC Model Toxics Control Act North American Datum of 1983 operations, maintenance, and monitoring plan polycyclic aromatic hydrocarbon parts per thousand Pope Resources, LP/OPG Properties, LLC Puget Sound Estuary Protocols quality assurance project plan quality control sampling and analysis plan sediment cleanup objective Port Gamble Bay
MSS MTCA NAD 83 OMMP PAH PAH PR/OPG PSEP QAPP QC SAP SCO Site SMA	Marine Sampling Systems, LLC Model Toxics Control Act North American Datum of 1983 operations, maintenance, and monitoring plan polycyclic aromatic hydrocarbon parts per thousand Pope Resources, LP/OPG Properties, LLC Puget Sound Estuary Protocols quality assurance project plan quality control sampling and analysis plan sediment cleanup objective Port Gamble Bay sediment management area
MSS MTCA NAD 83 OMMP PAH PR/OPG PSEP QAPP QC SAP SCO Site SMA SMS	Marine Sampling Systems, LLC Model Toxics Control Act North American Datum of 1983 operations, maintenance, and monitoring plan polycyclic aromatic hydrocarbon parts per thousand Pope Resources, LP/OPG Properties, LLC Puget Sound Estuary Protocols quality assurance project plan quality control sampling and analysis plan sediment cleanup objective Port Gamble Bay sediment management area Sediment Management Standards

TEQ	toxic equivalency quotient
USACE	U.S. Army Corps of Engineers
WAC	Washington Administrative Code

1 Introduction

This *Year-1 Post-Construction Monitoring Report* (Monitoring Report) presents monitoring and adaptive management of engineered caps in Port Gamble Bay ("Site"; Figure 1) performed approximately 1 year after completion of remedial construction. Monitoring is being performed to ensure the long-term integrity and protectiveness of the cleanup remedy.

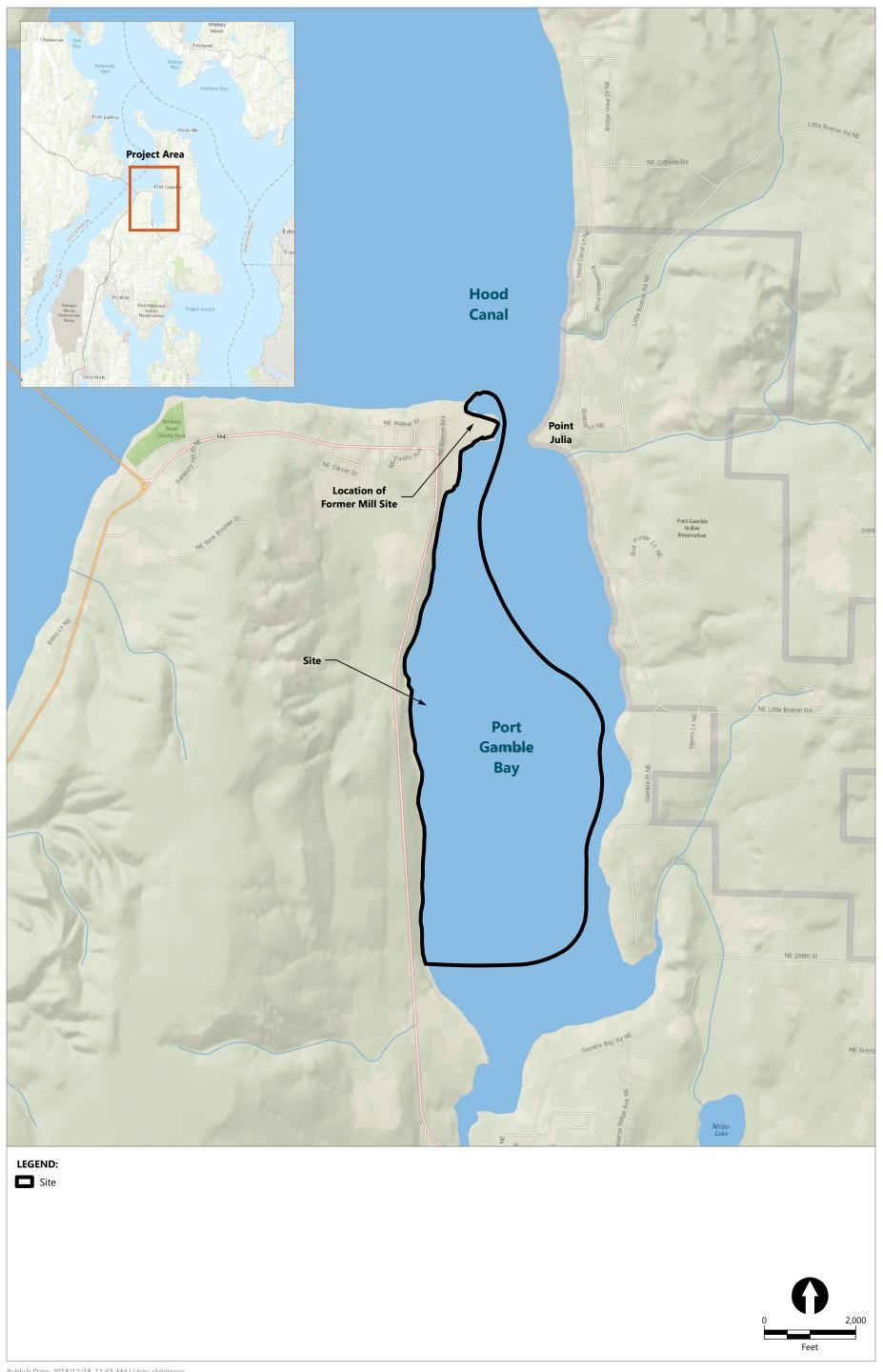
This Monitoring Report was prepared in accordance with the *Operations, Maintenance, and Monitoring Plan* (OMMP; Anchor QEA 2018a) and accompanying *Engineering Design Report* (EDR; Anchor QEA 2015), which describe the approach and criteria for the engineering design of sediment cleanup actions at the Site, as set forth in the *Final Cleanup Action Plan* (CAP; Ecology 2013), and in accordance with the requirements of Consent Decree (CD) 13-2-02720-0 between the Washington State Department of Ecology (Ecology) and Pope Resources, LP/OPG Properties, LLC (PR/OPG), entered in December 2013. The actions described in this Monitoring Report were performed by PR/OPG under Ecology oversight, consistent with CD requirements.

Implementation of the OMMP was also performed consistent with the requirements of the Model Toxics Control Act (MTCA), Chapter 70.105D in the Revised Code of Washington, as administered by Ecology under the MTCA Cleanup Regulation, Chapter 173-340 of the Washington Administrative Code (WAC), and the Sediment Management Standards (SMS) Chapter 173-204 WAC.

As described in more detail in the sections below, physical integrity performance monitoring (survey and visual inspection) identified a small area of the intertidal cap (approximately 3,700 square feet) within the upper portion of sediment management area (SMA)-2, where movement of the cap armor rock warranted a proactive cap repair action. This cap repair was performed in an area where the design was modified during construction to accommodate unanticipated nearshore wood debris removal, which altered the geometry of this area and rendered the shoreline more susceptible to wave forces. Importantly, post-construction sediment bioassays performed at all SMA-1 and SMA-2 engineered cap monitoring stations met the sediment cleanup objective (SCO) biological standard for the Site.

The monitoring, surveying, and inspection activities summarized in this Monitoring Report were conducted by Anchor QEA on behalf of PR/OPG. The project team also included Analytical Resources, Inc. (ARI) for chemical analyses; EcoAnalysts, Inc. (EcoAnalysts), for bioassay analyses; eTrac, Inc. (eTrac), for upland and bathymetric surveying; Marine Sampling Systems, LLC (MSS), for sediment sample collection; Laboratory Data Consultants for data validation; and Seton Construction, Inc. (Seton), for cap repairs.

1



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Figure 1 Site Vicinity Map

Year-1 Post-Construction Monitoring Report – 2018 Port Gamble Bay Cleanup

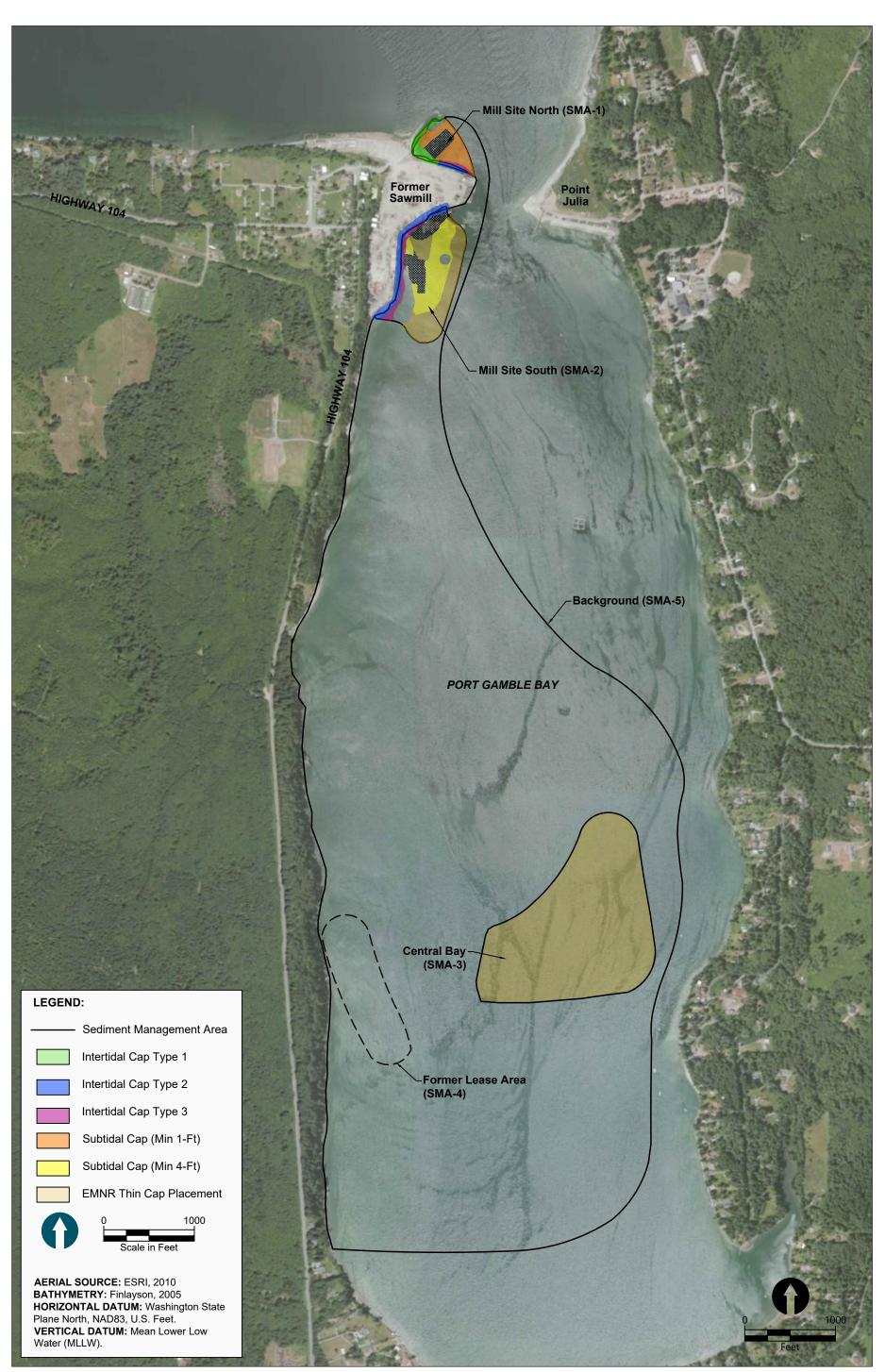
1.1 Purpose and Scope of Monitoring Activities

Between September 2015 and January 2017, the in-water construction phase of the Port Gamble Bay cleanup project was successfully completed by PR/OPG. As part of the cleanup remedy, engineered caps were placed over 10 acres of the Site, and clean silt/sand enhanced monitored natural recovery (EMNR) layers were placed over an additional 68 acres to address thin deposits sediment with relatively low concentrations of Site chemicals of concern (COCs; including carcinogenic polycyclic aromatic hydrocarbons [cPAHs], dioxins/furans, and cadmium). The extent of remedial actions in SMAs 1, 2, and 3 is shown on Figure 2. As discussed in the OMMP (Anchor QEA 2018a), long-term performance and confirmation monitoring activities will inform Ecology's 5-year reviews of the effectiveness of remedial actions at the Site, consistent with MTCA and SMS requirements. Sampling events will be scheduled to facilitate Ecology's 5-year reviews, beginning in 2020.

At SMA-1 and SMA-2, post-construction monitoring includes sediment cap field surveys and sediment quality confirmation monitoring at sentinel and nearshore wood debris cap locations. Field surveys of engineered caps include physical methods to monitor cap integrity and thickness, as well as confirmatory sediment bioassays. Post-construction monitoring began in 2018 (Year 1 following completion of construction), as described in this Monitoring Report. Follow-on monitoring will continue in Year 3 (2020), and then approximately every 5 years thereafter through 2030.

At SMA-3, long-term monitoring includes confirmatory sediment bioassays to verify the effectiveness of the constructed EMNR remedy in this area. EMNR layers (placed either as the primary remedy or as a post-dredge residuals management technique) do not require long-term physical survey monitoring or maintenance. Natural recovery processes throughout the rest of the 700-acre Site are expected to result in a reduction of surface sediment cPAH toxic equivalency quotient (TEQ) and dioxin/furan TEQ concentrations over time, particularly because ongoing sources (e.g., decaying creosote-treated piles) were removed during the 2015 to 2017 remedial action. Confirmatory chemical analyses in monitored natural recovery (MNR) areas will begin in 2020 (3 years after completion of remedial construction) and every 5 years thereafter, as needed.

Subsequent sections of this Monitoring Report describe the Year-1 (2018) post-construction environmental monitoring activities that were performed at the Site, including the details of postconstruction monitoring and maintenance of capped areas to ensure the cap remains physically stable and chemically protective over time.



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Figure 2 Capping and EMNR Areas in SMA-1, SMA-2, and SMA-3

Year-1 Post-Construction Monitoring Report – 2018 Port Gamble Bay Cleanup

1.2 Report Organization

The remainder of this Monitoring Report is organized as follows:

- Section 2, Cap Monitoring and Inspection Methods: This section describes surveying, inspection, and sediment quality confirmation monitoring methods.
- Section 3, Data Quality Assessment: This section describes information on sediment chemical data quality, including sample completeness, quality control (QC) measures, and a summary of the data validation.
- Section 4, Physical Integrity Performance Monitoring Data: This section presents the physical integrity performance monitoring data.
- Section 5, Sentinel Cap Confirmation Monitoring Data: This section presents analytical chemistry and sediment bioassay data at sentinel cap monitoring stations.
- Section 6, Nearshore Wood Debris Cap Confirmation Monitoring Data: This section presents porewater hydrogen sulfide chemistry and sediment bioassay data in nearshore capped wood debris areas.
- Section 7, Corrective Actions: This section describes the corrective actions recommended and performed based on the Year-1 post-construction monitoring.

2 Cap Monitoring and Inspection Methods

Year-1 (2018) cap monitoring in SMA-1 and SMA-2 included the following:

- Physical integrity performance monitoring (Section 2.1)
- Sediment quality confirmation monitoring at sentinel cap monitoring stations (Section 2.2)
- Sediment quality confirmation monitoring in nearshore capped wood debris areas (Section 2.3)

The sections below describe the methods for each of the monitoring activities performed in accordance with the OMMP for the Year-1 cap monitoring event. A sample collection and analysis summary for sentinel and near-shore samples is presented in Table 1.

		Station Coordinates (Washington SP NAD 83 North Zone)			Analysis	Performed	
Station ID	SMA Composite or Transect ID	Easting	Northing	Site COCs	Dissolved Sulfides	Larval Bioassay	Full Suite Bioassay
SMA1-ST1-G1		1211449.6	317502.5				
SMA1-ST2-G1	SMA1-ST (Sentinel)	1211635.2	317618.0				
SMA1-ST3-G2		1211706.6	317377.4	Х	—	Х	—
SMA1-ST4-G1		1211703.3	317282.6				
SMA1-ST5-G1		1211837.4	317243.7				
SMA1A-IT1-G2	SMA1A-IT (Sentinel)	1211536.3	317659.8	Х			
SMA1A-IT2-G1		1211387.3	317536.1		_	x	_
SMA1A-IT3-G2		1211364.0	317391.3				
SMA1A-IT4-G2	(continet)	1211660.0	317214.9				
SMA1A-IT5-G2		1211838.0	317158.0				
SMA2A-IT1-G2		1211610.2	316660.8	-	_	x	_
SMA2A-IT2-G1		1211384.1	316584.5				
SMA2A-IT3-G1	SMA2A-IT (Sentinel)	1211340.9	316517.4	Х			
SMA2A-IT4-G1	(Jentinel)	1211226.9	316417.8				
SMA2A-IT5-G1		1211175.8	316279.7				
SMA2A-ST1-G1		1211476.2	316242.5				
SMA2A-ST2-G1		1211593.0	316373.0				
SMA2A-ST3-G1	SMA2A-ST (Sentinel)	1211787.9	316466.5	х	—	Х	—
SMA2A-ST4-G1	(Jentinei)	1211507.4	316010.7				
SMA2A-ST5-G1		1211733.3	316189.8				

Table 1Summary of Sampling Locations

		(Washin	Station Coordinates (Washington SP NAD 83 North Zone)		Analysis Performed			
Station ID	SMA Composite or Transect ID	Easting	Northing	Site COCs	Dissolved Sulfides	Larval Bioassay	Full Suite Bioassay	
SMA2B-IT1-G1		1211171.0	316121.1					
SMA2B-IT2-G3		1211162.7	315953.4					
SMA2B-IT3-G3	SMA2B-IT (Sentinel)	1211152.2	315760.3	Х	—	Х	—	
SMA2B-IT4-G1	(Sentinel)	1211093.8	315623.6					
SMA2B-IT5-G2		1211037.7	315495.3					
SMA2B-ST1-G1		1211308.0	315845.5					
SMA2B-ST2-G1	SMA2B-ST (Sentinel)	1211660.5	315811.4					
SMA2B-ST3-G1		1211508.2	315738.2	Х	_	Х	_	
SMA2B-ST4-G1		1211336.2	315447.8					
SMA2B-ST5-G1		1211564.0	315509.5					
BW-15-G1	Natural Recovery	1212505.2	308615.4	Х	_	Х		
SMA1B-IT1-0- 6-180907		1211281.7	317379.8	_	Х			
SMA1B-IT1-24- 180907	-			No	х		_	
SMA1B-IT2-0- 6-180907				_	х			
SMA1B-IT2-24- 180907	SMA-1 Transect 1 (Nearshore cap)	1211310.7	317404.8	_	х		х	
SMA1B-IT102- 24-180907					х			
SMA1B-IT3-0- 6-180907			317428.5	_	х			
SMA1B-IT3-24- 180907		1211339.7			Х	_	Х	
SMA2C-IT1-0- 6-180907		1011000 5	216652.6	_	Х			
SMA2C-IT1-24- 180907		1211398.5	316652.6	_	Х	_	_	
SMA2C-IT2-0- 6-180907	SMA-2 Transect 1	1011106		_	Х			
SMA2C-IT2-24- 180907	(Nearshore cap)	1211406.1	316640.4	_	Х		_	
SMA2C-IT3-0- 6-180907		1011110	246622.5	_	Х			
SMA2C-IT3-24- 180907		1211412.0	316630.8		х		Х	

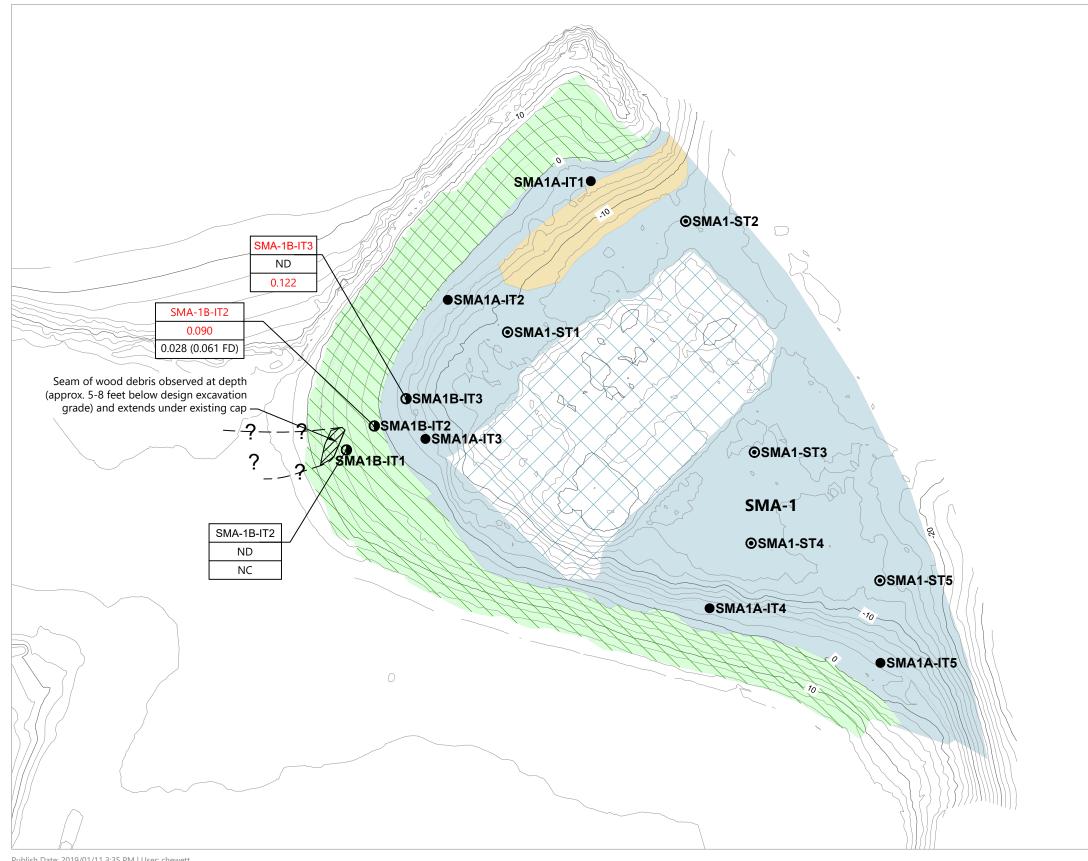
	Station Coordinates (Washington SP NAD 83 North Zone)		gton SP	Analysis Performed				
Station ID	SMA Composite or Transect ID	Easting	Northing	Site COCs	Dissolved Sulfides	Larval Bioassay	Full Suite Bioassay	
SMA2C-IT4-0- 6-180907	SMA-2 Transect 2 (Nearshore cap)			_	х			
SMA2C-IT4-24- 180907		1211415.6	316663.1		Х	_		
SMA2C-IT5-0- 6-180907		1011400 1	316651.0	_	х			
SMA2C-IT5-24- 180907		1211423.1	3 1005 1.0	_	х	_		
SMA2C-IT6-0- 6-180907		1211429.0	316641.3	_	х		x	
SMA2C-IT6-24- 180907				_	х			
SMA2C-IT7-0- 6-180907		1211432.6	316673.6	_	х			
SMA2C-IT107- 0-6-180907				_	х			
SMA2C-IT7-24- 180907				_	х			
SMA2C-IT8-0- 6-180907	SMA-2 Transect 3 (Nearshore cap)	1211440.1	316661.5	_	х			
SMA2C-IT8-24- 180907				_	х		_	
SMA2C-IT9-0- 6-180907		1211446.0	316651.9		х		V	
SMA2C-IT9-24- 180907		1211446.0	3 1003 1.9	_	х		Х	

Note:

COCs include dioxins/furans, cPAHs, and cadmium.

2.1 Physical Integrity Performance Monitoring

Physical integrity monitoring of SMA-1 and SMA-2 (Figure 2) was conducted to determine the stability of the cap areas following construction. This monitoring included visual inspection, topographic survey, and high-resolution hydrographic survey (i.e., multi-beam bathymetric survey). Bathymetric and topographic survey data were used to evaluate the cap thicknesses by comparing the measured surface elevations (immediately following construction and 1 year after construction) of the cap areas, as delineated in the final as-built survey. SMA-1 and SMA-2 cap areas are depicted on Figures 3 and 4, respectively.



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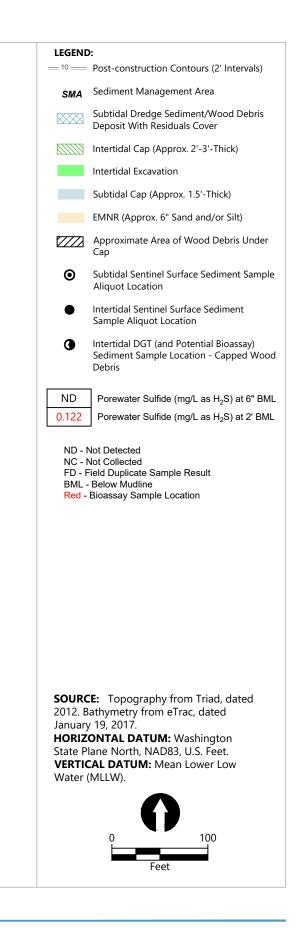
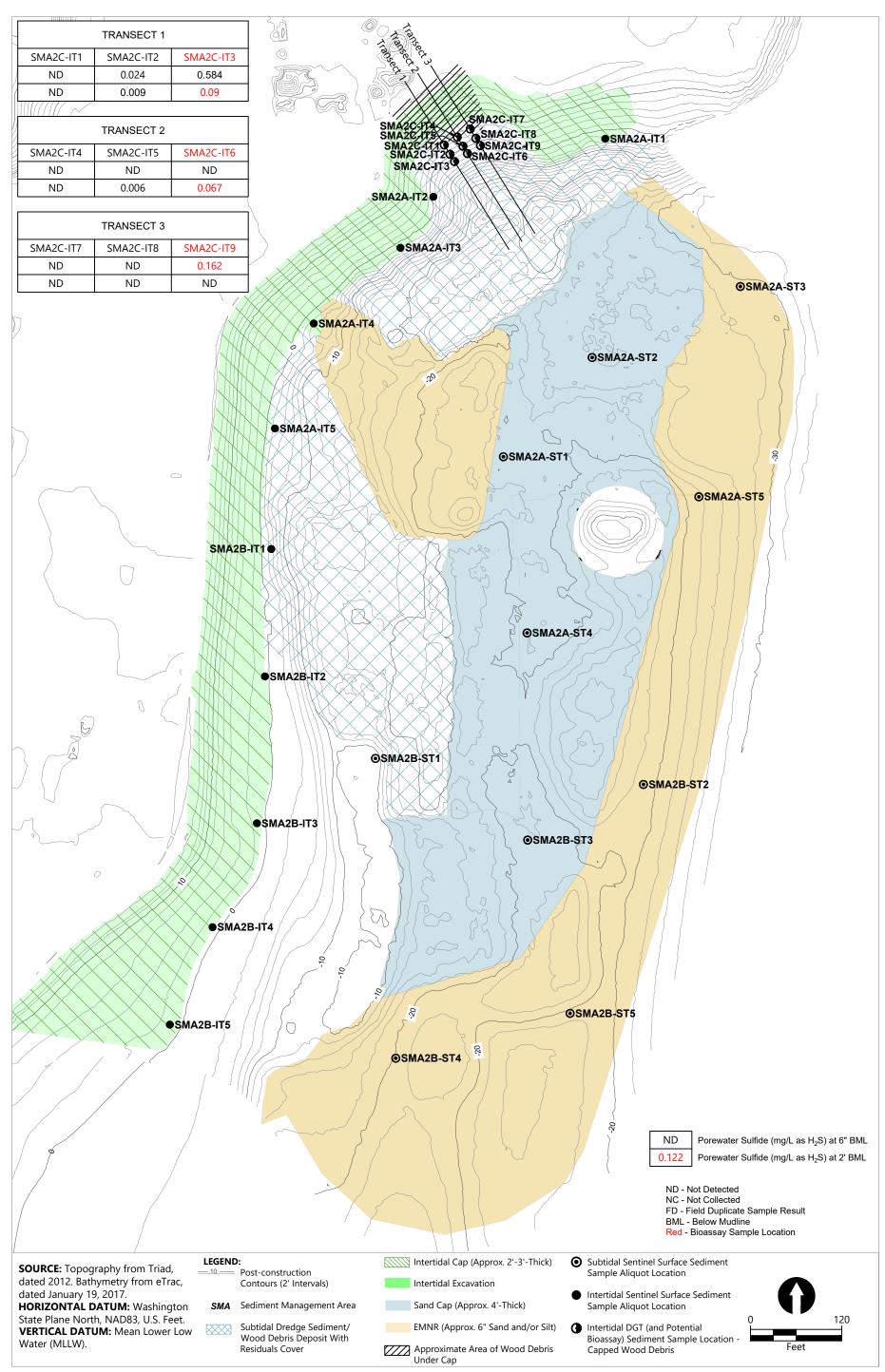


Figure 3 Sediment Sampling Stations (SMA-1)

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Figure 4 Sediment Sampling Stations (SMA-2)

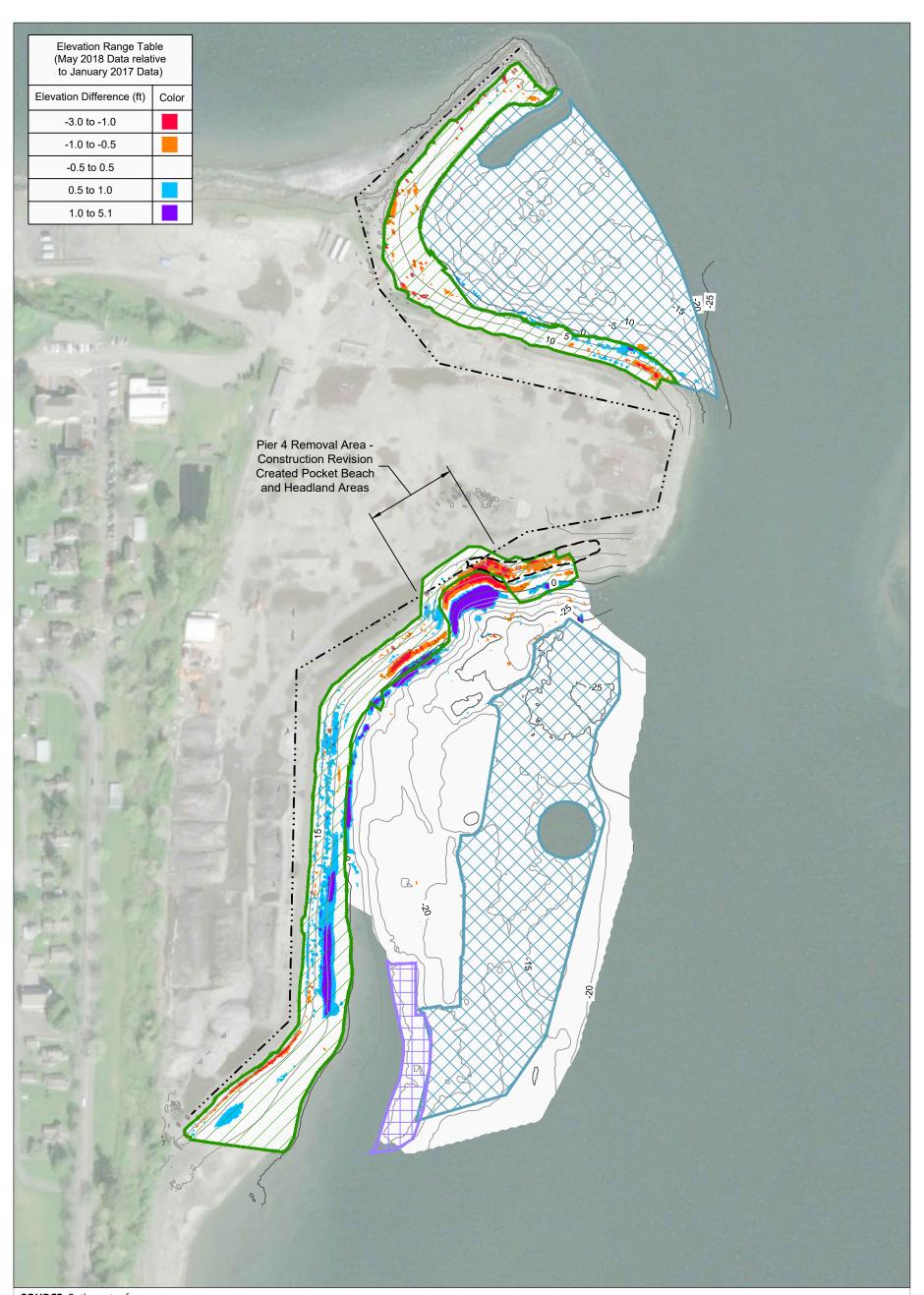
Year-1 Post-Construction Monitoring Report – 2018 Port Gamble Bay Cleanup Bathymetric and topographic surveys were performed by eTrac using multi-beam survey equipment in subtidal and lower intertidal areas to determine mudline elevations, and light detection and ranging (LiDAR) laser scan equipment was used in the upper portions of the intertidal caps. The multi-beam surveys were conducted by a licensed surveyor and met or exceeded the accuracy standards of +/- 0.2 foot, as referenced in the U.S. Army Corps of Engineers (USACE) *Hydrographic Survey Manual*, April 2004 Revision (USACE 2004). Topographic surveys, conducted for upper intertidal cap areas not included in the bathymetric survey, were conducted by a licensed surveyor and met or exceeded the accuracy standards of +/- 0.1 foot, as referenced in the USACE *Control and Topographic Surveying Manual*, January 2007 (USACE 2007).

Following the completion of the bathymetric and topographic surveys, eTrac licensed surveyors integrated the bathymetric and topographic elevation contours into a single set of elevation contours. These contours were evaluated by computer-aided drafting (CAD) isopach methodology. The isopach comparison of surface elevations immediately following construction and 1 year after construction, for SMA-1 and SMA-2 cap areas, is depicted on Figure 5. This comparison was used to identify zones of accretion, settlement, or erosion. Based on the results of this survey cap thickness evaluation, cap areas of relatively greater erosion or settlement were further investigated during a low tide visual inspection of the caps. The results of the physical integrity monitoring are presented in Section 4.

2.2 Sentinel Cap Confirmation Monitoring

Surface sediment quality monitoring was conducted at six sentinel intertidal and subtidal stations in SMA-1 and SMA-2, in accordance with the Sampling and Analysis Plan (SAP; Attachment F-1, Anchor QEA 2018a). Samples at each intertidal and subtidal sentinel cap monitoring stations were comprised of a five-point composite, as depicted on Figures 3 and 4. In addition, a discrete 0- to 10-centimeter (cm) grab sample from location BW-15 within SMA-3 (Figure 6) was collected and submitted for larval bioassay analysis.

Sampling was conducted in September 2018 to correspond with seasonally lower dissolved oxygen levels and higher temperatures, while also optimizing daylight low-tide intertidal sampling windows and the availability of larval bioassay organisms. Samples were collected by Anchor QEA and their subcontractor MSS, using a van Veen-type hydraulic power grab sampler deployed from a winch line on the MSS sampling vessel, in accordance with Puget Sound Estuary Protocols (PSEP; PSEP 1997) and the SAP (Attachment F-1; Anchor QEA 2018a); following is a detailed description of the process:

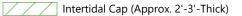


SOURCE: Bathymetry from eTrac, dated January 19, 2017, and May 16, 2018. Aerial from ESRI HORIZONTAL DATUM: Washington State Plane North, NAD83, U.S. Feet. VERTICAL DATUM: Mean Lower Low Water (MLLW).

LEGEND:

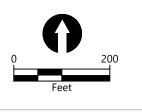
Year 1 Monitoring Survey Contours (5' and 25' Interval)

- ----- Original Designed Shoreline Orientation
- - Shoreline Cap Repair Area





Sand Cap (Approx. 4'-Thick)

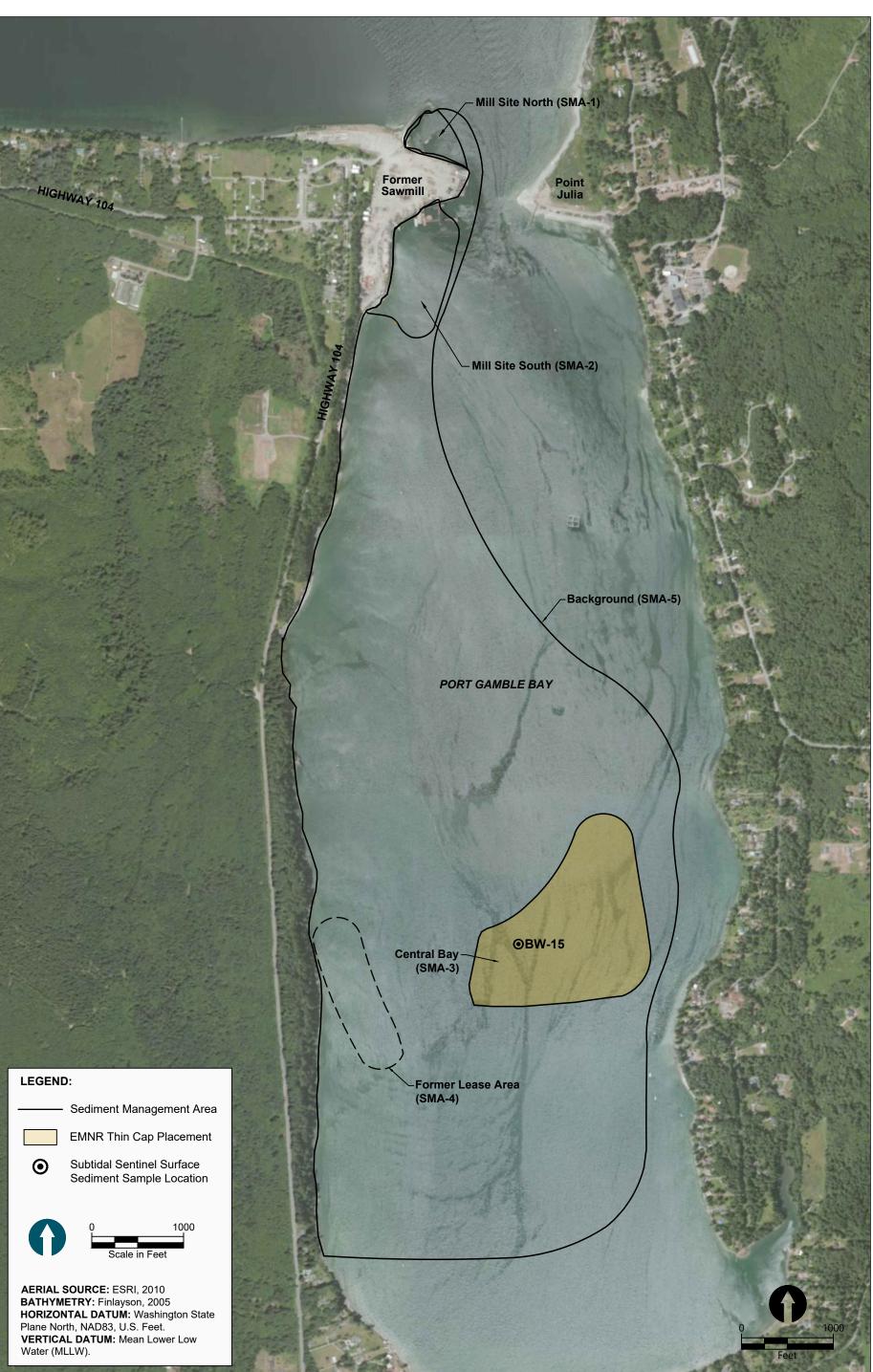


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Figure 5 Isopach Comparison - Post-Construction vs. Year-1 Cap Surfaces

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Figure 6 Surface Sediment Sampling Station (SMA-3)

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- 1. The vessel was maneuvered to the proposed location.
- 2. The sampler was decontaminated.
- 3. The sampler was deployed to the bottom.
- 4. The winch cable to the grab sampler was drawn taut and vertical.
- 5. Location coordinates of the cable hoist were recorded by the location control person.
- 6. The sediment sample was retrieved aboard the vessel and evaluated against the following PSEP acceptability criteria:
 - Grab sampler was not overfilled (i.e., sediment surface was not against the top of the sampler).
 - Sediment surface was relatively flat, indicating minimal disturbance or winnowing.
 - Overlying water was present, indicating minimal leakage.
 - Overlying water had low turbidity, indicating minimal sample disturbance.
 - Desired penetration depth of at least 10 cm was achieved.

Sediment samples that met the above collection criteria were processed as follows:

- 1. Overlying water was siphoned off.
- 2. After noting their presence, any large objects or debris were removed from the sediment surface.
- 3. Prior to sampling, color photographs were taken, and a sediment description of each grab was recorded for the following parameters, as appropriate and present:
 - Sample recovery (depth in inches or centimeters of recovery in the grab sampler)
 - Physical soil description of the grab in accordance with the Unified Soil Classification System (includes soil type, density/consistency of soil, moisture, and color)
 - Odor (e.g., hydrogen sulfide [H₂S] and petroleum)
 - Note any vegetation
 - Debris
 - Biological activity (e.g., detritus, shells, tubes, bioturbation, or live or dead organisms)
 - Presence of oil sheen
 - Any other distinguishing characteristics or features
- 4. A decontaminated stainless-steel spoon was used to place sample material from the 0- to 10-cm) biologically active zone for chemical and larval bioassay testing into a clean, stainless steel bowl. To avoid cross contamination, care was taken to remove only sediment that had not contacted the sides or bottom of the grab sampler. The bowl was covered with aluminum foil until each aliquot station had been collected to form a sample composite.
- 5. After material had been collected from each aliquot station, the material was combined and homogenized until a uniform color and consistency was achieved.

- 6. Immediately after filling the sample container with sediment, the screw cap was placed on the sample container and tightened.
- 7. Sample containers were checked for proper identification, analysis type, and lid tightness.
- 8. Each container was carefully packed to prevent breakage and placed inside of a cooler with ice for storage at the proper temperature (4 °C \pm 2 °C for all samples).

The results of the sediment quality confirmation monitoring in sentinel cap locations are included in Section 5.

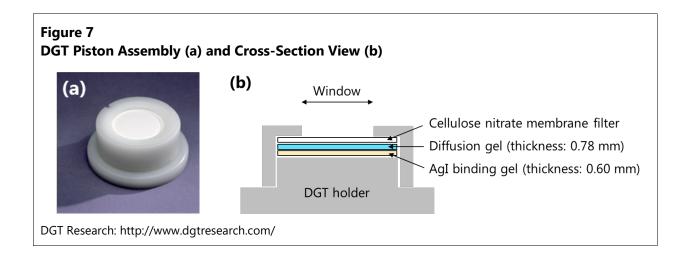
2.3 Nearshore Capped Wood Debris Confirmation Monitoring

Surface sediment quality monitoring was also conducted within the two areas where nearshore wood debris deposits were capped along the shoreline (i.e., within the North Basin in SMA-1 and the Former Pier 4 Area in SMA-2). Sampling was conducted in September 2018. Nearshore sediment sampling locations for capped wood debris in SMA-1 and SMA-2 are depicted on Figures 3 and 4, respectively.

Sediment monitoring in nearshore wood debris cap locations consisted of an initial phase of passive in situ diffusive gradient thin sheet (DGT) monitoring of porewater total free sulfide (including H₂S, hydrosulfide, and disulfide) concentrations. Following this initial phase of porewater monitoring and the calculation of the H₂S fraction of the total free sulfide concentration (based on concurrent temperature, pH, and salinity sampling), confirmatory surface sediment bioassay samples were collected from all locations where the porewater H₂S concentrations exceeded the risk-based benchmark of 0.07 milligram per liter (mg/L), or from the highest porewater H₂S concentrations in a transect, if no locations exceeded 0.07 mg/L.

2.3.1 Porewater Sulfide Monitoring

DGT piston devices were obtained from DGT Research (http://www.dgtresearch.com) and preloaded for sulfide measurement using a standard DGT holder containing a 0.6-mm-thick silver iodide impregnated binding gel layer, overlain by a 0.78-mm-thick polyacrylamide diffusive gel, and held in place by a 0.45-micron cellulose nitrate membrane filter (Figure 7). The window size of the DGT sampler was 2.54 square centimeters, and prior to use, the DGT assemblies were deoxygenated by immersion in 0.01 mol sodium nitrate purged with high-purity nitrogen gas for at least 2 days to remove any residual oxygen.



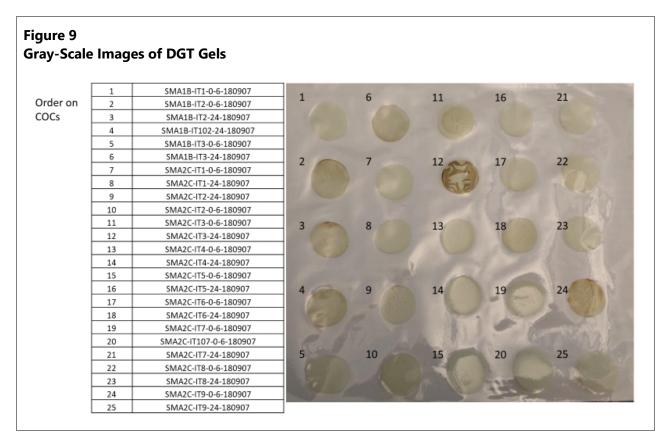
DGT probe field deployment consisted of a DGT piston within a plastic spear, so that the DGT could be deployed to the desired depth while the piston was protected within a wire mesh chamber (Figure 8). DGT probes were advanced at three locations along a single transect in SMA-1(Figure 3) and at three locations along three parallel transects in SMA-2 (total of nine locations; Figure 4). At each of these twelve DGT sampling locations, probes were installed at 6 and 24 inches below the mudline, for a total of 6 samples in SMA-1 and 18 samples in SMA-2.

Figure 8 Probe with DGT Piston Assembly Installed (left) and Probe Installation (right)



Following a 24-hour deployment period, DGT probes were retrieved from the sediment, the DGT piston assemblies removed, rinsed with de-ionized water, and sealed in Mylar bags. Representative surface sediment (approximately 6 inches below mudline) porewater temperature, pH, and salinity (where practicable) measurements were collected at the 12 DGT sampling locations during retrieval of the DGTs. DGT piston assemblies were packaged with ice and shipped to Anchor QEA's environmental geochemistry laboratory in Portland, Oregon, for analysis.

At the laboratory, the binding gel layers were removed and placed on blotting paper. The binding gels were then laid on a thin cellophane sheet (Bio-Rad) and covered with a second cellophane sheet. The sheet assembly was then placed in a vacuum gel dryer (Bio-Rad, Model 583) and dried for 2 hours at 60 °C. The dried sheet was digitally scanned (Konica Minolta BizHub-C364) and saved as a gray-scale image (Figure 9). Gel analysis software (UN-SCAN-IT Gel Version 7.1) was used to measure and record the gray-scale intensity of each binding gel on the scanned image.



Porewater H₂S concentrations were calculated based on the optical densitometry of the DGT gels and the corresponding temperature, pH, and salinity measurements, using the calibration curves and equations previously developed and presented in the Draft November 10, 2017 *Method Development and Verification Study for Sulfide Measurement in Porewater Using Diffusive-Gradients-in-Thin-Films*, included as an attachment to the OMMP (Anchor QEA, 2018a). The porewater sulfide monitoring data are presented in Section 6.1.

2.3.2 Surface Sediment Bioassay Sampling

Surface sediment samples for contingent bioassay analyses were collected from each of the probe locations and submitted to EcoAnalysts for archiving, pending the results of the porewater H₂S monitoring described in Section 2.3.1.

Bioassay samples were collected from the target locations and coordinates identified in the OMMP, as follows:

- 1. Sediment samples were collected directly from the cap surface, in the dry during low tide, using decontaminated hand tools (e.g., steel spoons, scoops, and bowls).
- 2. The sampling location for SMA1B-IT3 was submerged under water during DGT retrieval and deployment, and the bioassay sample was collected from a vessel during sampling of sentinel cap stations according to methods described in Section 2.2.
- 3. Prior to processing samples, color photographs were taken, and a sediment description of each grab was recorded for the following parameters, as appropriate and present:
 - Physical soil description of the grab in accordance with the Unified Soil Classification System (includes soil type, density/consistency of soil, moisture, and color)
 - Odor (e.g., hydrogen sulfide and petroleum)
 - Note any vegetation
 - Debris
 - Biological activity (e.g., detritus, shells, tubes, bioturbation, or live or dead organisms)
 - Presence of oil sheen
 - Any other distinguishing characteristics or features
- 4. A clean spoon was used to place sample material from the 0 to 10 cm biologically active zone for chemical and larval bioassay testing into a clean, stainless steel bowl, and the material was combined and homogenized until a uniform color and consistency was achieved.
- 5. Sample homogenates were placed into a 2-gallon polyethylene bag and sealed with minimal headspace.
- 6. Samples were checked for proper identification and bioassay testing type.
- Each sample was placed inside of a cooler with ice for storage at the proper temperature (4 °C ±2 °C for all samples).
- 8. Bioassay samples were hand delivered to EcoAnalysts each day and archived at the proper temperature (4 °C ±2 °C) until test initiation.

Once porewater H₂S concentrations were calculated, bioassay analyses were triggered for samples from all locations where the surface (6-inch depth) or subsurface (24-inch depth) porewater H₂S

concentration was greater than 0.07 mg/L (the risk-based sediment porewater H₂S benchmark developed by Ecology for Port Gamble Bay). As discussed in Section 2.3, if no locations from a given transect had porewater H₂S concentrations greater than 0.07 mg/L, bioassay analysis was performed on the sample from the transect with the highest porewater H₂S concentration. Two surface sediment samples from the SMA-1 transect, along with one surface sediment sample from each of the three SMA-2 transects (i.e., a total of five samples) were submitted for the suite of SMS bioassay analyses (two acute and one chronic). The bioassay data for nearshore capped wood debris areas are presented in Section 6.

3 Data Quality Assessment

This section provides information on data quality for sediment analytical data, including field and laboratory QC measures, data validation findings, and completeness.

3.1 Field Data Quality

All samples arrived at the laboratory within temperature requirements. Sufficient volume was provided for laboratory replicates, matrix spike, and matrix spike duplicate samples, as required in the Quality Assurance Project Plan (QAPP; Anchor QEA 2018a; Appendix F, Attachment F-2).

3.2 Analytical Data Quality

Data quality objectives and quality assurance procedures are provided in the QAPP (Anchor QEA 2018; see Attachment F-2 of Appendix F). The laboratory data reports are provided in Appendix C, and the data validation report is provided in Appendix D. All data qualifiers applied to the data during final validation have been incorporated into the database for this project. All data were considered useable as reported or as qualified. Data qualifiers assigned during data validation include the following:

- "J" indicates the associated numerical value is an estimated concentration
- "U" indicates a reporting limit below which the analyte was not detected
- "UJ" indicates an approximate reporting limit below which the analyte was not detected

The validation process resulted in some qualified data based on specified protocol or technical advisory, as stated in the data validation reports, including the following:

- Due to method blank contamination, one polycyclic aromatic hydrocarbon (PAH) result and five dioxin/furan results detected below the laboratory reporting limits were qualified as non-detect at the laboratory reporting limits.
- Dioxin/furan results with estimated maximum potential concentration "EMPC" qualifiers were converted to "J" qualifiers to indicate potential presence of these compounds.
- Some PAH laboratory control sample results were outside accuracy performance criteria; results were qualified "J" or "UJ" to indicate values are estimated.
- Three dioxin/furan duplicate results in one sample were outside of precision performance criteria; results were qualified "J" to indicate values are estimated.
- The continuing calibration verification was outside laboratory accuracy performance criteria for one dioxin/furan compound; six dioxin sample results were qualified "J" to indicate values are estimated.
- One dioxin/furan result was qualified "J" due to potential matrix interference.

3.3 Sediment Reference Material

Sediment reference materials were analyzed by ARI to evaluate measurement accuracy and laboratory performance for dioxin/furan, PAH, and cadmium analyses. The Puget Sound Sediment Reference Material was analyzed in association with the dioxin/furan analysis. The Sigma-Aldrich, Inc., certified reference material (CRM) 142-50G was analyzed in association with the PAH analysis and ERA CRM D095-540 was analyzed in association with the cadmium analysis. Laboratory results for all reference materials were within required acceptance criteria with the following exceptions:

- Five PAH results recovered below the CRM acceptance limits, and sample results were qualified "J" to indicate that values are estimated.
- For the dioxin/furan analysis, one result recovered below the PS SRM acceptance limit and two dioxin/furan results recovered above the PS SRM acceptance limits. Sample results were qualified "UJ" or "J" to indicate that values are estimated.

3.4 Sample Completeness

Data completeness includes collection of required samples in the field, and laboratory analysis for target chemicals, as outlined in the QAPP. All target samples were collected and submitted for the full suite of chemical testing.

Laboratory data completeness was measured by percentage of results reported by the analytical laboratory. Data completeness levels were set at 95% for all parameters, according to data quality objectives specified in the QAPP (Anchor QEA 2018; Appendix F).

4 Physical Integrity Performance Monitoring Data

Based on initial evaluations of the isopach comparison between the as-built survey and the combined Year-1 upland topographic and bathymetric surveys performed on May 16, 2018 (Figure 5), relatively minor changes in engineered cap surface elevations were identified in several upper intertidal areas of SMA-1 and SMA-2. Cap conditions in these areas were further characterized during a low-tide visual inspection performed on June 13, 2018. Following these evaluations, Anchor QEA prepared an *Intertidal Cap Maintenance Recommendations Memorandum* (Anchor QEA 2018b), describing the causes for the changes in surface elevation of the caps and providing recommendations for proactive maintenance and repairs. Sections 4.1 and 4.2 summarize the physical integrity evaluation of the cap and recommendations from the memorandum.

4.1 Physical Integrity Evaluation of SMA-1 and SMA-2 Caps

The June 13, 2018 low-tide visual inspection revealed that all but one of the areas identified by the isopach survey comparison (Figure 5) were a result of either anticipated deformation of the slope profile consistent with the Ecology-approved remedial design, or anticipated movement of habitat substrate from the upper intertidal area to the lower intertidal area along the profile.

The one area that was not a result of anticipated slope deformation or down-slope migration of habitat substrate was within the upper intertidal cap area of SMA-2 and the adjacent upper intertidal shoreline area near the former Pier 4. Within this area, there were two sub-areas where proactive cap repairs were recommended based on observed movement of cap armor rock. These two areas are outlined in yellow and red on Figure 10. A photograph taken of the armor rock movement in the yellow area (foreground) and red area (background) during the low tide visual inspection on June 13 is also provided on Figure 10.

Figure 10 Top: Eastern Edge of Armor Movement, Yellow Outlined Area (foreground) and Red Area (background)

Bottom: Aerial View of Observed Armor Rock Movement in SMA-2



Within the yellow outlined area, armor rock was displaced from the upper intertidal slopes over an approximately 25- to 30-foot length; underlying filter material is visible in this area. Adjacent areas of about 20 to 40 feet on either side showed some armor rock removal but no exposure of underlying filter material. This area was repaired, as described in Section 7.

Within the red outlined area on Figure 10, cap performance was determined to be as designed and expected. Movement of armor rock as the slope deformed due to storm waves was observed but was generally within acceptable limits. Although this area did not exhibit movement of the armor rock beyond the acceptable limits, additional rock was also placed here, to provide additional protection for the upslope cap during future large storm events, as described in Section 7.

4.2 Cause of Intertidal Cap Armor Movement Near Former Pier 4

As shown on Figure 5, the shoreline orientation in the former Pier 4 area was changed during construction to facilitate excavation of unanticipated nearshore upland wood debris from that area. The original shoreline design was straight, through the pier 4 area; the final constructed shoreline resulted in a configuration similar to a "pocket beach" area with two headlands (i.e., corners) on either side of the Pier 4 area.

Armor layers constructed at shoreline bends and corners are generally more exposed than straight shoreline sections. This is due to refraction, which can focus wave energy on the corners. Also, armor rocks placed in corner sections can have less lateral support from adjacent armor rocks in the bend (USACE 2001). Due to these reasons, headland areas along an armored shoreline are generally more susceptible to wave forces and thus are armored with larger rock than straight sections.

Based on available guidance documents (USACE 2001; CIRIA 2007), the rock in these headland areas should be 1.3 to 1.5 times the size determined for a straight section of armored shoreline. The armor rock size for the original design in this area had a median diameter of 9 inches; therefore, armor rock recommended to repair this section of the intertidal cap was a median diameter of at least 12 to 14 inches. The repairs were completed in accordance with recommendations described in Section 7.

5 Sentinel Cap Confirmation Monitoring Data

Sentinel cap confirmation monitoring sampling was conducted from September 17 to 19, 2018, following the methods described in Section 2.2. Surface sediment/cap samples were submitted to EcoAnalysts for biological testing (larval bioassay) and ARI for analyses of Site COCs. The bioassay and chemical monitoring results are summarized in Sections 5.1 and 5.2, respectively.

5.1 Larval Bioassay Data

Biological testing data for surface sediment/cap samples collected from the six sentinel intertidal and subtidal stations in SMA-1 and SMA-2 (in addition to the subtidal sample collected from SMA-3) were evaluated using SMS criteria. The SMS bioassay evaluation uses statistical and numerical comparisons between each sediment sample and a matched reference sample. While two comparisons are identified in the SMS regulation (i.e., SCO and cleanup screening level [CSL]), the SCO biological criterion is the site-specific cleanup standard for the Site. The full EcoAnalysts bioassay testing report is included as Appendix C. Table 2 summarizes larval bioassay results.

All bioassay results met both the SCO cleanup standard. Thus, the larval bioassay analyses confirmed that cleanup standards are being maintained on the SMA-1 and SMA-2 caps.

Composite Sample ID	Sediment Cleanup Objective	Cleanup Screening Level
SMA1-ST-0-10-COMP-180917	Pass	Pass
SMA1A-IT-0-10-COMP-180917	Pass	Pass
SMA2A-IT-0-10-COMP-180919	Pass	Pass
SMA2A-ST-0-10-COMP-180918	Pass	Pass
SMA2B-IT-0-10-COMP-180918	Pass	Pass
SMA2B-ST-0-10-COMP-180918	Pass	Pass
BW-15-0-10-180917	Pass	Pass

Table 2 Summary of Larval Bioassay Results

5.2 Chemical Analysis Results

Composite samples from each of the six sentinel locations were analyzed for COCs, including cPAHs, dioxins/furans, and cadmium). Chemical analysis results from sentinel sediment sample locations are summarized in Appendix B; the complete analytical report is included in Appendix C.

Sediment chemical concentration compliance at the Site (e.g., to achieve natural background-based cleanup standards for bioaccumulative COCs by Year 10) is based on the surface-weighted average

concentration (SWAC). The SWAC will be updated and evaluated in 2020, following Year-3 postconstruction monitoring when all sentinel monitoring stations at the Site are sampled (Anchor QEA 2018a).

6 Nearshore Wood Debris Cap Confirmation Monitoring Data

Sediment quality confirmation sampling of nearshore capped wood debris areas was conducted from September 6 to 7, 2018, following the methods described in Section 2.3. Samples were submitted to the Anchor QEA geochemical laboratory for analysis of the DGT gels, and to EcoAnalysts for biological testing (larval, polychaete, and amphipod bioassay analysis). In situ DGT sampling results and subsequent bioassay analysis results are summarized in Sections 6.1 and 6.2, respectively.

6.1 In Situ DGT Data

The results of the DGT analyses, including porewater temperature, pH, and salinity measurements, are summarized in Table 3. Porewater H₂S and bioassay data are summarized below.

Six DGTs were deployed in SMA-1, at three locations along a single transect at the 0.5-foot surface depth and 2-foot subsurface depth, as shown on Figure 3. The subsurface sample at location SMA1B-IT1 could not be collected because the DGT probe was damaged during installation and the damaged probe was not identified until retrieval.

Two samples exceeded the 0.07 mg/L porewater H₂S criterion:

- Surface interval at SMA1B-IT2 (0.090 mg/L)
- Subsurface interval at SMA1B-IT3 (0.122 mg/L)

Sediment from both locations were submitted for bioassay analyses, as described in Section 6.2.

Eighteen DGTs were deployed in SMA-2, at three locations along three transects at the 0.5-foot surface depth and 2-foot subsurface depth, as shown on Figure 4.

Samples exceeding the 0.07 mg/L porewater H₂S criterion included the following:

- Surface and subsurface sample at location SMA2C-IT3 (0.090 and 0.584 mg/L, respectively)
- Surface sample at SMA2C-IT9 (0.162 mg/L)

Sediment from both locations were submitted for bioassay analyses, as described in Section 6.2.

No surface or subsurface samples from SMA-2 transect 2 were greater than the 0.07 mg/L porewater H₂S criterion. The subsurface sample for SMA2C-IT6 had the highest porewater H₂S concentration (0.067 mg/L) detected in this transect and was submitted for bioassay analyses.

Table 3 Porewater Sulfide DGT Data

Sample ID	Transect	pH (SU)	Temperature (°F)	Salinity (ppt)	Hydrogen Sulfide Concentration (mg/L as H ₂ S)	Bioassay Analysis
SMA1B-IT1-0-6-180907		7.07	57.2	0.4	ND	No
SMA1B-IT1-24-180907		7.07	57.2	0.4	Not Collected	NO
SMA1B-IT2-0-6-180907	SMA-1 Transect 1				0.090	
SMA1B-IT2-24-180907		7.24	58.6	3.8	0.028	Yes
SMA1B-IT102-24-180907					0.061	
SMA1B-IT3-0-6-180907			NIN 4	NINA	ND	Vac
SMA1B-IT3-24-180907		NM	NM	NM	0.122	Yes
SMA2C-IT1-0-6-180907	SMA-2 Transect 1	7 0 2	F7 7	0.2	ND	Na
SMA2C-IT1-24-180907		7.83	57.7	0.3	ND	No
SMA2C-IT2-0-6-180907		8.28	58.1	0.9	0.024	No
SMA2C-IT2-24-180907					0.009	No
SMA2C-IT3-0-6-180907		8.15	58.6	2.2	0.090	Yes
SMA2C-IT3-24-180907					0.584	
SMA2C-IT4-0-6-180907		8.05 8.25	57.8	1.8 0.3	ND	No
SMA2C-IT4-24-180907					ND	
SMA2C-IT5-0-6-180907	SMA-2 Transect 2		57.0		ND	
SMA2C-IT5-24-180907	SIMA-2 Transect 2		57.9		0.006	
SMA2C-IT6-0-6-180907		8.21	58.2	1.2	ND	Yes
SMA2C-IT6-24-180907		8.21			0.067	
SMA2C-IT7-0-6-180907					ND	
SMA2C-IT107-0-6-180907		8.17	58.2	0.2	ND	No
SMA2C-IT7-24-180907	SMA-2 Transect 3				ND	
SMA2C-IT8-0-6-180907		0 10	F0 2	0.2	ND	No
SMA2C-IT8-24-180907		8.19	58.3	0.2	ND	
SMA2C-IT9-0-6-180907		0.22	F7 0	0.5	0.162	Vee
SMA2C-IT9-24-180907		8.32	57.9	0.5	ND	Yes

Notes:

Bold indicates triggered bioassay sample based on value >0.07 mg/L risk-based criteria or highest sulfide concentration from the transect.

SU: standard units

NM: No field data measured because the sampling station was submerged; water quality measurements (i.e., temperature, pH, and salinity) at the nearest sampling station were used for H_2S calculations

ND: Not detected at a detection limit of 0.004 mg/L

6.2 Larval, Polychaete, and Amphipod Bioassay Data

Sediment bioassay data were reviewed using SMS evaluation criteria, as described in Section 5.1. The complete bioassay testing report is included as Appendix C. Table 4 summarizes the bioassay results for the nearshore wood debris cap confirmation monitoring. All bioassay results met SCO biological standards. The bioassay analyses confirmed that cleanup standards are being maintained in the nearshore areas of capped wood debris.

	Sediment Cleanup Objective			Cleanup Screening Level			
Sample ID	Amphipod	Polychaete	Larval	Amphipod	Polychaete	Larval	
SMA1B-IT2-0-10-180907	Pass	Pass	Pass	Pass	Pass	Pass	
SMA1B-IT3-0-10-180919	Pass	Pass	Pass	Pass	Pass	Pass	
SMA2C-IT3-0-10-180907	Pass	Pass	Pass	Pass	Pass	Pass	
SMA2C-IT6-0-10-180907	Pass	Pass	Pass	Pass	Pass	Pass	
SMA2C-IT9-0-10-180906	Pass	Pass	Pass	Pass	Pass	Pass	

Table 4 Nearshore Wood Debris Cap Confirmation Monitoring – Bioassay Summary

7 Corrective Actions

One corrective action was identified in 2018, during physical integrity monitoring activities described in Sections 2.1 and 4. Minor repairs to the upper intertidal SMA-2 cap and the adjacent upper intertidal shoreline area to the east (Figure 5) were performed on September 4 and 5, 2018, by PR/OPG's subcontractor Seton. Anchor QEA was on site during the repairs, and the work was performed in accordance with the recommendations in the July 11, 2018 memorandum (Anchor QEA 2018b). Representatives from PR/OPG and Ecology were on site to observe the corrective actions on September 4, 2018.

Figure 5 depicts the as-built area of the repairs. A total of 360 tons of one-man armor rock (Washington State Department of Transportation [WSDOT] Specification 9-13.7(1)) ranging from 12 to 18 inches, was placed within the repaired area; 61 tons of 3-inch minus quarry spalls (WSDOT Specification 9-13.1(5)) was placed in areas where filter material was exposed.

The 3-inch minus quarry spalls were placed in a 0.5- to 1-foot-thick layer prior to placement of the larger one-man armor rock material. The quarry spalls were placed to retain the smaller underlying material within the slope. Other areas where armor rock was lost or moved but filter material was not exposed were re-armored with two layers of one-man rock.

The one-man armor rock was tapered down to a single layer at the edges of the repair area to avoid constructing an abrupt edge between the repair section and existing armored cap. The slope of the repair was re-graded as closely as possible to a 3:1 (horizontal to vertical) slope. A photograph of the repaired area in SMA-2 is shown on Figure 11.

Figure 11 Photograph of Repaired SMA-2 Intertidal Cap Area



8 Summary and Conclusions

The Year-1 post-construction monitoring and adaptive management of engineered caps in Port Gamble Bay has been performed in accordance with the OMMP. The monitoring results indicate the following:

- One area of armor rock movement, where proactive repairs were warranted, was identified within a relatively small intertidal cap area of SMA-2. Movement of the armor rock in this area was a result of changes to the shoreline geometry during construction. This area was repaired following recommendations to increase armor rock size for headland and pocket beach areas.
- Larval bioassay analyses of sentinel cap monitoring stations confirmed that cleanup standards are being maintained throughout the subtidal intertidal engineered cap areas of SMA-1 and SMA-2.
- Amphipod, polychaete, and larval bioassay analyses (informed by in situ DGT porewater H₂S monitoring) confirmed that cleanup standards have been maintained in nearshore capped wood debris areas of SMA-1 and SMA-2.

The next post-construction monitoring event will be conducted in 2020. Year-3 monitoring will include the following:

- Physical integrity performance monitoring in SMA-1 and SMA-2.
- Sediment quality confirmation monitoring of sentinel cap stations SMA-1 and SMA-2.
- Sediment quality confirmation monitoring in nearshore capped wood debris areas in SMA-1 and SMA-2.
- Natural recovery sediment quality monitoring throughout the Site.

Based on the Year-3 monitoring data, corrective actions and adaptive management would be implemented as warranted.

9 References

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Appendix A Field Data

Chain of Custody Record and Laboratory Analysis Request	sis Request				COC#	
					Sediment and Field OC	ANCHOR
Date: 1114 18						T COEA LLL
			7-42-			
Phone Number: 206.971.2680			1			
Shipment Method: Delivery			iners			
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Line Field Sample ID	Collection Date/Time	Matrix	No, oN No. d	PAHs Dioxi Archi		Commonte
1 SMA1A-IT-0-10-Comp-1809 [7]	911718 1510		x x			
2 SMA1-ST-0-10-Comp-1809 [7]	91/718 1205	SE	× 100	××		
3 SMA2A-IT-0-10-Comp-1809 19	9/19/18 1025		× Ø	<u> </u>		
4 SMA2A-ST-0-10-Comp-1809 i S	9/10/18 11 CC		x	××		
5 SMA2B-IT-0-10-Comp-1809 1	9/1//18 15/10	SE	S ×	××		
6 SMA2B-ST-0-10-Comp-18091K	9/1/18 16-25	SE	X	××		
7 SMA1A-IT1-1809 1 3	9/17418 1362	SE	/			
8 SMA1A-IT2-1809 17	9/7/18 / 322	SE	-	×		
9 SMA1A-IT3-1809 17	9/7/18 12/57/0			×		
10 SMA1A-IT4-1809 ビ子	91 (7/18 1423	SE)	×		
11 SMA1A-IT5-1809 F7-	9/17/18 1756	SE	1	×		
12 SMA1-ST1-180917	9/17/18 09 51	SE)	×		
13 SMA1-ST2-1809 (7	9/17/18 10 177	SE	/	×		
14 SMA1-ST3-180917	917418 1047	SE	1	×		
 See project SAP/GAPP for analyte lists and test methods Email sample confirmation report to labdata@anchorqea.com 		Additional notes/comments	notes/c	omments:		
4						
Relinquished By:	Company: /	Anchor QEA LLC.	EA LLC.	Received By	d By: Command	Anchor OEA LL C
Signature/Printed Name	Kagott al	1/8/1-	子; 0 0 Date/Time		Jusmine Burnen	9/19/18 170C
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Chain of Custody Record and Laboratory Analysis Request	alysis Request				COC#	
					Sediment and Field OC	HOR
Date: I of the second	LTM		6L2			}}
Line Field Sample ID	Collection Date/Time	Matrix	No. of Contain Cadmium	PAHs Dioxin/Furan	Archive	
1 SMA1-ST4-1809 I7	917/18 11/4	SE		1		2
2 SMA1-ST5-1809 (77	SY11 81/F/16	SE	1			
3 SMA2A-IT1-1809 P	919118 0834	SE				
4 SMA2A-IT2-1809) 9	9119118 09 03	SE	1			
5 SMA2A-IT3-1809 1 9	91,918 6929	SE	(
6 SMA2A-IT4-1809 14	9/9/18 0956	SE				
7 SMA2A-IT5-1809 7	91/118 1010	SE			x	
8 SMA2A-ST1-1809 戊	9/18/18 09/1	SE	-			
9 SMA2A-ST2-180915	9/18/18 0939	SE				
10 SMA2A-ST3-1809 K	9/1×18 1005	SE	1			
11 SMA2A-ST4-180915	9/18/18 1029	SE	1		×	
12 SMA2A-ST5-18091\$	911×18 1045	SE	_			
13 SMA2B-IT1-1809 1	91,8/18 1145	SE			x	
14 SMA2B-IT2-1809 八	PIX18 13.19	SE	-			
 See project SAP/QAPP for analyte lists and test methods Email sample confirmation report to labdata@anchorqea.com 	nods 'qea.com	Additional notes/comments	notes/c	mment	55	
Relinquished By:	, Company:	Company: Anchor QEA LLC.	A LLC.		Received By: Company: Anchor QEA LLC	
Signature/Printed Name Heven ward	Kurpeff affig	1 81/6	1700 Date/Time		I	
Relinquished By:	Company:			T	Received By: Company:	
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Chain of Custody Record and Laboratory Analysis Request	is Request						COC#	×
21/10/10							Sediment and Field QC	HOR
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Project Name: Port Gamble - OMMP LTM Project Number: 180388-01 01				14.8-75 Rectored				
Phone Number: 206.971.2680 Shipment Method: Delivery				sı				
				ənis				
Line Field Sample ID	Collection Date/Time	tion	Matrix	No. of Cont Cadmium	2HA9	Dioxin/Fura Archive		
1 SMA2B-IT3-1809代	9/15/18	1218	SE	-		×		
2 SMA2B-IT4-18091	9/1X/18	1954	SE	-		×		
3 SMA2B-IT5-1809 \	9/1/0/18	1445	SE	-		×		
4 SMA2B-ST1-1809 1K	9/1//18	1531	SE	~		×		
5 SMA2B-ST2-18091 K	9/1/2/18	1534	SE	_		×		
6 SMA2B-ST3-18091 K	91×/18	1602	SE			×		
7 SMA2B-ST4-1809 / Υ	9/1//18	16 16	SE			×		
8 SMA2B-ST5-1809 1	9/1 1/18	10:29	SE	-		×		
9 Smalezer 25-0-10 - Cemp-150918	9/15/18	16-10	SE	XX	X	X *X	ALA.	
10 PGLTM-RB-180919	9/17/18	11:20	ŠĔ,	5 X	X	XX	XH-	
11	9/ /18		SE			×		
12	9/ /18		SE			×		
13 .	9/ /18		SE			×		
14	9/ /18		SE			×		
 See project SAP/QAPP for analyte lists and test methods Email sample confirmation report to labdata@anchorqea.com 	ε		Additional notes/comments:	notes	comm	ents:		
		1 1						
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				5	((COC#					
Date: Laboratory : EcoAnalysts Project Name: Project Number: Project Contact: Phone Number: Project 206.287.9130	М					Sec	diment	and F	ield QC				QEA S
Shipment Method: Delivery			ners	hive									11 CC
Line Field Sample ID 1 SMA2C - 179 - 0 - 10 - 180906	Collection Date/Time	Matrix	No. of Containers	Bioassay Archive									
2 SMAZC - ITZ -0-10 -180906	9/6/18 0900	SE	1	X	++++	+		++	++	++	++		Comments
3 SMAZC - ITS-0-10-120900	0920	SE	1	·				++	++	++	++	++	
4 SMAZC - TTR-D-ID IDAQUE	0930	SE	1	P		++		$\left \cdot \right $	++	++	++	++	
5 MARC - TTY -0-10-10-100001	0940	SE	1	Y		++			++-	++	++	++	
SMA2C-IT1-0-10-180906	0950	SE	1	A		++	++			++	++		
SMAZC - IT 7-0-10 -180916	1000	SE	1	19		++			$\left - \right $	++	++		
	- 1010	SE	1	A		\top	++			++	++	++	
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Relinquished By:			e/Time		Signature/Print	-O//	ma	Kany	0 G	oAna	ilysiB		
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ignature/Printed Name					The served by:					Compa	ny:		
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	ecord and Laboratory Analysi	s Request		allow-yang and a second	B							coc	#							
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	Laboratory : EcoAnalysts				-													T		
i	Project Name: Port Gamble - OMMP LTM					1														
	Project Number: 180388-01.01																			
	Project Contact: Cheronne Oreiro																			and I
	Phone Number: 206.287.9130 Shipment Method: Delivery] "														1- c0	
	Shipment Method: Delivery				Containers	Bioassay Archive													AU	
		1		1	tai	Pro 1														
					No.														4	
		Colle	ction		5	SS		11												
Line	Field Sample ID	Date/		Matrix	No.	ioa														
1	SMAID-IT2-0-10-180907	917/18	0845	SE	1	X				+	+		+	++		+	\vdash		Commen	ts
2	SMAIB TT1-0-10-180907	917/18	0855	SE	ι	Ý	++		+	+	+		+-	++		+				
3	SMA2C-IT3-0-10-180907	917/09	0935	SE	1	X				+-	$\left\{ -\right\}$	-	+	++			\vdash	+		
4	SMA2C-ITG-0-10-190907	9/7/18	0940		1	X	\uparrow			+	$\left \right $	-	+	++	+	+		+		
5				SE		Ĺ				+		+	+	$\left \right $		++		+-		
6				SE									1	$\uparrow \uparrow$		+		+		
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L	Ma alas		9/7/18			ir	115	11	N	/				9-			.	1	()	
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Chain of Custo ecord and Laboratory Analysis	Request				_	1	-				со	C#								
Date: Laboratory : Anchor QEA Geochemistry L Project Name: Project Number: Project Contact: Phone Number: Shipment Method: Delivery	aboratory		iners	ater Sulfide					Sec	lime	ent a	nd I	Field							QEA
Line Field Sample ID	Collection Date/Time	Matrix	No. of Containers	DGT - Porewater																Comments
1 SALATE IFT 180407		DC-T	_		4	4	\rightarrow	-	~	1		1		4	$ \rightarrow $	4	\uparrow	-	\square	\sim
2 SMAIB-ITI-0-6-180407	9/7/18 1014	SEO		Х	\vdash	-	\perp													
3 SUAIB-ITZ-0-8-180907	0941	SE	1	X	\vdash	-	_	_												
4 SMAIB-ITZ-24-180907	0950	SE	(X	Ш		_													
5 SMA 1B - IT 102 - 24 - 180407	000	SE	1	X	Ш															
6 SMAIB-IT3-00-6-180907	0853	SE-	1	χ																
7 SMAIB-IT3-24-180907	6911	(- SE	1	χ																
8 SMA2C - ITI-0-6-180907	1030	SE	(X									I.					T		
9 SMAZC - ITI-24-180907	1025	SE	1	X																
10 SMA2C-ITZ-24-180907	1056	SE	1	x																
11 SMA2C-ITZ-0-6-180907	1117	.s₽	1	4																
12 5MA2C-IT3-0-6-180907	1047	SE	\backslash	X														\top	\top	
13 SMAZC-IT3-24-180907	1052	SE	1	х														+		
14 SMAZC-IT4-0-6-180907	V 1036	* SE	(X	\square											+	1	+		
See project SAP/QAPP for analyte lists and test methods Email sample confirmation report to labdata@anchorqea.com Relinquiched By:		Additiona				ment	s:													

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Signature/Printed Name	Date/Time	Signature/Printed Name		Date/Time
terinquisteed).	Eli Patmant 09/10/2018 1500	Received By:	Masa Kanematsu	Anchor QEALLC 9/11/2018 9:30

Date/Time

Signature/Printed Name

Page _____ of _____

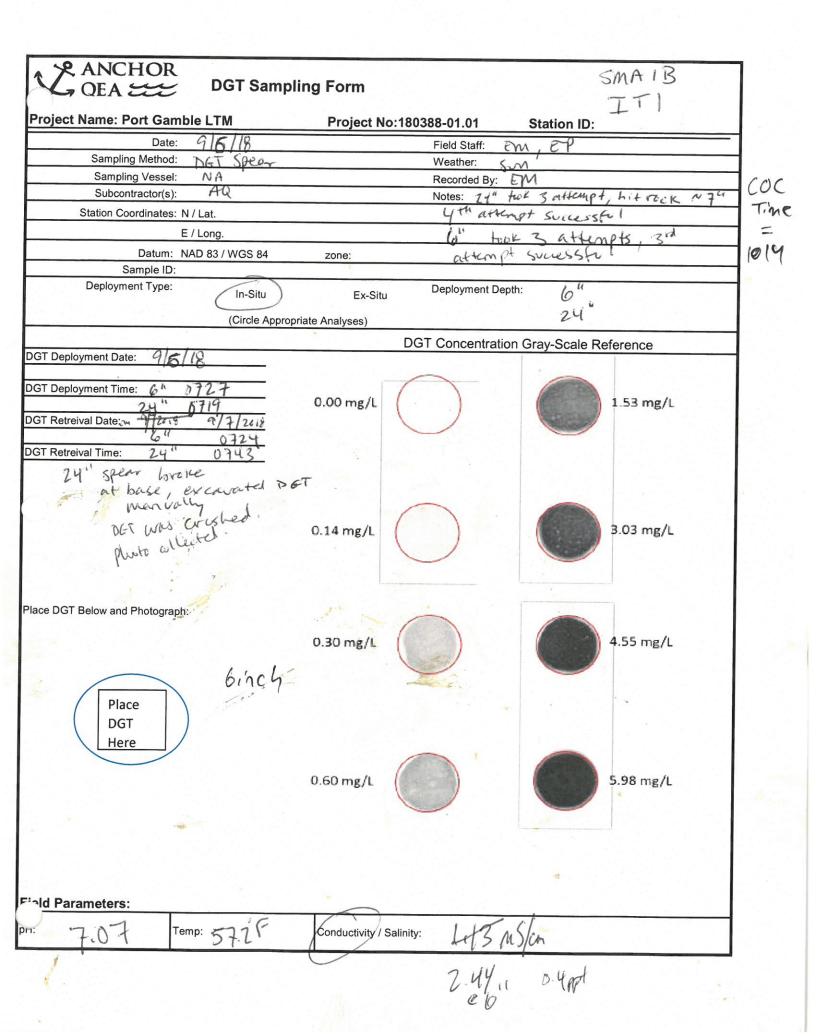
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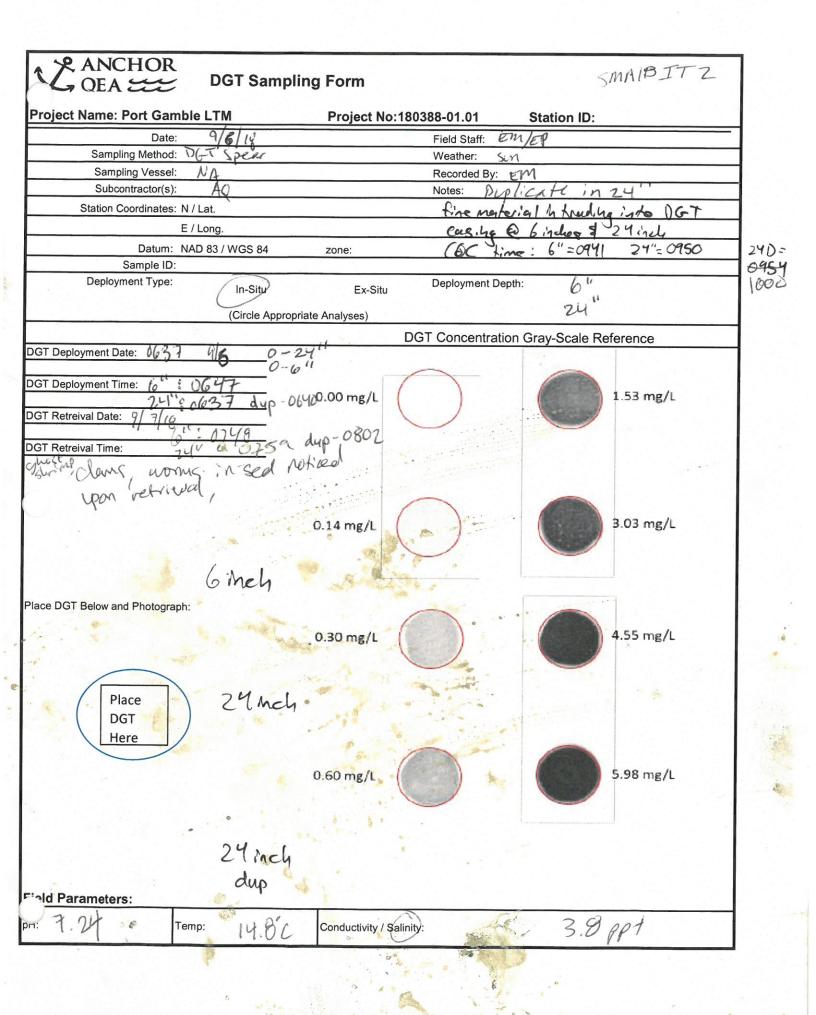
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	Date: Laboratory : Project Name: Project Number: Project Contact: Phone Number: Shipment Method:	aboratory			iners	ater Sulfide			Se	edim	ent a	nd F	ield	QC						QEA CHOR
Line	Field Sample ID	Collection Date/Time		Matrix	No. of Containers	DGT - Porewater														Comments
1		09/07/18 10		SE	1	X														
	SMA2C-IT5-0-6-180407	1	35	85	(X														
	SMA7C-IT5-24-180907		116	SE	1	X	+-			\perp		\square	_							
	SMA2C-IT6-0-6-180907		244	85	1	X							_							
	SM42C-IT6-24-180907		106	SE	1	X														
	SMAZC-ITZ-0-6-180907	11	25	SE	1	X														
7	SMA 2C-IT107-0-6-180907	11	30	SE	1	\times				Τ										
8-	SHAZE-ITS-		\sim	SE			 -	-				h	-	-	-		-		-	
9	SMA2C=IT7-24-180907	(1	137	SE	1	x				\top				+				1		
	SMA2C-IT8-0-6-180907	()	00	55	1	X							+				+			
11	SMAZC-IT8-24-180407	11	108	,SE	I.	X						\square		\top	\top	\square	1	1		
	SMA2C-IT9-0-6-180907	()	124	SE	1	X												1		
13	SMA2C-IT9-24-180907	10	037	♥ SHE)	ş	X				T		\square						1	1	
14				SE						T							1			
1	See project SAP/QAPP for analyte lists and test methods												and the second second					-	-	

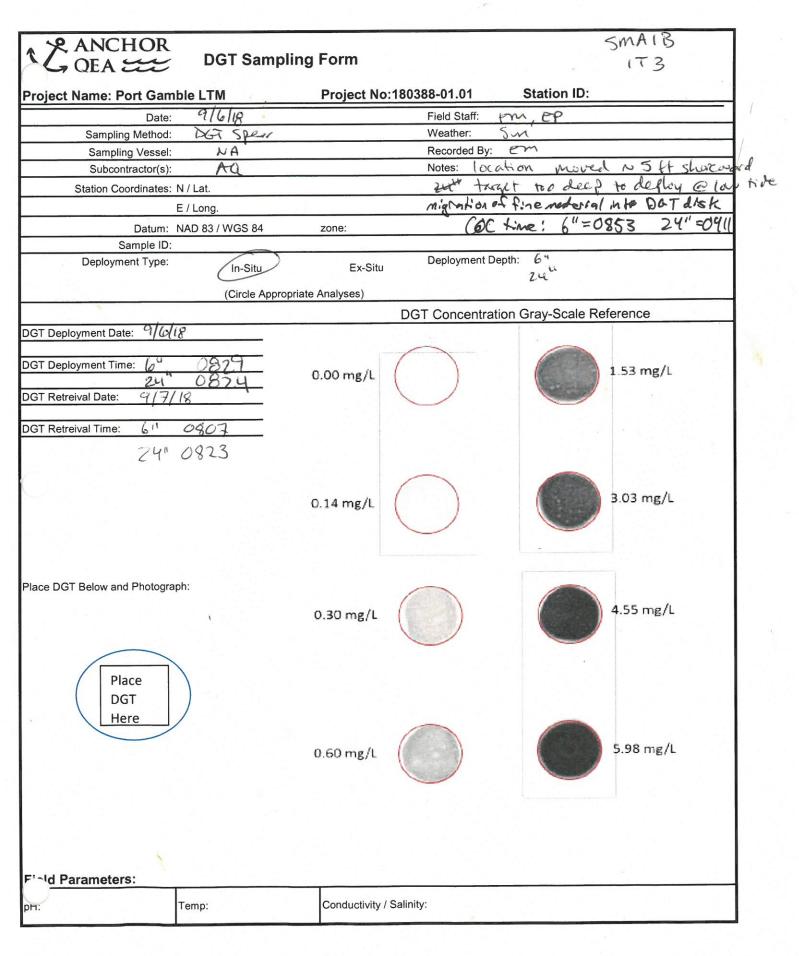
2 Email sample confirmation report to labdata@anchorgea.com

Additional notes/comments:

Relinquished By:	Company: Anchor QEA LLC.	Received By:	Company:	Anchor QEA LLC
Signature/Printed Name	Date/Time	Signature/Printed Name		Date/Time
Relinquished By:	Company:	Received By:	Company:	
Signature/Printed Name	Date/Time	Signature/Printed Name		Date/Time







Project Name: Port Gamble LTM	Project No:	180388-01.01	Station ID-	SMAZCI	-
Date: 9 6 18		Field Staff: C			=1
	each	A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWNER OWNER OWNER OWNER OWNER	JAAN		_
Sampling Vessel: Land		Recorded By:	CD		
Subcontractor(s):		and the second s	low on We	235	
Station Coordinates: N / Lat.		COC 10	030		
E / Long.					
Datum: NAD 83 / WGS 84	zone:				
Sample ID:	· · ·				
Deployment Type: In-Situ	Ex-Situ	Deployment Dep	th: ~ [[
			6		
(Circle Appro	opriate Analyses)				
		DGT Concentratio	n Gray-Scale R	eference	
OGT Deployment Date: 91613					
DGT Deployment Time: 6901		\frown			
	0.00 mg/L	()		1.53 mg/L	
OGT Retreival Date: 9718					
DGT Retreival Time: 0756					
		_			14
		()		1 0 0 0 h	1
	0.14 mg/L	()		3.03 mg/L	
		\bigcirc			1.1
Place DGT Below and Photograph:		\frown			
				4.55 mg/L	
	0.30 mg/L			4.55 mg/L	
Place					
DGT					
Here					
	0.60 mg/L	$\left(\begin{array}{c} \\ \end{array} \right)$		5.98 mg/L	
inid Parameters:					
т. 7.83 тетр: 57.7	F Conductivity / S	Salinity: 0.01	molan		
	1	0.3 P	ms/cm	and the billion of the second s	1

QEA E	DGT Sampling F	Form		
Project Name: Port Gamble		Project No	:180388-01.01	Station ID: SMAZCET1
Date:	216113		Field Staff:),56
N -	rohe on beach		Recorded By: C	-0
Subcontractor(s):			Notes: Dee	on East
Station Coordinates: N / L	.at.		0	
E/L	.ong.			
War and a label and a second data	83 / WGS 84 z	zone:	COC time	: 1025
Sample ID: Deployment Type:	In-Situ	Ex-Situ	Deployment Depth:	24"
	(Circle Appropriate A	nalyses)	DCT Concentration	Gray-Scale Reference
DGT Deployment Date: 9 6 8			DGT Concentration	
DGT Deployment Time: 〇イリ DGT Retreival Date: 9 (ア)	0. 18	00 mg/L	\bigcirc	1.53 mg/L
DGT Retreival Time: 075	6 0803			
	0.	14 mg/L	\bigcirc	3.03 mg/L
Place DGT Below and Photograph:	0.	.30 mg/L		4.55 mg/L
Place DGT Here				
	0.	60 mg/L		5.98 mg/L
	() (E)			
Finld Parameters: SW	6101			
Tem	ip:	Conductivity /	Salinity:	

pject Name: Port Gamble LTM	Project No:18	0388-01.01	Station ID: S	MAZCETZ
Date: 9619	N	Field Staff: この	.56	
	beach	Weather: Swr		
Sampling Vessel: Land		Recorded By:	-0	
Subcontractor(s):		Notes: Sans		12
Station Coordinates: N / Lat.		Coc	- 1117	
E / Long.				
Datum: NAD 83 / WGS 84 Sample ID:	zone:			
Deployment Type: In-Situ	Ex-Situ	Deployment Dept	" 6"	
			0	
10	ppropriate Analyses)			
Deployment Date: 916113	D	GT Concentration	Gray-Scale Re	ference
Deployment Date: 916113		\frown		
Deployment Time: 0652	0.00			1.53 mg/L
Retreival Date: 9719	0.00 mg/L			1.33 mg/ L
Theire var Date. 717113				
Retreival Time: OS33				
		_	-	
	(2.02/
	0.14 mg/L)		3.03 mg/L
e DGT Below and Photograph:			1	
e DGT Below and Photograph.	1			
	0.30 mg/L			4.55 mg/L
Place				
DGT				
Here		-		
	0.00			5.98 mg/L
	0.60 mg/L			5.96 mg/L
			\smile	
			·	
d Damana ata wa				
d Parameters:	~0			<u>A</u>
8-28 Temp: 581	Conductivity / Salini	0.90	milia	

Project Name: Port Gamble LTM		180388-01.01	Station ID: SMA2	CFT2
Date: 9/6/16	Floject No.		-0, 5C	
	each		Vnn-n	
Sampling Vessel: Lond		Recorded By:	50	
Subcontractor(s):		Notes:		
Station Coordinates: N / Lat.				
E / Long.	North State Stat	Cacli	. 1201	
Datum: NAD 83 / WGS 84	zone:	(OL find	: (056	
Sample ID: Deployment Type: In-Situ	Ex-Situ	Deployment De	epth: 24"	
(Circle Appro	priate Analyses)			
~ 1.1		DGT Concentrat	ion Gray-Scale Reference	
OGT Deployment Date: 916119				
OGT Deployment Time: 0655		()		h
	0.00 mg/L		1.53 mg	/L
GT Retreival Date: 917113		\smile		
GT Retreival Time:				
	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1			
	2			
		\frown		<i>b</i> .
	0.14 mg/L		3.03 mg	/Ľ
		\smile		
lace DGT Below and Photograph:		\frown		
	0.30 mg/L	()	4.55 mg	/L
Place				
(DGT)				
Here		-		
			5.98 mg	./1
	0.60 mg/L		5.98 mg	<i>,</i> / L
" 'd Parameters: Steh 2 (3)			
'd Parameters:				
H: Temp:	Conductivity / S	alinity:		

QEA CEC DGT Sam	pling Form				
roject Name: Port Gamble LTM	Project No:18	80388-01.01	Station ID:	MA2 CIT	2
Date: 9613		Field Staff: C	D.5C		_
	each	and the second se	sunny		
Sampling Vessel: Land		Recorded By:	60		
Subcontractor(s):		Notes: She	lowonger	WEST	_
Station Coordinates: N / Lat.					
E / Long.					
Datum: NAD 83 / WGS 84	zone:	COC tin	re: 1047		
Sample ID:					
Deployment Type: In-Situ	Ex-Situ	Deployment De	epth: L'1		
			U		
(Circle Ap	propriate Analyses)				-
		DGT Concentrat	ion Gray-Scale R	eference	
GT Deployment Date: 916118				병 이상은 가격을 내	
GT Deployment Time: 0812 0912		\frown			
	0.00 mg/L)	(keessi)	1.53 mg/L	
GT Retreival Date: 97113	×				
GT Retreival Time: 00.50					
				김 씨는 것 같은 것 같아.	
	1			2.02 //	
	0.14 mg/L			3.03 mg/L	
lace DGT Below and Photograph:		\frown			
				4.55 mg/L	
	0.30 mg/L			4.55 mg/L	
Place					
Here				그는 아파 같아요.	
Here					
	0.60 mg/L			5.98 mg/L	
			-		
ald Parameters:					
the second se	FO Contration	linite 61 no	max hist	icing molen	
H: 8.15 Temp: 58.6	Conductivity / Sa	inity. 91,00	max on n	h)/cn	٦
			ot		

Project Name: Port Gamb	ole LTM	Project No:	180388-01.01	Station ID: SM A	2 CIT3
Date:	916/18		Field Staff: 6	and the second se	
Sampling Method:	71 8	ach	Weather: Sv		
Sampling Vessel:	Land		Recorded By: 2	A 2	
Subcontractor(s):	Constant of the American		Notes: Deep	on past	
Station Coordinates: N	V / Lat.		(0)	- 1052	
E	/ Long.				
	AD 83 / WGS 84	zone:			
Sample ID:		20110.			
Deployment Type:	1. 01	F 01	Deployment Depth	1: 2411	
	In-Situ	Ex-Situ		24.	
	(Circle Appro	priate Analyses)			
			DGT Concentration	Gray-Scale Reference	e l
GT Deployment Date:	619				
			\frown		
GT Deployment Time:	5817	0.00 mg/L	()	1.53	mg/l
	510	0.00 mg/t			-6/ L
GT Retreival Date: 9	17/18		\smile		
GT Retreival Time:	3852				
	032				
			\frown		
			()	3.03	mal
		0.14 mg/L		5.05	ng/c
			\bigcirc		
ace DGT Below and Photograph	n:		-		
		0.30 mg/L		4.55	mg/L
			-		지 말을 가지 않는 것
Place					
DGT					
)				
Here			\frown		
				E 08	mg/L
		0.60 mg/L		5.96	mg/L
	5EE 36	.)			
	566 3L	31			Sec. Sec.
Id Parameters:	JUN				

roject Name: Port Gamble LTM	ampling Form Project No:	180388-01.01	Station ID: Sm	AZCIT
Date: 9/6/18		Field Staff: C		
Sampling Method: Prove 10	beach	Weather: S		
Sampling Vessel: Land		Recorded By:	CO	
Subcontractor(s):		Notes:		£1
Station Coordinates: N / Lat.				1
E / Long.				
Datum: NAD 83 / WGS 8	the second se	COC tin	10 = 1036	
Sample ID: Son A-2	EFT CP_	Dealerment D	anthe Cill	
Deployment Type: In-Si	tu Ex-Situ	Deployment	epth: 6"	
(Circle	Appropriate Analyses)			
A - 1		DGT Concentrat	ion Gray-Scale Refere	nce
T Deployment Date: 9613				
0636	-	\frown		
ST Deployment Time: 0636	- 0.00 mg/L	()	1.5	3 mg/L
ST Retreival Date: 97718				
TRetreival Time: 0746				
		\frown		
	0.14 mg/L	()	3.0	3 mg/L
	0.14 mg/c			e.
		\smile		
ace DGT Below and Photograph:				
ice DGT Below and Photograph.		\bigcirc		
	0.30 mg/L	(4.5	5 mg/L
Place				
(DGT)				
Here		-		
				10 mm = /1
	0.60 mg/L	(5.5	98 mg/L
	U.S.			
'd Parameters: 57	.8 F			
102 - 000		Colinity of C	10 0 1	
7.93 CD Temp: 25.0	G Conductivity / S		ppt	
8.05		10		
QND			Co a lam	

reject Name: Port Camble I TM	Project No.	:180388-01.01	Station ID: SMAZCIT	-4
roject Name: Port Gamble LTM	Project No			
Date: 9 6 3	hand	and the second	ED,JC	
Sampling Method: Dobe in	beach	Weather:	SUMY	
Sampling Vessel: Land Subcontractor(s):		Recorded By: Notes:		
		Notes: (20	C (C_ 1023	
Station Coordinates: N / Lat.				
E / Long.				
Datum: NAD 83 / WGS 84	zone:			
Sample ID:		Depleyment D		
Deployment Type: In-Situ	Ex-Situ	Deployment	Depth: 24"	
(Circle A	ppropriate Analyses))		
	ppropriate / maryood/	DCT Consertes	tion Crow Coole Deference	
GT Deployment Date: 9/6/19		DGT Concentra	tion Gray-Scale Reference	
GT Deployment Date: 916118		\sim		
GT Deployment Time: 0612		()		
	0.00 mg/L	()	1.53 mg/L	
GT Retreival Date: 9718		\checkmark		
GT Retreival Time: 0753				
		_		
	0.14 mg/L	()	3.03 mg/L	
ace DGT Below and Photograph:				
ade Der Below and Photograph.				
	0.30 mg/L		4.55 mg/L	
		\sim		
Place				
DGT				
Here		-		
	0.60 mg/L		5.98 mg/L	
Harameters: SEE 4	(5)			
'd Parameters: SILL T	61			
Parameters:				

roject Name: Port Gamble LTM	Project No:1	80388-01.01	Station ID:5	MA2 CITS
Date: 91613		Field Staff:	CD, JC	
Sampling Method: Prope on	beach	Weather: S	unny	
Sampling Vessel: Land		Recorded By:	c.n.	
Subcontractor(s):		Notes: 5h	allow on W	est
Station Coordinates: N / Lat.				
E / Long.				
Datum: NAD 83 / WGS 84	zone:	COC tim	c: 1135	
Sample ID:				
Deployment Type: In-Situ	Ex-Situ	Deployment De	epth: GII	
			U	
(Circle A	Appropriate Analyses)			
0112		DGT Concentrati	on Gray-Scale Re	eference
BT Deployment Date: 968				
GT Deployment Time: 0736		\frown		
	0.00 mg/L	}		1.53 mg/L
GT Retreival Date: 97718				
BT Retreival Time: 0823				
	1			
	0.14 mg/L			3.03 mg/L
	\ \			
ace DGT Below and Photograph:		-		
	1			AFF (I
	0.30 mg/L			4.55 mg/L
Place				
Here				
Here				
	0.60 mg/L			5.98 mg/L
	0.001116/1			
nd Parameters:				
	a (.º		1	
815 Temp: 57	ι γ Conductivity / Sal	inity: 0,20	o ms/cn t	n
	the second se		1	

Project Name: Port Gamb	DGT Samplin		o:180388-01.01	Station ID:SMA2 CITS	
Date:	9/6/13		Field Staff: C		=1
Sampling Method:	Probe in beac	h	10.84.	n'y	
Sampling Vessel:	Land		Recorded By:	CD	_
Subcontractor(s): Station Coordinates: N			Notes: Va	epon Eist	-
	/ Long.		COC tim	Nr 1111	-
	AD 83 / WGS 84	zone:			-
Sample ID:		20110.			
Deployment Type:	In-Situ	Ex-Situ	Deployment De	pth: 24"	1
	(Circle Appropria	ite Analyses)			
DGT Deployment Date:	110		DGT Concentration	on Gray-Scale Reference	
DGT Deployment Date: 9	16 18 F39	0.00 mg/L	\bigcirc	1.53 mg/L	
DGT Retreival Date:	7 13	0.00 Mg/L	\bigcirc		
DGT Retreival Time:	331	0.14 mg/L		3.03 mg/L	
Place DGT Below and Photograph		0.30 mg/L		4.55 mg/L	
Place DGT Here		0.60 mg/L		5.98 mg/L	
Find Parameters: SE	E 5 (s)				

GLACE	pling Form		Chatian ID: CMA2	1756
Project Name: Port Gamble LTM	Project No:18		Station ID: SAA2	-11
Date: 916118 Sampling Method: Proje in bea	ach		Unny	
Sampling Method: Probe in Dea Sampling Vessel: Land	ach	Recorded By:	CD CD	
Subcontractor(s):			allow on West	
Station Coordinates: N / Lat.			COC 1044	
E / Long.				
Datum: NAD 83 / WGS 84	zone:			8.1
Sample ID:			2.11	
Deployment Type: In-Situ	Ex-Situ	Deployment De	epth: 6"	
(Circle App	ropriate Analyses)			
		DGT Concentrat	ion Gray-Scale Reference	
DGT Deployment Date: 9[6]18				
		\frown		
OGT Deployment Time: (375()	0.00 mg/L		1.53 mg/L	
DGT Retreival Date: 97719				
		\smile		
DGT Retreival Time: 0843				
		\frown		
			3.03 mg/L	
	0.14 mg/L)	pico mg/	
		\checkmark		
Place DGT Below and Photograph:				
	0.30 mg/L		4.55 mg/l	•
		-		
Place				
Here				
	0.60 mg/L		5.98 mg/l	-
Find Parameters:				
DT: 8.21 Temp: 58.2	- 0	maxa	ut blinking 4,00 m	i
	F Conductivity / Sa	linity: 10000	100 m	sim

Project Name: Port Gaml	ole LTM	Project N	o:180388-01.01	Station ID: SMA	2 GIT
Date:	9610		Field Staff: 4	0.56	
Sampling Method:	Probe on hear	ch	Weather: 5	1217	
Sampling Vessel:	Land		Recorded By:	60	
Subcontractor(s):	-		Notes: Ve	ef east	
Station Coordinates: 1	3			0	
E	E / Long.		6 10 L	11	
	NAD 83 / WGS 84	zone:	COC tim	e: 1106	
Sample ID:			Dealey ment Dea	ath. N	
Deployment Type:	In-Situ	Ex-Site	u Deployment Dep	oth: 2411	
	(Circle Appropria	ate Analyses)			
	. 1		DGT Concentratio	on Gray-Scale Referenc	e
DGT Deployment Date: 9	6/19		c		
			\frown		
DGT Deployment Time:	+>3	0.00 mg/L	()	1.53	ng/L
DGT Retreival Date:	7/18	0.00			
	7/10				
DGT Retreival Time:	341				
			\bigcap		
		0.14 mg/L	()	3.03	mg/L
Place DGT Below and Photograp	h:		-		
					ma /I
		0.30 mg/L		4.55	ng/L
Place					
DGT)				
Here				-	
		0.60 mg/L	()	5.98	mg/L
영화 방법을 위한 것이 없다.					
/	E 6 (5)				
Find Parameters: 52	260)				
		T			
pn: T	emp:	Conductivity	/ Salinity:		

QEA COST DGT Sa	mpling Form		SMAZC	IT7
oject Name: Port Gamble LTM	Project No:18	80388-01.01	Station ID: SMA2	CIT7
Date: 91610		Field Staff: CD	JL	
Sampling Method: PNDE ON	beach	Weather: Sun	22	
Sampling Vessel: Lank		Recorded By: C		
Subcontractor(s):		Notes: Shellor	w on West	
Station Coordinates: N / Lat.		All Wer	1125	
E / Long.		(ic 1125	
Datum: NAD 83 / WGS 84	zone:			
Sample ID: Deployment Type:		Deployment Depth:	611	
In-Situ	Ex-Situ	Deployment Depan	6	
(Circle A	Appropriate Analyses)			
× 1 2		DGT Concentration	Gray-Scale Reference	
T Deployment Date: 963				
	1020	\frown		
T Deployment Time: 0919 dup	0920 0.00 mg/L		1.53 mg	/L
TRetreival Date: 97718				
11 11		_		
TRetreival Time: C+28 duy	0729			
	. 1		3.03 mg	/1
	0.14 mg/L		5.05 mg	
		\smile		
ace DGT Below and Photograph:		\frown		
	0.30 mg/L		4.55 mg	s/L
	0.50 mg/c		I IN	100
			and the second s	
			1	
Place				
DGT				
Here		\frown		
	0.00 11		5.98 m	e /1
	0.60 mg/L		5.50 m	37-
	-ù			
ald Parameters: BITT 58.2	F			
PAR A	Conductivity / Sa	linity: Oill M	e l. e	
Temp:	Conductivity / Sa		1/CM	

Project Name: Port Gamble LT	M Project	No:180388-01.01	Station ID: SMA2C	IT7
	2018	Field Staff:)/EP	
Sampling Method: Real	ch prode	Weather: Sun	23	
Sampling Vessel:		Recorded By: F	P 0(-1137	
Subcontractor(s):		Notes.	00 1137	
Station Coordinates: N / Lat.	-	and the second		
E / Long				
Datum: NAD 83 Sample ID:	3 / WGS 84 zone:			
Deployment Type:	In-Situ Ex-	Situ Deployment Dep	^{th:} 24"	
	(Circle Appropriate Analyses)			
	(Shele rippiophate rind)300)	DGT Concentratio	on Gray-Scale Reference	
OGT Deployment Date: 9/6/2018		DOT CONCENTRATE		
17 1		\frown		
OGT Deployment Time: 0927	0.00 mg/	и ()	1.53 mg/	L
DGT Retreival Date: 9/7/18				
OGT Retreival Time: 0731				
		김 아니 방법을 위해 같다.		
		\sim		
	0.14		3.03 mg/	L
	0.14 mg/			
Place DGT Below and Photograph:				
	0.30 mg	/L (4.55 mg/	L
Place				
(DGT)				
Here		_		
				1 4
	0.60 mg	/L ()	5.98 mg/	L
~ /	70			
Harameters: SEE	7(5)			

roject Name: Port Gamble LTM	Project No:180388-01.01 Station IDS	NAZCITS
Date: 9618	Field Staff: CD, JC	
Sampling Method: Properta	beach Weather: SUNAY	
Sampling Vessel: Lond Subcontractor(s):	Notes: Shallow on We	16
Station Coordinates: N / Lat.	COL 1100	3.7
E / Long.		
Datum: NAD 83 / WGS 84	zone:	
Sample ID:		
Deployment Type: In-Situ	Ex-Situ Deployment Depth: 611	
(Circle A	ppropriate Analyses)	
	DGT Concentration Gray-Scale Ref	erence
GT Deployment Date: 9419		
GT Deployment Time: 0721		
0 7 7 7	0.00 mg/L	1.53 mg/L
GT Retreival Date: 9716		
GT Retreival Time: 0819		14.14.14.14
5 • •		
	0.14 mg/L	3.03 mg/L
ace DGT Below and Photograph:]
ace DOT Below and Thotograph.		
	0.30 mg/L	4.55 mg/L
Place		
DGT Here		
Here		
	0.60 mg/L	5.98 mg/L
old Parameters:		
n: 🔿 🖓 Temp: < Q	3F° Conductivity/Salinity: 0,20 ms/cm 0:4ppz	

QEA E	DGT Samp	ling Form			
roject Name: Port Gam	ble LTM	Project No	:180388-01.01	Station ID:5M	AZCTT
Date:	91610	2		DIJC	-
Sampling Method:	Probe in	beach		unny	
Sampling Vessel:	land		Recorded By:	<u>(</u>)	
Subcontractor(s):			Notes: Dee		
Station Coordinates: I				Coc 1108	
	E / Long.				
	NAD 83 / WGS 84	zone:			
Sample ID:					
Deployment Type:	In-Situ	Ex-Situ	Deployment De	pth: 24"	
	(Circle Appro	priate Analyses)			
	(0.0070000		DGT Concentrati	on Gray-Scale Refere	
GT Deployment Date: 91	410		Der Concentrati	Un Gray-Scale Relefel	
	<u>0, '</u>		~	-	
GT Deployment Time: C	724	0.00	$\left(\right)$	15	3 mg/L
	1-1-1-0	0.00 mg/L		1.5	sing/c
GT Retreival Date: C	11/10		\smile		
GT Retreival Time:	70.11				
	2 9 A A				
			\frown		
		0.14 mg/L	()	3.0	3 mg/L
		0.14 (16/2			0.
			\smile		
ace DGT Below and Photograp	h:		\frown		
		0.30 mg/L		4.5	5 mg/L
		0.50 mg/ c			
Place					
DGT)				
Here			-		
		0.60 mg/L		5.9	8 mg/L
	1				
56	6 8 (5)				
<u> 1d Parameters:</u> 5년	6 8 (5)				

roject Name: Port Gamble LTM	Project No:1	80388-01.01	Station ID: 5	nA2 CITO
Date: 9/6/19		Field Staff: 40,		
	.ch	Weather: Sul	חח	
Sampling Vessel: Land		Recorded By: C	-0-	
Subcontractor(s):		Notes: sha	low on h)
Station Coordinates: N / Lat.				
E / Long.				
Datum: NAD 83 / WGS 84	zone:	COC the	: 1124	
Sample ID:				
Deployment Type: In-Situ	Ex-Situ	Deployment Depth:	611	
III-Situ	Ex-Situ		0	
(Circle Appro	opriate Analyses)			
		DGT Concentration	Gray-Scale Refe	erence
GT Deployment Date: 9 6 1 8				
		\frown		
GT Deployment Time: 0709	0.00 mg/L			.53 mg/L
GT Retreival Date: 97710	0.00 mg/c			
GT Retreival Date: 97718		\smile		
GT Retreival Time:				
		\frown		
		()		3.03 mg/L
	0.14 mg/L			
		\bigcirc		
ace DGT Below and Photograph:		-	-	
	0.30 mg/L			4.55 mg/L
		-		
Place				
DGT				
Here		0		
				5.98 mg/L
	0.60 mg/L			5.90 mg/L
old Parameters:				
T: 8.32 Temp: 57,9 F	Conductivity / S	alinity: 0,22 0,5 p	mslim	
T: 8,32 Temp: 57,9 F	Conductivity / S	annity. Crack	1 1 1 1 1 1	

GLACE	GT Sampling F		100000 01 01	Otation ID.	SMARCITO
roject Name: Port Gamble LTM	71	roject No	:180388-01.01	- 1	INFACTIC
	he is beach	h	Field Staff: C	UNY	
Sampling Vessel:	and	1	Recorded By:	GD	
Subcontractor(s):	~		1.0	pon basi	
Station Coordinates: N / Lat.			Co		
E / Long.					
Datum: NAD 83 /	WGS 84 zo	one:			
Sample ID:					
Deployment Type:	In-Situ	Ex-Situ	Deployment Dep	th: 24 "	
	(Circle Appropriate An	alvses)			
	A CONTRACT OF A CONTRACT.		DGT Concentratio	n Grav-Scale Re	ference
GT Deployment Date: 91618					
		F	\frown		
GT Deployment Time: 0700	0.0	00 mg/L	()		1.53 mg/L
GT Retreival Date: 9771	3	-			
			-		
GT Retreival Time: 0347	<u> </u>				
			()		3.03 mg/L
	0.1	4 mg/L	()		5.05 mg/c
			\smile		
					1
lace DGT Below and Photograph:			\bigcap		
	0.3	30 mg/L			4.55 mg/L
			<u> </u>		
Place					
DGT					
Here					
Here					
	0.6	50 mg/L			5.98 mg/L
	and				
Ind Parameters: SEE	9(5)				
n: Temp:	C	onductivity /	Salinity:		

LO 4	Daily Lo	Anchor QEA L.L.C.	
	NCHOR EA =====	720 Olive Way, Suite 1900	
		Seattle, WA 98101	
		Phone 206.287.9130 Fax 206.287.9131	
ROJECT NAM	E: PG OMMP Long Term Monitoring	DATE: 9/6/18	
ITE ADDRES	Port Gamble, WA	PERSONNEL: Th, JC, EP CA	
WEATHER:	WIND FROM: N NE E SE S SW SUNNY CLOUDY RAIN	W NW LIGHT MEDIUM HEAVY ? TEMPERATURE: °F °C [Circle appropriate units]	
TIME	COMMENTS		
0545	on, IC EP, CD crive on site	, Hes thilgete	
	AM/EP TU SMA-1	/ / /////	
	JL/LD to SMA-Z		
0630	ASTALL DET C SMA.	1 TT7, duo 24"	
0645	pred for SMAL I	71	
0120		equeter brus, which	
V+30	for tibe to drip.	conduct budge provide	
0870	· Harl a at TTO	in water, moved stretion	
0010	collect SMALL II3	C i co b	
Ohir	10 tet shoreward to allo		
0845	EMIER to SMAZ to assis		
0906	Collect bioassay SMAZC		
	SMA2C-179-0-10-1909		
0920	boassay SMAZC-IT		
	SMA2C-172-0-10-1	30906 @ 0920 W	
0930	bioassay (T5		
		0-180906 @9302	
	All is habitat substrate me	sterial of	
04	SAND W/ GRAVET, Moist, 9	nur, lose, 75%. M-sand	
	75% F-C gravel.	(, ,	
Days	SMALC- 178-0-10-1800	106 CO940 A	
0950	SMA7C-114-0-10-180706 CORSO A		
1000	SMA2C-171-0-10-180906 01000 A		
1010	SmA2C-177-0-10-19090601010		
1030		take simples to Econolysts	
10.0	poor of Josefa	in a my les re accor fis	
		·····	
·······			
		EL	
	1 1 4		
	c, $1/1$		

	Daily Log			
V20	NCHOR A EA EE Se	nchor QEA L.L.C. 20 Olive Way, Suite 1900 eattle, WA 98101 100ne 206.287.9130, Fax 206.287.9131		
ROJECT NAM		DATE: 916/13		
SITE ADDRESS		VEL: CD, JC, EM, ER		
WEATHER:	WIND FROM: NE E SE S SW W NW SUNNY CLOUDY RAIN ?	Image: Construction of the second s		
TIME	COMMENTS			
0545	Arrive site	-		
0600	HJ-S meeting	1		
0620	split into 2 soups cot J.	L/EMDER		
	tor deployment	/		
0.0.0	Deploy Station IT1 through	9 60250		
0939	Collect bio-grab samples			
1015	pEmob, clean up scar			
1100	Depart size / which			
1200	Deput site			
- and a state		4		
		1641.1		
	(Bh			
		·····		
		and a second		
		and the second sec		
	14.	1 .		
Signature:	/m/m	pg of		
	(

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	Daily Lo	bg		
QEA E		Anchor QEA L.L.C. 720 Olive Way, Suite 1900 Seattle, WA 98101 Phone 206.287.9130 Fax 206.287.9131		
ROJECT NAME	: PG OMMP Long Term Monitoring	DATE: 9/7/18		
SITE ADDRESS:	Port Gamble, WA	PERSONNEL: EM, JC, EP, CD		
WEATHER:	WIND FROM: N NE E SE S SW SUNNY CLOUDY RAIN	W NW LIGHT MEDIUM HEAVY ? TEMPERATURE: °F @> ° [Circle appropriate units]		
TIME	COMMENTS	· · · · · · · · · · · · · · · · · · ·		
0.700	team arrives on site discus	ss Order of operations & Ites		
0720	EM/EP PULLOUT DOTS	1		
0815	All dats pulled, EP.	to SMAZ to assist w/ DGT		
0945	Which bishesay C	SmAl		
5555	II S			
0900	EM to SIMA-2 to process	bioassay		
	SMAIB -IT2 - 0- 10 - 18090	7 C 0845		
	SMAIB- IT7-0-10-1909			
	SMAZC - IT3 -0-10-18091			
	SMA26 - 176 -0-10-1801			
1015	Em to Ecothalysts to delive	1 somples		
	0 0	Λ		
	2			
		¢		
((4))				
		IBM		
		here and her		
		×		
		<u>.</u>		
		λ.		
0	10m 11/1	1.1		
Signature:		pg of		

Daily Log			
	NCHOR EA =====	Anchor QEA L.L.C. 720 Olive Way, Suite 1900 Seattle, WA 98101 Phone 206.287.9130 Fax 206.287.9131	
PROJECT NAM	E: PG OMMP Long Term Monitoring	DATE: 9 7 18	
SITE ADDRESS		PERSONNEL: CD. JL, Em, EB	
WEATHER:	WIND FROM: N NE E SE S S SUNNY (LOUDY) RAIN	W W NW LIGHT MEDIUM HEAVY ? TEMPERATURE: °F C . °C [Circle appropriate units]	
TIME	COMMENTS		
0700 0725 0910 0920 1015 1145	Arnue site, HJS, C	sor Unation SC 1 through 9 SIL hiles, sediment data	
Signature:	Ma Jun	pgof /	

pg _/___of /_____



Г

DATE: 9/6/10

PROJECT NAME: Port Gamble OMMP LTM

PROJECT NO: 180388-01.01

DAILY SAFETY BRIEFING

PERSON CONDUCTING MEETING:	HEALTH & SAFETY OFFICER:	PROJECT MANAGER:
TOPICS COVERED:		
Emergency Procedures and Evacuation Route	Lines of Authority	Lifting Techniques
Directions to Hospital	Communication	Slips, Trips, and Falls
HASP Review and Location	Site Security	Hazard Exposure Routes
Safety Equipment Location	Vessel Safety Protocols	Heat and Cold Stress
Proper Safety Equipment Use	Work Zones	Overhead and Underfoot Hazards
Employee Right-to-Know/MSDS Location	Vehicle Safety and Driving/Road Conditions	Chemical Hazards
Fire Extinguisher Location	Equipment Safety and Operation	Flammable Hazards
Eye Wash Station Location	Proper Use of PPE	Biological Hazards
Buddy System	Decontamination Procedures	Eating/Drinking/Smoking
Self and Coworker Monitoring	Other:	

WEATHER CONDITIONS: Son, Cool	ATTE	NDEES
	PRINTED NAME	SIGNATURE
	Even Maleryll	Ula has
DAILY WORK SCOPE:	Jasn Comelte	lla las
	Calvin Dougles	Vel QC
	El: Patmont	Ate
SITE-SPECIFIC HAZARDS:		
		Ch



SAFETY COMMENTS:

DATE:

PROJECT NAME: Port Gamble OMMP LTM

G

7/18

PROJECT NO: 180388-01.01

DAILY SAFETY BRIEFING

PERSON CONDUCTING MEETING:	HEALTH & SAFETY OFFICER:C	T	PROJECT MANAGER:	JC
TOPICS COVERED:				
Emergency Procedures and Evacuation Route	Lines of Authority		Cifting Techn	iques
Directions to Hospital	Communication		Slips, Trips, a	nd Falls
HASP Review and Location	Site Security		Hazard Expos	sure Routes
Safety Equipment Location	Vessel Safety Proto	ocols	Heat and Col	d Stress
Proper Safety Equipment Use	Work Zones		Overhead an	d Underfoot Hazards
Employee Right-to-Know/MSDS Location	Vehicle Safety and Conditions	Driving/Road	Chemical Haz	zards
Fire Extinguisher Location	Equipment Safety a	and Operation	🗌 Flammable H	azards
Eye Wash Station Location	Proper Use of PPE		Biological Ha	zards
Buddy System	Decontamination P	Procedures	Eating/Drinki	ng/Smoking
Self and Coworker Monitoring	Other:			
WEATHER CONDITIONS: Cloud	4	PRINTED	ATTENDEE	SIGNATURE
		Elin Ma	akzyk /	14 Mapl
DAILY WORK SCOPE: pullon process bisasso	it DG-TS	Jasa C Calvin Eli Patric	Dugla C	2 D Vale
SITE-SPECIFIC HAZARDS:				

1 of 1

184 - 20 M

		ANCHO		Codiment F				
\bigcap		QEA :		Sediment Fi			- 1 - 1	
		No: 180388-	Bamble - OMMP LTM		Station ID:	SMH +	-ST1	
	Field St	taff: EM	AK	and the second			ver grab	
	Contrac	ctor: MSS	110		Logged By	AR	Jure	
		Datum: ft ML	.LW			orizontal Datum: NAD83 WA SP North		
		ter Height		Tidal Elevations			ne Elevation (ft MLLW)	
	DIMDE	pth Sounder:		Time: 0950		1	r Depth + Tidal Elevation	
	DTM Le	ad Line: 17,0	>	Height: 🔂 🧯	3-1+	-1	Di7 ff	
					21		Sample Acceptability Criteria:	
	Notes:						1) Overlying water is present	
8 2	Notes.						 Water has low turbidity Sampler is not overfilled 	
							4) Surface is flat	
	-						5) Desired penetration depth	
	Grab #	Time	Field Collection	on Coordinates Easting/Longitude W	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc	
	I	0957	47°51,4241'		y	15	Jaw shightly agapta on grandly	
-								
\bigcirc								
						-		
		5						
	Sample	Description:	surface cover, (density), m anoxic layer, debris, plant	noisture, color, minor modifi matter, shells, biota	ier, MAJOR mod	lifier, other co	nstituents, odor, sheen, layering,	
-	a	f sorfac	e, sibstatiu	l sub-ang	lar a	866Le.	maevo-algal	
		barnaa	ers, crab,	frih .				
-		ravel ne havel no	Cobble the	avgnor se	10% San Sign	d, 10%	dor, trace	
-			USILTY G	AAVEL (GHT)	w/ SKF			
	0.000				A			
-	Sample I	dentification a	nd Time: SMAL		nAI-ST-	-0-10-	Ly TIMV 095/ Comp-186917	
	Sample (Containers:			- 015	7		
$\overline{\bigcirc}$	Analyses	(circle all that	apply): Çadmium, (AHs, D/Fs, Larval B	Bioassay) Fu	II Suite Bio	assay Archive	
Ł								

		Bamble - OMMP LTM		Station ID:	SMAI	-ST2
	No: 180388-			Date: 9/	17/18	
Contra	taff: EM,	<u>n</u> <u>r</u>		Logged By:	thod: HE	wergrah
	Datum: ft ML	.LW				D83 WA SP North
	ter Height		Tidal Elevations			e Elevation (ft MLLW)
DTM De	epth Sounder:		Time:			r Depth + Tidal Elevation
DTM Le	ad Line: 21,	4 -(+	Height: 6,9 (` 	-10	4.5ft
Notes:		÷				Sample Acceptability Criteria: 1) Overlying water is present 2) Water has low turbidity 3) Sampler is not overfilled 4) Surface is flat
						5) Desired penetration depth
Grab #	Time	Field Collectio	on Coordinates Easting/Longitude W	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc
	1017	47° 51, 4438 '	122° 34.8047'	У	15	dence closed
	n					
				54		
Sample	Description:	anoxic layer, debris, plant	matter, shells, biota	0		nstituents, odor, sheen, layering
	Dio19. (rabs, parine	reles.			
l	0-15 l	th sif (10%)	JE grey h Sand (150	sell gra	Led f	RAVEL (GW) Fai (Worms),
	•					
ample	Identification a	nd Time: SMA1	-572-18091	7 - 41	rehw	only
	Containers:	Comp: 5	MA1-ST-0-	:10 - Con	1p-18	0917

ANCHOR								
	V- QEA CEA Surface Sediment Field Log							
Project Name: Port Gamble - OMMP LTM Station ID: SMAI-ST3 Project No: 180388-01.01 Date: 9/17/18								
Field Staff: EM, MC Sample Method: Power grach								
Contra				Logged By		over gran		
Vertica	I Datum: ft ML	.LW				D83 WA SP North		
	ater Height		Tidal Elevations			ne Elevation (ft MLLW)		
DTM D	epth Sounder:		Time: 1047		(-) Wate	r Depth + Tidal Elevation		
DTM Le	ead Line: 🍰	17277	Height: 7.5 f	+	-1	5.5 ft		
						Sample Acceptability Criteria:		
						1) Overlying water is present		
Notes:						2) Water has low turbidity		
						3) Sampler is not overfilled		
		-				 Surface is flat Desired penetration depth 		
						Comments: jaws close, good		
Grab #	Time	Field Collection	on Coordinates	Sample Accept (Y/N)	Recovery	seal, winnowing, overlying		
		Northing/Latitude N	Easting/Longitude	Accept (T/N)	Depth (in)	water, surface intact, etc		
		47 51.4048	122°51.7864'			taxes cocked,		
1	1040	11 5.1010		,)	10cm	NOT FULLY CLOSED -		
	10 10			\sim	10000	GMVEL NU JAW		
			122 34.7859	7.4				
		47°51.4045'	122 34.7859	У	<u> </u>			
2	1047				Soc			
Sample	e Description:	surface cover, (density), n anoxic layer, debris, plant		er, MAJOR mod	lifier, other co	nstituents, odor, sheen, layering,		
1		,				2		
17+	Sortacl	Sopanorole	ar cobble	Mrd. bi	ola: N	woroalgal,		
	worms,	barnach	es			· ,		
0	1 0 01	· oditis (20	1 1	0.01	macri	6 1 10001		
0	2 Silte	1 San DISP	1. loose we t	1 SIRF	(10/0)	Sand (30%),		
3.2	1) Sandly	CILLY SAND	(cp) without	istend	mato	tomie tomost		
	NKa	ven GIT(11	SP) Sand	alcal	6601	5%) Slight		
	4/25	, trace rain	16000 sheen	11 flore	F).			
	. 12	1			/			
Sample	Identification a	nd Time:	SMA1-ST3-1	80917	Arch			
Sample	a shanou ton a		5100111-01 5-1	JUIT	/rcv			
		Comp in	to: SMAI-	(T-0-10	- Con	P-1X0917		
Sample	Containers:				1			
		6						
Anal		annhult and it						
Analyse	s (circle all that	apply): Cadmium, I	AHS, D/FS, Larval B	lioassay, Fu	II Suite Bio	assay Archive		

		ANCH		0 11 (
	and the second	QEA 😂		Sediment Fi			in the state of th
		Name: Port (No: 180388-	Gamble - OMMP LTN	1	Station ID:	GMA	1-ST4
		taff: EM.		998-94	Date: 9 Sample Me	thad: D	milia Annu I
	the state of the s	ctor: MSS			Logged By:	AK	ower grads
		Datum: ft M	LLW				D83 WA SP North
		ter Height		Tidal Elevations			ne Elevation (ft MLLW)
	DTM De	epth Sounder:		Time:		(-) Wate	r Depth + Tidal Elevation
	DTM Le	ad Line: 2	4.1 4	Height: 7,9	-T-	- 16	,2 ft
							Sample Acceptability Criteria:
		· · · · · · · · · · · · · · · · · · ·					1) Overlying water is present
	Notes:						2) Water has low turbidity
							 Sampler is not overfilled
			*) 				4) Surface is flat
							5) Desired penetration depth
	Grab #	Time	Field Collection	on Coordinates Easting/Longitude W	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc
				122°34,7862'			tows closed.
	1	1114	-17 010001		N	30	Juns Hoseo.
		·······					
	Sample	Description:			er, MAJOR mod	ifier, other co	nstituents, odor, sheen, layering,
			anoxic layer, debris, plant	matter, shells, biota			
	-	115 11	Lord Elder	6		0	Srft
		1.	unist condition	tragmente	BILF ON	Sand y	Mic clenne,
		b	Jofq (worn	ss). J	y a k		
		15-30 0	TOTSE PRAVEI	(GP) al Trac	e fines.	loos	e. moist, dike
		9	trenz gravel	(Oce/) San	1(5%)	sili(E	Tr), slight
		/	12				
	Sample	dentification a	Ind Time: SW	AI-ST4-18	8917		
	Sample	Containers:	Comp. info	SMA1-	57-0-15)-(em	p-280917
()	Analyses	(circle all tha	t apply): Cadmium.	AHs, D/Fs, Larval B	lioassay. Ful	II Suite Bioa	assay Archive
\sim							
1							

12	QEA Surface Sediment Field Log							
Vertical QEA Surface Sediment Field Log Project Name: Port Gamble - OMMP LTM Station ID: SMAL ST5								
Project No: 180388-01.01 Date: 9/1741 K								
	taff: EM.	AK		Sample Me	thod:	wer Group		
Contra		· · · ·		Logged By				
	Datum: ft ML	_LW		Horizontal		AD83 WA SP North		
	ter Height epth Sounder:		Tidal Elevations			ne Elevation (ft MLLW)		
	eptil Sounder.		Time:		1	r Depth + Tidal Elevation		
DTM Le	ad Line: 22,	4 fl-	Height: 8,7	-ft-	-13	3.7 -11		
						Sample Acceptability Criteria:		
						1) Overlying water is present		
Notes:						2) Water has low turbidity		
						 Sampler is not overfilled 		
						4) Surface is flat		
		T				5) Desired penetration depth		
Grab #	Time	the second se	on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc		
	467	Northing/Latitude N		1.	Cim			
Ì	1148	47°51,3830'	122 34.7532'	У	15	taus closed		
						å		
						5.		
	ter Ve							
Sample	Description:	surface cover, (density), r anoxic layer, debris, plant		ier, MAJOR moc	lifier, other co	nstituents, odor, sheen, layering,		
S	ortace	sobanov	Car republe	Mod	brota	: Marko alaaf		
	-		ruaches,)		5 7		
0 -	15 sand	16 GRAIM 1	GW-GM1) P	cose . MM	01 11	(A 108 / .		
	Bill (100/4) Sam	(15%) form	vace bi	z tra	contract frage		
)			140			
Sample I	dentification a		- ST 5 - 1809	17 - A	rehis	e		
		Comp. in	to smapt-	ST-0-1	U-Conr	p-180917		
Sample (Containers:							
Analyses	(circle all that	apply): Cadmium,	PAHs, D/Fs, Larval E	Bioasşay, Fu	Il Suite Bio	assay Archive		
			110 M					

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	ANCHO		Sadimant F		ny kuniter en		
V- QEA Surface Sediment Field Log							
Project Name: Port Gamble - OMMP LTM Station ID: SwA1A - IT Project No: 180388-01.01 Date: 917118							
	ctor:MSSC	ЦР		Logged By:		wer grab	
and the second sec	I Datum: ft ML	LW				AD83 WA SP North	
	ter Height		Tidal Elevations			ne Elevation (ft MLLW)	
	epth Sounder:		Time:			r Depth + Tidal Elevation	
DTM	<i>л</i>	17 00 19 14	07	Di-	- 14	12 -1- 11	
	ad Line:	422; 12.9 Ft	Height:	ft		12-11- ft	
			· · · · · · · · · · · · · · · · · · ·			Sample Acceptability Criteria:	
Notoo						1) Overlying water is present	
Notes:						2) Water has low turbidity	
8						 Sampler is not overfilled Surface is flat 	
8	• • • • • • • • • • • • • • • • • • •					5) Desired penetration depth	
		1					
Grab #	Time		on Coordinates	Sample Accept (Y/N)	Recovery Depth (In)	Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc	
		Northing/Latitude	Easting/Longitude		Ôm		
l	1257	47° 51.4499 '	122034.8287	N	0	Jaws not closed poor reconent	
						recovery	
2	1303	47° 51.50 4503'	122 34.82911	У	20	facus cloved	
	8 .1						
Sample	e Description:	surface cover, (density), r anoxic layer, debris, plant		fier, MAJOR mod	lifier, other co	nstituents, odor, sheen, layering,	
	Surface		e biota (we	mus, s	Nrimp	bamacher.	
			igal)		1	1	
	0-20:		varavel:	laose,	MOIS	t, grey,	
		trace fines	, gearef (30	10, 9	and (70%), they	
	4	prota (noor	us),	/			
) 	1,000						
				0	A		
Sample	Identification a	nd Time: SM	AIA-ITI-	F10081	ity	chine	
- 1. <i>1.</i>	17	^		- 15 17		SLOC M	
Comula	Contrine	Compilabo: 8	SMAIA-II-	0-10- (1	mp -	180417	
Sample	Containers:	· · · ·	an a	-		1	
			<u> </u>	$ \rightarrow $			
Analyse	s (circle all that	tapply); Cadmium	RAHS, D/Fs, Larval I	Bioassay Fu	II Suite Bio	assav Archive	
					Outo Dio		

V?	QEA #		Sediment Fi	ield Log		
Project		Gamble - OMMP LTM		-		A-172
Project	No: 180388-			Date: 9/1	7118	
		AK		Sample Me	thod: P_{e}	wer aprab
	ctor: MSS	1.14/		Logged By	: AK	0
	I Datum: ft ML ter Height		Tidal Elevations	Horizontal		AD83 WA SP North
	epth Sounder:		Time:			r Depth + Tidal Elevation
	1	~	0.1	(1	
DTM Le	ad Line: (2.4	+ -	Height: 8,7	fe	- 3	1.7 ft
						Sample Acceptability Criteria:
Matan			· · · · · · · · · · · · · · · · · · ·			1) Overlying water is present
Notes:						2) Water has low turbidity
	= 33 ···					 Sampler is not overfilled Surface is flat
						5) Desired penetration depth
		7			_	Comments: jaws close, good
Grab #	Time	Field Collection	on Coordinates Easting/Longitude M	Sample Accept (Y/N)	Recovery Depth (in)	seal, winnowing, overlying water, surface intact, etc
		47°51,4294'	1220 34.86481		(.4/)	2 min alocad
١	1323	11 51,12)		Y	25	taux closed, overlyng the
	Description:	surface cover, (density), n anoxic layer, debris, plant	moisture, color, minor modif matter, shells, biota	ا م	lifier, other co	nstituents, odor, sheen, layering,
	0-10 SA	IND (SP-SM)	poorly grade	2 al Sa	AT = S	ilt: loose, net.
	- dk	are bota (D' (50%), g	Tavell	200%	fines (10 %);
	10-25 P	ren sand	A SANDIDI	gravel	(SP):	loose, net,
	- 3)) Service (1	- re), yiare	<u>w (40 /)</u>	2)*	
Sample	Identification a	nd Time: SMA	1A - 1T2 - 18	6917	- An	nive
	<u></u>	monto:		<u>v </u>		
		SMAI	A. IT- D-10)-Comp	- 18091	4
Sample	Containers:		·····		10 1	
	·······		<u>^</u>			
Analyses	s (circle all that	apply): Çadmium, F	PAHs, D(Fs, Larval E	Bioassay, Fu	II Suite Bio	assay Archive
	1		~ \			

A 78	ANCHO	DR				
	QEA 😂		Sediment Fi			A
	No: 180388-0	Bamble - OMMP LTN	Station ID: SMAIA-173 Date: 9/17/18			
	taff: LAM	vtr		Sample Me	thod: Q	wer trate
	ctor: MSS			Logged By		y.c.p
	I Datum: ft ML	LW		Horizontal	and the second se	AD83 WA SP North
	ter Height epth Sounder:		Tidal Elevations			ne Elevation (ft MLLW)
	eptil Sounder.		Time.			er Depth + Tidal Elevation
DTM Le	ead Line: 12	5,12,5 ft	Height: 12,5 8	16 ft	-3	ff ft
						Sample Acceptability Criteria:
Notoo					1911 9 - 1 11	1) Overlying water is present
Notes:						 Water has low turbidity Sampler is not overfilled
						4) Surface is flat
						5) Desired penetration depth
Grab #	Time	Field Collection	on Coordinates Easting/Longitude∖√	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc
1	1344	47° 51,4058 '	122 34, 8477 8701	Ν	e	trus agape, winnowed
2	13.56	47°51,4055 4055	122°34, 870+ ' 8697'	у	18	taws closed, windying the
	Description	surface cover, (density), n	noisture, color, minor modifi	er. MAJOR moo	lifier, other co	nstituents, odor, sheen, layering
Sample	Description:	anoxic layer, debris, plant	matter, shells, biota		-	
	Sertace	1.1.4	ed 2 Sils and motor (unació	ailer l Algare	porse fishi	gravel-colible, Sump,
0-18: poorly graded SAAN We silt & gravel (SP-SM). 2005e, webt de greig to silt (18%), Sand (51%) growel (4670);						
				-		
ample	Identification a	nd Time:	t1A-173-1	80917	- 7	frehind
	Comp nt		4A-IT-0-1	10- Con	18-181	1917
ample	Containers:		25)	1	
			6			
nalyses (circle all that apply): Cadmium, PAHs, D/Fs Larval Bioassay, Full Suite Bioassay Archive						
)		
		\sim				

			Sediment Fi	eld I og	1			
2000		Gamble - OMMP LTN		Station ID:	SMAL	A-174		
Project	No: 180388-		· · · · · · · · · · · · · · · · · · ·	Date: 911	7/18			
Field Staff: EM, FK Sample Method: F						wer Graf		
	tor: MSS			Logged By		<u> </u>		
	Datum: ft MI ter Height		Tidal Elevations	Horizontal		AD83 WA SP North		
	pth Sounder:		Time:			ne Elevation (ft MLLW) er Depth + Tidal Elevation		
		/	1	_		2/2		
DTM Le	ad Line: 12/2	2,10,2 11	Height: 815;8	S ft		Siti-lit ft		
						Sample Acceptability Criteria:		
Notes -						1) Overlying water is present		
Notes:						2) Water has low turbidity		
-			n			 Sampler is not overfilled Surface is flat 		
-						5) Desired penetration depth		
Grab #	Time	Field Collection	on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying		
		Northing/Latitude N	Easting/Longitude W	Accept (1/N)	Deptil (III)	water, surface intact, etc		
		47051.3777'	122 34, 7977'	1		Not sufficient		
١	14 18			N	l	Not sufficient recovery		
2	1423	47 851 .3776'	122 34.7964 1	¥	15	tims closed		
	Description: 1 1 Surfac	anoxic layer, debris, plant	matter, shells, biota Sillar lobble gravel mi	(6-8" derate)	nstituents, odor, sheen, layering, brown Led (mago algal,		
		Crab, h	gooms, par	racles)				
0-15: Well graded gravel (GW) with sand. Loose, wet, grey sand (25%) gravel (75%) trace biota (booms; (ams), trace shell hook								
the second se	dentification a	nd Time: S-M I	AIA -174-18	50917 10-Com	- A	retrine		
	Containers:			10 - Cerr	1p=10			
						- Autor		
			00-			1.0 75.0		
Analyses	(circle all that	t apply): Cadmium, F	PAHs, D/Fs Larval B	lioassay, Fu	Il Suite Bio	assay Archive		

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Field Staff: Frid Sample Method: TWO G vol a Contractor: WCS Logged By: AL Vertical Datum: f MLLW Horizontal Datum: NAD83 WA SP North Horizontal Datum: Sp Datum: Sp Datum: National Datum: Sp Datum: Sp Datum: Nating Sp			Samble - OMMP LTN	1			1A-115
Logged By: ALC Vertical Datum: ft MLLW Horizontal Datum: NAD83 WA SP North Water Height Tidal Elevations Mudline Elevation (ft ML DTM Depth Sounder: Time: (-) Water Depth + Tidal Elevations DTM Lead Line: 10 (5 (1)) (+) Height: 8 (3 (8)) (+) Water Depth + Tidal Elevation (ft ML Notes: 2) Water has to subtidity Sample Sample Accessballer. 0 0 (+) Water has to subtidity. Sample Accessballer. 0 0 (+) Water has to subtidity. Sample Accessballer. 0 0 (+) Water has to subtidity. Sample Accessballer. 0 0 (+) Water has to subtidity. Sample Accessballer. 1 144/2 (+) Yards is the (+) Water has to subtidity. 2 14/4/2 (+) Yards is the (+) Water has the subtidity. 2 14/4/2 (+) Yards is the (+) Yards is the 2 14/4/2 (+) Yards is the (+) Yards is the 3 15/4/2 (+) Yards is the (+) Yards is the 2 14/4/2 (+) Yards is the (+) Yards is the 3 <			Ar			TTIN	nila Court
Horizontal Datum: NADES WAS PN confined Datum: NADES WAS PN							www. ejvalo
DTM Depth Sounder: Time: (-) Water Depth = Tidal Electron Dominant Strest		and the second se	_LW				AD83 WA SP North
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Wa	ter Height		Tidal Elevations		Mudlin	ne Elevation (ft MLI
Notes: 3amete Accestability 1) Overlying water is provention for 3) Barries Is an overline 4) Surface is flat 5) Desired pertention for 5) Desired pertenting for 5) Desired pertention for 5) Desired	DTM D	epth Sounder:		Time:		(-) Wate	r Depth + Tidal Elev
Notes: 1) Overlying water is presed 9) Water has low turbidly 2) Water has low turbidly 9) Sufface is fail 9) Sufface is failed 9) Sufface is failed 9) Sufface is failed 9) Sufface is failed 9) Sufface is failed 9) Sufface is failed 11 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 122° 34,7524 11 15 11 1448 11 1448 11 122° 34,7524 11 15 11 1448 11 122° 34,7524 11 1408 11 122° 34,7524	DTM Le	ad Line: 1017	Filly F	Height: 8,3,8	I) ft	- 0	2,51 (3.3)
Notes: 1) Overlying water is presed 9) Water has low turbidly 2) Water has low turbidly 9) Sufface is fail 9) Sufface is failed 9) Sufface is failed 9) Sufface is failed 9) Sufface is failed 9) Sufface is failed 9) Sufface is failed 11 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 1447 11 122° 34,7524 11 15 11 1448 11 1448 11 122° 34,7524 11 15 11 1448 11 122° 34,7524 11 1408 11 122° 34,7524							Sample Acceptability C
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							1) Overlying water is preser
4) Surface is flat 6) Grab # Time Field Collection Coordinates Accept (Y/N) Northing/Latitude N Easting/Longitude w Accept (Y/N) Pepting (M) Northing/Latitude N Easting/Longitude w Accept (Y/N) Pepting (M) Value (M) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Notes:						2) Water has low turbidity
Solution dependent of the second sec							3) Sampler is not overfilled
Grab #TimeField Collection Coordinates Northing/Latitude NSample Recover, Maching/Latitude NComments: jaws clor seal, winnowing, over Seal, water, surface intact, M Comments: jaws clor seal, winnowing, over list water, surface intact, M Comments: jaws clor seal, winnowing, over seal, winnowing, over list water, surface intact, M Comments: jaws clor seal, winnowing, over list water, stall list water, stall list water, stall list water, stall M Sample Recover, MADR modifier, other constituents, odor, sheen, anxie layer, debis, plan matter, shells, biolaSample Description:surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anxie layer, debis, plan matter, shells, biolaApril bar, water, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anxie layer, debis, plan matter, shells, biolaSample Description:surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anxie layer, debis, plan matter, shells, biolaApril bar, proved with the track color, minor modifier, MAJOR modifier, other constituents, odor, sheen, bar, water, wa							
Grab #TimeField Collection Coordinates RecoverySample Depth, (Y)Depth, (Y) Depth, (Y)Seath with recovery Depth, (Y)Seath with recovery Beth, (Y)			1				· · · · · · · · · · · · · · · · · · ·
$\frac{1}{2} \frac{1443}{1443} \frac{47^{\circ}51.3692'}{17550'} \frac{122^{\circ}34.7550'}{15} \frac{15}{15} \frac{15}{15} \frac{11443}{15} \frac{11443}{15} \frac{1122^{\circ}34.7526'}{1122^{\circ}34.7526'} \frac{115}{15} \frac{115}{15} \frac{11456}{15} \frac{1115}{15} \frac{1122^{\circ}34.7526'}{15} \frac{115}{15} \frac{1115}{15} \frac{1115}$	Grab #	Time			and the second	Depth (in)	Comments: jaws clos seal, winnowing, over water, surface intact, e
$\frac{1}{2} \frac{1443}{1456} + \frac{172^{\circ} 51.3489}{1752.3489} \frac{122^{\circ} 54.7524}{122^{\circ} 54.7524} + \frac{115}{15} \frac{511349}{15} + \frac{1122^{\circ} 54.7524}{15} + \frac{115}{15} + \frac{1115}{15} + \frac{1115}{15$					1		alan adab
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		1100	11 513		\sim	15	
Image: Surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anoxic layer, debris, plant matter, shells, biota Image: Surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anoxic layer, debris, plant matter, shells, biota Sample Description: surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anoxic layer, debris, plant matter, shells, biota Article PT 2 MOVED MICHTERST Surface: Sub ALLED MAC CONSE Article PT 2 MOVED MICHTERST Surface: Sub ALLED MAC CONSE Article PT 2 MOVED MICHTERST Surface: Sub ALLED MAC CONSE Article PT 2 MOVED MICHTERST Surface: Super Marken State (GW) for Suff. Description: Super Marken State (GW) for Suff. Description: Super Marken State (GW) for Suff. Marken Arter State (GV) Super Marken Marken Arter State (GV) Arter Marken	1	1445		s			and - north
Sample Description: Surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anxic layer, debris, plant matter, shells, biota ARTENPT 2 MOND ~ 10 FT EAST Surfact: Sub anoundary (monder Avenuel, who - abing for block, way worked, way physical contents, odor, sheen, and work work and local, or all sub- block, way work and local and support of the work sub- of the work sub- main sub- main sub- main sub- supple Identification and Time: SWI AIA ATTS - 1809 FT - Archivel (brugh, 1815; ST/AIA - TT-O-10- (brugh- R0917) Sample Containers:			1.0. 1	in Dailmonit			TO sumpl
Sample Description: Surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anoxic layer, debris, plant matter, shells, biota ARTCMPT 2 MONDON ~ 10 FT EAST Surfact = SUB ALAGULAV (TOTALE A VELLEL, VAG J - abing for Unitary Wallow (TOTALE A VELLEL, VAG J - abing for Unitary Wallow (TOTALE A VELLEL, VAG J - abing for Unitary Wallow (TOTALE A VELLEL, VAG J - abing for Unitary Wallow (TOTALE A VELLEL, VAG J - abing for Unitary Wallow (TOTALE A VELLEL, VAG J - abing for Unitary Wallow (TOTALE A VELLE), VAG J - abing for Unitary Wallow (TOTALE A VELLE), VAG J - abing for Unitary Wallow (TOTALE A VELLE), VAG J - abing for Unitary Wallow (TOTALE A VELLE), VAG J - abing for Wallow (TOTALE A VELLE), VAG J - abing for Wallow (TOTALE A VELLE), VAG J - abing for Sample Identification and Time: SYM ALA TTS - 1809 FT - Archivel Sample Identification and Time: SYM ALA TTS - 1809 FT - Archivel Sample Containers:			47 51.3689	12.2 34, 1526	N		Jaws clos
Sample Description: Surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anoxic layer, debris, plant matter, shells, biola ARTEMPT 2 MOVED ~ 10 FT EAST Surfact: Sub amoutar County Archiel, web-abind con Dictor, Walvalland, Orthes, Shanp, Maychea Othor Worman Datmaller, Shanp, Maychea Mark Shall, hash, That Solar, Archivel Sample Identification and Time: SMAHA-TT-C-10-Comp, KogIT Sample Containers:	12	14560			Y	15	0.0000 0.000
Sample Description: surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anoxic layer, debris, plant matter, shells, biota ATTEMPT 2 MOURD ~ 10 FT EAST Surfact: Sub anov lay (ornse Avenuel, Mad-abund gas Dicta: warval gal, Ornse Avenuel, Mad-abund gas Dicta: warval gal, Ornse Avenuel, Mad-abund gas Dicta: warval gal, Ornse Avenuel, Mad-abund gas Other worms) parnalles Other worms) parnalles Other worms) parnalles Other worms) parnalles Dicta: user (GW) is Sulf: loose, wet, New Shell hash , Wale brota: bar havef(Wad Shell hash , Wale brota: bar havef(Sample Identification and Time: SMATA-TT-0-10- (omp- X0917 Sample Containers:	V	.)2				1	
Sample Description: surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anoxic layer, debris, plant matter, shells, biota ATTEMPT 2 MOURD ~ 10 FT EAST Surfact: Sub anov lay (ornse Avenuel, Mad-abund gas Dicta: warval gal, Ornse Avenuel, Mad-abund gas Dicta: warval gal, Ornse Avenuel, Mad-abund gas Dicta: warval gal, Ornse Avenuel, Mad-abund gas Other worms) parnalles Other worms) parnalles Other worms) parnalles Other worms) parnalles Dicta: user (GW) is Sulf: loose, wet, New Shell hash , Wale brota: bar havef(Wad Shell hash , Wale brota: bar havef(Sample Identification and Time: SMATA-TT-0-10- (omp- X0917 Sample Containers:							
Sample Description: surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anxic layer, debris, plant matter, shells, biota ARTIMPT 2 MONDO ~ 10 FT EAST Surfact: Sub angular (conste Avenuel, Wast-abundant DCFA: Warrow (algal, Orabs, Strong Augula OTHOR WORMS) paralles OTHOR WORMS) paralles OTHOR WORMS (GW) is Gult: lock, weth ARE AVENUE (GW) is Gult: lock, weth ARE AVENUE (GW) is Gult: lock, weth ARE AVENUE (GW) is Gult: lock, weth Mich Shell hash , Trace brota: bar hall War Shell hash , Trace brota: bar hall Sample Identification and Time: SYM AIA ATTS - 1809177 - Andrewel Sample Containers:							2
Sample Description: surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anoxic layer, debris, plant matter, shells, biota ATTEMPT 2 MOVED ~ 10 FT EAST Surfact: SUB AMENTAR (or the Avenuel, Wed-Abund gas preta: Warve (Gaal, Orabe, Strong Mychea Other were Sub (GW) is surf, leck, wet Ark aven Sut (5%) same (5%), gravell Mad Shell hash, trad brota; bar hael Worme Sample Identification and Time: SMIAIA TTS-1809 17 Sample Containers:							
Sample Description: surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anxic layer, debris, plant matter, shells, biota ARTEMPT 2 MOVED ~ 10 FT EAST Surfact: Sub analytax Converse Around, West-Abunders Drefa: Warvey lagel, Cirabs Show Mychell OTHOR WCMMS JPAMallos OTHOR JPAMAL Sample Identification and Time: SYM AIA - TT-O-10- Comp- NO917 Sample Containers: OTHOR WCMMS JPAMAL OTHOR JPAMAL OTHOR JPAMALLOS OTHOR JPAMALOS OTHOR JPAMALLOS OTHOR JPAMALLOS OTHOR JPAM							
Sample Description: surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, anxic layer, debris, plant matter, shells, biota ARTEMPT 2 MONDO ~ 10 FT EAST Surfact: Sub angular Conste Areauch, Mad-abind gas Dicta: Walvallaal, Orabs, Showp Mychea Other Warded GRAVEL (GW) is Surface, wet Ark area Sult (5%) Sand (5%), grawell Mich and hash, Trace biota; bar haele Sample Identification and Time: SYN AIAAT5-180917 Sample Containers:				a.			
Sample Description: anoxic layer, debris, plant matter, shells, biota Artimpt 2 moves ~ 10 FT EAST Surfact: Sub a moular (compe Arouel, mod-abind on Dota: Walvollaal, Orabs, Showp, polychea other worms Jpamallas 0-15: well-greeted GRAVEL (GN) is Sult: look, wet drk arong sult (5%) send (5%), gravel (mail shell hash, trad brota: bar haels Worms. Sample Identification and Time: SMAIA-TTS-180917 - Archivel (onge, into: SMAIA-TTS-180917 - K0917 Sample Containers:			~				
Sample Description: anoxic layer, debris, plant matter, shells, biota ARTEMPT 2 MONON NO FT EAST Surfact: Sub amountar (counce Arrivel, mod-abind on Defa: Walvall gal, Grabel, Showp, polychea other wormes I parmalles Showp, polychea other wormes I parmalles gut look, wet orkaren sult (5%) sand (5%), grawell Mod shell hash, trace brota: bar haels Normes Sample Identification and Time: SMAIA-TT-0-10- (omp- 180917 Sample Containers:							
ATTEMPT 2 MONTH VIOLT CONTRE AVENUEL, Mad-abundant Surface: Sub anon lar Contre Avenuel, Mad-abundant bioton worms I parmalled othor worms I parma othor worms I parmalled othor wore worms I parmalled othor wore worms I parmalled othor wore	Sample	Description:	surface cover, (density), r	noisture, color, minor modifi	ier, MAJOR mod	lifier, other co	nstituents, odor, sheen, l
Surfact: Sub angular Course Arouel, mod-abind on bitta: manoligal, Oraps Shoup polyches other worms pamalles or well-graded GRAVEL (GW) is sult lock, wet arkaven sult (5%) send (5%), gravel (mail shell hash, trace biota; par hall worms Sample Identification and Time: SMAIATE-180917 - Archinel (only, into: SMAIATE-180917 - Archinel Sample Containers:			anoxic layer, debris, plant	matter, shells, biota			*
Sample Identification and Time: SMALA - IT-0-10- Comp- 180917 Sample Containers:	PATTICA	PT & MOVE	AD TO FI EAST				
Sample Identification and Time: SVI ALATTS - 1809 17 Sample Containers:		Sinface:	Subaran	av Ambre	AVALOP	140	- about and
Sample Identification and Time: SYM AIA 1T 5 - 1809 17 - Archine Conf. 1915: Smith AT 5 - 1809 17 - Archine Conf. 1915: Smith AT 5 - 1809 17 - Archine Conf. 1915: Smith AT 5 - 1809 17 - Archine Conf. 1915: Smith AT 5 - 1809 17 - Archine Conf. 1915: Smith AT 5 - 1809 17 - Archine Conf. 1915: Smith AT 5 - 1809 17 - Archine Conf. 1915: Smith AT 5 - 1809 17 - Archine Conf. 1915: Smith AT 5 - 1809 17 - Archine Conf. 1915: Smith A A A A A A A A A A A A A A A A A A A		- ind		wolldal. Ou		hnim	
Sample Identification and Time: SVI AIA AT 5-1809 17 - Archine (5.16), gravel(Mai Shell hash, trace biota: barnaeli Worms Sample Identification and Time: SVI AIA AT 5-1809 17 - Archine (5.16), gravel(Worms Sample Identification and Time: SVI AIA AT 5-1809 17 - Archine (5.16), gravel(Worms Sample Containers:			ALL WORK	ans Ibain	allah	P	polychea
Sample Identification and Time: SMAIAAT5-180917 - Archune Conversion SMAIAAT5-180917 - Archune Conversion SMAIA-IT-0-10- Comp- 180917 Sample Containers:		0-15:	Well-grater	GRAVEL (GI	N) ions	ult :	
Sample Identification and Time: SVN AIA 1T 5 - 1809 17 - Archine Conf. into: SVN AIA - IT-0-10- Comp- 180917 Sample Containers:			drik arrent.	Self (5%)	sand (5/6)	, gravel
Sample Identification and Time: SVM AIA 1T 5 - 1809 17 - Archine Confer into: SVM AIA - IT-0-10- Comp- 180917 Sample Containers:			mad shell	hash, -	trace R	270 ta:	Davnach
Conversion Containers:			worms.	,			
Conversion Containers:	<u> </u>	an a					
Conversion Containers:	—		·····	· · · · · · · · · · · · · · · · · · ·		Ant	
Conversion Containers:	Sample	Identification a	ind Time: SM A	14-175-180	917 -	nven	-inte
	Ce	mue into			0- (824)	pr KI	0917
		1)		1	
	Sample	Containers:				B ¹	
Analyses (circle all that apply): Cadmium, PAHs, D/Fs, Larval Bioassay, Full Suite Bioassay Archive							
	Analyse	s (circle all that	tapply) Cadmium	PAHS D/Fs Lanval F	Bioassay Fu	II Suite Bio	assay Archive
	. andiyou		Copping Countrient,		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		adday Aidilive
				Alternativeline and internation			

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12%	ANCHO		Codiment E		C	5MA-3)
X	QEA 😂		Sediment Fi			-
		Samble - OMMP LTM		Station ID:	BW-1	5
	No: 180388-	01.01		Date: 9	718	
	taff: EM,	TK		Sample Me	thod: to	wer grab
	ctor: MSS	1.14/		Logged By:		
	I Datum: ft ML ter Height		Tidal Elevationa	Horizontal		AD83 WA SP North
	epth Sounder:		Tidal Elevations			ne Elevation (ft MLLW) er Depth + Tidal Elevation
	spin oounder.	- 0 C	rime.		1.00	
DTM Le	ad Line: 39,	3 ft	Height: 7,7	ft	-3	1.6 Et
						Sample Acceptability Criteria:
						1) Overlying water is present
Notes:						2) Water has low turbidity
						Sampler is not overfilled
					-	4) Surface is flat
				1		5) Desired penetration depth
Grab #	Time	Field Collection	on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying
		Northing/Latitude	Eesting/Longitude W			water, surface intact, etc
1	1546	47°49.9666	122 34,5423	У	27	overlying 1/20
			<			
Sample	Description:			ier, MAJOR mod	lifier, other co	nstituents, odor, sheen, layering,
•	EL	anoxic layer, debris, plant	SAND (SM)			
K	-17,5	ANDFEPT	wheatt: ceta	ate nord	fim.	INDE ATUR
	6	men silt	(97576). Sal	112 F920	705	man, aut
ŗ.	7-27 0	had es to say	M-SILT(M	I SP	+ 70°	6) Sand 30%
	·).	faint Hal	J	71		
191 - 1-2-						
				10122 AM 81 81 8		
Sample	Identification a	and Time: BW-	15-0-10-19	50917		
Sample	Containers:	bag				
		0				
				2		
Analyses	s (circle all that	t apply): Cadmium, I	PAHs, D/Fs, Larval E	Bioassay, Fu	Il Suite Bio	assay Archive

	POR G	amble - OMMP LTM	Sediment Fi	Station ID:	SMA Z	A-STI	
Project No: 180388-01.01 Date: 09/18/2018							
Field Staff: A		M		Sample Met	thod: Hy	DRAULIC URAB	
Contractor: A		14/		Logged By:	AK Datum: NA	D83 WA SP North	
Vertical Datum Water Heig			Tidal Elevations	nonzontai i		ne Elevation (ft MLLW)	
DTM Depth Sou			Time:			r Depth + Tidal Elevation	
DTM Lead Line:		3'	Height: 3,7 ft		14 A	,6 ft	
						Sample Acceptability Criteria:	
Notes:						1) Overlying water is present	
Notes	13 10 TO TO T					 Water has low turbidity Sampler is not overfilled 	
						4) Surface is flat	
						5) Desired penetration depth	
Grab # Tin	ne		on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying	
		Northing/Latitude N			m	water, surface intact, etc	
1 09:1	1	47°51.2170'	122-34,8359'	Y	24		
					e R		
Sample Descri	<u>Ψ</u> : ρ	anoxic layer, debris, plant	matter, shells, biota	er, MAJOR mod) Med 2026), -f Sucfa	tifier, other co decuse vale h	worst avery	
Sample Identific	ers:	: Sin		8 19 18 10 (m Bioassay, Fu	np-181	nchive 29 18 Dassay Archive	

Project	Name: Port	OR Surface Gamble - OMMP LTM	1	Station ID:	SMA	2A-STQ
	No: 180388			Date: 9/18	18	
	taff: EM, A ctor: MSS	ik, mill		Sample Me		paraulic Grais
	Datum: ft M	1LLW		Logged By Horizontal		AD83 WA SP North
	ter Height		Tidal Elevations	rionzontar		ne Elevation (ft MLLV
DTM De	epth Sounder	:	Time:			r Depth + Tidal Eleva
DTM Le	ad Line: 3	0.4 #	Height: 4.5.ft		-26	5,9 ft
						Sample Acceptability Crite
						1) Overlying water is present
Notes:						2) Water has low turbidity
		- 				3) Sampler is not overfilled
						4) Surface is flat5) Desired penetration depth
				•		Comments: jaws close,
Grab #	Time	Field Collection	on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	seal, winnowing, overlyi
		Northing/Latitude N			CVIL	water, surface intact, etc
١	0939	47" 51.2389'	122. 34.8081	У	24	jamis close
Sample	Descriptior	surface cover, (density), n anoxic layer, debris, plant	noisture, color, minor modifi	er, MAJOR mod	lifier, other co	nstituents, odor, sheen, laye
	-A	anoxic layer, debris, plant	matter, snells, blota		-1	macroalg
-	the South	ace: trace	biol-a: sur	els, W	omus;	perasional
a 10 a		Draar	nics: stick(, Woo	d trai	
		Ofter Doord	maradeds	CANNT	SP)	prose with t
		dearen	Dand AD	50/0) 4	ilt/E	Podek
		of me	reased find	P thom	1 0-F	Scin. Thale
		biota	(wornus),			1
			-			
Comert-	dont!flact!	and Times A	10	at of -	Arch	we
and the second sec	Compi wh		X1-ST2-18	FILCOG	1×	
(omp int	: SMA2	A SI-0-10	1801	0)	
Sample	Containers:					
					A /	

	Name: Port (No: 180388-	Gamble - OMMP LTN	1	Station ID:	SmA	2A-5T3
	Iff: FM.			Sample Me	thod:	werdra
Contract	or: MSE	>		Logged By		weigen
	Datum: ft M	LLW		Horizontal		AD83 WA SP Nor
	er Height oth Sounder:		Tidal Elevations			ne Elevation (ft N
DIMDep	un sounder.		Time:		1	er Depth + Tidal El
DTM Lea	d Line: 3	4.3 ft	Height: 51	ft	2	29,2
-						Sample Acceptabilit
Notes:						 Overlying water is pre Water has low turbidition
_						3) Sampler is not overfil
						4) Surface is flat
1		1				5) Desired penetration d
Grab #	Time	Field Collection	on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws cl seal, winnowing, ov water, surface intac
1	1905	47°51.2550'	122 34,7610'	V	24.14	daws clos
	a a dana a ka					
Sample I	Description	surface cover, (density), n anoxic layer, debris, plant	noisture, color, minor modif matter, shells, biota	ier, MAJOR mod	difier, other co	nstituents, odor, shee
	0-241	Oppola- Mo	Led SAND	(SP)	wed-d	ense, wet
			sound (100%)) pocke		trace fines
		track biota tf surface	: (noms) ; frace she	"I had	a, fr	ace brote
		myny st	aux.			
			-			
						and restan
	4.0 7 .1					
						Archine
~	entification a		and the second se	-1869	18 -	VIOLV
09	and in	to: Swy	$\pi \chi H - ST - 0$	-10-00	mp - 1	SUTIX
Sample C	ontainers:			/		
			X			

17	QEA 😂		Sodimont Fi					
Project		amble - OMMP LTN	Sediment Fi			DA-CTN		
	No: 180388-0		1	Date: 91	SUITE	2A-574		
Field S		AL		Sample Me	thed: Po	wer arraly		
Contra	V 1 / 3			Logged By		0		
	I Datum: ft ML	.LW	THEFT	Horizontal		D83 WA SP North		
	ter Height epth Sounder:		Tidal Elevations			re Elevation (ft MLLW) r Depth + Tidal Elevation		
DTM Le	ad Line: 37	1.8 ft	Height: 5, 1	£ł	-22.0	61		
		÷	· · · · · · · · · · · · · · · · · · ·			•		
8						Sample Acceptability Criteria: 1) Overlying water is present		
Notes:						2) Water has low turbidity		
						3) Sampler is not overfilled		
				-1		4) Surface is flat		
						5) Desired penetration depth		
Grab #	Time	Field Collection	on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc		
١	1029	47°51,1790'	122° 34,8270'	4	Эu	taus closed		
	6							
Sample	Description:	surface cover, (density), r anoxic layer, debris, plant		ier, MAJOR mod	lifier, other co	nstituents, odor, sheen, layering,		
	A s	1	-t-a	Ĥ				
	17+ 2	norface: trace	brota: may	-trace)	1 sma	els, worms		
)			
	0-20: poorlingraded SOND (SP), med-dense, wet, aney-f-m sand (95%), frace folt (5%), pockets of memories of mes throught, frace brota (worm)							
-> trahine								
Sample Identification and Time: SWARA-6T4-180918								
Computo: SMARAF-ST-0-10-Comp-180918								
Sample Containers:								
Sample								
				A				
Analyses	s (circle all that	apply): Cadmium	PAHs, D/Fs, Larval E	Bioassay, Fu	Il Suite Bio	assay Archive		
	· · · · · · · · · · · · · · · · · · ·							
	Appendiction of the second	and the second						

17	ANCHO		Sodimont Fi						
Project	QEA C	Gamble - OMMP LTM	Sediment Fi	-	100 C	A			
	No: 180388-		1	Date: 9	SIVINX	A-575			
	taff: EM.	AF		Sample Me	حقار والأسياد المسارك	ruer Grate			
Contra	ctor: MSS	,		Logged By	AK	(
	l Datum: ft ML	LW		Horizontal		D83 WA SP North			
	ter Height		Tidal Elevations			ne Elevation (ft MLLW)			
	epth Sounder:		Time:		1	r Depth + Tidal Elevation			
DTM Le	ad Line: QY	4 ft	Height: Le.2	Ft	-22	.2 ft			
						Sample Acceptability Criteria:			
Notes:						 Overlying water is present Water has low turbidity 			
Notes.						3) Sampler is not overfilled			
						4) Surface is flat			
						5) Desired penetration depth			
Grab #	Time	Field Collecti	on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc			
-	1045	47°51,2093'	122°34,7728'	Y	24	danus closed			
Sample	Sample Description: surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, debris, plant matter, shells, biota At Sonface: occcustor of brota: hermit olato, smail, Wormus, bryzoa, maevo alaae, trae								
		Shall I	iash (creb	cleur);)	/			
	Dr	24: SANT Sand Trave	(SP). med 100%), pocket bio ta' (wor		nuet vace f	Arey, F-M ines Huringhoot			
Sample (Identification a	and Time: Smf		(0918 10- (ov	-7/1va up-18	cture 0918			
Sample	Containers:					<u> </u>			
Sample	containoro.				A				
Analyse	s (circle all tha	t apply): Cadmium	PAHs, D/Fs, Darval I	Bioassay, Fu	III Suite Bio	assay Archive			
						10 M M 10 1 M			

	ANCHO		O diment E			
	QEA 🛫		Sediment Fi			
	Name: Port C No: 180388-0	Samble - OMMP LTN		Station ID; Date: 9/1	SMAG	B-IT2
	and the second se	AK		Sample Me	thod: P	vier grab
	ctor: MSS			Logged By:	AK	vergine
	I Datum: ft ML	.LW				AD83 WA SP North
	ter Height		Tidal Elevations			ne Elevation (ft MLLW)
DTM De	epth Sounder:		Time:		(-) Wate	r Depth + Tidal Elevation
DTM Le	ad Line: 12	5 Et	Height: 7.5	ft	- 5.0	FF
						Sample Acceptability Criteria:
N						1) Overlying water is present
Notes:						2) Water has low turbidity
					1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	3) Sampler is not overfilled4) Surface is flat
3						5) Desired penetration depth
Grab #	Time		on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc
		Northing/Latitude			Cu	
١	1145	47°51,1959'	122 34.9098'	Y	13	Surface what,
			1.	2		
		surface cover, (density), r	noisture, color, minor modif	er. MAJOR moc	lifier, other co	nstituents, odor, sheen, layering,
Sample	Description:	anoxic layer, debris, plant				
	At surfa	debris.	bieta: maler	algar	>, tr	ace authropogenic
	°C .	-13: Poorling Loose 14 gravel	Jon of SAN Ver de Are (40%) - Solo) al silt	- (100/2) - (100/2)	uel ('SP-SM), , Saud (50%);
		0				
					Arc	hm e
Sample	Identification a	nd Time: Sm/	12B-171- 12B-17-0-1	0-(om	y - 18	0918
Sample	Containers:	1				
				Å		
_			00			
Analyse	s (circle all that	t apply): Cadmium,	PAHs, D/Fs, Larvalt	Bioassay, Fu	II Suite Bio	assay Archive
	1000 M 1000 M 100			19-19-19-19-19-19-19-19-19-19-19-19-19-1		

		amble - OMMP LTM	1	eld Log Station ID:	SIMAR	B-ITA	
	No: 180388-0			Date: 9	XIIX		
Field St		IAK				wergrab	
	ctor: MSS	IW		Logged By: Horizontal		D83 WA SP North	
	ter Height		Tidal Elevations	Tionzontar		e Elevation (ft MLLW)	
DTM De	pth Sounder:	-	Time:			r Depth + Tidal Elevation	
DTM Le	ad Line: 🔏	3: 8,5:8,6 Ft	Height: 8	ft	-01	7 FF	
						Sample Acceptability Criteria:	
						1) Overlying water is present	
Notes:		- We the second s				2) Water has low turbidity	
						3) Sampler is not overfilled	
						 Surface is flat Desired penetration depth 	
Grab #	Time	Field Collection	on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, goo seal, winnowing, overlying	
		Northing/Latitude N	Easting/Longitude W		GM	water, surface intact, etc	
l	1203	47 51, 1690'	122 34,9109	N		Haves closed, insufficent	
2	1211	47°51.1697'	122°34,9108'	2	ł	NIAMONICA, Javos agage.	
3	1219	47°51,1683'	122 34,9109	Y	10	Desired penetration deptn.	
Sample	Description:	surface cover, (density), n anoxic layer, debris, plant		er, MAJOR moo	lifier, other co	nstituents, odor, sheen, layerin	
	A;			<u>_ 1</u>		A. 9	
	777 5	orface: Sup algan	e barnad		casio	net brite:	
		A-ID- WARL	and Lad APT	4117	1.0.	Caul	
		p-10: wall a	Just and	Sand	40°/a	Jif (10%)	
		Santa	aranel (f-c)	(50%).	That	e laista:	
		Worn	y clam's tr	ace	Occus	mail	
		she	11 hasp?			<u>`</u>	
1 Archine							
		~		-	14	icving	
Sample Identification and Time: SMARB - IT2 - IS0918							
		Sma	2B-JT-0-1	0-Com	2-180	918	
ample	Containers:	5.11s	-		1		
ample	containers.	and the second	2.17 ⁻			a 411 (a 10)	

1 2	ANCHO	DR						
K	QEA 🛫	\simeq Surface	Sediment Fi	eld Log				
	Project Name: Port Gamble - OMMP LTM Station ID: SMA2B-1T3							
	No: 180388-	12 9 2	1.5.5 (1.5.5.1.5.5.1.5.5.1.5.5.1.1.5.5.1.1.5.5.1.1.5.5.1.1.5.5.1.1.5.5.1.1.5.5.1.1.5.5.1.1.5.5.1.1.5.5.1.1.5.5	Date: 9	18/18	do es la		
Field St Contrac		HR		Sample Me Logged By		wengrah		
	Datum: ft ML	LW		Horizontal	Datum: NA	D83 WA SP North		
	er Height		Tidal Elevations		Mudlin	e Elevation (ft MLLW)		
DTM De	pth Sounder:		Time:	www.endiked.com/ulina	(-) Wate	r Depth + Tidal Elevation		
DTM Lea	ad Line: 8,5	5; 8: 76 T.6 FF	Height: 0-8-8.5	87)ft	-0	.2; (+D.1) ++		
-	staho	n moved N/1	IN for attern	pf 3	A THE REAL PROPERTY OF	Sample Acceptability Criteria:		
Notes:			100 - P	<u>.</u>		 Overlying water is present Water has low turbidity 		
		с.				3) Sampler is not overfilled		
-						4) Surface is flat		
	10 - 20 - 10					5) Desired penetration depth		
Grab #	Time		on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc		
		Northing/Latitude N	Easting/Longitude W		an			
1	1245	47°51,1333'	122 34,9109	N	1	Copple infans		
2	1256	47°51,1320'	12.2"34.9109'	N		3 tobblec Confected		
3	1318	47°51, 1365'	122° 34,9124'	¥	12	Sufficent material reavery		
	an a ci	surface cover (density) n	noisture, color, minor modifi		lifier other co	nstituents, odor, sheen, layering,		
Sample	Description:	anoxic layer, debris, plant	matter, shells, biota			nauterita, ouor, aneeri, iayering,		
4						01		
	-1 Suntac	2 Sof and Shingt	Norms, bis aded grave wef grey	1 1 0	ud Ce			
		biota Chell	(womis, b	annaci ghost s	eil j -	Prace Fackets of		
		Incinea	vite jives.					
Sample I	dentification a			80918	sitro	nwe		
		Smith	2B-17-1-10	- Con	rb-12	6418		
Sample	Containers:	internation						
	in a state	_	66	-	Nya	· · · · · · · · · · · · · · · · · · ·		
Analyses	circle all tha	t apply): Cadmium, (PAHs, D/Fs, Larval E	Bioassay, Fu	III Suite Bio	assay Archive		
				10. 10 . 10. 1	31.54-371-			

	ANICITC	ND O				
127	ANCHC					
X			Sediment Fi	-	-	1
		Samble - OMMP LTN	l	Station ID:	Sm.A.	2B-174
the second se	No: 180388-0	1		Date: 91	8/18 0	
Field St		(M		Sample Me		over grap
Contrac	Datum: ft ML	1.W/	· · · · · · · · · · · · · · · · · · ·	Logged By		D92 MA SD North
	ter Height	.L.VV	Tidal Elevations	Horizontai		AD83 WA SP North
	pth Sounder:		Time:			r Depth + Tidal Elevation
	par ocundor.		Time.		(-) Wate	Deptil - Ildal Llevation
DTM Le	ad Line: 9,	ft	Height: 8,9	Ft	·-D	12 Ft
						· · · · · · · · · · · · · · · · · · ·
						Sample Acceptability Criteria:
						1) Overlying water is present
Notes:						2) Water has low turbidity
-						Sampler is not overfilled
-						4) Surface is flat
				1		5) Desired penetration depth
Grab #	Time	Field Collection	on Coordinates	Sample	Recovery	Comments: jaws close, good seal, winnowing, overlying
		Northing/Latitude		Accept (Y/N) Dep	Depth (in)	water, surface intact, etc
	and a second				am	1 1 i
1	1251	47°51, 1138'	122 34,9259'	N	-	daws closed
	1354			T	11	
				,		
						3
			0			
		- 10				
Sample	Description:	surface cover, (density), n anoxic layer, debris, plant		ier, MAJOR mod	lifier, other co	nstituents, odor, sheen, layering,
		anoxic layer, debris, plant			a familie a	
	At sw.	face: Suba	wallow 001	alabe v	Wad. b	sita
		shan		R. Mai	in alo	
		Nom		1)
		0-17: Doon	ly graded	SANDI	DSH	+ 2 ana-l (SP-SM)
		2000		areizo	Sult(1	0%, grave (40%)
		sas		bang.	15 F-0	Styperanded !!
		tra	le bieter (w	(and)	trace	chell hash:
				,		
				A	netrive	2
Sample I	dentification a	nd Time: 8nAA2	B-174-1809	K -PH		
		SmAD		om 2- 18	50918	
				1		
Sample (Containers:					
				- A		
Analyses	(circle all that	anniu): Codmium			II Quite Di-	accourt Archive
hidlyses	circle all trat	apply). Caumium, I	AHS, D/FS, Larval E	bioassay, Fu	II SUILE BIO	assay Archive
	10/14					

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	ANCHOR								
	QEA 🛫		Sediment Fi			A 1			
	Project Name: Port Gamble - OMMP LTM Station ID: SwhAge-1T5 Project No: 180388-01.01 Date: 918118								
	the second s			Date: 9	XLIX				
	taff:EM. ₱ ctor: MICC			Sample Me	the second s	wer grab			
	I Datum: ft ML	IW		Logged By Horizontal		D83 WA SP North			
	ter Height		Tidal Elevations	Horizontai		ne Elevation (ft MLLW)			
	DTM Depth Sounder: Time: (-) Water Depth + Tidal Elevation								
DIMLE	ad Line: 4,5	B. FF	Height: 5.70.	1) fr	0.07	the second secon			
						Sample Acceptability Criteria:			
Notoo						1) Overlying water is present			
Notes:						2) Water has low turbidity			
3						 Sampler is not overfilled Surface is flat 			
						5) Desired penetration depth			
						Comments: jaws close, good			
Grab #	Time	Field Collection	on Coordinates		Recovery	seal, winnowing, overlying			
		Northing/Latitude N			Depth (In)	water, surface intact, etc			
		4731.0920'	122° 34,9367'	1		Insofficient			
1	1414	7151.0120	122 39,7361		/	(A. 42) 12 25 (A. 1931)			
	1-119		· · · ·	i.v		recovery			
		47°51,0925'	17.7 34.9389'	У		C - C 0			
0	1448	11 1. 0141	100 1011001	/	15	sufficient recovery			
F	1440	9C			1)	MALOND			
						Teavernet			
						Ŭ			
		12							
						2			
					8				
Sample	Description:			er, MAJOR mod	lifier, other co	nstituents, odor, sheen, layering,			
	· · · · · · · · · · · · · · · · · · ·	anoxic layer, debris, plant	matter, snells, blota						
	0-15	Oporthe mas	Led SAND wil	avauel	(SP)				
		Loose Wet	NKonen	Anaus	P. F-R	(40%)			
		F-m Sana	J (66%) SIP	+ (0.%)	Tra	10 65010			
		worms	trace She	et has	h. t	race ornamics.			
)	·		· · · · ·				
	En Son	tace: peca		20)a:	herry				
	parnaches, algal, worms,								
			,	<u> </u>					
					1				
	11			1	Avrta	ind			
Sample	Sample Identification and Time: SWA2B-1T5-180918 Archive								
SMA2B-17-0-10- Comp-180918									
Sample	Sample Containers:								
				X					
Analyses	Analyses (circle all that apply): Cadmium, PAHs, D/Fs, Lan/al Bioassay, Full Suite Bioassay Archive								
Analyses		appiy). Caumium,	Ans, U/FS, Lanal B	bioassay, Fu	II SUILE BIO	assay Archive			
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	ANTOTTO	20					
	ANCHO		Codimont Ei				
	QEA #		Sediment Fi			A	
		Samble - OMMP LTM		Station ID:	SMAD	B-STI	
	No: 180388-	01.01	No.00 10 171 1000 1	Date: 9	thod: 0 ==	100 00-10	
Contra	the second s	FTK		Logged By	· AK	wer grado	
	I Datum: ft ML	LW				D83 WA SP North	
	ter Height	· · · · · · · · · · · · · · · · · · ·	Tidal Elevations			e Elevation (ft MLLW)	
	epth Sounder:		Time:			r Depth + Tidal Elevation	
DTM Le	ad Line: 20	9 ft	Height: 8,8	ft	-12.	L Ft	
		· · · · · ·		1		, .	
						Sample Acceptability Criteria:	
						1) Overlying water is present	
Notes:						2) Water has low turbidity	
						3) Sampler is not overfilled	
6						 Surface is flat Desired penetration depth 	
				1			
Grab #	Time	Field Collection	on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying	
		-Northing/Latitude N			an	water, surface intact, etc	
۲	1601	\$7'51,1511'	122°34.8748'	1	2024	Janus closed, overlying H20	
	15.21			T	1 X	overlying H20	
						Γ.,	
					-		
					័រ		
		84 - 1					
2							
-							
Comple	Description	surface cover, (density), r	noisture, color, minor modifi	ier, MAJOR mod	difier, other co	nstituents, odor, sheen, layering,	
Sample	e Description:	anoxic layer, debris, plant	matter, shells, biota		<i>K</i>	5 A.	
	7		1.0	/	. 0	······································	
	ブ)4	Sontace: +	race potal	maeo	oag	ac) snalls, tsh	
	0~	24. poorlog-6	inded SAN	N) (c))	. appens	lost with	
		at fineded	ente met		222	and (f - why Ciller	
		trace of	not hash.	1	5		
		1.0					
				9			
		and a state of the		1			
				C. Ar	due		
Sample	Identification a	and Time: SMAR	B-511-1810	ils M		,	
		SMAZZ	-ST-0-10-(omp -	180919		
SMA1023-ST-0-10 - Comp - 190118 dellicate							
Sample Containers:							
Analyses (circle all that apply): Cadmium, PAHs, D/Fs, Larval Bioassay, Full Suite Bioassay Archive							
-indiy58				Jugasay, rl			
						10 CM	

	ANCHC		Cadimant Ei				
	QEA 😂	amble - OMMP LTM	Sediment Fi	_		2-070	
	No: 180388-0			Station ID: SWA2B-ST2 Date: 9110110			
	taff: AK. E	141		Sample Me		wer grab	
	ctor: MSS			Logged By		0	
	Datum: ft ML	LW		Horizontal		D83 WA SP North	
	ter Height epth Sounder:		Tidal Elevations			ne Elevation (ft MLLW)	
	epin Sounder.		Time:		(-) vvate	r Depth + Tidal Elevatior	
DTM Le	ad Line: 28,	FF 1	Height: 817	ft	-19,1	F.	
Notes:						Sample Acceptability Criteria: 1) Overlying water is present 2) Water has low turbidity	
						 Sampler is not overfilled Surface is flat 	
Grab #	Time	Field Collection	on Coordinates	Sample Accept (Y/N)	Recovery Depth (m)	5) Desired penetration depth Comments: jaws close, goo seal, winnowing, overlying	
		Northing/Latitude N	Easting/Longitude W		- Om	water, surface intact, etc	
١	1534	47°51,1448'	122 34,78851	¥	22	tians closed	
Sample	Description:	surface cover, (density), m anoxic layer, debris, plant		er, MAJOR mod	lifier, other co	nstituents, odor, sheen, layerin	
	Alsi	stare: trac	e brotafara	lvoale	jat, u	20mmy trave	
	0-22.	· Poerly 9-	roud and SANN & wet, gree	$(sl)_{f}$	-M Sol	ud (10007)	
		-frace bibli	a' (worm).	0			
			100				
				CI IV Sed I	frehu	Ĺ	
ample	Identification a	the second s	R-ST-0-10-		-18091	6 d.01	
ample	Containers:		20-31-0 10	A)	TE diplicate	
nalyses	s (circle all that	apply): Cadmium, F	AHs, D/Fs, Larval B		II Suite Bio	assay Archive	
						toritori di concerne de s	

Field St Contrac Vertical <u>Wa</u>	No: 180388-	01.01		B.1. A.1.	SMADE			
Contrac Vertical <u>Wa</u> r				Sample Method: Prwer Arab				
Vertical <u>Wa</u>	tor AAC	₩-		Logged By:	Ar-	wor gino		
Wa	Datum: ft MI	LW		Horizontal	Datum: NA	D83 WA SP North		
DTMD	ter Height		Tidal Elevations			e Elevation (ft MLLW)		
DIMDE	pth Sounder:		Time:		(-) Wate	r Depth + Tidal Elevatio		
DTM Le	ad Line: 30	15 Et	Height: 8,5	-{+	- 22,0			
						Sample Acceptability Criteria		
Network		<i>E</i> .				1) Overlying water is present		
Notes:				1.4		 Water has low turbidity Sampler is not overfilled 		
						4) Surface is flat		
						5) Desired penetration depth		
Grab #	Time	Field Collection	on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, go seal, winnowing, overlying water, surface intact, etc		
١	1602	and an end of the second se	122 34.8253	۶		tous closed		
	14-14							
Sample	Description	surface cover, (density), r	moisture, color, minor modif	ier, MAJOR mod	difier, other co	nstituents, odor, sheen, laye		
		anoxic layer, debris, plant	t matter, shells, biota					
	0-2-		readed SAN	P(SP) enj-f-	M So	mad(1000%)		
					<i>P</i> : 7	<u> </u>		
	At s	At surface, trace brota (works, Shaels, algae), trace shell hash, trace sub-roomed						
		9.						
				Ċ	Ardi	ril		
Sample	Identification	SMA	28-51-0-10			X - dup licat		
Sample	Containers:	I AMES	038-ST-0-	10 T Cony	2-100-	10 2000		

1 %	, ANCHO					
X.	QEA #		Sediment Fi			
	the second se	Samble - OMMP LTM		Station ID:		2B-ST4
Field St	No: 180388-	Ar			SILX	wer arres
Contrac	V	1 IL		Logged By:	AK	ver egres
Vertical	Datum: ft ML	LW				D83 WA SP North
	ter Height		Tidal Elevations			ne Elevation (ft MLLW)
	pth Sounder:		Time:		(-) Wate	r Depth + Tidal Elevation
DTM Le	ad Line: 29	1 ft	Height: 8,4	ft	-21,0	o ft
						Sample Acceptability Criteria:
		1.002.00				1) Overlying water is present
Notes:						2) Water has low turbidity
-						3) Sampler is not overfilled
-			1999 J - J			 Surface is flat Desired penetration depth
						Comments: jaws close, good
Grab #	Time	Field Collection	on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	seal, winnowing, overlying water, surface intact, etc
and of the	1616		122 34. 8657		Ai	tams closed
		-		1	QY	
Sample	Description:	surface cover, (density), n anoxic layer, debris, plant		fier, MAJOR mod	difier, other co	I nstituents, odor, sheen, layering,
	0-24		-I CANNI	CDY		
		ned-dense.	wet, ane	m S	and.	F-m(100%).
		Frace subro	inder grav	ep (1"),	trau	e bootta (usond)
	AT SD	face: trace	brita (g	naili.	alga	e, wardt.
				1	<u> </u>	,
		· · · · · · · · · · · · · · · · · · ·				
					0	
				3	Hrch	ne
Sample	Identification a		2B-ST4-180	V	<i>√</i>	~
			28-5T-0-10 028-5T-0-	-10-11	RAIX	Saplicat
Sample	Containers:	571/1711		10 18	× 110	A
Anth						And him
Analyses	s (circle all tha	t apply). Cadmium, I	PAHS, D/FS, Larval	bioassay, Fu	iii Suite Bio	bassay Archive

ct Name: Port Gamble - OMMP LTM Station ID: Sm A 2 B - ST 5 ct No: 180388-01.01 Date: 9 11 Staff: EM AY Sample Method: Power Grach Tactor: MSS Logged By: A Colspan="2">Mudline Elevation Grach Tidal Elevations Mudline Elevation (ft MLLW) Operation of the second se		ANCHO QEA 😂		Sediment Fi	eld I og		
et No: 180388-01.01 Date: 91.1% Staff: EVM, AV Horizontal Datum: NAD83 WA SP North Horizontal Datum: NAD83 WA SP North Wulling Elevation ft MLLW Horizontal Datum: NAD83 WA SP North Horizontal Datum: NAD8 Northwey Horizontal Datum: Nad8 Nad8 P Northwey Horizontal Datum: Nad8 Nad8 P Northwey Horizontal Datum: Nad8 P Northwey Horizontal Datum: Nad8 Nad8 P Northwey Horizontal Datum: Nad8 P Northwey Horizontal Data P Northwey P Nad8 P Northwey Horizontal Data P Northwey Horizontal Da							D-CTE
Staff: MY Sample Method: Grach ractor: MGS Logged By: AL at Datum: ft MLW Tidal Elevations Mudline Elevation (ft MLLW) Depth Sounder: Time: (-) Water Depth + Tidal Elevation Mudline Elevation Lead Line: XS.1 AH Height: Y.2 AH - 19.9 ft s:			and the second se			SMHO	45-515
Cogged By: AC Cogged By: AC Construction Tidal Elevations Batum: MD83 WA SP North Mudline Elevation (ff MLLW) Vater Height Depth Sounder: Time: (-) Water Depth + Tidal Elevation Lead Line: DS () (-) Water Depth + Tidal Elevation (-) Water Depth + Tidal Elevation <tr< td=""><td></td><td></td><td></td><td></td><td></td><td>thod .</td><td>use a Arrita</td></tr<>						thod .	use a Arrita
Pail Datum: ft MLLW Horizontal Datum: NAD83 WA SP North Vater Height Tidal Elevations Depth Sounder: Time: Lead Line: Standa Locastability. Citaria. Lead Line: Standa Locastability. Citaria. s: -19.9 s: -21.9 Northing/Latitude N Easting/Longitude W Accept (YN) Depth (in) water, surface intact, etc s: -22.9 Northing/Latitude N Easting/Longitude W Northing/Latitude N Easting/Longitude W s: -23.9 surface cover, (den							Wer green
Vater Height Tidal Elevations Mudline Elevation (ft MLLW) Depth Sounder: Time: (-) Water Depth + Tidal Elevation Lead Line: XS_1 4 Height: X_2 1 - 19.9 status (-) Water Depth + Tidal Elevation status (-) Water Depth + Tidal Elevation status (-) Water Depth + Tidal Elevation status (-) Overlyng water present			LW				D83 WA SP North
Depth Sounder: Time: (-) Water Depth + Tidal Elevation Lead Line: Xi (A) A) Height: Xi (A) FI -19.9 A) s:				Tidal Elevations			and the second
Lead Line: 35.1 4 Height: 3.2 4 -19.9 4 Simple Accentability Criteria 1) Overlying water is present 2) Water has low turbidity 3) Sample and vorfilled 4) Surface is fat 9) Desired pretration depth 4) Surface is fat 9) Desired pretration depth 9) Desired pretration dep							
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S: 2) Water has low turbidity 3) Surface is flat 4) Surface is flat 5) Desired penetration depth Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc 47°57, b966' (22°34, E104') 1629 23 Haws, closed 47°57, b966' (22°34, E104') 23 Haws, closed 40°57, closed 40°57, b966' (22°34, E104') 23 Haws, closed 40°57, closed 40°							Sample Acceptability Criteria:
s) Sampler is not overfilled 4) Surface is flat 5) Description: surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, debris, plant matter, shells, biota At Surface - trace brotha (algae, use mus), trace At Surface - trace -							1) Overlying water is present
4) Surface is flat 5) Desired penetration depth 5) Desired penetration depth 5) Desired penetration depth 5) Desired penetration depth 6) Desired penet	Notes:						2) Water has low turbidity
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ses (circle all that apply) Cadmium, PAHs D/Fs, Larval Bioassay, Full Suite Bioassay Archive	Analyses	(circle all that	apply): Cadmium,	PAHS, DIFS, Larval L	bioassay, Fi	ui Suite Bio	bassay Archive
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	· · · · · · · · · · · · · · · · · · ·						Sample Acceptability Criteria:		
	Notes:						1) Overlying water is present		
	Notes.						 Water has low turbidity Sampler is not overfilled 		
							4) Surface is flat		
							5) Desired penetration depth		
	Grab #	Time	Field Collection	on Coordinates Easting/ Longitude₩	Sample Accept (Y/N)	Recovery Depth (jri)	Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc		
	١	0830		122° 34.8069'	2		Jaws agripe, grabbed Rg. CipbH		
	2	0834	47° 51,2863'	122°34.8055'	Ŷ	(5			
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	Sample	Description:			er, MAJOR mod	lifier, other co	nstituents, odor, sheen, layering,		
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V.	QEA 5		Sediment Fi	eld Loa					
Project		Gamble - OMMP LTM				A-172			
	No: 180388-			Date: 91	9/1/				
Field St	A CONTRACTOR OF THE OWNER WATER OF THE OWNER OWNER OF THE OWNER O	VAK		Sample Me	thod: P	over marb			
Contrac	ctor: MSS			Logged By:					
Vertica	l Datum: ft MI	_LW	-	Horizontal		AD83 WA SP North			
	ter Height		Tidal Elevations			ne Elevation (ft MLLW)			
DTM De	epth Sounder:		Time:		(-) Wate	r Depth + Tidal Elevation			
DTM Le	DTM Lead Line: $2,5$ f+ Height: $2,1$ f+ -0.4 -f+								
						Sample Acceptability Criteria: 1) Overlying water is present			
Notes:						2) Water has low turbidity			
			(a)	-		3) Sampler is not overfilled			
		i in the second s				4) Surface is flat			
1						5) Desired penetration depth			
Grab #	Time		on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc			
		Northing/Latitude N	the second s						
		47°51.2729'	122 34.8603			Sufficient			
1	0903			Y	21	recover			
		2							
Sample	e Description:			ier, MAJOR mod	difier, other co	onstituents, odor, sheen, layering,			
	A	anoxic layer, debris, plant	matter, shells, biota						
	-1+ 0	inface: sol	mailar	186 bb	·	altonal			
	111 2	Wilder SU	ta barnad		Lap	astora			
		ble	14 (Boor Parce	nos ca	gar	1 was welt			
	0-2	1: Well grad	ed gravel	DIC	and	(AW).			
		Looser Mil		fre Sc	brown				
		M-C Sand	(400,) - Tida	é 676	ta luo	must trail			
		shell has	hill						
					rehu	-l			
Sample	Identification a	and Time: Sm A	13-A-172-18						
Jampio		Smr		- Comp	- 18091	9			
	11. TAX 1.0.00.4	SIIIV	ivent of to	V VIII	- <u>,,,,</u> ,				
Sample Containers:									
85									
Analyses (circle all that apply): Cadmium, PAHs, D/Fs, Larval Bioassay, Full Suite Bioassay Archive									

17	QEA : Surface Sediment Field Log							
Droject	QEA :			Station ID;	-	21-117		
	No: 180388-0	amble - OMMP LTM		Date: 9	SMAG	217-112		
	taff: F.M.	AK		Sample Me	thod:	two grab		
	ctor: MSS	+ > 1		Logged By:				
	l Datum: ft ML	LW		Horizontal		D83 WA SP North		
	ter Height		Tidal Elevations			ne Elevation (ft MLLW)		
	epth Sounder:		Time:		(-) Wate	r Depth + Tidal Elevation		
DTM Le	ad Line:	41	Height: 2,1	1+	-1.5	, fr		
				·		Sample Acceptability Criteria:		
						1) Overlying water is present		
Notes:						2) Water has low turbidity		
						 Sampler is not overfilled 		
	•					4) Surface is flat		
		r		1		5) Desired penetration depth		
Grab #	Time	and the second	on Coordinates	Sample Accept (Y/N)	Recovery Depth (in)	Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc		
		Northing/Latitude N						
		47 51. 2617'	122,34.8705'	1		tonus closed		
1	0929		12	1	20	tanus closed overlyngH20		
						-		
Sample	e Description:			ier, MAJOR mod	difier, other co	nstituents, odor, sheen, layering,		
	D ISFY @	anoxic layer, debris, plant	matter, shells, biota					
	0				0			
	0-20 pg	only grad	ed SAND(SP) 10 A	ravel	ind gravel (20%)		
		Dose MOTS	oral one so	b-aug	provid	obbile.		
	- N	The Intal		vnacht	1 ward	are hall		
	7	rash.) ,			
					2.00			
						rehre		
						A		
Sample	Identification a	nd Time: SVV	M2A-177	- 18091	9 -			
	SMA2A - 17-0-16- (mme - 180918							
Comela	Containant		,	~	/	-		
Sample	Containers:							
Analyses (circle all that apply): Cadmium, PAHs, D/Fs, Larval Bioassay, Full Suite Bioassay Archive								
		CR	X					
					and the second second			

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oject Name: Port Gamble - OMMP LTM Station ID: Smith 2 A - 174 oject No: 180388-01.01 Date: 9 19 18 eld Staff: CM, A + Sample Method: forver grash ontractor: MCS Logged By: After ortical Datum: ft MLLW Horizontal Datum: NAD83 WA SP North Water Height Tidal Elevations Mudline Elevation (ft MLLW) M Depth Sounder: Time: (-) Water Depth + Tidal Elevation TM Lead Line: b, 9 ft Height: 3, 2 ft - 3, 7 ft otes:		QEA ##		Sediment Fi	eld I oa			
olect No: 190388-01.01 Date: 1/14 1/3 Barnels Method: processing and the second secon							A-174	
and Staff: C.M., A.K. Sample Method: Intractor: Music grady intractor: MCS. Logged By: A.H. with the labit Tidal Elevations Mudline Elevation (ft MLLW) Mudline Elevation (ft MLLW) Water height Time: (i) Water height Time: (i) Water height Time: (i) Water both (i) Water both M Lead Line: L., 1 (i) Height: 3.2 (ii) Overling were in some constituents Sample Acceptable: Cherse (iii) Overling were in some constituents (iii) Overling were in some constituents (iii) Overling were in some constituents (iiii) Overling were in some constituents (iii) Overling were in some constituents (iiii) Overling were constituents (iii) Overling were constituents (iiii) Overling were constituents (iiii) Overling were constituents (iiiiii) Overling were constituents (iiii) Overling were constituents (iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii		the second s			Date: 911	1118		
Inficial Datum: NADB3 WA SP North Water Height Tidal Elevations Muditive Elevations Muditive Elevation (ft MLLW) (-) Water Neight Time: Muditive Elevations Muditive Elevation (ft MLLW) (-) Water Neight Time: Muditive Elevations Muditive Elevation Muditive Elevations Muditive Elevation Muditive Elevations Muditive Elevation Muditive Elevations Sample Accostability Citerin: 1) Overlyne water present 3) Sample Accostability Citerin: 1) Overlyne water present 3) Sample In not overfiled 4) Surface is fait 3) Sample 1 0956 Field Collection Coordinates Accept (VN) Sample Northing/Latitude Al Eesting/Longitude Kl 40956 Y JJ 1 0956 Y JJ 41 0956 Y JJ 42 How Clevel How Clevel 44 Y IZZ * 34.8976' JJ 45 Surface cover, (density), moisture, color, minor modifier, MJOR modifier, other constiluents, odor, sheen, layeting, ancole synt. densis, b								
Water Height Multime Elevation (ft MLLW) (-) Water Depth F Tidal Elevation Multime Elevation (ft MLLW) (-) Water Depth F Tidal Elevation Multime Elevation (ft MLLW) (-) Water Depth F Tidal Elevation Multime Elevation (ft MLLW) (-) Water Depth F Tidal Elevation Multime Elevation (ft MLLW) (-) Water Depth F Tidal Elevation Multime Elevation (ft MLLW) (-) Water Depth F Tidal Elevation Multime Elevation (ft MLLW) (-) Water Depth F Tidal Elevation Multime Elevation (ft MLLW) (-) Water Depth F Tidal Elevation Multime Elevation (ft MLLW) (-) Water Depth F Tidal Elevation Sample Description: Sample Recovery (ft ft f								
Image: Time: (-) Water Depth + Tidal Elevation Image: Model in the intervention of the intervented of the interventint of the intervention of			LW	Tidal Elevations	Horizontal			N)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $								
ample Description: Surface sourd. (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, density, moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, density, moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, density, moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, density, moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, density, moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, density, moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, debts, plant mater, shells, biota At Suc Fau : for the fau the								
otes: 0 Contribution of the second s	DTM Lea	ad Line: 6, 1	Ft-	Height: 3.2	++	- 3:7		14
otes: 2) Where has low turbidity 3) Sampler is not overfilled 4) Surface is fait 5) Desired penetration digth Comments: jaws close, good 8) Morthing/Latitude NI Every (YN) Penetration digth Comments: jaws close, good 9) Description: Understand 1 0956 47°51, 2.449 / 122°34, 8976 / 1 0956 47°51, 2.449 / 122°34, 8976 / 1 0956 47°51, 2.449 / 122°34, 8976 / 1 0956 3 Jaws close, good seal, winnowing, overlying ample Description: surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, debris, plant matter, shells, biota A+ Surface is an inter, shells, biota A+ Surface, shell, matter, shells, biota 0-22: pterlag, greated, SAIND (SS), for greated, shell, for greated, for greated, for greated, for greated, for greated, for grea, bitter, for greated, for grea, bitter, for greated,	-						and the second	eria:
3) Sampler is not overfiled 4) Surface is fait 3) Desire pertainin depth 3) Desire pertainin depth 3) Desire pertainin depth 3) Desire pertainin depth 4) Desire pertainin depth 4) Desire pertainin depth 4) Desire pertainin depth 4) Desire pertainin depth 1) Defiel 4) Defiel	Notos:			60 Mg			and the second sec	
4) Surface is flat 6) Surface is flat 7) Surface is flat 8) Surface is flat 9) Surface is	Notes.							
Time Field Collection Coordinates Northing/Latitude N Sample Accept (YN) Recovery Depth (in) Comments: jaws close, good seal, winnowing, overlying water, surface intact, etc 1 0956 9751, 2449' 122°34, 8978' 97 97 97 97 ample 97°51, 2449' 122°34, 8978' 97 97 97 97 97 ample 9956 97 97 97 97 97 97 ample surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anoxic layer, debris, plant matter, shells, biola 97 97 At Suc Faru: trance bit faru trance bit faru 100, 100, 100, 100, 100, 100, 100, 100,	-							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	-						5) Desired penetration depth	
ample Description: surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anota layer, debris, plant matter, shells, biota At Stor Face: traine biola (algae, bur acteo), trace Shell hash, trave and humporgenics (glass from 0-22: ptorly graded SAND (SP), (loose week dk grad for the constituents, another or the face of the face of the face and humporgenics (glass from trave and face of the face of the face of the face of the face of the face another of the face of the face of the face of the face of the face and humporgenics (glass from the face of the face of the face and humporgenics (glass from the face of the face of the face and humporgenics (glass from the face of the face of the face and humporgenics (glass from gullats), mple Identification and Time: SM A2A - TT-150911 SM A2A - TT-0-10 (and face) for the face and humporgenics (glass from gullats), mple Containers:	Grab #	Time	and the second se	the second statement of the se	A CONTRACTOR OF A CONTRACTOR O		seal, winnowing, overlyi	ng
ample Description: anotic layer, debris, plant matter, shells, biota A+ Surface cover, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anotic layer, debris, plant matter, shells, biota A+ Surface : trace b what (al Aal, bu vaches), trace Shell hash, trace Outher Orgenics (glass free) 0-22: ptorlag graded SAND (SP), (cope wet, dk orgenics (glass free) 0-22: ptorlag graded SAND (SP), (cope wet, dk orgenics (glass free) 0-22: ptorlag graded SAND (SP), (cope wet, dk orgenics (glass free) 0-22: ptorlag graded SAND (SP), (cope wet, dk orgenics (glass free) mple Identification and Time: SM A2A - T-15 Comp - Spall 9 mple Containers:							· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
ample Description: anotic layer, (density), moisture, color, minor modifier, MAJOR modifier, other constituents, odor, sheen, layering, anotic layer, debris, plant matter, shells, biota A+ Surface: trace builta (alphale, buvacles), trace Shell hash, trace Outprogrammed (glass free) 0-22: ptorlag graded SAND (SP), (cose) web, dt graded SAN	.		47 51.2449	122 34,8978	./	0.0	daws closer	1
At Surfau: trace buta (algae, buracles), trace At Surfau: trace buta (algae, buracles), trace Shell harh, true (unthropogenics (glass free) 0-22: poorly graded SAND (98), loose wet, draver f-c saud (90%) loose wet, draver f-c saud (90%) aravel Sov-wooded (16%), Trace but (use mult, trace Shell hash trace anthropogenics (glass fragments), mple Identification and Time: SMA2A-IT-0-10-Comp-80919 mple Containers:	1	0956			X	22	overlyng Hz	,0
At Surfau: trace bruta (algae, buracter), trace At Surfau: trace bruta (algae, buracter), trace Shell harh, trace (authropogenics (glass free) 0-22: prorting graded SAND (SP), loose wet, dramper f-c saud (gu?/.) aravell Sob-instradiction of trace bictu (higher trace Shell harh, trace authrofogenics (glass fragments), mple Identification and Time: SMA2A-IT-0-10-Comp -80919 mple Containers:								
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At Surfau: trace buta (algae, buracles), trace At Surfau: trace buta (algae, buracles), trace Shell hash, trace (authropogenics (glass free) 0-22: pronling graded SAND (98), loose wet, draver f-c saud (90%) aravell Sob-insided (16%), Trace bicta (use mult, trace Shell hash, trace authrofegenics (glass fragments), mple Identification and Time: SMA2A-IT-0-10-Comp-80919 mple Containers:								
At Surfau: trace buta (algae, buracles), trace At Surfau: trace buta (algae, buracles), trace Shell hash, trace (authropogenics (glass free) 0-22: pronling graded SAND (98), loose wet, draver f-c saud (90%) aravell Sob-insided (16%), Trace bicta (use mult, trace Shell hash, trace authrofegenics (glass fragments), mple Identification and Time: SMA2A-IT-0-10-Comp-80919 mple Containers:								
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mple Identification and Time: SW AZA-IZ-0-10-Comp-180919 SMAZA-IZ-0-10-Comp-180919 mple Containers:	Sample	bescription.	anoxic layer, debris, plant	matter, shells, biota				
mple Identification and Time: SWI AZA-17-180919 SMAZA-17-0-10-Comp-180919 mple Containers:		A+ C.	r fait i tra.	1 pula (al	AAPt	In rarl	on traco	
0-22: pronly graded SAND (SP). loose wet, dk grey F-C saud (gu/l) gravel, Sig-immed (10%). Trace birty (hight), trace Shell hash frace authrofegenics (glass fragments). mple Identification and Time: SMA2A-17-180919 SMA2A-17-0-10-Comp-180919 mple Containers:		11 30	Shi	el hash -	true a	14		Freis
mple Identification and Time: SWI AZA-IZ-0-10-Comp-180913 mple Containers:)		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1-7-6	
mple Identification and Time: SMAZA-II-0-10-Comp-180919 mple Containers:		0-	22: poorly	- graded &	SAND (SP),	1/aut	
mple Identification and Time: SMAZA-II-0-10-Comp-180919 mple Containers:			Kuose	wes, dk	20 Mil	1-0,0	and guile	
mple Identification and Time: SMAZA-II-180919 SMAZA-II-0-10-Comp-180919 mple Containers:			1	11 trado	Short	That is	1	
mple Identification and Time: SMA2A-JT4-180819 SMA2A-IT-0-10-Comp-180819 mple Containers:					alass.	Fragin	1 H Porto	
mple Identification and Time: SMA2A-JT4-180819 SMA2A-IT-0-10-Comp-180819 mple Containers:						1		
mple Identification and Time: SMA2A-JT4-180819 SMA2A-IT-0-10-Comp-180819 mple Containers:						2 A	relas a	
SMA2A-17-0-10-Comp-180919 mple Containers:	Sample	Identification a	Ind Time: SM A	20-574-19	80919		which	
	Prof.				-Comp	-1805	213	
	2	Contair			1	1		
alyses (circle all that apply): Cadmium, PAHs, D/Fs, Larval Bioassay, Full Suite Bioassay Archive	sample	Containers:				/		
alyses (circle all that apply): Cadmium, PAHs, D/Fs, Larval Bioassay, Full Suite Bioassay Archive				TOF	A			
	Analyses	s (circle all tha	t apply): Cadmium,	PAHs, D/Fs, Larval I	Bioassáy, Fu	ull Suite Bio	bassay Archive	
			$\langle \rangle$		\sim			
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Project I	Name: Port	Gamble - OMMP LTM		Station ID:	SMAQ	A-I+5
Project I	No: 180388-	01.01		Date: 9 10	1/18	A-ITS wergrab
Field Sta	aff: EM,	AK		Sample Me	thod: Pt	wer and
Contract	tor: MSS					
Vertical	Datum: ft M	LLW		Horizontal	Datum: NA	AD83 WA SP North
Wate	er Height	1 - 1996 - 19 - 19	Tidal Elevations	10-12M H.		ne Elevation (ft MLLV
DTM Dep	oth Sounder:		Time:		(-) Wate	er Depth + Tidal Elevat
DTM Lea	d Line: Le.	o ft	Height: 3.7	Ft	-21	3
						Sample Acceptability Crite
-	1		1			1) Overlying water is present
Notes:			2) Water has low turbidity			
-						3) Sampler is not overfilled
						4) Surface is flat
-						5) Desired penetration depth
					100	Comments: jaws close,
Grab #	Time	Field Collection	on Coordinates	Sample	Recovery	seal, winnowing, overlyi
			Easting/Longitude W	Accept (Y/N)	Depth (in)	water, surface intact, etc
					Can	Laux -Los
,		47 51.2220	122°34,9095'	N	10	Jaus close
	1010			Y	19	good recver
1				1)
Comula	Deserintion	surface cover, (density), n	noisture, color, minor modif	ier, MAJOR mod	difier, other co	onstituents, odor, sheen, lay
Sample	Description	anoxic layer, debris, plant	matter, shells, biota			AM
		A		<u> </u>	2	
	0-10	1. poorly a	raded SANT	n(sp-s)	m) in	Silt & Araul
		loose, Ket	. ak over.	silt (100%).	F-M SDD toons
		asaver (15	do turist	1017	511	trace bioto
		I Shrime.	ghost 1 -	Frace S	holi	ham: slig
	1	(FIR)	Junit		inal	v row y
	AI	Sortace: a	couple of Si	Teanar	of ar	reples
	()1	trave lo	TADAA	0 () . Pi	1 11	Mal Joly
		- park W	is in (major	T (VIVO	-) - WL	······································
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		N			A	rahue
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Sample	dontification	and Time:	ADA	18/001	9	
sample l	dentification		A2A-175		5-10	0919
		SMA	2A-1T-0-1	U - Lem	7-15	
	Damtelaa				\rightarrow	
D	ontainers.					
Sample (Jonnamoro.					
Sample (làs	

		L VOTTO	~				- C DOL ATOR
	1 7	ANCHO				DGT	- Capped wood
		QEA :	🖂 Surface	Sediment Fi	eld Log		31
\bigcap	Project		amble - OMMP LTM		Station ID:	SIAAA 1	B-IT3
		No: 180388-0			Date: 9 19		
			AK		Sample Met		wer eprals
		tor: MSS	11-	and the second sec	Logged By:	AV 10	NEX ETTESS
	the second se	Datum: ft ML	1 \A/				D83 WA SP North
				Tidal Elevations	nonzontai		e Elevation (ft MLLW)
		er Height		Tidal Elevations			r Depth + Tidal Elevation
	DIMIDE	pth Sounder:		Time:		(-) Wate	Deptil + Ildal Elevation
	DTM		C.	Height: 4.5	0	-3.8	ft
	DIMLea	ad Line: 83	45	Height: 119	ft	2.6	<u>t</u> T
			•		,		
	· _						Sample Acceptability Criteria:
							1) Overlying water is present
	Notes:						2) Water has low turbidity
							Sampler is not overfilled
							4) Surface is flat
							5) Desired penetration depth
						-	Comments: jaws close, good
	Grab #	Time	Field Collection	on Coordinates	Sample Accept (Y/N)	Recovery	seal, winnowing, overlying
			Northing/Latitude N	Easting/Longitude W	Accept (T/N)	Depth (in)	water, surface intact, etc
							A
		12 1	47'51.4124'	122 34,8749'			faus closed
		1043			¥	20	
	├						in an
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(
		9					
			2 A 1				
				15			
		a					
	Sample				ier, MAJOR mod	difier, other co	nstituents, odor, sheen, layering,
	/		anoxic layer, debris, plant	and a second		+	
	*	to Susta	ace " modes	rate bital	marvoc	algae	bannactes),
			-mace sh	el hash.			, , ,
		0-20 M	rell graded	GRAVEL D		nd sau	
		l	pose, wet, a	k grey su	1+(15%)	the state of the local division of the local	
		5	Oprounded.	F-C gravel	(100-76)	. Hock	ets of increased
		£	nes Throve	hort. tra	ie brot	a (ioi	and'
		1	C	<u>、</u>			
	Sample I	Identification a	nd Time: Cv	NA2B-IT3	-0-10-	18091	9
			ter t				
	Sample	Containers:					;
	2011010						
6 3	Analyse	circle all that	apply): Cadmium	PAHs, D/Fs, Larval I	Binassay Er	I Suite Bio	assay Archive
\bigcirc	Analyses		apply). Caumum,	TANS, DITS, LAIVAIL	510435ay, 14	an oute DIC	August Another
			(1-1)) 	<u>() () () () () () () () () () () () () (</u>			

	Dail	y Log					
V20	NCHOR EA 🚟		Anchor QEA L.L.C. 720 Olive Way, Suite 1900 Seattle, WA 98101 Phone 206.287.9130 Fax 206.287.9131				
PROJECT NAM	E: PG OMMP Long Term Monitoring		DATE: 9/17/18				
SITE ADDRESS		PERSO	NNEL: EM/AK				
WEATHER:	WIND FROM: NE E SE SUNNY CLOUDY	S SW W NW RAIN ?	LIGHT MEDIUM HEAVY TEMPERATURE: °F 65 . °C [Circle appropriate units]				
TIME	COMMENTS						
0815	empail arrive c' but I	anch Salisber	y manhay load ger				
0910	Hds meeting		-				
0920	Depart Boatland	h	1.1 Mar.				
0925	AM NAVCHECK AT OFFSKOLE PILL	E- SALBBURY PR	rn zame				
	47°51.4348'N 122 36.4						
0945	on station of Small.	- ST1, tak	e sample				
1017	sample SUMTI-ST	()					
1040	oustation SMAI-S	T3, Samp	e				
1114	Sample SMAAI-STI	1					
+ 4	- Wood Fibers in	grab at	both ST3 7 STY				
	- largen wood d	nix af ST	4				
4148	Sample SMAI-ST5						
1205	SMAI-ST Rampi Sa	mple Colle	ched				
1215	Dreak for lunch						
1255	on station SMAIA-ITI, station collected						
1323	Blect sample at &	SMAIA-IT	R				
1356	Pallet Samele at 8	MALA-TT	3				
1418	SMATA-ITY-Sau	PLecollecte	ed.				
1450	SMAIA - ITS - Samp	Le rellect	ed				
1510	SMAIA-IT COMP	Sample (5	rected.				
1535	Mob to SMA-3 to co	Tlect BW.	-15-0-10 sample.				
1540	onstation of BW-1	5 Glect	Sample.				
1615	We b for dock, Drip	of same	hes at Ecotralusts				
110 50	Annue at dock,	denos fé	r day.				
			0				
		ZM					
			70. ⁻				
	Λ	4					
Signature:	Man Mall	1	pg of				
(.	360461-5784 - Br	ian @ Eco	Analysts				

Daily Log							
VE ANCHOR QEA				Anchor QEA L.L.C. 720 Olive Way, Suite 1900 Seattle, WA 98101 Phone 206.287.9130 Fax 206.28		06.287.913	1
PROJECT NAM	IE: PG OMMP Lo	ong Term Monitoring		DATE:	9/18/18		
SITE ADDRESS	S: Port Gamble,	NA	PERSO	NNEL:	em, AK, V	nH	
WEATHER:		N NE E SE SUNNY CLOUDY	S SW W NW RAIN ?	LIGHT TEMPE		HE 50. appropriate uni	AVY ° C
TIME	COMMENTS						
0730	Arrive a	n site, load ge	W. HONLOW SAFE	177			
0847		T OFFSHORE PILE AN			wer KANF		
		51.4349'N			2 - A		
0911	Sample	SMAZA-ST	1				
0939	Sample	SMAZA - ST	2				
1005	Sample	SMAZA-ST	3				
1029	Cample	SmA2A-ST	Н				
1045	Sample	SMARA-ST	5	an a	-		
1100	Compos	if Sam D	ie at 8m	A-2A	- ST (vollec	led :
1146	on statio		10 571 1	1111011	pollect	ed	~~ .
1219	Sermele	Collected Sm		Dier		Hen	NC
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- 212	Ciban	allas aldol		in and		0 10 DE	2
	had 2	Contraction of the second	ancouster	0	gestina	erpr	~
	Inclein	and seller	a colla	1-11		ive	
	DIA MARIN	The colled	va: Stat	- Tha	noved &	C. A.	1
	should		apris apth	a C	THE DA	for h	FU
	S=10.A		cted.	- J	argue		
1318	SWI TO						
354	SMA2B-	I COUCER	ed				
1448	SMAZB -		ed.	1			
1510	Sm128-1		neh colle	ched	×		
1521	SmAZB-S		ed				
12.34	Smit 213-	ST.2 Sampl	ed		<u></u>		
1602	SMA2B-	ST3 Samp	hed.				
1616	5-MA2B-9	STY Sample	eled.				
1629	SMA20-5	T5- Samph	ed.	1-11			10
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	Sample	TO DEF PH	H & Ca sar	npher	of Coller	10,	
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	davion y	port 1	ι	<u> </u>			/
		í					
Signature:		Q			pg	of	-}

WI all way

	Daily Log
V2A	NCHORAnchor QEA L.L.C.DEA720 Olive Way, Suite 1900Seattle, WA 98101Seattle, WA 98101Phone 206.287.9130Fax 206.287.9131
	ME: PG OMMP Long Term Monitoring DATE: $q / 1 \leq / 1 \leq$
SITE ADDRES	
WEATHER:	WIND FROM: N NE E SE S SW W NW LIGHT MEDIUM HEAVY SUNNY CLOUDY RAIN ? TEMPERATURE: °F S . °C [Circle appropriate units]
TIME	COMMENTS
0730	En/All mine on site mob get to rease!
0750	HLS meeting
0810	MOD For SMAD
0834	SMADA-ITI Pateched,
12902	SMOTAA - IT2 Valle ched. (US upport to)
6929	Smitzit-ITO Collected. 2 DDM
	Dule E mgs noted coordinates for ITZ were indeeper
	Pail 6 Internet
	from SAL to DDM.
0951	
1010	SMARA - M5collected.
1025	SMAZA-IT Comp sample collected.
1043	SMAIB-173 Foll soile brassan volkched.
1120	Collect equipment RB, O
1200	Amue back at dock, denote boat
<u>.</u>	
	m
	U
Signature:	pg of
	\vee

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DATE: 0/17/18

PROJECT NAME: Port Gamble OMMP LTM

Alexandra Kanpost Davo Dickinson

m

PROJECT NO: 180388-01.01

DAILY SAFETY BRIEFING

DAILY WORK SCOPE: Collect Surface

SITE-SPECIFIC HAZARDS: _______

PERSON CONDUCTING MEETING: EM/AK	HEALTH & SAFETY OFFICER:	PROJECT MANAGER:
TOPICS COVERED:		
Emergency Procedures and Evacuation Route	Lines of Authority	DLifting Techniques
Directions to Hospital	⁄ Communication	Slips, Trips, and Falls
HASP Review and Location	Site Security	Hazard Exposure Routes
Safety Equipment Location	Vessel Safety Protocols	Heat and Cold Stress
Proper Safety Equipment Use	Work Zones	Overhead and Underfoot Hazards
Employee Right-to-Know/MSDS	Vehicle Safety and Driving/Road Conditions	Chemical Hazards
Sire Extinguisher Location	Equipment Safety and Operation	Flammable Hazards
Eye Wash Station Location	Proper Use of PPE	Biological Hazards
Buddy System	Decontamination Procedures	Eating/Drinking/Smoking
Self and Coworker Monitoring	C Other:	
	partly cloudy	ATTENDEES
	PRINTE	D NAME SIGNATURE
	a m M	ALIZANIA III. MAR

SAFETY COMMENTS:

grobs

Work



DATE:

PROJECT NAME: Port Gamble OMMP LTM

PROJECT NO:

180388-01.01

9/18/18

DAILY SAFETY BRIEFING

	HEALTH & SAFETY OFFICER:		PROJECT MANAGER:	JC
TOPICS COVERED:				
 Emergency Procedures and Evacuation Route Directions to Hospital HASP Review and Location Safety Equipment Location Proper Safety Equipment Use Employee Right-to-Know/MSDS Location Fire Extinguisher Location Eye Wash Station Location Buddy System Self and Coworker Monitoring 	 Lines of Authority Communication Site Security Vessel Safety Proto Work Zones Vehicle Safety and Conditions Equipment Safety a Proper Use of PPE Decontamination P Other: 	Driving/Road and Operation	Lifting Techn	nd Falls sure Routes d Stress d Underfoot Hazards ards azards zards
WEATHER CONDITIONS: Sun,	cost and		ATTENDEE	<u>s</u>
then worming		PRINTED	NAME	SIGNATURE
DAILY WORK SCOPE: <u>ident</u>		Meredith Alexand Daro Dica	Bee Me	he Bar help
Slippery shorelines	it walking			
SAFETY COMMENTS:				



DATE:	
DAIL	

PROJECT NAME: Port Gamble OMMP LTM

9/19/18

PROJECT NO:

180388-01.01

DAILY SAFETY BRIEFING

PERSON CONDUCTING MEETING:	HEALTH & SAFETY OFFICER:	PROJECT MANAGER:
TOPICS COVERED:		CA
Emergency Procedures and Evacuation Route	Lines of Authority	Lifting Techniques
Directions to Hospital	Communication	Slips, Trips, and Falls
HASP Review and Location	Site Security	Hazard Exposure Routes
Safety Equipment Location	Vessel Safety Protocols	Heat and Cold Stress
Proper Safety Equipment Use	Work Zones	Overhead and Underfoot Hazards
Employee Right-to-Know/MSDS	Vehicle Safety and Driving/Road Conditions	Chemical Hazards
Fire Extinguisher Location	Equipment Safety and Operation	Flammable Hazards
Eye Wash Station Location	Proper Use of PPE	Biological Hazards
Buddy System	Decontamination Procedures	Eating/Drinking/Smoking
Self and Coworker Monitoring	Other:	

WEATHER CONDITIONS:	ATTE	NDEES
	PRINTED NAME	SIGNATURE
DAILY WORK SCOPE: wile at surface	Alexandra Carpert	
SITE-SPECIFIC HAZARDS: On - Water work		
		m

Appendix B Analytical Data Table

Table B-1aSummary Analytical Results - Sediment

Location ID	SMA1A-IT_1809	SMA1-ST_1809	SMA2A-IT_1809
Sample ID		SMA1-ST-0-10-Comp-180917	SMA2A-IT-0-10-Comp-180919
Sample Date	09/17/2018	09/17/2018	09/19/2018
Depth	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type	N	N	N
Conventional Parameters (pct)			
Total Solids	79.39	49.28	83.61
Metals (mg/kg)			
Cadmium	0.1 J	0.55	0.1 J
Polycyclic Aromatic Hydrocarbons (µg/kg)			
1-Methylnaphthalene	3.62 J	87.3	2.48 J
2-Methylnaphthalene	6.21	125	4.03 J
Acenaphthene	6.26 J	205 J	4.9 J
Acenaphthylene	6.3 J	80.7 J	3.33 J
Anthracene	11.7 J	252 J	4.81 J
Benzo(a)anthracene	9.73	260	3.65 J
Benzo(a)pyrene	7.92	214	3.54 J
Benzo(b)fluoranthene	9.25	255	3.25 J
Benzo(b,j,k)fluoranthenes	18	497	7.01 J
Benzo(g,h,i)perylene	8.97	110	6.24
Benzo(j)fluoranthene	4.06 J	118	1.79 J
Benzo(k)fluoranthene	4.42 J	125	1.72 J
Chrysene	17.4	433	4.65 J
Dibenzo(a,h)anthracene	4.81 U	28.4	4.94 U
Fluoranthene	38.2	715	20.1
Fluorene	6.25 J	220 J	4.64 J
Indeno(1,2,3-c,d)pyrene	4.2 J	90.7	4.94 U
Naphthalene	39.1	851	19.3
Phenanthrene	30.3	696	16.9
Pyrene	36.4 J	765 J	18.9 J
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 0)	12.654 J	343.94	5.1495 J
Dioxin Furans (ng/kg)			
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.048 U	0.393 J	0.176 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.079 U	0.894 J	0.483 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.098 J	0.647 J	0.27 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.232 J	3.28	1.31
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.133 J	1.13	0.674 J
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	10.7	128	9.78
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	117 J	1310	50
Total Tetrachlorodibenzo-p-dioxin (TCDD)	2.8	24.2	9.87
Total Pentachlorodibenzo-p-dioxin (PeCDD)	1.29	13	8.11
Total Hexachlorodibenzo-p-dioxin (HxCDD)	5.37 J	66.4	25.8
Total Heptachlorodibenzo-p-dioxin (HpCDD)	59.5 J	647	27.3
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	0.128 J	1.49	0.375 J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.086 U	0.705 J	0.534 J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0.071 U	0.575 J	0.359 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0.053 J	0.776 J	0.469 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.04 U	0.501 J	0.295 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.038 U	0.278 J	0.126 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.06 J	0.515 J	0.314 J
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	1	12.6	2.47
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.061 J	0.606 J	0.041 U
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	2.65 J	33.5	2.51 J
Total Tetrachlorodibenzofuran (TCDF)	2.18	24.5	5.12
Total Pentachlorodibenzofuran (PeCDF)	0.533	11.1	5.12
Total Hexachlorodibenzofuran (HxCDF)	1.04	22	4.7
Total Heptachlorodibenzofuran (HpCDF)	2.94	37	5.01
Total Dioxin/Furan (U = 0)	132.115 J	1495.89 J	70.145 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0)	0.223905 J	4.15746 J	1.304273 J

Notes:

Horizontal coordinate datum is NAD 1983 State Plane Washington North FIPS 4601 (US Survey Feet).

All undetect results are reported at the reporting limit or, for high-resolution analyses, at the estimated detection limit.

Totals are calculated as the sum of all detected results (U=0). If all results are not detected, the highest limit value is reported as the sum.

Total cPAH TEQ (7 minimum CAEPA 2005) calculation includes benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene,

chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-c,d)pyrene. Per MTCA cleanup Regulation, Table 708-2 "Toxicity Equivalency Factors for Minimum

Required Carcinogenic Polyaromatic Hydrocarbons (cPAHs) under WAC 173-340-708(e).

I otal dioxin/furan is the sum of all individual dioxin/furans (non-homolog) listed in this table. Dioxin/furan TEQ values were calculated with 2005 WHO TEF values for mammals. Bold: Detected result --: results not reported or not applicable µg/kg: micrograms per kilogram cPAH: carcinogenic polycyclic aromatic hydrocarbon FD: field duplicate sample J: estimated value mg/kg: milligrams per kilogram N: normal environmental sample ng/kg: nanograms per kilogram PAH: polycyclic aromatic hydrocarbons pct: percent SE: sediment matrix TEQ: toxic equivalency U: compound analyzed, but not detected above detection limit UJ: Compound analyzed, but not detected above estimated detection limit

FINAL VALIDATED DATA

Year-1 Post-Construction Monitoring Report – 2018 Port Gamble Cleanup

SMA2A-ST_1809	SMA2B-IT_1809	SMA2B-ST_1809	SMA2B-ST_1809
SMA2A-ST-0-10-Comp-180918	SMA2B-IT-0-10-Comp-180918	SMA102B-ST-0-10-Comp-180918	SMA2B-ST-0-10-Comp-180918
09/18/2018	09/18/2018	09/18/2018	09/18/2018
0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Ν	N	FD	N
76.51	79.59	81.95	78.01
0.13	0.1 J	0.07 J	0.09 J
17.4	7.08	5.64	4.8 J
23.3	10.6	9.41	7.65
41.9 J	9.21 J	11 J	7.41 J
32.8 J	14.5 J	20.2 J	10.8 J
54.4 J	15.8 J	15.6 J	10.6 J
70.9	13.3	11.1	5.2
57.7	12.3	24.6	4.14 J
91	10.4	26	4.44 J
178	22.6	50.7	9.42 J
39.9	15.9	15.1	6.17
43.5	5.79	10.1	2.41 J
44.4	5.88	14.8	2.51 J
155	27.5	19.1	10.4
7.58	4.83 U	3.41 J	4.93 U
428	57.9	43.4	34.9
36.2 J	9.87 J	8.53 J	5.97 J
29.1	6.73	10.8	4.93 U
<u>159</u> 159	131 58.8	112	57.1 31.7
332 J		46	
101.348	67.2 J 18.466	46.1 J 36.472 J	31.5 J 6.401 J
101.540	10.400	50.4725	0.4013
0.152 J	0.197 J	0.184 J	0.131 J
0.108 U	0.303 J	0.077 J	0.142 J
0.123 J	0.164 J	0.053 U	0.059 J
0.659 J	0.838 J	0.255 J	0.294 J
0.319 J	0.378 J	0.112 J	0.152 J
38.6	7.85	6.65	5.47
515	62.3	75.1	49.1
9.03	7.87	6.52	2.2
4.3	4.35	1.68	1.23
18.1	10	4.52	4.09
259	29.4	36	25.7
0.38 J	0.422 J	0.193 J	0.204 J
0.172 U	0.332 J	0.098 U	0.106 U
0.127 J	0.212 J	0.055 J	0.042 U
0.146 J	0.229 J	0.032 U	0.031 U
0.109 J	0.188 J	0.04 J	0.031 U
0.099 J	0.126 J	0.058 J	0.057 J
0.113 J	0.207 J	0.054 J	0.031 UJ
2.45	1.68	0.697 J	0.721 J
0.162 J	0.115 J	0.039 U	0.045 U
11.3	2.88	1.88 J	1.56 J
5.08	7.78	3.25	3.03
1.84	3.62	0.866	0.805
2.56	3.19	0.839	0.854
9	4.22	1.97	1.88
569.739 J	78.421 J	85.355 J	57.89 J
0.95491 J	0.944764 J	0.445264 J	0.426708 J

Table B-1aSummary Analytical Results - Sediment

Year-1 Post-Construction Monitoring Report – 2018 Port Gamble Cleanup

Table B-1b Summary Analytical Results - Rinse Blank QC

	Sample ID Sample Date Sample Type	PGLTM-RB-180919 09/19/2018 RB
Metals (μg/L)		
Cadmium		0.1 U
Polycyclic Aromatic Hydrocarbons (µg/L)		0.1 0
		0.1.11
1-Methylnaphthalene		0.1 UJ
2-Methylnaphthalene		0.1 UJ 0.1 UJ
Acenaphthene Acenaphthylene		0.1 UJ
Anthracene		0.1 U
Benzo(a)anthracene		0.1 U
Benzo(a)pyrene		0.1 U
Benzo(b)fluoranthene		0.1 U
Benzo(b,j,k)fluoranthenes		0.2 U
Benzo(g,h,i)perylene		0.1 U
Benzo(j)fluoranthene		0.1 U
Benzo(k)fluoranthene		0.1 U
Chrysene		0.1 U
Dibenzo(a,h)anthracene		0.1 UJ
Fluoranthene		0.1 U
Fluorene		0.1 U
Indeno(1,2,3-c,d)pyrene		0.1 U
Naphthalene		0.1 UJ
Phenanthrene		0.1 U
Pyrene		0.1 U
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 0)		0.1 UJ
Dioxin Furans (ng/L)		
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)		0.00039 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)		0.00052 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)		0.00049 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)		0.0005 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)		0.00049 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDE		0.00072 U
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD))	0.0016 U
Total Tetrachlorodibenzo-p-dioxin (TCDD)		U
Total Pentachlorodibenzo-p-dioxin (PeCDD)		U
Total Hexachlorodibenzo-p-dioxin (HxCDD)		U
Total Heptachlorodibenzo-p-dioxin (HpCDD)		U
2,3,7,8-Tetrachlorodibenzofuran (TCDF)		0.00026 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)		0.00046 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)		0.00042 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)		0.00036 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)		0.00034 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)		0.0004 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)		0.00034 U
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)		0.00028 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)		0.00044 U
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)		0.0016 U
Total Tetrachlorodibenzofuran (TCDF)		U
Total Pentachlorodibenzofuran (PeCDF)		U
Total Hexachlorodibenzofuran (HxCDF)		U
Total Heptachlorodibenzofuran (HpCDF)		U
Total Dioxin/Furan (U = 0)		0.0016 U
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0) FINAL VALIDATED DATA		0.00052 U

FINAL VALIDATED DATA

Table B-1b Summary Analytical Results - Rinse Blank QC

Notes:

All undetect results are reported at the reporting limit or, for high-resolution analyses, at the estimated detection limit. Totals are calculated as the sum of all detected results (U=0). If all results are not detected, the highest limit value is reported as the sum. Total CPAH TEQ (7 minimum CAEPA 2005) calculation includes benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-c,d)pyrene. Per MTCA cleanup Regulation, Table 708-2 "Toxicity Equivalency Factors for Minimum Required Carcinogenic Polyaromatic Hydrocarbons (cPAHs) under WAC 173-340-708(e). Total dioxin/furan is the sum of all individual dioxin/furans (non-homolog) listed in this table. Dioxin/furan TEQ values were calculated with 2005 WHO TEF values for mammals. Bold: Detected result --: results not reported or not applicable µg/L: micrograms per liter cPAH: carcinogenic polycyclic aromatic hydrocarbon J: estimated value N: normal environmental sample ng/L: nanograms per liter PAH: polycyclic aromatic hydrocarbons RB: rinse blank sample TEQ: toxic equivalency U: compound analyzed, but not detected above detection limit

UJ: Compound analyzed, but not detected above estimated detection limit

FINAL VALIDATED DATA

Appendix C EcoAnalyst Bioassay Laboratory Report

Provided under separate cover

Appendix D ARI Laboratory Report



15 October 2018

Jascon Cornetta Anchor QEA, LLC 720 Olive Way, Suite 1900 Seattle, WA 98101

RE: Port Gamble - OMMP LTM

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s) 1810285 Associated SDG ID(s) N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

Amanda Volgardsen, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

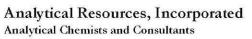


	С			Sediment and Field OC	NCHOR
Date: 9 19 18			-		A OEA 111
Project Name: Port Gamble - OMMP LTM	1MP LTM				8
Project Number: 180388-01.01 Project Contact: Jason Cornetta					
Phone Number: 206.971.2680			S		
Shipment Method: Delivery			Second		240
Line Field Sample ID	Collection Date/Time	Matrix	No. of Cont Cadmium PAHs Dioxin/Fura	Archive	Comments
1 SMA1A-IT-0-10-Comp-1809	9/17/18 15/0	SE	2 x x x		
2 SMA1-ST-0-10-Comp-1809	91/718 120S		⊗ × × ×		
3 SMA2A-IT-0-10-Comp-1809 19	9/19/18 1025	SE	⊘ × × ×		
4 SMA2A-ST-0-10-Comp-1809 (§	9/18/18 11 CC	SE	X X X X		
5 SMA2B-IT-0-10-Comp-180915	9/1×18 1510	SE	X X X		
6 SMA2B-ST-0-10-Comp-180918	9/1×18 1635	SE	X X X		
7 SMA1A-IT1-1809	9/17/18 1363	SE		×	
8 SMA1A-IT2-1809 17	917/18 1320	SE		×	
9 SMA1A-IT3-1809 17	9/1/18 12/576	SE		×	
10 SMA1A-IT4-1809 ビチ	9/17/18 1423	SE		×	
11 SMA1A-IT5-1809 17	9/7/18 1456	SE		×	
12 SMA1-ST1-1809 P7	9/7/18 09 51	SE		×	
13 SMA1-ST2-1809 (7	9/17/18 IU 17	SE		×	
14 SMA1-ST3-1809 17	917718 1047	SE		x	
 See project SAP/QAPP for analyte lists and test methods Email sample confirmation report to labdata@anchorqea.com 	tt methods inchorqea.com	Additional 1	Additional notes/comments:	ants:	
Relinquished By:	Company:	Company: Anchor QEA LLC.	A LLC.	Received By: Company: Anchor QEA LLC	
Name	Alexandra Lagott 9/	17/18/12	子; o o Date/Time	Jusmine Bounen ARI 9/19/18 ned Name Date/Time	1700
Relinquished By:	Company:			Received By: Company:	Π
Signature/Printed Name		ă	Date/Time	Signature/Printed Name Date/Time	

Distribution: A copy will be made for the laboratory and client. The Project file will retain the original.

Page 1 of 3

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Date:						-	-					-		-		C, OEA	}}
Project Name: Port	CELLAR AND																
Project Contact:	: Jason Cornetta																
Phone Number: 206.971. Shipment Method: Delivery	: 206.971.2680 3: Delivery				sien										196		and description
Line Line	Field Samole ID	Collection Date/Time		Matrix	Vo. of Contain Cadmium	sHAc	Dioxin/Furan Archive									Comments	y
SMA2B-IT3-180	<u> </u>	9/18/18	XX	SE	2		-					-					
2 SMA2B-IT4-1809 [X	9/18/18	1354	SE	. /		×										
3 SMA2B-IT5-1809 \	, K	9/1/0/18	1445	SE	~		×							_			
4 SMA2B-ST1-1809 1	IS	9/15/18	1851	SE	·	1	. ×					_					
5 SMA2B-ST2-1809 \ \$	IK.	9/15/18	1534	SE	_		×										
6 SMA2B-ST3-1809 \ K	1K	91 × /18	1602	SE			×							_			
7 SMA2B-ST4-1809 \ Y	1X	9/\ \\/18	9191	SE	-		×				1						
8 SMA2B-ST5-1809 1X	18	9/1 1/18	16 29	SE			×										
9 Smalozer-ör-	Sindle 28-57-0-10 - Comp-150918	9/1、公/18	1640		XX	X	X	AL									
10 PGLTM-RB-180919	120919	9/19/18	11:20	SE'	U X	X	* ×	¥						_			2
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12		9/ /18		SE			×						_				
13 .		9/ /18		SE			×								0		
14		9/ /18	-	SE			×										
1 See project SAP/QAPP 2 Email sample confirmati	 See project SAP/QAPP for analyte lists and test methods Email sample confirmation report to labdata@anchorgea.com 	F	4	Additional notes/comments:	notes/	comm	ents:										
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WORK ORDER

18I0285

Client: Anchor QEA, LLC Project: Port Gamble Sediment Stockpile		Project Manager: Amanda Volgardsen					
		Project Number: 2017 Port Gamble Sediment Stoo	ent Stockpile				
1810285-30 A	Glass WM, Amber, 8 oz						
810285-31 A	Glass WM, Amber, 8 oz						
1810285-32 A	Glass WM, Amber, 8 oz						
1810285-33 A	Glass WM, Amber, 8 oz						
1810285-34 A	Glass WM, Amber, 8 oz						
810285-35 A	Glass WM, Amber, 8 oz						
810285-36 A	Glass WM, Amber, 8 oz						
810285-37 A	Glass WM, Clear, 16 oz						
1810285-37 B	Glass WM, Amber, 8 oz						
810285-38 A	Glass NM, Amber, 1000 mL						
810285-38 B	Glass NM, Amber, 1000 mL						
1810285-38 C	Glass NM, Amber, 500 mL						
810285-38 D	Glass NM, Amber, 500 mL						
810285-38 E	HDPE NM, 500 mL, 1:1 HNO3	LJ Pass					

Preservation Confirmed By

09/20/18 Date

Analytical Resources, Incorporated Analytical Chemists and Consultants	Cooler Receipt Form
ARI Client: Anchor GEA	Project Name: Part banble Sechant
COC No(s): NA [Delivered by: Fed-Ex UPS Courier Hand Delivered Other:
Assigned ARI Job No: 1870285	Tracking No: NA
Preliminary Examination Phase:	
Were intact, properly signed and dated custody seals attached to the ou	tside of to cooler? YES NO
Were custody papers included with the cooler?	WES NO
Were custody papers properly filled out (ink, signed, etc.)	
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) Time: 1700	1.80.6
If cooler temperature is out of compliance fill out form 00070F	Temp Gun ID#: DOOS ZOG
Cooler Accepted by:Date	9/19/18 Time: 1700
Complete custody forms and att	ach all shipping documents
Log-In Phase:	
Was a temperature blank included in the cooler?	
What kind of packing material was used? Bubble Wrap Wet le	
Was sufficient ice used (if appropriate)?	
Were all bottles sealed in individual plastic bags?	
Did all bottles arrive in good condition (unbroken)?	<u> </u>
Were all bottle labels complete and legible?	
Did the number of containers listed on COC match with the number of co	
Did all bottle labels and tags agree with custody papers?	
Were all bottles used correct for the requested analyses?	
Do any of the analyses (bottles) require preservation? (attach preservation	on sheet, excluding VOCs) NA YES NO
Were all VOC vials free of air bubbles?	
Was sufficient amount of sample sent in each bottle?	
Date VOC Trip Blank was made at ARI	
Was Sample Split by ARI : (NA) YES Date/Time:	Equipment: Split by:
Samples Logged by:	

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC
Additional Notes, Discrepand	ies, & Resolutions:		
зу: Е	Date:		
ly: E Small Air Bubbles Peabut		Small → "sm" (<2 mm)	
	bbles' LARGE Air Bubbles	Small → "sm" (<2 mm) Peabubbles → "pb" (2 to <4 mm)	
Small Air Bubbles Peabut	bbles' LARGE Air Bubbles	the second s	

0016F 3/2/10

Cooler Receipt Form

Revision 014



Anchor QEA, LLC 720 Olive Way, Suite 1900 Seattle WA, 98101

Project: Port Gamble - OMMP LTM Project Number: 180388-01.01 Project Manager: Jascon Cornetta

Reported: 15-Oct-2018 14:14

Analytical Report

Case Narrative

Sample receipt

Samples as listed on the preceding page were received September 19, 2018 under ARI work order 1810285. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270D-SIM

The samples were extracted and analyzed within the recommended holding times.

Sample SMAI-ST-0-10-COMP-180917 was reanalyzed at a dilution due to various compound concentrations exceeding the upper calibration limits. These compounds have been flagged with "E" qualifiers on the initial run. No further corrective action was taken.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank BGI06118 has Naphthalene detected below the reporting limit, but above the method detection limit. The Naphthalene has been flagged with a "J" qualifier on the method blank. There were no target compounds detected above the reporting limits in the method blanks. No further corrective action was taken.

The LCSD BGI0618 has high RPD for Dibenzo(a,h)anthracene. This is likely due to a calibration bias. All other LCS/LCSD percent recoveries and RPD were within control limits. No corrective action was taken.

A matrix spike and matrix spike duplicate were prepared in conjunction with sample SMA2A-IT-0-10-COMP-180919. The matrix spike/matrix spike duplicate percent recoveries and RPD were within QC limits.

The SRM has various low percent recoveries. These compounds have been flagged on the SRM. The SRM is not appropriate for the method limits. All other SRM percent recoveries were within QC limits. No corrective action was taken.

Dioxin/Furans - EPA Method 1613

The samples were extracted and analyzed within the recommended holding times. Analysis was performed using an application specific column developed by Restek. The RTX-Dloxin2 column has unique isomer separation for the 2378-TCDF, eliminating the need for confirmation analysis.

Initial and continuing calibrations were within method requirements.

Labeled internal standard areas were within limits.

The cleanup surrogate percent recoveries were within control limits.

The method blanks contain reportable responses for various compounds below the reporting limits. Associated detected results and QC have been flagged with "B" qualifiers. No further corrective action was taken.

The OPR (Ongoing Precision and Recovery) standard percent recoveries were within control limits.

A duplicate was prepared in conjunction with sample PGLTM-RB-180919. The duplicate RPD were within QC limits.

A duplicate was prepared in conjunction with sample SMA1A-IT-0-10-COMP-180917. The duplicate has high RPD for the flagged compounds. The results are advisory. All other RPD were within QC limits. No corrective action was taken.



Anchor QEA, LLC 720 Olive Way, Suite 1900 Seattle WA, 98101 Project: Port Gamble - OMMP LTM Project Number: 180388-01.01 Project Manager: Jascon Cornetta

Reported: 15-Oct-2018 14:14

Case Narrative

recoveries were within QC limits. No corrective action was taken.

Total Cadmium UCT-KED - EPA Method 6020A

The samples were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blanks were clean at the reporting limits.

The LCS percent recoveries were within control limits.

A matrix spike and duplicate were prepared in conjunction with sample SMA1A-IT-0-10-COMP-180917. The matrix spike percent recovery and duplicate RPD were within QC limits.

The SRM percent recovery was within QC limits.



Anchor QEA, LLC	Project: Port Gamble - OMMP LTM	
720 Olive Way, Suite 1900	Project Number: 180388-01.01	Reported:
Seattle, WA 98101	Project Manager: Jascon Cornetta	10/15/2018 14:14

ANALYTICAL REPORT FOR SAMPLES

IND23-501 SMAI A-TT-0-TC-Comp-180917 Solid 09/17/18 15:10 09/19/18 17:20 180285-02 SMAI ST-0-10-Comp-180917 Solid 09/17/18 12:05 09/19/18 17:20 180285-03 SMAZA-TT-0-10-Comp-180919 Solid 09/19/18 11:20 09/19/18 17:00 180285-04 SMAZA-ST-0-10-Comp-180918 Solid 09/18/18 15:00 09/19/18 17:00 180285-05 SMAZB-ST-0-10-Comp-180918 Solid 09/18/18 16:3 09/19/18 17:00 180285-06 SMAZB-ST-0-10-Comp-180918 Solid 09/17/18 10:3 09/19/18 17:00 180285-07 SMAI A-TT-180917 Solid 09/17/18 10:3 09/19/18 17:00 180285-10 SMAI A-TT-180917 Solid 09/17/18 10:3 09/19/18 17:00 180285-11 SMAI A-TT-180917 Solid 09/17/18 10:3 09/19/18 17:00 180285-12 SMAI A-TT-180917 Solid 09/17/18 10:4 09/19/18 17:00 180285-14 SMAI A-TT-180917 Solid 09/17/18 10:4 09/19/18 17:00 180285-15 SMAI A-TT-180917 Solid 09/17/18 10:4 09/19/18 17:00	Laboratory ID	Sample ID	Matrix	Date Sampled	Date Received
I 810285-03 SMA2A-IT-0-10-Comp-180919 Solid 09/19/18 10.05 09/19/18 17.00 I 810285-04 SMA2A-ST-0-10-Comp-180918 Solid 09/18/18 11.00 09/19/18 17.00 I 810285-05 SMA2B-ST-0-10-Comp-180918 Solid 09/17/18 15.35 09/19/18 17.00 I 810285-07 SMA1A-IT1-180917 Solid 09/17/18 15.23 09/19/18 17.00 I 810285-08 SMA1A-IT3-180917 Solid 09/17/18 15.26 09/19/18 17.00 I 810285-10 SMA1A-IT4-180917 Solid 09/17/18 14.25 09/19/18 17.00 I 810285-13 SMA1A-T51-80917 Solid 09/17/18 10.27 09/19/18 17.00 I 810285-14 SMA1A-ST1-80917 Solid 09/17/18 10.17 09/19/18 17.00 I 810285-15 SMA1A-ST1-80917 Solid 09/17/18 10.17 09/19/18 17.00 I 810285-16 SMA1A-ST1-80917 Solid 09/17/18 10.47 09/19/18 17.00 I 810285-16 SMA1A-ST1-80917 Solid 09/17/18 11.44 09/19/18 17.00 I 810285-17 SMA1A-ST1-80917 Solid 09/17/18 11.45 09/19/18 17.00 <	18I0285-01	SMA1A-IT-0-10-Comp-180917	Solid	09/17/18 15:10	09/19/18 17:00
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1810285-23SMA2A-ST2-180918Solid09/18/18 09:3909/19/18 17:001810285-24SMA2A-ST3-180918Solid09/18/18 10:0509/19/18 17:001810285-25SMA2A-ST4-180918Solid09/18/18 10:2909/19/18 17:001810285-26SMA2A-ST5-180918Solid09/18/18 10:4509/19/18 17:001810285-27SMA2B-IT1-180918Solid09/18/18 11:4509/19/18 17:001810285-28SMA2B-IT2-180918Solid09/18/18 12:1909/19/18 17:001810285-29SMA2B-IT3-180918Solid09/18/18 13:1809/19/18 17:001810285-30SMA2B-IT4-180918Solid09/18/18 13:5409/19/18 17:001810285-31SMA2B-ST1-180918Solid09/18/18 13:5409/19/18 17:001810285-32SMA2B-ST1-180918Solid09/18/18 15:2109/19/18 17:001810285-33SMA2B-ST1-180918Solid09/18/18 15:3409/19/18 17:001810285-34SMA2B-ST3-180918Solid09/18/18 16:0209/19/18 17:001810285-35SMA2B-ST3-180918Solid09/18/18 16:1609/19/18 17:001810285-36SMA2B-ST3-180918Solid09/18/18 16:1609/19/18 17:001810285-37SMA2B-ST5-180918Solid09/18/18 16:1609/19/18 17:001810285-36SMA2B-ST5-180918Solid09/18/18 16:1609/19/18 17:001810285-37SMA102B-ST0-10-Comp-180918Solid09/18/18 16:4009/19/18 17:001810285-37SMA102B-ST0-10-Comp-180918Solid09/18/18 16:4009/19/18	18I0285-21	SMA2A-IT5-180919	Solid	09/19/18 10:10	09/19/18 17:00
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1810285-27SMA2B-IT1-180918Solid09/18/18 11:4509/19/18 17:001810285-28SMA2B-IT2-180918Solid09/18/18 12:1909/19/18 17:001810285-29SMA2B-IT3-180918Solid09/18/18 13:1809/19/18 17:001810285-30SMA2B-IT4-180918Solid09/18/18 13:5409/19/18 17:001810285-31SMA2B-IT5-180918Solid09/18/18 14:4809/19/18 17:001810285-32SMA2B-ST1-180918Solid09/18/18 15:2109/19/18 17:001810285-33SMA2B-ST2-180918Solid09/18/18 15:3409/19/18 17:001810285-34SMA2B-ST3-180918Solid09/18/18 16:0209/19/18 17:001810285-35SMA2B-ST4-180918Solid09/18/18 16:1609/19/18 17:001810285-36SMA2B-ST5-180918Solid09/18/18 16:1609/19/18 17:001810285-37SMA102B-ST-0-10-Comp-180918Solid09/18/18 16:4009/19/18 17:00	18I0285-25	SMA2A-ST4-180918	Solid	09/18/18 10:29	09/19/18 17:00
18I0285-28SMA2B-IT2-180918Solid09/18/18 12:1909/19/18 17:0018I0285-29SMA2B-IT3-180918Solid09/18/18 13:1809/19/18 17:0018I0285-30SMA2B-IT4-180918Solid09/18/18 13:5409/19/18 17:0018I0285-31SMA2B-IT5-180918Solid09/18/18 14:4809/19/18 17:0018I0285-32SMA2B-ST1-180918Solid09/18/18 15:2109/19/18 17:0018I0285-33SMA2B-ST2-180918Solid09/18/18 15:3409/19/18 17:0018I0285-34SMA2B-ST3-180918Solid09/18/18 16:0209/19/18 17:0018I0285-35SMA2B-ST4-180918Solid09/18/18 16:1609/19/18 17:0018I0285-36SMA2B-ST5-180918Solid09/18/18 16:2909/19/18 17:0018I0285-37SMA102B-ST0-10-Comp-180918Solid09/18/18 16:4009/19/18 17:00	18I0285-26	SMA2A-ST5-180918	Solid	09/18/18 10:45	09/19/18 17:00
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18I0285-30SMA2B-IT4-180918Solid09/18/18 13:5409/19/18 17:0018I0285-31SMA2B-IT5-180918Solid09/18/18 14:4809/19/18 17:0018I0285-32SMA2B-ST1-180918Solid09/18/18 15:2109/19/18 17:0018I0285-33SMA2B-ST2-180918Solid09/18/18 15:3409/19/18 17:0018I0285-34SMA2B-ST3-180918Solid09/18/18 16:0209/19/18 17:0018I0285-35SMA2B-ST4-180918Solid09/18/18 16:1609/19/18 17:0018I0285-36SMA2B-ST5-180918Solid09/18/18 16:2909/19/18 17:0018I0285-37SMA102B-ST0-10-Comp-180918Solid09/18/18 16:4009/19/18 17:00	18I0285-28	SMA2B-IT2-180918	Solid	09/18/18 12:19	09/19/18 17:00
18I0285-31SMA2B-IT5-180918Solid09/18/18 14:4809/19/18 17:0018I0285-32SMA2B-ST1-180918Solid09/18/18 15:2109/19/18 17:0018I0285-33SMA2B-ST2-180918Solid09/18/18 15:3409/19/18 17:0018I0285-34SMA2B-ST3-180918Solid09/18/18 16:0209/19/18 17:0018I0285-35SMA2B-ST4-180918Solid09/18/18 16:1609/19/18 17:0018I0285-36SMA2B-ST5-180918Solid09/18/18 16:2909/19/18 17:0018I0285-37SMA102B-ST0-10-Comp-180918Solid09/18/18 16:4009/19/18 17:00	18I0285-29	SMA2B-IT3-180918	Solid	09/18/18 13:18	09/19/18 17:00
1810285-32SMA2B-ST1-180918Solid09/18/18 15:2109/19/18 17:001810285-33SMA2B-ST2-180918Solid09/18/18 15:3409/19/18 17:001810285-34SMA2B-ST3-180918Solid09/18/18 16:0209/19/18 17:001810285-35SMA2B-ST4-180918Solid09/18/18 16:1609/19/18 17:001810285-36SMA2B-ST5-180918Solid09/18/18 16:2909/19/18 17:001810285-37SMA102B-ST-0-10-Comp-180918Solid09/18/18 16:4009/19/18 17:00	18I0285-30	SMA2B-IT4-180918	Solid	09/18/18 13:54	09/19/18 17:00
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18I0285-34SMA2B-ST3-180918Solid09/18/18 16:0209/19/18 17:0018I0285-35SMA2B-ST4-180918Solid09/18/18 16:1609/19/18 17:0018I0285-36SMA2B-ST5-180918Solid09/18/18 16:2909/19/18 17:0018I0285-37SMA102B-ST-0-10-Comp-180918Solid09/18/18 16:4009/19/18 17:00	18I0285-32	SMA2B-ST1-180918	Solid	09/18/18 15:21	09/19/18 17:00
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18I0285-36SMA2B-ST5-180918Solid09/18/18 16:2909/19/18 17:0018I0285-37SMA102B-ST-0-10-Comp-180918Solid09/18/18 16:4009/19/18 17:00	18I0285-34	SMA2B-ST3-180918	Solid	09/18/18 16:02	09/19/18 17:00
18I0285-37 SMA102B-ST-0-10-Comp-180918 Solid 09/18/18 16:40 09/19/18 17:00	18I0285-35	SMA2B-ST4-180918	Solid	09/18/18 16:16	09/19/18 17:00
1	18I0285-36	SMA2B-ST5-180918	Solid	09/18/18 16:29	09/19/18 17:00
18I0285-38 PGLTM-RB-180919 Water 09/19/18 11:20 09/19/18 17:00	18I0285-37	SMA102B-ST-0-10-Comp-180918	Solid	09/18/18 16:40	09/19/18 17:00
	18I0285-38	PGLTM-RB-180919	Water	09/19/18 11:20	09/19/18 17:00



QUALIFIERS AND NOTES

Qualifier	Definition
X	Indicates possible CDPE interference.
U	This analyte is not detected above the applicable reporting or detection limit.
J	Estimated concentration value detected below the reporting limit.
EMPC	Estimated Maximum Possible Concentration qualifier for HRGCMS Dioxin
Е	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
D	The reported value is from a dilution
В	This analyte was detected in the method blank.
*	Flagged value is not within established control limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference



SMA1A-IT-0-10-Comp-180917

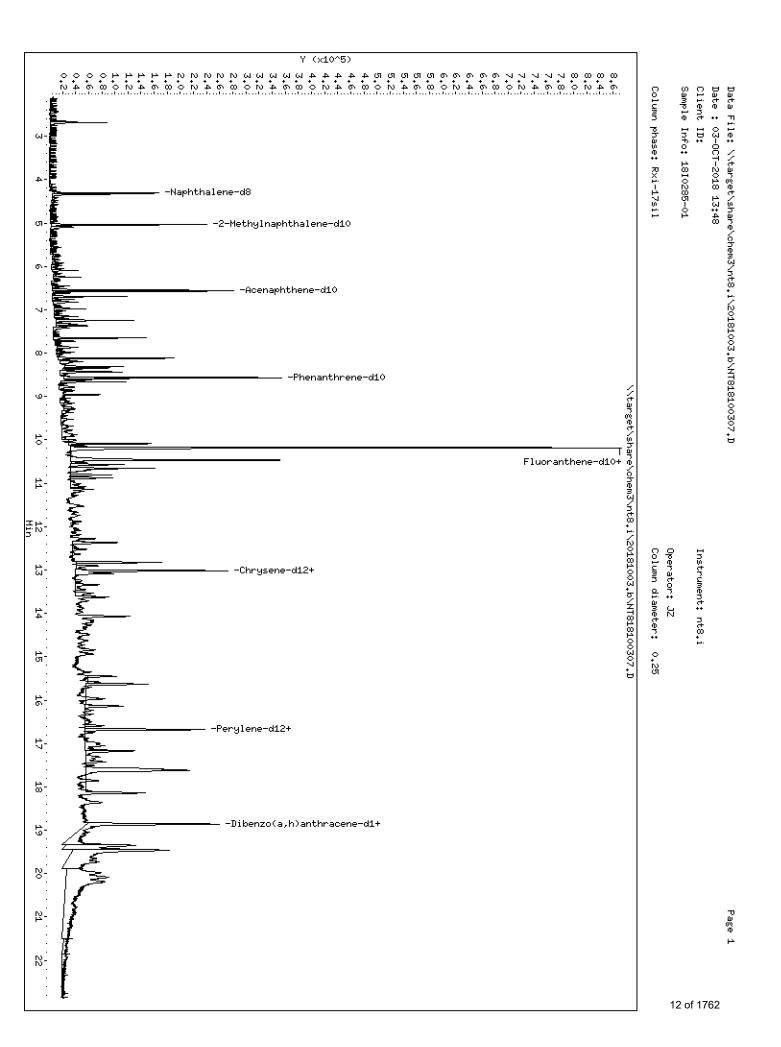
Form I

ORGANIC ANALYSIS DATA SHEET

EPA 8270D-SIM

Polynuclear Aromatic Hydrocarbons

Laboratory:	Analytical Resources, Inc.										
Client:	Anchor QEA, LLC										
Project:	Port Gamble - OMMP LTM										
Matrix:	Sediment	Laborator	y ID: <u>18</u>	310285-	<u>01</u>		SDG:		<u>18</u> I	0285	
Sampled:	<u>09/17/18 15:10</u> Prepared:		09/26/18 15:45			File ID:		<u>NT818100307.D</u>			
% Solids:	79.39 Preparatio		n: <u>EPA 3546 (Microwave)</u>) .	Analyzed:		10/03/18 13:48			
Batch:	BGI0708 Sequence:		<u>SGJ0048</u>			Initial/Final:		13.08 g Wet / 0.5 mL		mL	
Instrument:	: <u>NT8</u> Column:		<u>R</u>	<u>RXI-17Sil ms</u>		Calibration:		BH	00016		
Cleanups:	Silica Gel, Sulfur										
CAS NO.	COMPOUND		DILUTION	CON	NC. (ug/kg dry)		Q	DL		RL	
91-20-3	Naphthalene		1		39.1			1.23		4.81	
91-57-6	2-Methylnaphthalene		1		6.21			1.06		4.81	
90-12-0	1-Methylnaphthalene		1	3.62			J 0.39			4.81	
208-96-8	Acenaphthylene	Acenaphthylene		6.30			1.04			4.81	
83-32-9	Acenaphthene		1	1			0.5			4.81	
86-73-7	Fluorene	-		1 6.2			0.61			4.81	
85-01-8	Phenanthrene		1	30.3			0.69			4.81	
120-12-7	Anthracene		1					0.84		4.81	
206-44-0	Fluoranthene		1		38.2			0.45		4.81	
129-00-0	Pyrene		1		36.4			0.60		4.81	
56-55-3	Benzo(a)anthracene		1		9.73			0.79		4.81	
218-01-9	Chrysene		1		17.4			1.01		4.81	
205-99-2	Benzo(b)fluoranthene		1		9.25			1.32		4.81	
207-08-9	Benzo(k)fluoranthene	Benzo(k)fluoranthene		1 4.42			J 0.73			4.81	
205-82-3	Benzo(j)fluoranthene		1	1 4.06			J 0.65			4.81	
50-32-8	Benzo(a)pyrene		1 7.92			0.59 J 1.01			4.81		
193-39-5	Indeno(1,2,3-cd)pyrene			4.20			J			4.81	
53-70-3	Dibenzo(a,h)anthracene		1	4.81		U		0.86		4.81	
191-24-2		Benzo(g,h,i)perylene		8.97			1.0			4.81	
	Benzofluoranthenes, Total		1		18.0			2.90		9.63	
SURROGAT	ES		ADDED (ug/k	g dry)	CONC (ug/kg	g dry)	% I	REC	Q	C LIMITS	Q
2-Methylnapht	halene-d10		144.45		84.6		5	3.6		32 - 120	
Dibenzo[a,h]ar	nthracene-d14		144.45		139		90	5.6		21 - 133	
Fluoranthene-d	110		144.45		111		7	7.0		36 - 134	



Date : 03-0CT-2018 13:48

Client ID:

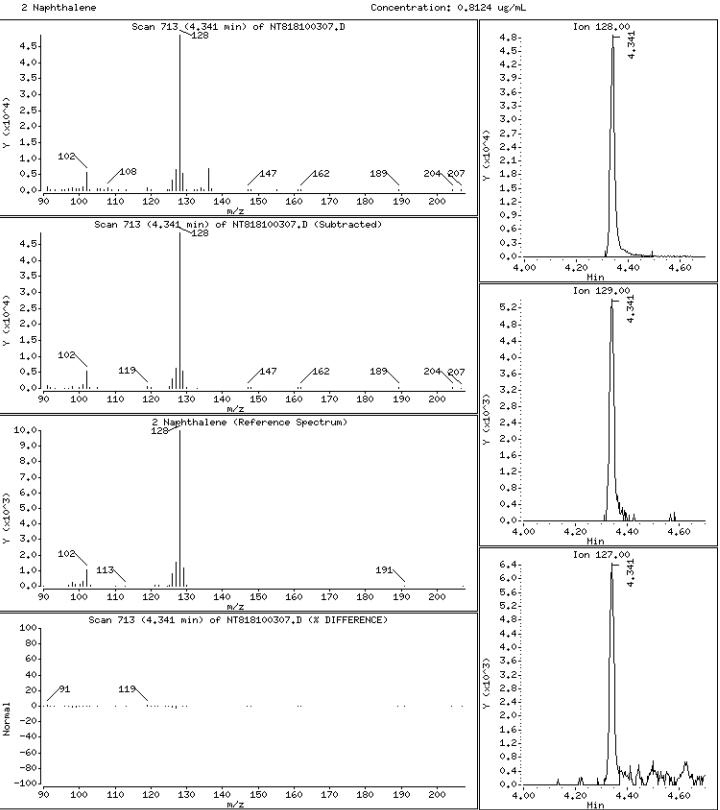
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Instrument: nt8.i

Column phase: R×i-17sil

Operator: JZ

Column diameter: 0.25



13 of 1762

Date : 03-0CT-2018 13:48

Client ID:

Sample Info: 1810285-01

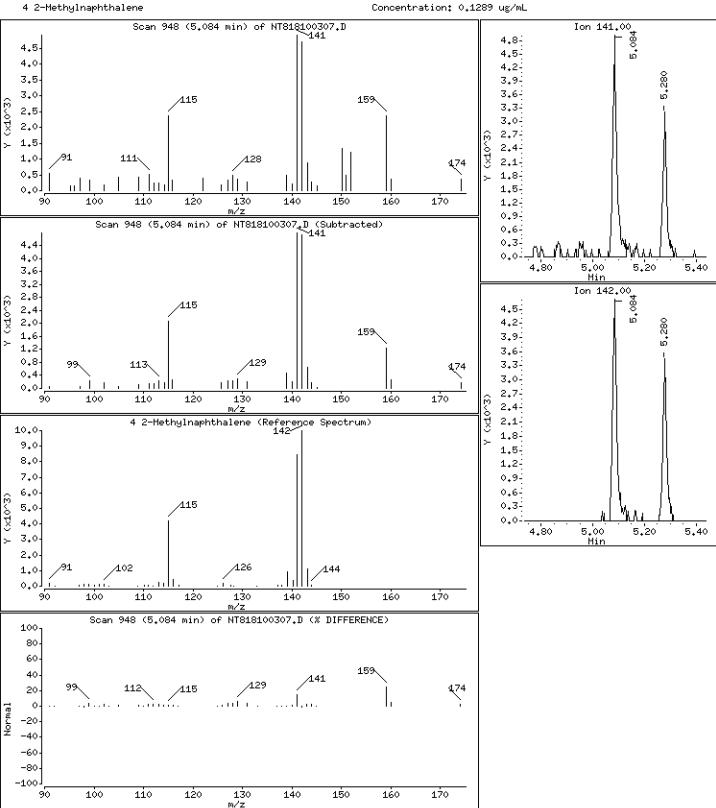
Instrument: nt8.i

Operator: JZ

Column phase: Rxi-17sil

4 2-Methylnaphthalene

Column diameter: 0.25



Date : 03-0CT-2018 13:48

Client ID:

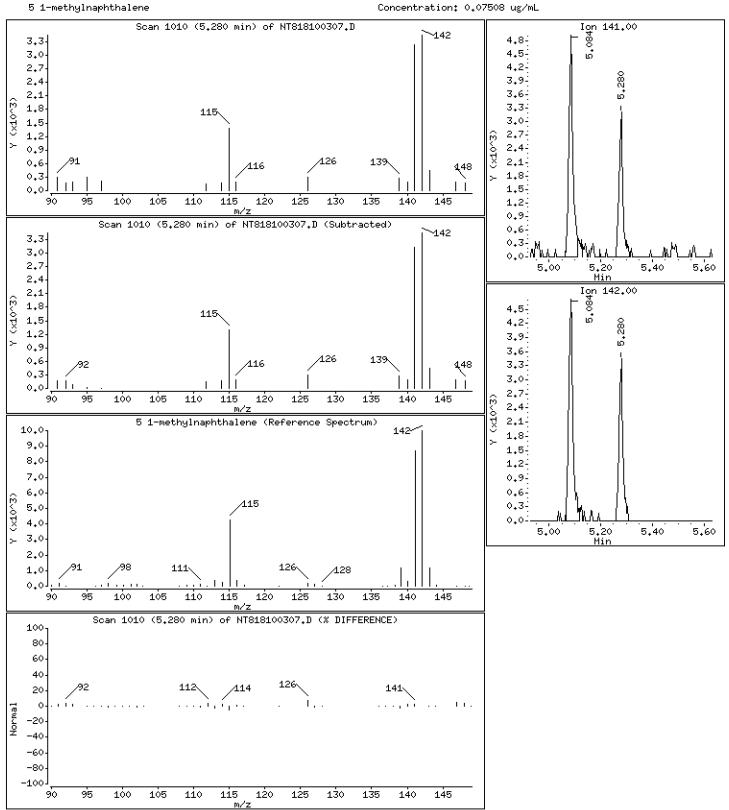
Sample Info: 1810285-01

Instrument: nt8.i

Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0.25



Date : 03-0CT-2018 13:48

Client ID:

Sample Info: 1810285-01

Instrument: nt8.i

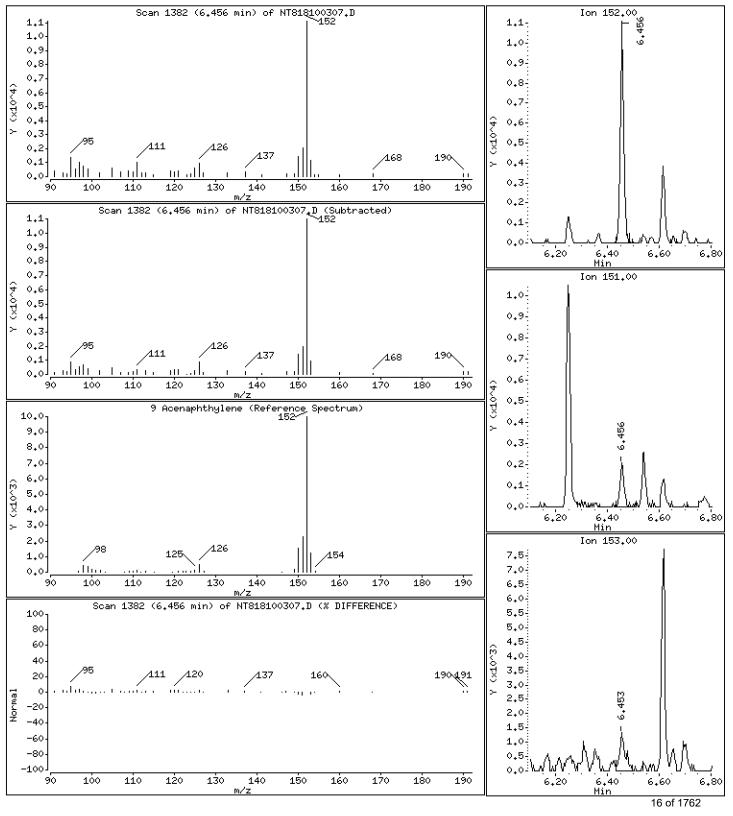
Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0.25

Concentration: 0,1309 ug/mL





Date : 03-0CT-2018 13:48

Client ID:

11 Acenaphthene

Sample Info: 1810285-01

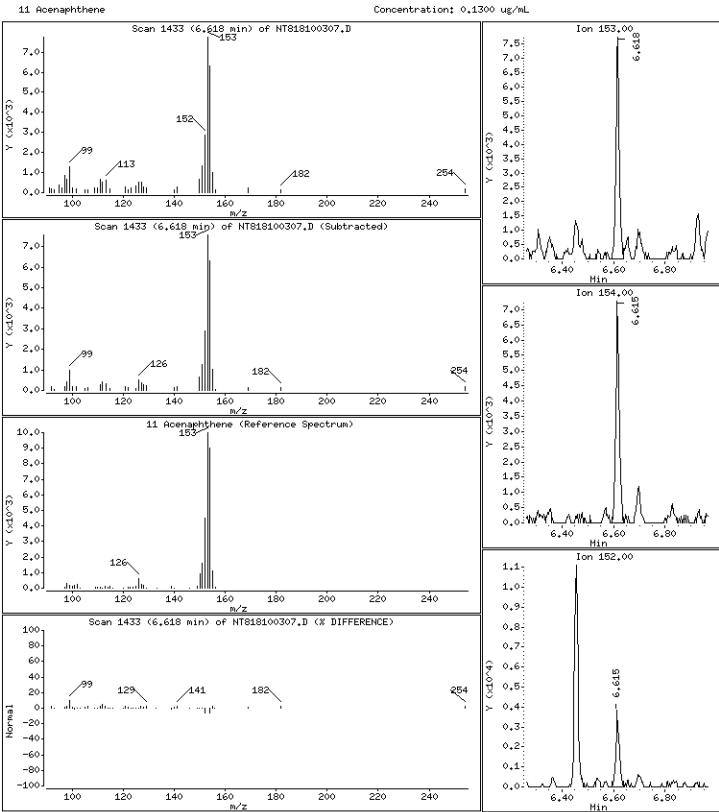
Instrument: nt8.i

Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0.25

Concentration: 0,1300 ug/mL



Date : 03-0CT-2018 13:48

Client ID:

Sample Info: 1810285-01

Instrument: nt8.i

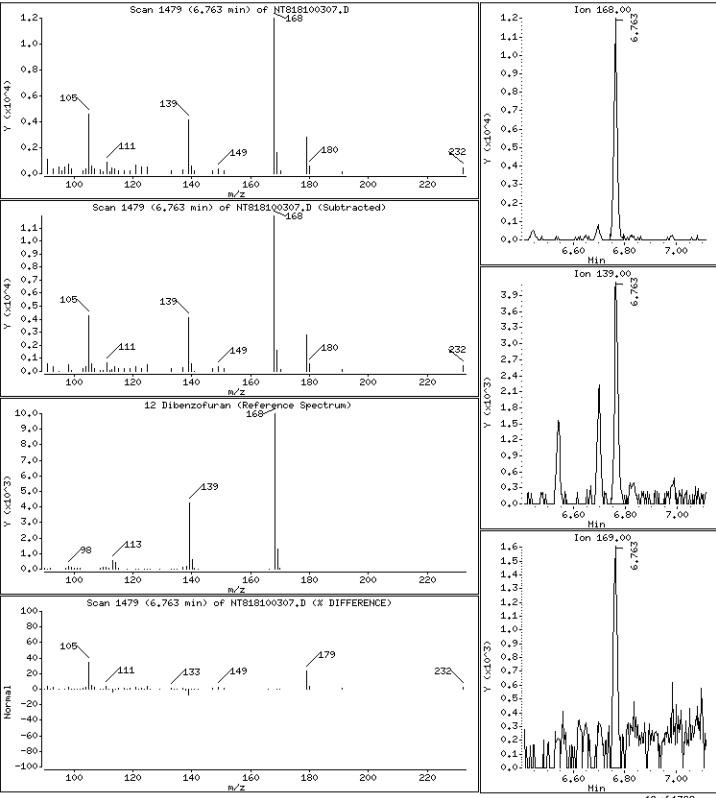
Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0.25

Concentration: 0.1453 ug/mL





18 of 1762

Date : 03-0CT-2018 13:48

Client ID:

Sample Info: 1810285-01

Instrument: nt8.i

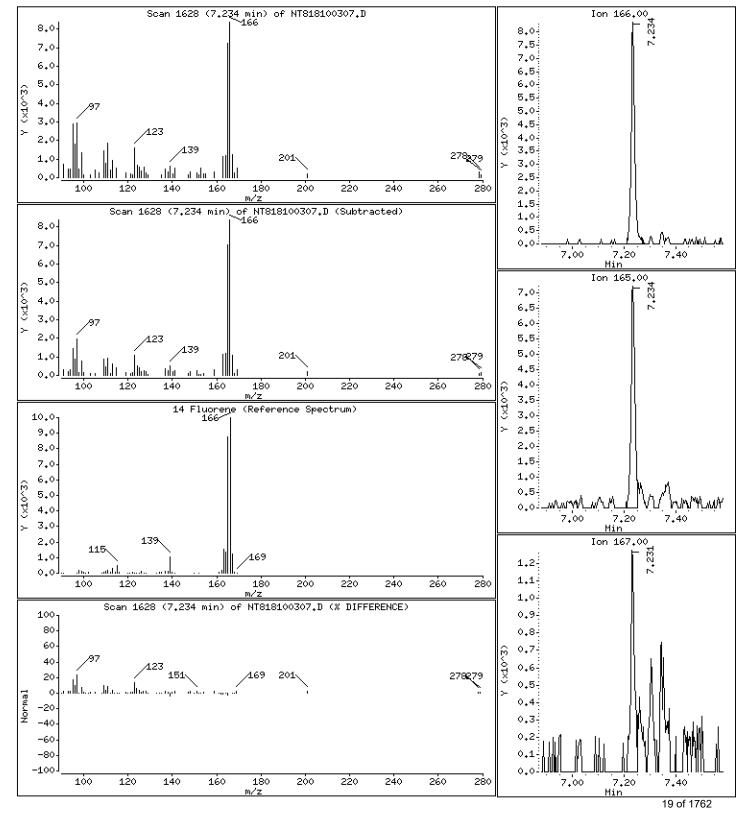
Operator: JZ

Column phase: Rxi-17sil

Column diameter: 0,25

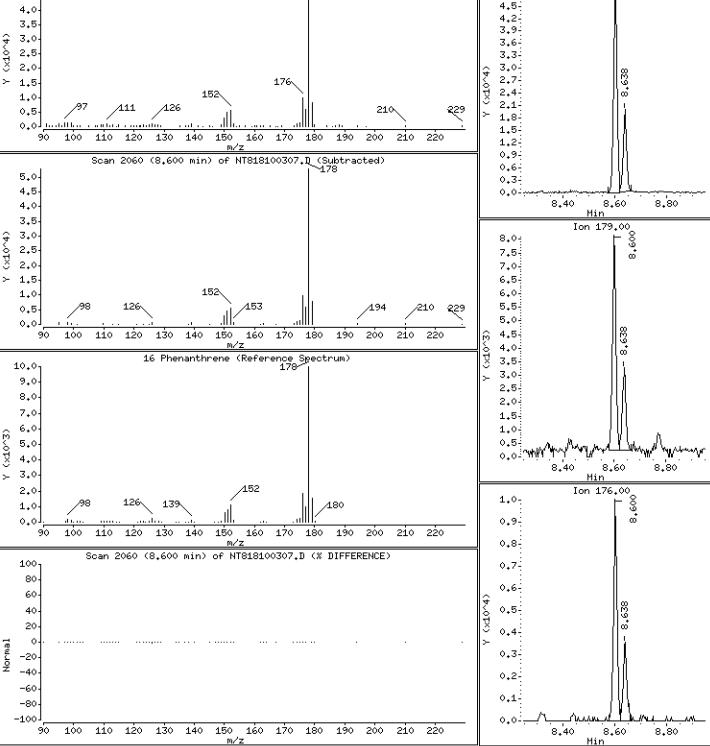






Page 8

20 of 1762



Data File: \\target\share\chem3\nt8.i\20181003.b\NT818100307.D

Scan 2060 (8.600 min) of NT818100307.D √178

Date : 03-0CT-2018 13:48

Client ID:

16 Phenanthrene

5.0

4.5

Sample Info: 18I0285-01

Column phase: Rxi-17sil

Instrument: nt8.i

Operator: JZ

Column diameter: 0.25

Concentration: 0.6288 ug/mL

5.1-4.8Ion 178,00

. 000 100

ω

Date : 03-0CT-2018 13:48

Client ID:

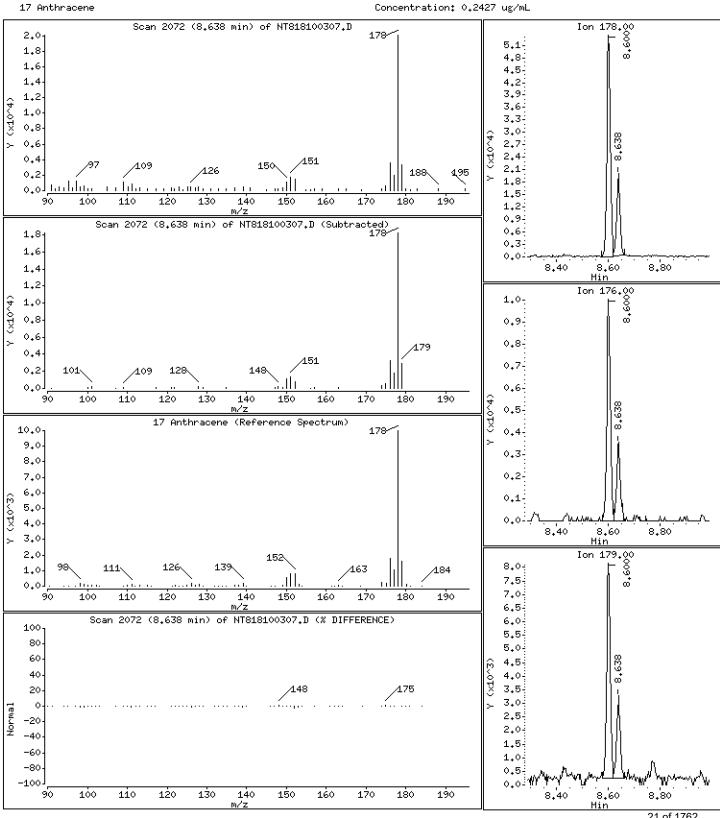
Sample Info: 1810285-01

Instrument: nt8.i

Operator: JZ

Column phase: Rxi-17sil

Column diameter: 0.25



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Date : 03-0CT-2018 13:48

Client ID:

Sample Info: 1810285-01

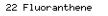
Instrument: nt8.i

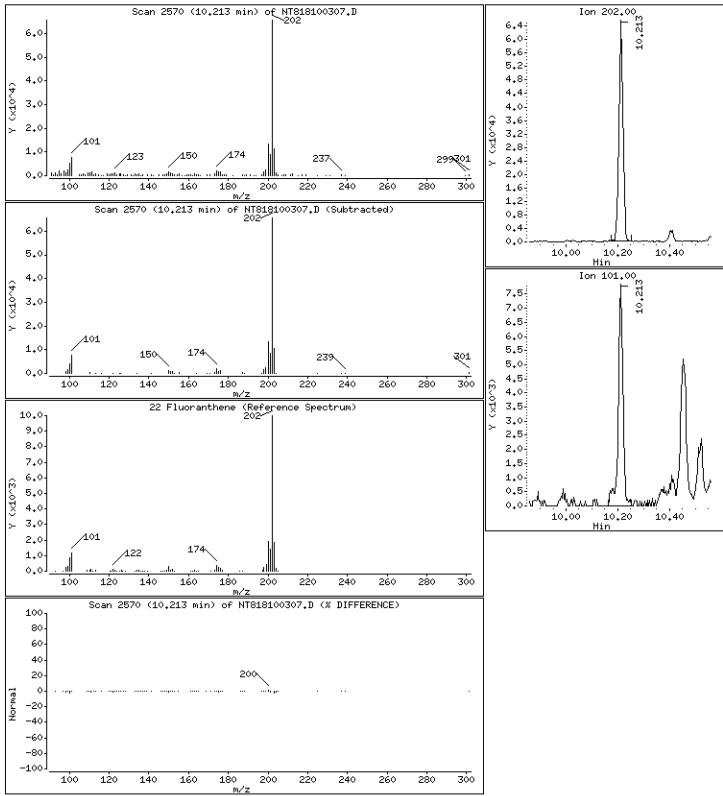
Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0.25

Concentration: 0.7928 ug/mL





Date : 03-0CT-2018 13:48

Client ID:

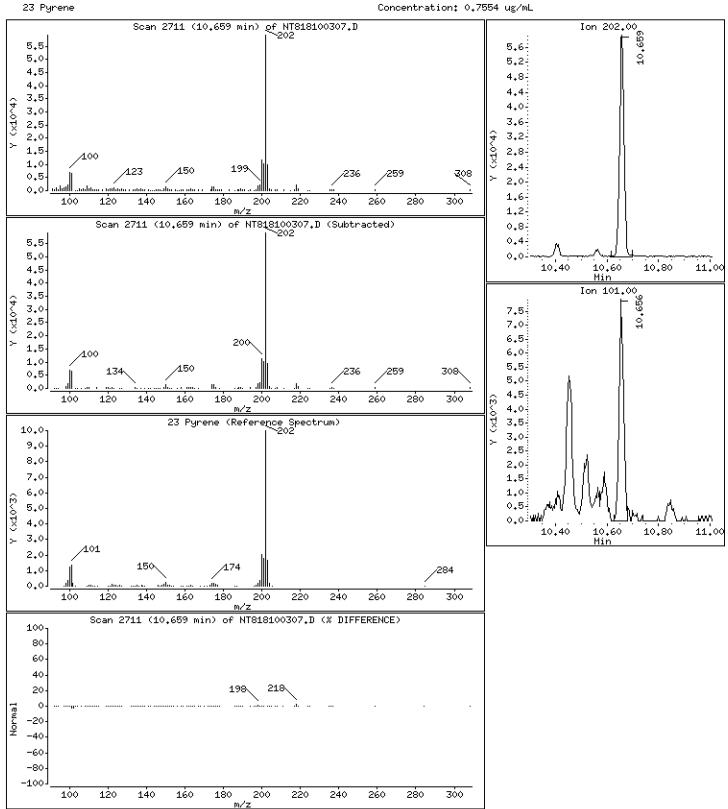
Sample Info: 1810285-01

Instrument: nt8.i

Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0,25



Date : 03-0CT-2018 13:48

Client ID:

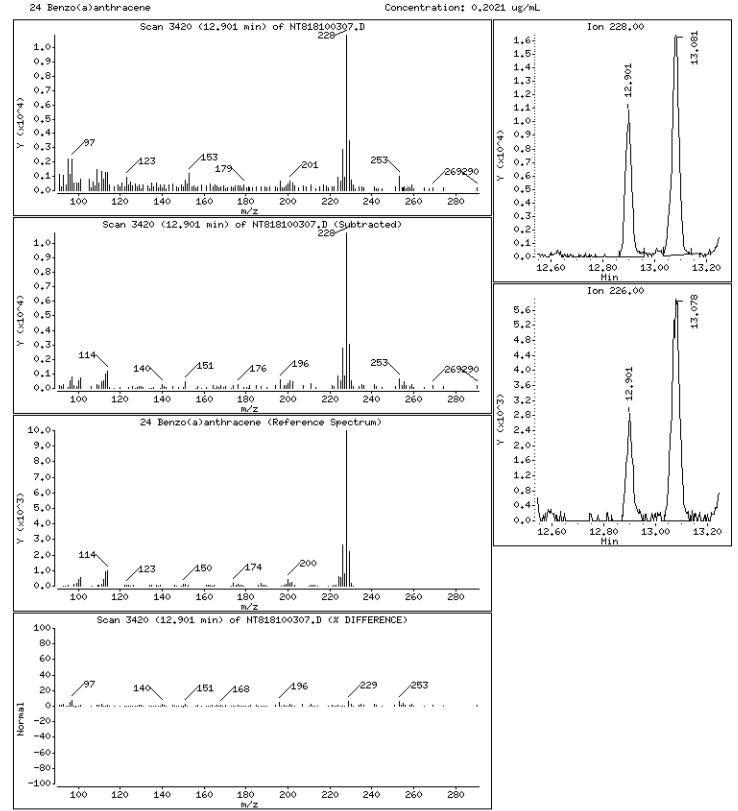
Sample Info: 1810285-01

Instrument: nt8.i

Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0,25



Date : 03-0CT-2018 13:48

Client ID:

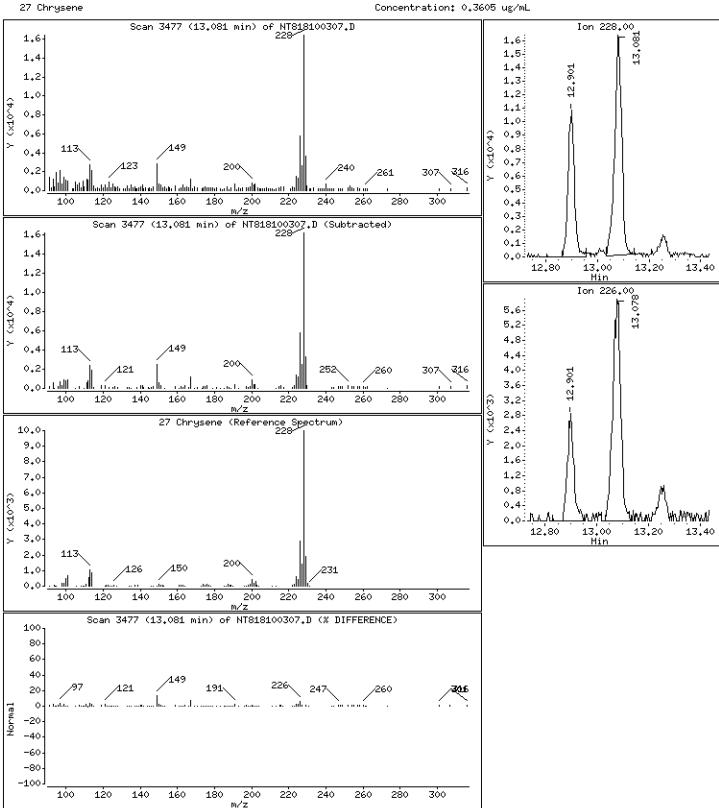
Sample Info: 1810285-01

Instrument: nt8.i

Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0.25



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Date : 03-0CT-2018 13:48

Client ID:

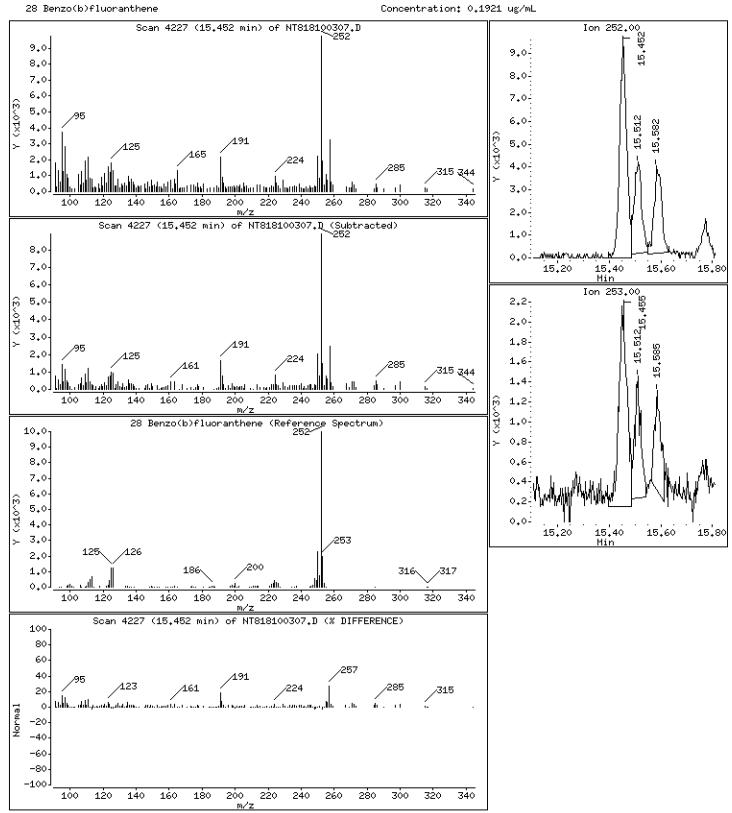
Sample Info: 1810285-01

Column phase: Rxi-17sil

Instrument: nt8.i

Operator: JZ

Column diameter: 0.25



Date : 03-0CT-2018 13:48

Client ID:

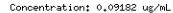
Sample Info: 1810285-01

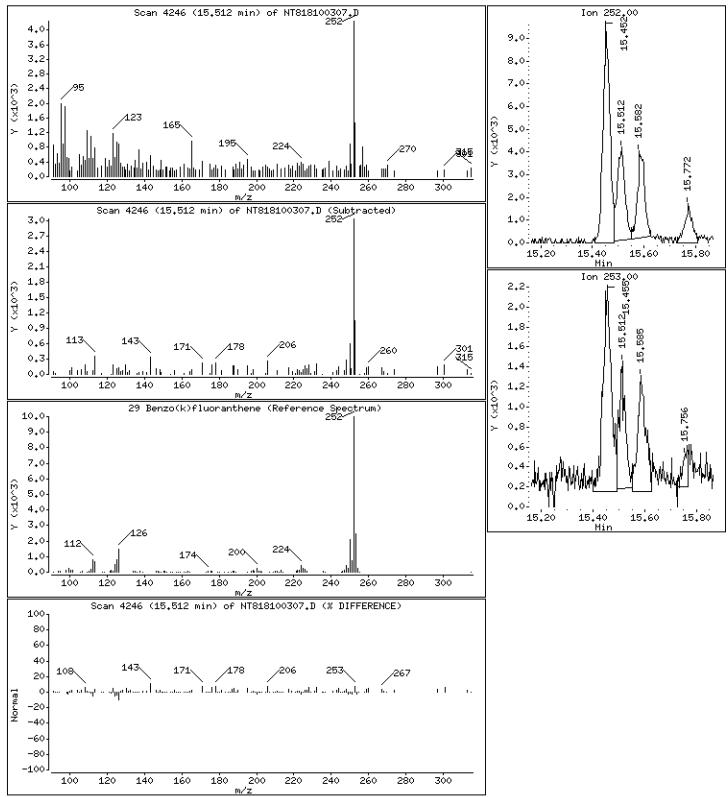
Instrument: nt8.i

Column diameter: 0.25

Operator: JZ

Column phase: Rxi-17sil 29 Benzo(k)fluoranthene





Date : 03-0CT-2018 13:48

Client ID:

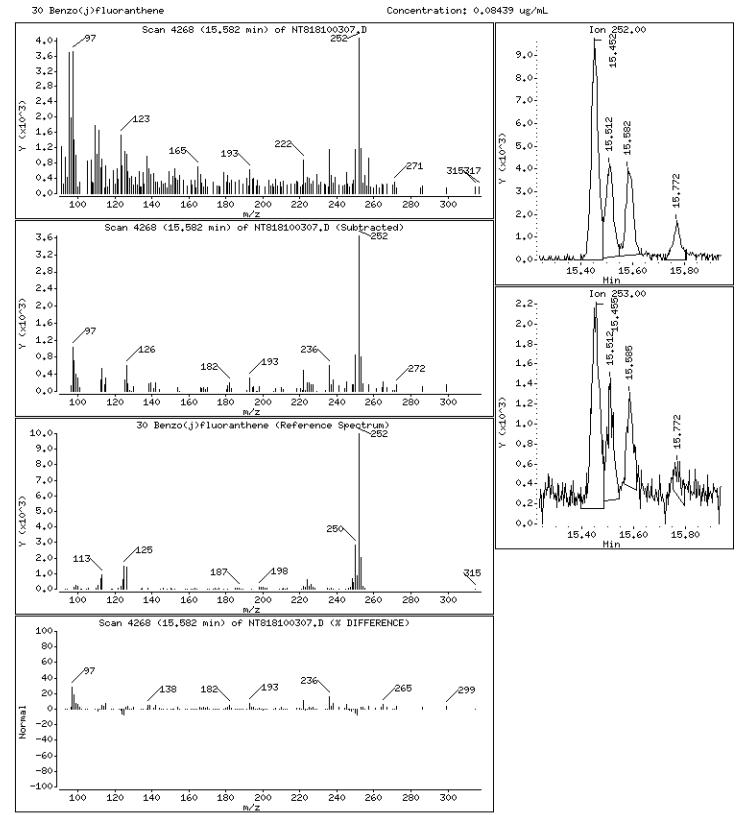
Sample Info: 1810285-01

Instrument: nt8.i

Column phase: R×i-17sil

```
Operator: JZ
```

Column diameter: 0,25



Date : 03-0CT-2018 13:48

Client ID:

Sample Info: 1810285-01

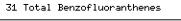
Instrument: nt8.i

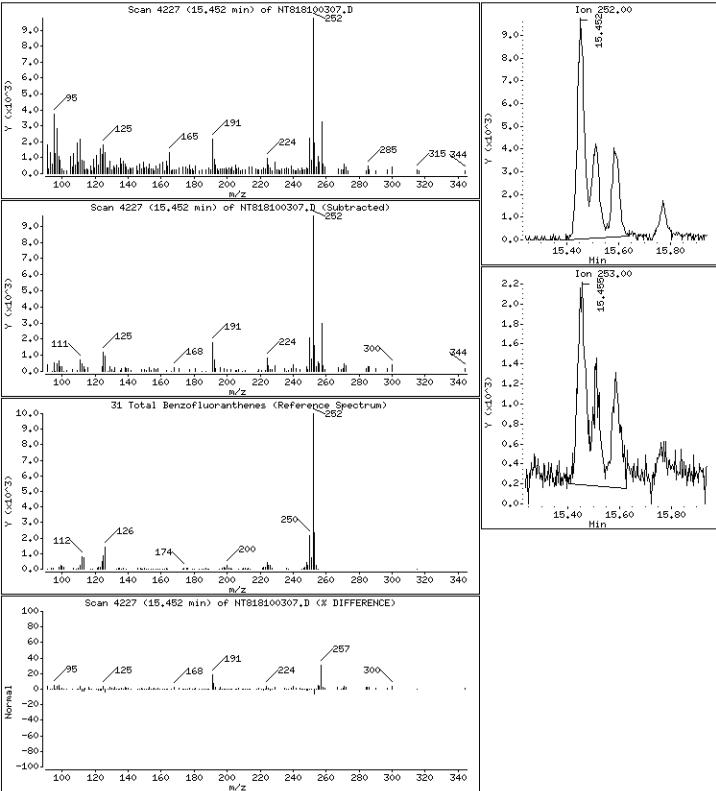
Operator: JZ

Column phase: Rxi-17sil

```
Column diameter: 0,25
```

Concentration: 0.3737 ug/mL





Date : 03-0CT-2018 13:48

Client ID:

Sample Info: 1810285-01

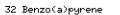
Column phase: Rxi-17sil

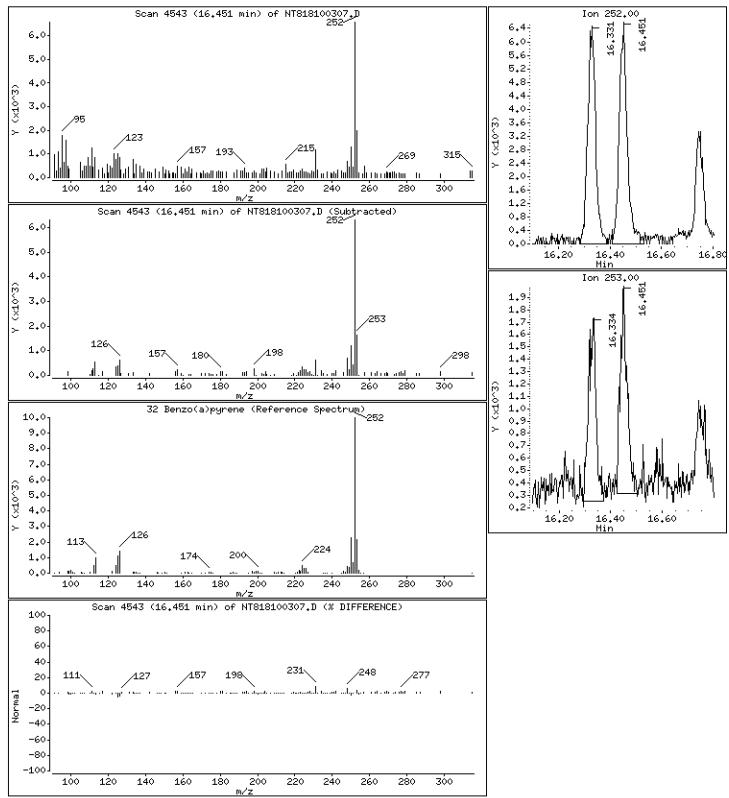
Instrument: nt8.i

Operator: JZ

Column diameter: 0.25

Concentration: 0.1645 ug/mL





Date : 03-0CT-2018 13:48

Client ID:

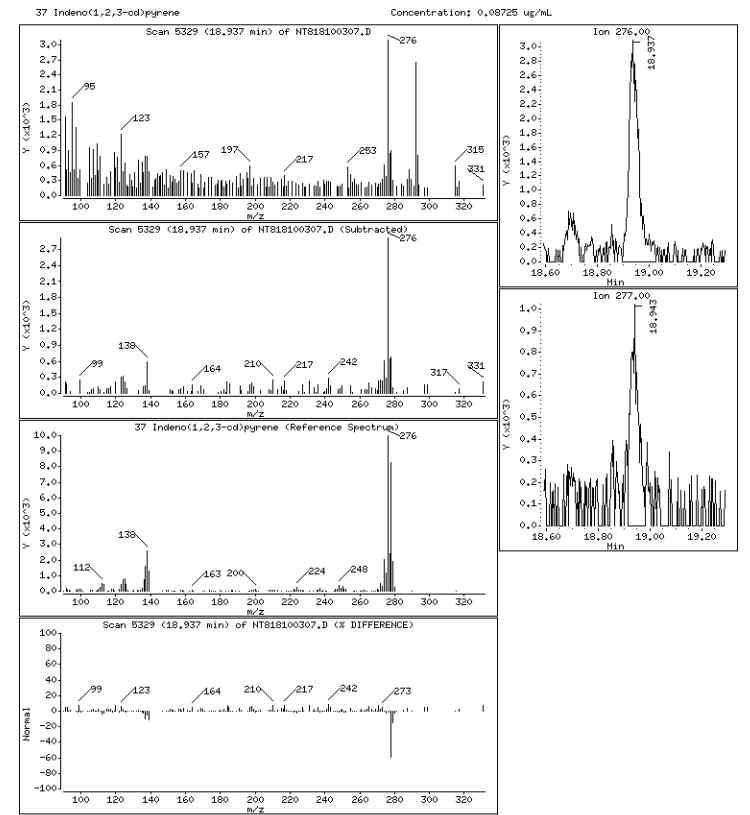
Sample Info: 1810285-01

Instrument: nt8.i

Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0.25



Date : 03-0CT-2018 13:48

Client ID:

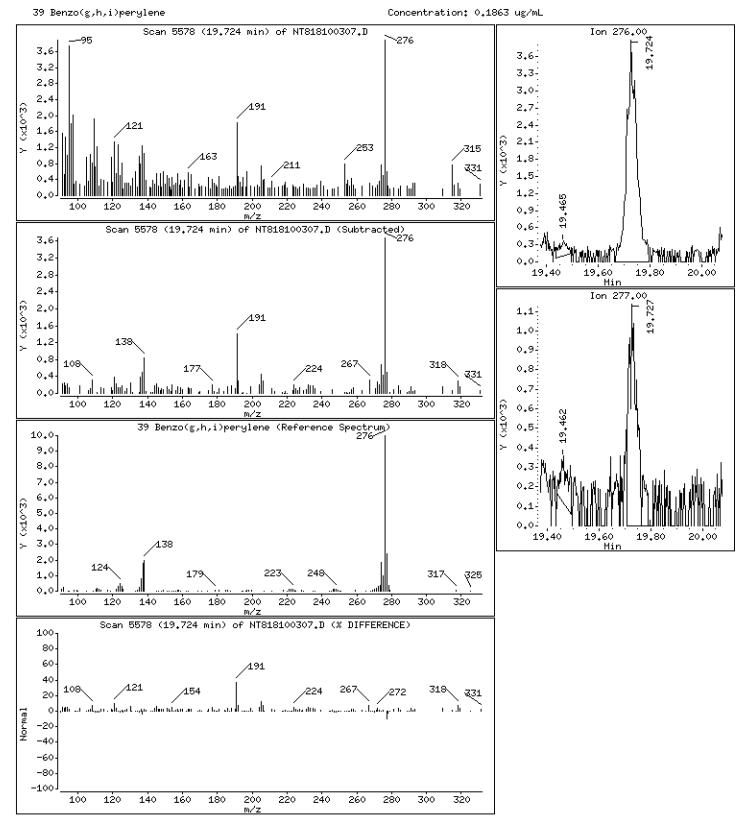
Sample Info: 1810285-01

Instrument: nt8.i

Column phase: Rxi-17sil

```
Operator: JZ
```

Column diameter: 0.25



Date : 03-0CT-2018 13:48

Client ID:

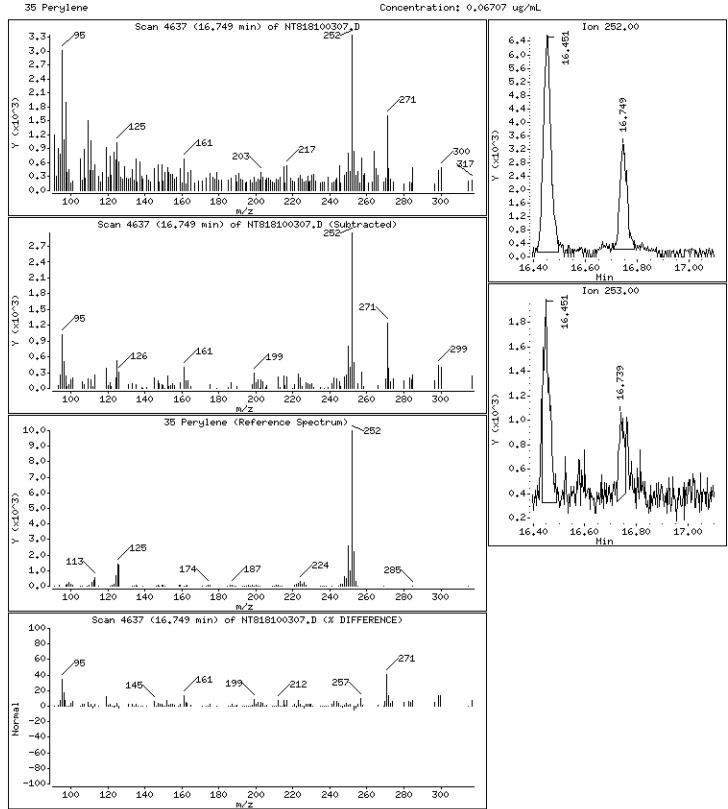
Sample Info: 1810285-01

Instrument: nt8.i

Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0.25



ARI Labs, Inc.

Semivolatile Report SW846 Method 8270D Data file : \\target\share\chem3\nt8.i\20181003.b\NT818100307.D Lab Smp Id: 18I0285-01 Inj Date : 03-OCT-2018 13:48 Inst ID: nt8.i Operator : JZ Smp Info : 18I0285-01 Misc Info : 18-Comment : 1ul Injection Method : \\target\share\chem3\nt8.i\20181003.b\FSIMPNA180803.m Meth Date : 03-Oct-2018 12:11 jianqing Cal Date : 03-AUG-2018 10:49 Quant Type: ISTD Cal File: N818080302.D Als bottle: 7 Dil Factor: 1.00000 Integrator: HP RTE Compound Sublist: pnax.sub Target Version: 4.14 Processing Host: ORGDATA22

	ompounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTR ON-COLUMN (ug/mL)	FINAL (ug/mL)
*	1 Naphthalene-d8	==== 136	4.312		= ====================================	142221	====== 2.00000	
	2 Naphthalene	128	4.341	4.347	(1.007)	62975	0.81245	0.8124
Ş	3 2-Methylnaphthalene-d10	152	5.039	5.040	(1.169)	88423	1.75803	1.758
	4 2-Methylnaphthalene	141	5.084	5.087	(1.179)	5603	0.12891	0.1289
	5 1-methylnaphthalene	141	5.280	5.280	(1.224)	3360	0.07508	0.07508
	9 Acenaphthylene	152	6.456	6.453	(0.983)	10589	0.13094	0.1309
*	10 Acenaphthene-d10	164	6.567	6.564	(1.000)	76244	2.00000	
	11 Acenaphthene	153	6.617	6.614	(1.008)	7089	0.13004	0.1300
	12 Dibenzofuran	168	6.763	6.763	(1.030)	10974	0.14532	0.1453
	14 Fluorene	166	7.234	7.231	(1.102)	8116	0.12976	0.1298
*	15 Phenanthrene-d10	188	8.565	8.565	(1.000)	147766	2.00000	
	16 Phenanthrene	178	8.600	8.597	(1.004)	50111	0.62881	0.6288
	17 Anthracene	178	8.638	8.638	(1.008)	18933	0.24266	0.2427
	22 Fluoranthene	202	10.212	10.209	(1.192)	73460	0.79285	0.7928
Ş	21 Fluoranthene-d10	212	10.181	10.178	(1.189)	215529	2.30958	2.310
	23 Pyrene	202	10.658	10.655	(0.819)	71404	0.75539	0.7554
	24 Benzo(a)anthracene	228	12.900	12.897	(0.991)	18476	0.20214	0.2021
*	25 Chrysene-d12	240	13.014	13.014	(1.000)	158864	2.00000	
	27 Chrysene	228	13.080	13.080	(1.005)	31144	0.36051	0.3605
	28 Benzo(b)fluoranthene	252	15.452	15.458	(0.926)	18433	0.19212	0.1921
	29 Benzo(k)fluoranthene	252	15.512	15.515	(0.930)	8722	0.09182	0.09182
	30 Benzo(j)fluoranthene	252	15.581	15.591	(0.934)	7599	0.08439	0.08439
	31 Total Benzofluoranthenes	252	15.452	15.591	(0.926)	34800	0.37371	0.3737(M)
	32 Benzo(a)pyrene	252	16.451	16.451	(0.986)	14233	0.16445	0.1645
*	33 Perylene-d12	264	16.679	16.672	(1.000)	153854	2.00000	
	37 Indeno(1,2,3-cd)pyrene	276	18.936	18.943	(1.135)	7955	0.08725	0.08725
\$	36 Dibenzo(a,h)anthracene-d14	292	18.857	18.861	(1.131)	199918	2.89655	2.897
	38 Dibenzo(a,h)anthracene	278	Con	npound No	ot Detecte	d.		
	39 Benzo(g,h,i)perylene	276	19.724	19.727	(1.183)	10338	0.18631	0.1863
	35 Perylene	252	16.748	16.745	(1.004)	5988	0.06707	0.06707

Data File: \\target\share\chem3\nt8.i\20181003.b\NT818100307.D Page 2 Report Date: 03-Oct-2018 14:26

QC Flag Legend

M - Compound response manually integrated.

Data File: \\target\share\chem3\nt8.i\20181003.b\NT818100307.D Page 1 Report Date: 03-Oct-2018 14:26

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS AREA AND RT SUMMARY

Instrument ID: nt8.i Calibration Date: 03-OCT-2018 Lab File ID: NT818100307.D Calibration Time: 11:20 Lab Smp Id: 18I0285-01 Analysis Type: SV Level: Quant Type: ISTD Sample Type: Operator: JZ Method File: \\target\share\chem3\nt8.i\20181003.b\FSIMPNA180803.m Misc Info: 18-

Test Mode:

Use Initial Calibration Level 4.

COMPOUND	STANDARD	AREA LOWER	LIMIT UPPER	SAMPLE	%DIFF	
1 Naphthalene-d8	131877	65939	263754	$\begin{array}{r} 142221 \\ 76244 \\ 147766 \\ 158864 \\ 153854 \end{array}$	7.84	
10 Acenaphthene-d10	72272	36136	144544		5.50	
15 Phenanthrene-d10	156058	78029	312116		-5.31	
25 Chrysene-d12	174389	87195	348778		-8.90	
33 Perylene-d12	150701	75351	301402		2.09	

COMPOUND	STANDARD	RT I LOWER	JIMIT UPPER	SAMPLE	%DIFF	
1 Naphthalene-d8 10 Acenaphthene-d10 15 Phenanthrene-d10 25 Chrysene-d12 33 Perylene-d12	======== 4.32 6.56 8.57 13.01 16.67	======== 3.82 6.06 8.07 12.51 16.17	4.82 7.06 9.07 13.51 17.17	4.31 6.57 8.57 13.01 16.68	-0.15 0.05 -0.00 -0.00 0.04	

AREA UPPER LIMIT = +100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area. RT UPPER LIMIT = + 0.50 minutes of internal standard RT. RT LOWER LIMIT = - 0.50 minutes of internal standard RT. ccal: //target/share/chem3/nt8.i/20181003.b/NT818100302.D REVIEW SUMMARY FOR FILE - NT818100307.D

Lab ID: 18I0285-01 nt8.i, 20181003.b\FSIMPNA180803.m, 03-OCT-2018 13:48

RT CO-ELUTION COMPOUNDS

NO CO-ELUTIONS

Quant Method: ICAL

RRT CHECK

RRT CCV RRT DELTA COMPOUND

0.926 0.935 -0.0087 Total Benzofluoranthenes

RRT check based on Ccal File: NT818100302.D

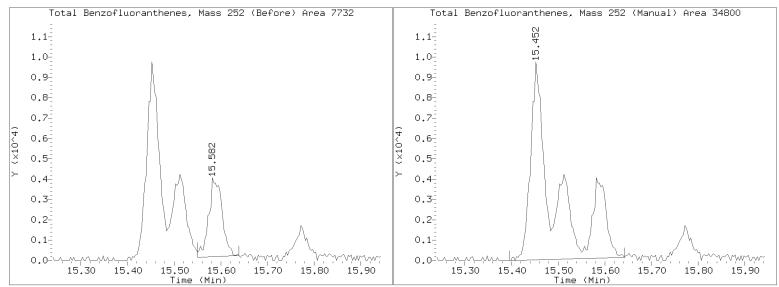
On Column LOD for nt8.i, 20181003.b\FSIMPNA180803.m, pnax.sub = 0.0500

Exception: Benzo(b)fluoranthene 0.0300 Exception: Benzo(k)fluoranthene 0.0300 Exception: Benzo(j)fluoranthene 0.0300 Exception: Total Benzofluoranthenes 0.0300 Exception: Fluoranthene-d10 (Surr) 0.0000

* Only compounds listed in the work order have been verified by the analyst *

Quant Ion Manual Peak Adjustment Report

Datafile: //target/share/chem3/nt8.i/20181003.b/NT818100307.D Injection Date: 03-OCT-2018 13:48 Lab ID:18I0285-01 Client ID: Report Date: 10/03/2018 14:26





SMA1-ST-0-10-Comp-180917

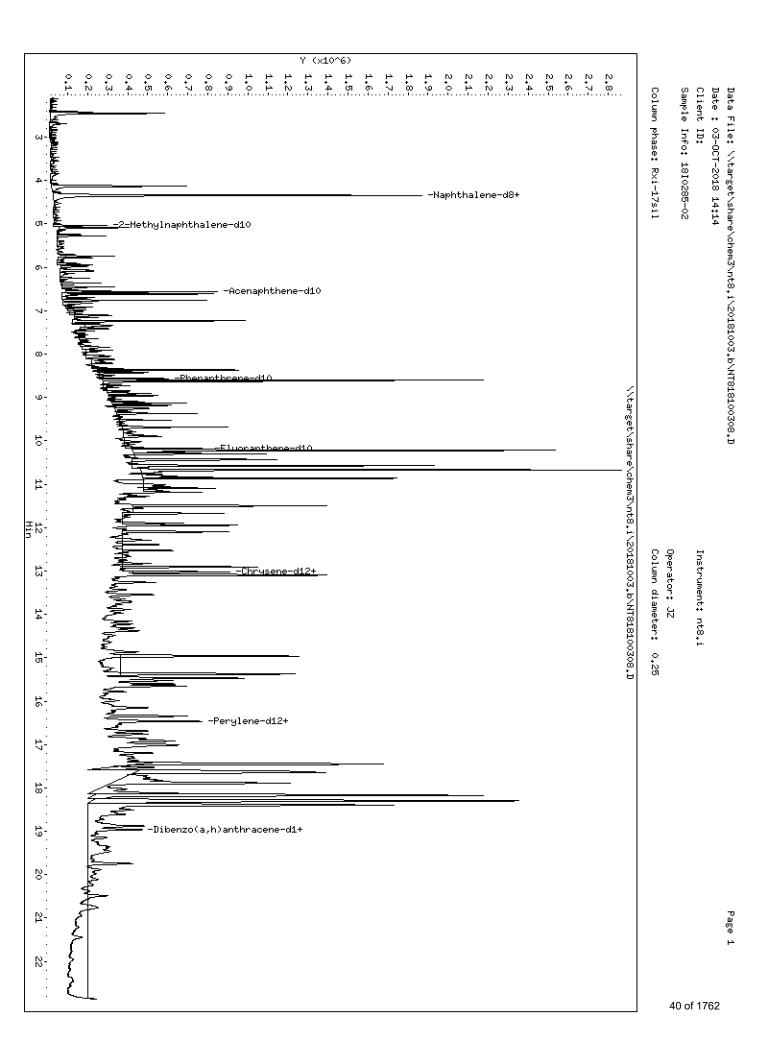
Form I

ORGANIC ANALYSIS DATA SHEET

EPA 8270D-SIM

Polynuclear Aromatic Hydrocarbons

Laboratory:	Analytical Resources, Inc.											
Client:	Anchor QEA, LLC											
Project:	Port Gamble - OMMP LTM											
Matrix:	Sediment Lab		Laboratory ID: 1		810285-02		SDG:		1810285			
G 1 1		Prepared:	Drenewada 00				Ella ID.					
Sampled:	09/17/18 12:05	Prepared:	Prepared: <u>09</u>		<u>9/26/18 15:45</u>		File ID:		<u>NT818100308.D</u>			
% Solids:	49.28	Preparatio	Preparation: <u>EI</u>		EPA 3546 (Microwave)		Analyzed:		10/03/18 14:14			
Batch:	BGI0708	Sequence	Sequence: <u>SG</u> .		<u>GJ0048</u>		Initial/Final:		20.34 g Wet / 0.5 mL		mL	
Instrument:	<u>NT8</u> Column:		RXI-17Sil ms			Calibration:		BH00016				
Cleanups:	<u>Silica Gel, Sulfur</u>											
CAS NO.	COMPOUND		DILUTION	CO	NC. (ug/kg dry)		Q	DL		RL		
91-20-3	Naphthalene	Naphthalene			706		E	1.27		4.99		
91-57-6	2-Methylnaphthalene	2-Methylnaphthalene		125			1.10		4.99			
90-12-0	1-Methylnaphthalene				87.3			0.40		4.99		
208-96-8	Acenaphthylene		1		80.7			1.08		4.99		
83-32-9	Acenaphthene		1		205			0.57		4.99		
86-73-7	Fluorene		1		220			0.63		4.99		
85-01-8	Phenanthrene	Phenanthrene			587	Е		0.72		4.99		
120-12-7	Anthracene	Anthracene			252			0.87		4.99		
206-44-0	Fluoranthene	Fluoranthene			602	Е		0.47		4.99		
129-00-0	Pyrene	,			632	Е		0.62		4.99		
56-55-3	Benzo(a)anthracene				260			0.82		4.99		
218-01-9	Chrysene				433			1.05		4.99		
205-99-2	Benzo(b)fluoranthene				255			1.37		4.99		
207-08-9		Benzo(k)fluoranthene			125			0.76		4.99		
205-82-3	•	Benzo(j)fluoranthene			118			0.68		4.99		
50-32-8		Benzo(a)pyrene		1				0.61		4.99		
193-39-5	Indeno(1,2,3-cd)pyrene		1		90.7			1.05		4.99		
53-70-3	Dibenzo(a,h)anthracene		1		28.4			0.89		4.99		
191-24-2	Benzo(g,h,i)perylene		1		110			1.06		4.99		
Benzofluoranthenes, Total		1 497		497			3.00 9.98					
SURROGATES			ADDED (ug/kg dry)		CONC (ug/kg dry)		% REC		Q	C LIMITS	Q	
2-Methylnaphthalene-d10			149.65	149.65		88.5		59.1		32 - 120		
Dibenzo[a,h]anthracene-d14			149.65	149.65		120		80.0		21 - 133		
Fluoranthene-d	10			149.65		102		67.9		36 - 134		
			177.05			102			50 154			



Date : 03-0CT-2018 14:14

Client ID:

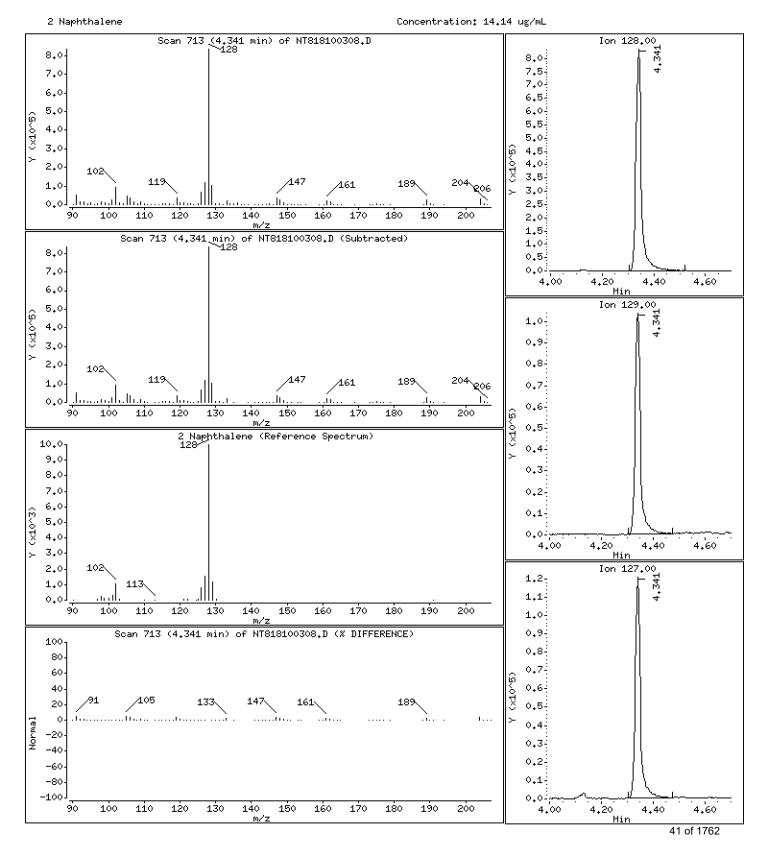
Sample Info: 1810285-02

Instrument: nt8.i

Column phase: R×i-17sil

Operator: JZ

Column diameter: 0.25



Date : 03-0CT-2018 14:14

Client ID:

Sample Info: 1810285-02

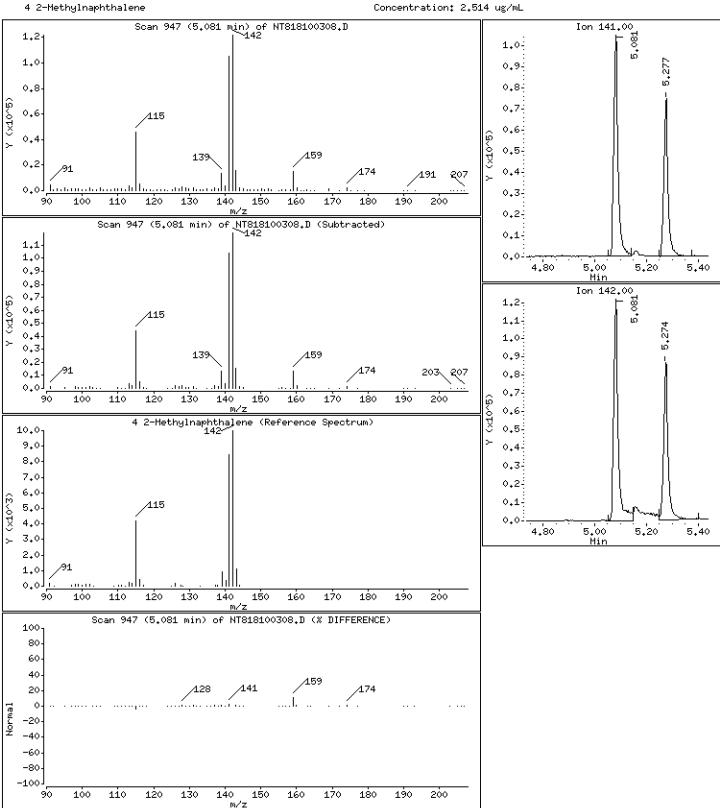
```
Instrument: nt8.i
```

Operator: JZ

Column phase: Rxi-17sil

4 2-Methylnaphthalene

Column diameter: 0.25



Date : 03-0CT-2018 14:14

Client ID:

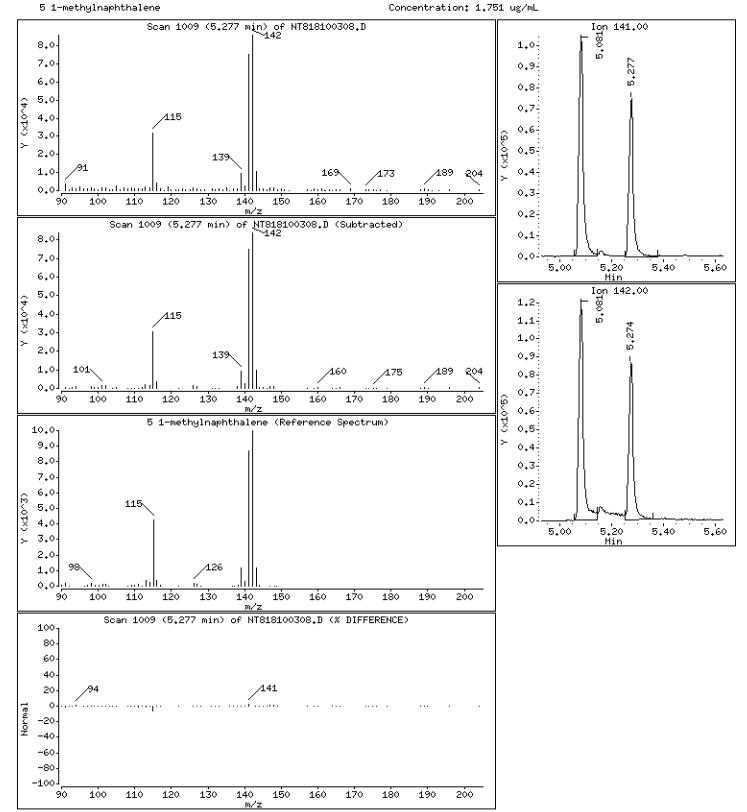
Sample Info: 18I0285-02

Instrument: nt8.i

Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0.25



Date : 03-0CT-2018 14:14

Client ID:

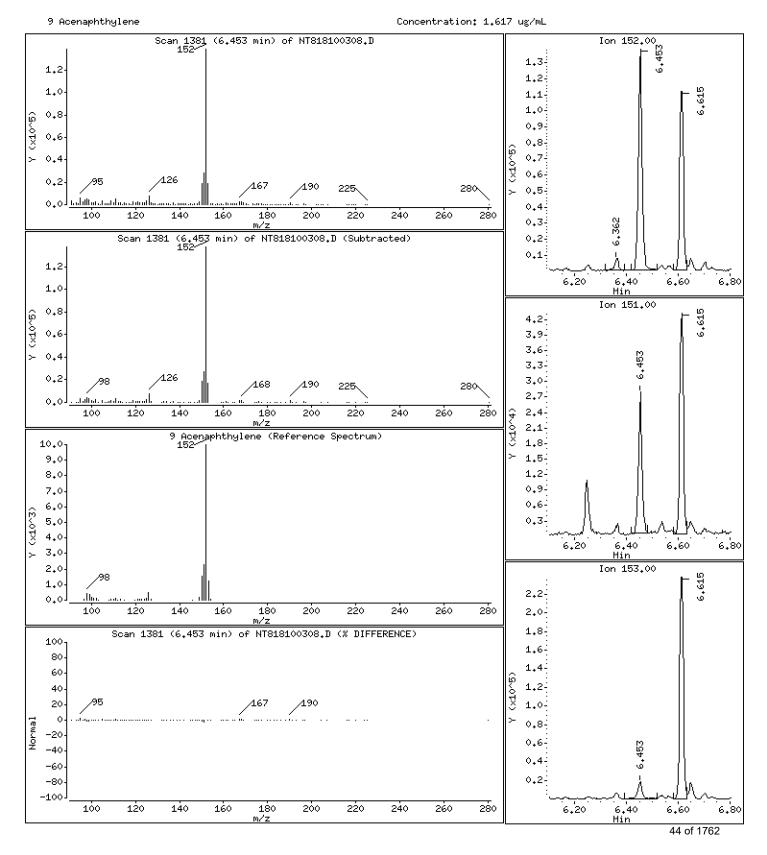
Sample Info: 1810285-02

Instrument: nt8.i

Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0.25



Date : 03-0CT-2018 14:14

Client ID:

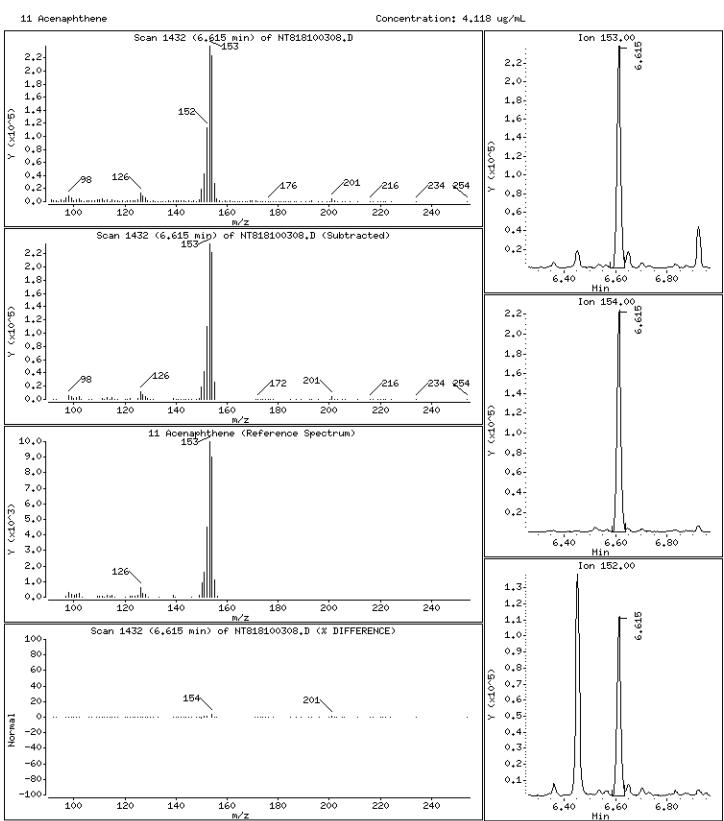
Sample Info: 1810285-02

Instrument: nt8.i

Operator: JZ

Column phase: Rxi-17sil

Column diameter: 0.25



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Date : 03-0CT-2018 14:14

Client ID:

12 Dibenzofuran

Sample Info: 1810285-02

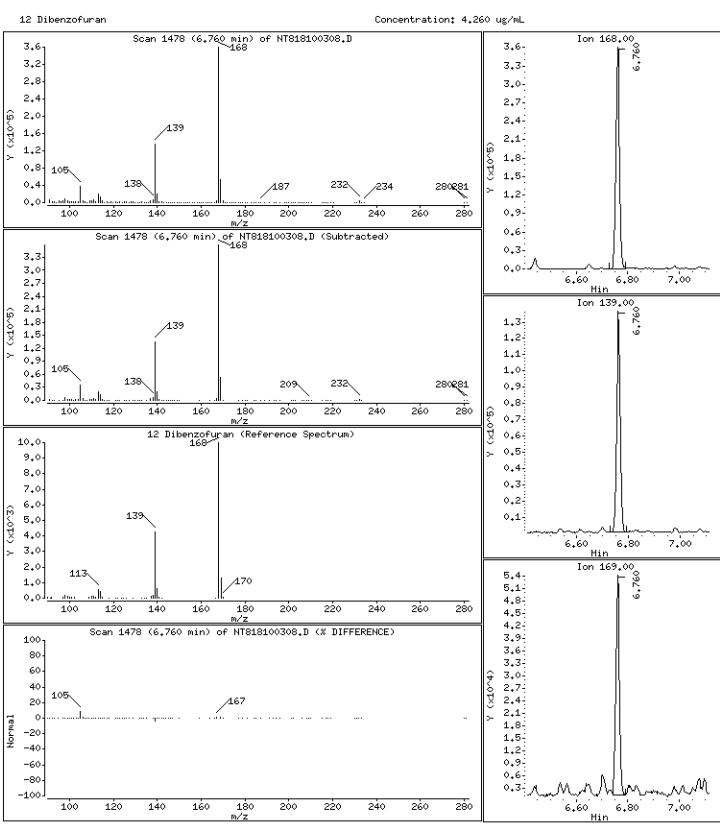
Instrument: nt8.i

Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0.25

Concentration: 4.260 ug/mL



Date : 03-0CT-2018 14:14

Client ID:

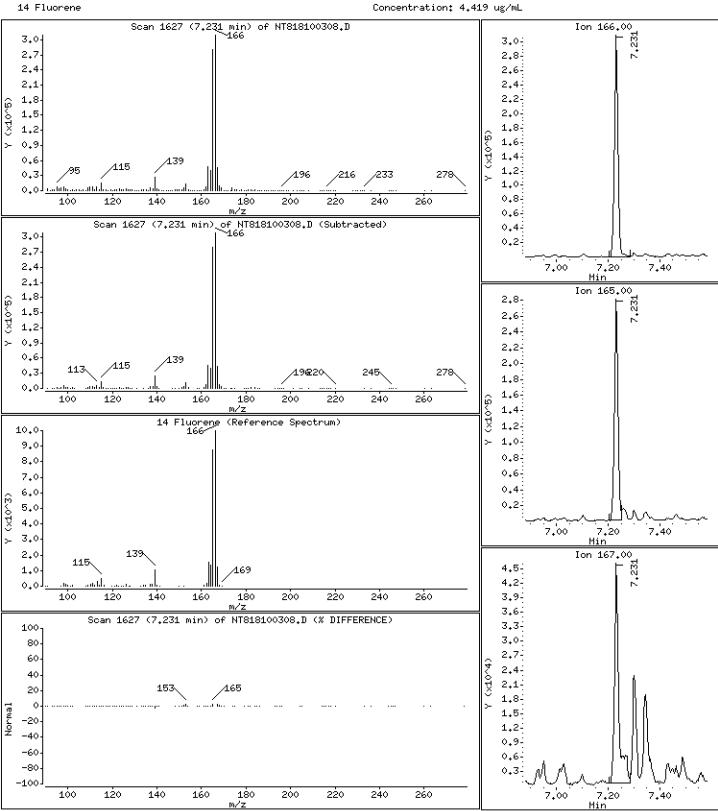
Sample Info: 1810285-02

Instrument: nt8.i

Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0,25



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Date : 03-0CT-2018 14:14

Client ID:

16 Phenanthrene

Sample Info: 1810285-02

Instrument: nt8.i

Column phase: Rxi-17sil

Operator: JZ

Column diameter: 0.25

Concentration: 11.76 ug/mL

