DRAFT
SEDIMENT DATA REPORT
JENSEN'S SHIPYARD AND MARINA
1293 TURN POINT ROAD
FRIDAY HARBOR, WASHINGTON

prepared for:

Port of Friday Harbor
PO Box 889
Friday Harbor, WA 98250

October 8, 2018

whatcom ENVIRONMENTAL

soil | water | air
compliance consulting

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SEDIMENT DATA REPORT
JENSEN'S SHIPYARD
1293 TURN POINT ROAD
FRIDAY HARBOR, WASHINGTON

Prepared for:

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Friday Harbor, Washington 98250

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October 8, 2018

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ACRONYMS AND ABBREVIATIONS

ARAR	-	Applicable or Relevant and Appropriate Requirements
BTEX	-	Benzene, Toluene, Ethylbenzene, and Xylenes
cPAH	-	Carcinogenic Polycyclic Aromatic Hydrocarbons
COC	-	Contaminant/Chemical of Concern
DMMP	-	Dredged Material Management Program
Ecology	-	Washington State Department of Ecology
EPA	-	Environmental Protection Agency
ESA	-	Environmental Site Assessment
GPS	-	Global Positioning System
MTCA	-	Model Toxics Control Act
MDL	-	Method Detection Limit
NPDES	-	National Pollutant Discharge Elimination System
OPALCO	-	Orcas Power and Light Company
PAH	-	Polycyclic Aromatic Hydrocarbons
PCBs	-	Polychlorinated Biphenyls
PSEP	-	Puget Sound Estuary Program
PQL	-	Practical Quantitation Limit
RCW	-	Revised Code of Washington
SAP	-	Sampling and Analysis Plan
SCUM II	-	Sediment Cleanup User's Manual
SMS	-	Sediment Management Standards
SQS	-	Sediment Quality Standards
TBT	-	Tributyltin
TOC	-	Total Organic Carbon
TPH	-	Total Petroleum Hydrocarbons
UST	-	Underground Storage Tank
USDA	-	US Department of Agriculture
VOC	-	Volatile Organic Compounds
WAC	-	Washington State Administrative Code

EXECUTIVE SUMMARY

To further characterize marine sediment quality additional sediment sampling was conducted at the Jensen's Shipyard property (1293 Turn Point Road) in Friday Harbor, Washington. Seven surface sediment samples were collected and analyzed during the investigation. Four samples represented new sample stations, while three samples were collected from previous sample stations.

Previous sampling documented numerous chemical criteria exceedances in nearshore marine sediments (collected within 50 feet of the high tide line). Criteria exceedances included copper, zinc, mercury, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), phthalates, pesticides, and tributyltin. Sediment results were compared to the Sediment Quality Standards (SQS) numeric criteria (Ecology, 2015) where applicable. Tributyltin and dioxins/furans do not have an established SQS numeric criteria value and those results have instead been compared to the Dredged Material Management Program (DMMP) User Manual screening levels (USACE, 2016). Samples collected approximately 300 to 500 feet from shore did not contain any criteria exceedances except for total chlordane.

Three new sample stations were placed approximately 100 to 150 feet from shore to further delineate the areal extents of chemical criteria exceedances. Results indicate the concentrations of chemicals of concern dissipate moving away from the shoreline and most drop to levels below applicable criteria levels within roughly 150 feet from shore. However, a band of elevated PCB and tributyltin levels continues further offshore generally following the pier and continuing slightly east of the pier. This band of elevated chemical concentrations diminishes prior to reaching the covered boat slips.

Three nearshore sample stations which contained the highest chemical concentrations were re-sampled to supplement the original data set with an evaluation of dioxins/furans at those locations. To date, all sediment samples have been collected in the uppermost 0 – 4 inches of sediment. Further investigation would be needed to determine if elevated chemical concentrations are present in deeper sediment, and to develop options for site remediation.

1.0 INTRODUCTION

1.1 GENERAL SITE INFORMATION

Jensen's Shipyard and Marina (the site) is located at 1293 Turn Point Road in Friday Harbor, Washington. The upland portion of the site encompasses approximately 4.88 acres, and the aquatic lands (including piers and docks) encompasses approximately 5 acres. The aquatic lands are located within Shipyard Cove, Friday Harbor. The upland portion of the facility was recently purchased from Albert Jensen & Sons Inc and is now owned by the Port of Friday Harbor. The aquatic portion of the site is leased from the Washington State Department of Natural Resources (Authorization Number 20-B12158).

The site is comprised of one parcel (351341005000) and is located in the northeast quarter of the southeast quarter of Section 13 in Township 35 North, Range 3 West. The median elevation of the site is approximately 16 feet above mean sea level. The property topography is relatively level, and the surrounding area generally slopes north towards Friday Harbor (USGS Friday Harbor, 2014). The site is located in an area characterized by marina, commercial, and industrial development. The site location and surrounding area is shown on Figure 1. The general layout of the facility is shown on Figure 2.

Contact information for the project consultant, property owner, and facility operator are included below.

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1.2 SITE HISTORY

The site was first developed as a shipyard prior to 1941 with anecdotal evidence suggesting operation beginning in 1910. The site was originally used to manufacture wooden boats in the early 20th century. As wooden boats were phased out in the middle of the 20th century, the site use moved from shipbuilding to boat repair and maintenance. Railways are present at the northern portion of the site, east of the current dock. The railways were originally used to launch boats, but were later used to pull boats out for repair. A concrete pad is present at the location of the rails which was added later and is not original to the railway area.

A boat pullout is located in the northwest portion of the site. A wash pad is located at the end of the pullout, and both the pullout and wash pad are paved with concrete. Wash water generated during boat washing operations is treated in a closed loop system using enzymes. A small building housing the pumping and treating equipment is located just east of the wash pad. No wash water is discharged from the site. When the washing is completed, the wash pad is cleaned and the drain on the wash pad is diverted to the onsite stormwater detention and evaporation pond.

1.3 SITE USE

The property has remained a shipyard since development. Minor changes to structures at the property have been made over time. Adjacent properties have historically been primarily marina/commercial/industrial.

2.0 PREVIOUS SEDIMENT INVESTIGATIONS

Previous sediment investigations have been conducted at the site.

2.1 1997 SEDIMENT SAMPLING

Sediment samples were collected from the site by the Department of Ecology in 1997 as part of a larger study. The results of sediment chemical testing were summarized in a 2001 Department of Ecology report titled *Concentrations of Selected Chemicals in Sediments from Harbors in the San Juan Islands*. The report was generated to determine the occurrence and extent of toxic chemicals associated with marina activities in four harbors in the San Juan Islands. The report indicated that two sediment samples collected within the aquatic area of the subject property (FR1 and FR3) exceeded the screening level of 73 µg/kg for tributyltin (TBT) at concentrations of 135.3 µg/kg and 74.8 µg/kg, respectively (Ecology, 2001). Additional details have been provided in the Jensen's Shipyard Sediment Sampling and Analysis Plan (Whatcom Environmental Services, 2017). Historical sediment sample locations are shown in Appendix A

2.2 2018 UPLAND SOIL AND MARINE SEDIMENT SAMPLING

Sediment samples were collected at the site in February 2018. The results of soil and sediment chemical testing were summarized in the report titled *Initial Investigation Report, Jensen's Shipyard, 1293 Turn Point Road, Friday Harbor, Washington* (WES, 2018a).

Marine sediment samples collected from the site during the investigation contained elevated concentrations of numerous chemicals. The elevated concentrations were detected in samples collected from the nearshore marine areas close to the old marine railways and the current boat travel lift. Elevated concentrations were also present to a lesser extent in samples collected further west of the lifts and beneath the covered boat moorage slips. Sediment results were compared to the SQS marine chemical criteria levels (Chapter 173-204-320 WAC) and the DMMP screening levels (USACE, 2015). Chemicals with concentrations exceeding applicable target criteria and screening levels include PCBs, various PAHs, phthalates, pesticides, copper, zinc, mercury, and

tributyltin. The study recommended further sediment sampling to more thoroughly delineate the presence of chemicals in sediment at the site.

3.0 MARINE SEDIMENT INVESTIGATION RESULTS

On August 21, 2018 a sediment sampling event was completed in accordance with the Jensen's Shipyard and Marina Sediment Sampling and Analysis Plan (SAP) (WES, 2018b) approved by the Washington State Department Ecology. The SAP was prepared following guidelines provided in *SCUM II* (Ecology, 2015), and the *Puget Sound Estuary Protocols* (PSEP, 1997). The purpose of the study was to further characterize sediment quality in marine areas of the Jensen's Shipyard and Marina site.

Surface sediment samples were collected for chemical analysis at seven sampling stations. Three of the sampling stations had been previously sampled (SED-9d, SED-10d, and SED-13d) and were re-sampled to supplement the original data set with an evaluation of dioxins/furans at those locations. Sediment results have been compared to the Sediment Quality Standards (SQS) numeric criteria (Ecology, 2015) where applicable. Tributyltin and dioxins/furans do not have an established SQS numeric criteria value and those results have instead been compared to the Dredged Material Management Program (DMMP) User Manual screening levels (USACE, 2016).

3.1 FIELD SAMPLING METHODS

Sediment at three sampling stations accessible by foot during low tide were collected directly with stainless steel utensils (SED-10d, SED-13d, and SED-17). Sediment at the remaining four sampling stations were collected using a WILDCO Petite Ponar (9-inch) sampler deployed from a boat. Samples were collected by Whatcom Environmental Services personnel. The boat was owned and operated by Jen-Jay Inc. Daily field activities were recorded in the project field notebook and on sample collection logs. Sample collection and handling procedures were followed per the approved SAP (WES, 2018b).

Samples were generally collected from the uppermost 0-10 cm of sediment. Materials more than 2 inches in diameter and debris were removed prior to sample collection. Extra sample volume was collected from sample station SED-15 to allow for laboratory matrix spike / matrix spike duplicate (MS/MSD) analysis. Original field log sheets for each sampling station are provided in Appendix B.

The sediment was transferred directly from the sampling device to a stainless-steel bowl and homogenized with a stainless-steel trowel. The homogenized sample portions were transferred into clean sample containers provided by the analytical laboratory.

Proposed sampling station locations were referenced to the actual deployment locations using a handheld GPS unit (Garmin model GPSMAP 64s). Coordinates of the actual deployment locations for all sample stations are provided in Table 1. Sample station locations are shown on Figure 2.

3.2 LABORATORY ANALYTICAL METHODS

Sediment samples collected from new sample stations (SED-14, SED-15, SED-16, and SED-17) were analyzed for the full list of SMS chemical and conventional parameters as well as organotins. Samples collected from existing stations (SED-9d, SED-10d, and SED-13d) were only analyzed for supplementary data for dioxins/furans.

The samples were analyzed at Analytical Resources Inc (ARI), located in Tukwila, Washington. The laboratory maintains applicable Ecology-accreditation and is expected to adhere to the Sediment Cleanup User's Manual (Ecology 2015) and PSEP protocols and requirements. The laboratory quality control data has been reviewed and deemed acceptable. Original laboratory quality control data is included in the original laboratory analytical data report in Appendix C.

The laboratory used for the previous sampling event (February 2018) was ALS Lab, located in Kelso Washington. The associated data report was presented in the *Initial Investigation Report* (WES 2018a).

3.3 DEVIATIONS

Sample containers for sulfide analysis were not filled prior to homogenization as recommended in the SAP. Sulfide sample results are considered biased low.

3.4 QUALITY ASSURANCE REVIEW

A quality assurance review has been performed on all sediment data generated during this investigation. The data set is 100% complete. The data review included an evaluation of:

- Field collection and handling
- Completeness
- Reporting limits
- Acceptability of test results for:
  - Method blanks
  - Analytical replicates
  - Laboratory control samples (blank spikes)
  - Surrogate recoveries
  - Matrix spikes and matrix spike duplicates

The quality assurance review has established confidence that accepted project data are of known and appropriate quality and sufficient to support their intended use. Data qualifiers were added where appropriate. No data were rejected. A summary of the quality assurance review is provided in Appendix D.

3.5 RESULTS

To provide a complete understanding of sediment quality present at the site, this discussion includes results generated during both the February 2018 and August 2018 sampling events. Additional details of the February sampling were presented in the *Initial Investigation Report* (WES, 2018a).

A summary of all sediment sample results is provided in Table 2. Non-detect sample results have been presented at the method detection limit (MDL) and qualified with a "U". Sample results greater than the MDL but less than the practical quantitation limit (PQL) are considered estimated and have been qualified with a "J". Sample results are compared to applicable SQS numeric criteria levels for marine sediment in Table 3, Table 4, and Table 5. Sample results are compared to applicable DMMP screening levels in Table 6. Sample collection locations are shown on Figure 2.

Figures displaying chemical concentration gradients and estimated criteria exceedance boundaries have been created for selected chemicals. Gradient contours were generated using the ESRI ArcGIS Spatial Analyst software utilizing the spline interpolation method. All 2018 surface sediment data were used in the analysis. Gradient maps include tributyltin (Figure 3), PCBs (Figure 4), mercury (Figure 5), and fluoranthene (Figure 6). A summary map which includes all selected chemical criteria boundaries is presented on Figure 7.

Tributyltin (TBT): Elevated TBT concentrations were encountered throughout nearshore areas adjacent to upland work areas at the site. TBT concentrations were particularly elevated in the intertidal zone along the base of the historic western railway. The DMMP screening level was exceeded at sample locations SED-7, SED-8, SED-9, SED-10, and SED-13. Additionally, the screening level was exceeded directly offshore from the marine railways at sample location SED-14. All other samples contained detectable concentrations of TBT below the screening level. See Figure 3.

Polychlorinated Biphenyls (PCBs): PCB concentrations (evaluated as total Aroclors) exceeded the applicable criteria levels in the nearshore area at the end of the travel lift slip (SED-9), at the intertidal zone located at base of the historic western railway (SED-10 and SED-13), and directly offshore from the marine railway (SED-14). Samples SED-10, SED-13, and SED-14 were compared to the SQS criteria. Due to the elevated organic carbon content, sample SED-9 was compared to Apparent Effects Threshold (AET) criteria as recommended in *SCUM II* Table 8-1 (Ecology, 2015). All other samples contained detectable concentrations of PCBs below applicable criteria. See Figure 4.

Dioxins/Furans: Dioxins/Furans concentrations (evaluated as total 2,3,7,8-TCDD equivalence) exceeded the applicable DMMP screening level in the nearshore areas at the north end of the boat travel lift (SED-9d) and at the base of the historic western railway (SED-10d and SED-13d). Dioxins/Furans have not been evaluated in any other marine areas of the site.

Metals: Elevated metals concentrations were encountered in the nearshore area. Copper, mercury, and zinc concentrations exceeded applicable SQS criteria at sample stations located in the intertidal zone at base of the historic western railway (SED-10 and SED-13). Additionally, mercury exceeded the criteria just northeast of the railway (SED-11), and copper exceeded the AET criteria at the end of the travel lift slip (SED-9). No

other metals exceeded the applicable criteria in marine sediment at the site. A surface sediment concentration gradient for mercury is presented on Figure 5.

Organic chemicals: Benzyl alcohol concentration exceeded the SQS criteria at sample station SED-9. The result was flagged by the lab as being an estimated concentration (J-flagged) and was only slightly above the SQS criteria. Result may or may not be of concern. Detected organic chemical concentrations did not exceed applicable SQS criteria at any other sampling station. However, numerous organic chemical results were reported at elevated detection limits which are above applicable SQS (and/or AET) criteria. See Table 4 and Table 5.

Phthalates: Butylbenzyl phthalate and dimethyl phthalate concentrations exceeded the SQS criteria at one sample station located at the north end of the boat travel lift (sample station SED-9). No other phthalate exceedances were encountered in marine sediment at the site.

Polycyclic Aromatic Hydrocarbon (PAH): Various PAH constituent concentrations exceeded the SQS criteria levels in the nearshore areas at the north end of the boat travel lift (SED-9) and at the base of the historic western railway (SED-10 and SED-13). PAH constituents detected at sample station SED-9 exceeded six of the eighteen criteria levels. PAH constituents detected at sample station SED-10 exceeded eleven of the eighteen criteria levels. PAH constituents detected at sample station SED-13 exceeded three of the eighteen criteria levels. No other PAHs exceeded the applicable criteria levels in marine sediment at the site. A surface sediment concentration gradient for fluoranthene is presented on Figure 6.

Chlorinated Organics: No chlorinated organics were detected in sediment at the site above applicable SQS criteria. However, due to the dilution factors (created by converting data to dry weight and also converting to carbon normalized data) some laboratory detection limits were elevated greater than the SQS criteria.

Pesticides: Total chlordane exceeded the DMMP screening level at two sample stations located approximately 300 and 450 feet from shore, beneath the covered boat slips (SED-3 and SED-5). There were no other chemical criteria exceedances at those sample stations. Pesticides were not evaluated during the most recent sampling event.

4.0 CONCLUSIONS

Marine sediment samples collected during this investigation indicate that various chemicals are present in marine sediment at the site at concentrations which exceed applicable regulatory screening levels and criteria. Sediment results were compared to the SQS marine chemical criteria levels (Chapter 173-204-320 WAC) and the DMMP screening levels (USACE, 2015).

In conjunction with the February 2018 sediment sampling results, this sampling event has further delineated the areal extents of chemicals present in surface sediment at the site. Analytical data indicate elevated chemical concentrations are focused in the nearshore marine areas close to the historical marine railways and the operational boat travel lift. Chemicals exceeding applicable target criteria and screening levels in this area include PCBs, PAHs, phthalates, pesticides, copper, zinc, mercury, and tributyltin. Pesticides also exceeded applicable criteria in samples collected beneath the covered boat slips. All sediment samples have been collected in the uppermost 0 – 4 inches to date.

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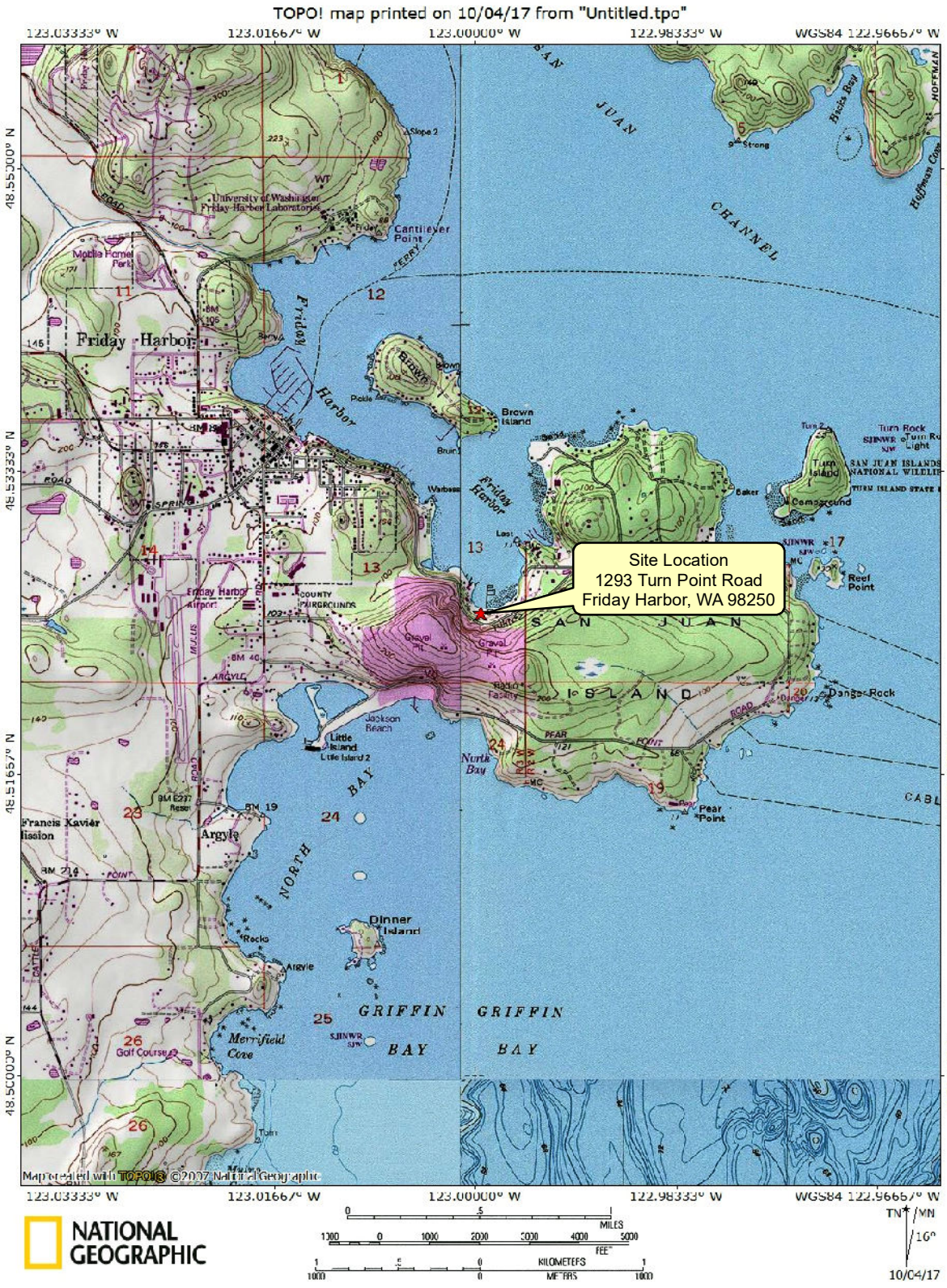

Prepared for:	Prepared by:	Site Location Map	
PORT OF FRIDAY HARBOR	whatcom ENVIRONMENTAL	Jensen's Shipyard 10/05/18	Figure 1

Sample Location (8/21/18)

Previous Sample Location (2/12/18)

2001-Present DNR Lease Boundary

Previous DNR Lease Boundary

0 50 100 150 200 Feet

1 inch = 100 feet

All data are approximate and should be used for relative location reference only. 2015 aerial photograph (GoogleEarth).

Marine Sediment Sample Locations

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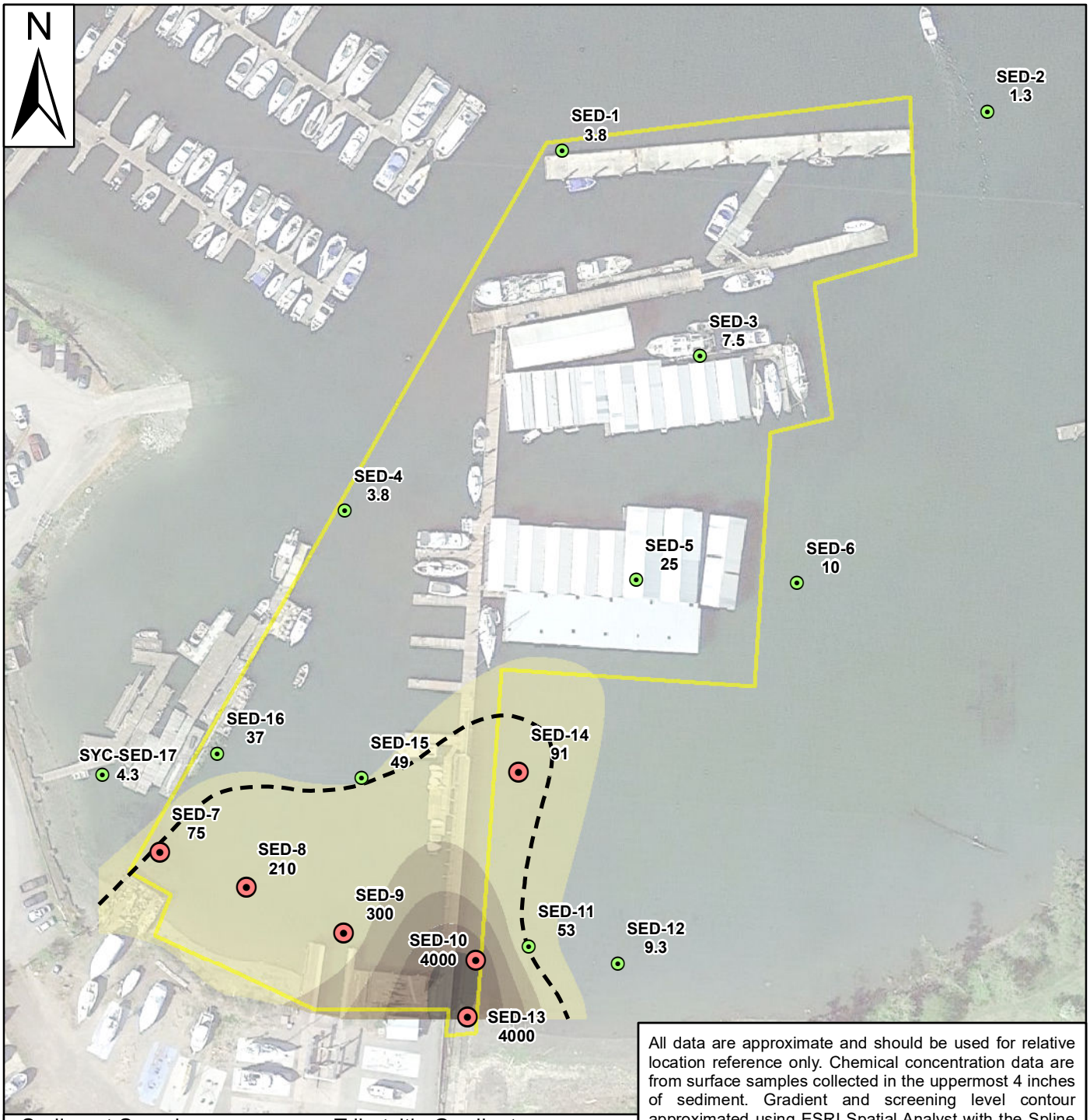
Figure 2



Sediment Sample

- ≤ 73 (ug/kg dw)
- > 73 (ug/kg dw)
- DMMP Screening Level (73 ug/kg dw)
- 2001 DNR Lease Boundary

Tributyltin Gradient (ug/kg dw)

- 50 - 1,000
- 1,000 - 2,000
- 2,000 - 3,000
- 3,000 - 4,000
- 4,000 - 5,000

All data are approximate and should be used for relative location reference only. Chemical concentration data are from surface samples collected in the uppermost 4 inches of sediment. Gradient and screening level contour approximated using ESRI Spatial Analyst with the Spline and Natural Neighbor interpolation methods.

2015 aerial obtained from Google Earth.

0 50 100 150 200 250 Feet

1 inch = 100 feet

Surface Sediment Concentration Gradient - Tributyltin

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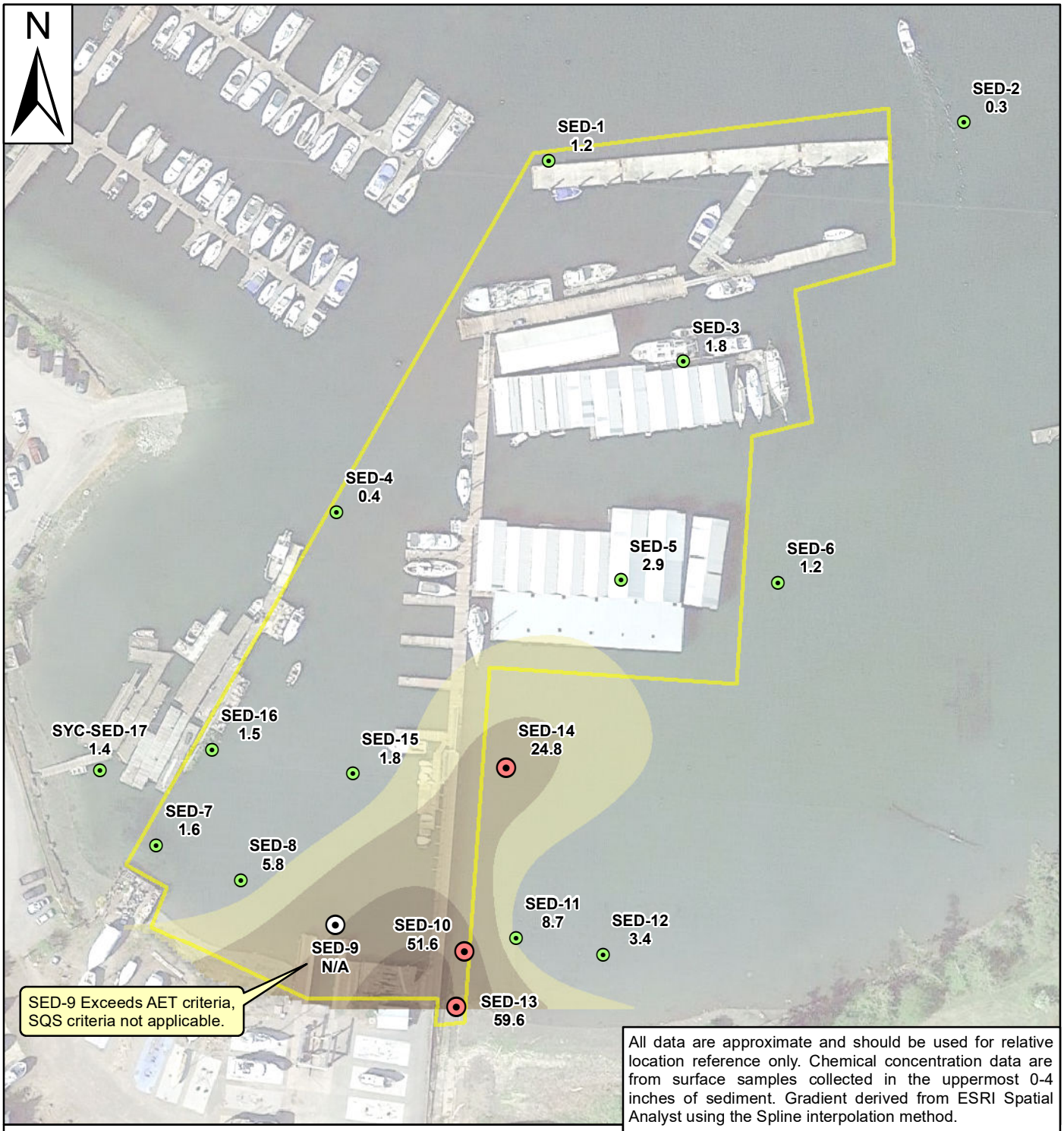
Figure 3



Sediment Sample

- ≤ 12 (mg/kg OC)
- > 12 (mg/kg OC)
- SQS Marine Criteria (12 mg/kg OC)
- 2001 DNR Lease Boundary

PCB Gradient (mg/kg OC)

- 10 - 20
- 20 - 40
- 40 - 60
- 60 - 80

All data are approximate and should be used for relative location reference only. Chemical concentration data are from surface samples collected in the uppermost 0-4 inches of sediment. Gradient derived from ESRI Spatial Analyst using the Spline interpolation method.

2015 aerial obtained from Google Earth.

0 50 100 150 200 250 Feet

1 inch = 100 feet

Surface Sediment Concentration Gradient - PCBs

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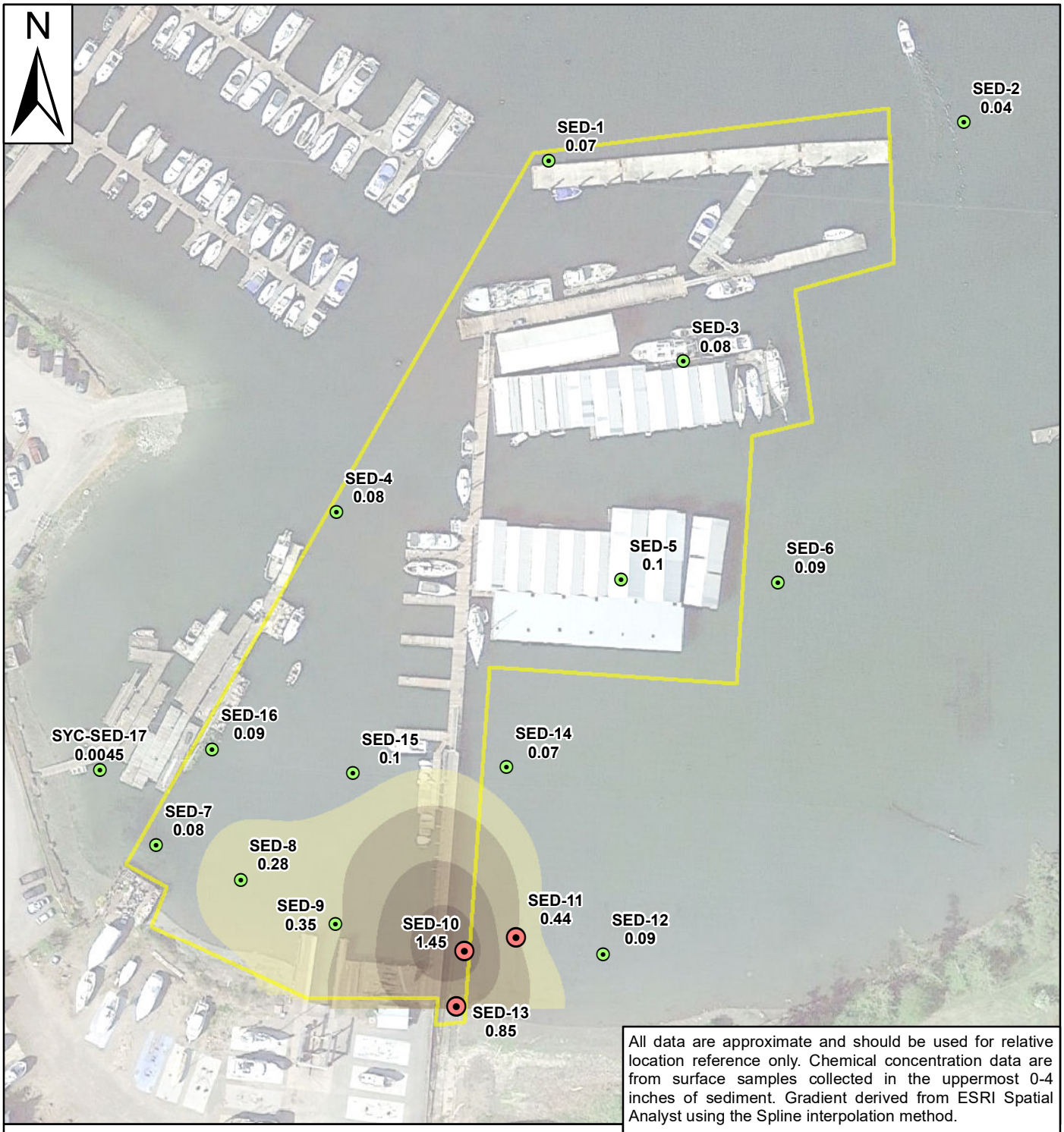
Figure 4



Sediment Sample

- ≤ 0.41 (mg/kg dw)
- > 0.41 (mg/kg dw)
- SQS Marine Criteria (0.41 mg/kg dw)
- 2001 DNR Lease Boundary

Mercury Gradient (mg/kg dw)

- 0.2 - 0.4
- 0.4 - 0.8
- 0.8 - 1.2
- 1.2 - 1.6

All data are approximate and should be used for relative location reference only. Chemical concentration data are from surface samples collected in the uppermost 0-4 inches of sediment. Gradient derived from ESRI Spatial Analyst using the Spline interpolation method.

2015 aerial obtained from Google Earth.

0 50 100 150 200 250 Feet

1 inch = 100 feet

Surface Sediment Concentration Gradient - Mercury

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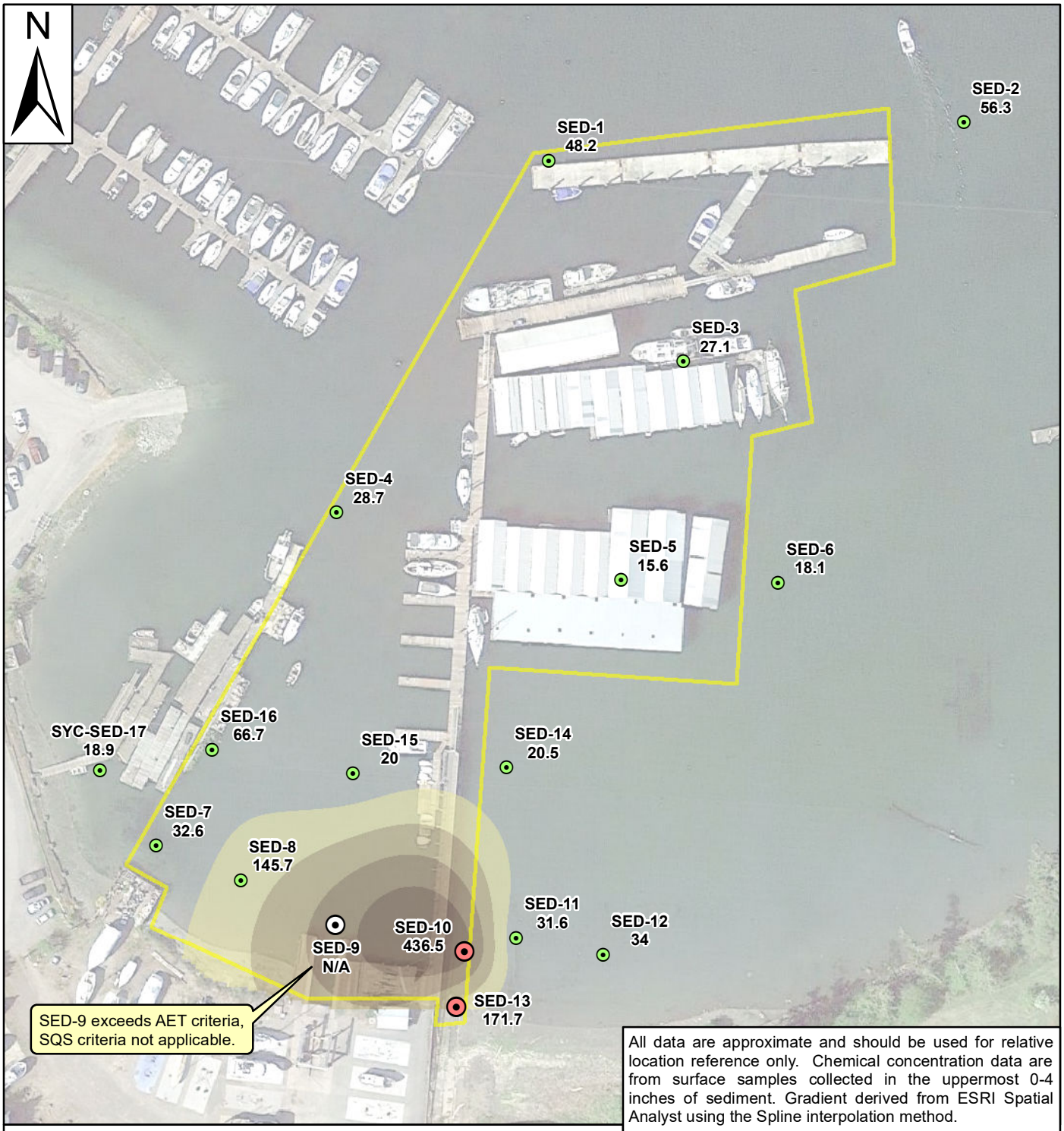
Figure 5



Sediment Sample

- ≤ 160 (mg/kg OC)
- > 160 (mg/kg OC)
- SQS Marine Criteria (160 mg/kg OC)
- 2001 DNR Lease Boundary

Fluoranthene Gradient (mg/kg OC)

- 100 - 200
- 200 - 300
- 300 - 400
- 400 - 500

All data are approximate and should be used for relative location reference only. Chemical concentration data are from surface samples collected in the uppermost 0-4 inches of sediment. Gradient derived from ESRI Spatial Analyst using the Spline interpolation method.

2015 aerial obtained from Google Earth.

0 50 100 150 200 250 Feet

1 inch = 100 feet

Surface Sediment Concentration Gradient - Fluoranthene

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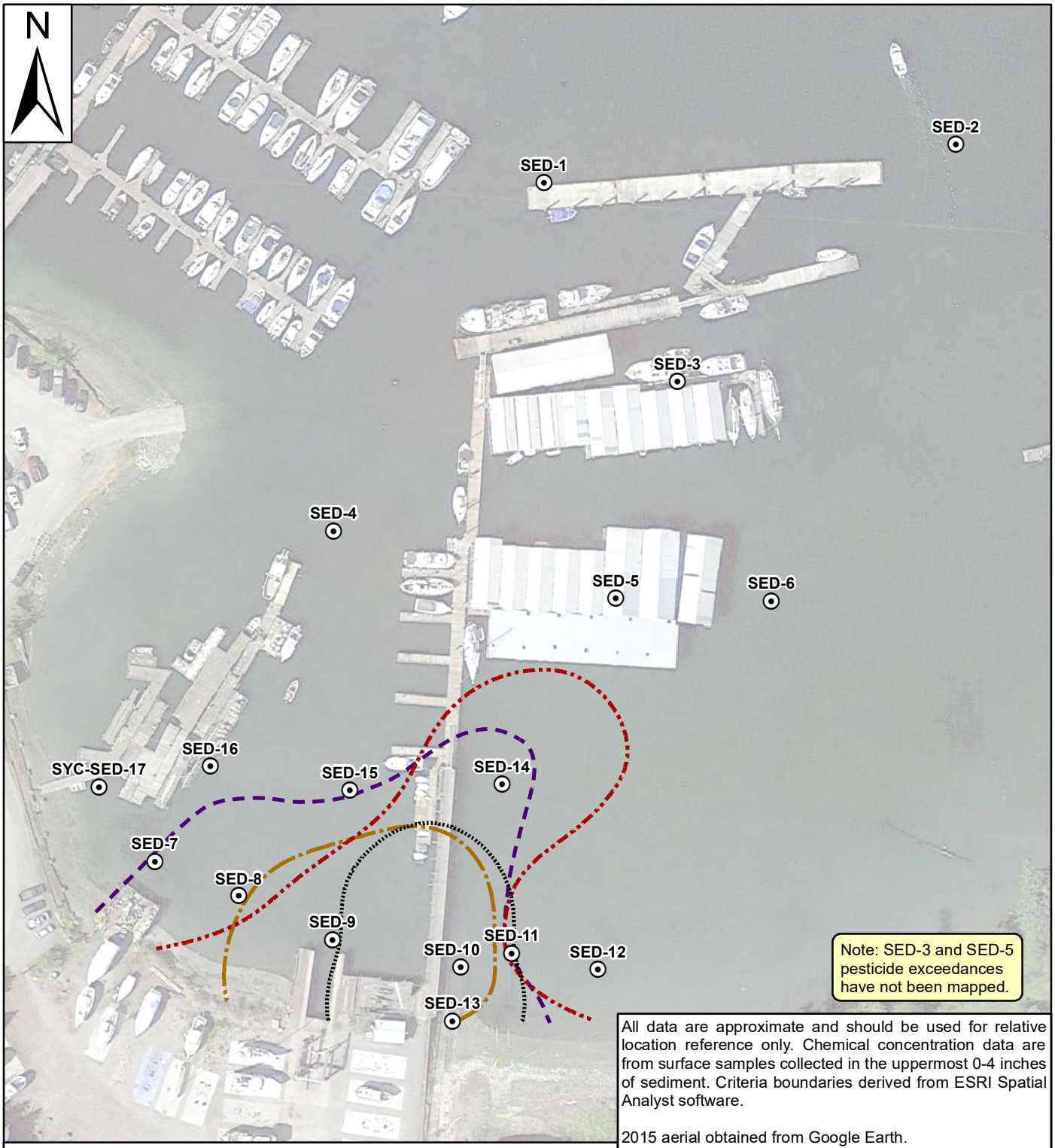
Figure 6



All data are approximate and should be used for relative location reference only. Chemical concentration data are from surface samples collected in the uppermost 0-4 inches of sediment. Criteria boundaries derived from ESRI Spatial Analyst software.

2015 aerial obtained from Google Earth.

Mercury SQS Marine Criteria

Tributyltin DMMP Screening Level

Sediment Sample

Fluoranthene SQS Marine Criteria

PCB SQS Marine Criteria

2001 DNR Lease Boundary

0 50 100 150 200 250 Feet

1 inch = 100 feet

Summary of Surface Sediment Exceedance Boundaries

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Jensen's Shipyard

10/05/18

Figure 7

Table 1. Marine Sediment Sample Location Coordinates - Jensen's Shipyard

Location ID	Lat./Lon. (GCS_North_American_1983_HARN)		Comments
Sample Station Cluster #1			
SED-1	48.527491	-122.998782	Lease boundary, northwest corner.
SED-2	48.527563	-122.997607	Lease boundary, northeast corner.
SED-3	48.527113	-122.998401	North edge of covered slips.
SED-4	48.526829	-122.999384	Lease boundary, west edge.
SED-5	48.526702	-122.998578	Beneath southern covered slips.
SED-6	48.526697	-122.998133	Lease boundary, east edge.
SED-7	48.526202	-122.999895	Lease boundary, southwest corner.
SED-8	48.526137	-122.999656	60 feet west of travel lift.
SED-9*	48.526054	-122.999387	End of travel lift slip.
SED-10*	48.526003	-122.999021	Low intertidal, west marine railway.
SED-11	48.526029	-122.998875	Subtidal, 55 feet east of pier.
SED-12	48.525997	-122.998628	Subtidal, 120 feet east of pier.
SED-13*	48.525900	-122.999045	High intertidal, west marine railway.
SED-14	48.526334	-122.998890	150 north of railways.
SED-15	48.526339	-122.999344	115 north of travel lift slip.
SED-16	48.526359	-122.999729	90 feet NE of old OPALCO pad.
SYC-SED-17	48.526321	-123.000059	Intertidal, 70 feet NW of old OPALCO pad (adajecnt parcel).

* 8/21/18 samples SED-9d, SED-10d and SED-13d were collected within one meter of the original sample station locations.

Table 2. Marine Sediment Results (Dry Weight Basis) - Jensen's Shipyard

		Samples collected 2/12/18												Samples collected 8/21/18						
	SED-1	**SED-2**	**SED-3**	**SED-4**	**SED-5**	**SED-6**	**SED-7**	**SED-8**	**SED-9**	**SED-10**	**SED-11**	**SED-12**	**SED-13**	**SED-14**	**SED-15**	**SED-16**	**SYC-SED-17**	**SED-9d**	**SED-10d**	**SED-13d**
Collection Depth	(inches)																			
	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-5	0-6	0-7	0-8
Conventional Parameters	(mg/kg dw)																			
Ammonia	4.4	4.2	6.1	2.5	10.8	10.2	4.6	5.6	7.3	4.1	5.8	3.8	4.4	16.0	5.5	17.2	17.6	NA	NA	NA
Grain Size	See laboratory report													See laboratory report				NA	NA	NA
Total Organic Carbon (%)	1.37%	0.80%	1.88%	1.81%	1.92%	2.21%	1.41%	2.54%	4.29%	1.26%	2.69%	1.03%	1.98%	1.87% J	2.08% J	3.30% J	0.49% J	NA	NA	NA
Total Sulfides	28	3	405	3	261	30	<0.31	5	730	709	2	29	219	698 J-	488 J-	822 J-	51.3 J-	NA	NA	NA
Total Volatile Solids	4.8%	3.1%	6.2%	3.6%	6.4%	7.2%	3.1%	6.2%	11.3%	3.4%	6.5%	3.4%	4.2%	5.1%	5.4%	9.2%	4.2%	NA	NA	NA
Metals	(mg/kg dw)																			
Arsenic	8	5	7	6	10	7	6	8	13	9	9	6	16	4	4	7	5	NA	NA	NA
Cadmium	1.2	1.5	1.5	2.5	2.1	1.9	0.1	1.5	2.0	0.6	1.3	0.9	0.4	1.9	1.7	1.9	0.2	NA	NA	NA
Chromium	33	22	34	33	34	28	22	34	51	22	26	19	33	24	23	33	21	NA	NA	NA
Copper	33	14	42	37	63	42	82	202	578	1370	168	50	1380	53	59	91	39	NA	NA	NA
Lead	12 J+	4 J+	14 J+	17 J+	17 J+	13 J+	27 J+	60 J+	106 J+	105 J+	109 J+	19 J+	193 J+	20	22	32	13	NA	NA	NA
Mercury	0.07	0.04	0.08	0.08	0.10	0.09	0.08	0.28	0.35	1.45	0.44	0.09	0.85	0.07	0.10	0.09	< 0.009 U	NA	NA	NA
Silver	0.10	0.05	0.10	0.09	0.13	0.10	0.13	0.13	0.15	0.10	0.09	0.06	0.10	0.12 J	0.12 J	0.19 J	0.07 J	NA	NA	NA
Zinc	96	53	96	78	109	78	92	141	206	589	116	57	928	119	72	104	39	NA	NA	NA
Organic Chemicals	(mg/kg dw)																			
2,4-Dimethylphenol	<0.067 U	<0.063 U	<0.075 U	<0.065 U	<0.083 U	<0.084	<0.032 U	<0.065 U	<0.084 U	<0.063 U	<0.063 U	<0.063 U	<0.063 U	<0.026 U	<0.026 U	<0.026 U	<0.026 U	NA	NA	NA
2-Methylphenol	<0.044 U	<0.041 U	<0.049 U	<0.043 U	<0.055 U	<0.055	<0.021 U	<0.042 U	<0.055 U	<0.041 U	<0.041 U	<0.041 U	<0.041 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U	NA	NA	NA
4-Methylphenol	<0.048 U	<0.045 U	<0.054 U	<0.047 U	<0.060 U	<0.060	0.390	<0.046 U	0.190	<0.045 U	<0.045 U	<0.045 U	0.093	0.022	<0.015 U	0.034 J	<0.014 U	NA	NA	NA
Benzoic acid	<1.100 R	<0.960 R	<1.200 R	<0.990 R	<1.300 R	<1.300 R	<0.480 R	<0.980 R	<1.300 R	<0.960 R	<0.960 R	<0.960 R	<0.960 R	0.317 J	0.173 J	0.162 J	<0.056 U	NA	NA	NA
Benzyl alcohol	<0.052 U	<0.049 U	<0.058 U	<0.051 U	<0.065 U	<0.066	<0.025 U	<0.050 U	0.068 J	<0.049 U	<0.049 U	<0.049 U	<0.049 U	<0.015 U	<0.015 U	<0.015 U	<0.014 U	NA	NA	NA
Dibenzofuran	<0.036 U	0.060 J	<0.041 U	<0.035 U	<0.045 U	<0.046	<0.017 U	<0.035 U	<0.045 U	0.097	<0.034 U	<0.034 U	<0.034 U	0.016 J	0.010 J	0.032 J	<0.004 U	NA	NA	NA
Phenol	<0.033 U	<0.031 U	<0.037 U	<0.032 U	<0.041 U	<0.042	0.140	<0.032 U	0.046 J	<0.031 U	<0.031 U	<0.031 U	0.068 J	0.066	0.045	0.039 J	<0.008 U	NA	NA	NA
N-nitrosodiphenylamine	<0.034 U	<0.032 U	<0.038 U	<0.033 U	<0.043 U	<0.043	<0.016 U	<0.033 U	<0.043 U	<0.032 U	<0.032 U	<0.032 U	<0.032 U	<0.009 J	<0.009 J	<0.009 J	<0.009 J	NA	NA	NA
Phthalates	(mg/kg dw)																			
Bis(2-Ethylhexyl)phthalate	<0.094 U	<0.089 U	<0.110 U	<0.092 U	<0.120 U	<0.120	<0.045 U	0.230 J	0.370 J	0.340 J	0.150 J	<0.089 U	0.540 J	0.047 J	0.064	0.082 J	0.032 J	NA	NA	NA
Butylbenzyl phthalate	<0.039 U	<0.037 U	<0.044 U	<0.038 U	<0.049 U	<0.050	<0.019 U	0.049 J	0.070 J	<0.037 U	<0.037 U	<0.037 U	0.071	<0.008 U	<0.008 U	<0.008 U	<0.008 U	NA	NA	NA
Diethyl phthalate	<0.039 U	<0.037 U	<0.044 U	<0.038 U	<0.049 U	<0.050	<0.019 U	<0.038 U	<0.049 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.017 U	<0.018 U	<0.017 U	<0.017 U	NA	NA	NA
Dimethyl phthalate	<0.043 U	<0.040 U	<0.048 U	<0.042 U	<0.053 U	<0.054	0.033 J	0.130	0.190	0.300	0.100	<0.040 U	0.840	0.039	0.032	0.049	0.013 J	NA	NA	NA
Di-n-butyl phthalate	<0.051 U	<0.048 U	<0.057 U	<0.050 U	<0.064 U	<0.064	<0.024 U	0.079 J	<0.064 U	0.094 J	0.160 J	<0.048 U	0.210	0.009 J	<0.005 U	0.021 J	<0.005 U	NA	NA	NA
Di-n-octyl phthalate	<0.034 U	<0.032 U	<0.038 U	<0.033 U	<0.043 U	<0.043	<0.016 U	<0.033 U	0.170	0.048 J	<0.032 U	<0.032 U	<0.032 U	<0.009 U	<0.009 U	<0.009 U	<0.008 U	NA	NA	NA

Table 2. Marine Sediment Results (Dry Weight Basis) - Jensen's Shipyard

	Samples collected 2/12/18													Samples collected 8/21/18						
	SED-1	**SED-2**	**SED-3**	**SED-4**	**SED-5**	**SED-6**	**SED-7**	**SED-8**	**SED-9**	**SED-10**	**SED-11**	**SED-12**	**SED-13**	**SED-14**	**SED-15**	**SED-16**	**SYC-SED-17**	**SED-9d**	**SED-10d**	**SED-13d**
Polychlorinated Biphenyls	(mg/kg dw)																			
Total Aroclors (PCBs)	0.017	<0.005 U	0.035	0.007 JP	0.055	0.027	0.023 JP	0.147	0.252	0.65 P	0.234 P	0.035 J	1.18 P	0.464 J	0.038 J	0.051 J	0.007 J	NA	NA	NA
Polycyclic Aromatic	(mg/kg dw)																			
LPAH	0.268	0.7	0.2	0.3	0.1	0.2	0.2	1.1	1.2	3.1	0.3	0.120	1.3	0.4	0.3	1.1	0.1	NA	NA	NA
Naphthalene	<0.031 U	0.038 J	<0.035 U	<0.030 U	<0.039 U	<0.039	<0.015 U	<0.030 U	<0.039 U	0.032 J	<0.029 U	<0.029 U	<0.029 U	0.037	0.025	0.031 J	<0.005 U	NA	NA	NA
Acenaphthylene	<0.028 U	<0.026 U	<0.031 U	<0.027 U	<0.035 U	<0.035	<0.013 U	0.081 J	0.093 J	0.044 J	0.027 J	<0.026 U	0.039 J	0.040	0.026	0.099	0.007 J	NA	NA	NA
Acenaphthene	<0.034 U	0.047 J	<0.038 U	0.051 J	<0.043 U	<0.043	<0.016 U	<0.033 U	<0.043 U	0.220	<0.032 U	<0.032 U	0.067	0.012 J	0.010 J	0.031 J	<0.005 U	NA	NA	NA
Fluorene	<0.035 U	0.049 J	<0.039 U	<0.034 U	<0.044 U	<0.044	<0.017 U	0.095 J	0.072 J	0.200	<0.033 U	<0.033 U	0.069	0.026	<0.005 U	0.063	0.005 J	NA	NA	NA
Phenanthrene	0.230	0.480	0.130	0.220	0.077 J	0.140	0.120	0.640	0.690	2.300	0.220	0.120	0.920	0.160	0.115	0.580	0.029	NA	NA	NA
Anthracene	0.038 J	0.039 J	0.055 J	0.043 J	<0.043 U	0.068 J	0.047	0.260	0.380	0.420	0.077 J	<0.032 U	0.180	0.107	0.053	0.286	0.012 J	NA	NA	NA
2-Methylnaphthalene	<0.030 U	0.033 J	<0.034 U	<0.029 U	<0.037 U	<0.038	<0.014 U	<0.029 U	<0.037 U	<0.028 U	<0.028 U	<0.028 U	<0.028 U	0.030	0.024	0.037 J	<0.005 U	NA	NA	NA
Total HPAH	2.1	0.9	1.8	1.4	1.0	1.5	1.6	13.6	20.6	21.1	3.3	1.2	13.9	2.6	2.0	10.0	0.4	NA	NA	NA
Fluoranthene	0.660	0.450	0.510	0.520	0.300	0.400	0.460	3.700	5.500	5.500	0.850	0.350	3.400	0.383	0.415	2.200	0.093	NA	NA	NA
Pyrene	0.400	0.260	0.320	0.420	0.200	0.230	0.240	2.300	3.200	3.500	0.560	0.220	2.100	0.366	0.357	1.920	0.067	NA	NA	NA
Benz[a]anthracene	0.100 J	0.043 J	0.130	0.080 J	0.077 J	0.130 J	0.100	0.990	1.900	1.700	0.250	0.086	1.000	0.251	0.152	0.883	0.026	NA	NA	NA
Chrysene	0.510	0.100	0.280	0.140	0.190	0.280	0.270	2.400	4.100	2.300	0.500	0.210	1.700	0.621	0.360	1.880	0.067	NA	NA	NA
Total benzofluoranthenes	0.29	0.064 J	0.33	0.100	0.21	0.28	0.27	2.47	3.44	3.56	0.60	0.20	2.52	0.591	0.404	1.870	0.077	NA	NA	NA
Benzo[a]pyrene	0.094 J	<0.036 U	0.120	0.057 J	0.075 J	0.094 J	0.098	0.800	1.200	1.700	0.240	0.100	1.200	0.168	0.117	0.547	0.020	NA	NA	NA
Indeno[1,2,3-c,d]pyrene	0.059 J	<0.032 U	0.066 J	0.034 J	<0.043 U	0.062 J	0.062	0.420	0.580	1.200	0.150	0.058 J	0.950	0.105	0.076	0.281 J	0.013 J	NA	NA	NA
Dibenzo[a,h]anthracene	<0.032 U	<0.030 U	<0.036 U	<0.031 U	<0.040 U	<0.040	0.015 J	0.100	0.130	0.280	0.033 J	<0.030 U	0.210	0.041	0.023	0.106 J	<0.006 U	NA	NA	NA
Benzo[g,h,i]perylene	<0.039 U	<0.037 U	<0.044 U	<0.038 U	<0.049 U	<0.050	0.050	0.370	0.520	1.400	0.120	<0.037 U	1.100	0.101 J	0.072 J	0.268 J	0.011 J	NA	NA	NA
Chlorinated Organics	(mg/kg dw)																			
1,2,4-Trichlorobenzene	<0.028 U	<0.026 U	<0.031 U	<0.027 U	<0.035 U	<0.035	<0.013 U	<0.027 U	<0.035 U	<0.026 U	<0.026 U	<0.026 U	<0.026 U	<0.006 U	<0.006 U	<0.006 U	<0.006 U	NA	NA	NA
1,2-Dichlorobenzene	<0.026 U	<0.024 U	<0.029 U	<0.025 U	<0.032 U	<0.032	<0.012 U	<0.025 U	<0.032 U	<0.024 U	<0.024 U	<0.024 U	<0.024 U	<0.005 U	<0.005 U	<0.005 U	<0.004 U	NA	NA	NA
1,4-Dichlorobenzene	<0.027 U	<0.025 U	<0.030 U	<0.026 U	<0.033 U	<0.034	<0.013 U	<0.026 U	<0.033 U	<0.025 U	<0.025 U	<0.025 U	<0.025 U	<0.004 U	<0.004 U	<0.004 U	<0.004 U	NA	NA	NA
Hexachlorobenzene	<0.035 U	<0.033 U	<0.039 U	<0.034 U	<0.044 U	<0.044	<0.017 U	<0.034 U	<0.044 U	<0.033 U	<0.033 U	<0.033 U	<0.033 U	<0.005 U	<0.005 U	<0.005 U	<0.005 U	NA	NA	NA
Hexachlorobutadiene	<0.032 U	<0.030 U	<0.036 U	<0.031 U	<0.040 U	<0.040	<0.015 U	<0.031 U	<0.040 U	<0.030 U	<0.030 U	<0.030 U	<0.030 U	<0.005 U	<0.005 U	<0.005 U	<0.005 U	NA	NA	NA
Pentachlorophenol	<0.056 U	<0.053 U	<0.063 U	<0.055 U	<0.070 U	<0.071	0.098 J	0.280 J	<0.070 U	0.240 J	<0.053 U	<0.053 U	0.230 J	<0.031 U	<0.031 U	<0.031 U	<0.030 U	NA	NA	NA

Table 2. Marine Sediment Results (Dry Weight Basis) - Jensen's Shipyard

	Samples collected 2/12/18													Samples collected 8/21/18						
	SED-1	**SED-2**	**SED-3**	**SED-4**	**SED-5**	**SED-6**	**SED-7**	**SED-8**	**SED-9**	**SED-10**	**SED-11**	**SED-12**	**SED-13**	**SED-14**	**SED-15**	**SED-16**	**SYC-SED-17**	**SED-9d**	**SED-10d**	**SED-13d**
Organochlorine Pesticides	(µg/kg dw)																			
gamma-BHC (Lindane)	1.7 JP	<0.86 Ui	1.8 JP	<0.55 U	2.6 P	<0.74 U	<0.41 U	<0.52 U	<0.69 U	0.72 JP	0.59 JP	<0.42 U	0.84	NA	NA	NA	NA	NA	NA	NA
Heptachlor	<4.2 Ui	<0.61 U	<2.6 Ui	<0.69 U	<3.1 Ui	<0.93 U	<0.52 U	<0.65 U	<2.2 Ui	<0.52 Ui	<0.61 U	<0.53 U	<1.2 Ui	NA	NA	NA	NA	NA	NA	NA
Aldrin	<1.2 U	<0.92 U	<1.4 U	<1.1 U	<1.4 U	<1.5 U	<0.78 U	<0.98 U	<1.4 U	<0.70 U	<0.93 U	<0.79 U	<0.66 U	NA	NA	NA	NA	NA	NA	NA
Dieldrin	<0.42 U	<0.35 U	0.75 JP	<0.39 U	1.9 J	<0.93 Ui	<1.3 Ui	<0.37 U	5.30	<4.8 Ui	<1.6 Ui	1.60	<4.7 Ui	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	<0.76 U	<0.63 U	<0.89 U	<0.70 U	<0.90 U	<0.96 U	<0.86 Ui	<0.67 U	1.0 JP	<2.5 Ui	2.50	0.85 J	4.0 P	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	<1.2 U	<2.4 Ui	<1.4 U	<1.1 U	<1.4 U	<4.5 Ui	<0.79 U	<1.1 Ui	4.1 P	19	5.7 P	<0.81 U	36	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	<3.2 Ui	<0.95 U	<1.4 U	<1.1 U	<1.4 U	<1.5 U	<2.4 Ui	<4.9 Ui	<5.9 Ui	<8.2 Ui	<5.3 Ui	<2.4 Ui	<30 Ui	NA	NA	NA	NA	NA	NA	NA
2,4'-DDE	<0.89 U	<0.73 U	<1.1 U	<0.83 U	<1.1 U	<1.2 U	<0.62 U	<0.79 U	<1.1 U	<0.56 U	<0.74 U	<0.63 U	<1.1 Ui	NA	NA	NA	NA	NA	NA	NA
2,4'-DDD	<0.52 U	<0.42 U	<1.5 Ui	<1.0 Ui	2.1 J	<0.65 U	<0.79 Ui	<6.4 Ui	6.7 P	<38 Ui	<15 Ui	<2.2 Ui	<25 Ui	NA	NA	NA	NA	NA	NA	NA
2,4'-DDT	<0.91 U	<0.75 U	<1.1 U	<0.84 U	<1.1 U	<1.2 U	1.2 JP	<7.2 Ui	<1.1 U	<17 Ui	<0.76 U	<0.64 U	<2.3 Ui	NA	NA	NA	NA	NA	NA	NA
Total Chlordane[a]	2.8 J	<1.2 UiJ	5.3 J	<1.6 UiJ	4.9 JP	<2.0 UiJ	<1.2 UiJ	<4.8 UiJ	<5.0 UiJ	7.5 JP	<4.6 UiJ	1.1 J	12 J	NA	NA	NA	NA	NA	NA	NA
Organotins	(µg/kg dw)																			
Tributyltin[b]	3.8	1.3 J	7.5	3.8	25	10	75	210	300	4,000	53	9.3	4,000	91.3	48.8[d]	36.9	4.31	NA	NA	NA
Dioxins/Furans	(ng/kg dw)																			
Total 2,3,7,8-TCDD Equivalence[c]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80.3 J	92.8 J	72.3 J

[a] - Sum of cis-chlordane, trans-chlordane, cis-nonachlor, trans-nonachlor, and oxychlordane

[b] - Organotin samples collected 2/12/18 were prepped or analyzed beyond the recommended hold time.

[c] - Calculated using WHO2005, ND=1/2 EDL, Including EMPC

[d] - MS/MSD recoveries for this sample were outdside of suggested control limits, likely due to non-homogeneity in the sample matrix.

J - Indicates estimated concentration.

J+ - Indicates estimated concentration which may be biased high.

J- - Indicates estimated concentration which may be biased low.

<, J - indicates the analyte was not detected above the MDL value shown, and the reported MDL is approximate and may be inaccurate or imprecise.

<, U - indicates the analyte was not detected above the MDL value shown.

<, Ui - Indicates the analyte was not detected above the MDL value shown and the MDL is elevated due to chromatographic interference.

<, R - Indicates analyte was not detected and data is rejected since analysis did not meet quality control objectives. Analyte may or may not be present in sample.

P - Indicates laboratory experienced a greater than 40 % difference in analyte concentration when run on two separate machines. The lower result is reported here. All 2/12/18 Aroclors were run twice.

NA - Indicates sample was not analyzed for specified parameter.

mg/kg dw, indicates results have been dry-weight normalized.

Table 3. Marine Sediment Results with Dry Weight SQS Criteria - Jensen's Shipyard

	SQS Marine Criteria[a]	Samples collected 2/12/18													Samples collected 8/21/18						
		SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9	SED-10	SED-11	SED-12	SED-13	SED-14	SED-15	SED-16	SYC-SED-17	SED-9d	SED-10d	SED-13d
Metals	(mg/kg dw)																				
Arsenic	57	8.5	4.8	7.4	6.2	9.5	7.1	6.1	8.1	12.8	9.0	9.4	5.8	16.4	4	4	7	5	NA	NA	NA
Cadmium	5.1	1.2	1.5	1.5	2.5	2.1	1.9	0.1	1.5	2.0	0.6	1.3	0.9	0.4	1.9	1.7	1.9	0.2	NA	NA	NA
Chromium	260	33	22	34	33	34	28	22	34	51	22	26	19	33	24	23	33	21	NA	NA	NA
Copper	390	33	14	42	37	63	42	82	202	**578**	**1370**	168	50	**1380**	53	59	91	39	NA	NA	NA
Lead	450	12 J+	4 J+	14 J+	17 J+	17 J+	13 J+	27 J+	60 J+	106 J+	105 J+	109 J+	19 J+	193 J+	20	22	32	13	NA	NA	NA
Mercury	0.41	0.07	0.04	0.08	0.08	0.10	0.09	0.08	0.28	0.35	**1.45**	**0.44**	0.09	**0.85**	0.07	0.10	0.09	< 0.009 U	NA	NA	NA
Silver	6.1	0.10	0.05	0.10	0.09	0.13	0.10	0.13	0.13	0.15	0.10	0.09	0.06	0.1	0.12 J	0.12 J	0.19 J	0.07 J	NA	NA	NA
Zinc	410	96	53	96	78	109	78	92	141	206	**589**	116	57	**928**	119	72	104	39	NA	NA	NA
Organic Chemicals	(mg/kg dw)																				
2,4-Dimethylphenol	0.029	*<0.067 U*	*<0.063 U*	*<0.075 U*	*<0.065 U*	*<0.083 U*	*<0.084 U*	*<0.032 U*	*<0.065 U*	*<0.084 U*	*<0.063 U*	*<0.063 U*	*<0.063 U*	*<0.063 U*	<0.026 U	<0.026 U	<0.026 U	<0.026 U	NA	NA	NA
2-Methylphenol	0.063	<0.044 U	<0.041 U	<0.049 U	<0.043 U	<0.055 U	<0.055 U	<0.021 U	<0.042 U	<0.055 U	<0.041 U	<0.041 U	<0.041 U	<0.041 U	<0.008 U	<0.008 U	<0.008 U	<0.008 U	NA	NA	NA
4-Methylphenol	0.670	<0.048 U	<0.045 U	<0.054 U	<0.047 U	<0.060 U	<0.060 U	0.390	<0.046 U	0.190	<0.045 U	<0.045 U	<0.045 U	0.093	0.022	<0.015 U	0.034 J	<0.014 U	NA	NA	NA
Benzoic Acid	0.650	*<1.100 R*	*<0.960 R*	*<1.200 R*	*<0.990 R*	*<1.300 R*	*<1.300 R*	<0.480 R	*<0.980 R*	*<1.300 R*	*<0.960 R*	*<0.960 R*	*<0.960 R*	*<0.960 R*	0.317 J	0.173 J	0.162 J	<0.056 U	NA	NA	NA
Benzyl alcohol	0.057	<0.052 U	<0.049 U	*<0.058 U*	<0.051 U	*<0.065 U*	*<0.066 U*	<0.025 U	<0.050 U	**0.068 J**	<0.049 U	<0.049 U	<0.049 U	<0.049 U	<0.015 U	<0.015 U	<0.015 U	<0.014 U	NA	NA	NA
Phenol	0.420	<0.033 U	<0.031 U	<0.037 U	<0.032 U	<0.041 U	<0.042 U	0.140	<0.032 U	0.046 J	<0.031 U	<0.031 U	<0.031 U	0.068 J	0.066	0.045	0.039 J	<0.008 U	NA	NA	NA

[a] - Marine values are dry weight normalized for metals and polar organics and normalized to total organic carbon for nonpolar organics.

J - Indicates estimated concentration.

J+ indicates estimated concentrations which may be biased high.

<, J - indicates the analyte was not detected above the MDL value shown, and the reported MDL is approximate and may be inaccurate or imprecise.

<, U - indicates the analyte was not detected above the MDL value shown.

R - Indicates data is rejected since analysis did not meet quality control objectives. Analyte may or may not be present in sample.

NA - Indicates sample was not analyzed for specified parameter.

mg/kg dw, indicates results have been dry-weight normalized.

Italics indicates the reported PQL value exceeds the applicable AET or SQS criteria.

Bold indicates value exceeds the applicable criteria

Table 4. Marine Sediment Results with Carbon Normalized SQS Criteria - Jensen's Shipyard

		Samples collected 2/12/18												Samples collected 8/21/18						
	SQS Marine Criteria[a]	**SED-1**	**SED-2**	**SED-3**	**SED-4**	**SED-5**	**SED-6**	**SED-7**	**SED-8**	**SED-9[b]**	**SED-10**	**SED-11**	**SED-12**	**SED-13**	**SED-14**	**SED-15**	**SED-16**	**SYC-SED-17[b]**	**SED-9d**	**SED-10d**	**SED-13d**
Organic Chemicals	(mg/kg OC)																				
Dibenzofuran	15	<2.6 U	7.5 J	<2.2 U	<1.9 U	<2.3 U	<2.1 U	<1.2 U	<1.4 U	(see Table 5)	7.7	<1.3 U	<3.3 U	<1.7 U	0.8 J	0.5 J	1.0 J	(see Table 5)	NA	NA	NA
N-nitrosodiphenylamine	11	<2.5 U	<4.0 U	<2.0 U	<1.8 U	<2.2 U	<1.9 U	<1.1 U	<1.3 U	na	<2.5 U	<1.2 U	<3.1 U	<1.6 U	<0.5 J	<0.5 J	<0.3 J		NA	NA	NA
Phthalates	(mg/kg OC)																				
Bis(2-Ethylhexyl)phthalate	47	<6.9 U	<11.1 U	<5.9 U	<5.1 U	<6.3 U	<5.4 U	<3.2 U	9.1 J	(see Table 5)	27.0 J	5.6 J	<8.6 U	27.3 J	2.5 J	3.1 J	2.5 J	(see Table 5)	NA	NA	NA
Butylbenzyl phthalate	4.9	<2.8 U	<4.6 U	<2.3 U	<2.1 U	<2.6 U	<2.3 U	<1.3 U	1.9 J	na	<2.9 U	<1.4 U	<3.6 U	3.6	<0.4 J	<0.4 J	<0.2 J		NA	NA	NA
Diethyl phthalate	61	<2.8 U	<4.6 U	<2.3 U	<2.1 U	<2.6 U	<2.3 U	<1.3 U	<1.5 U	na	<2.9 U	<1.4 U	<3.6 U	<1.9 U	<0.9 J	<0.8 J	<0.5 J		NA	NA	NA
Dimethyl phthalate	53	<3.1 U	<5.0 U	<2.6 U	<2.3 U	<2.8 U	<2.4 U	2.3 J	5.1	na	23.8	3.7	<3.9 U	42.4	2.1 J	1.5 J	1.5 J		NA	NA	NA
Di-n-butyl phthalate	220	<3.7 U	<6.0 U	<3.0 U	<2.8 U	<3.3 U	<2.9 U	<1.7 U	3.1 J	na	7.5 J	5.9 J	<4.7 U	10.6	0.5 J	<0.3 J	0.6 J		NA	NA	NA
Di-n-octyl phthalate	58	<2.5 U	<4.0 U	<2.0 U	<1.8 U	<2.2 U	<1.9 U	<1.1 U	<1.3 U	na	3.8 J	<1.2 U	<3.1 U	<1.6 U	<0.5 J	<0.4 J	<0.3 J		NA	NA	NA
Polychlorinated Biphenyls	(mg/kg OC)																				
Total Aroclors	12	1.2	<0.6 U	1.8	0.4 JP	2.9	1.2	1.6 JP	5.8	(see Table 5)	**51.6 P**	8.7 P	3.4 J	**59.6 P**	**24.8 J**	1.8 J	1.5 J	(see Table 5)	NA	NA	NA
Polycyclic Aromatics	(mg/kg OC)																				
LPAH	370	19.6	81.6	9.8	17.3	4.0	9.4	11.8	42.4	(see Table 5)	249.2	12.0	11.7	64.4	22.0 J	12.2 J	32.5 J	(see Table 5)	NA	NA	NA
Naphthalene	99	<2.3 U	4.8 J	<1.9 U	<1.7 U	<2.0 U	<1.8 U	<1.1 U	<1.2 U	na	2.5 J	<1.1 U	<2.8 U	<1.5 U	2.0 J	1.2 J	0.9 J		NA	NA	NA
Acenaphthylene	66	<2.0 U	<3.3 U	<1.6 U	<1.5 U	<1.8 U	<1.6 U	<.9 U	3.2 J	na	3.5 J	1.0 J	<2.5 U	2.0 J	2.2 J	1.2 J	3.0 J		NA	NA	NA
Acenaphthene	16	<2.5 U	5.9 J	<2.0 U	2.8 J	<2.2 U	<1.9 U	<1.1 U	<1.3 U	na	**17.5**	<1.2 U	<3.1 U	3.4	0.6 J	0.5 J	0.9 J		NA	NA	NA
Fluorene	23	<2.6 U	6.1 J	<2.1 U	<1.9 U	<2.3 U	<2.0 U	<1.2 U	3.7 J	na	15.9	<1.2 U	<3.2 U	3.5	1.4 J	<0.2 J	1.9 J		NA	NA	NA
Phenanthrene	100	16.8	60.0	6.9	12.2	4.0 J	6.3	8.5	25.2	na	**182.5**	8.2	11.7	46.5	8.6 J	5.5 J	17.6 J		NA	NA	NA
Anthracene	220	2.8 J	4.9 J	2.9 J	2.4 J	<2.2 U	3.1 J	3.3	10.2	na	33.3	2.9 J	<3.1 U	9.1	5.7 J	2.6 J	8.7 J		NA	NA	NA
2-Methylnaphthalene	38	<2.2 U	4.1 J	<1.8 U	<1.6 U	<1.9 U	<1.7 U	<1.0 U	<1.1 U	na	<2.2 U	<1.0 U	<2.7 U	<1.4 U	1.6 J	1.1 J	1.1 J		NA	NA	NA
Total HPAH	960	154	115	93	75	55	67	111	533	na	**1678**	123	119	703	140 J	95 J	302 J		NA	NA	NA
Fluoranthene	160	48.2	56.3	27.1	28.7	15.6	18.1	32.6	145.7	na	**436.5**	31.6	34.0	**171.7**	20.5 J	20.0 J	66.7 J		NA	NA	NA
Pyrene	1000	29.2	32.5	17.0	23.2	10.4	10.4	17.0	90.6	na	277.8	20.8	21.4	106.1	19.6 J	17.2 J	58.2 J		NA	NA	NA
Benz[a]anthracene	110	7.3 J	5.4 J	6.9	4.4 J	4.0 J	5.9 J	7.1	39.0	na	**134.9**	9.3	8.3	50.5	13.4 J	7.3 J	26.8 J		NA	NA	NA
Chrysene	110	37.2	12.5	14.9	7.7	9.9	12.7	19.1	94.5	na	**182.5**	18.6	20.4	85.9	33.2 J	17.3 J	57.0 J		NA	NA	NA
Total benzofluoranthenes	230	20.9	8.0 J	17.4	5.5	10.7	12.5	19.0	97.2	na	**282.5**	22.3	19.7	127.3	31.6 J	19.4 J	56.7 J		NA	NA	NA
Benzo[a]pyrene	99	6.9 J	<4.5 U	6.4	3.1 J	3.9 J	4.3 J	7.0	31.5	na	**134.9**	8.9	9.7	60.6	9.0 J	5.6 J	16.6 J		NA	NA	NA
Indeno[1,2,3-c,d]pyrene	34	4.3 J	<4.0 U	3.5 J	1.9 J	<2.2 U	2.8 J	4.4	16.5	na	**95.2**	5.6	5.6 J	**48.0**	5.6 J	3.6 J	8.5 J		NA	NA	NA
Dibenzo[a,h]anthracene	12	<2.3 U	<3.8 U	<1.9 U	<1.7 U	<2.1 U	<1.8 U	1.1 J	3.9	na	**22.2**	1.2 J	<2.9 U	10.6	2.2 J	1.1 J	3.2 J		NA	NA	NA
Benzo[g,h,i]perylene	31	<2.8 U	<4.6 U	<2.3 U	<2.1 U	<2.6 U	<2.3 U	3.5	14.6	na	**111.1**	4.5	<3.6 U	**55.6**	5.4 J	3.4 J	8.1 J		NA	NA	NA

Table 4. Marine Sediment Results with Carbon Normalized SQS Criteria - Jensen's Shipyard

		Samples collected 2/12/18												Samples collected 8/21/18						
	SQS Marine Criteria[a]	**SED-1**	**SED-2**	**SED-3**	**SED-4**	**SED-5**	**SED-6**	**SED-7**	**SED-8**	**SED-9[b]**	**SED-10**	**SED-11**	**SED-12**	**SED-13**	**SED-14**	**SED-15**	**SED-16**	**SYC-SED-17[b]**	**SED-9d**	**SED-10d**	**SED-13d**
Chlorinated Organics	(mg/kg OC)																				
1,2,4-Trichlorobenzene	0.81	*<2.0 U*	*<3.3 U*	*<1.6 U*	*<1.5 U*	*<1.8 U*	*<1.6 U*	*<0.9 U*	*<1.1 U*	(see Table 5)	*<2.1 U*	*<1.0 U*	*<2.5 U*	*<1.3 U*	<0.3 J	<0.3 J	<0.2 J	(see Table 5)	NA	NA	NA
1,2-Dichlorobenzene	2.3	<1.9 U	*<3.0 U*	<1.5 U	<1.4 U	<1.7 U	<1.4 U	<0.9 U	<1.0 U	na	<1.9 U	<0.9 U	<2.3 U	<1.2 U	<0.2 J	<0.2 J	<0.1 J		NA	NA	NA
1,4-Dichlorobenzene	3.1	<2.0 U	<3.1 U	<1.6 U	<1.4 U	<1.7 U	<1.5 U	<0.9 U	<1.0 U	na	<2.0 U	<0.9 U	<2.4 U	<1.3 U	<0.2 J	<0.2 J	<0.1 J		NA	NA	NA
Hexachlorobenzene	0.38	*<2.6 U*	*<4.1 U*	*<2.1 U*	*<1.9 U*	*<2.3 U*	*<2.0 U*	*<1.2 U*	*<1.3 U*	na	*<2.6 U*	*<1.2 U*	*<3.2 U*	*<1.7 U*	<0.3 J	<0.2 J	<0.1 J		NA	NA	NA
Hexachlorobutadiene	3.9	<2.3 U	<3.8 U	<1.9 U	<1.7 U	<2.1 U	<1.8 U	<1.1 U	<1.2 U	na	<2.4 U	<1.1 U	<2.9 U	<1.5 U	<0.3 J	<0.2 J	<0.1 J		NA	NA	NA
Pentachlorophenol	360	<4.1 U	<6.6 U	<3.4 U	<3.0 U	<3.6 U	<3.2 U	7.0 J	11.0 J	na	19.0 J	<2.0 U	<5.1 U	11.6 J	<1.6 J	<1.5 J	<0.9 J		NA	NA	NA

[a] - Marine values are dry weight normalized for metals and polar organics and normalized to total organic carbon for nonpolar organics.

[b] - Total Organic Carbon (TOC) of the sample is outside of the 0.5% - 3.5% range and sample is therefore dry-weight normalized and compared to AET criteria.

J - Indicates estimated concentration.

J+ indicates estimated concentrations which may be biased high.

<, J - indicates the analyte was not detected above the MDL value shown, and the reported MDL is approximate and may be inaccurate or imprecise.

<, U - indicates the analyte was not detected above the MDL value shown.

mg/kg OC, indicates results have been normalized to total organic carbon.

NA - Indicates sample was not analyzed for specified parameter.

Italics indicates the reported MDL value exceeds the applicable AET or SQS criteria.

Bold indicates value exceeds the applicable criteria

Table 5. Marine Sediment Results with AET Criteria - Jensen's Shipyard

	Marine Sediment AETs[a]	SED-9 2/12/18	SYC-SED-17 8/21/18
Total Organic Carbon	na	4.29%	0.49% J
Organic Chemicals	(mg/kg dw)		
Dibenzofuran	0.540	<0.045 U	<0.004 U
N-nitrosodiphenylamine	0.028	*<0.043 U*	<0.009 J
Phthalates	(mg/kg dw)		
Bis(2-Ethylhexyl)phthalate	1.30	0.370 J	0.032 J
Butylbenzyl phthalate	0.063	**0.070 J**	<0.008 U
Diethyl phthalate	0.200	<0.049 U	<0.017 U
Dimethyl phthalate	0.071	**0.190**	0.013 J
Di-n-butyl phthalate	1.400	<0.064 U	<0.005 U
Di-n-octyl phthalate	6.200	0.170	<0.008 U
Polychlorinated Biphenyls	(mg/kg dw)		
Total Aroclors	0.130	**0.252**	0.007 J
Polycyclic Aromatic Hydrocarbons	(mg/kg dw)		
LPAH	5.20	1.24	0.1
Naphthalene	2.10	<0.039 U	<0.005 U
Acenaphthylene	1.30	0.093 J	0.007 J
Acenaphthene	0.50	<0.043 U	<0.005 U
Fluorene	0.54	0.072 J	0.005 J
Phenanthrene	1.50	0.690	0.029
Anthracene	0.96	0.380	0.012 J
2-Methylnaphthalene	0.67	<0.037 U	<0.005 U
Total HPAH	12.0	**20.6**	0.4
Fluoranthene	1.70	**5.5**	0.093
Pyrene	2.60	**3.2**	0.067
Benz[a]anthracene	1.30	**1.9**	0.026
Chrysene	1.40	**4.1**	0.067
Total benzofluoranthenes	3.20	**3.4**	0.077
Benzo[a]pyrene	1.60	1.200	0.020
Indeno[1,2,3-c,d]pyrene	0.60	0.580	0.013 J
Dibenzo[a,h]anthracene	0.23	0.130	<0.006 U
Benzo[g,h,i]perylene	0.67	0.520	0.011 J
Chlorinated Organics	(mg/kg dw)		
1,2,4-Trichlorobenzene	0.031	*<0.035 U*	<0.006 U
1,2-Dichlorobenzene	0.035	<0.032 U	<0.004 U
1,4-Dichlorobenzene	0.110	<0.033 U	<0.004 U
Hexachlorobenzene	0.02	*<0.044 U*	<0.005 U
Hexachlorobutadiene	0.01	*<0.040 U*	<0.005 U
Pentachlorophenol	0.36	<0.070 U	<0.030 U

[a] - Dry weight normalized AETs are recommended when total organic carbon is outside the recommended range of 0.5 – 3.5% for organic carbon normalization.

<, U - indicates the analyte was not detected above the MDL value shown.

J - Indicates estimated concentration.

mg/kg dw, indicates results have been dry-weight normalized.

Italics indicates the reported PQL value exceeds the applicable AET or SQS criteria.

Bold indicates value exceeds the applicable criteria

Table 6. Marine Sediment Results with DMMP Screening Levels - Jensen's Shipyard

		Samples collected 2/12/18													Samples collected 8/21/18						
	DMMP Screening Level[a]	**SED-1**	**SED-2**	**SED-3**	**SED-4**	**SED-5**	**SED-6**	**SED-7**	**SED-8**	**SED-9**	**SED-10**	**SED-11**	**SED-12**	**SED-13**	**SED-14**	**SED-15**	**SED-16**	**SYC-SED-17**	**SED-9d**	**SED-10d**	**SED-13d**
Organochlorine Pesticides	(µg/kg dw)																				
gamma-BHC (Lindane)	*	1.7 JP	<0.86 Ui	1.8 JP	<0.55 U	2.6 P	<0.74 U	<0.41 U	<0.52 U	<0.69 U	0.72 JP	0.59 JP	<0.42 U	0.84	NA	NA	NA	NA	NA	NA	NA
Heptachlor	1.5	*<4.2 Ui*	<0.61 U	*<2.6 Ui*	<0.69 U	*<3.1 Ui*	<0.93 U	<0.52 U	<0.65 U	*<2.2 Ui*	<0.52 Ui	<0.61 U	<0.53 U	<1.2 Ui	NA	NA	NA	NA	NA	NA	NA
Aldrin	9.5	<1.2 U	<0.92 U	<1.4 U	<1.1 U	<1.4 U	<1.5 U	<0.78 U	<0.98 U	<1.4 U	<0.70 U	<0.93 U	<0.79 U	<0.66 U	NA	NA	NA	NA	NA	NA	NA
Dieldrin	1.9	<0.42 U	<0.35 U	0.75 JP	<0.39 U	1.9 J	<0.93 Ui	<1.3 Ui	<0.37 U	**5.30**	*<4.8 Ui*	<1.6 Ui	1.60	*<4.7 Ui*	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	9	<0.76 U	<0.63 U	<0.89 U	<0.70 U	<0.90 U	<0.96 U	<0.86 Ui	<0.67 U	1.0 JP	<2.5 Ui	2.50	0.85 J	4.0 P	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	16	<1.2 U	<2.4 Ui	<1.4 U	<1.1 U	<1.4 U	<4.5 Ui	<0.79 U	<1.1 Ui	4.1 P	**19**	5.7 P	<0.81 U	**36**	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	12	<3.2 Ui	<0.95 U	<1.4 U	<1.1 U	<1.4 U	<1.5 U	<2.4 Ui	<4.9 Ui	<5.9 Ui	<8.2 Ui	<5.3 Ui	<2.4 Ui	*<30 Ui*	NA	NA	NA	NA	NA	NA	NA
2,4'-DDE	*	<0.89 U	<0.73 U	<1.1 U	<0.83 U	<1.1 U	<1.2 U	<0.62 U	<0.79 U	<1.1 U	<0.56 U	<0.74 U	<0.63 U	<1.1 Ui	NA	NA	NA	NA	NA	NA	NA
2,4'-DDD	*	<0.52 U	<0.42 U	<1.5 Ui	<1.0 Ui	2.1 J	<0.65 U	<0.79 Ui	<6.4 Ui	6.7 P	<38 Ui	<15 Ui	<2.2 Ui	<25 Ui	NA	NA	NA	NA	NA	NA	NA
2,4'-DDT	*	<0.91 U	<0.75 U	<1.1 U	<0.84 U	<1.1 U	<1.2 U	1.2 JP	<7.2 Ui	<1.1 U	<17 Ui	<0.76 U	<0.64 U	<2.3 Ui	NA	NA	NA	NA	NA	NA	NA
Total Chlordane[b]	2.8	2.8 J	<1.2 UiJ	**5.3 J**	<1.6 UiJ	**4.9 JP**	<2.0 UiJ	<1.2 UiJ	*<4.8 UiJ*	*<5.0 UiJ*	**7.5 JP**	*<4.6 UiJ*	1.1 J	**12 J**	NA	NA	NA	NA	NA	NA	NA
Organotins	(µg/kg dw)																				
Tributyltin[c]	73	3.8	1.3 J	7.5	3.8	25	10	**75**	**210**	**300**	**4,000**	53	9.3	**4,000**	**91**	49	37	4.3	NA	NA	NA
Dioxins/Furans	(ng/kg dw)																				
Total 2,3,7,8-TCDD Equivalence[d]	4-10[e]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**80.3 J**	**92.8 J**	**72.3 J**

[a] - Screening levels from the *Dredged Material Evaluation and Disposal Procedures User Manual* (US Army Corps, 2016)

[b] - Sum of cis-chlordane, trans-chlordane, cis-nonachlor, trans-nonachlor, and oxychlordane.

[c] - Organotin samples collected 2/12/18 were prepped or analyzed beyond the recommended hold time.

[d] - Calculated using WHO2005, ND=1/2 EDL, Including EMPC

[e] - See US Army Corps, 2016, Table 8-3.

* - No Screening Level has been established for the specified analyte.

J - Indicates estimated concentration.

<, J - indicates the analyte was not detected above the PQL value shown, and the reported PQL is approximate and may be inaccurate or imprecise.

<, U - Indicates the analyte was not detected above the MDL value shown.

<, Ui - Indicates the analyte was not detected above the MDL value shown and the MDL is elevated due to chromatographic interference.

P - Indicates laboratory experienced a greater than 40 % difference in analyte concentration when run on two separate machines. The lower result is reported here.

NA - Indicates sample was not analyzed for specified parameter.

mg/kg dw, indicates results have been dry-weight normalized.

Italics indicates the reported MDL value exceeds the applicable DMMP criteria.

Bold indicates value exceeds the applicable criteria

APPENDIX A

Historical Sediment Sample Locations

Previous Sample (1997)

DNR Prior Lease Boundary

2001-Present DNR Lease Boundary

All data are approximate and should be used for relative location reference only. 2015 aerial photograph (GoogleEarth). Previous sample locations have been shifted to match the location descriptions recorded during sample collection to correct for a GPS transformation error.

0 100 200 300 400 Feet

1 inch = 200 feet

Previous Sediment Sampling Location Map

Prepared for: PORT OF FRIDAY HARBOR

Prepared by: whatcom ENVIRONMENTAL

1293 Turn Point Road
Friday Harbor, WA 98250

Jensen'sShipyard

12/21/17

Figure A-1

APPENDIX B

Sediment Sample Collection Field Logs

Sediment Grab Sample Collection Log

Project: Jensen's Shipyard **Station Name:** SED-9/

Location: middle of traveline bay **Date/Time:** 8/18/18 11:00

Crew: DH/BN, SEN-SAT Crew

Grab # 1	**Bottom Depth**	**Penetration depth** 0-4	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	Zero recovery
Grab # 2	**Bottom Depth**	**Penetration depth** 0-4	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	Minor recovery
Grab # 3	**Bottom Depth**	**Penetration depth** 0-4	**Time** 11:10
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	Minor recovery. Composite 2 & 3 together for full sample
Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Sediment Grab Sample Collection Log

Project: Jensen's Shipyard **Station Name:** SED-10D

Location: Intertidal, W Railway **Date/Time:** 8/21/18 8:00

Crew: DH/BW

Grab #	**Bottom Depth**	**Penetration depth**	**Time**
1	Intertidal	0-4"	8:00
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Sediment Grab Sample Collection Log

Project: Jensen's Shipyard **Station Name:** SED-13D

Location: Near shore, W railway **Date/Time:** 8/21/18 7:55

Crew: DH/BN

Grab # 1	Bottom Depth intertidal	Penetration depth 0-4"	Time 7:55
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other: RED	None Slight Moderate Strong Overwhelming H2S Petroleum	
Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	
Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	
Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Sediment Grab Sample Collection Log

Project: Jensen's Shipyard

Station Name: SED-14

Location: E of E pier

Date/Time: 8/21/18 1200

Crew: DH / BW Jen-Sky

Grab # 1	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel (Sand) (C) M F (Silt/Clay) Detritus/organic matter Woody debris (Shell debris) (Muck/mud)	(Drab olive) Brown (Brown Surface) Gray Black Other:	None (Slight) Moderate Strong Overwhelming (H2S) Petroleum	

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Sediment Grab Sample Collection Log

Project: Jensen's Shipyard **Station Name:** SED-15

Location: offshore (W) of boat lift **Date/Time:** 8/2/18 1000

Crew: DH/BN, Jen Jay Crew

Grab #	Bottom Depth	Penetration depth	Time
1		0-4"	1000
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel **Sand** C M F **Silt**/Clay Detritus/organic matter Woody debris **Shell debris** **Muck**/mud	**Drab olive** Brown **Brown Surface** Gray Black Other:	None **Slight** Moderate Strong Overwhelming H2S Petroleum	Collecting MS/MSD

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Sediment Grab Sample Collection Log

Project: Jensen's Shipyard **Station Name:** SED-16

Location: W of East Dock **Date/Time:** 8/21/18 9:25

Crew: DH/BN, Sea Jay Crew

Grab #	Bottom Depth	Penetration depth	Time
1		0-4"	9:25
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble **Gravel** Sand C M F Silt/Clay Detritus/organic matter Woody debris **Shell debris** **Muck/mud**	**Drab olive** Brown Brown Surface Gray Black Other:	None **Slight** Moderate Strong Overwhelming H2S Petroleum	Blue, organic-looking sheen

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	

Sediment Grab Sample Collection Log

Project: Jensen's Shipyard

Station Name: Near east dock, intertidal

Location: SYC-SED-17

Date/Time: 8/21/18 8:10

Crew: DH/BW

Grab #	Bottom Depth	Penetration depth	Time
1	intertidal	0.4'	8:10
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
(Cobble)	Drab olive	(None)	
(Gravel)	(Brown)	Slight	
(Sand C) M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/(organic matter)	(Black)	Overwhelming	
Woody debris	Other:	H2S	
(Shell debris)		Petroleum	
Muck/mud			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

APPENDIX C

Laboratory Analytical Data Reports

Analytical Resources, Incorporated
Analytical Chemists and Consultants

13 September 2018

Dan Heimbigner
Whatcom Environmental Services
228 East Champion Street, Suite 101
Bellingham, WA 98225

RE: Jensen's Shipyard

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)	Associated SDG ID(s)
18H0311	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.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 18H0311	Turn-around Requested: **Standard**	Date: 8/22/18
ARI Client Company: Whatcom Environmental Services (W.E.S.)	Phone: (360) 752-9571	Page: 1 of 1
Client Contact: Dan Heimbigner		No. of Coolers: 2 Cooler Temps: -0.4°C -0.6°C
Client Project Name: Jensen's Shipyard		
Client Project #:	Samplers: B. Neslon, D. Heimbigner	

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	Number of Containers	Analysis Requested: See SCUM II Table 5-1 (attached) — Metals	LPAHs	HPAHs	Chlorinated Hydrocarbons	Phthalates	Misc. Extractables	Aroclor PCBs (8082A)	Conventional Sed. Variables	Tributyltin	Dioxins/Furans			Notes/Comments
SED-9d	8/21/18	11:10	sediment	6										X			
SED-10d	8/21/18	8:00	sediment	6										X			
SED-13d	8/21/18	7:55	sediment	6										X			
SED-14	8/21/18	12:00	sediment	6	X	X	X	X	X	X	X	X	X				
SED-15	8/21/18	10:00	sediment	17	X	X	X	X	X	X	X	X	X				Extra for MS/MSD
SED-16	8/21/18	9:25	sediment	6	X	X	X	X	X	X	X	X	X				
SYC-SED-17	8/21/18	8:10	sediment	6	X	X	X	X	X	X	X	X	X				

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Please send results to WES (dheimbigner@whatcomenvironmental.com and elibolt@whatcomenv…)			(Signature)	(Signature)
	Printed Name: Dan Heimbigner	Printed Name: Jacob Smith	Printed Name:	Printed Name:
	Company: Whatcom Environmental Services	Company: ARI	Company:	Company:
	Date & Time: 8/23/18 11:24	Date & Time: 08/23/18 1124	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by work order or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

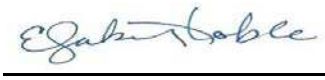
Materials Testing & Consulting, Inc.

Geotechnical Engineering • Special Inspection • Materials Testing • Environmental Consulting

Project:	18H0311	**Date Received:**	August 24, 2018
Project #:	18S010-62	**Sampled By:**	Others
Client :	Analytical Resources, Inc.	**Date Reported:**	September 10, 2018
Source:	Multiple	**Tested By:**	B. Goble, K. DeChurch
MTC Sample#:	Multiple		

CASE NARRATIVE

1. Four samples were submitted for grain size analysis according to Puget Sound Estuary Protocol (PSEP) methodology.
2. The samples were run in a single batch and one sample from this job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The data is provided in summary tables and plots.
4. There were no noted anomalies during this testing.

Reviewed by: 

Materials Testing & Consulting, Inc.

Geotechnical Engineering • Special Inspection • Materials Testing • Environmental Consulting

Project: 18H0311
Project #: 18S010-62
Date Received: August 24, 2018
Date Tested: September 7, 2018

Client: Analytical Resources, Inc.
Sampled by: Others
Tested by: B. Goble, K. DeChurch

Apparent Grain Size Distribution Summary

Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4 (4750)	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (63)	31.0	15.6	7.8	3.9	2.0	1.0
18H0311-05	100.0	100.0	100.0	99.1	98.2	96.2	86.1	67.2	45.4	29.5	20.4	15.1	11.1	7.3
	100.0	100.0	99.7	99.0	98.0	95.8	85.1	67.5	46.4	29.8	20.5	15.1	11.7	7.7
	100.0	100.0	99.9	99.1	98.3	90.7	85.8	67.6	45.2	27.8	20.5	14.4	11.3	7.5
18H0311-04	100.0	100.0	100.0	99.2	98.4	96.2	83.3	61.5	42.4	27.1	18.6	13.6	10.5	6.7
18H0311-06	100.0	100.0	99.7	97.8	96.1	93.8	88.8	76.9	53.3	41.6	28.5	20.1	14.8	9.5
18H0311-07	100.0	30.3	17.3	15.8	14.9	12.8	10.0	8.2	5.0	2.9	2.0	1.6	1.3	0.9

Reviewed by: EGabriel Goble

Corporate ~ 777 Chrysler Drive • Burlington, WA 98233 • Phone (360) 755-1990 • Fax (360) 755-1980
Regional Offices: Olympia ~ 360.534.9777 Bellingham ~ 360.647.6061 Silverdale ~ 360.698.6787 Tukwila ~ 206.241.1974
Visit our website: www.mtc-inc.net

Materials Testing & Consulting, Inc.

Geotechnical Engineering • Special Inspection • Materials Testing • Environmental Consulting

Project: 18H0311
Project #: 18S010-62
Date Received: August 24, 2018
Date Tested: September 7, 2018

Client: Analytical Resources, Inc.
Sampled by: Others
Tested by: B. Goble, K. DeChurch

Apparent Grain Size Distribution Summary

Percent Retained in Each Size Fraction

Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay			Total Fines
Phi Size	< -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	> 10	> 4
Sieve Size (microns)	> #10 (2000)	10-18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	<1.0	<230 (<62)
18H0311-05	0.0	0.9	0.9	2.0	10.1	18.9	21.7	15.9	9.1	5.4	4.0	3.7	7.3	67.2
	0.3	0.8	0.9	2.3	10.7	17.6	21.2	16.6	9.2	5.5	3.3	4.0	7.7	67.5
	0.1	0.8	0.8	7.5	5.0	18.2	22.4	17.3	7.3	6.2	3.1	3.8	7.5	67.6
18H0311-04	0.0	0.7	0.9	2.2	12.9	21.8	19.1	15.3	8.5	5.0	3.2	3.7	6.7	61.5
18H0311-06	0.3	1.9	1.7	2.3	5.0	11.9	23.6	11.7	13.1	8.4	5.4	5.3	9.5	76.9
18H0311-07	82.7	1.5	0.9	2.1	2.8	1.8	3.2	2.1	0.9	0.4	0.4	0.4	0.9	8.2

Reviewed by: EGabriel Goble

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Materials Testing & Consulting, Inc.

Geotechnical Engineering • Special Inspection • Materials Testing • Environmental Consulting

Project: 18H0311
Project #: 18S010-62
Date Received: August 24, 2018
Date Tested: September 7, 2018

Client: Analytical Resources, Inc.
Sampled by: Others
Tested by: B. Goble, K. DeChurch

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
18H0311-05	100.0	100.0	100.0	99.1	98.2	96.2	86.1	67.2	45.4	29.5	20.4	15.1	11.1	7.3
	100.0	100.0	99.7	99.0	98.0	95.8	85.1	67.5	46.4	29.8	20.5	15.1	11.7	7.7
	100.0	100.0	99.9	99.1	98.3	90.7	85.8	67.6	45.2	27.8	20.5	14.4	11.3	7.5
AVE	100.0	100.0	99.9	99.1	98.2	94.2	85.7	67.4	45.6	29.0	20.5	14.8	11.4	7.5
STDEV	0.0	0.0	0.1	0.1	0.1	2.5	0.4	0.2	0.5	0.9	0.0	0.3	0.3	0.1
%RSD	0.0	0.0	0.1	0.1	0.1	2.6	0.5	0.3	1.1	3.0	0.2	2.2	2.4	2.0

The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
18H0311-05	8/21/2018	8/29/2018	9/7/2018	98.5		12.1
	8/21/2018	8/29/2018	9/7/2018	99.2		11.9
	8/21/2018	8/29/2018	9/7/2018	99.4		12.5
18H0311-04	8/21/2018	8/29/2018	9/7/2018	99.5		12.6
18H0311-06	8/21/2018	8/29/2018	9/7/2018	99.8		12.1
18H0311-07	8/21/2018	8/29/2018	9/7/2018	102.4		10.8

Reviewed by: EGabriel Goble

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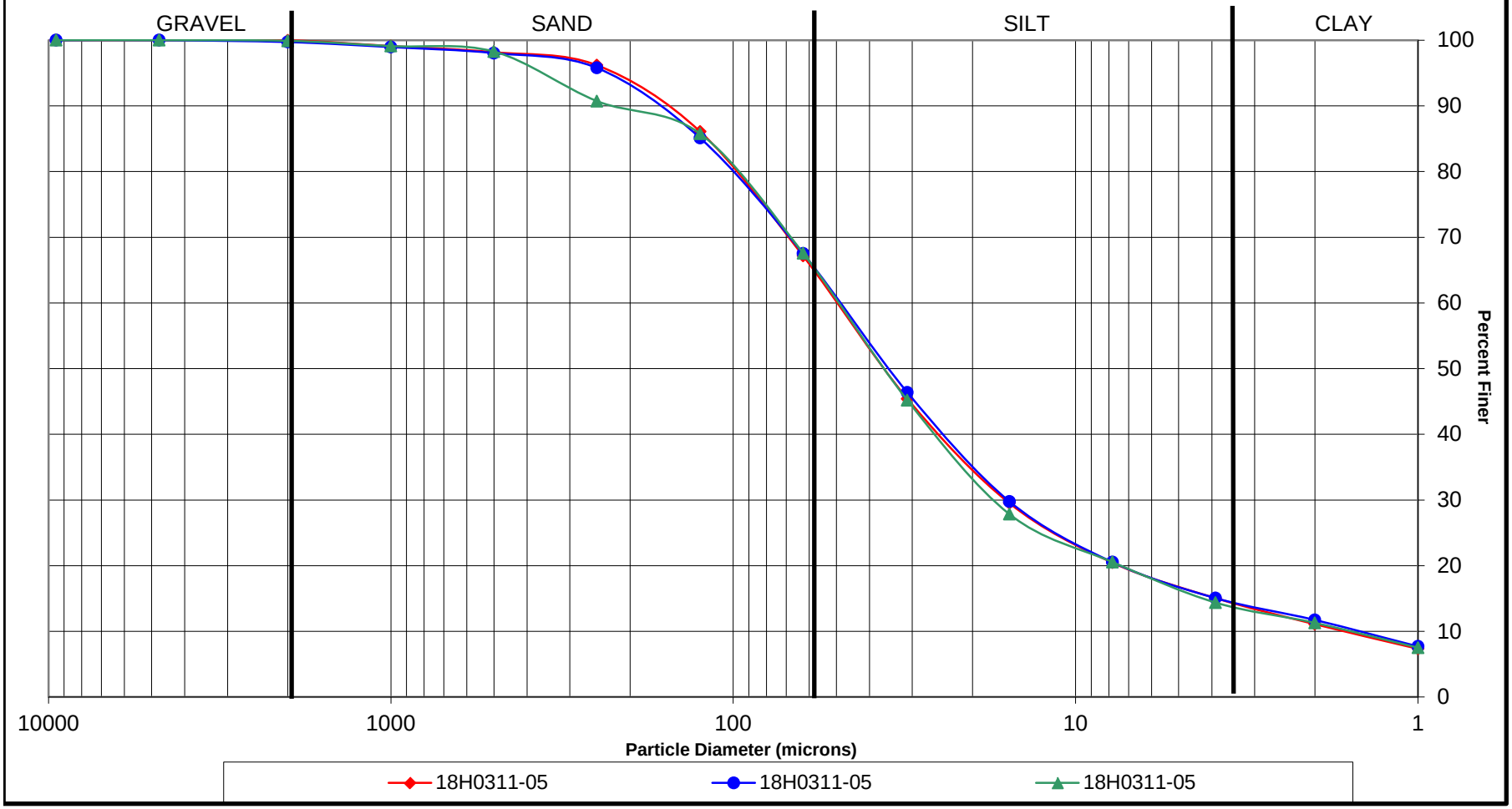
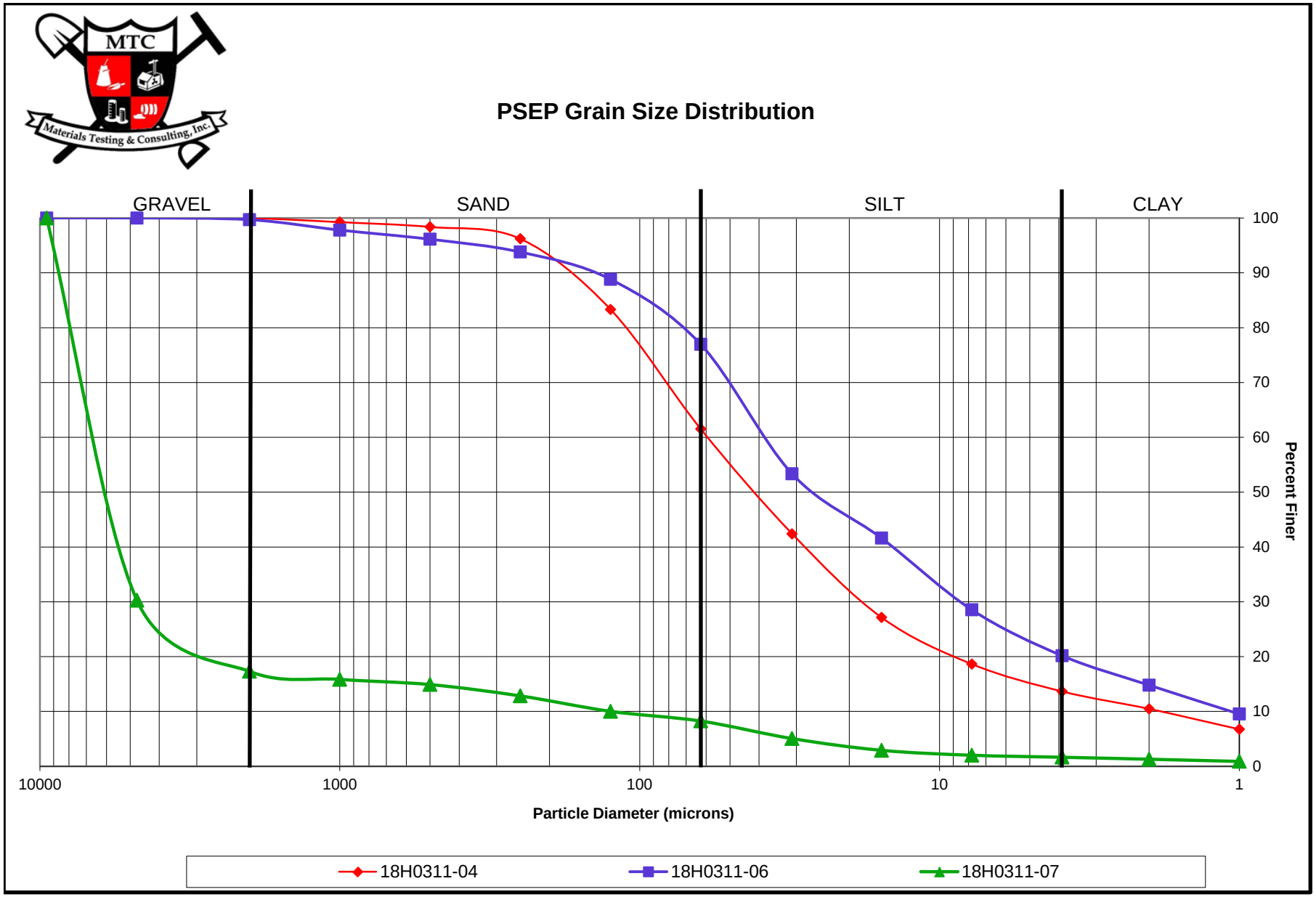
PSEP Grain Size Distribution

Triplicate Sample Plot




MTC
Materials Testing & Consulting, Inc.
PSEP Grain Size Distribution
GRAVEL
SAND
SILT
CLAY
100
90
80
70
60
50
40
30
20
10
0
Percent Finer
10000
1000
100
10
1
Particle Diameter (microns)
18H0311-04
18H0311-06
18H0311-07

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SED-09d	18H0311-01	Solid	21-Aug-2018 11:10	23-Aug-2018 11:24
SED-10d	18H0311-02	Solid	21-Aug-2018 08:00	23-Aug-2018 11:24
SED-13d	18H0311-03	Solid	21-Aug-2018 07:55	23-Aug-2018 11:24
SED-14	18H0311-04	Solid	21-Aug-2018 12:00	23-Aug-2018 11:24
SED-15	18H0311-05	Solid	21-Aug-2018 10:00	23-Aug-2018 11:24
SED-16	18H0311-06	Solid	21-Aug-2018 09:25	23-Aug-2018 11:24
SYC-SED-17	18H0311-07	Solid	21-Aug-2018 08:10	23-Aug-2018 11:24

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Case Narrative

Dioxin/Furans - EPA Method 1613

The sample(s) were extracted and analyzed within the recommended holding times. Analysis was performed using an application specific column developed by Restek. The RTX-DIoxin2 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 blank(s) were clean at the reporting limits except 123789-HxCDF and OCDD. All samples which contain analyte have been flagged with a "B" qualifier.

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

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times.

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(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The Matrix Spike/Matrix Spike duplicate recoveries and RPD were within limits.

Semivolatiles - EPA Method SW8270D

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are
out of control low in the CCAL. All associated samples that contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

The method blank(s) were clean at the reporting limits.

The LCS/ LCSD and RPDs percent recoveries were within control limits with the exception of analytes flagged on the associated forms.

The Matrix Spike/Matrix Spike duplicate recoveries and RPD were within limits with the exception of analytes flagged on the associated forms.

Butyl Tin(s) - EPA Method SW8270D-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

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(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The Matrix Spike/Matrix Spike duplicate recoveries and RPD were within limits with the exception of analytes flagged on the associated forms.

Semivolatiles - EPA Method SW8270D-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are
out of control low in the CCAL. All associated samples that contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) contained phenol and diethylphthalate. All associated samples that contain analyte have been flagged with a "B" qualifier.

The LCS/ LCSD and RPDs percent recoveries were within control limits with the exception of analytes flagged on the

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

associated forms.

The Matrix Spike/Matrix Spike duplicate recoveries and RPD were within limits with the exception of analytes flagged on the associated forms.

Total Metals - EPA Method 6020A and 7471

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The Matrix Spike/Matrix Spike duplicate recoveries and RPD were within limits with the exception of analytes flagged on the associated forms.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The Matrix Spike/Matrix Spike duplicate recoveries and RPD were within limits with the exception of analytes flagged on the associated forms.

Grainsize

The samples were submitted to Materials Testing & Consulting, Inc. (MTC) for grainsize analysis. The MTC report is included here in its entirety.

WORK ORDER

18H0311

Client: Whatcom Environmental Services
Project: Jensen's Shipyard
Project Manager: Kelly Bottem
Project Number: Jensen Shipyard

Report To:
Whatcom Environmental Services
Dan Heimbigner
228 East Champion Street, Suite 101
Bellingham, WA 98225
Phone: (360) 752-9571
Fax:

Invoice To:
Whatcom Environmental Services
Dan Heimbigner
228 East Champion Street, Suite 101
Bellingham, WA 98225
Phone :(360) 752-9571
Fax:

Date Due: 06-Sep-2018 18:00 (10 day TAT)

Received By: Jacob Walter
Date Received: 23-Aug-2018 11:24

Logged In By: Jacob Walter
Date Logged In: 23-Aug-2018 13:14

Samples Received at:-**0.4°C**

Intact, properly signed and dated custody seals attached to outside of cooler(s)	No	Custody papers included with the cooler	Yes
Custody papers properly filled out (in, signed, analyses requested, etc)	Yes	Was a temperature blank included in the cooler	Yes
Was sufficient ice used (if appropriate)	Yes	All bottles sealed in individual plastic bags	No
All bottles arrived in good condition (unbroken)	Yes	All bottle labels complete and legible	Yes
Number of containers listed on COC match number received	No	Bottle labels and tags agree with COC	Yes
Correct bottles used for the requested analyses	Yes	All VOC vials free of air bubbles	No
Analyses/bottles require preservation (attach preservation sheet excluding VOC).	No	Sufficient amount of sample sent in each bottle	Yes
Sample split at ARI	No		

Analysis	Due	TAT	Expires	Comments

WORK ORDER

18H0311

Client: Whatcom Environmental Services **Project Manager:** Kelly Bottem

Project: Jensen's Shipyard **Project Number:** Jensen Shipyard

Analysis	Due	TAT	Expires	Comments
18H0311-01 SED-09d [Solid] Sampled 21-Aug-2018 11:10 (GMT-08:00) Pacific Time (US & Canada)				
A = Glass WM, Amber, 8 oz *B = Glass WM, Clear, 4 oz*				
Solids, Total, Dried at 103 -105 °C, Soli	06-Sep-2018 15:00	10	18-Sep-2018 11:10	
1613B Dioxin	06-Sep-2018 15:00	10	21-Aug-2019 11:10	
18H0311-02 SED-10d [Solid] Sampled 21-Aug-2018 08:00 (GMT-08:00) Pacific Time (US & Canada)				
A = Glass WM, Amber, 8 oz *B = Glass WM, Clear, 4 oz*				
1613B Dioxin	06-Sep-2018 15:00	10	21-Aug-2019 08:00	
Solids, Total, Dried at 103 -105 °C, Soli	06-Sep-2018 15:00	10	18-Sep-2018 08:00	
18H0311-03 SED-13d [Solid] Sampled 21-Aug-2018 07:55 (GMT-08:00) Pacific Time (US & Canada)				
A = Glass WM, Amber, 8 oz *B = Glass WM, Clear, 4 oz*				
1613B Dioxin	06-Sep-2018 15:00	10	21-Aug-2019 07:55	
Solids, Total, Dried at 103 -105 °C, Soli	06-Sep-2018 15:00	10	18-Sep-2018 07:55	
18H0311-04 SED-14 [Solid] Sampled 21-Aug-2018 12:00 (GMT-08:00) Pacific Time (US & Canada)				
A = HDPE WM, 16 oz *B = Glass WM, Clear, 16 oz* *C = Glass WM, Clear, 8 oz* *D = Glass WM, Clear, 4 oz* *E = Glass WM, Clear, 4 oz* *F = Glass WM, Clear, 2 oz*				
Solids, Total, PSEP (Extractions)	06-Sep-2018 15:00	10	04-Sep-2018 12:00	
Metals Prep ICPMS (HCl)	06-Sep-2018 15:00	10	21-Aug-2019 12:00	
Metals, SMS by ICPMS 6020A/7471B (	06-Sep-2018 15:00	10	17-Feb-2019 12:00	
Solids, Total Volatile (TVS) PSEP	06-Sep-2018 15:00	10	30-Aug-2018 11:24	
Solids, Total, Metals Correction	06-Sep-2018 15:00	10	18-Sep-2018 12:00	
Sulfide, SM 4500-S2 D-0, Solid (PSEP)	06-Sep-2018 15:00	10	28-Aug-2018 12:00	
8270D-SIM Dual Scan SVOC	06-Sep-2018 15:00	10	04-Sep-2018 12:00	
Met 6020A - Sb (HCl)	06-Sep-2018 15:00	10	17-Feb-2019 12:00	
8270D-SIM Butyl Tins	06-Sep-2018 15:00	10	04-Sep-2018 12:00	
Ammonia-N, SM 4500-NH3 H-97 Solid	06-Sep-2018 15:00	10	28-Aug-2018 12:00	
8082A PCB Solid 4	06-Sep-2018 15:00	10	04-Sep-2018 12:00	
Grainsize PSEP (Subc)	06-Sep-2018 15:00	10	20-Feb-2019 04:48	
Met 6020A - Ni UCT	06-Sep-2018 15:00	10	17-Feb-2019 12:00	
Carbon, Organic Total, PSEP with TS	06-Sep-2018 15:00	10	04-Sep-2018 12:00	
8270D SV (20-200 ppb) or (0.2-2 ppb L	06-Sep-2018 15:00	10	04-Sep-2018 12:00	

WORK ORDER

18H0311

Client: Whatcom Environmental Services | **Project Manager:** Kelly Bottem

Project: Jensen's Shipyard | **Project Number:** Jensen Shipyard

Analysis	Due	TAT	Expires	Comments
18H0311-05 SED-15 [Solid] Sampled 21-Aug-2018 10:00 (GMT-08:00) Pacific Time (US & Canada)				**MS/MSD**
A = HDPE WM, 16 oz	*B = HDPE WM, 16 oz*	*C = Glass WM, Clear, 16 oz*	*D = Glass WM, Clear, 16 oz*	
E = Glass WM, Clear, 16 oz	*F = Glass WM, Clear, 8 oz*	*G = Glass WM, Clear, 8 oz*	*H = Glass WM, Clear, 8 oz*	
I = Glass WM, Clear, 4 oz	*J = Glass WM, Clear, 4 oz*	*K = Glass WM, Clear, 4 oz*	*L = Glass WM, Clear, 4 oz*	
M = Glass WM, Clear, 4 oz	*N = Glass WM, Clear, 4 oz*	*O = Glass WM, Clear, 2 oz*	*P = Glass WM, Clear, 2 oz*	
Q = Glass WM, Clear, 2 oz				
Metals, SMS by ICPMS 6020A/7471B	06-Sep-2018 15:00	10	17-Feb-2019 10:00	
Met 6020A - Sb (HCl)	06-Sep-2018 15:00	10	17-Feb-2019 10:00	
Metals Prep ICPMS (HCl)	06-Sep-2018 15:00	10	21-Aug-2019 10:00	
Solids, Total Volatile (TVS) PSEP	06-Sep-2018 15:00	10	30-Aug-2018 11:24	
Met 6020A - Ni UCT	06-Sep-2018 15:00	10	17-Feb-2019 10:00	
Ammonia-N, SM 4500-NH3 H-97 Solid	06-Sep-2018 15:00	10	28-Aug-2018 10:00	
Grainsize PSEP (Subc)	06-Sep-2018 15:00	10	20-Feb-2019 02:48	
8270D-SIM Dual Scan SVOC	06-Sep-2018 15:00	10	04-Sep-2018 10:00	
8270D-SIM Butyl Tins	06-Sep-2018 15:00	10	04-Sep-2018 10:00	
8270D SV (20-200 ppb) or (0.2-2 ppb L	06-Sep-2018 15:00	10	04-Sep-2018 10:00	
8082A PCB Solid 4	06-Sep-2018 15:00	10	04-Sep-2018 10:00	
Solids, Total, Metals Correction	06-Sep-2018 15:00	10	18-Sep-2018 10:00	
Solids, Total, PSEP (Extractions)	06-Sep-2018 15:00	10	04-Sep-2018 10:00	
Carbon, Organic Total, PSEP with TS	06-Sep-2018 15:00	10	04-Sep-2018 10:00	
Sulfide, SM 4500-S2 D-0, Solid (PSEP)	06-Sep-2018 15:00	10	28-Aug-2018 10:00	

WORK ORDER

18H0311

Client: Whatcom Environmental Services **Project Manager:** Kelly Bottem

Project: Jensen's Shipyard **Project Number:** Jensen Shipyard

Analysis	Due	TAT	Expires	Comments
18H0311-06 SED-16 [Solid] Sampled 21-Aug-2018 09:25 (GMT-08:00) Pacific Time (US & Canada)				
A = HDPE WM, 16 oz	*B = Glass WM, Clear, 16 oz*	*C = Glass WM, Clear, 8 oz*	*D = Glass WM, Clear, 4 oz*	
E = Glass WM, Clear, 4 oz	*F = Glass WM, Clear, 2 oz*			
Solids, Total, Metals Correction	06-Sep-2018 15:00	10	18-Sep-2018 09:25	
Solids, Total, PSEP (Extractions)	06-Sep-2018 15:00	10	04-Sep-2018 09:25	
Met 6020A - Sb (HCl)	06-Sep-2018 15:00	10	17-Feb-2019 09:25	
Carbon, Organic Total, PSEP with TS	06-Sep-2018 15:00	10	04-Sep-2018 09:25	
Ammonia-N, SM 4500-NH3 H-97 Solid	06-Sep-2018 15:00	10	28-Aug-2018 09:25	
8270D-SIM Dual Scan SVOC	06-Sep-2018 15:00	10	04-Sep-2018 09:25	
Sulfide, SM 4500-S2 D-0, Solid (PSEP)	06-Sep-2018 15:00	10	28-Aug-2018 09:25	
8270D SV (20-200 ppb) or (0.2-2 ppb L	06-Sep-2018 15:00	10	04-Sep-2018 09:25	
8270D-SIM Butyl Tins	06-Sep-2018 15:00	10	04-Sep-2018 09:25	
Grainsize PSEP (Subc)	06-Sep-2018 15:00	10	20-Feb-2019 02:13	
Met 6020A - Ni UCT	06-Sep-2018 15:00	10	17-Feb-2019 09:25	
Metals Prep ICPMS (HCl)	06-Sep-2018 15:00	10	21-Aug-2019 09:25	
Metals, SMS by ICPMS 6020A/7471B (	06-Sep-2018 15:00	10	17-Feb-2019 09:25	
8082A PCB Solid 4	06-Sep-2018 15:00	10	04-Sep-2018 09:25	
Solids, Total Volatile (TVS) PSEP	06-Sep-2018 15:00	10	30-Aug-2018 11:24	
18H0311-07 SYC-SED-17 [Solid] Sampled 21-Aug-2018 08:10 (GMT-08:00) Pacific Time (US & Canada)				
A = HDPE WM, 16 oz	*B = Glass WM, Clear, 16 oz*	*C = Glass WM, Clear, 8 oz*	*D = Glass WM, Clear, 4 oz*	
E = Glass WM, Clear, 4 oz	*F = Glass WM, Clear, 2 oz*			
Met 6020A - Sb (HCl)	06-Sep-2018 15:00	10	17-Feb-2019 08:10	
Metals Prep ICPMS (HCl)	06-Sep-2018 15:00	10	21-Aug-2019 08:10	
Solids, Total, Metals Correction	06-Sep-2018 15:00	10	18-Sep-2018 08:10	
Solids, Total Volatile (TVS) PSEP	06-Sep-2018 15:00	10	30-Aug-2018 11:24	
Solids, Total, PSEP (Extractions)	06-Sep-2018 15:00	10	04-Sep-2018 08:10	
Metals, SMS by ICPMS 6020A/7471B (	06-Sep-2018 15:00	10	17-Feb-2019 08:10	
Met 6020A - Ni UCT	06-Sep-2018 15:00	10	17-Feb-2019 08:10	
Carbon, Organic Total, PSEP with TS	06-Sep-2018 15:00	10	04-Sep-2018 08:10	
Ammonia-N, SM 4500-NH3 H-97 Solid	06-Sep-2018 15:00	10	28-Aug-2018 08:10	
8270D-SIM Dual Scan SVOC	06-Sep-2018 15:00	10	04-Sep-2018 08:10	
8270D-SIM Butyl Tins	06-Sep-2018 15:00	10	04-Sep-2018 08:10	
8270D SV (20-200 ppb) or (0.2-2 ppb L	06-Sep-2018 15:00	10	04-Sep-2018 08:10	
8082A PCB Solid 4	06-Sep-2018 15:00	10	04-Sep-2018 08:10	
Sulfide, SM 4500-S2 D-0, Solid (PSEP)	06-Sep-2018 15:00	10	28-Aug-2018 08:10	
Grainsize PSEP (Subc)	06-Sep-2018 15:00	10	20-Feb-2019 00:58	

Reviewed By _____ Date _____

WORK ORDER

18H0311

Client: Whatcom Environmental Services
Project: Jensen's Shipyard

Project Manager: Kelly Bottem
Project Number: Jensen Shipyard

Analysis groups included in this work order

Carbon, Organic Total, PSEP with TS

Solids, Total, Dried at 70 °(	Solids, Total, Dried at 103	Carbon, Organic Total, PSI	

Metals, SMS by ICPMS 6020A/7471B (Solids)

Metals Prep ICPMS	Met 7471B Hg	Met 6020A - Zn UCT	Met 6020A - Pb
Met 6020A - Cu UCT	Met 6020A - Cr	Met 6020A - Cd UCT	Met 6020A - As UCT
Met 6020A - Ag			

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SUBCONTRACT ORDER
To: Materials Testing & Consulting, Inc. (Olympia)
ARI Work Order:18H0311

SENDING LABORATORY:

Analytical Resources, Inc.
4611 S. 134th Place, Suite 100
Tukwila, WA 98168
Phone: (206) 695-6200
Fax: (206) 695-6201
Project Manager: Kelly Bottem
E-Mail: kelly.bottem@arilabs.c

RECEIVING LABORATORY:

Materials Testing & Consulting, Inc. (Olympia)
2118 Black Lake Blvd. SW
Olympia, WA 98512
Phone :(360) 534-9777
Fax:

PLEASE SEND DATA TO subdata@arilabs.com

Analysis	Due	Expires	Sub Laboratory ID	Comments
Sample ID: 18H0311-04 **Sampled: 08/21/18 12:00 Matrix: Solid**				
Grainsize PSEP (Subc)	09/06/18	02/20/19 04:48		
Containers Supplied:				
18H0311-04 A HDPE WM, 16 oz				
Sample ID: 18H0311-05 **Sampled: 08/21/18 10:00 Matrix: Solid**				**MS/MSD**
Grainsize PSEP (Subc)	09/06/18	02/20/19 02:48		
Containers Supplied:				
18H0311-05 A HDPE WM, 16 oz	**18H0311-05 B** HDPE WM, 16 oz			
Sample ID: 18H0311-06 **Sampled: 08/21/18 09:25 Matrix: Solid**				
Grainsize PSEP (Subc)	09/06/18	02/20/19 02:13		
Containers Supplied:				
18H0311-06 A HDPE WM, 16 oz				
Sample ID: 18H0311-07 **Sampled: 08/21/18 08:10 Matrix: Solid**				
Grainsize PSEP (Subc)	09/06/18	02/20/19 00:58		
Containers Supplied:				
18H0311-07 A HDPE WM, 16 oz				

Released By	Date	Received By	Date
Released By	Date	Received By	Date

Printed: 8/23/2018 1:25:48PM

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Whatcom Project Name: _____

COC No(s): _____ NA Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 18H0311 Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry): -0.4°C -0.6°C

Time: 1120

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90005206

Cooler Accepted by: JBW Date: 08/23/18 Time: 1124

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used? ...	Bubble Wrap, Wet Ice, Gel Packs, Baggies, Foam Block, Paper, Other: _____		
Was sufficient ice used (if appropriate)?	NA	YES	NO
Were all bottles sealed in individual plastic bags?		YES	NO
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI	NA	_____	

Was Sample Split by ARI : NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JBW Date: 08/23/18 Time: 1313

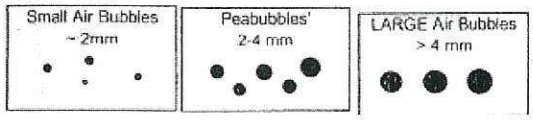
***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

SED-9d, SED-10d and SED-13d all say 6 containers, but, mearly received 2 per.

By: JBW Date: 08/23/18



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-09d

18H0311-01 (Solid)

Dioxins/Furans

Method: EPA 1613B — Sampled: 08/21/2018 11:10

Instrument: AUTOSPEC01 — Analyzed: 06-Sep-2018 11:00

Sample Preparation:	Preparation Method: EPA 1613		
	Preparation Batch: BGH0794	Sample Size: 23.88 g (wet)	Dry Weight:10.03 g
	Prepared: 31-Aug-2018	Final Volume: 20 uL	% Solids: 42.00
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0026	Initial Volume: 20 mL	
	Cleaned: 04-Sep-2018	Final Volume: 20 mL	
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CGI0025	Initial Volume: 20 mL	
	Cleaned: 04-Sep-2018	Final Volume: 20 mL	
Sample Cleanup:	Cleanup Method: Florisil		
	Cleanup Batch: CGI0027	Initial Volume: 20 mL	
	Cleaned: 04-Sep-2018	Final Volume: 20 mL	

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes
2,3,7,8-TCDF		0.638	0.655-0.886		100	**3.48**	ng/kg	EMPC, Z, J
2,3,7,8-TCDD			0.655-0.886	0.886	100	ND	ng/kg	Z, U
1,2,3,7,8-PeCDF		1.804	1.318-1.783		100	**4.71**	ng/kg	EMPC, Z, J
2,3,4,7,8-PeCDF		1.886	1.318-1.783		100	**3.72**	ng/kg	EMPC, Z, J
1,2,3,7,8-PeCDD		1.795	1.318-1.783		100	**7.67**	ng/kg	EMPC, Z, J
1,2,3,4,7,8-HxCDF		1.237	1.054-1.426		100	**8.28**	ng/kg	Z, J
1,2,3,6,7,8-HxCDF		1.646	1.054-1.426		100	**4.14**	ng/kg	EMPC, Z, J
2,3,4,6,7,8-HxCDF		1.408	1.054-1.426		100	**4.66**	ng/kg	Z, J
1,2,3,7,8,9-HxCDF		1.438	1.054-1.426		100	**4.06**	ng/kg	EMPC, Z, J, B
1,2,3,4,7,8-HxCDD		1.232	1.054-1.426		100	**24.7**	ng/kg	Z, J
1,2,3,6,7,8-HxCDD		1.140	1.054-1.426		100	**74.3**	ng/kg	Z, J
1,2,3,7,8,9-HxCDD		1.187	1.054-1.426		100	**23.2**	ng/kg	Z, J
1,2,3,4,6,7,8-HpCDF		1.073	0.893-1.208		100	**114**	ng/kg	Z
1,2,3,4,7,8,9-HpCDF		0.993	0.893-1.208		100	**5.64**	ng/kg	Z, J
1,2,3,4,6,7,8-HpCDD		1.043	0.893-1.208		249	**4760**	ng/kg	Z
OCDF		0.982	0.757-1.024		199	**182**	ng/kg	Z, J
OCDD		0.886	0.757-1.024		997	**24800**	ng/kg	Z, B
Homologue groups								
Total TCDF					10	**26.5**	ng/kg	
Total TCDD					10	**1.58**	ng/kg	J
Total PeCDF					10	**57.4**	ng/kg	
Total PeCDD					10	**66.2**	ng/kg	
Total HxCDF					10	**249**	ng/kg	
Total HxCDD					10	**2400**	ng/kg	
Total HpCDF					10	**400**	ng/kg	
Total HpCDD					10	**16100**	ng/kg	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-09d

18H0311-01 (Solid)

Dioxins/Furans

Method: EPA 1613B — Sampled: 08/21/2018 11:10

Instrument: AUTOSPEC01 — Analyzed: 06-Sep-2018 11:00

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC):	80.34
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC):	79.90
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, EMPC = ND):	75.30
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, EMPC = ND):	69.81

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-09d

18H0311-01 (Solid)

Dioxins/Furans

Method: EPA 1613B — Sampled: 08/21/2018 11:10

Instrument: AUTOSPEC01 — Analyzed: 06-Sep-2018 11:00

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Labeled compounds							
13C12-2,3,7,8-TCDF		*0.778*	*0.655-0.886*	*24-169 %*	*64.5*	*%*	
13C12-2,3,7,8-TCDD		*0.747*	*0.655-0.886*	*25-164 %*	*62.0*	*%*	
13C12-1,2,3,7,8-PeCDF		*1.580*	*1.318-1.783*	*24-185 %*	*75.2*	*%*	
13C12-2,3,4,7,8-PeCDF		*1.642*	*1.318-1.783*	*21-178 %*	*77.0*	*%*	
13C12-1,2,3,7,8-PeCDD		*1.698*	*1.318-1.783*	*25-181 %*	*67.3*	*%*	
13C12-1,2,3,4,7,8-HxCDF		*0.482*	*0.434-0.587*	*26-152 %*	*73.7*	*%*	
13C12-1,2,3,6,7,8-HxCDF		*0.522*	*0.434-0.587*	*26-123 %*	*72.8*	*%*	
13C12-2,3,4,6,7,8-HxCDF		*0.490*	*0.434-0.587*	*28-136 %*	*72.2*	*%*	
13C12-1,2,3,7,8,9-HxCDF		*0.497*	*0.434-0.587*	*29-147 %*	*32.3*	*%*	
13C12-1,2,3,4,7,8-HxCDD		*1.284*	*1.054-1.426*	*32-141 %*	*69.6*	*%*	
13C12-1,2,3,6,7,8-HxCDD		*1.293*	*1.054-1.426*	*28-130 %*	*72.8*	*%*	
13C12-1,2,3,4,6,7,8-HpCDF		*0.442*	*0.374-0.506*	*28-143 %*	*60.0*	*%*	
13C12-1,2,3,4,7,8,9-HpCDF		*0.437*	*0.374-0.506*	*26-138 %*	*49.4*	*%*	
13C12-1,2,3,4,6,7,8-HpCDD		*1.152*	*0.893-1.208*	*23-140 %*	*58.4*	*%*	
13C12-OCDD		*0.952*	*0.757-1.024*	*17-157 %*	*31.7*	*%*	
37Cl4-2,3,7,8-TCDD				*35-197 %*	*95.3*	*%*	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-10d

18H0311-02 (Solid)

Dioxins/Furans

Method: EPA 1613B — Sampled: 08/21/2018 08:00

Instrument: AUTOSPEC01 — Analyzed: 06-Sep-2018 11:47

Sample Preparation:	Preparation Method: EPA 1613		
	Preparation Batch: BGH0794	Sample Size: 16.25 g (wet)	Dry Weight:10.06 g
	Prepared: 31-Aug-2018	Final Volume: 20 uL	% Solids: 61.88
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0026	Initial Volume: 20 mL	
	Cleaned: 04-Sep-2018	Final Volume: 20 mL	
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CGI0025	Initial Volume: 20 mL	
	Cleaned: 04-Sep-2018	Final Volume: 20 mL	
Sample Cleanup:	Cleanup Method: Florisil		
	Cleanup Batch: CGI0027	Initial Volume: 20 mL	
	Cleaned: 04-Sep-2018	Final Volume: 20 mL	

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes
2,3,7,8-TCDF		0.548	0.655-0.886		99	**4.24**	ng/kg	EMPC, Z, J
2,3,7,8-TCDD		1.266	0.655-0.886		99	**1.58**	ng/kg	EMPC, Z, J
1,2,3,7,8-PeCDF		1.487	1.318-1.783		99	**2.91**	ng/kg	Z, J
2,3,4,7,8-PeCDF		2.198	1.318-1.783		99	**3.07**	ng/kg	EMPC, Z, J
1,2,3,7,8-PeCDD		1.758	1.318-1.783		99	**8.94**	ng/kg	Z, J
1,2,3,4,7,8-HxCDF		1.321	1.054-1.426		99	**15.2**	ng/kg	Z, J
1,2,3,6,7,8-HxCDF		1.113	1.054-1.426		99	**7.51**	ng/kg	Z, J
2,3,4,6,7,8-HxCDF		1.462	1.054-1.426		99	**8.23**	ng/kg	EMPC, Z, J
1,2,3,7,8,9-HxCDF		1.193	1.054-1.426		99	**5.00**	ng/kg	Z, J, B
1,2,3,4,7,8-HxCDD		1.019	1.054-1.426		99	**12.3**	ng/kg	EMPC, Z, J
1,2,3,6,7,8-HxCDD		1.242	1.054-1.426		99	**94.9**	ng/kg	Z, J
1,2,3,7,8,9-HxCDD		1.246	1.054-1.426		99	**30.0**	ng/kg	Z, J
1,2,3,4,6,7,8-HpCDF		1.013	0.893-1.208		99	**610**	ng/kg	Z
1,2,3,4,7,8,9-HpCDF		1.046	0.893-1.208		99	**35.2**	ng/kg	Z, J
1,2,3,4,6,7,8-HpCDD		1.048	0.893-1.208		249	**4320**	ng/kg	Z
OCDF		0.939	0.757-1.024		199	**3900**	ng/kg	Z
OCDD		0.877	0.757-1.024		994	**42400**	ng/kg	E, Z, B
Homologue groups								
Total TCDF					10	**44.1**	ng/kg	
Total TCDD					10	**16.1**	ng/kg	
Total PeCDF					10	**75.3**	ng/kg	
Total PeCDD					10	**41.3**	ng/kg	
Total HxCDF					10	**639**	ng/kg	
Total HxCDD					10	**636**	ng/kg	
Total HpCDF					10	**2990**	ng/kg	
Total HpCDD					10	**8090**	ng/kg	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-10d

18H0311-02 (Solid)

Dioxins/Furans

Method: EPA 1613B — Sampled: 08/21/2018 08:00

Instrument: AUTOSPEC01 — Analyzed: 06-Sep-2018 11:47

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC):	92.81
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC):	92.81
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, EMPC = ND):	90.32
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, EMPC = ND):	87.83

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-10d

18H0311-02 (Solid)

Dioxins/Furans

Method: EPA 1613B — Sampled: 08/21/2018 08:00

Instrument: AUTOSPEC01 — Analyzed: 06-Sep-2018 11:47

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Labeled compounds							
13C12-2,3,7,8-TCDF		*0.807*	*0.655-0.886*	*24-169 %*	*95.1*	*%*	
13C12-2,3,7,8-TCDD		*0.789*	*0.655-0.886*	*25-164 %*	*83.1*	*%*	
13C12-1,2,3,7,8-PeCDF		*1.609*	*1.318-1.783*	*24-185 %*	*93.1*	*%*	
13C12-2,3,4,7,8-PeCDF		*1.619*	*1.318-1.783*	*21-178 %*	*91.3*	*%*	
13C12-1,2,3,7,8-PeCDD		*1.756*	*1.318-1.783*	*25-181 %*	*83.6*	*%*	
13C12-1,2,3,4,7,8-HxCDF		*0.498*	*0.434-0.587*	*26-152 %*	*91.0*	*%*	
13C12-1,2,3,6,7,8-HxCDF		*0.512*	*0.434-0.587*	*26-123 %*	*89.4*	*%*	
13C12-2,3,4,6,7,8-HxCDF		*0.507*	*0.434-0.587*	*28-136 %*	*87.4*	*%*	
13C12-1,2,3,7,8,9-HxCDF		*0.511*	*0.434-0.587*	*29-147 %*	*53.3*	*%*	
13C12-1,2,3,4,7,8-HxCDD		*1.288*	*1.054-1.426*	*32-141 %*	*83.7*	*%*	
13C12-1,2,3,6,7,8-HxCDD		*1.307*	*1.054-1.426*	*28-130 %*	*88.2*	*%*	
13C12-1,2,3,4,6,7,8-HpCDF		*0.426*	*0.374-0.506*	*28-143 %*	*77.2*	*%*	
13C12-1,2,3,4,7,8,9-HpCDF		*0.422*	*0.374-0.506*	*26-138 %*	*69.9*	*%*	
13C12-1,2,3,4,6,7,8-HpCDD		*1.148*	*0.893-1.208*	*23-140 %*	*69.7*	*%*	
13C12-OCDD		*0.948*	*0.757-1.024*	*17-157 %*	*36.4*	*%*	
37Cl4-2,3,7,8-TCDD				*35-197 %*	*96.1*	*%*	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-13d

18H0311-03 (Solid)

Dioxins/Furans

Method: EPA 1613B — Sampled: 08/21/2018 07:55

Instrument: AUTOSPEC01 — Analyzed: 06-Sep-2018 12:36

Sample Preparation:	Preparation Method: EPA 1613		
	Preparation Batch: BGH0794	Sample Size: 13.43 g (wet)	Dry Weight:10.03 g
	Prepared: 31-Aug-2018	Final Volume: 20 uL	% Solids: 74.68
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0026	Initial Volume: 20 mL	
	Cleaned: 04-Sep-2018	Final Volume: 20 mL	
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CGI0025	Initial Volume: 20 mL	
	Cleaned: 04-Sep-2018	Final Volume: 20 mL	
Sample Cleanup:	Cleanup Method: Florisil		
	Cleanup Batch: CGI0027	Initial Volume: 20 mL	
	Cleaned: 04-Sep-2018	Final Volume: 20 mL	

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes
2,3,7,8-TCDF		0.799	0.655-0.886		100	**6.17**	ng/kg	Z, J
2,3,7,8-TCDD			0.655-0.886	0.712	100	ND	ng/kg	Z, U
1,2,3,7,8-PeCDF		1.409	1.318-1.783		100	**2.00**	ng/kg	Z, J
2,3,4,7,8-PeCDF		1.613	1.318-1.783		100	**3.09**	ng/kg	Z, J
1,2,3,7,8-PeCDD		1.500	1.318-1.783		100	**8.81**	ng/kg	Z, J
1,2,3,4,7,8-HxCDF		1.241	1.054-1.426		100	**16.5**	ng/kg	Z, J
1,2,3,6,7,8-HxCDF		1.233	1.054-1.426		100	**8.01**	ng/kg	Z, J
2,3,4,6,7,8-HxCDF		1.561	1.054-1.426		100	**6.34**	ng/kg	EMPC, Z, J
1,2,3,7,8,9-HxCDF		1.431	1.054-1.426		100	**5.17**	ng/kg	EMPC, Z, J, B
1,2,3,4,7,8-HxCDD		1.459	1.054-1.426		100	**10.9**	ng/kg	EMPC, Z, J
1,2,3,6,7,8-HxCDD		1.182	1.054-1.426		100	**67.5**	ng/kg	Z, J
1,2,3,7,8,9-HxCDD		1.142	1.054-1.426		100	**23.5**	ng/kg	Z, J
1,2,3,4,6,7,8-HpCDF		1.061	0.893-1.208		100	**465**	ng/kg	Z
1,2,3,4,7,8,9-HpCDF		0.948	0.893-1.208		100	**40.2**	ng/kg	Z, J
1,2,3,4,6,7,8-HpCDD		1.058	0.893-1.208		249	**3130**	ng/kg	Z
OCDF		0.949	0.757-1.024		199	**2030**	ng/kg	Z
OCDD		0.885	0.757-1.024		997	**35800**	ng/kg	Z, B
Homologue groups								
Total TCDF					10	**56.9**	ng/kg	
Total TCDD					10	**9.23**	ng/kg	J
Total PeCDF					10	**83.6**	ng/kg	
Total PeCDD					10	**36.8**	ng/kg	
Total HxCDF					10	**508**	ng/kg	
Total HxCDD					10	**441**	ng/kg	
Total HpCDF					10	**1950**	ng/kg	
Total HpCDD					10	**5750**	ng/kg	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-13d

18H0311-03 (Solid)

Dioxins/Furans

Method: EPA 1613B — Sampled: 08/21/2018 07:55

Instrument: AUTOSPEC01 — Analyzed: 06-Sep-2018 12:36

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC):	72.26
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC):	71.91
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, EMPC = ND):	71.14
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, EMPC = ND):	69.67

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-13d

18H0311-03 (Solid)

Dioxins/Furans

Method: EPA 1613B — Sampled: 08/21/2018 07:55

Instrument: AUTOSPEC01 — Analyzed: 06-Sep-2018 12:36

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Labeled compounds							
13C12-2,3,7,8-TCDF		*0.808*	*0.655-0.886*	*24-169 %*	*118*	*%*	
13C12-2,3,7,8-TCDD		*0.752*	*0.655-0.886*	*25-164 %*	*104*	*%*	
13C12-1,2,3,7,8-PeCDF		*1.596*	*1.318-1.783*	*24-185 %*	*115*	*%*	
13C12-2,3,4,7,8-PeCDF		*1.602*	*1.318-1.783*	*21-178 %*	*117*	*%*	
13C12-1,2,3,7,8-PeCDD		*1.669*	*1.318-1.783*	*25-181 %*	*101*	*%*	
13C12-1,2,3,4,7,8-HxCDF		*0.491*	*0.434-0.587*	*26-152 %*	*115*	*%*	
13C12-1,2,3,6,7,8-HxCDF		*0.497*	*0.434-0.587*	*26-123 %*	*113*	*%*	
13C12-2,3,4,6,7,8-HxCDF		*0.484*	*0.434-0.587*	*28-136 %*	*111*	*%*	
13C12-1,2,3,7,8,9-HxCDF		*0.490*	*0.434-0.587*	*29-147 %*	*51.7*	*%*	
13C12-1,2,3,4,7,8-HxCDD		*1.311*	*1.054-1.426*	*32-141 %*	*106*	*%*	
13C12-1,2,3,6,7,8-HxCDD		*1.258*	*1.054-1.426*	*28-130 %*	*111*	*%*	
13C12-1,2,3,4,6,7,8-HpCDF		*0.441*	*0.374-0.506*	*28-143 %*	*94.6*	*%*	
13C12-1,2,3,4,7,8,9-HpCDF		*0.421*	*0.374-0.506*	*26-138 %*	*83.4*	*%*	
13C12-1,2,3,4,6,7,8-HpCDD		*1.120*	*0.893-1.208*	*23-140 %*	*87.3*	*%*	
13C12-OCDD		*0.909*	*0.757-1.024*	*17-157 %*	*43.7*	*%*	
37Cl4-2,3,7,8-TCDD				*35-197 %*	*123*	*%*	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-14

18H0311-04 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 08/21/2018 12:00

Instrument: NT10 — Analyzed: 10-Sep-2018 22:50

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0755	Sample Size: 23.06 g (wet)	Dry Weight:10.18 g
	Prepared: 31-Aug-2018	Final Volume: 1 mL	% Solids: 44.13
Sample Cleanup:	Cleanup Method: GPC		
	Cleanup Batch: CGI0041	Initial Volume: 1 mL	
	Cleaned: 06-Sep-2018	Final Volume: 1 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	8.1	19.7	**66.3**	ug/kg	
bis(2-chloroethyl) ether	111-44-4	1	6.7	19.7	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	4.3	19.7	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	4.6	19.7	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	14.6	19.7	ND	ug/kg	U
2-Methylphenol	95-48-7	1	7.7	19.7	ND	ug/kg	U
Hexachloroethane	67-72-1	1	5.6	19.7	ND	ug/kg	U
4-Methylphenol	106-44-5	1	14.4	19.7	**22.0**	ug/kg	
2,4-Dimethylphenol	105-67-9	1	26.3	98.3	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	5.9	19.7	ND	ug/kg	U
Naphthalene	91-20-3	1	5.2	19.7	**36.6**	ug/kg	
Benzoic acid	65-85-0	1	58.1	197	**317**	ug/kg	
Hexachlorobutadiene	87-68-3	1	4.9	19.7	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	5.6	19.7	**30.3**	ug/kg	
Acenaphthylene	208-96-8	1	4.7	19.7	**40.3**	ug/kg	
Dimethylphthalate	131-11-3	1	6.3	19.7	**39.4**	ug/kg	
Acenaphthene	83-32-9	1	5.0	19.7	**11.9**	ug/kg	J
Dibenzofuran	132-64-9	1	4.5	19.7	**15.8**	ug/kg	J
Fluorene	86-73-7	1	4.9	19.7	**25.6**	ug/kg	
Diethyl phthalate	84-66-2	1	17.4	19.7	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	9.4	19.7	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	4.7	19.7	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	30.8	98.3	ND	ug/kg	U
Phenanthrene	85-01-8	1	4.6	19.7	**160**	ug/kg	
Anthracene	120-12-7	1	5.8	19.7	**107**	ug/kg	
Di-n-Butylphthalate	84-74-2	1	5.2	19.7	**8.7**	ug/kg	J
Fluoranthene	206-44-0	1	4.4	19.7	**383**	ug/kg	
Pyrene	129-00-0	1	5.5	19.7	**366**	ug/kg	
Butylbenzylphthalate	85-68-7	1	7.9	19.7	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	5.1	19.7	**251**	ug/kg	
Chrysene	218-01-9	1	5.1	19.7	**621**	ug/kg	
bis(2-Ethylhexyl)phthalate	117-81-7	1	28.3	49.1	**47.4**	ug/kg	J
Di-n-Octylphthalate	117-84-0	1	8.6	19.7	ND	ug/kg	U

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

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18H0311-04 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 08/21/2018 12:00

Instrument: NT10 — Analyzed: 10-Sep-2018 22:50

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzo(b)fluoranthene	205-99-2	1	6.9	19.7	**323**	ug/kg	
Benzo(k)fluoranthene	207-08-9	1	4.9	19.7	**285**	ug/kg	
Benzofluoranthenes, Total		1	10.0	39.3	**591**	ug/kg	
Benzo(a)pyrene	50-32-8	1	6.4	19.7	**168**	ug/kg	
Indeno(1,2,3-cd)pyrene	193-39-5	1	5.9	19.7	**105**	ug/kg	
Dibenzo(a,h)anthracene	53-70-3	1	6.1	19.7	**40.7**	ug/kg	
Benzo(g,h,i)perylene	191-24-2	1	5.7	19.7	**101**	ug/kg	Q
Surrogate: 2-Fluorophenol				*27-120 %*	*63.0*	*%*	
Surrogate: Phenol-d5				*29-120 %*	*63.0*	*%*	
Surrogate: 2-Chlorophenol-d4				*31-120 %*	*71.6*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4				*32-120 %*	*73.7*	*%*	
Surrogate: Nitrobenzene-d5				*30-120 %*	*72.0*	*%*	
Surrogate: 2-Fluorobiphenyl				*35-120 %*	*88.6*	*%*	
Surrogate: 2,4,6-Tribromophenol				*24-134 %*	*99.1*	*%*	
Surrogate: p-Terphenyl-d14				*37-120 %*	*97.4*	*%*	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-14

18H0311-04 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270D-SIM — Sampled: 08/21/2018 12:00

Instrument: NT10 — Analyzed: 10-Sep-2018 22:50

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0755	Sample Size: 23.06 g (wet)	Dry Weight:10.18 g
	Prepared: 31-Aug-2018	Final Volume: 1 mL	% Solids: 44.13
Sample Cleanup:	Cleanup Method: GPC		
	Cleanup Batch: CGI0041	Initial Volume: 1 mL	
	Cleaned: 06-Sep-2018	Final Volume: 1 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	2.2	4.9	**69.8**	ug/kg	B
1,4-Dichlorobenzene	106-46-7	1	0.6	4.9	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.7	4.9	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	2.4	19.7	ND	ug/kg	U
Benzoic acid	65-85-0	1	13.2	98.3	**316**	ug/kg	
2-Methylphenol	95-48-7	1	1.1	4.9	**4.5**	ug/kg	J
4-Methylphenol	106-44-5	1	0.9	4.9	**22.7**	ug/kg	
2,4-Dimethylphenol	105-67-9	1	2.1	24.6	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.6	4.9	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	0.7	4.9	ND	ug/kg	U
Dimethylphthalate	131-11-3	1	1.0	4.9	**33.6**	ug/kg	
Diethyl phthalate	84-66-2	1	4.7	19.7	**14.6**	ug/kg	J, B
N-Nitrosodiphenylamine	86-30-6	1	1.3	4.9	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	0.7	4.9	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	2.1	19.7	**10.9**	ug/kg	Q, J
Butylbenzylphthalate	85-68-7	1	0.7	4.9	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	0.9	4.9	**37.6**	ug/kg	
Surrogate: 2-Fluorophenol				*27-120 %*	*63.1*	*%*	
Surrogate: p-Terphenyl-d14				*37-120 %*	*83.6*	*%*	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-14

18H0311-04 (Solid)

Butyl Tins

Method: EPA 8270D-SIM — Sampled: 08/21/2018 12:00

Instrument: NT14 — Analyzed: 07-Sep-2018 11:26

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0759	Sample Size: 12.15 g (wet)	Dry Weight:5.36 g
	Prepared: 31-Aug-2018	Final Volume: 0.5 mL	% Solids: 44.13
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0036	Initial Volume: 0.5 mL	
	Cleaned: 05-Sep-2018	Final Volume: 0.5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Tributyltin Ion	36643-28-4	1	0.420	3.60	**91.3**	ug/kg	
Dibutyltin Ion	14488-53-0	1	1.61	5.39	**40.2**	ug/kg	
Butyltin Ion	78763-54-9	1	1.76	3.80	**5.25**	ug/kg	
Tetrabutyltin	1461-25-2	1	4.66	4.66	ND	ug/kg	U
Surrogate: Tripentyltin				*30-160 %*	*66.5*	*%*	
Surrogate: Tripropyltin				*30-160 %*	*59.9*	*%*	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

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18H0311-04 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 08/21/2018 12:00

Instrument: ECD7 — Analyzed: 05-Sep-2018 08:39

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0709	Sample Size: 29.16 g (wet)	Dry Weight:12.87 g
	Prepared: 29-Aug-2018	Final Volume: 2.5 mL	% Solids: 44.13
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0022	Initial Volume: 2.5 mL	
	Cleaned: 04-Sep-2018	Final Volume: 2.5 mL	
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CGI0020	Initial Volume: 2.5 mL	
	Cleaned: 04-Sep-2018	Final Volume: 2.5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CGI0021	Initial Volume: 2.5 mL	
	Cleaned: 04-Sep-2018	Final Volume: 2.5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.5	3.9	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.5	3.9	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.5	3.9	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.5	3.9	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.5	3.9	**14.2**	ug/kg	
Aroclor 1254	11097-69-1	1	1.5	3.9	**21.9**	ug/kg	
Aroclor 1260	11096-82-5	1	0.6	3.9	**10.3**	ug/kg	
Aroclor 1262	37324-23-5	1	0.6	3.9	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	3.9	ND	ug/kg	U
Surrogate: Decachlorobiphenyl				*40-126 %*	*79.2*	*%*	
Surrogate: Tetrachlorometaxylene				*44-120 %*	*76.1*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-126 %*	*74.6*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*44-120 %*	*70.9*	*%*	

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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-14

18H0311-04 (Solid)

Metals and Metallic Compounds

Method: EPA 6020A — Sampled: 08/21/2018 12:00

Instrument: ICPMS2 — Analyzed: 04-Sep-2018 14:55

Sample Preparation: Preparation Method: SWN EPA 3050B
Preparation Batch: BGI0016 — Sample Size: 1.011 g (wet) — Dry Weight:0.53 g
Prepared: 03-Sep-2018 — Final Volume: 50 mL — % Solids: 51.96

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	20	0.04	0.38	ND	mg/kg	U
Chromium	7440-47-3	20	0.13	0.95	**24.2**	mg/kg	
Lead	7439-92-1	20	0.02	0.19	**19.5**	mg/kg	
Silver	7440-22-4	20	0.006	0.38	**0.12**	mg/kg	J

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-14

18H0311-04 (Solid)

Metals and Metallic Compounds

Method: EPA 6020A UCT-KED — Sampled: 08/21/2018 12:00

Instrument: ICPMS2 — Analyzed: 04-Sep-2018 14:55

Sample Preparation: Preparation Method: SWN EPA 3050B
Preparation Batch: BGI0016 — Sample Size: 1.011 g (wet) — Dry Weight:0.53 g
Prepared: 03-Sep-2018 — Final Volume: 50 mL — % Solids: 51.96

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	0.06	0.38	**4.06**	mg/kg	
Cadmium	7440-43-9	20	0.01	0.19	**1.89**	mg/kg	
Copper	7440-50-8	20	0.07	0.95	**52.5**	mg/kg	
Nickel	7440-02-0	20	0.03	0.95	**16.1**	mg/kg	
Zinc	7440-66-6	20	0.4	7.6	**119**	mg/kg	

Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-14

18H0311-04 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B — Sampled: 08/21/2018 12:00

Instrument: CVAA — Analyzed: 27-Aug-2018 09:19

Sample Preparation: Preparation Method: SMM EPA 7471B
Preparation Batch: BGH0643 — Sample Size: 0.22 g (wet) — Dry Weight:0.11 g
Prepared: 24-Aug-2018 — Final Volume: 50 mL — % Solids: 51.96

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.0437	**0.0674**	mg/kg	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-14

18H0311-04 (Solid)

Wet Chemistry

Method: PSEP 1986 — Sampled: 08/21/2018 12:00

Instrument: BAL2 — Analyzed: 27-Aug-2018 15:35

Sample Preparation: Preparation Method: PSEP 1986 (modified)
Preparation Batch: BGH0690 — Sample Size: 1 g (wet) — Dry Weight:0.51 g
Prepared: 27-Aug-2018 — Final Volume: 1 mL — % Solids: 50.98

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Volatile Solids		1	0.01	0.01	**5.08**	%	

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGH0745 — Sample Size: 5 g (wet) — Dry Weight:2.55 g
Prepared: 28-Aug-2018 — Final Volume: 5 g — % Solids: 50.98

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Solids, Sulfide		1	0.04	0.04	**53.34**	%	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-14

18H0311-04 (Solid)

Wet Chemistry

Method: SM 2540 G-97 — Sampled: 08/21/2018 12:00

Instrument: BAL2 — Analyzed: 27-Aug-2018 15:35

Sample Preparation: Preparation Method: PSEP 1986 (modified)
Preparation Batch: BGH0690 — Sample Size: 1 g (wet) — Dry Weight:0.51 g
Prepared: 27-Aug-2018 — Final Volume: 1 mL — % Solids: 50.98

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Solids		1	0.04	0.04	**50.98**	%	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-14

18H0311-04 (Solid)

Wet Chemistry

Method: SM 4500-NH3 H-97 — Sampled: 08/21/2018 12:00

Instrument: LACHAT1 — Analyzed: 28-Aug-2018 16:53

Sample Preparation: Preparation Method: MSA 33.3 (2M KCl)
Preparation Batch: BGH0678 — Sample Size: 4.09 g (wet) — Dry Weight:2.09 g
Prepared: 27-Aug-2018 — Final Volume: 40 mL — % Solids: 50.98

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.77	0.77	ND	mg/kg NH3-N	U

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-14

18H0311-04 (Solid)

Wet Chemistry

Method: SM 4500-S2 D-00 — Sampled: 08/21/2018 12:00

Instrument: UV1800-2 — Analyzed: 28-Aug-2018 14:53

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGH0669 — Sample Size: 5.423 g (wet) — Dry Weight:2.89 g
Prepared: 27-Aug-2018 — Final Volume: 100 g — % Solids: 53.34

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfide	18496-25-8	100	173	173	**698**	mg/kg	D

Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-14

18H0311-04RE1 (Solid)

Wet Chemistry

Method: PSEP 1986 Combustion IR — Sampled: 08/21/2018 12:00

Instrument: APOLLO2 — Analyzed: 10-Sep-2018 18:04

Sample Preparation: Preparation Method: PSEP 1986 (modified)
Preparation Batch: BGH0690 — Sample Size: 1 g (wet) — Dry Weight:0.51 g
Prepared: 27-Aug-2018 — Final Volume: 1 mL — % Solids: 50.98

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.02	0.02	**1.87**	%	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-14

18H0311-04RE1 (Solid)

Wet Chemistry

Method: SM 4500-NH3 H-97 — Sampled: 08/21/2018 12:00

Instrument: LACHAT1 — Analyzed: 28-Aug-2018 17:09

Sample Preparation: Preparation Method: MSA 33.3 (2M KCl)
Preparation Batch: BGH0678 — Sample Size: 4.09 g (wet) — Dry Weight:2.09 g
Prepared: 27-Aug-2018 — Final Volume: 40 mL — % Solids: 50.98

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.77	0.77	**16.0**	mg/kg NH3-N	

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228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-15

18H0311-05 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 08/21/2018 10:00

Instrument: NT10 — Analyzed: 10-Sep-2018 23:26

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0755	Sample Size: 22.19 g (wet)	Dry Weight:10.14 g
	Prepared: 31-Aug-2018	Final Volume: 1 mL	% Solids: 45.69
Sample Cleanup:	Cleanup Method: GPC		
	Cleanup Batch: CGI0041	Initial Volume: 1 mL	
	Cleaned: 06-Sep-2018	Final Volume: 1 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	8.1	19.7	**45.1**	ug/kg	
bis(2-chloroethyl) ether	111-44-4	1	6.7	19.7	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	4.3	19.7	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	4.6	19.7	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	14.7	19.7	ND	ug/kg	U
2-Methylphenol	95-48-7	1	7.7	19.7	ND	ug/kg	U
Hexachloroethane	67-72-1	1	5.6	19.7	ND	ug/kg	U
4-Methylphenol	106-44-5	1	14.5	19.7	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	26.4	98.6	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	5.9	19.7	ND	ug/kg	U
Naphthalene	91-20-3	1	5.2	19.7	**24.5**	ug/kg	
Benzoic acid	65-85-0	1	58.3	197	**173**	ug/kg	J
Hexachlorobutadiene	87-68-3	1	4.9	19.7	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	5.6	19.7	**23.7**	ug/kg	
Acenaphthylene	208-96-8	1	4.7	19.7	**25.5**	ug/kg	
Dimethylphthalate	131-11-3	1	6.4	19.7	**32.2**	ug/kg	
Acenaphthene	83-32-9	1	5.1	19.7	**9.6**	ug/kg	J
Dibenzofuran	132-64-9	1	4.5	19.7	**9.7**	ug/kg	J
Fluorene	86-73-7	1	4.9	19.7	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	17.5	19.7	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	9.4	19.7	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	4.7	19.7	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	30.9	98.6	ND	ug/kg	U
Phenanthrene	85-01-8	1	4.6	19.7	**115**	ug/kg	
Anthracene	120-12-7	1	5.8	19.7	**53.3**	ug/kg	
Di-n-Butylphthalate	84-74-2	1	5.2	19.7	ND	ug/kg	U
Fluoranthene	206-44-0	1	4.5	19.7	**415**	ug/kg	
Pyrene	129-00-0	1	5.5	19.7	**357**	ug/kg	
Butylbenzylphthalate	85-68-7	1	7.9	19.7	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	5.1	19.7	**152**	ug/kg	
Chrysene	218-01-9	1	5.1	19.7	**360**	ug/kg	
bis(2-Ethylhexyl)phthalate	117-81-7	1	28.4	49.3	**64.1**	ug/kg	
Di-n-Octylphthalate	117-84-0	1	8.6	19.7	ND	ug/kg	U

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-15

18H0311-05 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 08/21/2018 10:00

Instrument: NT10 — Analyzed: 10-Sep-2018 23:26

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzo(b)fluoranthene	205-99-2	1	6.9	19.7	**211**	ug/kg	
Benzo(k)fluoranthene	207-08-9	1	4.9	19.7	**209**	ug/kg	
Benzofluoranthenes, Total		1	10.1	39.5	**404**	ug/kg	
Benzo(a)pyrene	50-32-8	1	6.4	19.7	**117**	ug/kg	
Indeno(1,2,3-cd)pyrene	193-39-5	1	5.9	19.7	**75.8**	ug/kg	
Dibenzo(a,h)anthracene	53-70-3	1	6.1	19.7	**23.3**	ug/kg	
Benzo(g,h,i)perylene	191-24-2	1	5.7	19.7	**71.5**	ug/kg	Q
Surrogate: 2-Fluorophenol				*27-120 %*	*65.6*	*%*	
Surrogate: Phenol-d5				*29-120 %*	*63.2*	*%*	
Surrogate: 2-Chlorophenol-d4				*31-120 %*	*75.9*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4				*32-120 %*	*80.1*	*%*	
Surrogate: Nitrobenzene-d5				*30-120 %*	*77.6*	*%*	
Surrogate: 2-Fluorobiphenyl				*35-120 %*	*85.7*	*%*	
Surrogate: 2,4,6-Tribromophenol				*24-134 %*	*97.6*	*%*	
Surrogate: p-Terphenyl-d14				*37-120 %*	*101*	*%*	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-15

18H0311-05 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270D-SIM — Sampled: 08/21/2018 10:00

Instrument: NT10 — Analyzed: 10-Sep-2018 23:26

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0755	Sample Size: 22.19 g (wet)	Dry Weight:10.14 g
	Prepared: 31-Aug-2018	Final Volume: 1 mL	% Solids: 45.69
Sample Cleanup:	Cleanup Method: GPC		
	Cleanup Batch: CGI0041	Initial Volume: 1 mL	
	Cleaned: 06-Sep-2018	Final Volume: 1 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	2.2	4.9	**48.8**	ug/kg	B
1,4-Dichlorobenzene	106-46-7	1	0.6	4.9	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.7	4.9	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	2.4	19.7	ND	ug/kg	U
Benzoic acid	65-85-0	1	13.2	98.6	**177**	ug/kg	
2-Methylphenol	95-48-7	1	1.1	4.9	**2.9**	ug/kg	J
4-Methylphenol	106-44-5	1	0.9	4.9	**20.1**	ug/kg	
2,4-Dimethylphenol	105-67-9	1	2.1	24.7	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.6	4.9	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	0.7	4.9	ND	ug/kg	U
Dimethylphthalate	131-11-3	1	1.0	4.9	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	4.7	19.7	**11.7**	ug/kg	J, B
N-Nitrosodiphenylamine	86-30-6	1	1.3	4.9	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	0.7	4.9	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	2.1	19.7	**5.0**	ug/kg	Q, J
Butylbenzylphthalate	85-68-7	1	0.7	4.9	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	0.9	4.9	**23.5**	ug/kg	
Surrogate: 2-Fluorophenol				*27-120 %*	*66.3*	*%*	
Surrogate: p-Terphenyl-d14				*37-120 %*	*89.7*	*%*	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-15

18H0311-05 (Solid)

Butyl Tins

Method: EPA 8270D-SIM — Sampled: 08/21/2018 10:00

Instrument: NT14 — Analyzed: 07-Sep-2018 11:40

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0759	Sample Size: 11.16 g (wet)	Dry Weight:5.10 g
	Prepared: 31-Aug-2018	Final Volume: 0.5 mL	% Solids: 45.69
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0036	Initial Volume: 0.5 mL	
	Cleaned: 05-Sep-2018	Final Volume: 0.5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Tributyltin Ion	36643-28-4	1	0.441	3.79	**48.8**	ug/kg	
Dibutyltin Ion	14488-53-0	1	1.70	5.67	**25.6**	ug/kg	
Butyltin Ion	78763-54-9	1	1.85	4.00	**3.30**	ug/kg	J
Tetrabutyltin	1461-25-2	1	4.90	4.90	ND	ug/kg	U
Surrogate: Tripentyltin				*30-160 %*	*67.3*	*%*	
Surrogate: Tripropyltin				*30-160 %*	*61.2*	*%*	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-15

18H0311-05 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 08/21/2018 10:00

Instrument: ECD7 — Analyzed: 05-Sep-2018 09:01

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0709	Sample Size: 28.01 g (wet)	Dry Weight:12.80 g
	Prepared: 29-Aug-2018	Final Volume: 2.5 mL	% Solids: 45.69
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0022	Initial Volume: 2.5 mL	
	Cleaned: 04-Sep-2018	Final Volume: 2.5 mL	
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CGI0020	Initial Volume: 2.5 mL	
	Cleaned: 04-Sep-2018	Final Volume: 2.5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CGI0021	Initial Volume: 2.5 mL	
	Cleaned: 04-Sep-2018	Final Volume: 2.5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.5	3.9	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.5	3.9	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.5	3.9	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.5	3.9	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.5	3.9	**11.7**	ug/kg	
Aroclor 1254	11097-69-1	1	1.5	3.9	**16.0**	ug/kg	
Aroclor 1260	11096-82-5	1	0.6	3.9	**9.8**	ug/kg	P1
Aroclor 1262	37324-23-5	1	0.6	3.9	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	3.9	ND	ug/kg	U
Surrogate: Decachlorobiphenyl				*40-126 %*	*81.1*	*%*	
Surrogate: Tetrachlorometaxylene				*44-120 %*	*73.1*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-126 %*	*76.9*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*44-120 %*	*73.8*	*%*	

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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-15

18H0311-05 (Solid)

Metals and Metallic Compounds

Method: EPA 6020A — Sampled: 08/21/2018 10:00

Instrument: ICPMS2 — Analyzed: 04-Sep-2018 13:47

Sample Preparation: Preparation Method: SWN EPA 3050B
Preparation Batch: BGI0016 — Sample Size: 1.022 g (wet) — Dry Weight:0.49 g
Prepared: 03-Sep-2018 — Final Volume: 50 mL — % Solids: 48.05

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	20	0.04	0.41	ND	mg/kg	U
Chromium	7440-47-3	20	0.14	1.02	**23.3**	mg/kg	
Lead	7439-92-1	20	0.02	0.20	**22.4**	mg/kg	
Silver	7440-22-4	20	0.006	0.41	**0.12**	mg/kg	J

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-15

18H0311-05 (Solid)

Metals and Metallic Compounds

Method: EPA 6020A UCT-KED — Sampled: 08/21/2018 10:00

Instrument: ICPMS2 — Analyzed: 04-Sep-2018 13:47

Sample Preparation: Preparation Method: SWN EPA 3050B
Preparation Batch: BGI0016 — Sample Size: 1.022 g (wet) — Dry Weight:0.49 g
Prepared: 03-Sep-2018 — Final Volume: 50 mL — % Solids: 48.05

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	0.06	0.41	**4.23**	mg/kg	
Cadmium	7440-43-9	20	0.01	0.20	**1.67**	mg/kg	
Copper	7440-50-8	20	0.08	1.02	**59.4**	mg/kg	
Nickel	7440-02-0	20	0.03	1.02	**17.6**	mg/kg	
Zinc	7440-66-6	20	0.6	8.1	**72.0**	mg/kg	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-15

18H0311-05 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B — Sampled: 08/21/2018 10:00

Instrument: CVAA — Analyzed: 27-Aug-2018 09:21

Sample Preparation: Preparation Method: SMM EPA 7471B
Preparation Batch: BGH0643 — Sample Size: 0.209 g (wet) — Dry Weight:0.10 g
Prepared: 24-Aug-2018 — Final Volume: 50 mL — % Solids: 48.05

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.0498	**0.104**	mg/kg	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-15

18H0311-05 (Solid)

Wet Chemistry

Method: PSEP 1986 — Sampled: 08/21/2018 10:00

Instrument: BAL2 — Analyzed: 27-Aug-2018 15:35

Sample Preparation: Preparation Method: PSEP 1986 (modified)
Preparation Batch: BGH0690 — Sample Size: 1 g (wet) — Dry Weight:0.51 g
Prepared: 27-Aug-2018 — Final Volume: 1 mL — % Solids: 50.74

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Volatile Solids		1	0.01	0.01	**5.39**	%	

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGH0745 — Sample Size: 5 g (wet) — Dry Weight:2.54 g
Prepared: 28-Aug-2018 — Final Volume: 5 g — % Solids: 50.74

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Solids, Sulfide		1	0.04	0.04	**53.87**	%	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-15

18H0311-05 (Solid)

Wet Chemistry

Method: PSEP 1986 Combustion IR — Sampled: 08/21/2018 10:00

Instrument: APOLLO2 — Analyzed: 10-Sep-2018 18:21

Sample Preparation: Preparation Method: PSEP 1986 (modified)
Preparation Batch: BGH0690 — Sample Size: 1 g (wet) — Dry Weight:0.51 g
Prepared: 27-Aug-2018 — Final Volume: 1 mL — % Solids: 50.74

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.02	0.02	**2.08**	%	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-15

18H0311-05 (Solid)

Wet Chemistry

Method: SM 2540 G-97 — Sampled: 08/21/2018 10:00

Instrument: BAL2 — Analyzed: 27-Aug-2018 15:35

Sample Preparation: Preparation Method: PSEP 1986 (modified)
Preparation Batch: BGH0690 — Sample Size: 1 g (wet) — Dry Weight:0.51 g
Prepared: 27-Aug-2018 — Final Volume: 1 mL — % Solids: 50.74

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Solids		1	0.04	0.04	**50.74**	%	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-15

18H0311-05 (Solid)

Wet Chemistry

Method: SM 4500-NH3 H-97 — Sampled: 08/21/2018 10:00

Instrument: LACHAT1 — Analyzed: 28-Aug-2018 16:49

Sample Preparation: Preparation Method: MSA 33.3 (2M KCl)
Preparation Batch: BGH0678 — Sample Size: 4.29 g (wet) — Dry Weight:2.18 g
Prepared: 27-Aug-2018 — Final Volume: 40 mL — % Solids: 50.74

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.74	0.74	**5.50**	mg/kg NH3-N	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-15

18H0311-05 (Solid)

Wet Chemistry

Method: SM 4500-S2 D-00 — Sampled: 08/21/2018 10:00

Instrument: UV1800-2 — Analyzed: 28-Aug-2018 14:54

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGH0669 — Sample Size: 5.082 g (wet) — Dry Weight:2.74 g
Prepared: 27-Aug-2018 — Final Volume: 100 g — % Solids: 53.87

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfide	18496-25-8	50	91.3	91.3	**488**	mg/kg	D

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-16

18H0311-06 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 08/21/2018 09:25

Instrument: NT10 — Analyzed: 11-Sep-2018 00:03

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0755	Sample Size: 29.06 g (wet)	Dry Weight:10.23 g
	Prepared: 31-Aug-2018	Final Volume: 1 mL	% Solids: 35.21
Sample Cleanup:	Cleanup Method: GPC		
	Cleanup Batch: CGI0041	Initial Volume: 1 mL	
	Cleaned: 06-Sep-2018	Final Volume: 1 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	8.0	19.5	**35.2**	ug/kg	
bis(2-chloroethyl) ether	111-44-4	1	6.6	19.5	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	4.3	19.5	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	4.6	19.5	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	14.6	19.5	ND	ug/kg	U
2-Methylphenol	95-48-7	1	7.7	19.5	ND	ug/kg	U
Hexachloroethane	67-72-1	1	5.5	19.5	ND	ug/kg	U
4-Methylphenol	106-44-5	1	14.4	19.5	**28.0**	ug/kg	
2,4-Dimethylphenol	105-67-9	1	26.2	97.7	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	5.8	19.5	ND	ug/kg	U
Naphthalene	91-20-3	1	5.1	19.5	**31.6**	ug/kg	
Benzoic acid	65-85-0	1	57.8	195	**143**	ug/kg	J
Hexachlorobutadiene	87-68-3	1	4.9	19.5	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	5.5	19.5	**33.7**	ug/kg	
Acenaphthylene	208-96-8	1	4.7	19.5	**102**	ug/kg	
Dimethylphthalate	131-11-3	1	6.3	19.5	**51.5**	ug/kg	
Acenaphthene	83-32-9	1	5.0	19.5	**33.6**	ug/kg	
Dibenzofuran	132-64-9	1	4.5	19.5	**38.7**	ug/kg	
Fluorene	86-73-7	1	4.8	19.5	**59.7**	ug/kg	
Diethyl phthalate	84-66-2	1	17.3	19.5	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	9.4	19.5	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	4.6	19.5	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	30.6	97.7	ND	ug/kg	U
Phenanthrene	85-01-8	1	4.6	19.5	**532**	ug/kg	
Anthracene	120-12-7	1	5.8	19.5	**288**	ug/kg	
Di-n-Butylphthalate	84-74-2	1	5.2	19.5	**17.5**	ug/kg	J
Fluoranthene	206-44-0	1	4.4	19.5	**2190**	ug/kg	E
Pyrene	129-00-0	1	5.4	19.5	**1880**	ug/kg	
Butylbenzylphthalate	85-68-7	1	7.9	19.5	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	5.1	19.5	**894**	ug/kg	
Chrysene	218-01-9	1	5.1	19.5	**1860**	ug/kg	
bis(2-Ethylhexyl)phthalate	117-81-7	1	28.1	48.9	**76.1**	ug/kg	
Di-n-Octylphthalate	117-84-0	1	8.5	19.5	ND	ug/kg	U

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-16

18H0311-06 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 08/21/2018 09:25

Instrument: NT10 — Analyzed: 11-Sep-2018 00:03

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzo(b)fluoranthene	205-99-2	1	6.9	19.5	**1100**	ug/kg	
Benzo(k)fluoranthene	207-08-9	1	4.9	19.5	**787**	ug/kg	
Benzofluoranthenes, Total		1	10.0	39.1	**1830**	ug/kg	
Benzo(a)pyrene	50-32-8	1	6.3	19.5	**558**	ug/kg	
Indeno(1,2,3-cd)pyrene	193-39-5	1	5.9	19.5	**265**	ug/kg	
Dibenzo(a,h)anthracene	53-70-3	1	6.0	19.5	**92.0**	ug/kg	
Benzo(g,h,i)perylene	191-24-2	1	5.7	19.5	**221**	ug/kg	Q
Surrogate: 2-Fluorophenol				*27-120 %*	*61.8*	*%*	
Surrogate: Phenol-d5				*29-120 %*	*57.9*	*%*	
Surrogate: 2-Chlorophenol-d4				*31-120 %*	*72.5*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4				*32-120 %*	*73.5*	*%*	
Surrogate: Nitrobenzene-d5				*30-120 %*	*74.9*	*%*	
Surrogate: 2-Fluorobiphenyl				*35-120 %*	*90.4*	*%*	
Surrogate: 2,4,6-Tribromophenol				*24-134 %*	*102*	*%*	
Surrogate: p-Terphenyl-d14				*37-120 %*	*89.2*	*%*	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-16

18H0311-06 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270D-SIM — Sampled: 08/21/2018 09:25

Instrument: NT10 — Analyzed: 11-Sep-2018 00:03

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0755	Sample Size: 29.06 g (wet)	Dry Weight:10.23 g
	Prepared: 31-Aug-2018	Final Volume: 1 mL	% Solids: 35.21
Sample Cleanup:	Cleanup Method: GPC		
	Cleanup Batch: CGI0041	Initial Volume: 1 mL	
	Cleaned: 06-Sep-2018	Final Volume: 1 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	2.2	4.9	**36.2**	ug/kg	B
1,4-Dichlorobenzene	106-46-7	1	0.6	4.9	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.7	4.9	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	2.4	19.5	ND	ug/kg	U
Benzoic acid	65-85-0	1	13.1	97.7	**141**	ug/kg	
2-Methylphenol	95-48-7	1	1.1	4.9	**6.0**	ug/kg	
4-Methylphenol	106-44-5	1	0.9	4.9	**29.3**	ug/kg	
2,4-Dimethylphenol	105-67-9	1	2.1	24.4	**6.6**	ug/kg	J
1,2,4-Trichlorobenzene	120-82-1	1	2.6	4.9	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	0.7	4.9	ND	ug/kg	U
Dimethylphthalate	131-11-3	1	1.0	4.9	**48.8**	ug/kg	
Diethyl phthalate	84-66-2	1	4.7	19.5	**19.1**	ug/kg	J, B
N-Nitrosodiphenylamine	86-30-6	1	1.3	4.9	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	0.7	4.9	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	2.1	19.5	**22.6**	ug/kg	Q
Butylbenzylphthalate	85-68-7	1	0.7	4.9	**5.4**	ug/kg	
Dibenzo(a,h)anthracene	53-70-3	1	0.9	4.9	**111**	ug/kg	
Surrogate: 2-Fluorophenol				*27-120 %*	*63.2*	*%*	
Surrogate: p-Terphenyl-d14				*37-120 %*	*91.0*	*%*	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-16

18H0311-06 (Solid)

Butyl Tins

Method: EPA 8270D-SIM — Sampled: 08/21/2018 09:25

Instrument: NT14 — Analyzed: 07-Sep-2018 12:20

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0759	Sample Size: 14.31 g (wet)	Dry Weight:5.04 g
	Prepared: 31-Aug-2018	Final Volume: 0.5 mL	% Solids: 35.21
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0036	Initial Volume: 0.5 mL	
	Cleaned: 05-Sep-2018	Final Volume: 0.5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Tributyltin Ion	36643-28-4	1	0.447	3.83	**36.9**	ug/kg	
Dibutyltin Ion	14488-53-0	1	1.72	5.74	**26.5**	ug/kg	
Butyltin Ion	78763-54-9	1	1.88	4.05	**6.79**	ug/kg	
Tetrabutyltin	1461-25-2	1	4.96	4.96	ND	ug/kg	U
Surrogate: Tripentyltin				*30-160 %*	*69.7*	*%*	
Surrogate: Tripropyltin				*30-160 %*	*59.6*	*%*	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-16

18H0311-06 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 08/21/2018 09:25

Instrument: ECD7 — Analyzed: 05-Sep-2018 10:08

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0709	Sample Size: 35.65 g (wet)	Dry Weight:12.55 g
	Prepared: 29-Aug-2018	Final Volume: 2.5 mL	% Solids: 35.21
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0022	Initial Volume: 2.5 mL	
	Cleaned: 04-Sep-2018	Final Volume: 2.5 mL	
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CGI0020	Initial Volume: 2.5 mL	
	Cleaned: 04-Sep-2018	Final Volume: 2.5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CGI0021	Initial Volume: 2.5 mL	
	Cleaned: 04-Sep-2018	Final Volume: 2.5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	**14.9**	ug/kg	
Aroclor 1254	11097-69-1	1	1.6	4.0	**19.4**	ug/kg	
Aroclor 1260	11096-82-5	1	0.6	4.0	**17.1**	ug/kg	P1
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U
Surrogate: Decachlorobiphenyl				*40-126 %*	*73.6*	*%*	
Surrogate: Tetrachlorometaxylene				*44-120 %*	*68.4*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-126 %*		*NRS*	NRS
Surrogate: Tetrachlorometaxylene [2C]				*44-120 %*	*65.0*	*%*	

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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-16

18H0311-06 (Solid)

Metals and Metallic Compounds

Method: EPA 6020A — Sampled: 08/21/2018 09:25

Instrument: ICPMS2 — Analyzed: 04-Sep-2018 13:37

Sample Preparation: Preparation Method: SWN EPA 3050B
Preparation Batch: BGI0016 — Sample Size: 1.042 g (wet) — Dry Weight:0.41 g
Prepared: 03-Sep-2018 — Final Volume: 50 mL — % Solids: 39.24

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	20	0.05	0.49	**0.09**	mg/kg	J
Chromium	7440-47-3	20	0.17	1.22	**32.7**	mg/kg	
Lead	7439-92-1	20	0.02	0.24	**31.7**	mg/kg	
Silver	7440-22-4	20	0.008	0.49	**0.19**	mg/kg	J

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-16

18H0311-06 (Solid)

Metals and Metallic Compounds

Method: EPA 6020A UCT-KED — Sampled: 08/21/2018 09:25

Instrument: ICPMS2 — Analyzed: 04-Sep-2018 13:37

Sample Preparation: Preparation Method: SWN EPA 3050B
Preparation Batch: BGI0016 — Sample Size: 1.042 g (wet) — Dry Weight:0.41 g
Prepared: 03-Sep-2018 — Final Volume: 50 mL — % Solids: 39.24

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	0.07	0.49	**6.99**	mg/kg	
Cadmium	7440-43-9	20	0.02	0.24	**1.89**	mg/kg	
Copper	7440-50-8	20	0.09	1.22	**90.9**	mg/kg	
Nickel	7440-02-0	20	0.04	1.22	**24.7**	mg/kg	
Zinc	7440-66-6	20	0.7	9.8	**104**	mg/kg	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-16

18H0311-06 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B — Sampled: 08/21/2018 09:25

Instrument: CVAA — Analyzed: 27-Aug-2018 09:36

Sample Preparation: Preparation Method: SMM EPA 7471B
Preparation Batch: BGH0643 — Sample Size: 0.281 g (wet) — Dry Weight:0.11 g
Prepared: 24-Aug-2018 — Final Volume: 50 mL — % Solids: 39.24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.0453	**0.0869**	mg/kg	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-16

18H0311-06 (Solid)

Wet Chemistry

Method: PSEP 1986 — Sampled: 08/21/2018 09:25

Instrument: BAL2 — Analyzed: 27-Aug-2018 15:35

Sample Preparation: Preparation Method: PSEP 1986 (modified)
Preparation Batch: BGH0690 — Sample Size: 1 g (wet) — Dry Weight:0.39 g
Prepared: 27-Aug-2018 — Final Volume: 1 mL — % Solids: 39.21

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Volatile Solids		1	0.01	0.01	**9.18**	%	

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGH0745 — Sample Size: 5 g (wet) — Dry Weight:1.96 g
Prepared: 28-Aug-2018 — Final Volume: 5 g — % Solids: 39.21

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Solids, Sulfide		1	0.04	0.04	**41.57**	%	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-16

18H0311-06 (Solid)

Wet Chemistry

Method: PSEP 1986 Combustion IR — Sampled: 08/21/2018 09:25

Instrument: APOLLO2 — Analyzed: 10-Sep-2018 19:06

Sample Preparation: Preparation Method: PSEP 1986 (modified)
Preparation Batch: BGH0690 — Sample Size: 1 g (wet) — Dry Weight:0.39 g
Prepared: 27-Aug-2018 — Final Volume: 1 mL — % Solids: 39.21

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.02	0.02	**3.30**	%	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-16

18H0311-06 (Solid)

Wet Chemistry

Method: SM 2540 G-97 — Sampled: 08/21/2018 09:25

Instrument: BAL2 — Analyzed: 27-Aug-2018 15:35

Sample Preparation: Preparation Method: PSEP 1986 (modified)
Preparation Batch: BGH0690 — Sample Size: 1 g (wet) — Dry Weight:0.39 g
Prepared: 27-Aug-2018 — Final Volume: 1 mL — % Solids: 39.21

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Solids		1	0.04	0.04	**39.21**	%	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-16

18H0311-06 (Solid)

Wet Chemistry

Method: SM 4500-NH3 H-97 — Sampled: 08/21/2018 09:25

Instrument: LACHAT1 — Analyzed: 28-Aug-2018 16:54

Sample Preparation: Preparation Method: MSA 33.3 (2M KCl)
Preparation Batch: BGH0678 — Sample Size: 4.56 g (wet) — Dry Weight:1.79 g
Prepared: 27-Aug-2018 — Final Volume: 40 mL — % Solids: 39.21

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.89	0.89	**17.2**	mg/kg NH3-N	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SED-16

18H0311-06 (Solid)

Wet Chemistry

Method: SM 4500-S2 D-00 — Sampled: 08/21/2018 09:25

Instrument: UV1800-2 — Analyzed: 28-Aug-2018 14:55

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGH0669 — Sample Size: 5.461 g (wet) — Dry Weight:2.27 g
Prepared: 27-Aug-2018 — Final Volume: 100 g — % Solids: 41.57

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfide	18496-25-8	50	110	110	**822**	mg/kg	D

Whatcom Environmental Services	Project: Jensen's Shipyard	
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SED-16

18H0311-06RE1 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 08/21/2018 09:25

Instrument: NT10 — Analyzed: 12-Sep-2018 01:23

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0755	Sample Size: 29.06 g (wet)	Dry Weight:10.23 g
	Prepared: 31-Aug-2018	Final Volume: 1 mL	% Solids: 35.21
Sample Cleanup:	Cleanup Method: GPC		
	Cleanup Batch: CGI0041	Initial Volume: 1 mL	
	Cleaned: 06-Sep-2018	Final Volume: 1 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	2	16.1	39.1	**38.8**	ug/kg	J, D
bis(2-chloroethyl) ether	111-44-4	2	13.3	39.1	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	2	8.6	39.1	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	2	9.1	39.1	ND	ug/kg	U
Benzyl Alcohol	100-51-6	2	29.1	39.1	ND	ug/kg	U
2-Methylphenol	95-48-7	2	15.3	39.1	ND	ug/kg	U
Hexachloroethane	67-72-1	2	11.0	39.1	ND	ug/kg	U
4-Methylphenol	106-44-5	2	28.7	39.1	**34.2**	ug/kg	J, D
2,4-Dimethylphenol	105-67-9	2	52.4	195	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	2	11.6	39.1	ND	ug/kg	U
Naphthalene	91-20-3	2	10.3	39.1	**31.1**	ug/kg	J, D
Benzoic acid	65-85-0	2	116	391	**162**	ug/kg	J, D
Hexachlorobutadiene	87-68-3	2	9.8	39.1	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	2	11.1	39.1	**37.4**	ug/kg	J, D
Acenaphthylene	208-96-8	2	9.3	39.1	**99.4**	ug/kg	D
Dimethylphthalate	131-11-3	2	12.6	39.1	**48.8**	ug/kg	D
Acenaphthene	83-32-9	2	10.0	39.1	**30.6**	ug/kg	J, D
Dibenzofuran	132-64-9	2	9.0	39.1	**32.1**	ug/kg	J, D
Fluorene	86-73-7	2	9.7	39.1	**63.4**	ug/kg	D
Diethyl phthalate	84-66-2	2	34.6	39.1	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	2	18.7	39.1	ND	ug/kg	U
Hexachlorobenzene	118-74-1	2	9.3	39.1	ND	ug/kg	U
Pentachlorophenol	87-86-5	2	61.2	195	ND	ug/kg	U
Phenanthrene	85-01-8	2	9.2	39.1	**580**	ug/kg	D
Anthracene	120-12-7	2	11.6	39.1	**286**	ug/kg	D
Di-n-Butylphthalate	84-74-2	2	10.4	39.1	**21.1**	ug/kg	J, D
Fluoranthene	206-44-0	2	8.8	39.1	**2200**	ug/kg	D
Pyrene	129-00-0	2	10.8	39.1	**1920**	ug/kg	D
Butylbenzylphthalate	85-68-7	2	15.7	39.1	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	2	10.1	39.1	**883**	ug/kg	D
Chrysene	218-01-9	2	10.2	39.1	**1880**	ug/kg	D
bis(2-Ethylhexyl)phthalate	117-81-7	2	56.3	97.7	**82.2**	ug/kg	J, D
Di-n-Octylphthalate	117-84-0	2	17.0	39.1	ND	ug/kg	U

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
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SED-16

18H0311-06RE1 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 08/21/2018 09:25

Instrument: NT10 — Analyzed: 12-Sep-2018 01:23

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzo(b)fluoranthene	205-99-2	2	13.7	39.1	**1010**	ug/kg	D
Benzo(k)fluoranthene	207-08-9	2	9.8	39.1	**935**	ug/kg	D
Benzofluoranthenes, Total		2	19.9	78.2	**1870**	ug/kg	D
Benzo(a)pyrene	50-32-8	2	12.7	39.1	**547**	ug/kg	D
Indeno(1,2,3-cd)pyrene	193-39-5	2	11.7	39.1	**281**	ug/kg	Q, D
Dibenzo(a,h)anthracene	53-70-3	2	12.0	39.1	**106**	ug/kg	Q, D
Benzo(g,h,i)perylene	191-24-2	2	11.4	39.1	**268**	ug/kg	Q, D
Surrogate: 2-Fluorophenol				*27-120 %*	*64.5*	*%*	
Surrogate: Phenol-d5				*29-120 %*	*66.9*	*%*	
Surrogate: 2-Chlorophenol-d4				*31-120 %*	*78.3*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4				*32-120 %*	*74.2*	*%*	
Surrogate: Nitrobenzene-d5				*30-120 %*	*77.3*	*%*	
Surrogate: 2-Fluorobiphenyl				*35-120 %*	*91.8*	*%*	
Surrogate: 2,4,6-Tribromophenol				*24-134 %*	*96.7*	*%*	
Surrogate: p-Terphenyl-d14				*37-120 %*	*92.3*	*%*	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SYC-SED-17

18H0311-07 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 08/21/2018 08:10

Instrument: NT10 — Analyzed: 11-Sep-2018 00:40

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0755	Sample Size: 14.17 g (wet)	Dry Weight:10.51 g
	Prepared: 31-Aug-2018	Final Volume: 1 mL	% Solids: 74.19
Sample Cleanup:	Cleanup Method: GPC		
	Cleanup Batch: CGI0041	Initial Volume: 1 mL	
	Cleaned: 06-Sep-2018	Final Volume: 1 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	7.8	19.0	ND	ug/kg	U
bis(2-chloroethyl) ether	111-44-4	1	6.4	19.0	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	6.2	19.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	4.8	19.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	4.2	19.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	4.4	19.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	14.2	19.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	5.4	19.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	7.5	19.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	5.4	19.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	10.3	19.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	14.0	19.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.6	19.0	ND	ug/kg	U
Isophorone	78-59-1	1	7.4	19.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	6.6	19.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	25.5	95.1	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	6.0	19.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	30.4	95.1	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	5.7	19.0	ND	ug/kg	U
Naphthalene	91-20-3	1	5.0	19.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	56.2	190	ND	ug/kg	U
4-Chloroaniline	106-47-8	1	32.1	95.1	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	19.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	27.5	95.1	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	5.4	19.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	39.3	95.1	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	24.2	95.1	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.6	95.1	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	4.2	19.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	28.7	95.1	ND	ug/kg	U
Acenaphthylene	208-96-8	1	4.5	19.0	**6.5**	ug/kg	J
Dimethylphthalate	131-11-3	1	6.1	19.0	**13.2**	ug/kg	J
2,6-Dinitrotoluene	606-20-2	1	25.4	95.1	ND	ug/kg	U

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SYC-SED-17

18H0311-07 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 08/21/2018 08:10

Instrument: NT10 — Analyzed: 11-Sep-2018 00:40

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Acenaphthene	83-32-9	1	4.9	19.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	35.9	95.1	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	39.3	190	ND	ug/kg	U
Dibenzofuran	132-64-9	1	4.4	19.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	42.2	95.1	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	21.8	95.1	ND	ug/kg	U
Fluorene	86-73-7	1	4.7	19.0	**4.7**	ug/kg	J
4-Chlorophenylphenyl ether	7005-72-3	1	6.6	19.0	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	16.8	19.0	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	33.2	95.1	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	48.0	190	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	9.1	19.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	5.8	19.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	4.5	19.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	29.8	95.1	ND	ug/kg	U
Phenanthrene	85-01-8	1	4.5	19.0	**29.2**	ug/kg	
Anthracene	120-12-7	1	5.6	19.0	**11.5**	ug/kg	J
Carbazole	86-74-8	1	7.0	19.0	**8.8**	ug/kg	J
Di-n-Butylphthalate	84-74-2	1	5.1	19.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	4.3	19.0	**92.6**	ug/kg	
Pyrene	129-00-0	1	5.3	19.0	**66.6**	ug/kg	
Butylbenzylphthalate	85-68-7	1	7.7	19.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	4.9	19.0	**25.6**	ug/kg	
3,3'-Dichlorobenzidine	91-94-1	1	29.7	95.1	ND	ug/kg	U
Chrysene	218-01-9	1	5.0	19.0	**66.5**	ug/kg	
bis(2-Ethylhexyl)phthalate	117-81-7	1	27.4	47.6	**32.2**	ug/kg	J
Di-n-Octylphthalate	117-84-0	1	8.3	19.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	9.7	38.0	**76.5**	ug/kg	
Benzo(a)pyrene	50-32-8	1	6.2	19.0	**19.8**	ug/kg	
Indeno(1,2,3-cd)pyrene	193-39-5	1	5.7	19.0	**13.0**	ug/kg	J
Dibenzo(a,h)anthracene	53-70-3	1	5.9	19.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	5.5	19.0	**11.4**	ug/kg	Q, J
1-Methylnaphthalene	90-12-0	1	5.7	19.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				*27-120 %*	*65.6*	*%*	
Surrogate: Phenol-d5				*29-120 %*	*67.0*	*%*	
Surrogate: 2-Chlorophenol-d4				*31-120 %*	*80.2*	*%*	
Surrogate: 1,2-Dichlorobenzene-d4				*32-120 %*	*94.3*	*%*	
Surrogate: Nitrobenzene-d5				*30-120 %*	*88.7*	*%*	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SYC-SED-17

18H0311-07 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270D — Sampled: 08/21/2018 08:10

Instrument: NT10 — Analyzed: 11-Sep-2018 00:40

Analyte	CAS Number	Recovery Limits	Recovery	Units	Notes
Surrogate: 2-Fluorobiphenyl		*35-120 %*	*96.5*	*%*	
Surrogate: 2,4,6-Tribromophenol		*24-134 %*	*81.4*	*%*	
Surrogate: p-Terphenyl-d14		*37-120 %*	*115*	*%*	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SYC-SED-17

18H0311-07 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270D-SIM — Sampled: 08/21/2018 08:10

Instrument: NT10 — Analyzed: 11-Sep-2018 00:40

Sample Preparation: Preparation Method: EPA 3546 (Microwave)
Preparation Batch: BGH0755 — Sample Size: 14.17 g (wet) — Dry Weight:10.51 g
Prepared: 31-Aug-2018 — Final Volume: 1 mL — % Solids: 74.19

Sample Cleanup: Cleanup Method: GPC
Cleanup Batch: CGI0041 — Initial Volume: 1 mL
Cleaned: 06-Sep-2018 — Final Volume: 1 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	2.1	4.8	**18.4**	ug/kg	B
1,3-Dichlorobenzene	541-73-1	1	0.6	4.8	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.6	4.8	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.7	4.8	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	2.4	19.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	12.7	95.1	**36.7**	ug/kg	J
2-Methylphenol	95-48-7	1	1.0	4.8	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	1.6	19.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	0.8	4.8	**3.1**	ug/kg	J
2,4-Dimethylphenol	105-67-9	1	2.1	23.8	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.5	4.8	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	0.7	4.8	ND	ug/kg	U
N-Nitrosodimethylamine	62-75-9	1	2.9	23.8	ND	ug/kg	U
Dimethylphthalate	131-11-3	1	1.0	4.8	**11.4**	ug/kg	
Diethyl phthalate	84-66-2	1	4.6	19.0	**5.8**	ug/kg	J, B
N-Nitrosodiphenylamine	86-30-6	1	1.2	4.8	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	0.7	4.8	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	2.0	19.0	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	0.6	4.8	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	0.9	4.8	**5.7**	ug/kg	
Surrogate: 2-Fluorophenol				*27-120 %*	*67.4*	*%*	
Surrogate: p-Terphenyl-d14				*37-120 %*	*102*	*%*	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SYC-SED-17

18H0311-07 (Solid)

Butyl Tins

Method: EPA 8270D-SIM — Sampled: 08/21/2018 08:10

Instrument: NT14 — Analyzed: 07-Sep-2018 12:34

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0759	Sample Size: 7.16 g (wet)	Dry Weight:5.31 g
	Prepared: 31-Aug-2018	Final Volume: 0.5 mL	% Solids: 74.19
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0036	Initial Volume: 0.5 mL	
	Cleaned: 05-Sep-2018	Final Volume: 0.5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Tributyltin Ion	36643-28-4	1	0.424	3.63	**4.31**	ug/kg	
Dibutyltin Ion	14488-53-0	1	1.63	5.44	**4.47**	ug/kg	J
Butyltin Ion	78763-54-9	1	1.78	3.84	**2.40**	ug/kg	J
Tetrabutyltin	1461-25-2	1	4.71	4.71	ND	ug/kg	U
Surrogate: Tripentyltin				*30-160 %*	*72.8*	*%*	
Surrogate: Tripropyltin				*30-160 %*	*63.6*	*%*	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SYC-SED-17

18H0311-07 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 08/21/2018 08:10

Instrument: ECD7 — Analyzed: 05-Sep-2018 10:30

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGH0709	Sample Size: 17.15 g (wet)	Dry Weight:12.72 g
	Prepared: 29-Aug-2018	Final Volume: 2.5 mL	% Solids: 74.19
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0022	Initial Volume: 2.5 mL	
	Cleaned: 04-Sep-2018	Final Volume: 2.5 mL	
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CGI0020	Initial Volume: 2.5 mL	
	Cleaned: 04-Sep-2018	Final Volume: 2.5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CGI0021	Initial Volume: 2.5 mL	
	Cleaned: 04-Sep-2018	Final Volume: 2.5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.5	3.9	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.5	3.9	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.5	3.9	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.5	3.9	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.5	3.9	**2.1**	ug/kg	J
Aroclor 1254	11097-69-1	1	1.5	3.9	**3.5**	ug/kg	J
Aroclor 1260	11096-82-5	1	0.6	3.9	**1.6**	ug/kg	J
Aroclor 1262	37324-23-5	1	0.6	3.9	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	3.9	ND	ug/kg	U
Surrogate: Decachlorobiphenyl				*40-126 %*	*85.8*	*%*	
Surrogate: Tetrachlorometaxylene				*44-120 %*	*82.3*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-126 %*	*79.8*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*44-120 %*	*76.8*	*%*	

Whatcom Environmental Services	Project: Jensen's Shipyard	
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SYC-SED-17

18H0311-07 (Solid)

Metals and Metallic Compounds

Method: EPA 6020A — Sampled: 08/21/2018 08:10

Instrument: ICPMS2 — Analyzed: 04-Sep-2018 15:00

Sample Preparation: Preparation Method: SWN EPA 3050B
Preparation Batch: BGI0016 — Sample Size: 1.083 g (wet) — Dry Weight:0.60 g
Prepared: 03-Sep-2018 — Final Volume: 50 mL — % Solids: 55.38

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	20	0.03	0.33	ND	mg/kg	U
Chromium	7440-47-3	20	0.11	0.83	**20.6**	mg/kg	
Lead	7439-92-1	20	0.01	0.17	**12.8**	mg/kg	
Silver	7440-22-4	20	0.005	0.33	**0.07**	mg/kg	J

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SYC-SED-17

18H0311-07 (Solid)

Metals and Metallic Compounds

Method: EPA 6020A UCT-KED — Sampled: 08/21/2018 08:10

Instrument: ICPMS2 — Analyzed: 04-Sep-2018 15:00

Sample Preparation: Preparation Method: SWN EPA 3050B
Preparation Batch: BGI0016 — Sample Size: 1.083 g (wet) — Dry Weight:0.60 g
Prepared: 03-Sep-2018 — Final Volume: 50 mL — % Solids: 55.38

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	0.05	0.33	**4.72**	mg/kg	
Cadmium	7440-43-9	20	0.01	0.17	**0.21**	mg/kg	
Copper	7440-50-8	20	0.06	0.83	**38.8**	mg/kg	
Nickel	7440-02-0	20	0.03	0.83	**17.0**	mg/kg	
Zinc	7440-66-6	20	0.5	6.7	**39.4**	mg/kg	

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SYC-SED-17

18H0311-07 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B — Sampled: 08/21/2018 08:10

Instrument: CVAA — Analyzed: 27-Aug-2018 09:39

Sample Preparation: Preparation Method: SMM EPA 7471B
Preparation Batch: BGH0643 — Sample Size: 0.214 g (wet) — Dry Weight:0.12 g
Prepared: 24-Aug-2018 — Final Volume: 50 mL — % Solids: 55.38

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.0422	ND	mg/kg	U

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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SYC-SED-17

18H0311-07 (Solid)

Wet Chemistry

Method: PSEP 1986 — Sampled: 08/21/2018 08:10

Instrument: BAL2 — Analyzed: 27-Aug-2018 15:35

Sample Preparation: Preparation Method: PSEP 1986 (modified)
Preparation Batch: BGH0690 — Sample Size: 1 g (wet) — Dry Weight:0.74 g
Prepared: 27-Aug-2018 — Final Volume: 1 mL — % Solids: 74.41

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Volatile Solids		1	0.01	0.01	**4.23**	%	

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGH0745 — Sample Size: 5 g (wet) — Dry Weight:3.72 g
Prepared: 28-Aug-2018 — Final Volume: 5 g — % Solids: 74.41

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Solids, Sulfide		1	0.04	0.04	**85.12**	%	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SYC-SED-17

18H0311-07 (Solid)

Wet Chemistry

Method: PSEP 1986 Combustion IR — Sampled: 08/21/2018 08:10

Instrument: APOLLO2 — Analyzed: 10-Sep-2018 19:14

Sample Preparation: Preparation Method: PSEP 1986 (modified)
Preparation Batch: BGH0690 — Sample Size: 1 g (wet) — Dry Weight:0.74 g
Prepared: 27-Aug-2018 — Final Volume: 1 mL — % Solids: 74.41

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.02	0.02	**0.49**	%	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
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Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SYC-SED-17

18H0311-07 (Solid)

Wet Chemistry

Method: SM 2540 G-97 — Sampled: 08/21/2018 08:10

Instrument: BAL2 — Analyzed: 27-Aug-2018 15:35

Sample Preparation: Preparation Method: PSEP 1986 (modified)
Preparation Batch: BGH0690 — Sample Size: 1 g (wet) — Dry Weight:0.74 g
Prepared: 27-Aug-2018 — Final Volume: 1 mL — % Solids: 74.41

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Solids		1	0.04	0.04	**74.41**	%	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SYC-SED-17

18H0311-07 (Solid)

Wet Chemistry

Method: SM 4500-NH3 H-97 — Sampled: 08/21/2018 08:10

Instrument: LACHAT1 — Analyzed: 28-Aug-2018 16:55

Sample Preparation: Preparation Method: MSA 33.3 (2M KCl)
Preparation Batch: BGH0678 — Sample Size: 4.11 g (wet) — Dry Weight:3.06 g
Prepared: 27-Aug-2018 — Final Volume: 40 mL — % Solids: 74.41

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.52	0.52	**17.6**	mg/kg NH3-N	

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SYC-SED-17

18H0311-07 (Solid)

Wet Chemistry

Method: SM 4500-S2 D-00 — Sampled: 08/21/2018 08:10

Instrument: UV1800-2 — Analyzed: 28-Aug-2018 14:56

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGH0669 — Sample Size: 6.051 g (wet) — Dry Weight:5.15 g
Prepared: 27-Aug-2018 — Final Volume: 100 g — % Solids: 85.12

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfide	18496-25-8	10	9.71	9.71	**51.3**	mg/kg	D

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

SYC-SED-17

18H0311-07RE1 (Solid)

Wet Chemistry

Method: SM 4500-NH3 H-97 — Sampled: 08/21/2018 08:10

Instrument: LACHAT1 — Analyzed: 28-Aug-2018 17:12

Sample Preparation: Preparation Method: MSA 33.3 (2M KCl)
Preparation Batch: BGH0678 — Sample Size: 4.11 g (wet) — Dry Weight:3.06 g
Prepared: 27-Aug-2018 — Final Volume: 40 mL — % Solids: 74.41

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	2	1.05	1.05	**17.9**	mg/kg NH3-N	D

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0755-BLK1)	Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 15:52										
Phenol	ND	8.2	20.0	ug/kg							U
bis(2-chloroethyl) ether	ND	6.8	20.0	ug/kg							U
2-Chlorophenol	ND	6.5	20.0	ug/kg							U
1,3-Dichlorobenzene	ND	5.1	20.0	ug/kg							U
1,4-Dichlorobenzene	ND	4.4	20.0	ug/kg							U
1,2-Dichlorobenzene	ND	4.7	20.0	ug/kg							U
Benzyl Alcohol	ND	14.9	20.0	ug/kg							U
2,2'-Oxybis(1-chloropropane)	ND	5.7	20.0	ug/kg							U
2-Methylphenol	ND	7.8	20.0	ug/kg							U
Hexachloroethane	ND	5.7	20.0	ug/kg							U
N-Nitroso-di-n-Propylamine	ND	10.8	20.0	ug/kg							U
4-Methylphenol	ND	14.7	20.0	ug/kg							U
Nitrobenzene	ND	8.0	20.0	ug/kg							U
Isophorone	ND	7.8	20.0	ug/kg							U
2-Nitrophenol	ND	6.9	20.0	ug/kg							U
2,4-Dimethylphenol	ND	26.8	100	ug/kg							U
Bis(2-Chloroethoxy)methane	ND	6.3	20.0	ug/kg							U
2,4-Dichlorophenol	ND	32.0	100	ug/kg							U
1,2,4-Trichlorobenzene	ND	6.0	20.0	ug/kg							U
Naphthalene	ND	5.3	20.0	ug/kg							U
Benzoic acid	ND	59.1	200	ug/kg							U
4-Chloroaniline	ND	33.7	100	ug/kg							U
Hexachlorobutadiene	ND	5.0	20.0	ug/kg							U
4-Chloro-3-Methylphenol	ND	28.9	100	ug/kg							U
2-Methylnaphthalene	ND	5.7	20.0	ug/kg							U
Hexachlorocyclopentadiene	ND	41.3	100	ug/kg							U
2,4,6-Trichlorophenol	ND	25.4	100	ug/kg							U
2,4,5-Trichlorophenol	ND	26.9	100	ug/kg							U
2-Chloronaphthalene	ND	4.4	20.0	ug/kg							U
2-Nitroaniline	ND	30.2	100	ug/kg							U
Acenaphthylene	ND	4.8	20.0	ug/kg							U
Dimethylphthalate	ND	6.4	20.0	ug/kg							U
2,6-Dinitrotoluene	ND	26.7	100	ug/kg							U
Acenaphthene	ND	5.1	20.0	ug/kg							U
3-Nitroaniline	ND	37.7	100	ug/kg							U

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0755-BLK1)				Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 15:52							
2,4-Dinitrophenol	ND	41.3	200	ug/kg							U
Dibenzofuran	ND	4.6	20.0	ug/kg							U
4-Nitrophenol	ND	44.4	100	ug/kg							U
2,4-Dinitrotoluene	ND	22.9	100	ug/kg							U
Fluorene	ND	5.0	20.0	ug/kg							U
4-Chlorophenylphenyl ether	ND	7.0	20.0	ug/kg							U
Diethyl phthalate	20.7	17.7	20.0	ug/kg							
4-Nitroaniline	ND	34.9	100	ug/kg							U
4,6-Dinitro-2-methylphenol	ND	50.5	200	ug/kg							U
N-Nitrosodiphenylamine	ND	9.6	20.0	ug/kg							U
4-Bromophenyl phenyl ether	ND	6.1	20.0	ug/kg							U
Hexachlorobenzene	ND	4.7	20.0	ug/kg							U
Pentachlorophenol	ND	31.3	100	ug/kg							U
Phenanthrene	ND	4.7	20.0	ug/kg							U
Anthracene	ND	5.9	20.0	ug/kg							U
Carbazole	ND	7.4	20.0	ug/kg							U
Di-n-Butylphthalate	ND	5.3	20.0	ug/kg							U
Fluoranthene	ND	4.5	20.0	ug/kg							U
Pyrene	ND	5.6	20.0	ug/kg							U
Butylbenzylphthalate	ND	8.1	20.0	ug/kg							U
Benzo(a)anthracene	ND	5.2	20.0	ug/kg							U
3,3'-Dichlorobenzidine	ND	31.2	100	ug/kg							U
Chrysene	ND	5.2	20.0	ug/kg							U
bis(2-Ethylhexyl)phthalate	ND	28.8	50.0	ug/kg							U
Di-n-Octylphthalate	ND	8.7	20.0	ug/kg							U
Benzo(b)fluoranthene	ND	7.0	20.0	ug/kg							U
Benzo(k)fluoranthene	ND	5.0	20.0	ug/kg							U
Benzofluoranthenes, Total	ND	10.2	40.0	ug/kg							U
Benzo(a)pyrene	ND	6.5	20.0	ug/kg							U
Indeno(1,2,3-cd)pyrene	ND	6.0	20.0	ug/kg							U
Dibenzo(a,h)anthracene	ND	6.2	20.0	ug/kg							U
Benzo(g,h,i)perylene	ND	5.8	20.0	ug/kg							U
1-Methylnaphthalene	ND	6.0	20.0	ug/kg							U
Surrogate: 2-Fluorophenol	511			ug/kg	*750*		*68.1*	*27-120*			
Surrogate: Phenol-d5	446			ug/kg	*750*		*59.5*	*29-120*			

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0755-BLK1)				Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 15:52							
Surrogate: 2-Chlorophenol-d4	588			ug/kg	*750*		*78.4*	*31-120*			
Surrogate: 1,2-Dichlorobenzene-d4	417			ug/kg	*500*		*83.5*	*32-120*			
Surrogate: Nitrobenzene-d5	409			ug/kg	*500*		*81.7*	*30-120*			
Surrogate: 2-Fluorobiphenyl	397			ug/kg	*500*		*79.3*	*35-120*			
Surrogate: 2,4,6-Tribromophenol	585			ug/kg	*750*		*77.9*	*24-134*			
Surrogate: p-Terphenyl-d14	516			ug/kg	*500*		*103*	*37-120*			
LCS (BGH0755-BS1)				Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 16:29							
Phenol	399	8.2	20.0	ug/kg	500		79.8	34-120			
bis(2-chloroethyl) ether	387	6.8	20.0	ug/kg	500		77.4	36-120			
2-Chlorophenol	363	6.5	20.0	ug/kg	500		72.7	39-120			
1,3-Dichlorobenzene	380	5.1	20.0	ug/kg	500		76.1	40-120			
1,4-Dichlorobenzene	400	4.4	20.0	ug/kg	500		80.0	39-120			
1,2-Dichlorobenzene	409	4.7	20.0	ug/kg	500		81.7	40-120			
Benzyl Alcohol	328	14.9	20.0	ug/kg	500		65.6	19-120			
2,2'-Oxybis(1-chloropropane)	366	5.7	20.0	ug/kg	500		73.1	32-120			
2-Methylphenol	342	7.8	20.0	ug/kg	500		68.4	28-120			
Hexachloroethane	392	5.7	20.0	ug/kg	500		78.4	38-120			
N-Nitroso-di-n-Propylamine	379	10.8	20.0	ug/kg	500		75.8	34-120			
4-Methylphenol	359	14.7	20.0	ug/kg	500		71.8	29-120			
Nitrobenzene	396	8.0	20.0	ug/kg	500		79.2	36-120			
Isophorone	329	7.8	20.0	ug/kg	500		65.7	37-120			Q
2-Nitrophenol	405	6.9	20.0	ug/kg	500		80.9	30-120			
2,4-Dimethylphenol	922	26.8	100	ug/kg	1500		61.4	10-120			
Bis(2-Chloroethoxy)methane	392	6.3	20.0	ug/kg	500		78.5	39-120			
2,4-Dichlorophenol	1240	32.0	100	ug/kg	1500		82.6	28-120			
1,2,4-Trichlorobenzene	473	6.0	20.0	ug/kg	500		94.6	35-120			
Naphthalene	397	5.3	20.0	ug/kg	500		79.3	43-120			
Benzoic acid	1340	59.1	200	ug/kg	2750		48.7	10-120			
4-Chloroaniline	525	33.7	100	ug/kg	1500		35.0	11-120			Q
Hexachlorobutadiene	456	5.0	20.0	ug/kg	500		91.1	37-120			
4-Chloro-3-Methylphenol	1180	28.9	100	ug/kg	1500		78.8	32-120			
2-Methylnaphthalene	374	5.7	20.0	ug/kg	500		74.8	43-120			
Hexachlorocyclopentadiene	888	41.3	100	ug/kg	1500		59.2	10-120			Q
2,4,6-Trichlorophenol	1180	25.4	100	ug/kg	1500		78.6	30-120			

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BGH0755-BS1)	Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 16:29										
2,4,5-Trichlorophenol	1190	26.9	100	ug/kg	1500		79.2	28-120			
2-Chloronaphthalene	411	4.4	20.0	ug/kg	500		82.2	40-120			
2-Nitroaniline	1220	30.2	100	ug/kg	1500		81.3	31-126			
Acenaphthylene	383	4.8	20.0	ug/kg	500		76.5	42-120			
Dimethylphthalate	453	6.4	20.0	ug/kg	500		90.6	43-120			
2,6-Dinitrotoluene	1270	26.7	100	ug/kg	1500		84.7	33-123			
Acenaphthene	410	5.1	20.0	ug/kg	500		82.0	45-120			
3-Nitroaniline	925	37.7	100	ug/kg	1500		61.7	22-120			
2,4-Dinitrophenol	1540	41.3	200	ug/kg	2750		55.9	10-120			Q
Dibenzofuran	408	4.6	20.0	ug/kg	500		81.6	43-120			
4-Nitrophenol	1040	44.4	100	ug/kg	1500		69.4	15-138			
2,4-Dinitrotoluene	1290	22.9	100	ug/kg	1500		86.1	35-127			
Fluorene	401	5.0	20.0	ug/kg	500		80.2	45-120			
4-Chlorophenylphenyl ether	427	7.0	20.0	ug/kg	500		85.4	32-120			
Diethyl phthalate	493	17.7	20.0	ug/kg	500		98.6	50-120			B
4-Nitroaniline	799	34.9	100	ug/kg	1500		53.3	24-125			Q
4,6-Dinitro-2-methylphenol	2190	50.5	200	ug/kg	2750		79.6	24-120			
N-Nitrosodiphenylamine	422	9.6	20.0	ug/kg	500		84.4	36-120			
4-Bromophenyl phenyl ether	426	6.1	20.0	ug/kg	500		85.3	39-120			
Hexachlorobenzene	474	4.7	20.0	ug/kg	500		94.9	33-120			
Pentachlorophenol	958	31.3	100	ug/kg	1500		63.9	16-120			
Phenanthrene	429	4.7	20.0	ug/kg	500		85.8	49-120			
Anthracene	384	5.9	20.0	ug/kg	500		76.8	45-120			
Carbazole	485	7.4	20.0	ug/kg	500		96.9	43-135			
Di-n-Butylphthalate	446	5.3	20.0	ug/kg	500		89.3	48-126			
Fluoranthene	414	4.5	20.0	ug/kg	500		82.8	53-120			
Pyrene	417	5.6	20.0	ug/kg	500		83.3	48-121			
Butylbenzylphthalate	462	8.1	20.0	ug/kg	500		92.4	45-132			
Benzo(a)anthracene	437	5.2	20.0	ug/kg	500		87.4	49-120			
3,3'-Dichlorobenzidine	676	31.2	100	ug/kg	1500		45.0	10-120			
Chrysene	462	5.2	20.0	ug/kg	500		92.3	47-120			
bis(2-Ethylhexyl)phthalate	478	28.8	50.0	ug/kg	500		95.6	34-130			
Di-n-Octylphthalate	449	8.7	20.0	ug/kg	500		89.9	28-124			
Benzo(b)fluoranthene	507	7.0	20.0	ug/kg	500		101	42-132			
Benzo(k)fluoranthene	450	5.0	20.0	ug/kg	500		90.1	39-129			

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BGH0755-BS1)				Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 16:29							
Benzofluoranthenes, Total	952	10.2	40.0	ug/kg	1000		95.2	30-160			
Benzo(a)pyrene	420	6.5	20.0	ug/kg	500		84.0	42-120			
Indeno(1,2,3-cd)pyrene	427	6.0	20.0	ug/kg	500		85.3	42-123			
Dibenzo(a,h)anthracene	442	6.2	20.0	ug/kg	500		88.4	30-133			
Benzo(g,h,i)perylene	407	5.8	20.0	ug/kg	500		81.5	38-126			Q
1-Methylnaphthalene	364	6.0	20.0	ug/kg	500		72.9	42-120			
Surrogate: 2-Fluorophenol	563			ug/kg	*750*		*75.1*	*27-120*			
Surrogate: Phenol-d5	558			ug/kg	*750*		*74.4*	*29-120*			
Surrogate: 2-Chlorophenol-d4	622			ug/kg	*750*		*82.9*	*31-120*			
Surrogate: 1,2-Dichlorobenzene-d4	414			ug/kg	*500*		*82.9*	*32-120*			
Surrogate: Nitrobenzene-d5	401			ug/kg	*500*		*80.3*	*30-120*			
Surrogate: 2-Fluorobiphenyl	414			ug/kg	*500*		*82.8*	*35-120*			
Surrogate: 2,4,6-Tribromophenol	683			ug/kg	*750*		*91.0*	*24-134*			
Surrogate: p-Terphenyl-d14	511			ug/kg	*500*		*102*	*37-120*			
LCS Dup (BGH0755-BSD1)				Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 17:06							
Phenol	440	8.2	20.0	ug/kg	500		88.0	34-120	9.73	30	
bis(2-chloroethyl) ether	401	6.8	20.0	ug/kg	500		80.2	36-120	3.52	30	
2-Chlorophenol	382	6.5	20.0	ug/kg	500		76.3	39-120	4.88	30	
1,3-Dichlorobenzene	399	5.1	20.0	ug/kg	500		79.8	40-120	4.77	30	
1,4-Dichlorobenzene	420	4.4	20.0	ug/kg	500		84.0	39-120	4.85	30	
1,2-Dichlorobenzene	419	4.7	20.0	ug/kg	500		83.7	40-120	2.44	30	
Benzyl Alcohol	310	14.9	20.0	ug/kg	500		61.9	19-120	5.79	30	
2,2'-Oxybis(1-chloropropane)	388	5.7	20.0	ug/kg	500		77.6	32-120	5.89	30	
2-Methylphenol	334	7.8	20.0	ug/kg	500		66.9	28-120	2.25	30	
Hexachloroethane	409	5.7	20.0	ug/kg	500		81.8	38-120	4.24	30	
N-Nitroso-di-n-Propylamine	397	10.8	20.0	ug/kg	500		79.5	34-120	4.79	30	
4-Methylphenol	375	14.7	20.0	ug/kg	500		75.0	29-120	4.47	30	
Nitrobenzene	412	8.0	20.0	ug/kg	500		82.4	36-120	3.91	30	
Isophorone	350	7.8	20.0	ug/kg	500		70.0	37-120	6.28	30	Q
2-Nitrophenol	436	6.9	20.0	ug/kg	500		87.2	30-120	7.47	30	
2,4-Dimethylphenol	752	26.8	100	ug/kg	1500		50.1	10-120	20.30	30	
Bis(2-Chloroethoxy)methane	414	6.3	20.0	ug/kg	500		82.8	39-120	5.42	30	
2,4-Dichlorophenol	1320	32.0	100	ug/kg	1500		87.7	28-120	5.98	30	
1,2,4-Trichlorobenzene	442	6.0	20.0	ug/kg	500		88.3	35-120	6.88	30	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BGH0755-BSD1)					Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 17:06						
Naphthalene	416	5.3	20.0	ug/kg	500		83.2	43-120	4.82	30	
Benzoic acid	1900	59.1	200	ug/kg	2750		69.3	10-120	34.90	30	*
4-Chloroaniline	497	33.7	100	ug/kg	1500		33.1	11-120	5.49	30	Q
Hexachlorobutadiene	470	5.0	20.0	ug/kg	500		93.9	37-120	3.04	30	
4-Chloro-3-Methylphenol	1270	28.9	100	ug/kg	1500		84.5	32-120	6.98	30	
2-Methylnaphthalene	399	5.7	20.0	ug/kg	500		79.9	43-120	6.50	30	
Hexachlorocyclopentadiene	982	41.3	100	ug/kg	1500		65.5	10-120	10.10	30	Q
2,4,6-Trichlorophenol	1280	25.4	100	ug/kg	1500		85.2	30-120	7.96	30	
2,4,5-Trichlorophenol	1240	26.9	100	ug/kg	1500		82.8	28-120	4.40	30	
2-Chloronaphthalene	423	4.4	20.0	ug/kg	500		84.6	40-120	2.90	30	
2-Nitroaniline	1280	30.2	100	ug/kg	1500		85.3	31-126	4.85	30	
Acenaphthylene	401	4.8	20.0	ug/kg	500		80.2	42-120	4.67	30	
Dimethylphthalate	482	6.4	20.0	ug/kg	500		96.4	43-120	6.27	30	
2,6-Dinitrotoluene	1340	26.7	100	ug/kg	1500		89.1	33-123	5.08	30	
Acenaphthene	429	5.1	20.0	ug/kg	500		85.8	45-120	4.45	30	
3-Nitroaniline	885	37.7	100	ug/kg	1500		59.0	22-120	4.39	30	
2,4-Dinitrophenol	1780	41.3	200	ug/kg	2750		64.7	10-120	14.60	30	Q
Dibenzofuran	429	4.6	20.0	ug/kg	500		85.9	43-120	5.13	30	
4-Nitrophenol	1160	44.4	100	ug/kg	1500		77.5	15-138	10.90	30	
2,4-Dinitrotoluene	1370	22.9	100	ug/kg	1500		91.0	35-127	5.60	30	
Fluorene	424	5.0	20.0	ug/kg	500		84.8	45-120	5.63	30	
4-Chlorophenylphenyl ether	452	7.0	20.0	ug/kg	500		90.5	32-120	5.80	30	
Diethyl phthalate	551	17.7	20.0	ug/kg	500		110	50-120	11.10	30	B
4-Nitroaniline	784	34.9	100	ug/kg	1500		52.3	24-125	1.89	30	Q
4,6-Dinitro-2-methylphenol	2330	50.5	200	ug/kg	2750		84.6	24-120	6.09	30	
N-Nitrosodiphenylamine	397	9.6	20.0	ug/kg	500		79.4	36-120	6.05	30	
4-Bromophenyl phenyl ether	449	6.1	20.0	ug/kg	500		89.8	39-120	5.11	30	
Hexachlorobenzene	550	4.7	20.0	ug/kg	500		110	33-120	14.80	30	
Pentachlorophenol	999	31.3	100	ug/kg	1500		66.6	16-120	4.18	30	
Phenanthrene	435	4.7	20.0	ug/kg	500		87.0	49-120	1.38	30	
Anthracene	392	5.9	20.0	ug/kg	500		78.5	45-120	2.19	30	
Carbazole	477	7.4	20.0	ug/kg	500		95.4	43-135	1.54	30	
Di-n-Butylphthalate	475	5.3	20.0	ug/kg	500		95.0	48-126	6.19	30	
Fluoranthene	452	4.5	20.0	ug/kg	500		90.4	53-120	8.83	30	
Pyrene	451	5.6	20.0	ug/kg	500		90.1	48-121	7.85	30	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BGH0755-BSD1)					Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 17:06						
Butylbenzylphthalate	494	8.1	20.0	ug/kg	500		98.9	45-132	6.75	30	
Benzo(a)anthracene	463	5.2	20.0	ug/kg	500		92.5	49-120	5.67	30	
3,3'-Dichlorobenzidine	172	31.2	100	ug/kg	1500		11.5	10-120	119.00	30	*
Chrysene	501	5.2	20.0	ug/kg	500		100	47-120	8.20	30	
bis(2-Ethylhexyl)phthalate	496	28.8	50.0	ug/kg	500		99.1	34-130	3.61	30	
Di-n-Octylphthalate	470	8.7	20.0	ug/kg	500		94.0	28-124	4.51	30	
Benzo(b)fluoranthene	481	7.0	20.0	ug/kg	500		96.1	42-132	5.25	30	
Benzo(k)fluoranthene	515	5.0	20.0	ug/kg	500		103	39-129	13.40	30	
Benzofluoranthenes, Total	996	10.2	40.0	ug/kg	1000		99.6	30-160	4.47	30	
Benzo(a)pyrene	430	6.5	20.0	ug/kg	500		86.0	42-120	2.31	30	
Indeno(1,2,3-cd)pyrene	461	6.0	20.0	ug/kg	500		92.2	42-123	7.73	30	
Dibenzo(a,h)anthracene	465	6.2	20.0	ug/kg	500		93.1	30-133	5.12	30	
Benzo(g,h,i)perylene	433	5.8	20.0	ug/kg	500		86.6	38-126	6.05	30	Q
1-Methylnaphthalene	380	6.0	20.0	ug/kg	500		76.1	42-120	4.27	30	
Surrogate: 2-Fluorophenol	587			ug/kg	*750*		*78.2*	*27-120*			
Surrogate: Phenol-d5	574			ug/kg	*750*		*76.6*	*29-120*			
Surrogate: 2-Chlorophenol-d4	642			ug/kg	*750*		*85.6*	*31-120*			
Surrogate: 1,2-Dichlorobenzene-d4	424			ug/kg	*500*		*84.7*	*32-120*			
Surrogate: Nitrobenzene-d5	424			ug/kg	*500*		*84.8*	*30-120*			
Surrogate: 2-Fluorobiphenyl	431			ug/kg	*500*		*86.2*	*35-120*			
Surrogate: 2,4,6-Tribromophenol	712			ug/kg	*750*		*94.9*	*24-134*			
Surrogate: p-Terphenyl-d14	544			ug/kg	*500*		*109*	*37-120*			
Matrix Spike (BGH0755-MS1)		**Source: 18H0311-05**			Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 21:36						
Phenol	373	8.1	19.8	ug/kg	494	45.1	66.4	34-120			
bis(2-chloroethyl) ether	364	6.7	19.8	ug/kg	494	ND	73.7	36-120			
2-Chlorophenol	354	6.4	19.8	ug/kg	494	ND	71.7	39-120			
1,3-Dichlorobenzene	365	5.0	19.8	ug/kg	494	ND	73.9	40-120			
1,4-Dichlorobenzene	390	4.3	19.8	ug/kg	494	ND	78.9	39-120			
1,2-Dichlorobenzene	404	4.6	19.8	ug/kg	494	ND	81.7	40-120			
Benzyl Alcohol	317	14.7	19.8	ug/kg	494	ND	64.2	19-120			
2,2'-Oxybis(1-chloropropane)	376	5.6	19.8	ug/kg	494	ND	76.2	32-120			
2-Methylphenol	398	7.7	19.8	ug/kg	494	ND	80.6	28-120			
Hexachloroethane	325	5.6	19.8	ug/kg	494	ND	65.8	38-120			
N-Nitroso-di-n-Propylamine	408	10.7	19.8	ug/kg	494	ND	82.5	34-120			

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BGH0755-MS1)	**Source: 18H0311-05**			Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 21:36							
4-Methylphenol	418	14.5	19.8	ug/kg	494	ND	84.6	29-120			
Nitrobenzene	408	7.9	19.8	ug/kg	494	ND	82.5	36-120			
Isophorone	339	7.7	19.8	ug/kg	494	ND	68.5	37-120			Q
2-Nitrophenol	399	6.8	19.8	ug/kg	494	ND	80.8	30-120			
2,4-Dimethylphenol	427	26.5	98.8	ug/kg	1480	ND	28.8	10-120			
Bis(2-Chloroethoxy)methane	404	6.3	19.8	ug/kg	494	ND	81.7	39-120			
2,4-Dichlorophenol	1200	31.6	98.8	ug/kg	1480	ND	80.9	28-120			
1,2,4-Trichlorobenzene	465	5.9	19.8	ug/kg	494	ND	94.1	35-120			
Naphthalene	424	5.2	19.8	ug/kg	494	24.5	80.8	43-120			
Benzoic acid	1590	58.4	198	ug/kg	2720	173	52.2	10-120			
4-Chloroaniline	ND	33.3	98.8	ug/kg	1480	ND		11-120			*, Q, U
Hexachlorobutadiene	456	5.0	19.8	ug/kg	494	ND	92.4	37-120			
4-Chloro-3-Methylphenol	1110	28.6	98.8	ug/kg	1480	ND	75.2	32-120			
2-Methylnaphthalene	418	5.6	19.8	ug/kg	494	23.7	79.7	43-120			
Hexachlorocyclopentadiene	341	40.8	98.8	ug/kg	1480	ND	23.0	10-120			Q
2,4,6-Trichlorophenol	1310	25.1	98.8	ug/kg	1480	ND	88.4	30-120			
2,4,5-Trichlorophenol	1200	26.6	98.8	ug/kg	1480	ND	81.2	28-120			
2-Chloronaphthalene	434	4.4	19.8	ug/kg	494	ND	87.9	40-120			
2-Nitroaniline	749	29.8	98.8	ug/kg	1480	ND	50.5	31-126			
Acenaphthylene	400	4.7	19.8	ug/kg	494	25.5	75.9	42-120			
Dimethylphthalate	436	6.4	19.8	ug/kg	494	32.2	81.7	43-120			
2,6-Dinitrotoluene	1200	26.4	98.8	ug/kg	1480	ND	81.1	33-123			
Acenaphthene	410	5.1	19.8	ug/kg	494	9.6	81.0	45-120			
3-Nitroaniline	ND	37.3	98.8	ug/kg	1480	ND		22-120			*, U
2,4-Dinitrophenol	373	40.8	198	ug/kg	2720	ND	13.7	10-120			Q
Dibenzofuran	403	4.6	19.8	ug/kg	494	9.7	79.7	43-120			
4-Nitrophenol	1140	43.9	98.8	ug/kg	1480	ND	76.8	15-138			
2,4-Dinitrotoluene	1220	22.6	98.8	ug/kg	1480	ND	82.4	35-127			
Fluorene	394	4.9	19.8	ug/kg	494	ND	79.7	45-120			
4-Chlorophenylphenyl ether	420	6.9	19.8	ug/kg	494	ND	84.9	32-120			
Diethyl phthalate	404	17.5	19.8	ug/kg	494	ND	81.8	50-120			B
4-Nitroaniline	ND	34.5	98.8	ug/kg	1480	ND		24-125			*, Q, U
4,6-Dinitro-2-methylphenol	1510	49.9	198	ug/kg	2720	ND	55.7	24-120			
N-Nitrosodiphenylamine	261	9.5	19.8	ug/kg	494	ND	52.8	36-120			
4-Bromophenyl phenyl ether	416	6.0	19.8	ug/kg	494	ND	84.2	39-120			

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BGH0755-MS1)	**Source: 18H0311-05**			Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 21:36							
Hexachlorobenzene	455	4.7	19.8	ug/kg	494	ND	92.0	33-120			
Pentachlorophenol	1210	30.9	98.8	ug/kg	1480	ND	81.6	16-120			
Phenanthrene	587	4.6	19.8	ug/kg	494	115	95.6	49-120			
Anthracene	415	5.9	19.8	ug/kg	494	53.3	73.3	45-120			
Carbazole	512	7.3	19.8	ug/kg	494	31.2	97.3	43-135			
Di-n-Butylphthalate	420	5.2	19.8	ug/kg	494	ND	84.9	48-126			
Fluoranthene	877	4.5	19.8	ug/kg	494	415	93.5	53-120			
Pyrene	893	5.5	19.8	ug/kg	494	357	109	48-121			
Butylbenzylphthalate	457	8.0	19.8	ug/kg	494	ND	92.4	45-132			
Benzo(a)anthracene	659	5.1	19.8	ug/kg	494	152	103	49-120			
3,3'-Dichlorobenzidine	ND	30.8	98.8	ug/kg	1480	ND		10-120			*, U
Chrysene	912	5.2	19.8	ug/kg	494	360	112	47-120			
bis(2-Ethylhexyl)phthalate	518	28.5	49.4	ug/kg	494	64.1	91.8	34-130			
Di-n-Octylphthalate	447	8.6	19.8	ug/kg	494	ND	90.4	28-124			
Benzo(b)fluoranthene	717	6.9	19.8	ug/kg	494	211	103	42-132			
Benzo(k)fluoranthene	728	5.0	19.8	ug/kg	494	209	105	39-129			
Benzofluoranthenes, Total	1420	10.1	39.5	ug/kg	988	404	102	30-160			
Benzo(a)pyrene	592	6.4	19.8	ug/kg	494	117	96.2	42-120			
Indeno(1,2,3-cd)pyrene	568	5.9	19.8	ug/kg	494	75.8	99.7	42-123			
Dibenzo(a,h)anthracene	500	6.1	19.8	ug/kg	494	23.3	96.5	30-133			
Benzo(g,h,i)perylene	569	5.8	19.8	ug/kg	494	71.5	101	38-126			Q
1-Methylnaphthalene	392	5.9	19.8	ug/kg	494	15.5	76.2	42-120			
Surrogate: 2-Fluorophenol	540			ug/kg	*741*	*485*	*72.9*	*27-120*			
Surrogate: Phenol-d5	538			ug/kg	*741*	*467*	*72.5*	*29-120*			
Surrogate: 2-Chlorophenol-d4	595			ug/kg	*741*	*561*	*80.2*	*31-120*			
Surrogate: 1,2-Dichlorobenzene-d4	414			ug/kg	*494*	*395*	*83.8*	*32-120*			
Surrogate: Nitrobenzene-d5	420			ug/kg	*494*	*383*	*85.0*	*30-120*			
Surrogate: 2-Fluorobiphenyl	437			ug/kg	*494*	*423*	*88.5*	*35-120*			
Surrogate: 2,4,6-Tribromophenol	687			ug/kg	*741*	*722*	*92.6*	*24-134*			
Surrogate: p-Terphenyl-d14	497			ug/kg	*494*	*497*	*101*	*37-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BGH0755-MSD1)	**Source: 18H0311-05**			Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 22:13							
Phenol	383	8.1	19.8	ug/kg	494	45.1	68.5	34-120	2.63	30	
bis(2-chloroethyl) ether	355	6.7	19.8	ug/kg	494	ND	71.8	36-120	2.48	30	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BGH0755-MSD1)	**Source: 18H0311-05**			Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 22:13							
2-Chlorophenol	349	6.4	19.8	ug/kg	494	ND	70.7	39-120	1.46	30	
1,3-Dichlorobenzene	370	5.0	19.8	ug/kg	494	ND	74.9	40-120	1.35	30	
1,4-Dichlorobenzene	385	4.3	19.8	ug/kg	494	ND	77.9	39-120	1.32	30	
1,2-Dichlorobenzene	392	4.6	19.8	ug/kg	494	ND	79.4	40-120	2.81	30	
Benzyl Alcohol	397	14.7	19.8	ug/kg	494	ND	80.3	19-120	22.30	30	
2,2'-Oxybis(1-chloropropane)	358	5.6	19.8	ug/kg	494	ND	72.4	32-120	5.06	30	
2-Methylphenol	325	7.7	19.8	ug/kg	494	ND	65.8	28-120	20.20	30	
Hexachloroethane	256	5.6	19.8	ug/kg	494	ND	51.9	38-120	23.70	30	
N-Nitroso-di-n-Propylamine	394	10.7	19.8	ug/kg	494	ND	79.8	34-120	3.27	30	
4-Methylphenol	414	14.5	19.8	ug/kg	494	ND	83.9	29-120	0.88	30	
Nitrobenzene	395	7.9	19.8	ug/kg	494	ND	80.0	36-120	3.15	30	
Isophorone	334	7.7	19.8	ug/kg	494	ND	67.7	37-120	1.24	30	Q
2-Nitrophenol	387	6.8	19.8	ug/kg	494	ND	78.4	30-120	3.00	30	
2,4-Dimethylphenol	344	26.5	98.8	ug/kg	1480	ND	23.2	10-120	21.70	30	
Bis(2-Chloroethoxy)methane	393	6.3	19.8	ug/kg	494	ND	79.5	39-120	2.69	30	
2,4-Dichlorophenol	1160	31.6	98.8	ug/kg	1480	ND	78.3	28-120	3.25	30	
1,2,4-Trichlorobenzene	443	5.9	19.8	ug/kg	494	ND	89.6	35-120	4.89	30	
Naphthalene	420	5.2	19.8	ug/kg	494	24.5	80.1	43-120	0.82	30	
Benzoic acid	1990	58.4	198	ug/kg	2720	173	66.8	10-120	22.10	30	
4-Chloroaniline	ND	33.3	98.8	ug/kg	1480	ND		11-120			*, Q, U
Hexachlorobutadiene	441	5.0	19.8	ug/kg	494	ND	89.2	37-120	3.46	30	
4-Chloro-3-Methylphenol	1110	28.6	98.8	ug/kg	1480	ND	75.0	32-120	0.26	30	
2-Methylnaphthalene	402	5.6	19.8	ug/kg	494	23.7	76.5	43-120	3.90	30	
Hexachlorocyclopentadiene	142	40.8	98.8	ug/kg	1480	ND	9.56	10-120	82.60	30	*, Q
2,4,6-Trichlorophenol	986	25.1	98.8	ug/kg	1480	ND	66.5	30-120	28.20	30	
2,4,5-Trichlorophenol	1210	26.6	98.8	ug/kg	1480	ND	81.6	28-120	0.53	30	
2-Chloronaphthalene	381	4.4	19.8	ug/kg	494	ND	77.2	40-120	13.00	30	
2-Nitroaniline	469	29.8	98.8	ug/kg	1480	ND	31.7	31-126	45.90	30	*
Acenaphthylene	329	4.7	19.8	ug/kg	494	25.5	61.5	42-120	19.50	30	
Dimethylphthalate	398	6.4	19.8	ug/kg	494	32.2	74.1	43-120	8.99	30	
2,6-Dinitrotoluene	1090	26.4	98.8	ug/kg	1480	ND	73.4	33-123	10.10	30	
Acenaphthene	362	5.1	19.8	ug/kg	494	9.6	71.4	45-120	12.30	30	
3-Nitroaniline	ND	37.3	98.8	ug/kg	1480	ND		22-120			*, U
2,4-Dinitrophenol	414	40.8	198	ug/kg	2720	ND	15.2	10-120	10.50	30	
Dibenzofuran	394	4.6	19.8	ug/kg	494	9.7	77.8	43-120	2.35	30	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BGH0755-MSD1)	**Source: 18H0311-05**			Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 22:13							
4-Nitrophenol	1010	43.9	98.8	ug/kg	1480	ND	67.9	15-138	12.20	30	
2,4-Dinitrotoluene	1090	22.6	98.8	ug/kg	1480	ND	73.6	35-127	11.30	30	
Fluorene	355	4.9	19.8	ug/kg	494	ND	71.8	45-120	10.40	30	
4-Chlorophenylphenyl ether	406	6.9	19.8	ug/kg	494	ND	82.2	32-120	3.24	30	
Diethyl phthalate	417	17.5	19.8	ug/kg	494	ND	84.4	50-120	3.15	30	B
4-Nitroaniline	ND	34.5	98.8	ug/kg	1480	ND		24-125			*, Q, U
4,6-Dinitro-2-methylphenol	1580	49.9	198	ug/kg	2720	ND	58.1	24-120	4.25	30	
N-Nitrosodiphenylamine	141	9.5	19.8	ug/kg	494	ND	28.5	36-120	59.90	30	*
4-Bromophenyl phenyl ether	436	6.0	19.8	ug/kg	494	ND	88.3	39-120	4.75	30	
Hexachlorobenzene	463	4.7	19.8	ug/kg	494	ND	93.8	33-120	1.89	30	
Pentachlorophenol	1470	30.9	98.8	ug/kg	1480	ND	98.9	16-120	19.20	30	
Phenanthrene	640	4.6	19.8	ug/kg	494	115	106	49-120	8.51	30	
Anthracene	416	5.9	19.8	ug/kg	494	53.3	73.3	45-120	0.02	30	
Carbazole	492	7.3	19.8	ug/kg	494	31.2	93.3	43-135	3.95	30	
Di-n-Butylphthalate	419	5.2	19.8	ug/kg	494	ND	84.7	48-126	0.26	30	
Fluoranthene	784	4.5	19.8	ug/kg	494	415	74.7	53-120	11.20	30	
Pyrene	763	5.5	19.8	ug/kg	494	357	82.3	48-121	15.70	30	
Butylbenzylphthalate	470	8.0	19.8	ug/kg	494	ND	95.1	45-132	2.88	30	
Benzo(a)anthracene	579	5.1	19.8	ug/kg	494	152	86.5	49-120	13.00	30	
3,3'-Dichlorobenzidine	ND	30.8	98.8	ug/kg	1480	ND		10-120			*, U
Chrysene	888	5.2	19.8	ug/kg	494	360	107	47-120	2.61	30	
bis(2-Ethylhexyl)phthalate	581	28.5	49.4	ug/kg	494	64.1	105	34-130	11.50	30	
Di-n-Octylphthalate	452	8.6	19.8	ug/kg	494	ND	91.4	28-124	1.14	30	
Benzo(b)fluoranthene	725	6.9	19.8	ug/kg	494	211	104	42-132	1.07	30	
Benzo(k)fluoranthene	647	5.0	19.8	ug/kg	494	209	88.6	39-129	11.80	30	
Benzofluoranthenes, Total	1350	10.1	39.5	ug/kg	988	404	95.7	30-160	4.73	30	
Benzo(a)pyrene	482	6.4	19.8	ug/kg	494	117	73.9	42-120	20.50	30	
Indeno(1,2,3-cd)pyrene	538	5.9	19.8	ug/kg	494	75.8	93.6	42-123	5.42	30	
Dibenzo(a,h)anthracene	481	6.1	19.8	ug/kg	494	23.3	92.6	30-133	3.90	30	
Benzo(g,h,i)perylene	507	5.8	19.8	ug/kg	494	71.5	88.1	38-126	11.70	30	Q
1-Methylnaphthalene	382	5.9	19.8	ug/kg	494	15.5	74.2	42-120	2.52	30	
Surrogate: 2-Fluorophenol	524			ug/kg	*741*	*485*	*70.7*	*27-120*			
Surrogate: Phenol-d5	549			ug/kg	*741*	*467*	*74.0*	*29-120*			
Surrogate: 2-Chlorophenol-d4	600			ug/kg	*741*	*561*	*80.9*	*31-120*			
Surrogate: 1,2-Dichlorobenzene-d4	392			ug/kg	*494*	*395*	*79.4*	*32-120*			

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BGH0755-MSD1)	**Source: 18H0311-05**			Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 22:13							
Surrogate: Nitrobenzene-d5	401			ug/kg	*494*	*383*	*81.1*	*30-120*			
Surrogate: 2-Fluorobiphenyl	389			ug/kg	*494*	*423*	*78.7*	*35-120*			
Surrogate: 2,4,6-Tribromophenol	634			ug/kg	*741*	*722*	*85.6*	*24-134*			
Surrogate: p-Terphenyl-d14	502			ug/kg	*494*	*497*	*102*	*37-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - SIM - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0755-BLK2)				Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 15:52							
Phenol	5.9	2.2	5.0	ug/kg							
1,3-Dichlorobenzene	ND	0.6	5.0	ug/kg							U
1,4-Dichlorobenzene	ND	0.6	5.0	ug/kg							U
1,2-Dichlorobenzene	ND	0.7	5.0	ug/kg							U
Benzyl Alcohol	ND	2.5	20.0	ug/kg							U
Benzoic acid	ND	13.4	100	ug/kg							U
2-Methylphenol	ND	1.1	5.0	ug/kg							U
N-Nitroso-di-n-Propylamine	ND	1.7	20.0	ug/kg							U
4-Methylphenol	ND	0.9	5.0	ug/kg							U
2,4-Dimethylphenol	ND	2.2	25.0	ug/kg							U
1,2,4-Trichlorobenzene	ND	2.7	5.0	ug/kg							U
Hexachlorobutadiene	ND	0.7	5.0	ug/kg							U
N-Nitrosodimethylamine	ND	3.1	25.0	ug/kg							U
Dimethylphthalate	ND	1.0	5.0	ug/kg							U
Diethyl phthalate	24.8	4.8	20.0	ug/kg							
N-Nitrosodiphenylamine	ND	1.3	5.0	ug/kg							U
Hexachlorobenzene	ND	0.7	5.0	ug/kg							U
Pentachlorophenol	ND	2.1	20.0	ug/kg							U
Butylbenzylphthalate	ND	0.7	5.0	ug/kg							U
Dibenzo(a,h)anthracene	ND	0.9	5.0	ug/kg							U
Surrogate: 2-Fluorophenol	518			ug/kg	*750*		*69.1*	*27-120*			
Surrogate: p-Terphenyl-d14	444			ug/kg	*500*		*88.7*	*37-120*			
LCS (BGH0755-BS2)				Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 16:29							
Phenol	410	2.2	5.0	ug/kg	500		81.9	30-160			B
1,3-Dichlorobenzene	369	0.6	5.0	ug/kg	500		73.8	30-120			
1,4-Dichlorobenzene	372	0.6	5.0	ug/kg	500		74.4	36-120			
1,2-Dichlorobenzene	391	0.7	5.0	ug/kg	500		78.2	36-120			
Benzyl Alcohol	367	2.5	20.0	ug/kg	500		73.5	25-123			
Benzoic acid	1590	13.4	100	ug/kg	2750		57.8	10-160			
2-Methylphenol	409	1.1	5.0	ug/kg	500		81.8	26-120			
N-Nitroso-di-n-Propylamine	390	1.7	20.0	ug/kg	500		77.9	30-160			
4-Methylphenol	365	0.9	5.0	ug/kg	500		73.0	30-160			
2,4-Dimethylphenol	961	2.2	25.0	ug/kg	1500		64.1	10-120			
1,2,4-Trichlorobenzene	393	2.7	5.0	ug/kg	500		78.7	35-120			

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - SIM - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BGH0755-BS2)				Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 16:29							
Hexachlorobutadiene	430	0.7	5.0	ug/kg	500		86.0	34-120			
N-Nitrosodimethylamine	877	3.1	25.0	ug/kg	1500		58.5	30-160			
Dimethylphthalate	438	1.0	5.0	ug/kg	500		87.6	38-120			
Diethyl phthalate	476	4.8	20.0	ug/kg	500		95.1	55-120			B
N-Nitrosodiphenylamine	409	1.3	5.0	ug/kg	500		81.8	27-120			
Hexachlorobenzene	440	0.7	5.0	ug/kg	500		87.9	32-120			
Pentachlorophenol	1010	2.1	20.0	ug/kg	1500		67.6	26-120			Q
Butylbenzylphthalate	455	0.7	5.0	ug/kg	500		91.0	32-142			
Dibenzo(a,h)anthracene	429	0.9	5.0	ug/kg	500		85.8	28-125			
Surrogate: 2-Fluorophenol	568			ug/kg	*750*		*75.8*	*27-120*			
Surrogate: p-Terphenyl-d14	447			ug/kg	*500*		*89.4*	*37-120*			
LCS Dup (BGH0755-BSD2)				Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 17:06							
Phenol	456	2.2	5.0	ug/kg	500		91.2	30-160	10.70	30	B
1,3-Dichlorobenzene	390	0.6	5.0	ug/kg	500		77.9	30-120	5.42	30	
1,4-Dichlorobenzene	399	0.6	5.0	ug/kg	500		79.9	36-120	7.06	30	
1,2-Dichlorobenzene	413	0.7	5.0	ug/kg	500		82.6	36-120	5.50	30	
Benzyl Alcohol	381	2.5	20.0	ug/kg	500		76.3	25-123	3.74	30	
Benzoic acid	2030	13.4	100	ug/kg	2750		73.8	10-160	24.30	30	
2-Methylphenol	422	1.1	5.0	ug/kg	500		84.5	26-120	3.20	30	
N-Nitroso-di-n-Propylamine	413	1.7	20.0	ug/kg	500		82.6	30-160	5.84	30	
4-Methylphenol	384	0.9	5.0	ug/kg	500		76.9	30-160	5.10	30	
2,4-Dimethylphenol	789	2.2	25.0	ug/kg	1500		52.6	10-120	19.70	30	
1,2,4-Trichlorobenzene	408	2.7	5.0	ug/kg	500		81.7	35-120	3.72	30	
Hexachlorobutadiene	452	0.7	5.0	ug/kg	500		90.4	34-120	5.02	30	
N-Nitrosodimethylamine	956	3.1	25.0	ug/kg	1500		63.8	30-160	8.63	30	
Dimethylphthalate	457	1.0	5.0	ug/kg	500		91.3	38-120	4.16	30	
Diethyl phthalate	499	4.8	20.0	ug/kg	500		99.8	55-120	4.79	30	B
N-Nitrosodiphenylamine	389	1.3	5.0	ug/kg	500		77.8	27-120	5.01	30	
Hexachlorobenzene	459	0.7	5.0	ug/kg	500		91.8	32-120	4.34	30	
Pentachlorophenol	1090	2.1	20.0	ug/kg	1500		72.6	26-120	7.07	30	Q
Butylbenzylphthalate	476	0.7	5.0	ug/kg	500		95.3	32-142	4.56	30	
Dibenzo(a,h)anthracene	452	0.9	5.0	ug/kg	500		90.4	28-125	5.24	30	
Surrogate: 2-Fluorophenol	596			ug/kg	*750*		*79.5*	*27-120*			

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - SIM - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BGH0755-BSD2)				Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 17:06							
Surrogate: p-Terphenyl-d14	461			ug/kg	*500*		*92.3*	*37-120*			
Matrix Spike (BGH0755-MS2)		**Source: 18H0311-05**		Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 21:36							
Phenol	396	2.2	4.9	ug/kg	494	48.8	70.2	30-160			B
1,3-Dichlorobenzene	374	0.6	4.9	ug/kg	494	ND	75.7	30-120			
1,4-Dichlorobenzene	383	0.6	4.9	ug/kg	494	ND	77.5	36-120			
1,2-Dichlorobenzene	404	0.7	4.9	ug/kg	494	ND	81.8	36-120			
Benzyl Alcohol	342	2.5	19.8	ug/kg	494	ND	69.1	25-123			
Benzoic acid	1770	13.2	98.9	ug/kg	2720	177	58.6	10-160			
2-Methylphenol	433	1.1	4.9	ug/kg	494	2.9	87.0	26-120			
N-Nitroso-di-n-Propylamine	418	1.7	19.8	ug/kg	494	ND	84.6	30-160			
4-Methylphenol	384	0.9	4.9	ug/kg	494	20.1	73.6	30-160			
2,4-Dimethylphenol	443	2.1	24.7	ug/kg	1480	ND	29.9	10-120			
1,2,4-Trichlorobenzene	394	2.6	4.9	ug/kg	494	ND	79.7	35-120			
Hexachlorobutadiene	431	0.7	4.9	ug/kg	494	ND	87.3	34-120			
N-Nitrosodimethylamine	919	3.0	24.7	ug/kg	1480	ND	62.0	30-160			
Dimethylphthalate	431	1.0	4.9	ug/kg	494	ND	87.1	38-120			
Diethyl phthalate	442	4.8	19.8	ug/kg	494	11.7	87.1	55-120			B
N-Nitrosodiphenylamine	262	1.3	4.9	ug/kg	494	ND	52.9	27-120			
Hexachlorobenzene	447	0.7	4.9	ug/kg	494	ND	90.4	32-120			
Pentachlorophenol	1310	2.1	19.8	ug/kg	1480	5.0	88.1	26-120			Q
Butylbenzylphthalate	454	0.7	4.9	ug/kg	494	ND	91.8	32-142			
Dibenzo(a,h)anthracene	495	0.9	4.9	ug/kg	494	23.5	95.4	28-125			
Surrogate: 2-Fluorophenol	554			ug/kg	*741*	*490*	*74.7*	*27-120*			
Surrogate: p-Terphenyl-d14	453			ug/kg	*494*	*442*	*91.6*	*37-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BGH0755-MSD2)		**Source: 18H0311-05**		Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 22:13							
Phenol	401	2.2	4.9	ug/kg	494	48.8	71.4	30-160	1.42	30	B
1,3-Dichlorobenzene	359	0.6	4.9	ug/kg	494	ND	72.6	30-120	4.19	30	
1,4-Dichlorobenzene	372	0.6	4.9	ug/kg	494	ND	75.2	36-120	2.93	30	
1,2-Dichlorobenzene	388	0.7	4.9	ug/kg	494	ND	78.4	36-120	4.18	30	
Benzyl Alcohol	440	2.5	19.8	ug/kg	494	ND	89.1	25-123	25.20	30	
Benzoic acid	2170	13.2	98.9	ug/kg	2720	177	73.3	10-160	20.30	30	
2-Methylphenol	370	1.1	4.9	ug/kg	494	2.9	74.4	26-120	15.60	30	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Semivolatile Organic Compounds - SIM - Quality Control

Batch BGH0755 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BGH0755-MSD2)	**Source: 18H0311-05**			Prepared: 31-Aug-2018 Analyzed: 10-Sep-2018 22:13							
N-Nitroso-di-n-Propylamine	416	1.7	19.8	ug/kg	494	ND	84.2	30-160	0.48	30	
4-Methylphenol	378	0.9	4.9	ug/kg	494	20.1	72.4	30-160	1.52	30	
2,4-Dimethylphenol	357	2.1	24.7	ug/kg	1480	ND	24.1	10-120	21.40	30	
1,2,4-Trichlorobenzene	387	2.6	4.9	ug/kg	494	ND	78.4	35-120	1.71	30	
Hexachlorobutadiene	427	0.7	4.9	ug/kg	494	ND	86.3	34-120	1.10	30	
N-Nitrosodimethylamine	915	3.0	24.7	ug/kg	1480	ND	61.7	30-160	0.36	30	
Dimethylphthalate	414	1.0	4.9	ug/kg	494	ND	83.7	38-120	3.94	30	
Diethyl phthalate	439	4.8	19.8	ug/kg	494	11.7	86.4	55-120	0.75	30	B
N-Nitrosodiphenylamine	175	1.3	4.9	ug/kg	494	ND	35.4	27-120	39.70	30	*
Hexachlorobenzene	447	0.7	4.9	ug/kg	494	ND	90.5	32-120	0.12	30	
Pentachlorophenol	1430	2.1	19.8	ug/kg	1480	5.0	95.8	26-120	8.35	30	Q
Butylbenzylphthalate	451	0.7	4.9	ug/kg	494	ND	91.2	32-142	0.64	30	
Dibenzo(a,h)anthracene	476	0.9	4.9	ug/kg	494	23.5	91.5	28-125	3.97	30	
Surrogate: 2-Fluorophenol	533			ug/kg	*741*	*490*	*72.0*	*27-120*			
Surrogate: p-Terphenyl-d14	458			ug/kg	*494*	*442*	*92.7*	*37-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Butyl Tins - Quality Control

Batch BGH0759 - EPA 3546 (Microwave)

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0759-BLK1)				Prepared: 31-Aug-2018 Analyzed: 07-Sep-2018 10:46							
Tributyltin Ion	ND	0.450	3.86	ug/kg							U
Dibutyltin Ion	ND	1.73	5.78	ug/kg							U
Butyltin Ion	ND	1.89	4.08	ug/kg							U
Tetrabutyltin	ND	5.00	5.00	ug/kg							U
Surrogate: Tripentyltin	28.0			ug/kg	*45.2*		*61.9*	*30-160*			
Surrogate: Tripropyltin	22.9			ug/kg	*43.7*		*52.4*	*30-160*			
LCS (BGH0759-BS1)				Prepared: 31-Aug-2018 Analyzed: 07-Sep-2018 10:59							
Tributyltin Ion	26.9	0.450	3.86	ug/kg	44.6		60.4	30-160			
Dibutyltin Ion	21.3	1.73	5.78	ug/kg	38.4		55.5	30-160			
Butyltin Ion	19.9	1.89	4.08	ug/kg	31.2		63.8	30-160			
Surrogate: Tripentyltin	31.5			ug/kg	*45.2*		*69.7*	*30-160*			
Surrogate: Tripropyltin	26.3			ug/kg	*43.7*		*60.0*	*30-160*			
LCS Dup (BGH0759-BSD1)				Prepared: 31-Aug-2018 Analyzed: 07-Sep-2018 11:13							
Tributyltin Ion	26.3	0.450	3.86	ug/kg	44.6		59.0	30-160	2.35	30	
Dibutyltin Ion	20.2	1.73	5.78	ug/kg	38.4		52.6	30-160	5.52	30	
Butyltin Ion	19.9	1.89	4.08	ug/kg	31.2		63.9	30-160	0.13	30	
Surrogate: Tripentyltin	29.2			ug/kg	*45.2*		*64.6*	*30-160*			
Surrogate: Tripropyltin	24.3			ug/kg	*43.7*		*55.6*	*30-160*			
Matrix Spike (BGH0759-MS1)		**Source: 18H0311-05**		Prepared: 31-Aug-2018 Analyzed: 07-Sep-2018 11:53							
Tributyltin Ion	148	0.445	3.82	ug/kg	44.1	48.8	225	30-160			*
Dibutyltin Ion	64.5	1.71	5.72	ug/kg	37.9	25.6	103	30-160			
Butyltin Ion	16.5	1.87	4.04	ug/kg	30.8	3.30	42.7	30-160			
Surrogate: Tripentyltin	28.8			ug/kg	*44.7*	*29.8*	*64.5*	*30-160*			
Surrogate: Tripropyltin	23.8			ug/kg	*43.3*	*26.2*	*54.9*	*30-160*			
Matrix Spike Dup (BGH0759-MSD1)		**Source: 18H0311-05**		Prepared: 31-Aug-2018 Analyzed: 07-Sep-2018 12:07							
Tributyltin Ion	61.9	0.443	3.80	ug/kg	43.8	48.8	29.8	30-160	82.10	30	*
Dibutyltin Ion	49.0	1.70	5.69	ug/kg	37.7	25.6	62.2	30-160	27.20	30	
Butyltin Ion	11.1	1.86	4.02	ug/kg	30.7	3.30	25.4	30-160	39.10	30	*
Surrogate: Tripentyltin	32.2			ug/kg	*44.5*	*29.8*	*72.5*	*30-160*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Butyl Tins - Quality Control

Batch BGH0759 - EPA 3546 (Microwave)

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BGH0759-MSD1)	**Source: 18H0311-05**			Prepared: 31-Aug-2018 Analyzed: 07-Sep-2018 12:07							
Surrogate: Tripropyltin	26.6			ug/kg	*43.1*	*26.2*	*61.7*	*30-160*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Aroclor PCB - Quality Control

Batch BGH0709 - EPA 3546 (Microwave)

Instrument: ECD7 Analyst: JGR

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0709-BLK1)				Prepared: 29-Aug-2018 Analyzed: 05-Sep-2018 01:57							
Aroclor 1016	ND	1.6	4.0	ug/kg							U
Aroclor 1221	ND	1.6	4.0	ug/kg							U
Aroclor 1232	ND	1.6	4.0	ug/kg							U
Aroclor 1242	ND	1.6	4.0	ug/kg							U
Aroclor 1248	ND	1.6	4.0	ug/kg							U
Aroclor 1254	ND	1.6	4.0	ug/kg							U
Aroclor 1260	ND	0.6	4.0	ug/kg							U
Aroclor 1262	ND	0.6	4.0	ug/kg							U
Aroclor 1268	ND	0.6	4.0	ug/kg							U
Surrogate: Decachlorobiphenyl	7.03			ug/kg	*8.00*		*87.9*	*40-126*			
Surrogate: Tetrachlorometaxylene	6.14			ug/kg	*8.00*		*76.7*	*44-120*			
Surrogate: Decachlorobiphenyl [2C]	6.87			ug/kg	*8.00*		*85.9*	*40-126*			
Surrogate: Tetrachlorometaxylene [2C]	5.76			ug/kg	*8.00*		*72.0*	*44-120*			
LCS (BGH0709-BS1)				Prepared: 29-Aug-2018 Analyzed: 05-Sep-2018 02:19							
Aroclor 1016	88.1	1.6	4.0	ug/kg	101		87.4	56-120			
Aroclor 1260	94.7	0.6	4.0	ug/kg	101		93.9	58-120			
Surrogate: Decachlorobiphenyl	6.92			ug/kg	*8.00*		*86.5*	*40-126*			
Surrogate: Tetrachlorometaxylene	6.27			ug/kg	*8.00*		*78.4*	*44-120*			
Surrogate: Decachlorobiphenyl [2C]	6.84			ug/kg	*8.00*		*85.5*	*40-126*			
Surrogate: Tetrachlorometaxylene [2C]	6.02			ug/kg	*8.00*		*75.2*	*44-120*			
LCS Dup (BGH0709-BSD1)				Prepared: 29-Aug-2018 Analyzed: 05-Sep-2018 02:42							
Aroclor 1016	92.3	1.6	4.0	ug/kg	101		91.5	56-120	4.63	30	
Aroclor 1260	95.7	0.6	4.0	ug/kg	101		94.9	58-120	1.03	30	
Surrogate: Decachlorobiphenyl	6.96			ug/kg	*8.00*		*87.0*	*40-126*			
Surrogate: Tetrachlorometaxylene	6.55			ug/kg	*8.00*		*81.9*	*44-120*			
Surrogate: Decachlorobiphenyl [2C]	6.93			ug/kg	*8.00*		*86.6*	*40-126*			
Surrogate: Tetrachlorometaxylene [2C]	6.08			ug/kg	*8.00*		*76.0*	*44-120*			
Matrix Spike (BGH0709-MS3)		**Source: 18H0311-05**		Prepared: 29-Aug-2018 Analyzed: 05-Sep-2018 09:24							
Aroclor 1016	90.0	1.5	3.9	ug/kg	98.3	ND	91.6	56-120			
Aroclor 1260	88.7	0.6	3.9	ug/kg	98.3	9.8	80.3	58-120			
Surrogate: Decachlorobiphenyl	5.80			ug/kg	*7.80*		*74.3*	*40-126*			

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Aroclor PCB - Quality Control

Batch BGH0709 - EPA 3546 (Microwave)

Instrument: ECD7 Analyst: JGR

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BGH0709-MS3)	**Source: 18H0311-05**			Prepared: 29-Aug-2018 Analyzed: 05-Sep-2018 09:24							
Surrogate: Tetrachlorometaxylene	5.47			ug/kg	*7.80*		*70.1*	*44-120*			
Surrogate: Decachlorobiphenyl [2C]	5.50			ug/kg	*7.80*		*70.5*	*40-126*			
Surrogate: Tetrachlorometaxylene [2C]	5.30			ug/kg	*7.80*		*67.9*	*44-120*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BGH0709-MSD3)	**Source: 18H0311-05**			Prepared: 29-Aug-2018 Analyzed: 05-Sep-2018 09:46							
Aroclor 1016	98.0	1.5	3.9	ug/kg	98.4	ND	99.6	56-120	8.46	30	
Aroclor 1260	93.9	0.6	3.9	ug/kg	98.4	9.8	85.5	58-120	5.60	30	
Surrogate: Decachlorobiphenyl	6.32			ug/kg	*7.81*		*81.0*	*40-126*			
Surrogate: Tetrachlorometaxylene	6.32			ug/kg	*7.81*		*80.9*	*44-120*			
Surrogate: Decachlorobiphenyl [2C]	5.98			ug/kg	*7.81*		*76.5*	*40-126*			
Surrogate: Tetrachlorometaxylene [2C]	5.78			ug/kg	*7.81*		*74.0*	*44-120*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Dioxins/Furans - Quality Control

Batch BGH0794 - EPA 1613

Instrument: AUTOSPEC01 Analyst: PJ

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0794-BLK1)				Prepared: 31-Aug-2018 Analyzed: 05-Sep-2018 13:04							
2,3,7,8-TCDF		0.655-0.886	0.040	1.00	ND	ng/kg					U
2,3,7,8-TCDD		0.655-0.886	0.062	1.00	ND	ng/kg					U
1,2,3,7,8-PeCDF		1.318-1.783	0.039	1.00	ND	ng/kg					U
2,3,4,7,8-PeCDF		1.318-1.783	0.036	1.00	ND	ng/kg					U
1,2,3,7,8-PeCDD		1.318-1.783	0.051	1.00	ND	ng/kg					U
1,2,3,4,7,8-HxCDF		1.054-1.426	0.043	1.00	ND	ng/kg					U
1,2,3,6,7,8-HxCDF		1.054-1.426	0.040	1.00	ND	ng/kg					U
2,3,4,6,7,8-HxCDF		1.054-1.426	0.041	1.00	ND	ng/kg					U
1,2,3,7,8,9-HxCDF	1.429	1.054-1.426		1.00	0.0818	ng/kg					EMPC, J
1,2,3,4,7,8-HxCDD		1.054-1.426	0.039	1.00	ND	ng/kg					U
1,2,3,6,7,8-HxCDD		1.054-1.426	0.039	1.00	ND	ng/kg					U
1,2,3,7,8,9-HxCDD		1.054-1.426	0.039	1.00	ND	ng/kg					U
1,2,3,4,6,7,8-HpCDF		0.893-1.208	0.032	1.00	ND	ng/kg					U
1,2,3,4,7,8,9-HpCDF		0.893-1.208	0.045	1.00	ND	ng/kg					U
1,2,3,4,6,7,8-HpCDD		0.893-1.208	0.074	2.50	ND	ng/kg					U
OCDF		0.757-1.024	0.198	2.00	ND	ng/kg					U
OCDD	0.794	0.757-1.024		10.0	0.469	ng/kg					J
Homologue group											
Total TCDF				1.00	ND	ng/kg					U
Total TCDD				1.00	ND	ng/kg					U
Total PeCDF				1.00	ND	ng/kg					U
Total PeCDD				1.00	ND	ng/kg					U
Total HxCDF				1.00	0.0818	ng/kg					
Total HxCDD				1.00	ND	ng/kg					U
Total HpCDF				1.00	ND	ng/kg					U
Total HpCDD				1.00	ND	ng/kg					U

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC):	0.05
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC):	0.01
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, EMPC=ND):	0.04
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0 EDL, EMPC=ND):	0.00

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Dioxins/Furans - Quality Control

Batch BGH0794 - EPA 1613

Instrument: AUTOSPEC01 Analyst: PJ

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0794-BLK1)				Prepared: 31-Aug-2018 Analyzed: 05-Sep-2018 13:04							
Labeled compounds											
13C12-2,3,7,8-TCDF	*0.793*	*0.655-0.886*			*97.5*	*%*		*24-169 %*			
13C12-2,3,7,8-TCDD	*0.771*	*0.655-0.886*			*84.4*	*%*		*25-164 %*			
13C12-1,2,3,7,8-PeCDF	*1.565*	*1.318-1.783*			*93.1*	*%*		*24-185 %*			
13C12-2,3,4,7,8-PeCDF	*1.569*	*1.318-1.783*			*90.6*	*%*		*21-178 %*			
13C12-1,2,3,7,8-PeCDD	*1.675*	*1.318-1.783*			*84.7*	*%*		*25-181 %*			
13C12-1,2,3,4,7,8-HxCDF	*0.496*	*0.434-0.587*			*92.0*	*%*		*26-152 %*			
13C12-1,2,3,6,7,8-HxCDF	*0.498*	*0.434-0.587*			*96.9*	*%*		*26-123 %*			
13C12-2,3,4,6,7,8-HxCDF	*0.499*	*0.434-0.587*			*90.6*	*%*		*28-136 %*			
13C12-1,2,3,7,8,9-HxCDF	*0.500*	*0.434-0.587*			*84.5*	*%*		*29-147 %*			
13C12-1,2,3,4,7,8-HxCDD	*1.282*	*1.054-1.426*			*91.2*	*%*		*32-141 %*			
13C12-1,2,3,6,7,8-HxCDD	*1.252*	*1.054-1.426*			*94.8*	*%*		*28-130 %*			
13C12-1,2,3,4,6,7,8-HpCDF	*0.432*	*0.374-0.506*			*86.2*	*%*		*28-143 %*			
13C12-1,2,3,4,7,8,9-HpCDF	*0.439*	*0.374-0.506*			*80.9*	*%*		*26-138 %*			
13C12-1,2,3,4,6,7,8-HpCDD	*1.087*	*0.893-1.208*			*81.0*	*%*		*23-140 %*			
13C12-OCDD	*0.940*	*0.757-1.024*			*48.2*	*%*		*17-157 %*			
37Cl4-2,3,7,8-TCDD					*98.6*	*%*		*35-197 %*			
LCS (BGH0794-BS1)				Prepared: 31-Aug-2018 Analyzed: 05-Sep-2018 13:52							
2,3,7,8-TCDF	0.728	0.655-0.886		1.00	19.7	ng/kg	98.6	75-158 %			
2,3,7,8-TCDD	0.773	0.655-0.886		1.00	20.5	ng/kg	102	67-158 %			
1,2,3,7,8-PeCDF	1.692	1.318-1.783		1.00	105	ng/kg	105	80-134 %			
2,3,4,7,8-PeCDF	1.684	1.318-1.783		1.00	107	ng/kg	107	68-160 %			
1,2,3,7,8-PeCDD	1.610	1.318-1.783		1.00	106	ng/kg	106	70-142 %			
1,2,3,4,7,8-HxCDF	1.254	1.054-1.426		1.00	102	ng/kg	102	72-134 %			
1,2,3,6,7,8-HxCDF	1.296	1.054-1.426		1.00	101	ng/kg	101	84-130 %			
2,3,4,6,7,8-HxCDF	1.203	1.054-1.426		1.00	105	ng/kg	105	70-156 %			
1,2,3,7,8,9-HxCDF	1.270	1.054-1.426		1.00	99.9	ng/kg	99.9	78-130 %			B
1,2,3,4,7,8-HxCDD	1.263	1.054-1.426		1.00	102	ng/kg	102	70-164 %			
1,2,3,6,7,8-HxCDD	1.249	1.054-1.426		1.00	101	ng/kg	101	76-134 %			
1,2,3,7,8,9-HxCDD	1.237	1.054-1.426		1.00	96.0	ng/kg	96.0	64-162 %			
1,2,3,4,6,7,8-HpCDF	1.054	0.893-1.208		1.00	106	ng/kg	106	82-122 %			
1,2,3,4,7,8,9-HpCDF	1.048	0.893-1.208		1.00	102	ng/kg	102	78-138 %			
1,2,3,4,6,7,8-HpCDD	1.077	0.893-1.208		2.50	105	ng/kg	105	70-140 %			
OCDF	0.919	0.757-1.024		2.00	214	ng/kg	107	63-170 %			
OCDD	0.876	0.757-1.024		10.0	197	ng/kg	98.5	78-144 %			B

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Dioxins/Furans - Quality Control

Batch BGH0794 - EPA 1613

Instrument: AUTOSPEC01 Analyst: PJ

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BGH0794-BS1)				Prepared: 31-Aug-2018 Analyzed: 05-Sep-2018 13:52							
Labeled compounds											
13C12-2,3,7,8-TCDF	*0.798*	*0.655-0.886*			*86.1*	*%*		*24-169 %*			
13C12-2,3,7,8-TCDD	*0.767*	*0.655-0.886*			*83.7*	*%*		*25-164 %*			
13C12-1,2,3,7,8-PeCDF	*1.579*	*1.318-1.783*			*91.0*	*%*		*24-185 %*			
13C12-2,3,4,7,8-PeCDF	*1.559*	*1.318-1.783*			*86.9*	*%*		*21-178 %*			
13C12-1,2,3,7,8-PeCDD	*1.673*	*1.318-1.783*			*82.0*	*%*		*25-181 %*			
13C12-1,2,3,4,7,8-HxCDF	*0.494*	*0.434-0.587*			*92.0*	*%*		*26-152 %*			
13C12-1,2,3,6,7,8-HxCDF	*0.498*	*0.434-0.587*			*95.7*	*%*		*26-123 %*			
13C12-2,3,4,6,7,8-HxCDF	*0.503*	*0.434-0.587*			*89.3*	*%*		*28-136 %*			
13C12-1,2,3,7,8,9-HxCDF	*0.502*	*0.434-0.587*			*85.7*	*%*		*29-147 %*			
13C12-1,2,3,4,7,8-HxCDD	*1.282*	*1.054-1.426*			*91.7*	*%*		*32-141 %*			
13C12-1,2,3,6,7,8-HxCDD	*1.262*	*1.054-1.426*			*95.3*	*%*		*28-130 %*			
13C12-1,2,3,4,6,7,8-HpCDF	*0.435*	*0.374-0.506*			*84.8*	*%*		*28-143 %*			
13C12-1,2,3,4,7,8,9-HpCDF	*0.428*	*0.374-0.506*			*81.0*	*%*		*26-138 %*			
13C12-1,2,3,4,6,7,8-HpCDD	*1.087*	*0.893-1.208*			*79.0*	*%*		*23-140 %*			
13C12-OCDD	*0.922*	*0.757-1.024*			*49.4*	*%*		*17-157 %*			
37Cl4-2,3,7,8-TCDD					*96.9*	*%*		*35-197 %*			
Duplicate (BGH0794-DUP2)	**Source: 18H0311-01**			Prepared: 31-Aug-2018 Analyzed: 06-Sep-2018 10:11							
2,3,7,8-TCDF	0.623	0.655-0.886		10	3.21	ng/kg			8.23	25	EMPC, X
2,3,7,8-TCDD		0.655-0.886	0.643	10	ND	ng/kg					U
1,2,3,7,8-PeCDF	1.668	1.318-1.783		10	4.01	ng/kg			16.10	25	
2,3,4,7,8-PeCDF	1.512	1.318-1.783		10	2.93	ng/kg			23.70	25	
1,2,3,7,8-PeCDD	1.730	1.318-1.783		10	3.97	ng/kg			63.70	25	*
1,2,3,4,7,8-HxCDF	1.513	1.054-1.426		10	6.80	ng/kg			19.60	25	EMPC
1,2,3,6,7,8-HxCDF	1.769	1.054-1.426		10	3.32	ng/kg			22.10	25	EMPC
2,3,4,6,7,8-HxCDF	1.441	1.054-1.426		10	5.64	ng/kg			19.20	25	EMPC
1,2,3,7,8,9-HxCDF	1.472	1.054-1.426		10	3.06	ng/kg			28.20	25	*, EMPC, B
1,2,3,4,7,8-HxCDD	1.205	1.054-1.426		10	10.2	ng/kg			83.10	25	*
1,2,3,6,7,8-HxCDD	1.240	1.054-1.426		10	51.2	ng/kg			36.80	25	*
1,2,3,7,8,9-HxCDD	1.069	1.054-1.426		10	15.4	ng/kg			40.20	25	*
1,2,3,4,6,7,8-HpCDF	1.044	0.893-1.208		10	110	ng/kg			4.18	25	
1,2,3,4,7,8,9-HpCDF	1.149	0.893-1.208		10	5.42	ng/kg			3.94	25	
1,2,3,4,6,7,8-HpCDD	1.049	0.893-1.208		25	2840	ng/kg			50.60	25	*
OCDF	0.917	0.757-1.024		20	319	ng/kg			54.90	25	*
OCDD	0.887	0.757-1.024		100	20100	ng/kg			20.90	25	B

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Dioxins/Furans - Quality Control

Batch BGH0794 - EPA 1613

Instrument: AUTOSPEC01 Analyst: PJ

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BGH0794-DUP2)	**Source: 18H0311-01**			Prepared: 31-Aug-2018	Analyzed: 06-Sep-2018 10:11						
Homologue group											
Total TCDF				10	28.8	ng/kg			8.37	200	
Total TCDD				10	4.45	ng/kg			94.90	200	
Total PeCDF				10	57.9	ng/kg			0.92	200	
Total PeCDD				10	34.4	ng/kg			63.20	200	
Total HxCDF				10	209	ng/kg			17.50	200	
Total HxCDD				10	1050	ng/kg			78.40	200	
Total HpCDF				10	398	ng/kg			0.35	200	
Total HpCDD				10	12000	ng/kg			29.10	200	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Dioxins/Furans - Quality Control

Batch BGH0794 - EPA 1613

Instrument: AUTOSPEC01 Analyst: PJ

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BGH0794-DUP2)	**Source: 18H0311-01**			Prepared: 31-Aug-2018 Analyzed: 06-Sep-2018 10:11							
Labeled compounds											
13C12-2,3,7,8-TCDF	*0.762*	*0.655-0.886*			*89.8*	*%*				*24-169 %*	
13C12-2,3,7,8-TCDD	*0.757*	*0.655-0.886*			*80.6*	*%*				*25-164 %*	
13C12-1,2,3,7,8-PeCDF	*1.586*	*1.318-1.783*			*85.2*	*%*				*24-185 %*	
13C12-2,3,4,7,8-PeCDF	*1.604*	*1.318-1.783*			*88.2*	*%*				*21-178 %*	
13C12-1,2,3,7,8-PeCDD	*1.713*	*1.318-1.783*			*76.1*	*%*				*25-181 %*	
13C12-1,2,3,4,7,8-HxCDF	*0.505*	*0.434-0.587*			*89.0*	*%*				*26-152 %*	
13C12-1,2,3,6,7,8-HxCDF	*0.492*	*0.434-0.587*			*88.3*	*%*				*26-123 %*	
13C12-2,3,4,6,7,8-HxCDF	*0.503*	*0.434-0.587*			*87.2*	*%*				*28-136 %*	
13C12-1,2,3,7,8,9-HxCDF	*0.486*	*0.434-0.587*			*52.3*	*%*				*29-147 %*	
13C12-1,2,3,4,7,8-HxCDD	*1.351*	*1.054-1.426*			*84.0*	*%*				*32-141 %*	
13C12-1,2,3,6,7,8-HxCDD	*1.232*	*1.054-1.426*			*86.4*	*%*				*28-130 %*	
13C12-1,2,3,4,6,7,8-HpCDF	*0.450*	*0.374-0.506*			*76.7*	*%*				*28-143 %*	
13C12-1,2,3,4,7,8,9-HpCDF	*0.432*	*0.374-0.506*			*70.8*	*%*				*26-138 %*	
13C12-1,2,3,4,6,7,8-HpCDD	*1.072*	*0.893-1.208*			*71.1*	*%*				*23-140 %*	
13C12-OCDD	*0.939*	*0.757-1.024*			*37.1*	*%*				*17-157 %*	
37Cl4-2,3,7,8-TCDD					*92.5*	*%*				*35-197 %*	
Reference (BGH0794-SRM1)				Prepared: 31-Aug-2018 Analyzed: 05-Sep-2018 14:41							
2,3,7,8-TCDF	0.769	0.655-0.886		1.00	0.824	ng/kg	74.2	50-150 %			J
2,3,7,8-TCDD	0.676	0.655-0.886		1.00	1.01	ng/kg	95.8	50-150 %			
1,2,3,7,8-PeCDF	1.595	1.318-1.783		1.00	1.01	ng/kg	82.2	50-150 %			
2,3,4,7,8-PeCDF	1.741	1.318-1.783		1.00	0.692	ng/kg	64.7	50-150 %			J
1,2,3,7,8-PeCDD	1.495	1.318-1.783		1.00	1.13	ng/kg	105	50-150 %			
1,2,3,4,7,8-HxCDF	1.273	1.054-1.426		1.00	2.41	ng/kg	79.8	50-150 %			
1,2,3,6,7,8-HxCDF	1.244	1.054-1.426		1.00	0.857	ng/kg	78.7	50-150 %			J
2,3,4,6,7,8-HxCDF	1.136	1.054-1.426		1.00	1.62	ng/kg	88.3	50-150 %			
1,2,3,7,8,9-HxCDF	1.402	1.054-1.426		1.00	0.554	ng/kg		50-150 %			J, B
1,2,3,4,7,8-HxCDD	1.189	1.054-1.426		1.00	1.32	ng/kg	83.2	50-150 %			
1,2,3,6,7,8-HxCDD	1.168	1.054-1.426		1.00	3.59	ng/kg	92.5	50-150 %			
1,2,3,7,8,9-HxCDD	1.242	1.054-1.426		1.00	2.40	ng/kg	79.1	50-150 %			
1,2,3,4,6,7,8-HpCDF	1.049	0.893-1.208		1.00	21.4	ng/kg	114	50-150 %			
1,2,3,4,7,8,9-HpCDF	1.104	0.893-1.208		1.00	1.58	ng/kg	96.9	50-150 %			
1,2,3,4,6,7,8-HpCDD	1.060	0.893-1.208		2.50	114	ng/kg	126	50-150 %			
OCDF	0.917	0.757-1.024		2.00	91.7	ng/kg	157	50-150 %			
OCDD	0.885	0.757-1.024		10.0	1030	ng/kg	127	50-150 %			B

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Dioxins/Furans - Quality Control

Batch BGH0794 - EPA 1613

Instrument: AUTOSPEC01 Analyst: PJ

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
Reference (BGH0794-SRM1)				Prepared: 31-Aug-2018 Analyzed: 05-Sep-2018 14:41							
Labeled compounds											
13C12-2,3,7,8-TCDF	*0.788*	*0.655-0.886*			*95.2*	*%*				*24-169 %*	
13C12-2,3,7,8-TCDD	*0.768*	*0.655-0.886*			*91.5*	*%*				*25-164 %*	
13C12-1,2,3,7,8-PeCDF	*1.562*	*1.318-1.783*			*101*	*%*				*24-185 %*	
13C12-2,3,4,7,8-PeCDF	*1.583*	*1.318-1.783*			*101*	*%*				*21-178 %*	
13C12-1,2,3,7,8-PeCDD	*1.650*	*1.318-1.783*			*94.9*	*%*				*25-181 %*	
13C12-1,2,3,4,7,8-HxCDF	*0.503*	*0.434-0.587*			*90.5*	*%*				*26-152 %*	
13C12-1,2,3,6,7,8-HxCDF	*0.506*	*0.434-0.587*			*82.8*	*%*				*26-123 %*	
13C12-2,3,4,6,7,8-HxCDF	*0.500*	*0.434-0.587*			*82.4*	*%*				*28-136 %*	
13C12-1,2,3,7,8,9-HxCDF	*0.504*	*0.434-0.587*			*50.3*	*%*				*29-147 %*	
13C12-1,2,3,4,7,8-HxCDD	*1.281*	*1.054-1.426*			*87.7*	*%*				*32-141 %*	
13C12-1,2,3,6,7,8-HxCDD	*1.271*	*1.054-1.426*			*89.2*	*%*				*28-130 %*	
13C12-1,2,3,4,6,7,8-HpCDF	*0.441*	*0.374-0.506*			*82.9*	*%*				*28-143 %*	
13C12-1,2,3,4,7,8,9-HpCDF	*0.433*	*0.374-0.506*			*87.4*	*%*				*26-138 %*	
13C12-1,2,3,4,6,7,8-HpCDD	*1.101*	*0.893-1.208*			*81.2*	*%*				*23-140 %*	
13C12-OCDD	*0.945*	*0.757-1.024*			*48.8*	*%*				*17-157 %*	
37Cl4-2,3,7,8-TCDD					*106*	*%*				*35-197 %*	
Reference (BGH0794-SRM2)				Prepared: 31-Aug-2018 Analyzed: 05-Sep-2018 15:29							
2,3,7,8-TCDF	0.799	0.655-0.886		1.00	0.858	ng/kg	77.3	50-150 %			J
2,3,7,8-TCDD	0.718	0.655-0.886		1.00	0.990	ng/kg	94.3	50-150 %			J
1,2,3,7,8-PeCDF	1.618	1.318-1.783		1.00	0.807	ng/kg	65.6	50-150 %			J
2,3,4,7,8-PeCDF	1.638	1.318-1.783		1.00	0.813	ng/kg	75.9	50-150 %			J
1,2,3,7,8-PeCDD	1.341	1.318-1.783		1.00	1.10	ng/kg	101	50-150 %			
1,2,3,4,7,8-HxCDF	1.273	1.054-1.426		1.00	2.60	ng/kg	86.0	50-150 %			
1,2,3,6,7,8-HxCDF	1.351	1.054-1.426		1.00	0.808	ng/kg	74.1	50-150 %			J
2,3,4,6,7,8-HxCDF	1.152	1.054-1.426		1.00	1.65	ng/kg	90.4	50-150 %			
1,2,3,7,8,9-HxCDF	1.348	1.054-1.426		1.00	0.555	ng/kg		50-150 %			J, B
1,2,3,4,7,8-HxCDD	1.201	1.054-1.426		1.00	1.30	ng/kg	81.8	50-150 %			
1,2,3,6,7,8-HxCDD	1.209	1.054-1.426		1.00	3.48	ng/kg	89.7	50-150 %			
1,2,3,7,8,9-HxCDD	1.223	1.054-1.426		1.00	2.44	ng/kg	80.1	50-150 %			
1,2,3,4,6,7,8-HpCDF	1.038	0.893-1.208		1.00	22.3	ng/kg	119	50-150 %			
1,2,3,4,7,8,9-HpCDF	1.004	0.893-1.208		1.00	1.73	ng/kg	106	50-150 %			
1,2,3,4,6,7,8-HpCDD	1.059	0.893-1.208		2.50	117	ng/kg	129	50-150 %			
OCDF	0.910	0.757-1.024		2.00	112	ng/kg	192	50-150 %			
OCDD	0.895	0.757-1.024		10.0	1090	ng/kg	134	50-150 %			B

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Dioxins/Furans - Quality Control

Batch BGH0794 - EPA 1613

Instrument: AUTOSPEC01 Analyst: PJ

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
Reference (BGH0794-SRM2)				Prepared: 31-Aug-2018 Analyzed: 05-Sep-2018 15:29							
Labeled compounds											
13C12-2,3,7,8-TCDF	*0.795*	*0.655-0.886*			*96.3*	*%*		*24-169 %*			
13C12-2,3,7,8-TCDD	*0.767*	*0.655-0.886*			*91.8*	*%*		*25-164 %*			
13C12-1,2,3,7,8-PeCDF	*1.575*	*1.318-1.783*			*100*	*%*		*24-185 %*			
13C12-2,3,4,7,8-PeCDF	*1.572*	*1.318-1.783*			*99.4*	*%*		*21-178 %*			
13C12-1,2,3,7,8-PeCDD	*1.663*	*1.318-1.783*			*95.0*	*%*		*25-181 %*			
13C12-1,2,3,4,7,8-HxCDF	*0.501*	*0.434-0.587*			*87.7*	*%*		*26-152 %*			
13C12-1,2,3,6,7,8-HxCDF	*0.504*	*0.434-0.587*			*68.4*	*%*		*26-123 %*			
13C12-2,3,4,6,7,8-HxCDF	*0.498*	*0.434-0.587*			*77.1*	*%*		*28-136 %*			
13C12-1,2,3,7,8,9-HxCDF	*0.499*	*0.434-0.587*			*44.9*	*%*		*29-147 %*			
13C12-1,2,3,4,7,8-HxCDD	*1.275*	*1.054-1.426*			*82.8*	*%*		*32-141 %*			
13C12-1,2,3,6,7,8-HxCDD	*1.272*	*1.054-1.426*			*83.7*	*%*		*28-130 %*			
13C12-1,2,3,4,6,7,8-HpCDF	*0.447*	*0.374-0.506*			*73.3*	*%*		*28-143 %*			
13C12-1,2,3,4,7,8,9-HpCDF	*0.444*	*0.374-0.506*			*75.1*	*%*		*26-138 %*			
13C12-1,2,3,4,6,7,8-HpCDD	*1.081*	*0.893-1.208*			*70.0*	*%*		*23-140 %*			
13C12-OCDD	*0.925*	*0.757-1.024*			*36.0*	*%*		*17-157 %*			
37Cl4-2,3,7,8-TCDD					*104*	*%*		*35-197 %*			

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Metals and Metallic Compounds - Quality Control

Batch BGH0643 - SMM EPA 7471B

Instrument: CVAA Analyst: DP

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0643-BLK1)				Prepared: 24-Aug-2018 Analyzed: 27-Aug-2018 09:10						
Mercury	ND	0.0250	mg/kg							U
LCS (BGH0643-BS1)				Prepared: 24-Aug-2018 Analyzed: 27-Aug-2018 09:17						
Mercury	0.468	0.0250	mg/kg	0.500		93.5	80-120			
Duplicate (BGH0643-DUP2)		**Source: 18H0311-05**		Prepared: 24-Aug-2018 Analyzed: 27-Aug-2018 09:24						
Mercury	0.0997	0.0500	mg/kg		0.104			3.84	20	
Matrix Spike (BGH0643-MS2)		**Source: 18H0311-05**		Prepared: 24-Aug-2018 Analyzed: 27-Aug-2018 09:26						
Mercury	0.517	0.0500	mg/kg	0.500	0.104	82.7	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BGH0643-MSD2)		**Source: 18H0311-05**		Prepared: 24-Aug-2018 Analyzed: 27-Aug-2018 09:34						
Mercury	0.500	0.0496	mg/kg	0.496	0.104	80.1	75-125	3.33	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Reference (BGH0643-SRM1)				Prepared: 24-Aug-2018 Analyzed: 27-Aug-2018 10:22						
Mercury	10.8	0.248	mg/kg	13.3		81.5	68-131.6			D

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Metals and Metallic Compounds - Quality Control

Batch BGI0016 - SWN EPA 3050B

Instrument: ICPMS2 Analyst: TCH

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGI0016-BLK1)					Prepared: 03-Sep-2018 Analyzed: 04-Sep-2018 13:27							
Antimony	121	0.07	0.02	0.20	mg/kg							J
Antimony	123	0.07	0.02	0.20	mg/kg							J
Chromium	52	ND	0.07	0.50	mg/kg							U
Chromium	53	ND	0.04	0.50	mg/kg							U
Lead	208	0.01	0.008	0.10	mg/kg							J
Silver	107	ND	0.003	0.20	mg/kg							U
Arsenic	75a	ND	0.03	0.20	mg/kg							U
Cadmium	111	ND	0.007	0.10	mg/kg							U
Cadmium	114	ND	0.005	0.10	mg/kg							U
Copper	63	ND	0.04	0.50	mg/kg							U
Copper	65	ND	0.03	0.50	mg/kg							U
Nickel	60	ND	0.02	0.50	mg/kg							U
Nickel	62	ND	0.27	0.50	mg/kg							U
Zinc	66	ND	0.3	4.0	mg/kg							U
Zinc	67	ND	0.2	4.0	mg/kg							U
LCS (BGI0016-BS1)					Prepared: 03-Sep-2018 Analyzed: 04-Sep-2018 14:02							
Antimony	121	26.8	0.02	0.20	mg/kg	25.0		107	80-120			
Antimony	123	27.1	0.02	0.20	mg/kg	25.0		108	80-120			
Chromium	52	26.1	0.07	0.50	mg/kg	25.0		104	80-120			
Chromium	53	25.6	0.04	0.50	mg/kg	25.0		102	80-120			
Lead	208	28.2	0.008	0.10	mg/kg	25.0		113	80-120			
Silver	107	27.9	0.003	0.20	mg/kg	25.0		112	80-120			
Arsenic	75a	23.7	0.03	0.20	mg/kg	25.0		94.8	80-120			
Cadmium	111	25.5	0.007	0.10	mg/kg	25.0		102	80-120			
Cadmium	114	25.7	0.005	0.10	mg/kg	25.0		103	80-120			
Copper	63	25.6	0.04	0.50	mg/kg	25.0		103	80-120			
Copper	65	26.8	0.03	0.50	mg/kg	25.0		107	80-120			
Nickel	60	26.1	0.02	0.50	mg/kg	25.0		104	80-120			
Nickel	62	25.8	0.27	0.50	mg/kg	25.0		103	80-120			
Zinc	66	78.1	0.3	4.0	mg/kg	80.0		97.7	80-120			
Zinc	67	69.3	0.2	4.0	mg/kg	80.0		86.7	80-120			
LCS Dup (BGI0016-BSD1)					Prepared: 03-Sep-2018 Analyzed: 04-Sep-2018 14:06							
Antimony	121	26.1	0.02	0.20	mg/kg	25.0		104	80-120	2.41	20	

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Metals and Metallic Compounds - Quality Control

Batch BGI0016 - SWN EPA 3050B

Instrument: ICPMS2 Analyst: TCH

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BGI0016-BSD1)					Prepared: 03-Sep-2018 Analyzed: 04-Sep-2018 14:06							
Antimony	123	26.0	0.02	0.20	mg/kg	25.0		104	80-120	4.41	20	
Chromium	52	25.6	0.07	0.50	mg/kg	25.0		102	80-120	2.12	20	
Chromium	53	26.2	0.04	0.50	mg/kg	25.0		105	80-120	2.38	20	
Lead	208	27.0	0.008	0.10	mg/kg	25.0		108	80-120	4.12	20	
Silver	107	27.8	0.003	0.20	mg/kg	25.0		111	80-120	0.43	20	
Arsenic	75a	24.1	0.03	0.20	mg/kg	25.0		96.4	80-120	1.67	20	
Cadmium	111	25.3	0.007	0.10	mg/kg	25.0		101	80-120	0.76	20	
Cadmium	114	25.8	0.005	0.10	mg/kg	25.0		103	80-120	0.64	20	
Copper	63	26.2	0.04	0.50	mg/kg	25.0		105	80-120	2.22	20	
Copper	65	26.8	0.03	0.50	mg/kg	25.0		107	80-120	0.05	20	
Nickel	60	26.6	0.02	0.50	mg/kg	25.0		107	80-120	2.13	20	
Nickel	62	26.6	0.27	0.50	mg/kg	25.0		106	80-120	2.85	20	
Zinc	66	82.8	0.3	4.0	mg/kg	80.0		103	80-120	5.75	20	
Zinc	67	76.3	0.2	4.0	mg/kg	80.0		95.3	80-120	9.53	20	
Duplicate (BGI0016-DUP1)			**Source: 18H0311-05**		Prepared: 03-Sep-2018 Analyzed: 04-Sep-2018 13:42							
Antimony	121	0.06	0.04	0.41	mg/kg		ND					J
Chromium	52	26.0	0.14	1.02	mg/kg		23.3			10.80	20	
Lead	208	24.1	0.02	0.20	mg/kg		22.4			7.42	20	
Silver	107	0.14	0.006	0.41	mg/kg		0.12			11.30	20	J
Arsenic	75a	4.78	0.06	0.41	mg/kg		4.23			12.20	20	
Cadmium	111	2.00	0.01	0.20	mg/kg		1.67			17.90	20	
Copper	63	63.0	0.08	1.02	mg/kg		59.4			5.94	20	
Nickel	60	19.5	0.03	1.02	mg/kg		17.6			10.70	20	
Zinc	66	84.1	0.6	8.2	mg/kg		72.0			15.50	20	
Matrix Spike (BGI0016-MS1)			**Source: 18H0311-05**		Prepared: 03-Sep-2018 Analyzed: 04-Sep-2018 13:52							
Antimony	121	2.31	0.04	0.41	mg/kg	50.7	ND	4.55	75-125			*
Chromium	52	70.5	0.14	1.01	mg/kg	50.7	23.3	93.0	75-125			
Lead	208	74.5	0.02	0.20	mg/kg	50.7	22.4	103	75-125			
Silver	107	39.6	0.006	0.41	mg/kg	50.7	0.12	77.9	75-125			
Arsenic	75a	47.5	0.06	0.41	mg/kg	50.7	4.23	85.3	75-125			
Cadmium	111	50.1	0.01	0.20	mg/kg	50.7	1.67	95.5	75-125			
Copper	63	112	0.08	1.01	mg/kg	50.7	59.4	103	75-125			
Nickel	60	66.0	0.03	1.01	mg/kg	50.7	17.6	95.6	75-125			

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Metals and Metallic Compounds - Quality Control

Batch BGI0016 - SWN EPA 3050B

Instrument: ICPMS2 Analyst: TCH

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BGI0016-MS1)			**Source: 18H0311-05**			Prepared: 03-Sep-2018		Analyzed: 04-Sep-2018 13:52				
Zinc	66	229	0.6	8.1	mg/kg	162	72.0	96.8	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike Dup (BGI0016-MSD1)			**Source: 18H0311-05**			Prepared: 03-Sep-2018		Analyzed: 04-Sep-2018 13:57				
Antimony	121	2.36	0.04	0.41	mg/kg	51.0	ND	4.63	75-125	2.23	20	*
Chromium	52	76.8	0.14	1.02	mg/kg	51.0	23.3	105	75-125	8.50	20	
Lead	208	77.7	0.02	0.20	mg/kg	51.0	22.4	109	75-125	4.27	20	
Silver	107	46.5	0.006	0.41	mg/kg	51.0	0.12	91.0	75-125	16.00	20	
Arsenic	75a	51.2	0.06	0.41	mg/kg	51.0	4.23	92.3	75-125	7.63	20	
Cadmium	111	50.9	0.01	0.20	mg/kg	51.0	1.67	96.6	75-125	1.66	20	
Copper	63	127	0.08	1.02	mg/kg	51.0	59.4	133	75-125	13.10	20	*
Nickel	60	69.8	0.03	1.02	mg/kg	51.0	17.6	103	75-125	5.57	20	
Zinc	66	225	0.6	8.2	mg/kg	163	72.0	93.9	75-125	1.77	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Reference (BGI0016-SRM1)						Prepared: 03-Sep-2018		Analyzed: 04-Sep-2018 13:32				
Antimony	121	3.77	0.02	0.20	mg/kg	91.4		4.13	0-225.4			
Chromium	52	78.4	0.07	0.50	mg/kg	89.3		87.8	76.4-123.2			
Lead	208	99.8	0.008	0.10	mg/kg	98.5		101	79.2-120.8			
Silver	107	47.4	0.003	0.20	mg/kg	48.9		97.0	71.4-128.8			
Arsenic	75a	132	0.03	0.20	mg/kg	146		90.5	79.4-119.9			
Cadmium	111	60.8	0.007	0.10	mg/kg	63.2		96.2	79.7-120.4			
Copper	63	57.7	0.04	0.50	mg/kg	60.8		94.9	78.9-121			
Nickel	60	66.3	0.02	0.50	mg/kg	66.6		99.5	79.6-120.4			
Zinc	67	157	0.2	4.0	mg/kg	177		88.8	80.2-120.3			

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Wet Chemistry - Quality Control

Batch BGH0669 - No Prep Wet Chem

Instrument: UV1800-2 Analyst: YK

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0669-BLK1)				Prepared: 27-Aug-2018 Analyzed: 28-Aug-2018 14:52							
Sulfide	ND	1.00	1.00	mg/kg							U
LCS (BGH0669-BS1)				Prepared: 27-Aug-2018 Analyzed: 28-Aug-2018 14:52							
Sulfide	168	10.0	10.0	mg/kg	181		92.6	75-125			D
LCS Dup (BGH0669-BSD1)				Prepared: 27-Aug-2018 Analyzed: 28-Aug-2018 14:53							
Sulfide	155	10.0	10.0	mg/kg	181		85.6	75-125	7.81	20	D
Duplicate (BGH0669-DUP1)		**Source: 18H0311-05**		Prepared: 27-Aug-2018 Analyzed: 28-Aug-2018 14:54							
Sulfide	571	88.9	88.9	mg/kg		488			15.70	20	D
Matrix Spike (BGH0669-MS1)		**Source: 18H0311-05**		Prepared: 27-Aug-2018 Analyzed: 28-Aug-2018 14:54							
Sulfide	677	82.8	82.8	mg/kg	300	488	63.3	75-125			*, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BGH0669-MSD1)		**Source: 18H0311-05**		Prepared: 27-Aug-2018 Analyzed: 28-Aug-2018 14:55							
Sulfide	749	89.0	89.0	mg/kg	322	488	81.2	75-125	10.10	200	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Wet Chemistry - Quality Control

Batch BGH0678 - MSA 33.3 (2M KCl)

Instrument: LACHAT1 Analyst: AGW

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0678-BLK1)				Prepared: 27-Aug-2018 Analyzed: 28-Aug-2018 16:47							
Ammonia-N	ND	0.40	0.40	mg/kg NH3-N							U
LCS (BGH0678-BS1)				Prepared: 27-Aug-2018 Analyzed: 28-Aug-2018 16:48							
Ammonia-N	99.1	8.00	8.00	mg/kg NH3-N	100		99.1	90-110			D
Duplicate (BGH0678-DUP1)		**Source: 18H0311-05**		Prepared: 27-Aug-2018 Analyzed: 28-Aug-2018 16:50							
Ammonia-N	3.44	0.72	0.72	mg/kg NH3-N		5.50			46.10	20	*
Matrix Spike (BGH0678-MS3)		**Source: 18H0311-05RE1**		Prepared: 27-Aug-2018 Analyzed: 28-Aug-2018 17:14							
Ammonia-N	196	13.4	13.4	mg/kg NH3-N	168	ND	117	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Whatcom Environmental Services	Project: Jensen's Shipyard	
228 East Champion Street, Suite 101	Project Number: Jensen Shipyard	**Reported:**
Bellingham WA, 98225	Project Manager: Dan Heimbigner	13-Sep-2018 14:17

Wet Chemistry - Quality Control

Batch BGH0690 - PSEP 1986 (modified)

Instrument: APOLLO2 Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0690-BLK1)				Prepared: 27-Aug-2018 Analyzed: 27-Aug-2018 15:35							
Volatile Solids	ND	0.01	0.01	%							U
Total Solids	ND	0.04	0.04	%							U
Blank (BGH0690-BLK2)				Prepared: 27-Aug-2018 Analyzed: 10-Sep-2018 13:54							
Total Organic Carbon	ND	0.02	0.02	%							U
Duplicate (BGH0690-DUP5)		Source: 18H0311-05		Prepared: 27-Aug-2018 Analyzed: 10-Sep-2018 18:27							
Total Organic Carbon	1.23	0.02	0.02	%		2.08			50.90	20	*
Volatile Solids	5.50	0.01	0.01	%		5.39			2.01	20	
Total Solids	50.41	0.04	0.04	%		50.74			0.66	20	
Duplicate (BGH0690-DUP6)		Source: 18H0311-05		Prepared: 27-Aug-2018 Analyzed: 10-Sep-2018 18:33							
Total Organic Carbon	0.88	0.02	0.02	%		2.08			80.60	20	*
Volatile Solids	5.59	0.01	0.01	%		5.39			3.73	20	
Total Solids	51.78	0.04	0.04	%		50.74			2.04	20	
Matrix Spike (BGH0690-MS3)		Source: 18H0311-05		Prepared: 27-Aug-2018 Analyzed: 10-Sep-2018 18:40							
Total Organic Carbon	3.82	0.02	0.02	%	3.85	2.08	45.4	75-125			*
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BGH0690-MSD3)		Source: 18H0311-05		Prepared: 27-Aug-2018 Analyzed: 10-Sep-2018 18:47							
Total Organic Carbon	2.50	0.02	0.02	%	3.84	2.08	11.1	75-125	41.80	20	*
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
DL (BGH0690-SRM2)				Prepared: 27-Aug-2018 Analyzed: 10-Sep-2018 14:01							
Total Organic Carbon	2.78	0.02	0.02	%	2.88		96.5	75-125			

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Wet Chemistry - Quality Control

Batch BGH0745 - No Prep Wet Chem

Instrument: BAL2 Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0745-BLK1)				Prepared: 28-Aug-2018 Analyzed: 28-Aug-2018 17:38							
Total Solids, Sulfide	ND	0.04	0.04	%							U
Duplicate (BGH0745-DUP1)		**Source: 18H0311-05**		Prepared: 28-Aug-2018 Analyzed: 28-Aug-2018 17:38							
Total Solids, Sulfide	54.00	0.04	0.04	%		53.87			0.23	20	
Duplicate (BGH0745-DUP2)		**Source: 18H0311-05**		Prepared: 28-Aug-2018 Analyzed: 28-Aug-2018 17:38							
Total Solids, Sulfide	53.11	0.04	0.04	%		53.87			1.43	20	

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Certified Analyses included in this Report

Analyte	Certifications
EPA 1613B in Solid	
2,3,7,8-TCDF	DoD-ELAP,NELAP,WADOE
2,3,7,8-TCDD	DoD-ELAP,NELAP,WADOE
1,2,3,7,8-PeCDF	DoD-ELAP,NELAP,WADOE
2,3,4,7,8-PeCDF	DoD-ELAP,NELAP,WADOE
1,2,3,7,8-PeCDD	DoD-ELAP,NELAP,WADOE
1,2,3,4,7,8-HxCDF	DoD-ELAP,NELAP,WADOE
1,2,3,6,7,8-HxCDF	DoD-ELAP,NELAP,WADOE
2,3,4,6,7,8-HxCDF	DoD-ELAP,NELAP,WADOE
1,2,3,7,8,9-HxCDF	DoD-ELAP,NELAP,WADOE
1,2,3,4,7,8-HxCDD	DoD-ELAP,NELAP,WADOE
1,2,3,6,7,8-HxCDD	DoD-ELAP,NELAP,WADOE
1,2,3,7,8,9-HxCDD	DoD-ELAP,NELAP,WADOE
1,2,3,4,6,7,8-HpCDF	DoD-ELAP,NELAP,WADOE
1,2,3,4,7,8,9-HpCDF	DoD-ELAP,NELAP,WADOE
1,2,3,4,6,7,8-HpCDD	DoD-ELAP,NELAP,WADOE
OCDF	DoD-ELAP,NELAP,WADOE
OCDD	DoD-ELAP,NELAP,WADOE
Total TCDF	DoD-ELAP,NELAP,WADOE
Total TCDD	DoD-ELAP,NELAP,WADOE
Total PeCDF	DoD-ELAP,NELAP,WADOE
Total PeCDD	DoD-ELAP,NELAP,WADOE
Total HxCDF	DoD-ELAP,NELAP,WADOE
Total HxCDD	DoD-ELAP,NELAP,WADOE
Total HpCDF	DoD-ELAP,NELAP,WADOE
Total HpCDD	DoD-ELAP,NELAP,WADOE
13C12-2,3,7,8-TCDF	DoD-ELAP
13C12-2,3,7,8-TCDD	DoD-ELAP
13C12-1,2,3,7,8-PeCDF	DoD-ELAP
13C12-2,3,4,7,8-PeCDF	DoD-ELAP
13C12-1,2,3,7,8-PeCDD	DoD-ELAP
13C12-1,2,3,4,7,8-HxCDF	DoD-ELAP
13C12-1,2,3,6,7,8-HxCDF	DoD-ELAP
13C12-2,3,4,6,7,8-HxCDF	DoD-ELAP
13C12-1,2,3,7,8,9-HxCDF	DoD-ELAP
13C12-1,2,3,4,7,8-HxCDD	DoD-ELAP

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13C12-1,2,3,6,7,8-HxCDD	DoD-ELAP
13C12-1,2,3,4,6,7,8-HpCDF	DoD-ELAP
13C12-1,2,3,4,7,8,9-HpCDF	DoD-ELAP
13C12-1,2,3,4,6,7,8-HpCDD	DoD-ELAP
13C12-OCDD	DoD-ELAP
37Cl4-2,3,7,8-TCDD	DoD-ELAP
EPA 6020A in Solid	
Silver-107	NELAP,DoD-ELAP,WADOE
Chromium-52	NELAP,DoD-ELAP,WADOE,ADEC
Chromium-53	NELAP,DoD-ELAP,WADOE,ADEC
Lead-208	NELAP,DoD-ELAP,WADOE,ADEC
Antimony-121	NELAP,DoD-ELAP,WADOE
Antimony-123	NELAP,DoD-ELAP,WADOE
EPA 6020A UCT-KED in Solid	
Arsenic-75a	NELAP,DoD-ELAP,WADOE,ADEC
Cadmium-111	NELAP,DoD-ELAP,WADOE,ADEC
Cadmium-114	NELAP,DoD-ELAP,WADOE,ADEC
Copper-63	NELAP,DoD-ELAP,WADOE
Copper-65	NELAP,DoD-ELAP,WADOE
Nickel-60	NELAP,DoD-ELAP,WADOE,ADEC
Nickel-62	NELAP,DoD-ELAP,WADOE,ADEC
Zinc-66	NELAP,DoD-ELAP,WADOE
Zinc-67	NELAP,DoD-ELAP,WADOE
EPA 7471B in Solid	
Mercury	WADOE,NELAP,DoD-ELAP,CALAP
EPA 8082A in Solid	
Aroclor 1016	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1016 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1221	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1221 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1232	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1232 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1242	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1242 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1248	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1248 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1254	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1254 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC

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Aroclor 1260	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1260 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1262	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1262 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1268	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1268 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC

EPA 8270D in Solid

Phenol	CALAP,DoD-ELAP,NELAP,WADOE
bis(2-chloroethyl) ether	CALAP,DoD-ELAP,NELAP,WADOE
2-Chlorophenol	CALAP,DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	CALAP,DoD-ELAP,NELAP,WADOE
1,4-Dichlorobenzene	CALAP,DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	CALAP,DoD-ELAP,NELAP,WADOE
Benzyl Alcohol	CALAP,DoD-ELAP,NELAP,WADOE
2,2'-Oxybis(1-chloropropane)	DoD-ELAP,NELAP
2-Methylphenol	CALAP,DoD-ELAP,NELAP,WADOE
Hexachloroethane	CALAP,DoD-ELAP,NELAP,WADOE
N-Nitroso-di-n-Propylamine	CALAP,DoD-ELAP,NELAP,WADOE
4-Methylphenol	CALAP,DoD-ELAP,NELAP,WADOE
Nitrobenzene	CALAP,DoD-ELAP,NELAP,WADOE
Isophorone	CALAP,DoD-ELAP,NELAP,WADOE
2-Nitrophenol	CALAP,DoD-ELAP,NELAP,WADOE
2,4-Dimethylphenol	CALAP,DoD-ELAP,NELAP,WADOE
Bis(2-Chloroethoxy)methane	CALAP,DoD-ELAP,NELAP,WADOE
2,4-Dichlorophenol	CALAP,DoD-ELAP,NELAP,WADOE
1,2,4-Trichlorobenzene	CALAP,DoD-ELAP,NELAP,WADOE
Naphthalene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
Benzoic acid	CALAP,DoD-ELAP,NELAP,WADOE
4-Chloroaniline	CALAP,DoD-ELAP,NELAP,WADOE
Hexachlorobutadiene	CALAP,DoD-ELAP,NELAP,WADOE
4-Chloro-3-Methylphenol	CALAP,DoD-ELAP,NELAP,WADOE
2-Methylnaphthalene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
Hexachlorocyclopentadiene	CALAP,DoD-ELAP,NELAP,WADOE
2,4,6-Trichlorophenol	CALAP,DoD-ELAP,NELAP,WADOE
2,4,5-Trichlorophenol	CALAP,DoD-ELAP,NELAP,WADOE
2-Chloronaphthalene	CALAP,DoD-ELAP,NELAP,WADOE
2-Nitroaniline	CALAP,DoD-ELAP,NELAP,WADOE
Acenaphthylene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
Dimethylphthalate	CALAP,DoD-ELAP,NELAP,WADOE

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2,6-Dinitrotoluene	CALAP,DoD-ELAP,NELAP,WADOE
Acenaphthene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
3-Nitroaniline	CALAP,DoD-ELAP,NELAP,WADOE
2,4-Dinitrophenol	CALAP,DoD-ELAP,NELAP,WADOE
Dibenzofuran	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
4-Nitrophenol	CALAP,DoD-ELAP,NELAP,WADOE
2,4-Dinitrotoluene	CALAP,DoD-ELAP,NELAP,WADOE
Fluorene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
4-Chlorophenylphenyl ether	CALAP,DoD-ELAP,NELAP
Diethyl phthalate	CALAP,DoD-ELAP,NELAP,WADOE
4-Nitroaniline	CALAP,DoD-ELAP,NELAP,WADOE
4,6-Dinitro-2-methylphenol	CALAP,DoD-ELAP,NELAP,WADOE
N-Nitrosodiphenylamine	DoD-ELAP,NELAP,WADOE
4-Bromophenyl phenyl ether	CALAP,DoD-ELAP,NELAP,WADOE
Hexachlorobenzene	CALAP,DoD-ELAP,NELAP,WADOE
Pentachlorophenol	CALAP,DoD-ELAP,NELAP,WADOE
Phenanthrene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
Anthracene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
Carbazole	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
Di-n-Butylphthalate	CALAP,DoD-ELAP,NELAP,WADOE
Fluoranthene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
Pyrene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
Butylbenzylphthalate	CALAP,DoD-ELAP,NELAP,WADOE
Benzo(a)anthracene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
3,3'-Dichlorobenzidine	DoD-ELAP,NELAP,WADOE
Chrysene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
bis(2-Ethylhexyl)phthalate	CALAP,DoD-ELAP,NELAP,WADOE
Di-n-Octylphthalate	CALAP,DoD-ELAP,NELAP,WADOE
Benzo(b)fluoranthene	DoD-ELAP,NELAP,WADOE,ADEC
Benzo(k)fluoranthene	DoD-ELAP,NELAP,WADOE,ADEC
Benzofluoranthenes, Total	CALAP,WADOE,ADEC
Benzo(a)pyrene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
Indeno(1,2,3-cd)pyrene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
Dibenzo(a,h)anthracene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
Benzo(g,h,i)perylene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC
N-Nitrosodimethylamine	CALAP,DoD-ELAP,NELAP,WADOE
Aniline	CALAP,DoD-ELAP,NELAP,WADOE
Retene	CALAP,DoD-ELAP,NELAP,WADOE
Pyridine	CALAP,DoD-ELAP,NELAP,WADOE
1-Methylnaphthalene	CALAP,DoD-ELAP,NELAP,WADOE,ADEC

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Azobenzene (1,2-DP-Hydrazine)	CALAP,DoD-ELAP,NELAP,WADOE
2,3,4,6-Tetrachlorophenol	DoD-ELAP,WADOE
Benzidine	DoD-ELAP,NELAP
Tetrachloroguaiacol	DoD-ELAP,WADOE
3,4,5-Trichloroguaiacol	DoD-ELAP,WADOE
3,4,6-Trichloroguaiacol	DoD-ELAP,WADOE
4,5,6-Trichloroguaiacol	DoD-ELAP,WADOE
Guaiacol	DoD-ELAP,WADOE
EPA 8270D-SIM in Solid	
Tributyltin Ion	WADOE,DoD-ELAP
Dibutyltin Ion	WADOE,DoD-ELAP
Butyltin Ion	WADOE
Phenol	CALAP,NELAP,WADOE,DoD-ELAP
1,3-Dichlorobenzene	CALAP,NELAP,WADOE,DoD-ELAP
1,4-Dichlorobenzene	CALAP,NELAP,WADOE,DoD-ELAP
1,2-Dichlorobenzene	CALAP,NELAP,WADOE,DoD-ELAP
Benzyl Alcohol	CALAP,NELAP,WADOE,DoD-ELAP
2-Methylphenol	CALAP,NELAP,WADOE,DoD-ELAP
N-Nitroso-di-n-Propylamine	CALAP,NELAP,WADOE,DoD-ELAP
4-Methylphenol	CALAP,NELAP,WADOE,DoD-ELAP
2,4-Dimethylphenol	CALAP,NELAP,WADOE,DoD-ELAP
1,2,4-Trichlorobenzene	CALAP,NELAP,WADOE,DoD-ELAP
Hexachlorobutadiene	CALAP,NELAP,WADOE,DoD-ELAP
N-Nitrosodimethylamine	CALAP,NELAP,WADOE,DoD-ELAP
Dimethylphthalate	CALAP,NELAP,WADOE,DoD-ELAP
Diethyl phthalate	CALAP,NELAP,WADOE,DoD-ELAP
N-Nitrosodiphenylamine	CALAP,NELAP,WADOE,DoD-ELAP
Hexachlorobenzene	CALAP,NELAP,WADOE,DoD-ELAP
Pentachlorophenol	CALAP,NELAP,WADOE,DoD-ELAP
Butylbenzylphthalate	CALAP,NELAP,WADOE,DoD-ELAP
Dibenzo(a,h)anthracene	CALAP,NELAP,WADOE,DoD-ELAP
PSEP 1986 Combustion IR in Solid	
Total Organic Carbon	WADOE
SM 4500-NH3 H-97 in Solid	
Ammonia-N	WADOE,NELAP
SM 4500-S2 D-00 in Solid	
Sulfide	DoD-ELAP,NELAP,WADOE

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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	02/07/2019
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/07/2019
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-011	05/12/2019
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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Notes and Definitions

*	Flagged value is not within established control limits.
B	This analyte was detected in the method blank.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
EMPC	Estimated Maximum Possible Concentration qualifier for HRGCMS Dioxin
H	Hold time violation - Hold time was exceeded.
J	Estimated concentration value detected below the reporting limit.
NRS	This surrogate not reported due to chromatographic interference
P1	The reported value is greater than 40% difference between the concentrations determined on two GC columns where applicable.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the applicable reporting or detection limit.
X	Indicates possible CDPE interference.
Z	MDL and MRL are elevated due to isotope dilution.
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
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

APPENDIX D

Sediment Data Quality Assurance Review

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October 3, 2018

Mr. Todd Nicholson
Port of Friday Harbor
204 Front Street
Friday Harbor, Washington 98250

RE: Sediment Sampling Laboratory Data Verification and Validation – Jensen's Shipyard

This evaluation provides the results of verification and validation checks of analytical data for seven marine sediment samples collected during the sampling event which occurred on August 21, 2018 at the Jensen's Shipyard site located in Friday Harbor, Washington. The samples were collected and analyzed as part of the site investigation performed on behalf of the Port of Friday Harbor. All sample analyses were conducted at Analytical Resources Inc (ARI), located in Tukwila, Washington. This data quality evaluation covers ARI data package 18H0311.

Laboratory quality control procedures have been verified using the applicable National Functional Guidelines (EPA, 2017a; EPA, 2017b) and the Sediment Cleanup Users Manual II. The verification and validation check for each laboratory data package included the following:

- Verification that the laboratory data package contained all necessary documentation (including chain-of-custody records; identification of samples received by the laboratory; date and time of receipt of the samples at the laboratory; sample conditions upon receipt at the laboratory; date and time of sample analysis; explanation of any significant corrective actions taken by the laboratory during the analytical process; and, if applicable, date of extraction, definition of laboratory data qualifiers, all sample-related quality control data, and quality control acceptance criteria).

- Verification that all requested analyses, special cleanups, and special handling methods were performed.
- Evaluation of sample holding times.
- Evaluation of quality control data compared to acceptance criteria, including method blanks, surrogate recoveries, matrix spike results, laboratory duplicate and/or replicate results, and laboratory control sample results.
- Evaluation of overall data quality and completeness of analytical data.

Based on the verification and validation check, data qualifiers have been added to the sample results tables provided in the Report as needed. Data qualifier definitions are provided in the table footnotes. The absence of a data qualifier indicates that the reported result is acceptable without qualification. The data quality evaluation is summarized below.

Laboratory Data Package Completeness

The ARI laboratory data package (18H0311) contained a signed chain-of-custody, a cooler receipt form documenting the condition and temperature of the samples upon receipt at the laboratory, sample analytical results, and quality control results (method blanks, surrogate recoveries, laboratory control sample results, and replicate sample results). Definitions of laboratory qualifiers and quality control acceptance criteria were provided, as appropriate.

Sample Conditions and Analysis

The laboratories received the samples in good condition and all analyses were performed as requested. Preservation of samples, as specified by the analytical method, was verified by the laboratory and adjusted as appropriate.

Holding Times

For all analyses and all samples, the time between sample collection, extraction (if applicable), and analysis was determined to be within analytical method and project-specified holding times.

Initial and Continuing Calibrations

Appropriate calibration standard methods were followed as required. All initial and continuing calibration results were within acceptable range with the following exceptions:

- Benzo(g,h,i)perylene initial or continuing calibration did not meet established acceptance criteria during low level semivolatile organic compounds analysis (8270D). Associated data have been qualified as estimated concentrations (J) as indicated in Table 2, Table 4, and Table 5.
- Dibenzo(a,h)anthracene initial or continuing calibration did not meet established acceptance criteria during low level semivolatile organic compounds analysis (8270D) for the re-extraction of sample SED-16. Associated data have been qualified as estimated concentrations (J) as indicated in Table 2, and Table 4.
- Indeno(1,2,3-cd)pyrene initial or continuing calibration did not meet established acceptance criteria during low level semivolatile organic compounds analysis (8270D) for the re-extraction of sample SED-16. Associated data have been qualified as estimated concentrations (J) as indicated in Table 2, and Table 4.

Lab Method Blanks

At least one method blank was analyzed with each batch of samples. No contamination of the selected analytes was detected in any of the method blanks, with the following exceptions:

- Diethyl Phthalate was detected in the method blank associated with low level semivolatile organic compounds analysis (8270D). The analyte was not detected in any associated sample results, and no data qualifier is needed.
- 1,2,3,7,8,9-HxCDF was detected in the method blank associated with Dioxins/Furans analysis (EPA 1613B). The detected concentration was below the required reporting limit. All associated sample result concentrations are greater than 10x the method blank result. Sample results are considered unaffected.
- OCDD was detected in the method blank associated with Dioxins/Furans analysis (EPA 1613B). The detected concentration was below the required

reporting limit. All associated sample result concentrations are greater than 10x the method blank result. Sample results are considered unaffected.

- Lead was detected in the method blank associated with metals analysis (EPA 6020A). The detected concentration was below the required reporting limit. All associated sample result concentrations are greater than 10x the method blank result. Sample results are considered unaffected.

Surrogate Recoveries

Appropriate compounds (Decachlorobiphenyl and Tetrachlorometaxylene) were used as surrogate spikes for the PCB analysis (EPA 8082A). Surrogate spikes were added to all samples including Matrix Spikes, Matrix Spike Duplicates, Laboratory Control Samples, and blanks. Recovery values for the surrogate spikes were within the required control limits for all samples. No data qualification was deemed necessary.

Laboratory Control Sample Results

At least one laboratory control sample (LCS) and/or laboratory control sample duplicate (LCSD) was analyzed with each batch of samples. Recoveries for each LCS and/or LCSD were within the laboratory-specified control limits with the following exceptions:

- Benzoic acid LCSD results associated with low level semivolatile organic compounds analysis (8270D) were above the laboratory reported RPD limit. No data qualification was deemed necessary for associated non-detect results, detected concentrations have been qualified as estimated concentrations (J) as indicated in Table 2 and Table 3.

Sample Duplicate and Matrix Spike/Matrix Spike Duplicate Results and Laboratory Duplicate Results

A sample duplicate and/or Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed with each batch of samples. The recovery values and relative percent difference (RPD) values for associated analyses were within the laboratory-specified control limits for all samples with the following exceptions:

- Numerous parameter duplicate RPD results associated with the dioxins/furans analysis (EPA 1613B) were outside of the laboratory specified recommended limit. These parameters were used in the calculation of total 2,3,7,8-TCDD equivalence. Associated results have been qualified as estimated concentrations (J) as indicated in Table 2 and Table 6.
- Ammonia duplicate RPD results associated with conventionals analysis (SM 4500-NH3 H-97) were outside of the laboratory specified recommended limit. All other associated laboratory quality control data for ammonia meets specified requirements. No data qualifier is deemed necessary.
- The total organic carbon MS/MSD and duplicate RPD results associated with the conventionals analysis (PSEP 1986 modified) were recovered outside of the laboratory specified control limits. The MS/MSD and duplicates were performed using sample 18H0311-05 (SED-15). All independent quality control data associated with TOC analysis were acceptable. Dependent quality control exceedances (MS/MSD and sample duplicates) are believed to be caused by matrix interference and/or non-homogeneity in the sample matrix. The associated sample results were qualified as estimated (J), as indicated in Table 2.
- Tributyltin MS/MSD recoveries associated with butyl tins analysis (EPA 8270D-SIM) were outside of the recommended control limit range. The MS/MSD was performed using sample 18H0311-05 (SED-15). The MS was recovered high, while the MSD was recovered low. All other associated laboratory quality control data indicate the analysis is acceptable and the variation is likely due to non-homogeneity in the sample matrix. A comment has been included in Table 2. No data qualifier is deemed necessary.
- The copper MSD recovery associated with total metals analysis (EPA 6020A) was slightly above the suggested control limit range. The MSD was performed using sample 18H0311-05 (SED-15). All other laboratory quality control data associated with copper analysis meets specified requirements. No data qualifier is deemed necessary.
- The sulfide MS recovery associated with conventionals analysis (SM 450-S2 D-00) was outside of the suggested control limit range. The MS was performed using sample 18H0311-05 (SED-15). All other laboratory quality control data associated with sulfide analysis meets specified requirements. No data qualifier is deemed necessary.

- The N-Nitrosodiphenylamine MSD recovery and the MS/MSD RPD associated with low level semivolatile organic compounds analysis (8270D) were outside of the suggested control limits. The MS/MSD was performed using sample 18H0311-05 (SED-15). The analyte was not detected in any samples submitted for this project, and all associated non-detect results have been qualified as estimated (J) an indicated in Table 2 and Table 4.

Sample Collection Methods

All sample collection and handling methods were followed as described in the approved Sampling and Analysis Plan (SAP) and laboratory methods with the following exception:

- Sample containers for sulfide analysis were not filled prior to homogenization. Sulfide sample results have been qualified as biased low (J-) as indicated in Table 2.

Overall Assessment of the Data

This data set is 100% complete. Data precision was evaluated through sample duplicates, laboratory surrogate duplicates, and matrix spike duplicates. Data accuracy was evaluated through laboratory method blanks, surrogate spikes, and matrix spikes. Based on this data quality verification and validation, all of the data presented were determined to be acceptable.

APPENDIX E

Limitations

LIMITATIONS

No site investigation can wholly eliminate uncertainty regarding the potential for contamination in connection with a property. Performance of this investigation by Whatcom Environmental Services Inc. is intended to reduce, but not eliminate, uncertainty regarding the potential for environmental contamination in connection with the site.

The interpretation of conditions is based on Whatcom Environmental Services' field observations and chemical analytical data collected from relatively widely spaced sampling locations at the site. It is possible that contamination exists beneath portions of the site that were not explored, sampled, or analyzed. No warranty, express or implied, is given regarding the presence of hidden or unidentified sources of contamination of the site. In addition, no warranty, express or implied is given regarding geotechnical or geologic hazards.

This environmental report is based on conditions that existed at the time the investigation was performed and samples collected. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, ground instability, or groundwater fluctuations.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted environmental practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

This report has been prepared for use by the Port of Friday Harbor. Whatcom Environmental Services prepares a report for the client's exclusive use for a particular project and in accordance with generally accepted practices at the time of investigation. This report was prepared for exclusive use by the client and its agents and may not be used, relied upon, or assigned to a third party without written consent from Whatcom Environmental Services Inc. This report is not intended for use by others, and the information contained herein is not applicable to other sites. This report may be made available to regulatory agencies.