

**INITIAL INVESTIGATION REPORT  
JENSEN'S SHIPYARD  
1293 TURN POINT ROAD  
FRIDAY HARBOR, WASHINGTON**

*Prepared for:*

Mr. Todd Nicholson  
Port of Friday Harbor  
204 Front Street  
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April 2, 2018



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April 2, 2018



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**ACRONYMS AND ABBREVIATIONS**

ARAR	-	Applicable and Relevant and Appropriate Requirements
bgs	-	below ground surface
BLWA	-	Boat Lift Work Area
BTEX	-	Benzene, Toluene, Ethylbenzene, and Xylenes
cPAH	-	Carcinogenic Polycyclic Aromatic Hydrocarbons
COC	-	Contaminant/Chemical of Concern
Ecology	-	Washington State Department of Ecology
EPA	-	Environmental Protection Agency
ESA	-	Environmental Site Assessment
FOC	-	Fraction of Organic Carbon
GPS	-	Global Positioning System
MTCA	-	Model Toxics Control Act
NPDES	-	National Pollutant Discharge Elimination System
OPALCO	-	Orcas Power and Light Company
PAH	-	Polycyclic Aromatic Hydrocarbons
PID	-	Photoionization Detector
PCB	-	Polychlorinated Biphenyls
PSEP	-	Puget Sound Estuary Program
RCW	-	Revised Code of Washington
SAP	-	Sampling and Analysis Plan
SCUM II	-	Sediment Cleanup User's Manual
SMS	-	Sediment Management Standards
SRWA	-	Shipyard Rail Work Area
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**

A soil and sediment investigation was conducted at the Jensen's Shipyard property (1293 Turn Point Road) in Friday Harbor, Washington. Fifteen soil samples and thirteen sediment samples were collected during the investigation.

The soil sample results indicated that portions of the site are contaminated with metals (primarily copper and lead), petroleum compounds, and carcinogenic polycyclic aromatic hydrocarbons (cPAHs).

The sediment sample results indicated that marine sediments (particularly near the shore) are contaminated with metals (primarily copper, zinc, and mercury), PAHs, polychlorinated biphenyls (PCBs), phthalates, pesticides, and tributyltin.

No groundwater was encountered at the site during the investigation, however, due to the site proximity to marine waters, it is assumed that groundwater exists beneath the upland portions of the site at a depth of approximately 10-15 feet.

Soil, sediment, and groundwater contamination has not been fully delineated at the site. Further investigation is recommended to delineate contamination at the site 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 portions of the facility are owned by Albert Jensen & Sons Inc. The aquatic lands are 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.

- Project Consultant:
  - Whatcom Environmental Services, Inc.
  - Address: 228 E Champion St #101, Bellingham, WA 98225
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- Property Owner:
  - Albert Jensen and Sons Inc.
  - Address: 1293 Turn Point Road, Friday Harbor, WA, 98250
  - Contact: Mike Ahrenius

- Phone: (360) 378-4343
- Proposed Property User:
  - Port of Friday Harbor
  - Address: 204 Front Street, Friday Harbor, WA, 98250
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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 20<sup>th</sup> century. As wooden boats were phased out in the middle of the 20<sup>th</sup> 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.

The property owner also reported that an underground storage tank was formerly located in the field southwest of the oil storage building. The tank was used to fuel equipment, and was removed in the 1980's. The owner did not recall if soil contamination was observed when the tank was removed.



### **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.

### **1.4 SITE GEOLOGY**

Soils in the upland area of the subject property are described in the Soil Survey of San Juan County Area, Washington (U.S. Department of Agriculture [USDA], 2009). The Soil Survey designates the upland soil as a mixture of Beaches-Endoaquents, tidal-Xerorthents association; Mitchellbay-Rock Outcrop-Killebrew complex; and Cady-Rock Outcrop Complex. The soil is composed of approximately 38% Beaches-Endoaquents, tidal-Xerorthents association; 26% Mitchellbay-Rock Outcrop-Killebrew complex; and 36% Cady-Rock Outcrop Complex.

The Beaches-Endoaquents, tidal-Xerorthents association is 40% beaches; 25% Endoaquents, tidal, and similar soils; 25% Xerorthents and similar soils; and 10% dissimilar minor components. The material generally formed from beach sand and/or colluvium from glacial outwash. The material is very poorly to excessively drained, and the available water capacity is very low.

The Mitchellbay-Rock Outcrop-Killebrew complex is 45% Mitchellbay and similar soils; 25% rock outcrop; 20% Killebrew and similar soils; and 10% dissimilar minor components. The material generally formed from in glacial drift over dense glaciomarine deposits. The material is somewhat poorly drained, and the available water capacity is low to moderate.

The Cady-Rock Outcrop Complex is 45% Cady and similar soils; 35% rock outcrop; and 20% dissimilar minor components. The material generally formed in glacial drift mixed with colluvium derived from metasedimentary rock. The material is well drained, and the available water capacity is low.

The site is underlain by Marine outwash of the Everson Interstade of the Fraser Glaciation. The outwash consists of loose, moderately to well-sorted, sub angular to sub-rounded gravelly sand, sandy gravel, and sand with minor interbeds of silt and silty sand. Color is brown to gray, depending on oxidation state and lithologic content. Thickness ranges to as much as 230 feet (WSDNR, 2016).

## **1.5 SITE HYDROGEOLOGY**

Groundwater was not encountered during site investigation activities. Due to the site's proximity to marine waters, it is assumed that groundwater exists beneath the upland portion of the site at a depth of approximately 10-15 feet below ground surface.

## **2.0 PREVIOUS INVESTIGATIONS**

Two previous investigations have been conducted at the site.

### **2.1 2017 PHASE I ENVIRONMENTAL SITE ASSESSMENT**

A Phase I Environmental Site Assessment (ESA) was conducted at the site in November 2017. The ESA findings are summarized in a report titled "Phase I Environmental Site Assessment, Jensen's Shipyard, 1293 Turn Point Road, Friday Harbor, Washington" dated November 21, 2017. The Phase I ESA revealed evidence of several recognized environmental conditions at the subject property:

- The subject property has had several permit violations of the NPDES Boatyard General Permit including benchmark exceedances for copper, zinc, lead and total suspended solids.
- Sediment samples collected in the aquatic area northeast of the subject property exceeded the screening level for tributyltin (TBT).
- One underground storage tank was formerly located in the field south of the oil storage building. It is unknown if any soil contamination resulted from the use of the tank.
- A small dump site was identified north of the oil storage building. There is a potential that hazardous substances may have been released in the area of the dump.
- A floor drain was identified at the northwest corner of the machine shop building. Hazardous substances used in the machine shop may have made their way to the floor drain in the past, and may have infiltrated into the ground beneath the machine shop depending on the setup/terminus of the floor drain.
- The laydown area, marine railways, and stormwater detention pond are all potential areas of concern for tributyltins and other heavy metals in soil/sediments due to their use for maintenance/repair of boats. Depending on the current and historic use of the site, additional hazardous chemicals may be of concern for these areas including solvents and petroleum products.

## **2.2 1997 SEDIMENT SAMPLING**

Sediment samples were collected from the site by the Department of Ecology in 1997. 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, 2017b). Historical sediment sample locations are shown in Appendix A

### 3.0 UPLAND SOIL INVESTIGATION RESULTS

#### 3.1 SOIL SAMPLE COLLECTION

Soil samples were collected from the site on January 24, 2018. The soil sample locations are shown on Figure 3. Samples were collected from areas identified in the 2017 Phase I ESA. Soil samples were collected using either a stainless-steel hand auger or using a small excavator. All sampling tools were cleaned using Alconox detergent and rinsed with distilled water. When sampling soil collected from the excavator bucket, care was taken to collect samples from soil which did not contact the bucket.

Soil samples were logged in the field and soil descriptions generally followed ASTM D 2487 'Unified Soil Classification System' procedures for description and identification of soils. Soil was field screened for indications of petroleum contamination by conducting head space analyses for organic vapors using a photoionization detector (PID) and by conducting sheen tests. The organic vapor headspace analyses were conducted using a MiniRAE Model 3000 PID equipped with a 10.6 eV lamp. Immediately after the soil samples were described, a portion of each sample was sheen tested and the remainder of the sample was placed in a labeled re-sealable bag. The PID was inserted into the re-sealable bag to evaluate the presence of organic vapors, and a headspace organic vapor detection in parts per million (ppm) was recorded on the boring log. Sheen tests were recorded as: NS – no sheen, VSS – very slight sheen, SS – slight sheen, MS – moderate sheen, and HS – heavy sheen. Soil sample descriptions and field screening results are provided in Table 1.

All soil samples were collected as discrete samples using Method 5035A and placed in containers provided by the lab. Each sample was placed in a sample container provided by the lab, stored in a cooler with ice, and shipped to ALS Laboratory Group in Everett, Washington. ALS is accredited by Ecology. Strict chain-of-custody and QA/QC protocols were followed for each sample. The following laboratory methods were used to analyze the soil samples:

NWTPH-Dx: Diesel and oil range total petroleum hydrocarbon (TPH)

NWTPH-Gx: Gasoline range TPH

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EPA Method 8021: Benzene, toluene, ethylbenzene, and total xylenes (BTEX constituents)

EPA Method 6020: Arsenic, cadmium, chromium, copper, lead, and zinc

EPA Method 7471: Mercury

EPA Method 8260: Volatile Organic Compounds

EPA Method 8270: Semi-Volatile Organic Compounds, Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAH) and naphthalenes

EPA Method 8082: Polychlorinated Biphenyls (PCBs)

A summary of the soil sample laboratory analytical results is provided in Table 2. The Method A and Method B cleanup levels for cPAHs are calculated using the toxic equivalency methodology provided in WAC 173-340-900 Table 708-2. The original laboratory analytical reports are provided in Appendix B.

### **3.2 UNDERGROUND STORAGE TANK SITE**

Two test pits (UST-1 and UST-2) were excavated at the former underground storage tank (UST) site. The site was identified by the property owner, Mr. Mike Ahrenius, who reported that the UST was removed in the 1980s. Soil samples were collected from the bottom of each test pit. Soil sample UST-1 was collected 5.0 feet below ground surface (bgs) and sample UST-2 was collected 3.0 feet bgs. As the former UST was used to fuel equipment, the soil samples were analyzed for gasoline, diesel, and oil range TPH as well as BTEX constituents.

Soil samples UST-1 and UST-2 did not contain detectable concentrations of TPH or BTEX constituents.

### **3.3 FORMER DUMPING AREA SITE**

Three soil samples (FDA-1, FDA-2, and FDA-3) were collected using a hand auger at the former dumping area site. The samples were collected to determine if refuse dumped at the bluff area had impacted onsite soil. Samples were analyzed for diesel and oil range TPH and metals.

Soil samples FDA-1 and FDA-2 did not contain detectable concentrations of TPH. Soil sample FDA-3 contained a concentration of oil range TPH which was below the MTCA

Method A cleanup level. There were no metals detected in any of the three FDA samples at concentrations which exceeded MTCA cleanup levels.

### **3.4 SHOP FLOOR DRAIN SITE**

Three soil samples (Shop Floor Drain-1, Shop Floor Drain-2, and Shop Floor Drain-3) were collected using a hand auger near the location of a floor drain located in the northwest corner of the shop building. Samples Shop Floor Drain-1 and Shop Floor Drain-2 were collected by boring beneath the location of the drain from outside the building. Sample Shop Floor Drain-3 was collected from material which had collected in the drain itself.

The routing of the shop floor drain is unknown. Site personnel believe that the shop floor drain empties into a drain sump which then infiltrates into the soil. It is unknown if there is an outfall pipe from the drain sump.

Samples Shop Floor Drain-1 and Shop Floor Drain-2 were analyzed for gasoline, diesel, and oil range TPH, BTEX, and metals only. Due to the unknown nature of the materials drained into the shop floor drain, sample Shop Floor Drain-3 was analyzed for gasoline, diesel, and oil range TPH, BTEX, metals, volatile organic compounds, and semi-volatile organic compounds.

There were no detections above MTCA cleanup levels in samples Shop Floor Drain-1 and Shop Floor Drain-2. Sample Shop Floor Drain-3 contained concentrations of diesel and oil range TPH above MTCA Method A cleanup levels. Sample Shop Floor Drain-3 also contained concentrations of arsenic, copper, and lead which exceeded MTCA cleanup levels.

### **3.5 SHIPYARD RAIL WORK AREA SITE**

Three soil samples (SRWA-1, SRWA-2, and SRWA-3) were collected using a hand auger at the shipyard rail work area site. The three soil samples were collected near the ground surface. Soil samples were analyzed for diesel and oil range TPH, metals, and semi-volatile organic compounds.

All three samples contained concentrations of cPAHs above MTCA cleanup levels. Sample SRWA-1 contained concentrations of arsenic, lead, and mercury above the MTCA

Method A cleanup level. Sample SRWA-2 contained lead and mercury above MTCA cleanup levels. Sample SRWA-3 contained diesel range TPH at a concentration above the MTCA Method A cleanup level.

### **3.6 OPALCO PAD**

One soil sample (OPALCO Pad) was collected using a hand auger at the location of a former Orcas Power and Light Company (OPALCO) storage shed located on the western portion of the site. The shed and nearby pier were used in the past to offload and store equipment for OPALCO. The sample was collected from surface soils near the former OPALCO shed (the concrete floor slab is still intact). The sample was analyzed for gasoline, diesel, and oil range TPH and PCBs.

The sample did not contain concentrations of TPH or PCBs above MTCA cleanup levels. The sample did contain cadmium and lead at concentrations which exceed the MTCA Method A cleanup levels.

### **3.7 STORMWATER POND**

One soil sample (Stormwater Pond) was collected from the sediment which had collected in the lined stormwater pond. The stormwater pond receives stormwater from the wash pad and the boat lift and work area located to the south and west of the wash pad. Due to the potential for marine paint in the stormwater, the stormwater pond sediment was analyzed for metals.

The sample contained concentrations of cadmium, copper, and lead which exceeded MTCA cleanup levels.

### **3.8 BOAT LIFT AND WORK AREA SITE**

Two soil samples (BLWA-1 and BLWA-2) were collected from the boat lift and work area. The samples were collected from the ground surface to determine if boat repairs conducted in this area impacted soil. Samples were analyzed for diesel and oil range TPH and metals.



Both samples contained detectable concentrations of diesel and oil range TPH which were below MTCA Method A cleanup levels. Both samples did contain concentrations of copper and lead which exceeded MTCA cleanup levels.

## **4.0 MARINE SEDIMENT INVESTIGATION RESULTS**

A baseline sediment monitoring event was performed in accordance with the Jensen's Shipyard and Marina Sediment Sampling and Analysis Plan (SAP) approved by the Washington State Department of Natural Resources. The SAP was prepared following guidelines provided in the Sediment Cleanup User's Manual (Ecology, 2015), and the Puget Sound Estuary Program (PSEP, 1997). The purpose of the study is to characterize sediment quality in the leased tidelands and in-water property at the Jensen's Shipyard and Marina site.

Marine sediment samples were collected for chemical analysis from thirteen sampling stations. Sediment results have been compared to the Sediment Quality Standards (SQS) numeric criteria (Ecology, 2015). Tributyltin and pesticide results have been compared to the Dredged Material Management Program (DMMP) User Manual screening level values (USACE, 2016), since those contaminants do not have an established SQS numeric criteria value.

### **4.1 FIELD SAMPLING METHODS**

On February 12, 2018, marine sediment samples were collected for chemical analysis from thirteen sampling stations per the sample collection and handling procedures described in the SAP (WES, 2017).

Proposed sample locations were identified in the field using the boat's GPS unit. Upon arriving at each location, a small weight attached to a float was set to allow the diver to return to the exact sample location while underwater. Coordinates of all sample locations are provided in Table 3 and sample collection locations are shown on Figure 4.

Samples were hand-collected by a commercial diver provided by Jen-Jay Inc. Samples were collected from the uppermost 0-10 cm of sediment using a pre-cleaned stainless-steel sampling spoon and filled into 32 oz. jars while underwater. Samples were immediately brought to the surface where a small sub-sample was taken from one of the 32 oz. jars and transferred to a pre-preserved sample container as required for sulfides

analysis. Sample labeling and sample description documentation was completed by WES personnel. Original field log sheets for each sample location are provided in Appendix D.

#### **4.2 LABORATORY ANALYTICAL METHODS**

Sediment samples were analyzed for the full list of SMS chemical and conventional parameters. Samples were also analyzed for organotins as recommended in Ecology guidance documents, due to shipyard activities conducted at the site.

The laboratory used for the marine sediment sampling event was ALS Lab, located in Kelso 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 laboratory reports in Appendix C.

#### **4.3 DEVIATIONS**

Four nearshore sample locations were shifted slightly from the original SAP. Samples were moved due to a more accurate lease boundary map which was made available after the SAP was created. Additionally, the nearshore sample location names were modified to keep a logical naming pattern. Final sediment sample locations are shown on Figure 4.

Organotin analysis was performed beyond the recommended holding time due to laboratory error. All other analyses were performed within recommended holding times.

Benzoic acid analytical data were rejected due to deficiencies in meeting the associated quality control criteria. All other data were deemed acceptable.

#### **4.4 QUALITY ASSURANCE REVIEW**

A quality assurance review has been performed on all available 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:
  - o Method blanks
  - o Analytical replicates
  - o Laboratory control samples (blank spikes)
  - o Surrogate recoveries
  - o 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 with the following exception. Benzoic acid results have been rejected due to deficiencies in meeting the associated quality control criteria. No other data were rejected. A summary of the quality assurance review is provided in Appendix E.

#### **4.5 RESULTS**

Sediment sample results were compared to the SQS numeric criteria for marine sediment (Ecology, 2015). A summary of all sediment sample results is provided in Table 4. Sample results are evaluated against applicable SQS criteria levels in Table 5, Table 6, and Table 7. Sample results are evaluated against applicable DMMP screening levels in Table 8. Sample collection locations and all parameters exceeding applicable levels are shown on Figure 4.

Metals: Copper concentration exceeded the SQS criteria at sample stations SED-9. Mercury concentration exceeded the SQS criteria at sample station SED-11. Copper, mercury, and zinc concentrations exceeded the SQS criteria at sample stations SED-10 and SED-13. These sample stations are in nearshore areas in relatively close proximity to the current travel lift and the historic railways. No other metals exceeded the project criteria in marine sediment at the site.

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.

Phthalates: Butylbenzyl phthalate and dimethyl phthalate concentrations exceeded the SQS criteria at sample station SED-9. No other phthalate exceedances were encountered in marine sediment at the site.

Polycyclic Aromatics: Various PAH constituent concentrations exceeded the SQS criteria levels at three sample stations. 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 were exceeded in marine sediment at the site.

Chlorinated Organics: No chlorinated organics were detected at a concentration which exceeded any SQS criteria at the site. However, it should be noted that due to the dilution factors (created by converting data to dry weight and also converting to carbon normalized data) the laboratory detection limits were elevated greater than the SQS criteria for some chlorinated organics analyzed.

Pesticides: Various pesticide concentrations exceeded the DMMP screening levels at five sample stations. Dieldrin concentrations exceeded the DMMP screening level at sample station SED-9. Chlordane concentrations exceeded the DMMP screening level at sample stations SED-3, SED-5. Chlordane and 4,4' DDD concentrations (a breakdown product of DDT) exceeded the DMMP screening level at sample stations SED-10 and SED-13.

Organotins: Tributyltin concentrations exceeded the DMMP screening level at sample locations SED-7, SED-8, SED-9, SED-10, and SED-13. These sample stations are all located in the nearshore area. Tributyltin concentrations are significantly elevated in the shallow area at the historic western railway.

## **5.0 CONCLUSIONS**

### **5.1 SOIL**

Soil samples collected during this investigation indicate that upland soils are contaminated with petroleum compounds and metals. Diesel range TPH was detected at concentrations greater than MTCA Method A cleanup levels at the shop floor drain and shipyard rail work areas. Samples collected at the shipyard work area contained concentrations of cPAHs that exceeded MTCA Method A and Method B cleanup levels (as measured using the toxic equivalency methodology in WAC 173-340-900 Table 708-2). Samples collected at the shop floor drain, OPALCO pad boat lift and work area, and shipyard marine railways contained concentrations of metals (specifically arsenic, cadmium, copper, lead, and mercury) which exceeded MTCA cleanup levels.

The soil contamination is likely due to historical waste handling and disposal practices. It is likely that the metals concentrations are due to the presence of paint chips mixed with shallow soil. Soil contamination can impact human health and the environment through the direct contact exposure pathway (skin absorption, inhalation, or ingestion) and/or the potential for soil contaminants to leach into stormwater or groundwater.

### **5.2 STORMWATER**

Stormwater runoff at the site likely contains high concentrations of metals, especially copper and zinc. Pressure wash water is treated using enzymes before being discharged to the onsite stormwater evaporation pond. Enzymes have potential to breakdown petroleum constituents in the stormwater but are likely ineffective in reducing metal concentrations. The high levels of copper, lead, and zinc the stormwater pond sediment indicate that these metals are being concentrated in the evaporation system.

This stormwater sediment is potentially designated as a state dangerous waste due to the high concentration of copper. Management of dangerous waste needs to be conducted in accordance with WAC 173-303 and federal hazardous waste regulations. Further testing of the stormwater pond sediment is recommended.

### **5.3 GROUNDWATER**

This initial investigation did not include a groundwater investigation. Due to the presence of contaminated soil and the uncertainty regarding the shop floor drain, a groundwater investigation is recommended.

### **5.4 SEDIMENT**

Marine sediment samples collected during this investigation indicate that contaminated sediment is present in aquatic areas at the site. Sediment results were compared to the SQS marine chemical criteria levels (Chapter 173-204-320 WAC) and the DMMP screening levels (USACE, 2015). Chemicals exceeding applicable target criteria and screening levels include PCBs, various PAHs, phthalates, pesticides, copper, zinc, mercury, and tributyltin.

The contamination appears to be focused in the nearshore marine areas close to the old marine railways and the current boat travel lift. Some contamination is also present further west of the lifts and beneath the covered boat moorage slips.

## 6.0 RECOMMENDATIONS

In order to more fully assess and characterize the site, a remedial investigation should be conducted. The remedial investigation should include the following:

- A characterization of the horizontal and vertical (depth) extents of the upland soil impacts. This characterization should also include the collection of samples to determine the appropriate disposal options of any soil excavated from the site. The soil should be sampled to determine if it designates as a dangerous or hazardous waste due to the metals content.
- A groundwater characterization which includes sampling of the groundwater for petroleum and metals contamination. The groundwater characterization should also include a determination of groundwater flow direction, flow gradient, and the collection of geotechnical samples to determine the geophysical parameters of the aquifer.
- An assessment and designation of the stormwater pond sediment. The pond sediment should be sampled to determine if it designates as a dangerous or hazardous waste.
- Additional marine sediment sampling to determine the horizontal and vertical extents of the impacted sediment.



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## 7.0 REFERENCES

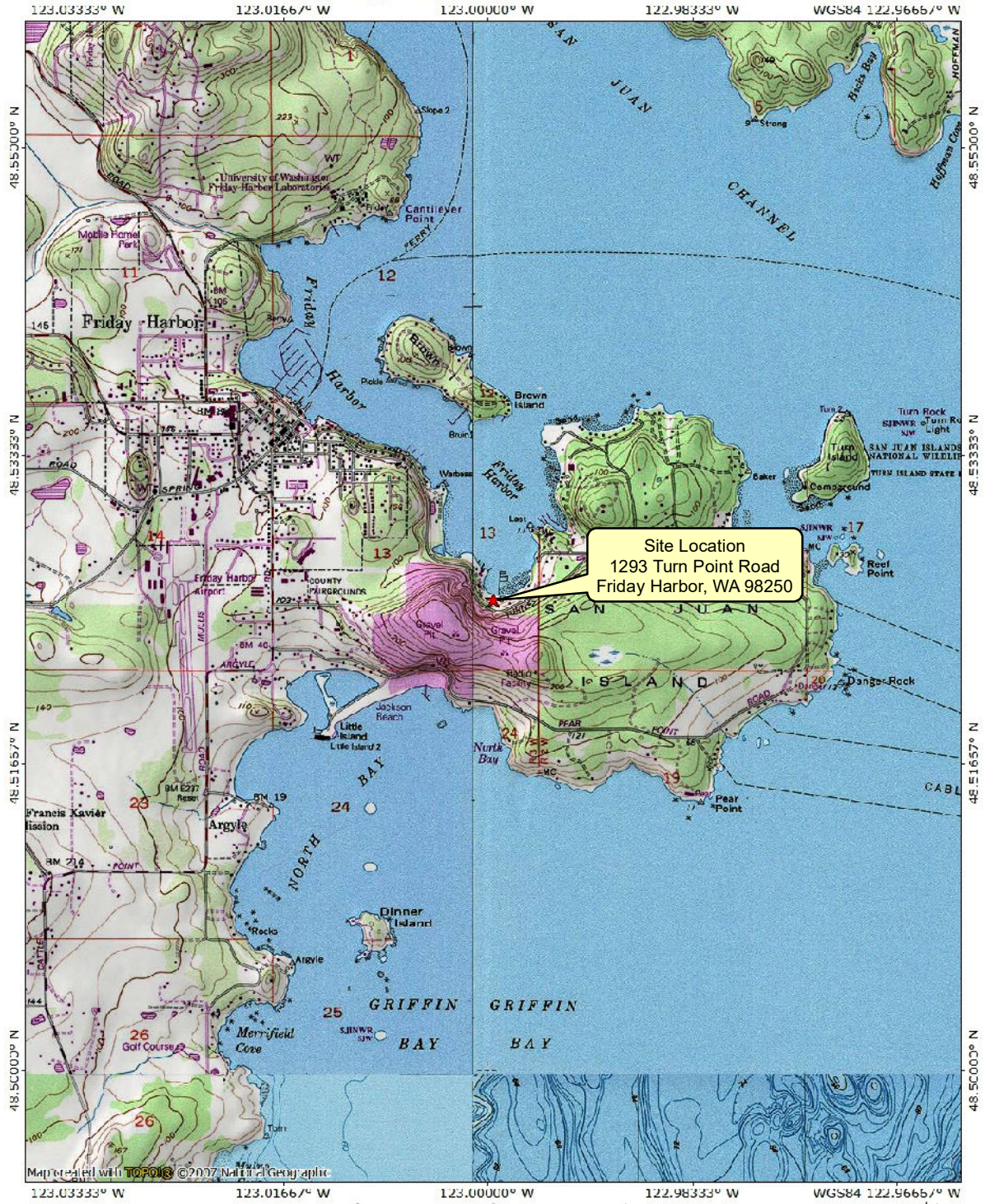
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TOPO! map printed on 10/04/17 from "Untitled.tpo"



Site Location  
 1293 Turn Point Road  
 Friday Harbor, WA 98250

Prepared for:



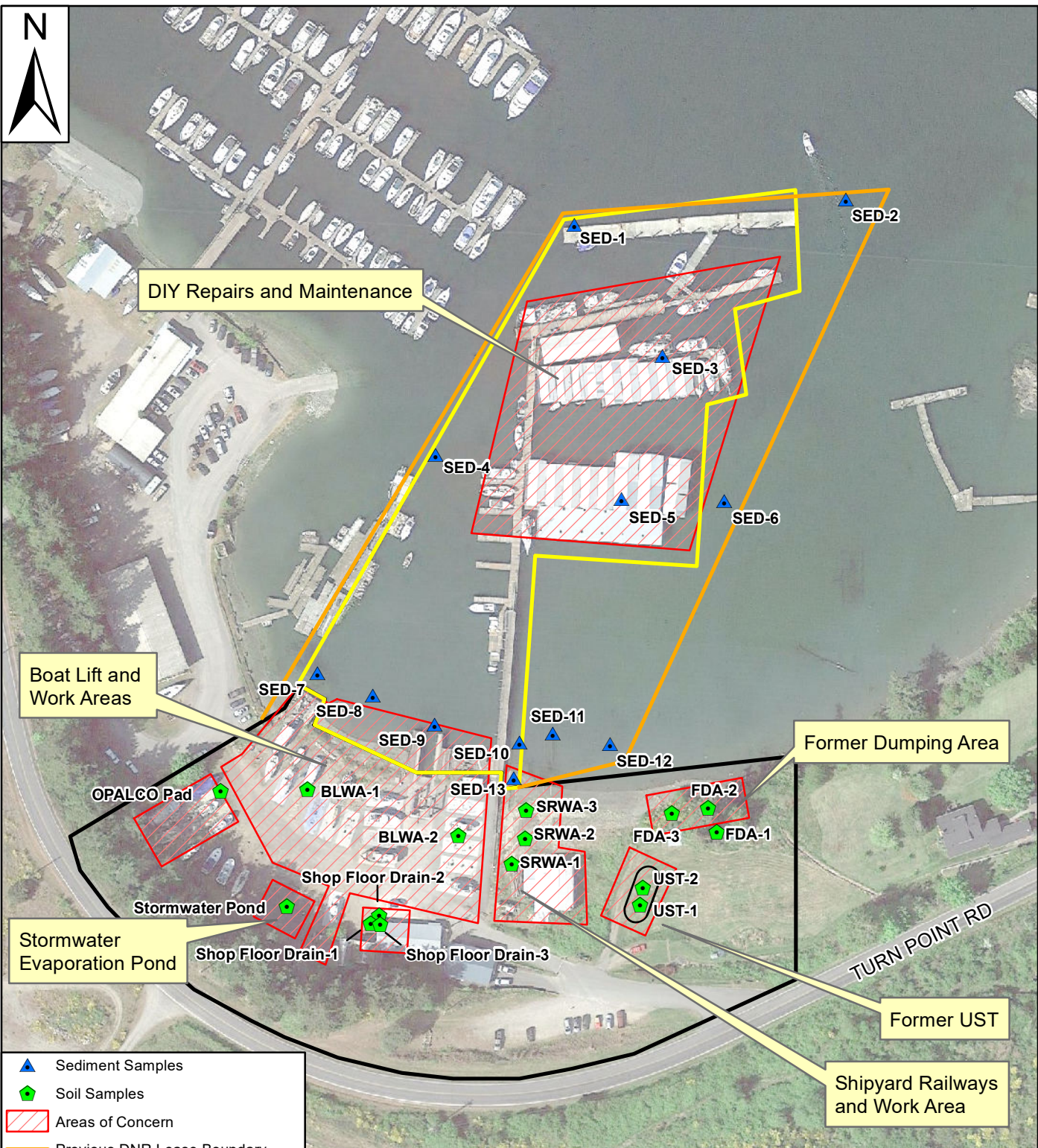
Prepared by:










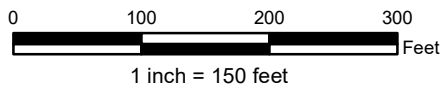
### Site Location Map

Jensen's Shipyard  
 Phase I ESA  
 10/04/17

# Figure 1



-  Sediment Samples
-  Soil Samples
-  Areas of Concern
-  Previous DNR Lease Boundary
-  2001-Present DNR Lease Boundary
-  Property Boundary
-  Former UST



All data are approximate and should be used for relative location reference only.  
 2017 Google Earth photograph.

### Subject Property and Sample Location Map

Prepared for:



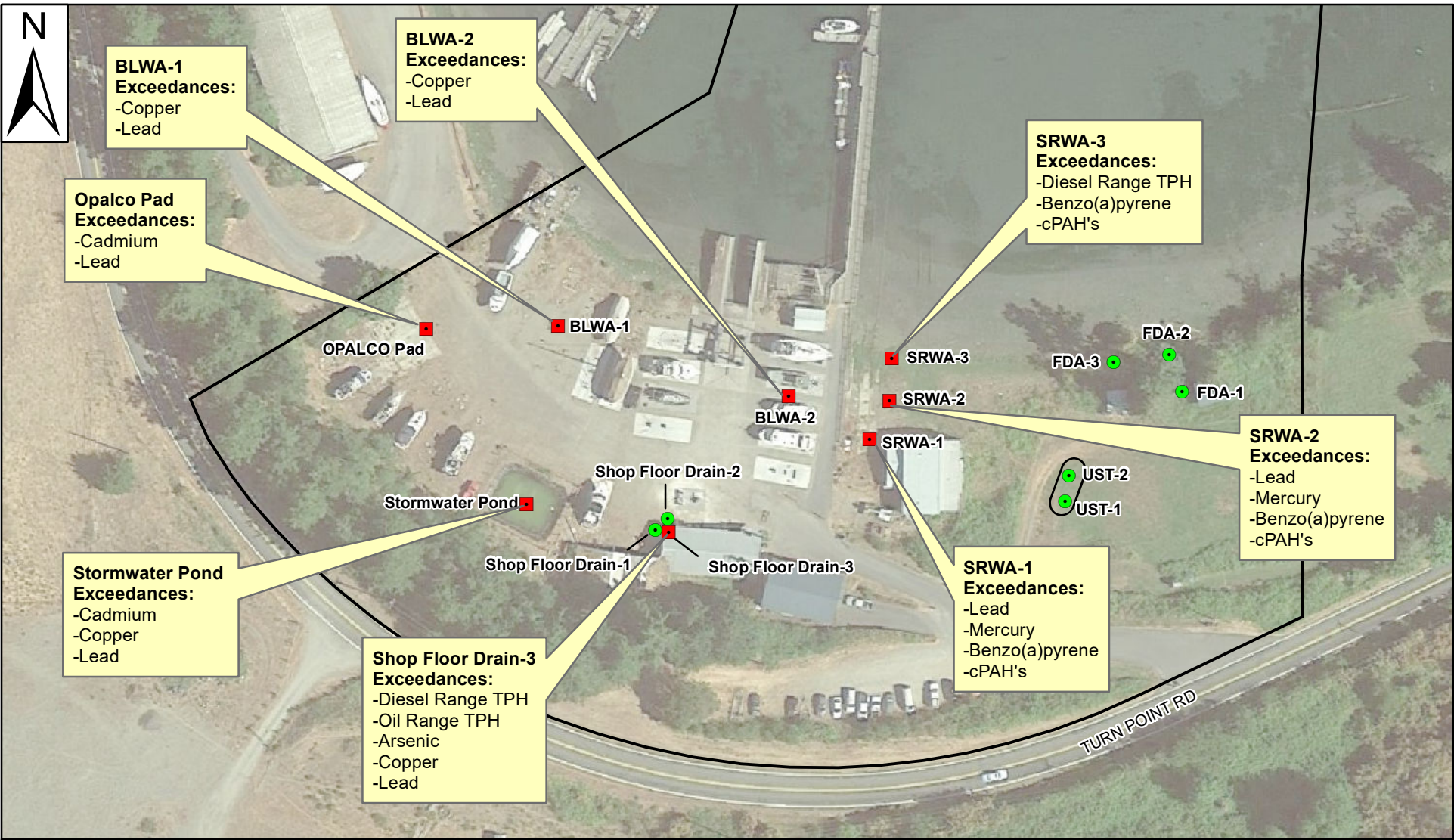
Prepared by:



1293 Turn Point Road  
 Friday Harbor, WA 98250

Jensen's Shipyard  
 Initial Assessment  
 3/27/18

# Figure 2



- Soil Sample (no criteria exceedance)
- Soil Sample (exceeds one or more criteria)
- Subject Property
- Former UST

All data are approximate and should be used for relative location reference only.  
2017 Google Earth aerial photograph.

0 25 50 100  
Feet  
1 inch = 100 feet

Prepared for:



Prepared by:

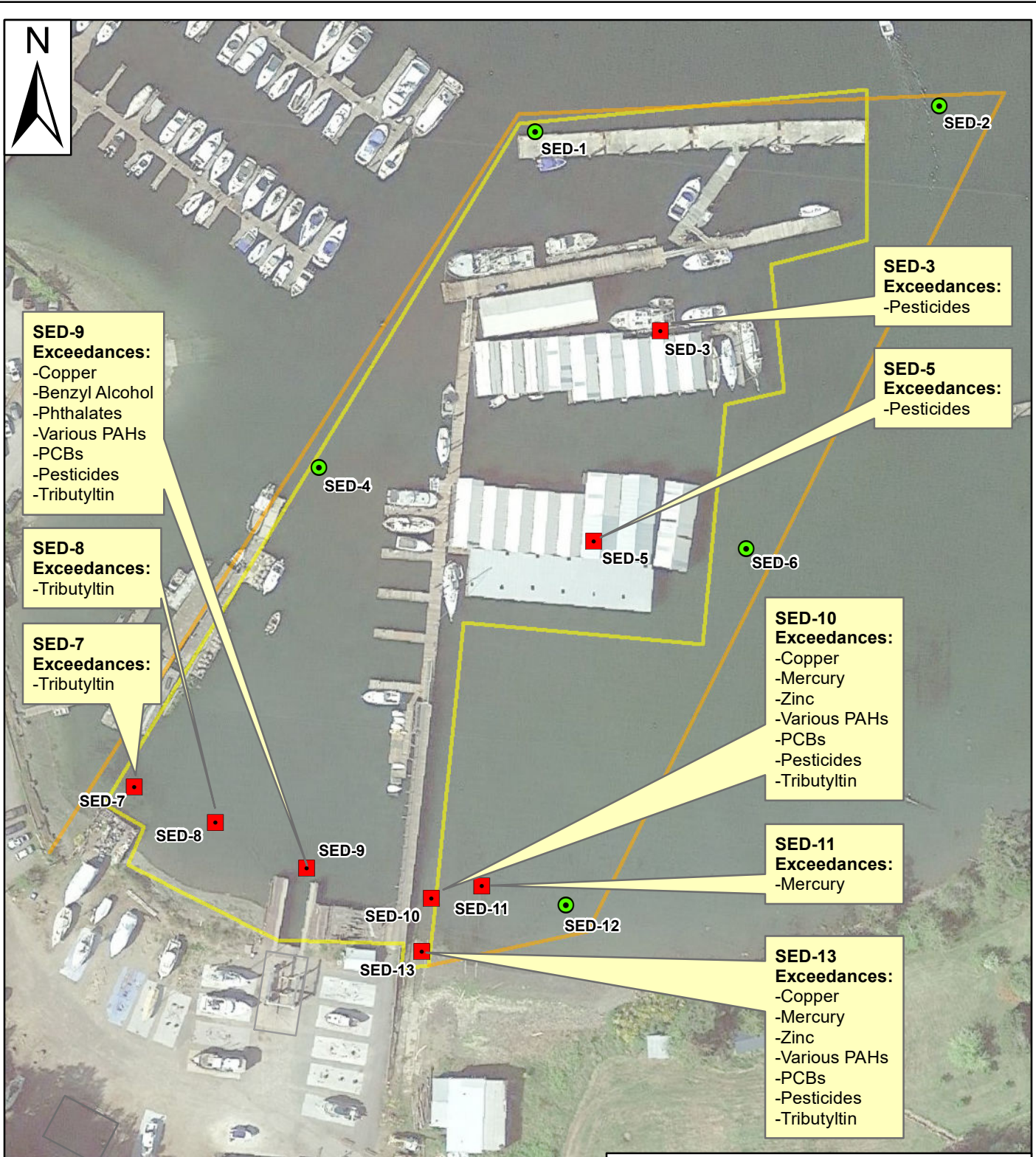


## Upland Soil Sample Results Map

1293 Turn Point Road  
Friday Harbor, WA 98250

Jensen's Shipyard  
Initial Assessment  
3/27/18

# Figure 3



**SED-9**  
**Exceedances:**  
 -Copper  
 -Benzyl Alcohol  
 -Phthalates  
 -Various PAHs  
 -PCBs  
 -Pesticides  
 -Tributyltin

**SED-8**  
**Exceedances:**  
 -Tributyltin

**SED-7**  
**Exceedances:**  
 -Tributyltin





**SED-3**  
**Exceedances:**  
 -Pesticides

**SED-5**  
**Exceedances:**  
 -Pesticides

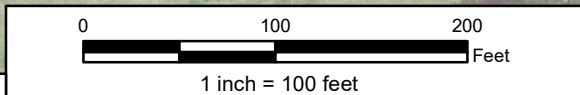
**SED-10**  
**Exceedances:**  
 -Copper  
 -Mercury  
 -Zinc  
 -Various PAHs  
 -PCBs  
 -Pesticides  
 -Tributyltin

**SED-11**  
**Exceedances:**  
 -Mercury

**SED-13**  
**Exceedances:**  
 -Copper  
 -Mercury  
 -Zinc  
 -Various PAHs  
 -PCBs  
 -Pesticides  
 -Tributyltin

-  Sediment Sample (no criteria exceedance)
-  Sediment Sample (exceeds one or more criteria)
-  Previous DNR Lease Boundary
-  2001-Present DNR Lease Boundary

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



## Marine Sediment Sample Results Map

Prepared for:



Prepared by:



1293 Turn Point Road  
 Friday Harbor, WA 98250

Jensen's Shipyard  
 Initial Assessment  
 4/2/18

# Figure 4

**Table 1. Upland Soil Sample Descriptions - Jensen's Shipyard**

<b>Sample ID</b>	<b>Date</b>	<b>Location and Description</b>	<b>PID (ppm)</b>	<b>Sheen Test<sup>a</sup></b>
<b>Shop Floor Drain-1</b>	1/24/2018	Collected using a hand auger 1 foot west of the northwest corner of the shop at 3.5 feet bgs. Coarse sand with gravel, brown, loose, moist.	0	VSS
<b>Shop Floor Drain-2</b>	1/24/2018	Collected using a hand auger 2 feet east, and 2 feet north of the northwest corner of the shop at 3.5 feet bgs. Coarse sand with gravel, brown, loose, moist.	0	NS
<b>Shop Floor Drain-3</b>	1/24/2018	Collected directly from shop floor drain inside the shop building using a 1 inch stainless steel soil punch at 1.5 feet bgs. Silty sand with organics, dark brown, firm, dry.	3.0	SS
<b>OPALCO Pad</b>	1/24/2018	Collected as a composite sample from 1 to 4 inches bgs, 15 feet west of the northeast corner of the old OPALCO pad. Coarse gravel with sand and organics, brown, loose, dry.	0	SS
<b>Stormwater Pond</b>	1/24/2018	Collected as a composite sample from soil at the bottom of the stormwater retention pond. Silt with decayed leaves and pine needles, black, loose, saturated.	0	NS
<b>BLWA-1</b>	1/24/2018	Collected as a composite sample from surficial gravel throughout the western half of the boat lift work area. Sandy gravel with paint chips and shell fragments, brown, loose, moist.	0	NS
<b>BLWA-2</b>	1/24/2018	Collected as a composite sample from surficial gravel throughout the eastern half of the boat lift work area. Sandy gravel with paint chips and shell fragments, brown, loose, moist.	0	NS
<b>FDA-1</b>	1/24/2018	Collected from a test pit excavated in the former dumping area, 9 feet west, and 4 feet north of the northwest corner of the old wood shed at 2 feet bgs. Organic rich silty clay, dark brown, firm, moist.	0	NS
<b>FDA-2</b>	1/24/2018	Collected as a composite sample from the surface to 6 inches bgs at the base of the bluff of the former dumping area using a hand auger 15 feet north of FDA-1 location.  Coarse sand, brown with heavy iron staining, loose, wet.	0	NS
<b>FDA-3</b>	1/24/2018	Collected as a composite sample from the base of the bluff at the former dumping area, augered into the bluff 6 inches at 2.5 feet bgs from the top of the bluff, 25 feet west of FDA-2 location. Silty sand with gravel, brown, loose, wet.	0	NS

**Table 1. Upland Soil Sample Descriptions - Jensen's Shipyard**

<b>Sample ID</b>	<b>Date</b>	<b>Location and Description</b>	<b>PID (ppm)</b>	<b>Sheen Test<sup>a</sup></b>
<b>UST-1</b>	1/24/2018	Collected from a test pit excavated at the northern side of the estimated former UST location, 20 feet east of gravel path at 5 feet bgs. Silty clay with fine sand, brown, loose to firm, moist.	0	NS
<b>UST-2</b>	1/24/2018	Collected from a test pit excavated at the southern side of the estimated former UST location, 15 feet north of UST-1 at 3 feet bgs. Silty clay with fine sand, brown, loose, moist.	0.0	NS
<b>SRWA-1</b>	1/24/2018	Collected as composite sample from 3 to 6 inches bgs using a hand auger along the sides of the old wood rails at the old shipyard rail work area, 12 feet west of the northwest corner of the old boat building. Coarse sand with gravel and organics, dark brown, loose, wet.	0.0	NS
<b>SRWA-2</b>	1/24/2018	Collected as composite sample from 3 to 6 inches bgs using a hand auger from the old shipyard rail work area, 25 feet north of the northwest corner of the old boat building. Coarse sand with gravel, dark brown, loose, wet.	0.0	NS
<b>SRWA-3</b>	1/24/2018	Collected as a composite sample from the surface to 6 inches bgs using a hand auger from the old shipyard rail work area, 50 feet north, and 10 feet west of the northwest corner of the old boat building. Sand with silts, gray, loose, saturated.	52.7	HS

<sup>a</sup> - NS = No Sheen; VSS = Very Slight Sheen; SS = Slight Sheen; MS = Moderate Sheen; HS = Heavy Sheen



**Table 2. Upland Soil Sample Results - Jensen's Shipyard**

Sample ID		MTCA Method A Cleanup Level:	MTCA Method B Cleanup Level:	Shop Floor Drain-1	Shop Floor Drain-2	Shop Floor Drain-3	OPALCO Pad	Stormwater Pond	BLWA-1	BLWA-2	FDA-1	FDA-2	FDA-3	UST-1	UST-2	SRWA-1	SRWA-2	SRWA-3	
Date		1/24/2018	1/24/2018	1/24/2018	1/24/2018	1/24/2018	1/24/2018	1/24/2018	1/24/2018	1/24/2018	1/24/2018	1/24/2018	1/24/2018	1/24/2018	1/24/2018	1/24/2018	1/24/2018	1/24/2018	
<u>TPH</u>																			
NWTPH-Gx Volatile Range	mg/kg	100/30 <sup>a</sup>	-	ND(<3.0)	ND(<3.0)	ND(<3.0)	ND(<3.0)	NA	NA	NA	NA	NA	NA	ND(<3.0)	ND(<3.0)	NA	NA	84	
NWTPH-Dx Diesel Range	mg/kg	2,000	-	190	ND(<25)	<b>5,300</b>	ND(<25)	NA	160	170	ND(<25)	ND(<25)	ND(<25)	ND(<25)	ND(<25)	180	91	<b>3,900</b>	
NWTPH-Dx Oil-Range	mg/kg	2,000	-	ND(<50)	ND(<50)	<b>7,800</b>	130	NA	470	300	ND(<50)	ND(<50)	420	ND(<50)	ND(<50)	1,100	220	940	
EPA-8021 Benzene	mg/kg	0.03	-	ND(<0.03)	ND(<0.03)	ND(<0.03)	ND(<0.03)	NA	NA	NA	NA	NA	NA	ND(<0.03)	ND(<0.03)	NA	NA	ND(<0.03)	
EPA-8021 Toluene	mg/kg	7	-	ND(<0.05)	ND(<0.05)	ND(<0.05)	ND(<0.05)	NA	NA	NA	NA	NA	NA	ND(<0.05)	ND(<0.05)	NA	NA	ND(<0.05)	
EPA-8021 Ethylbenzene	mg/kg	6	-	ND(<0.05)	ND(<0.05)	ND(<0.05)	ND(<0.05)	NA	NA	NA	NA	NA	NA	ND(<0.05)	ND(<0.05)	NA	NA	ND(<0.05)	
EPA-8021 Xylenes	mg/kg	9	-	ND(<0.20)	ND(<0.20)	ND(<0.20)	ND(<0.20)	NA	NA	NA	NA	NA	NA	ND(<0.20)	ND(<0.20)	NA	NA	ND(<0.20)	
<u>Metals (EPA-6020/7471)</u>																			
Arsenic	mg/kg	20.0	-	2.2	1.9	<b>22</b>	7.1	10	12	7.1	3.5	8.7	3.5	NA	NA	<b>30</b>	14	17	
Cadmium	mg/kg	2.0	-	ND(<0.50)	ND(<0.50)	57	<b>2.2</b>	<b>10</b>	1.3	0.94	ND(<0.5)	ND(<0.5)	ND(<0.5)	NA	NA	0.54	ND(<0.5)	ND(<0.5)	
Chromium	mg/kg	19/2000 <sup>c</sup>	-	19	12	350	40	43	35	20	41	21	22	NA	NA	29	18	21	
Copper	mg/kg	-	3200	56	29	<b>8,800</b>	1,100	<b>12,000</b>	<b>6,700</b>	<b>6,100</b>	16	79	29	NA	NA	2,400	1,100	690	
Lead	mg/kg	250.0	-	2.9	1.9	<b>10,000</b>	<b>530</b>	<b>450</b>	<b>700</b>	<b>350</b>	6.4	52	190	NA	NA	<b>920</b>	<b>1,000</b>	90	
Mercury	mg/kg	2.0	-	ND(<0.02)	0.021	0.25	0.15	0.15	0.81	0.39	0.028	ND(<0.02)	0.16	NA	NA	<b>13</b>	<b>6.3</b>	0.54	
Zinc	mg/kg	-	24000	100	29	7100	2,300	2,400	950	1,700	30	270	220	NA	NA	840	330	580	
<u>PCBs (EPA-8082)</u>																			
Total PCBs	mg/kg	1.0	-	NA	NA	NA	ND(<0.10)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.35	
<u>Volatile Organic Compounds (VOCs) (EPA-8260)</u>																			
Dichlorodifluoromethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Chloromethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Vinyl Chloride	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Bromomethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Chloroethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Carbon Tetrachloride	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Trichlorofluoromethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Carbon Disulfide	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Acetone	mg/kg	-	-	NA	NA	ND(<0.05)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.05)	
1,1-Dichloroethene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Methylene Chloride	mg/kg	-	-	NA	NA	ND(<0.02)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.02)	
Acrylonitrile	mg/kg	-	-	NA	NA	ND(<0.05)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.05)	
Methyl T-Buyl Ether	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Trans-1,2-Dichloroethene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
1,1-Dichloroethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
2-Butanone	mg/kg	-	-	NA	NA	ND(<0.05)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.05)	
Cis-1,2-Dichloroethene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
2,2-Dichloropropane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Bromochloromethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Chloroform	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
1,1,1-Trichloroethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
1,1-Dichloropropene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
1,2-Dichloroethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Trichloroethene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
1,2-Dichloropropane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Dibromomethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	
Bromodichloromethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)	

**Table 2. Upland Soil Sample Results - Jensen's Shipyard**

Sample ID		MTCA Method A Cleanup Level:	MTCA Method B Cleanup Level:	Shop Floor Drain-1	Shop Floor Drain-2	Shop Floor Drain-3	OPALCO Pad	Stormwater Pond	BLWA-1	BLWA-2	FDA-1	FDA-2	FDA-3	UST-1	UST-2	SRWA-1	SRWA-2	SRWA-3
Trans-1,3-Dichloropropene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
4-Methyl-2-Pentanone	mg/kg	-	-	NA	NA	ND(<0.05)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.05)
Cis-1,3-Dichloropropene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
1,1,2-Trichloroethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
2-Hexanone	mg/kg	-	-	NA	NA	ND(<0.05)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.05)
1,3-Dichloropropane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
Tetrachloroethylene	mg/kg	0.05	-	NA	NA	0.017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
Dibromochloromethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
1,2-Dibromoethane	mg/kg	-	-	NA	NA	ND(<0.005)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.005)
Chlorobenzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
1,1,1,2-Tetrachloroethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
Styrene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
Bromoform	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
Isopropylbenzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
1,1,2,2-Tetrachloroethane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
1,2,3-Trichloropropane	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
Bromobenzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
N-Propyl Benzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.017
2-Chlorotoluene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
1,3,5-Trimethylbenzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.24
4-Chlorotoluene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
T-Butyl Benzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
1,2,4-Trimethylbenzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.61
S-Butyl benzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.033
P-Isopropyltoluene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.033
1,3-Dichlorobenzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
1,4-Dichlorobenzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
N- Butylbenzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.055
1,2-Dichlorobenzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
1,2-Dichlorobenzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
1,2-Dibromo 3-Chloropropane	mg/kg	-	-	NA	NA	ND(<0.05)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.05)
1,2,4-Trichlorobenzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
Hexachlorobutadiene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
Naphthalene	mg/kg	5 <sup>b</sup>	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)
1,2,3-Trichlorobenzene	mg/kg	-	-	NA	NA	ND(<0.01)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.01)

**Table 2. Upland Soil Sample Results - Jensen's Shipyard**

Sample ID	MTCA Method A Cleanup Level:	MTCA Method B Cleanup Level:	Shop Floor Drain-1	Shop Floor Drain-2	Shop Floor Drain-3	OPALCO Pad	Stormwater Pond	BLWA-1	BLWA-2	FDA-1	FDA-2	FDA-3	UST-1	UST-2	SRWA-1	SRWA-2	SRWA-3
<u>Semi-Volatile Organic Compounds (SVOCs) (EPA-8270/8270 SIM)</u>																	
Pyridine	mg/kg	-	-	NA	NA	ND(<0.23)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.20)	ND(<0.20)	ND(<0.20)
N-Nitrosodimethylamine	mg/kg	-	-	NA	NA	ND(<0.12)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.10)
Phenol	mg/kg	-	-	NA	NA	ND(<0.14)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.12)
Aniline	mg/kg	-	-	NA	NA	ND(<0.27)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.17)	ND(<0.17)	ND(<0.23)
Bis(2-Chloroethyl) Ether	mg/kg	-	-	NA	NA	ND(<0.13)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.11)
2-Chlorophenol	mg/kg	-	-	NA	NA	ND(<0.11)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.10)
1,3-Dichlorobenzene	mg/kg	-	-	NA	NA	ND(<0.13)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.11)
1,4-Dichlorobenzene	mg/kg	-	-	NA	NA	ND(<0.14)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.12)
Benzyl alcohol	mg/kg	-	-	NA	NA	0.49	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.11)	ND(<0.11)	ND(<0.14)
1,2-Dichlorobenzene	mg/kg	-	-	NA	NA	ND(<0.10)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.10)
2-Methylphenol	mg/kg	-	-	NA	NA	6.6	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.13)
Bis(2-Chloroisopropyl)Ether	mg/kg	-	-	NA	NA	ND(<0.19)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.12)	ND(<0.12)	ND(<0.16)
3&4-Methylphenol	mg/kg	-	-	NA	NA	2.9	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.13)	ND(<0.13)	ND(<0.17)
N-Nitroso-Di-N-Propylamine	mg/kg	-	-	NA	NA	ND(<0.24)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.15)	ND(<0.15)	ND(<0.20)
Hexachloroethane	mg/kg	-	-	NA	NA	ND(<0.14)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.11)
Nitrobenzene	mg/kg	-	-	NA	NA	ND(<0.10)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.10)
Isophorone	mg/kg	-	-	NA	NA	ND(<0.13)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.10)
2-Nitrophenol	mg/kg	-	-	NA	NA	ND(<0.25)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.25)	ND(<0.25)	ND(<0.25)
2,4-Dimethylphenol	mg/kg	-	-	NA	NA	2.6	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.10)
Benzoic Acid	mg/kg	-	-	NA	NA	ND(<1.0)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<1.0)	ND(<1.0)	ND(<1.0)
Bis(2-Chloroethoxy)Methane	mg/kg	-	-	NA	NA	ND(<0.10)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.10)
2,4-Dichlorophenol	mg/kg	-	-	NA	NA	ND(<0.11)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.10)
1,2,4-Trichlorobenzene	mg/kg	-	-	NA	NA	ND(<0.15)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.12)
Naphthalene	mg/kg	5 <sup>b</sup>	-	NA	NA	0.052	NA	NA	NA	NA	NA	NA	NA	NA	0.12	0.0071	ND(<0.10)
4-Chloroaniline	mg/kg	-	-	NA	NA	ND(<0.32)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.20)	ND(<0.20)	ND(<0.26)
2,6-Dichlorophenol	mg/kg	-	-	NA	NA	ND(<0.16)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.13)
Hexachlorobutadiene	mg/kg	-	-	NA	NA	ND(<0.22)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.18)
4-Chloro-3-Methylphenol	mg/kg	-	-	NA	NA	ND(<0.14)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.11)
2-Methylnaphthalene	mg/kg	5 <sup>b</sup>	-	NA	NA	0.085	NA	NA	NA	NA	NA	NA	NA	NA	0.0067	0.0041	1.2
1-Methylnaphthalene	mg/kg	5 <sup>b</sup>	-	NA	NA	0.076	NA	NA	NA	NA	NA	NA	NA	NA	0.0052	0.0052	0.9
Hexachlorocyclopentadiene	mg/kg	-	-	NA	NA	ND(<0.50)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.50)	ND(<0.50)	ND(<0.50)
2,4,6-Trichlorophenol	mg/kg	-	-	NA	NA	ND(<0.13)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.11)
2,4,5-Trichlorophenol	mg/kg	-	-	NA	NA	ND(<0.20)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.12)	ND(<0.12)	ND(<0.17)
2-Chloronaphthalene	mg/kg	-	-	NA	NA	ND(<0.10)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.10)
2-Nitroaniline	mg/kg	-	-	NA	NA	ND(<0.25)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.25)	ND(<0.25)	ND(<0.25)
Acenaphthylene	mg/kg	-	-	NA	NA	ND(<0.00002)	NA	NA	NA	NA	NA	NA	NA	NA	0.095	0.077	ND<0.00002)
Dimethylphthalate	mg/kg	-	-	NA	NA	ND(<0.17)	NA	NA	NA	NA	NA	NA	NA	NA	0.29	0.64	ND(<0.14)
2,6-Dinitrotoluene	mg/kg	-	-	NA	NA	ND(<0.25)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.25)	ND(<0.25)	ND(<0.25)
Acenaphthene	mg/kg	-	-	NA	NA	ND(<0.00002)	NA	NA	NA	NA	NA	NA	NA	NA	0.012	ND(<0.00002)	ND<0.00002)
3-Nitroaniline	mg/kg	-	-	NA	NA	ND(<0.25)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.25)	ND(<0.25)	ND(<0.25)
2,4-Dinitrophenol	mg/kg	-	-	NA	NA	ND(<0.30)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.25)	ND(<0.25)	ND(<0.25)
4-Nitrophenol	mg/kg	-	-	NA	NA	ND(<0.50)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.50)	ND(<0.50)	ND(<0.50)
Dibenzofuran	mg/kg	-	-	NA	NA	ND(<0.16)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.14)
2,4-Dinitrotoluene	mg/kg	-	-	NA	NA	ND(<0.25)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.25)	ND(<0.25)	ND(<0.25)
2,3,4,6-Tetrachlorophenol	mg/kg	-	-	NA	NA	ND(<0.25)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.25)	ND(<0.25)	ND(<0.25)
Diethylphthalate	mg/kg	-	-	NA	NA	ND(<0.17)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.14)
Fluorene	mg/kg	-	-	NA	NA	ND(<0.00002)	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.12)	ND(<0.12)	ND(<0.12)

**Table 2. Upland Soil Sample Results - Jensen's Shipyard**

Sample ID		MTCA Method A Cleanup Level:	MTCA Method B Cleanup Level:	Shop Floor Drain-1	Shop Floor Drain-2	Shop Floor Drain-3	OPALCO Pad	Stormwater Pond	BLWA-1	BLWA-2	FDA-1	FDA-2	FDA-3	UST-1	UST-2	SRWA-1	SRWA-2	SRWA-3
4-Chlorophenyl-Phenylether	mg/kg	-	-	NA	NA	ND(<0.21)	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.13)	ND(<0.13)	ND(<0.17)
4-Nitroaniline	mg/kg	-	-	NA	NA	ND(<0.39)	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.25)	ND(<0.25)	ND(<0.32)
4,6-Dinitro-2-Methylphenol	mg/kg	-	-	NA	NA	ND(<0.34)	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.15)	ND(<0.15)	ND(<0.29)
N-Nitrosodiphenylamine	mg/kg	-	-	NA	NA	ND(<0.18)	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.11)	ND(<0.11)	ND(<0.15)
Azobenzene	mg/kg	-	-	NA	NA	ND(<0.18)	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.15)
4-Bromophenyl-Phenylether	mg/kg	-	-	NA	NA	ND(<0.15)	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.13)
Hexachlorobenzene	mg/kg	-	-	NA	NA	ND(<0.12)	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.50)	ND(<0.50)	ND(<0.10)
Pentachlorophenol	mg/kg	-	-	NA	NA	ND(<0.50)	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.10)	ND(<0.10)	ND(<0.10)
Phenanthrene	mg/kg	-	-	NA	NA	0.27	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.25	0.13	0.62
Anthracene	mg/kg	-	-	NA	NA	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.11	0.053	ND
Carbazole	mg/kg	-	-	NA	NA	ND(<0.33)	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.20)	ND(<0.20)	ND(<0.27)
Di-N-Butylphthalate	mg/kg	-	-	NA	NA	ND(<0.14)	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.13)	ND(<0.13)	ND(<0.13)
Fluoranthene	mg/kg	-	-	NA	NA	ND(<0.00002)	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.67	0.21	0.62
Pyrene	mg/kg	-	-	NA	NA	0.79	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.65	0.21	0.57
Butylbenzylphthalate	mg/kg	-	-	NA	NA	ND(<0.19)	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.12)	ND(<0.12)	ND(<0.16)
3,3-Dichlorobenzidine	mg/kg	-	-	NA	NA	ND(<0.81)	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.51)	ND(<0.51)	ND(<0.68)
Benzo[A]Anthracene	mg/kg	-	-	NA	NA	0.41	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.4	0.11	0.21
Chrysene	mg/kg	-	-	NA	NA	0.63	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.53	0.12	0.34
Bis(2-ethylhexyl)phthalate	mg/kg	-	-	NA	NA	5.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.13)	ND(<0.13)	0.21
Di-N-Octylphthalate	mg/kg	-	-	NA	NA	ND(<0.19)	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(<0.12)	ND(<0.12)	ND(<0.16)
Benzo[B]Fluoranthene	mg/kg	-	-	NA	NA	ND(<0.00002)	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.81	0.2	0.43
Benzo[K]Fluoranthene	mg/kg	-	-	NA	NA	ND(<0.00002)	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.28	ND(<0.11)	ND(<0.00002)
Benzo[A]Pyrene	mg/kg	0.1	-	NA	NA	ND(<0.00002)	NA	NA	NA	NA	NA	NA	NA	NA	NA	<b>0.52</b>	<b>0.14</b>	<b>0.22</b>
Indeno[1,2,3-Cd]Pyrene	mg/kg	-	-	NA	NA	0.18	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.4	0.12	0.15
Dibenz[A,H]Anthracene	mg/kg	-	-	NA	NA	ND(<0.00002)	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.11	ND(<0.10)	ND(<0.00002)
Benzo[G,H,I]perylene	mg/kg	-	-	NA	NA	0.39	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.57	0.19	0.17
Total cPAH Equivalent (TEq)	mg/kg	0.1	0.137	NA	NA	0.0783	NA	NA	NA	NA	NA	NA	NA	NA	NA	<b>0.7253</b>	<b>0.1862</b>	<b>0.3044</b>

<sup>a</sup> - Cleanup level dependent on BTEX concentrations

<sup>b</sup> - indicates sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene

<sup>c</sup> - indicates cleanup level is dependant on Chromium(VI) concentrations.

ND - indicates analyte was not detected at level above reporting limit (shown in parentheses)

NA - indicates sample was not analyzed for the constituent

**BOLD** - indicates that the concentration in the sample exceeds the MTCA Method A or Method B target cleanup levels

TEq - Toxicity Equivalency to benzo(a)pyrene, calculated by multiplying result by appropriate TEF. For ND values, the TEF was multiplied by one half the reporting limit

TEF - Toxicity Equivalency Factor (WAC 173-340-900 table 708.2)

**Table 3. Marine Sediment Sample Location Coordinates - Jensen's Shipyard**

<b>Location ID*</b>	<b>Lat./Lon.</b> (GCS_North_American_1983_HARN)		<b>Comments</b>
<b>Sample Station Cluster #1</b>			
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	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	Marine railway.

\*Samples collected Feb 12, 2018.

**Table 4. Marine Sediment Results (Dry Weight Basis) - Jensen's Shipyard**

		Samples collected 2/12/18											
	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
<u>Collection Depth</u>	(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
<u>Conventional Parameters</u>	(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
Grain Size	See laboratory report												
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%
Total Sulfides	28	3	405	3	261	30	<0.31	5	730	709	2	29	219
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%
<u>Metals</u>	(mg/kg dw)												
Arsenic	8	5	7	6	10	7	6	8	13	9	9	6	16
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
Chromium	33	22	34	33	34	28	22	34	51	22	26	19	33
Copper	33	14	42	37	63	42	82	202	578	1370	168	50	1380
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+
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
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
Zinc	96	53	96	78	109	78	92	141	206	589	116	57	928
<u>Organic Chemicals</u>	(mg/kg dw)												
2,4-Dimethylphenol	<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
2-Methylphenol	<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
4-Methylphenol	<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
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
Benzyl alcohol	<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
Dibenzofuran	<0.036 U	0.060 J	<0.041 U	<0.035 U	<0.045 U	<0.046 U	<0.017 U	<0.035 U	<0.045 U	0.097	<0.034 U	<0.034 U	<0.034 U
Phenol	<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
N-nitrosodiphenylamine	<0.034 U	<0.032 U	<0.038 U	<0.033 U	<0.043 U	<0.043 U	<0.016 U	<0.033 U	<0.043 U	<0.032 U	<0.032 U	<0.032 U	<0.032 U
<u>Phthalates</u>	(mg/kg dw)												
Bis(2-Ethylhexyl)phthalate	<0.094 U	<0.089 U	<0.110 U	<0.092 U	<0.120 U	<0.120 U	<0.045 U	0.230 J	0.370 J	0.340 J	0.150 J	<0.089 U	0.540 J
Butylbenzyl phthalate	<0.039 U	<0.037 U	<0.044 U	<0.038 U	<0.049 U	<0.050 U	<0.019 U	0.049 J	0.070 J	<0.037 U	<0.037 U	<0.037 U	0.071
Diethyl phthalate	<0.039 U	<0.037 U	<0.044 U	<0.038 U	<0.049 U	<0.050 U	<0.019 U	<0.038 U	<0.049 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U
Dimethyl phthalate	<0.043 U	<0.040 U	<0.048 U	<0.042 U	<0.053 U	<0.054 U	0.033 J	0.130	0.190	0.300	0.100	<0.040 U	0.840
Di-n-butyl phthalate	<0.051 U	<0.048 U	<0.057 U	<0.050 U	<0.064 U	<0.064 U	<0.024 U	0.079 J	<0.064 U	0.094 J	0.160 J	<0.048 U	0.210
Di-n-octyl phthalate	<0.034 U	<0.032 U	<0.038 U	<0.033 U	<0.043 U	<0.043 U	<0.016 U	<0.033 U	0.170	0.048 J	<0.032 U	<0.032 U	<0.032 U

**Table 4. Marine Sediment Results (Dry Weight Basis) - Jensen's Shipyard**

	Samples collected 2/12/18												
	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
<u>Polychlorinated Biphenyls</u> (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
<u>Polycyclic Aromatic</u> (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
Naphthalene	<0.031 U	0.038 J	<0.035 U	<0.030 U	<0.039 U	<0.039 U	<0.015 U	<0.030 U	<0.039 U	0.032 J	<0.029 U	<0.029 U	<0.029 U
Acenaphthylene	<0.028 U	<0.026 U	<0.031 U	<0.027 U	<0.035 U	<0.035 U	<0.013 U	0.081 J	0.093 J	0.044 J	0.027 J	<0.026 U	0.039 J
Acenaphthene	<0.034 U	0.047 J	<0.038 U	0.051 J	<0.043 U	<0.043 U	<0.016 U	<0.033 U	<0.043 U	0.220	<0.032 U	<0.032 U	0.067
Fluorene	<0.035 U	0.049 J	<0.039 U	<0.034 U	<0.044 U	<0.044 U	<0.017 U	0.095 J	0.072 J	0.200	<0.033 U	<0.033 U	0.069
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
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
2-Methylnaphthalene	<0.030 U	0.033 J	<0.034 U	<0.029 U	<0.037 U	<0.038 U	<0.014 U	<0.029 U	<0.037 U	<0.028 U	<0.028 U	<0.028 U	<0.028 U
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
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
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
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
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
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
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
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
Dibenzo[a,h]anthracene	<0.032 U	<0.030 U	<0.036 U	<0.031 U	<0.040 U	<0.040 U	0.015 J	0.100	0.130	0.280	0.033 J	<0.030 U	0.210
Benzo[g,h,i]perylene	<0.039 U	<0.037 U	<0.044 U	<0.038 U	<0.049 U	<0.050 U	0.050	0.370	0.520	1.400	0.120	<0.037 U	1.100
<u>Chlorinated Organics</u> (mg/kg dw)													
1,2,4-Trichlorobenzene	<0.028 U	<0.026 U	<0.031 U	<0.027 U	<0.035 U	<0.035 U	<0.013 U	<0.027 U	<0.035 U	<0.026 U	<0.026 U	<0.026 U	<0.026 U
1,2-Dichlorobenzene	<0.026 U	<0.024 U	<0.029 U	<0.025 U	<0.032 U	<0.032 U	<0.012 U	<0.025 U	<0.032 U	<0.024 U	<0.024 U	<0.024 U	<0.024 U
1,4-Dichlorobenzene	<0.027 U	<0.025 U	<0.030 U	<0.026 U	<0.033 U	<0.034 U	<0.013 U	<0.026 U	<0.033 U	<0.025 U	<0.025 U	<0.025 U	<0.025 U
Hexachlorobenzene	<0.035 U	<0.033 U	<0.039 U	<0.034 U	<0.044 U	<0.044 U	<0.017 U	<0.034 U	<0.044 U	<0.033 U	<0.033 U	<0.033 U	<0.033 U
Hexachlorobutadiene	<0.032 U	<0.030 U	<0.036 U	<0.031 U	<0.040 U	<0.040 U	<0.015 U	<0.031 U	<0.040 U	<0.030 U	<0.030 U	<0.030 U	<0.030 U
Pentachlorophenol	<0.056 U	<0.053 U	<0.063 U	<0.055 U	<0.070 U	<0.071 U	0.098 J	0.280 J	<0.070 U	0.240 J	<0.053 U	<0.053 U	0.230 J

**Table 4. Marine Sediment Results (Dry Weight Basis) - Jensen's Shipyard**

	Samples collected 2/12/18												
	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
<u>Organochlorine Pesticides</u>	(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
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
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
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
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
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
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
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
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
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
Total Chlordane <sup>a</sup>	2.8 J	<1.2 UJ	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
<u>Organotins</u>	(µg/kg dw)												
Tributyltin <sup>b</sup>	3.8	1.3 J	7.5	3.8	25	10	75	210	300	4,000	53	9.3	4,000

<, U - indicates the analyte was not detected above the PQL value shown. (MDL is used for organotins).

i - Indicates the MDL is elevated due to chromatographic interference.

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

<J - The reported quantitation limit is approximate and may be inaccurate or imprecise.

R - Indicates 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 Aroclors were run twice.

<sup>a</sup> - Sum of cis-chlordane, trans-chlordane, cis-nonachlor, trans-nonachlor, and oxychlordane

<sup>b</sup> - All organotin samples were prepped or analyzed beyond the recommended hold time.



**Table 5. Marine Sediment Results with Dry Weight SQS Criteria - Jensen's Shipyard**

SQS Marine Criteria <sup>a</sup>		Samples collected 2/12/18													
		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	
<u>Metals</u>		(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	
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	
Chromium	260	33	22	34	33	34	28	22	34	51	22	26	19	33	
Copper	390	33	14	42	37	63	42	82	202	<b>578</b>	<b>1370</b>	168	50	<b>1380</b>	
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+	
Mercury	0.41	0.07	0.04	0.08	0.08	0.10	0.09	0.08	0.28	0.35	<b>1.45</b>	<b>0.44</b>	0.09	<b>0.85</b>	
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	
Zinc	410	96	53	96	78	109	78	92	141	206	<b>589</b>	116	57	<b>928</b>	
<u>Organic Chemicals</u>		(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	
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	
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	
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	
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	<b>0.068 J</b>	<0.049 U	<0.049 U	<0.049 U	<0.049 U	
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	

<sup>a</sup> - Marine values are dry weight normalized for metals and polar organics and normalized to total organic carbon for nonpolar organics.

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

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

<J - The reported quantitation limit is approximate and may be inaccurate or imprecise.

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

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 Carbon Normalized SQS Criteria - Jensen's Shipyard**

	SQS Marine Criteria <sup>a</sup>	Samples collected 2/12/18												
		SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9 <sup>b</sup>	SED-10	SED-11	SED-12	SED-13
<u>Organic Chemicals</u> (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 7)	7.7	<1.3 U	<3.3 U	<1.7 U
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
<u>Phthalates</u> (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 7)	27.0 J	5.6 J	<8.6 U	27.3 J
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
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
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
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
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
<u>Polychlorinated Biphenyls</u> (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 7)	<b>51.6 P</b>	8.7 P	3.4 J	<b>59.6 P</b>
<u>Polycyclic Aromatic</u> (mg/kg OC)														
LPAH	370	19.6	81.6	9.8	17.3	4.0	9.4	11.8	42.4	(see Table 7)	249.2	12.0	11.7	64.4
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
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
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	<b>17.5</b>	<1.2 U	<3.1 U	3.4
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
Phenanthrene	100	16.8	60.0	6.9	12.2	4.0 J	6.3	8.5	25.2	na	<b>182.5</b>	8.2	11.7	46.5
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
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
Total HPAH	960	154	115	93	75	55	67	111	533	na	<b>1678</b>	123	119	703
Fluoranthene	160	48.2	56.3	27.1	28.7	15.6	18.1	32.6	145.7	na	<b>436.5</b>	31.6	34.0	<b>171.7</b>
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
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	<b>134.9</b>	9.3	8.3	50.5
Chrysene	110	37.2	12.5	14.9	7.7	9.9	12.7	19.1	94.5	na	<b>182.5</b>	18.6	20.4	85.9
Total benzofluoranthenes	230	20.9	8.0 J	17.4	5.5	10.7	12.5	19.0	97.2	na	<b>282.5</b>	22.3	19.7	127.3
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	<b>134.9</b>	8.9	9.7	60.6
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	<b>95.2</b>	5.6	5.6 J	<b>48.0</b>
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	<b>22.2</b>	1.2 J	<2.9 U	10.6
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	<b>111.1</b>	4.5	<3.6 U	<b>55.6</b>

**Table 6. Marine Sediment Results with Carbon Normalized SQS Criteria - Jensen's Shipyard**

	SQS Marine Criteria <sup>a</sup>	Samples collected 2/12/18												
		SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9 <sup>b</sup>	SED-10	SED-11	SED-12	SED-13
<u>Chlorinated Organics</u>	(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 7)	<2.1 U	<1.0 U	<2.5 U	<1.3 U
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
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
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
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
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

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

<sup>a</sup> - Marine values are dry weight normalized for metals and polar organics and normalized to total organic carbon for nonpolar organics.

<sup>b</sup> - 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.

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

J - Indicates estimated concentration.

<J - The reported quantitation limit is approximate and may be inaccurate or imprecise.

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 Aroclors were run twice.

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

**Bold** indicates value exceeds the applicable criteria

**Table 7. Marine Sediment Results with AET Criteria - Jensen's Shipyard**

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

<sup>a</sup> - 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 PQL value shown.

J - Indicates estimated concentration.

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 Aroclors were run twice.

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 8. Marine Sediment Results with DMMP Screening Levels - Jensen's Shipyard**

	DMMP Screening Level <sup>a</sup>	Samples collected 2/12/18												
		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
<u>Organochlorine Pesticides</u> (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
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
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
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	<b>5.30</b>	<4.8 Ui	<1.6 Ui	1.60	<4.7 Ui
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
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	<b>19</b>	5.7 P	<0.81 U	<b>36</b>
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
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
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
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
Total Chlordane <sup>b</sup>	2.8	2.8 J	<1.2 UJ	<b>5.3 J</b>	<1.6 UiJ	<b>4.9 JP</b>	<2.0 UiJ	<1.2 UiJ	<4.8 UiJ	<5.0 UiJ	<b>7.5 JP</b>	<4.6 UiJ	1.1 J	<b>12 J</b>
<u>Organotins</u> (µg/kg dw)														
Tributyltin <sup>c</sup>	73	3.8	1.3 J	7.5	3.8	25	10	<b>75</b>	<b>210</b>	<b>300</b>	<b>4,000</b>	53	9.3	<b>4,000</b>

<sup>a</sup> - Screening levels from the *Dredged Material Evaluation and Disposal Procedures User Manual* (US Army Corps, 2016)

<sup>b</sup> - Sum of cis-chlordane, trans-chlordane, cis-nonachlor, trans-nonachlor, and oxychlordane

<sup>c</sup> - All organotin samples were prepped or analyzed beyond the recommended hold time.

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

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

i - Indicates the MDL is elevated due to chromatographic interference.

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

<J - The reported quantitation limit is approximate and may be inaccurate or imprecise.

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

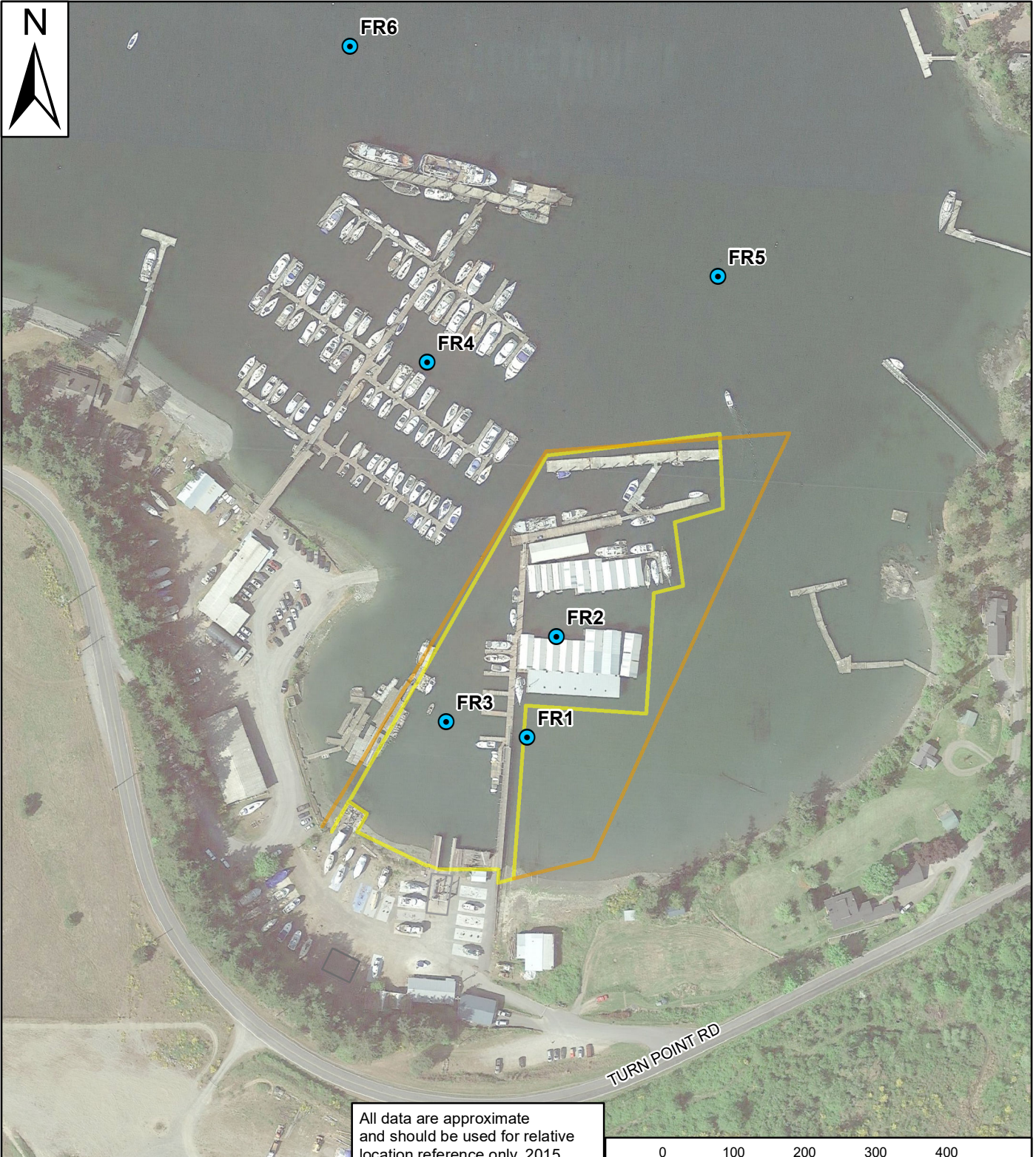
mg/kg dw, indicates results have been dry-weight normalized.

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

**Bold** indicates value exceeds the applicable criteria

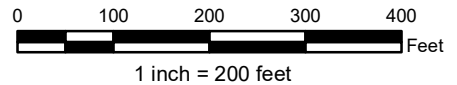
## **APPENDIX A**

Previous 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.



### Previous Sediment Sampling Location Map

Prepared for:

Prepared by:

1293 Turn Point Road  
Friday Harbor, WA 98250

Jensen's Shipyard Initial Assessment 12/21/17	<b>Figure 3</b>
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## **APPENDIX B**

Laboratory Analytical Data Reports - Soil





January 31, 2018

Mr. Eric Libolt  
Whatcom Environmental Svcs., Inc.  
228 E. Champion St., Suite 101  
Bellingham, WA 98225

Dear Mr. Libolt,

On January 26th, 15 samples were received by our laboratory and assigned our laboratory project number EV18010159. The project was identified as your Jensen's Shipyard. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Glen Perry  
Technical Manager



**CERTIFICATE OF ANALYSIS**

CLIENT:	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	DATE:	1/31/2018
CLIENT CONTACT:	Eric Libolt	ALS JOB#:	EV18010159
CLIENT PROJECT:	Jensen's Shipyard	ALS SAMPLE#:	EV18010159-01
CLIENT SAMPLE ID	Shop Floor Drain-1	DATE RECEIVED:	01/26/2018
		COLLECTION DATE:	1/24/2018 10:20:00 AM
		WDOE ACCREDITATION:	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	01/26/2018	SNC
Benzene	EPA-8021	U	0.030	1	MG/KG	01/26/2018	SNC
Toluene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	01/26/2018	SNC
TPH-Diesel Range	NWTPH-DX	<b>190</b>	25	1	MG/KG	01/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	01/29/2018	EBS
Mercury	EPA-7471	U	0.020	1	MG/KG	01/30/2018	RAL
Arsenic	EPA-6020	<b>2.2</b>	1.0	5	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	U	0.50	5	MG/KG	01/29/2018	RAL
Chromium	EPA-6020	<b>19</b>	0.50	5	MG/KG	01/29/2018	RAL
Copper	EPA-6020	<b>56</b>	0.50	5	MG/KG	01/29/2018	RAL
Lead	EPA-6020	<b>2.9</b>	0.50	5	MG/KG	01/29/2018	RAL
Zinc	EPA-6020	<b>100</b>	2.7	5	MG/KG	01/29/2018	RAL

SURROGATE	METHOD	%REC	ANALYSIS	ANALYSIS
			DATE	BY
TFT	NWTPH-GX	<b>101</b>	01/26/2018	SNC
TFT	EPA-8021	<b>113</b>	01/26/2018	SNC
C25	NWTPH-DX	<b>110</b>	01/29/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.  
Chromatogram indicates that it is likely that sample contains an unidentified diesel range product.



**CERTIFICATE OF ANALYSIS**

CLIENT:	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	DATE:	1/31/2018
CLIENT CONTACT:	Eric Libolt	ALS JOB#:	EV18010159
CLIENT PROJECT:	Jensen's Shipyard	ALS SAMPLE#:	EV18010159-02
CLIENT SAMPLE ID	Shop Floor Drain-2	DATE RECEIVED:	01/26/2018
		COLLECTION DATE:	1/24/2018 10:40:00 AM
		WDOE ACCREDITATION:	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	01/26/2018	SNC
Benzene	EPA-8021	U	0.030	1	MG/KG	01/26/2018	SNC
Toluene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	01/26/2018	SNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	01/29/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	01/29/2018	EBS
Mercury	EPA-7471	0.021	0.020	1	MG/KG	01/30/2018	RAL
Arsenic	EPA-6020	1.9	1.0	5	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	U	0.50	5	MG/KG	01/29/2018	RAL
Chromium	EPA-6020	12	0.50	5	MG/KG	01/29/2018	RAL
Copper	EPA-6020	29	0.50	5	MG/KG	01/29/2018	RAL
Lead	EPA-6020	1.9	0.50	5	MG/KG	01/29/2018	RAL
Zinc	EPA-6020	29	2.7	5	MG/KG	01/29/2018	RAL

SURROGATE	METHOD	%REC	ANALYSIS	ANALYSIS
			DATE	BY
TFT	NWTPH-GX	109	01/26/2018	SNC
TFT	EPA-8021	117	01/26/2018	SNC
C25	NWTPH-DX	109	01/29/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-03
<b>CLIENT SAMPLE ID</b>	Shop Floor Drain-3	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 11:15:00 AM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	01/26/2018	SNC
Benzene	EPA-8021	U	0.030	1	MG/KG	01/26/2018	SNC
Toluene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	01/26/2018	SNC
TPH-Diesel Range	NWTPH-DX	<b>5300</b>	500	20	MG/KG	01/29/2018	EBS
TPH-Oil Range	NWTPH-DX	<b>7800</b>	1000	20	MG/KG	01/29/2018	EBS
Dichlorodifluoromethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Chloromethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Vinyl Chloride	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Bromomethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Chloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Carbon Tetrachloride	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Trichlorofluoromethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Carbon Disulfide	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Acetone	EPA-8260	U	50	1	UG/KG	01/29/2018	DLC
1,1-Dichloroethene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Methylene Chloride	EPA-8260	U	20	1	UG/KG	01/29/2018	DLC
Acrylonitrile	EPA-8260	U	50	1	UG/KG	01/29/2018	DLC
Methyl T-Butyl Ether	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,1-Dichloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
2-Butanone	EPA-8260	U	50	1	UG/KG	01/29/2018	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
2,2-Dichloropropane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Bromochloromethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Chloroform	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,1,1-Trichloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,1-Dichloropropene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2-Dichloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Benzene	EPA-8260	U	5.0	1	UG/KG	01/29/2018	DLC
Trichloroethene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2-Dichloropropane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Dibromomethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Bromodichloromethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
4-Methyl-2-Pentanone	EPA-8260	U	50	1	UG/KG	01/29/2018	DLC
Toluene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-03
<b>CLIENT SAMPLE ID</b>	Shop Floor Drain-3	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 11:15:00 AM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
1,1,2-Trichloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
2-Hexanone	EPA-8260	U	50	1	UG/KG	01/29/2018	DLC
1,3-Dichloropropane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Tetrachloroethylene	EPA-8260	17	10	1	UG/KG	01/29/2018	DLC
Dibromochloromethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2-Dibromoethane	EPA-8260	U	5.0	1	UG/KG	01/29/2018	DLC
Chlorobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	01/29/2018	DLC
Styrene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Bromoform	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Isopropylbenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2,3-Trichloropropane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Bromobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
N-Propyl Benzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
2-Chlorotoluene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
4-Chlorotoluene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
T-Butyl Benzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
S-Butyl Benzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
P-Isopropyltoluene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,3-Dichlorobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,4-Dichlorobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
N-Butylbenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2-Dichlorobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	50	1	UG/KG	01/29/2018	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Hexachlorobutadiene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Naphthalene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Naphthalene	EPA-8270 SIM	52	0.020	1	UG/KG	01/26/2018	PAB
2-Methylnaphthalene	EPA-8270 SIM	85	0.020	1	UG/KG	01/26/2018	PAB
1-Methylnaphthalene	EPA-8270 SIM	76	0.020	1	UG/KG	01/26/2018	PAB
Acenaphthylene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Acenaphthene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB



**CERTIFICATE OF ANALYSIS**

CLIENT:	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	DATE:	1/31/2018
CLIENT CONTACT:	Eric Libolt	ALS JOB#:	EV18010159
CLIENT PROJECT:	Jensen's Shipyard	ALS SAMPLE#:	EV18010159-03
CLIENT SAMPLE ID	Shop Floor Drain-3	DATE RECEIVED:	01/26/2018
		COLLECTION DATE:	1/24/2018 11:15:00 AM
		WDOE ACCREDITATION:	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING	DILUTION	UNITS	ANALYSIS	ANALYSIS
			LIMITS	FACTOR		DATE	BY
Fluorene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Phenanthrene	EPA-8270 SIM	270	0.020	1	UG/KG	01/26/2018	PAB
Anthracene	EPA-8270 SIM	210	0.020	1	UG/KG	01/26/2018	PAB
Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Pyrene	EPA-8270 SIM	790	0.020	1	UG/KG	01/26/2018	PAB
Benzo[A]Anthracene	EPA-8270 SIM	410	0.020	1	UG/KG	01/26/2018	PAB
Chrysene	EPA-8270 SIM	630	0.020	1	UG/KG	01/26/2018	PAB
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Benzo[A]Pyrene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Pyridine	EPA-8270	U	230	1	UG/KG	01/31/2018	PAB
N-Nitrosodimethylamine	EPA-8270	U	120	1	UG/KG	01/31/2018	PAB
Phenol	EPA-8270	U	140	1	UG/KG	01/31/2018	PAB
Aniline	EPA-8270	U	270	1	UG/KG	01/31/2018	PAB
Bis(2-Chloroethyl)Ether	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
2-Chlorophenol	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
1,3-Dichlorobenzene	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
1,4-Dichlorobenzene	EPA-8270	U	140	1	UG/KG	01/31/2018	PAB
Benzyl Alcohol	EPA-8270	490	170	1	UG/KG	01/31/2018	PAB
1,2-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Methylphenol	EPA-8270	6600	160	1	UG/KG	01/31/2018	PAB
Bis(2-Chloroisopropyl)Ether	EPA-8270	U	190	1	UG/KG	01/31/2018	PAB
3&4-Methylphenol	EPA-8270	2900	210	1	UG/KG	01/31/2018	PAB
N-Nitroso-Di-N-Propylamine	EPA-8270	U	240	1	UG/KG	01/31/2018	PAB
Hexachloroethane	EPA-8270	U	140	1	UG/KG	01/31/2018	PAB
Nitrobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Isophorone	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
2-Nitrophenol	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
2,4-Dimethylphenol	EPA-8270	2600	100	1	UG/KG	01/31/2018	PAB
Benzoic Acid	EPA-8270	U	1000	1	UG/KG	01/31/2018	PAB
Bis(2-Chloroethoxy)Methane	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2,4-Dichlorophenol	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
1,2,4-Trichlorobenzene	EPA-8270	U	150	1	UG/KG	01/31/2018	PAB
Naphthalene	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
4-Chloroaniline	EPA-8270	U	320	1	UG/KG	01/31/2018	PAB
2,6-Dichlorophenol	EPA-8270	U	160	1	UG/KG	01/31/2018	PAB



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-03
<b>CLIENT SAMPLE ID</b>	Shop Floor Drain-3	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 11:15:00 AM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
Hexachlorobutadiene	EPA-8270	U	220	1	UG/KG	01/31/2018	PAB
4-Chloro-3-Methylphenol	EPA-8270	U	140	1	UG/KG	01/31/2018	PAB
2-Methylnaphthalene	EPA-8270	100	100	1	UG/KG	01/31/2018	PAB
1-Methylnaphthalene	EPA-8270	U	150	1	UG/KG	01/31/2018	PAB
Hexachlorocyclopentadiene	EPA-8270	U	500	1	UG/KG	01/31/2018	PAB
2,4,6-Trichlorophenol	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
2,4,5-Trichlorophenol	EPA-8270	U	200	1	UG/KG	01/31/2018	PAB
2-Chloronaphthalene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Nitroaniline	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
Acenaphthylene	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
Dimethylphthalate	EPA-8270	U	170	1	UG/KG	01/31/2018	PAB
2,6-Dinitrotoluene	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
Acenaphthene	EPA-8270	U	140	1	UG/KG	01/31/2018	PAB
3-Nitroaniline	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
2,4-Dinitrophenol	EPA-8270	U	300	1	UG/KG	01/31/2018	PAB
4-Nitrophenol	EPA-8270	U	500	1	UG/KG	01/31/2018	PAB
Dibenzofuran	EPA-8270	U	160	1	UG/KG	01/31/2018	PAB
2,4-Dinitrotoluene	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
2,3,4,6-Tetrachlorophenol	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
Diethylphthalate	EPA-8270	U	170	1	UG/KG	01/31/2018	PAB
Fluorene	EPA-8270	U	190	1	UG/KG	01/31/2018	PAB
4-Chlorophenyl-Phenylether	EPA-8270	U	210	1	UG/KG	01/31/2018	PAB
4-Nitroaniline	EPA-8270	U	390	1	UG/KG	01/31/2018	PAB
4,6-Dinitro-2-Methylphenol	EPA-8270	U	340	1	UG/KG	01/31/2018	PAB
N-Nitrosodiphenylamine	EPA-8270	U	180	1	UG/KG	01/31/2018	PAB
Azobenzene	EPA-8270	U	180	1	UG/KG	01/31/2018	PAB
4-Bromophenyl-Phenylether	EPA-8270	U	150	1	UG/KG	01/31/2018	PAB
Hexachlorobenzene	EPA-8270	U	120	1	UG/KG	01/31/2018	PAB
Pentachlorophenol	EPA-8270	U	500	1	UG/KG	01/31/2018	PAB
Phenanthrene	EPA-8270	U	140	1	UG/KG	01/31/2018	PAB
Anthracene	EPA-8270	U	160	1	UG/KG	01/31/2018	PAB
Carbazole	EPA-8270	U	330	1	UG/KG	01/31/2018	PAB
Di-N-Butylphthalate	EPA-8270	U	140	1	UG/KG	01/31/2018	PAB
Fluoranthene	EPA-8270	U	170	1	UG/KG	01/31/2018	PAB
Pyrene	EPA-8270	U	160	1	UG/KG	01/31/2018	PAB
Butylbenzylphthalate	EPA-8270	U	190	1	UG/KG	01/31/2018	PAB
3,3-Dichlorobenzidine	EPA-8270	U	810	1	UG/KG	01/31/2018	PAB
Benzo[A]Anthracene	EPA-8270	U	160	1	UG/KG	01/31/2018	PAB
Chrysene	EPA-8270	300	180	1	UG/KG	01/31/2018	PAB



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-03
<b>CLIENT SAMPLE ID</b>	Shop Floor Drain-3	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 11:15:00 AM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
Bis(2-Ethylhexyl)Phthalate	EPA-8270	5300	140	1	UG/KG	01/31/2018	PAB
Di-N-Octylphthalate	EPA-8270	U	190	1	UG/KG	01/31/2018	PAB
Benzo[B]Fluoranthene	EPA-8270	U	170	1	UG/KG	01/31/2018	PAB
Benzo[K]Fluoranthene	EPA-8270	U	170	1	UG/KG	01/31/2018	PAB
Benzo[A]Pyrene	EPA-8270	U	160	1	UG/KG	01/31/2018	PAB
Indeno[1,2,3-Cd]Pyrene	EPA-8270	180	130	1	UG/KG	01/31/2018	PAB
Dibenz[A,H]Anthracene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Benzo[G,H,I]Perylene	EPA-8270	390	190	1	UG/KG	01/31/2018	PAB
Mercury	EPA-7471	0.25	0.020	1	MG/KG	01/30/2018	RAL
Arsenic	EPA-6020	22	1.1	5	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	57	0.50	5	MG/KG	01/29/2018	RAL
Chromium	EPA-6020	350	0.58	5	MG/KG	01/29/2018	RAL
Copper	EPA-6020	8800	10	100	MG/KG	01/29/2018	RAL
Lead	EPA-6020	10000	10	100	MG/KG	01/29/2018	RAL
Zinc	EPA-6020	7100	79	100	MG/KG	01/29/2018	RAL

SURROGATE	METHOD	%REC	ANALYSIS	ANALYSIS
			DATE	BY
TFT	NWTPH-GX	80.9	01/26/2018	SNC
TFT	EPA-8021	84.2	01/26/2018	SNC
C25 20X Dilution	NWTPH-DX	121	01/29/2018	EBS
1,2-Dichloroethane-d4	EPA-8260	106	01/29/2018	DLC
Toluene-d8	EPA-8260	125	01/29/2018	DLC
4-Bromofluorobenzene	EPA-8260	114	01/29/2018	DLC
Terphenyl-d14	EPA-8270 SIM	78.5	01/26/2018	PAB
2-Fluorophenol	EPA-8270	89.3	01/31/2018	PAB
Phenol-d5	EPA-8270	90.5	01/31/2018	PAB
Nitrobenzene-d5	EPA-8270	73.8	01/31/2018	PAB
2-Fluorobiphenyl	EPA-8270	85.6	01/31/2018	PAB
2,4,6-Tribromophenol	EPA-8270	122	01/31/2018	PAB
Terphenyl-d14	EPA-8270	76.2	01/31/2018	PAB

U - Analyte analyzed for but not detected at level above reporting limit.  
 Chromatogram indicates that it is likely that sample contains an unidentified diesel range product and lube oil.  
 Diesel range product results biased high due to oil range product overlap.





**CERTIFICATE OF ANALYSIS**

CLIENT:	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	DATE:	1/31/2018
CLIENT CONTACT:	Eric Libolt	ALS JOB#:	EV18010159
CLIENT PROJECT:	Jensen's Shipyard	ALS SAMPLE#:	EV18010159-04
CLIENT SAMPLE ID	OPAICO Pad	DATE RECEIVED:	01/26/2018
		COLLECTION DATE:	1/24/2018 12:45:00 PM
		WDOE ACCREDITATION:	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	01/26/2018	SNC
Benzene	EPA-8021	U	0.030	1	MG/KG	01/26/2018	SNC
Toluene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	01/26/2018	SNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	01/29/2018	EBS
TPH-Oil Range	NWTPH-DX	130	50	1	MG/KG	01/29/2018	EBS
PCB-1016	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
PCB-1221	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
PCB-1232	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
PCB-1242	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
PCB-1248	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
PCB-1254	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
PCB-1260	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
PCB-1268	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
Mercury	EPA-7471	0.15	0.020	1	MG/KG	01/30/2018	RAL
Arsenic	EPA-6020	7.1	1.0	5	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	2.2	0.50	5	MG/KG	01/29/2018	RAL
Chromium	EPA-6020	40	0.50	5	MG/KG	01/29/2018	RAL
Copper	EPA-6020	1100	5.0	50	MG/KG	01/29/2018	RAL
Lead	EPA-6020	530	0.50	5	MG/KG	01/29/2018	RAL
Zinc	EPA-6020	2300	29	50	MG/KG	01/29/2018	RAL

SURROGATE	METHOD	%REC	ANALYSIS	ANALYSIS
			DATE	BY
TFT	NWTPH-GX	118	01/26/2018	SNC
TFT	EPA-8021	132	01/26/2018	SNC
C25	NWTPH-DX	107	01/29/2018	EBS
TCMX	EPA-8082	86.4	01/30/2018	PAB
DCB	EPA-8082	90.6	01/30/2018	PAB

U - Analyte analyzed for but not detected at level above reporting limit.  
Chromatogram indicates that it is likely that sample contains lube oil.



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-05
<b>CLIENT SAMPLE ID</b>	Stormwater Pond	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 1:10:00 PM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS ANALYSIS	
						DATE	BY
Mercury	EPA-7471	0.15	0.020	1	MG/KG	01/30/2018	RAL
Arsenic	EPA-6020	10	6.5	5	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	10	2.0	5	MG/KG	01/29/2018	RAL
Chromium	EPA-6020	43	3.3	5	MG/KG	01/29/2018	RAL
Copper	EPA-6020	12000	10	25	MG/KG	01/29/2018	RAL
Lead	EPA-6020	450	2.1	5	MG/KG	01/29/2018	RAL
Zinc	EPA-6020	2400	22	5	MG/KG	01/29/2018	RAL



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-06
<b>CLIENT SAMPLE ID</b>	BLWA-1	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 1:30:00 PM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

<b>ANALYTE</b>	<b>METHOD</b>	<b>RESULTS</b>	<b>REPORTING LIMITS</b>	<b>DILUTION FACTOR</b>	<b>UNITS</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
TPH-Diesel Range	NWTPH-DX	160	50	2	MG/KG	01/29/2018	EBS
TPH-Oil Range	NWTPH-DX	470	100	2	MG/KG	01/29/2018	EBS
Mercury	EPA-7471	0.81	0.10	5	MG/KG	01/30/2018	RAL
Arsenic	EPA-6020	11	1.0	5	MG/KG	01/29/2018	RAL
Arsenic	EPA-6020	12	10	50	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	1.3	0.50	5	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	U	5.0	50	MG/KG	01/29/2018	RAL
Chromium	EPA-6020	35	0.50	5	MG/KG	01/29/2018	RAL
Chromium	EPA-6020	30	5.0	50	MG/KG	01/29/2018	RAL
Copper	EPA-6020	6700	5.0	50	MG/KG	01/29/2018	RAL
Lead	EPA-6020	700	0.50	5	MG/KG	01/29/2018	RAL
Lead	EPA-6020	660	5.0	50	MG/KG	01/29/2018	RAL
Zinc	EPA-6020	950	29	50	MG/KG	01/29/2018	RAL

<b>SURROGATE</b>	<b>METHOD</b>	<b>%REC</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
C25 2X Dilution	NWTPH-DX	123	01/29/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.  
Chromatogram indicates that it is likely that sample contains light oil/lube oil.



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-07
<b>CLIENT SAMPLE ID</b>	BLWA-2	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 1:45:00 PM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

<b>ANALYTE</b>	<b>METHOD</b>	<b>RESULTS</b>	<b>REPORTING LIMITS</b>	<b>DILUTION FACTOR</b>	<b>UNITS</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
TPH-Diesel Range	NWTPH-DX	170	25	1	MG/KG	01/29/2018	EBS
TPH-Oil Range	NWTPH-DX	300	50	1	MG/KG	01/29/2018	EBS
Mercury	EPA-7471	0.39	0.020	1	MG/KG	01/30/2018	RAL
Arsenic	EPA-6020	7.1	1.0	5	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	0.94	0.50	5	MG/KG	01/29/2018	RAL
Chromium	EPA-6020	20	0.50	5	MG/KG	01/29/2018	RAL
Copper	EPA-6020	6100	5.0	50	MG/KG	01/29/2018	RAL
Lead	EPA-6020	350	0.50	5	MG/KG	01/29/2018	RAL
Zinc	EPA-6020	1700	28	50	MG/KG	01/29/2018	RAL

<b>SURROGATE</b>	<b>METHOD</b>	<b>%REC</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
C25	NWTPH-DX	183 DS3	01/29/2018	EBS

DS3 - Surrogate outside of control limits due to coeluting compounds.  
Chromatogram indicates that it is likely that sample contains light oil/lube oil.



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-08
<b>CLIENT SAMPLE ID</b>	FDA-1	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 9:15:00 AM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

<b>ANALYTE</b>	<b>METHOD</b>	<b>RESULTS</b>	<b>REPORTING LIMITS</b>	<b>DILUTION FACTOR</b>	<b>UNITS</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
TPH-Diesel Range	NWTPH-DX w/ SGA	U	25	1	MG/KG	01/29/2018	EBS
TPH-Oil Range	NWTPH-DX w/ SGA	U	50	1	MG/KG	01/29/2018	EBS
Mercury	EPA-7471	<b>0.028</b>	0.020	1	MG/KG	01/30/2018	RAL
Arsenic	EPA-6020	<b>3.5</b>	1.0	5	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	U	0.50	5	MG/KG	01/29/2018	RAL
Chromium	EPA-6020	<b>41</b>	0.50	5	MG/KG	01/29/2018	RAL
Copper	EPA-6020	<b>16</b>	0.50	5	MG/KG	01/29/2018	RAL
Lead	EPA-6020	<b>6.4</b>	0.50	5	MG/KG	01/29/2018	RAL
Zinc	EPA-6020	<b>30</b>	3.2	5	MG/KG	01/29/2018	RAL

<b>SURROGATE</b>	<b>METHOD</b>	<b>%REC</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
C25	NWTPH-DX w/ SGA	<b>122</b>	01/29/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-09
<b>CLIENT SAMPLE ID</b>	FDA-2	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 2:15:00 PM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

<b>ANALYTE</b>	<b>METHOD</b>	<b>RESULTS</b>	<b>REPORTING LIMITS</b>	<b>DILUTION FACTOR</b>	<b>UNITS</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
TPH-Diesel Range	NWTPH-DX w/ SGA	U	25	1	MG/KG	01/29/2018	EBS
TPH-Oil Range	NWTPH-DX w/ SGA	U	50	1	MG/KG	01/29/2018	EBS
Mercury	EPA-7471	U	0.020	1	MG/KG	01/30/2018	RAL
Arsenic	EPA-6020	<b>8.7</b>	1.0	5	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	U	0.50	5	MG/KG	01/29/2018	RAL
Chromium	EPA-6020	<b>21</b>	0.50	5	MG/KG	01/29/2018	RAL
Copper	EPA-6020	<b>79</b>	0.50	5	MG/KG	01/29/2018	RAL
Lead	EPA-6020	<b>52</b>	0.50	5	MG/KG	01/29/2018	RAL
Zinc	EPA-6020	<b>270</b>	2.8	5	MG/KG	01/29/2018	RAL

<b>SURROGATE</b>	<b>METHOD</b>	<b>%REC</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
C25	NWTPH-DX w/ SGA	117	01/29/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-10
<b>CLIENT SAMPLE ID</b>	FDA-3	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 2:35:00 PM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

<b>ANALYTE</b>	<b>METHOD</b>	<b>RESULTS</b>	<b>REPORTING LIMITS</b>	<b>DILUTION FACTOR</b>	<b>UNITS</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
TPH-Diesel Range	NWTPH-DX w/ SGA	U	25	1	MG/KG	01/29/2018	EBS
TPH-Oil Range	NWTPH-DX w/ SGA	420	50	1	MG/KG	01/29/2018	EBS
Mercury	EPA-7471	0.16	0.020	1	MG/KG	01/30/2018	RAL
Arsenic	EPA-6020	3.5	1.0	5	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	U	0.50	5	MG/KG	01/29/2018	RAL
Chromium	EPA-6020	22	0.50	5	MG/KG	01/29/2018	RAL
Copper	EPA-6020	29	0.50	5	MG/KG	01/29/2018	RAL
Lead	EPA-6020	190	0.50	5	MG/KG	01/29/2018	RAL
Zinc	EPA-6020	220	3.0	5	MG/KG	01/29/2018	RAL

<b>SURROGATE</b>	<b>METHOD</b>	<b>%REC</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
C25	NWTPH-DX w/ SGA	99.8	01/29/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.  
Chromatogram indicates that it is likely that sample contains lube oil.



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-11
<b>CLIENT SAMPLE ID</b>	UST-1	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 8:45:00 AM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

<b>ANALYTE</b>	<b>METHOD</b>	<b>RESULTS</b>	<b>REPORTING LIMITS</b>	<b>DILUTION FACTOR</b>	<b>UNITS</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	01/26/2018	SNC
Benzene	EPA-8021	U	0.030	1	MG/KG	01/26/2018	SNC
Toluene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	01/26/2018	SNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	01/26/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	01/26/2018	EBS

<b>SURROGATE</b>	<b>METHOD</b>	<b>%REC</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
TFT	NWTPH-GX	111	01/26/2018	SNC
TFT	EPA-8021	127	01/26/2018	SNC
C25	NWTPH-DX	89.8	01/26/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.





**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-12
<b>CLIENT SAMPLE ID</b>	UST-2	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 9:00:00 AM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

<b>ANALYTE</b>	<b>METHOD</b>	<b>RESULTS</b>	<b>REPORTING LIMITS</b>	<b>DILUTION FACTOR</b>	<b>UNITS</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	01/26/2018	SNC
Benzene	EPA-8021	U	0.030	1	MG/KG	01/26/2018	SNC
Toluene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	01/26/2018	SNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	01/26/2018	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	01/26/2018	EBS

<b>SURROGATE</b>	<b>METHOD</b>	<b>%REC</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
TFT	NWTPH-GX	108	01/26/2018	SNC
TFT	EPA-8021	123	01/26/2018	SNC
C25	NWTPH-DX	81.2	01/26/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-13
<b>CLIENT SAMPLE ID</b>	SRWA-1	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 12:00:00 PM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING	DILUTION	UNITS	ANALYSIS	ANALYSIS
			LIMITS	FACTOR		DATE	BY
TPH-Diesel Range	NWTPH-DX w/ SGA	180	50	2	MG/KG	01/29/2018	EBS
TPH-Oil Range	NWTPH-DX w/ SGA	1100	100	2	MG/KG	01/29/2018	EBS
Naphthalene	EPA-8270 SIM	12	0.020	1	UG/KG	01/26/2018	PAB
2-Methylnaphthalene	EPA-8270 SIM	6.7	0.020	1	UG/KG	01/26/2018	PAB
1-Methylnaphthalene	EPA-8270 SIM	5.2	0.020	1	UG/KG	01/26/2018	PAB
Acenaphthylene	EPA-8270 SIM	95	0.020	1	UG/KG	01/26/2018	PAB
Acenaphthene	EPA-8270 SIM	12	0.020	1	UG/KG	01/26/2018	PAB
Fluorene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Phenanthrene	EPA-8270 SIM	250	0.020	1	UG/KG	01/26/2018	PAB
Anthracene	EPA-8270 SIM	110	0.020	1	UG/KG	01/26/2018	PAB
Fluoranthene	EPA-8270 SIM	670	0.020	1	UG/KG	01/26/2018	PAB
Pyrene	EPA-8270 SIM	650	0.020	1	UG/KG	01/26/2018	PAB
Benzo[A]Anthracene	EPA-8270 SIM	370	0.020	1	UG/KG	01/26/2018	PAB
Chrysene	EPA-8270 SIM	480	0.020	1	UG/KG	01/26/2018	PAB
Benzo[B]Fluoranthene	EPA-8270 SIM	710	0.020	1	UG/KG	01/26/2018	PAB
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Benzo[A]Pyrene	EPA-8270 SIM	470	0.020	1	UG/KG	01/26/2018	PAB
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	360	0.020	1	UG/KG	01/26/2018	PAB
Dibenz[A,H]Anthracene	EPA-8270 SIM	94	0.020	1	UG/KG	01/26/2018	PAB
Benzo[G,H,I]Perylene	EPA-8270 SIM	570	0.020	1	UG/KG	01/26/2018	PAB
Pyridine	EPA-8270	U	200	1	UG/KG	01/31/2018	PAB
N-Nitrosodimethylamine	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Phenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Aniline	EPA-8270	U	170	1	UG/KG	01/31/2018	PAB
Bis(2-Chloroethyl)Ether	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Chlorophenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
1,3-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
1,4-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Benzyl Alcohol	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
1,2-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Methylphenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Bis(2-Chloroisopropyl)Ether	EPA-8270	U	120	1	UG/KG	01/31/2018	PAB
3&4-Methylphenol	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
N-Nitroso-Di-N-Propylamine	EPA-8270	U	150	1	UG/KG	01/31/2018	PAB
Hexachloroethane	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Nitrobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Isophorone	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Nitrophenol	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
2,4-Dimethylphenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB



**CERTIFICATE OF ANALYSIS**

CLIENT:	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	DATE:	1/31/2018
CLIENT CONTACT:	Eric Libolt	ALS JOB#:	EV18010159
CLIENT PROJECT:	Jensen's Shipyard	ALS SAMPLE#:	EV18010159-13
CLIENT SAMPLE ID	SRWA-1	DATE RECEIVED:	01/26/2018
		COLLECTION DATE:	1/24/2018 12:00:00 PM
		WDOE ACCREDITATION:	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING	DILUTION	UNITS	ANALYSIS	ANALYSIS
			LIMITS	FACTOR		DATE	BY
Benzoic Acid	EPA-8270	U	1000	1	UG/KG	01/31/2018	PAB
Bis(2-Chloroethoxy)Methane	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2,4-Dichlorophenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
1,2,4-Trichlorobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Naphthalene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
4-Chloroaniline	EPA-8270	U	200	1	UG/KG	01/31/2018	PAB
2,6-Dichlorophenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Hexachlorobutadiene	EPA-8270	U	140	1	UG/KG	01/31/2018	PAB
4-Chloro-3-Methylphenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Methylnaphthalene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
1-Methylnaphthalene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Hexachlorocyclopentadiene	EPA-8270	U	500	1	UG/KG	01/31/2018	PAB
2,4,6-Trichlorophenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2,4,5-Trichlorophenol	EPA-8270	U	120	1	UG/KG	01/31/2018	PAB
2-Chloronaphthalene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Nitroaniline	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
Acenaphthylene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Dimethylphthalate	EPA-8270	<b>290</b>	110	1	UG/KG	01/31/2018	PAB
2,6-Dinitrotoluene	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
Acenaphthene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
3-Nitroaniline	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
2,4-Dinitrophenol	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
4-Nitrophenol	EPA-8270	U	500	1	UG/KG	01/31/2018	PAB
Dibenzofuran	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2,4-Dinitrotoluene	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
2,3,4,6-Tetrachlorophenol	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
Diethylphthalate	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Fluorene	EPA-8270	U	120	1	UG/KG	01/31/2018	PAB
4-Chlorophenyl-Phenylether	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
4-Nitroaniline	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
4,6-Dinitro-2-Methylphenol	EPA-8270	U	210	1	UG/KG	01/31/2018	PAB
N-Nitrosodiphenylamine	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
Azobenzene	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
4-Bromophenyl-Phenylether	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Hexachlorobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Pentachlorophenol	EPA-8270	U	500	1	UG/KG	01/31/2018	PAB
Phenanthrene	EPA-8270	<b>290</b>	100	1	UG/KG	01/31/2018	PAB
Anthracene	EPA-8270	<b>100</b>	100	1	UG/KG	01/31/2018	PAB
Carbazole	EPA-8270	U	200	1	UG/KG	01/31/2018	PAB



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-13
<b>CLIENT SAMPLE ID</b>	SRWA-1	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 12:00:00 PM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
Di-N-Butylphthalate	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
Fluoranthene	EPA-8270	790	110	1	UG/KG	01/31/2018	PAB
Pyrene	EPA-8270	650	100	1	UG/KG	01/31/2018	PAB
Butylbenzylphthalate	EPA-8270	U	120	1	UG/KG	01/31/2018	PAB
3,3-Dichlorobenzidine	EPA-8270	U	510	1	UG/KG	01/31/2018	PAB
Benzo[A]Anthracene	EPA-8270	400	100	1	UG/KG	01/31/2018	PAB
Chrysene	EPA-8270	530	110	1	UG/KG	01/31/2018	PAB
Bis(2-Ethylhexyl)Phthalate	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
Di-N-Octylphthalate	EPA-8270	U	120	1	UG/KG	01/31/2018	PAB
Benzo[B]Fluoranthene	EPA-8270	810	110	1	UG/KG	01/31/2018	PAB
Benzo[K]Fluoranthene	EPA-8270	280	110	1	UG/KG	01/31/2018	PAB
Benzo[A]Pyrene	EPA-8270	520	100	1	UG/KG	01/31/2018	PAB
Indeno[1,2,3-Cd]Pyrene	EPA-8270	400	100	1	UG/KG	01/31/2018	PAB
Dibenz[A,H]Anthracene	EPA-8270	110	100	1	UG/KG	01/31/2018	PAB
Benzo[G,H,I]Perylene	EPA-8270	520	120	1	UG/KG	01/31/2018	PAB
Mercury	EPA-7471	13	0.80	40	MG/KG	01/30/2018	RAL
Arsenic	EPA-6020	30	1.0	5	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	0.54	0.50	5	MG/KG	01/29/2018	RAL
Chromium	EPA-6020	29	0.50	5	MG/KG	01/29/2018	RAL
Copper	EPA-6020	2400	5.0	50	MG/KG	01/29/2018	RAL
Lead	EPA-6020	920	0.50	5	MG/KG	01/29/2018	RAL
Zinc	EPA-6020	840	30	50	MG/KG	01/29/2018	RAL

SURROGATE	METHOD	%REC	ANALYSIS	ANALYSIS
			DATE	BY
C25 2X Dilution	NWTPH-DX w/ SGA	105	01/29/2018	EBS
Terphenyl-d14	EPA-8270 SIM	79.9	01/26/2018	PAB
2-Fluorophenol	EPA-8270	85.8	01/31/2018	PAB
Phenol-d5	EPA-8270	83.9	01/31/2018	PAB
Nitrobenzene-d5	EPA-8270	75.8	01/31/2018	PAB
2-Fluorobiphenyl	EPA-8270	80.3	01/31/2018	PAB
2,4,6-Tribromophenol	EPA-8270	86.3	01/31/2018	PAB
Terphenyl-d14	EPA-8270	89.7	01/31/2018	PAB

U - Analyte analyzed for but not detected at level above reporting limit.  
 Chromatogram indicates that it is likely that sample contains weathered diesel and lube oil.  
 Diesel range product results biased high due to oil range product overlap.



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-14
<b>CLIENT SAMPLE ID</b>	SRWA-2	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 12:10:00 PM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
TPH-Diesel Range	NWTPH-DX w/ SGA	91	25	1	MG/KG	01/27/2018	EBS
TPH-Oil Range	NWTPH-DX w/ SGA	220	50	1	MG/KG	01/27/2018	EBS
Naphthalene	EPA-8270 SIM	7.1	0.020	1	UG/KG	01/26/2018	PAB
2-Methylnaphthalene	EPA-8270 SIM	4.1	0.020	1	UG/KG	01/26/2018	PAB
1-Methylnaphthalene	EPA-8270 SIM	5.2	0.020	1	UG/KG	01/26/2018	PAB
Acenaphthylene	EPA-8270 SIM	77	0.020	1	UG/KG	01/26/2018	PAB
Acenaphthene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Fluorene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Phenanthrene	EPA-8270 SIM	130	0.020	1	UG/KG	01/26/2018	PAB
Anthracene	EPA-8270 SIM	53	0.020	1	UG/KG	01/26/2018	PAB
Fluoranthene	EPA-8270 SIM	210	0.020	1	UG/KG	01/26/2018	PAB
Pyrene	EPA-8270 SIM	210	0.020	1	UG/KG	01/26/2018	PAB
Benzo[A]Anthracene	EPA-8270 SIM	110	0.020	1	UG/KG	01/26/2018	PAB
Chrysene	EPA-8270 SIM	120	0.020	1	UG/KG	01/26/2018	PAB
Benzo[B]Fluoranthene	EPA-8270 SIM	200	0.020	1	UG/KG	01/26/2018	PAB
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Benzo[A]Pyrene	EPA-8270 SIM	140	0.020	1	UG/KG	01/26/2018	PAB
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	120	0.020	1	UG/KG	01/26/2018	PAB
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Benzo[G,H,I]Perylene	EPA-8270 SIM	190	0.020	1	UG/KG	01/26/2018	PAB
Pyridine	EPA-8270	U	200	1	UG/KG	01/31/2018	PAB
N-Nitrosodimethylamine	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Phenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Aniline	EPA-8270	U	170	1	UG/KG	01/31/2018	PAB
Bis(2-Chloroethyl)Ether	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Chlorophenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
1,3-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
1,4-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Benzyl Alcohol	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
1,2-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Methylphenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Bis(2-Chloroisopropyl)Ether	EPA-8270	U	120	1	UG/KG	01/31/2018	PAB
3&4-Methylphenol	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
N-Nitroso-Di-N-Propylamine	EPA-8270	U	150	1	UG/KG	01/31/2018	PAB
Hexachloroethane	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Nitrobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Isophorone	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Nitrophenol	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
2,4-Dimethylphenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB



**CERTIFICATE OF ANALYSIS**

CLIENT:	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	DATE:	1/31/2018
CLIENT CONTACT:	Eric Libolt	ALS JOB#:	EV18010159
CLIENT PROJECT:	Jensen's Shipyard	ALS SAMPLE#:	EV18010159-14
CLIENT SAMPLE ID	SRWA-2	DATE RECEIVED:	01/26/2018
		COLLECTION DATE:	1/24/2018 12:10:00 PM
		WDOE ACCREDITATION:	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING	DILUTION	UNITS	ANALYSIS	ANALYSIS
			LIMITS	FACTOR		DATE	BY
Benzoic Acid	EPA-8270	U	1000	1	UG/KG	01/31/2018	PAB
Bis(2-Chloroethoxy)Methane	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2,4-Dichlorophenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
1,2,4-Trichlorobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Naphthalene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
4-Chloroaniline	EPA-8270	U	190	1	UG/KG	01/31/2018	PAB
2,6-Dichlorophenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Hexachlorobutadiene	EPA-8270	U	140	1	UG/KG	01/31/2018	PAB
4-Chloro-3-Methylphenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Methylnaphthalene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
1-Methylnaphthalene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Hexachlorocyclopentadiene	EPA-8270	U	500	1	UG/KG	01/31/2018	PAB
2,4,6-Trichlorophenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2,4,5-Trichlorophenol	EPA-8270	U	120	1	UG/KG	01/31/2018	PAB
2-Chloronaphthalene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Nitroaniline	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
Acenaphthylene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Dimethylphthalate	EPA-8270	<b>640</b>	110	1	UG/KG	01/31/2018	PAB
2,6-Dinitrotoluene	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
Acenaphthene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
3-Nitroaniline	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
2,4-Dinitrophenol	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
4-Nitrophenol	EPA-8270	U	500	1	UG/KG	01/31/2018	PAB
Dibenzofuran	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2,4-Dinitrotoluene	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
2,3,4,6-Tetrachlorophenol	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
Diethylphthalate	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Fluorene	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
4-Chlorophenyl-Phenylether	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
4-Nitroaniline	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
4,6-Dinitro-2-Methylphenol	EPA-8270	U	210	1	UG/KG	01/31/2018	PAB
N-Nitrosodiphenylamine	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
Azobenzene	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
4-Bromophenyl-Phenylether	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Hexachlorobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Pentachlorophenol	EPA-8270	U	500	1	UG/KG	01/31/2018	PAB
Phenanthrene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Anthracene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Carbazole	EPA-8270	U	200	1	UG/KG	01/31/2018	PAB



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-14
<b>CLIENT SAMPLE ID</b>	SRWA-2	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 12:10:00 PM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
Di-N-Butylphthalate	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
Fluoranthene	EPA-8270	110	110	1	UG/KG	01/31/2018	PAB
Pyrene	EPA-8270	100	100	1	UG/KG	01/31/2018	PAB
Butylbenzylphthalate	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
3,3-Dichlorobenzidine	EPA-8270	U	500	1	UG/KG	01/31/2018	PAB
Benzo[A]Anthracene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Chrysene	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
Bis(2-Ethylhexyl)Phthalate	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
Di-N-Octylphthalate	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
Benzo[B]Fluoranthene	EPA-8270	130	110	1	UG/KG	01/31/2018	PAB
Benzo[K]Fluoranthene	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
Benzo[A]Pyrene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Indeno[1,2,3-Cd]Pyrene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Dibenz[A,H]Anthracene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Benzo[G,H,I]Perylene	EPA-8270	140	110	1	UG/KG	01/31/2018	PAB
Mercury	EPA-7471	6.3	0.40	20	MG/KG	01/30/2018	RAL
Arsenic	EPA-6020	14	1.0	5	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	U	0.50	5	MG/KG	01/29/2018	RAL
Chromium	EPA-6020	18	0.50	5	MG/KG	01/29/2018	RAL
Copper	EPA-6020	1100	0.50	5	MG/KG	01/29/2018	RAL
Lead	EPA-6020	1000	0.50	5	MG/KG	01/29/2018	RAL
Zinc	EPA-6020	330	2.8	5	MG/KG	01/29/2018	RAL

SURROGATE	METHOD	%REC	ANALYSIS	ANALYSIS
			DATE	BY
C25	NWTPH-DX w/ SGA	93.2	01/27/2018	EBS
Terphenyl-d14	EPA-8270 SIM	107	01/26/2018	PAB
2-Fluorophenol	EPA-8270	74.6	01/31/2018	PAB
Phenol-d5	EPA-8270	71.9	01/31/2018	PAB
Nitrobenzene-d5	EPA-8270	66.7	01/31/2018	PAB
2-Fluorobiphenyl	EPA-8270	71.9	01/31/2018	PAB
2,4,6-Tribromophenol	EPA-8270	81.3	01/31/2018	PAB
Terphenyl-d14	EPA-8270	80.5	01/31/2018	PAB

U - Analyte analyzed for but not detected at level above reporting limit.  
Chromatogram indicates that it is likely that sample contains weathered diesel and lube oil.



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-15
<b>CLIENT SAMPLE ID</b>	SRWA-3	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 2:00:00 PM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
TPH-Volatile Range	NWTPH-GX	84	3.0	1	MG/KG	01/26/2018	SNC
Benzene	EPA-8021	U	0.030	1	MG/KG	01/26/2018	SNC
Toluene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	01/26/2018	SNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	01/26/2018	SNC
TPH-Diesel Range	NWTPH-DX w/ SGA	3900	50	2	MG/KG	01/29/2018	EBS
TPH-Oil Range	NWTPH-DX w/ SGA	940	100	2	MG/KG	01/29/2018	EBS
Dichlorodifluoromethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Chloromethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Vinyl Chloride	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Bromomethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Chloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Carbon Tetrachloride	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Trichlorofluoromethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Carbon Disulfide	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Acetone	EPA-8260	U	50	1	UG/KG	01/29/2018	DLC
1,1-Dichloroethene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Methylene Chloride	EPA-8260	U	20	1	UG/KG	01/29/2018	DLC
Acrylonitrile	EPA-8260	U	50	1	UG/KG	01/29/2018	DLC
Methyl T-Butyl Ether	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,1-Dichloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
2-Butanone	EPA-8260	U	50	1	UG/KG	01/29/2018	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
2,2-Dichloropropane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Bromochloromethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Chloroform	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,1,1-Trichloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,1-Dichloropropene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2-Dichloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Benzene	EPA-8260	U	5.0	1	UG/KG	01/29/2018	DLC
Trichloroethene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2-Dichloropropane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Dibromomethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Bromodichloromethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
4-Methyl-2-Pentanone	EPA-8260	U	50	1	UG/KG	01/29/2018	DLC
Toluene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC





**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-15
<b>CLIENT SAMPLE ID</b>	SRWA-3	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 2:00:00 PM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
1,1,2-Trichloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
2-Hexanone	EPA-8260	U	50	1	UG/KG	01/29/2018	DLC
1,3-Dichloropropane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Tetrachloroethylene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Dibromochloromethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2-Dibromoethane	EPA-8260	U	5.0	1	UG/KG	01/29/2018	DLC
Chlorobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	01/29/2018	DLC
Styrene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Bromoform	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Isopropylbenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2,3-Trichloropropane	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Bromobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
N-Propyl Benzene	EPA-8260	17	10	1	UG/KG	01/29/2018	DLC
2-Chlorotoluene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,3,5-Trimethylbenzene	EPA-8260	240	62	1	UG/KG	01/29/2018	DLC
4-Chlorotoluene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
T-Butyl Benzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2,4-Trimethylbenzene	EPA-8260	610	67	1	UG/KG	01/29/2018	DLC
S-Butyl Benzene	EPA-8260	33	10	1	UG/KG	01/29/2018	DLC
P-Isopropyltoluene	EPA-8260	33	10	1	UG/KG	01/29/2018	DLC
1,3-Dichlorobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,4-Dichlorobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
N-Butylbenzene	EPA-8260	55	10	1	UG/KG	01/29/2018	DLC
1,2-Dichlorobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	50	1	UG/KG	01/29/2018	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Hexachlorobutadiene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Naphthalene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	10	1	UG/KG	01/29/2018	DLC
Naphthalene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
2-Methylnaphthalene	EPA-8270 SIM	1200	0.020	1	UG/KG	01/26/2018	PAB
1-Methylnaphthalene	EPA-8270 SIM	900	0.020	1	UG/KG	01/26/2018	PAB
Acenaphthylene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Acenaphthene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-15
<b>CLIENT SAMPLE ID</b>	SRWA-3	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 2:00:00 PM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
Fluorene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Phenanthrene	EPA-8270 SIM	620	0.020	1	UG/KG	01/26/2018	PAB
Anthracene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Fluoranthene	EPA-8270 SIM	620	0.020	1	UG/KG	01/26/2018	PAB
Pyrene	EPA-8270 SIM	570	0.020	1	UG/KG	01/26/2018	PAB
Benzo[A]Anthracene	EPA-8270 SIM	210	0.020	1	UG/KG	01/26/2018	PAB
Chrysene	EPA-8270 SIM	340	0.020	1	UG/KG	01/26/2018	PAB
Benzo[B]Fluoranthene	EPA-8270 SIM	430	0.020	1	UG/KG	01/26/2018	PAB
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Benzo[A]Pyrene	EPA-8270 SIM	220	0.020	1	UG/KG	01/26/2018	PAB
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	150	0.020	1	UG/KG	01/26/2018	PAB
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/KG	01/26/2018	PAB
Benzo[G,H,I]Perylene	EPA-8270 SIM	170	0.020	1	UG/KG	01/26/2018	PAB
Pyridine	EPA-8270	U	200	1	UG/KG	01/31/2018	PAB
N-Nitrosodimethylamine	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Phenol	EPA-8270	U	120	1	UG/KG	01/31/2018	PAB
Aniline	EPA-8270	U	230	1	UG/KG	01/31/2018	PAB
Bis(2-Chloroethyl)Ether	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
2-Chlorophenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
1,3-Dichlorobenzene	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
1,4-Dichlorobenzene	EPA-8270	U	120	1	UG/KG	01/31/2018	PAB
Benzyl Alcohol	EPA-8270	U	140	1	UG/KG	01/31/2018	PAB
1,2-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Methylphenol	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
Bis(2-Chloroisopropyl)Ether	EPA-8270	U	160	1	UG/KG	01/31/2018	PAB
3&4-Methylphenol	EPA-8270	U	170	1	UG/KG	01/31/2018	PAB
N-Nitroso-Di-N-Propylamine	EPA-8270	U	200	1	UG/KG	01/31/2018	PAB
Hexachloroethane	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
Nitrobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Isophorone	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Nitrophenol	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
2,4-Dimethylphenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Benzoic Acid	EPA-8270	U	1000	1	UG/KG	01/31/2018	PAB
Bis(2-Chloroethoxy)Methane	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2,4-Dichlorophenol	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
1,2,4-Trichlorobenzene	EPA-8270	U	120	1	UG/KG	01/31/2018	PAB
4-Chloroaniline	EPA-8270	U	260	1	UG/KG	01/31/2018	PAB
2,6-Dichlorophenol	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
Hexachlorobutadiene	EPA-8270	U	180	1	UG/KG	01/31/2018	PAB



**CERTIFICATE OF ANALYSIS**

CLIENT:	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	DATE:	1/31/2018
CLIENT CONTACT:	Eric Libolt	ALS JOB#:	EV18010159
CLIENT PROJECT:	Jensen's Shipyard	ALS SAMPLE#:	EV18010159-15
CLIENT SAMPLE ID	SRWA-3	DATE RECEIVED:	01/26/2018
		COLLECTION DATE:	1/24/2018 2:00:00 PM
		WDOE ACCREDITATION:	C601

**SAMPLE DATA RESULTS**

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
4-Chloro-3-Methylphenol	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
Hexachlorocyclopentadiene	EPA-8270	U	500	1	UG/KG	01/31/2018	PAB
2,4,6-Trichlorophenol	EPA-8270	U	110	1	UG/KG	01/31/2018	PAB
2,4,5-Trichlorophenol	EPA-8270	U	170	1	UG/KG	01/31/2018	PAB
2-Chloronaphthalene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
2-Nitroaniline	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
Dimethylphthalate	EPA-8270	U	140	1	UG/KG	01/31/2018	PAB
2,6-Dinitrotoluene	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
3-Nitroaniline	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
2,4-Dinitrophenol	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
4-Nitrophenol	EPA-8270	U	500	1	UG/KG	01/31/2018	PAB
Dibenzofuran	EPA-8270	U	140	1	UG/KG	01/31/2018	PAB
2,4-Dinitrotoluene	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
2,3,4,6-Tetrachlorophenol	EPA-8270	U	250	1	UG/KG	01/31/2018	PAB
Diethylphthalate	EPA-8270	U	140	1	UG/KG	01/31/2018	PAB
4-Chlorophenyl-Phenylether	EPA-8270	U	170	1	UG/KG	01/31/2018	PAB
4-Nitroaniline	EPA-8270	U	320	1	UG/KG	01/31/2018	PAB
4,6-Dinitro-2-Methylphenol	EPA-8270	U	290	1	UG/KG	01/31/2018	PAB
N-Nitrosodiphenylamine	EPA-8270	U	150	1	UG/KG	01/31/2018	PAB
Azobenzene	EPA-8270	U	150	1	UG/KG	01/31/2018	PAB
4-Bromophenyl-Phenylether	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
Hexachlorobenzene	EPA-8270	U	100	1	UG/KG	01/31/2018	PAB
Carbazole	EPA-8270	U	270	1	UG/KG	01/31/2018	PAB
Di-N-Butylphthalate	EPA-8270	U	130	1	UG/KG	01/31/2018	PAB
Butylbenzylphthalate	EPA-8270	U	160	1	UG/KG	01/31/2018	PAB
3,3-Dichlorobenzidine	EPA-8270	U	680	1	UG/KG	01/31/2018	PAB
Bis(2-Ethylhexyl)Phthalate	EPA-8270	<b>210</b>	130	1	UG/KG	01/31/2018	PAB
Di-N-Octylphthalate	EPA-8270	U	160	1	UG/KG	01/31/2018	PAB
PCB-1016	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
PCB-1221	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
PCB-1232	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
PCB-1242	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
PCB-1248	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
PCB-1254	EPA-8082	<b>0.35</b>	0.10	1	MG/KG	01/30/2018	PAB
PCB-1260	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
PCB-1268	EPA-8082	U	0.10	1	MG/KG	01/30/2018	PAB
Mercury	EPA-7471	<b>0.54</b>	0.020	1	MG/KG	01/30/2018	RAL
Arsenic	EPA-6020	<b>17</b>	1.0	5	MG/KG	01/29/2018	RAL
Cadmium	EPA-6020	U	0.50	5	MG/KG	01/29/2018	RAL



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS JOB#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>ALS SAMPLE#:</b>	EV18010159-15
<b>CLIENT SAMPLE ID</b>	SRWA-3	<b>DATE RECEIVED:</b>	01/26/2018
		<b>COLLECTION DATE:</b>	1/24/2018 2:00:00 PM
		<b>WDOE ACCREDITATION:</b>	C601

**SAMPLE DATA RESULTS**

<b>ANALYTE</b>	<b>METHOD</b>	<b>RESULTS</b>	<b>REPORTING LIMITS</b>	<b>DILUTION FACTOR</b>	<b>UNITS</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
Chromium	EPA-6020	21	0.50	5	MG/KG	01/29/2018	RAL
Copper	EPA-6020	690	0.50	5	MG/KG	01/29/2018	RAL
Lead	EPA-6020	90	0.50	5	MG/KG	01/29/2018	RAL
Zinc	EPA-6020	580	3.4	5	MG/KG	01/29/2018	RAL

<b>SURROGATE</b>	<b>METHOD</b>	<b>%REC</b>	<b>ANALYSIS DATE</b>	<b>ANALYSIS BY</b>
TFT	NWTPH-GX	119	01/26/2018	SNC
TFT	EPA-8021	122	01/26/2018	SNC
C25 2X Dilution	NWTPH-DX w/ SGA	122	01/29/2018	EBS
1,2-Dichloroethane-d4	EPA-8260	92.2	01/29/2018	DLC
1,2-Dichloroethane-d4	EPA-8260	92.9	01/29/2018	DLC
Toluene-d8	EPA-8260	103	01/29/2018	DLC
Toluene-d8	EPA-8260	114	01/29/2018	DLC
4-Bromofluorobenzene	EPA-8260	88.3	01/29/2018	DLC
4-Bromofluorobenzene	EPA-8260	86.2	01/29/2018	DLC
Terphenyl-d14	EPA-8270 SIM	82.8	01/26/2018	PAB
2-Fluorophenol	EPA-8270	74.3	01/31/2018	PAB
Phenol-d5	EPA-8270	73.3	01/31/2018	PAB
Nitrobenzene-d5	EPA-8270	68.3	01/31/2018	PAB
2-Fluorobiphenyl	EPA-8270	72.8	01/31/2018	PAB
2,4,6-Tribromophenol	EPA-8270	80.0	01/31/2018	PAB
Terphenyl-d14	EPA-8270	74.7	01/31/2018	PAB
TCMX	EPA-8082	83.7	01/30/2018	PAB
DCB	EPA-8082	94.8	01/30/2018	PAB

U - Analyte analyzed for but not detected at level above reporting limit.  
 Chromatogram indicates that it is likely that sample contains highly weathered gasoline, diesel and lube oil.  
 Gasoline range product results biased high due to semivolatile range product overlap.



**CERTIFICATE OF ANALYSIS**

CLIENT:	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	DATE:	1/31/2018
CLIENT CONTACT:	Eric Libolt	ALS SDG#:	EV18010159
CLIENT PROJECT:	Jensen's Shipyard	WDOE ACCREDITATION:	C601

**LABORATORY BLANK RESULTS**

**MBG-012618S - Batch 124728 - Soil by NWTPH-GX**

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	01/26/2018	SNC

U - Analyte analyzed for but not detected at level above reporting limit.

**MB-012618S - Batch 124728 - Soil by EPA-8021**

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	U	MG/KG	0.030	01/26/2018	SNC
Toluene	EPA-8021	U	MG/KG	0.050	01/26/2018	SNC
Ethylbenzene	EPA-8021	U	MG/KG	0.050	01/26/2018	SNC
Xylenes	EPA-8021	U	MG/KG	0.20	01/26/2018	SNC

U - Analyte analyzed for but not detected at level above reporting limit.

**MB-012518S - Batch 124740 - Soil by NWTPH-DX**

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	MG/KG	25	01/25/2018	EBS
TPH-Oil Range	NWTPH-DX	U	MG/KG	50	01/25/2018	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

**MB-012918S - Batch 124751 - Soil by EPA-8260**

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Chloromethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Vinyl Chloride	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Bromomethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Chloroethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Carbon Tetrachloride	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Trichlorofluoromethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Carbon Disulfide	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Acetone	EPA-8260	U	UG/KG	50	01/29/2018	DLC
1,1-Dichloroethene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Methylene Chloride	EPA-8260	U	UG/KG	20	01/29/2018	DLC
Acrylonitrile	EPA-8260	U	UG/KG	50	01/29/2018	DLC
Methyl T-Butyl Ether	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,1-Dichloroethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
2-Butanone	EPA-8260	U	UG/KG	50	01/29/2018	DLC



**CERTIFICATE OF ANALYSIS**

CLIENT: Whatcom Environmental Svcs., Inc.  
 228 E. Champion St., Suite 101  
 Bellingham, WA 98225

DATE: 1/31/2018  
 ALS SDG#: EV18010159  
 WDOE ACCREDITATION: C601

CLIENT CONTACT: Eric Libolt  
 CLIENT PROJECT: Jensen's Shipyard

**LABORATORY BLANK RESULTS**

**MB-012918S - Batch 124751 - Soil by EPA-8260**

Cis-1,2-Dichloroethene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
2,2-Dichloropropane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Bromochloromethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Chloroform	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,1,1-Trichloroethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,1-Dichloropropene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,2-Dichloroethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Benzene	EPA-8260	U	UG/KG	5.0	01/29/2018	DLC
Trichloroethene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,2-Dichloropropane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Dibromomethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Bromodichloromethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
4-Methyl-2-Pentanone	EPA-8260	U	UG/KG	50	01/29/2018	DLC
Toluene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,1,2-Trichloroethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
2-Hexanone	EPA-8260	U	UG/KG	50	01/29/2018	DLC
1,3-Dichloropropane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Tetrachloroethylene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Dibromochloromethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,2-Dibromoethane	EPA-8260	U	UG/KG	5.0	01/29/2018	DLC
Chlorobenzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Ethylbenzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
m,p-Xylene	EPA-8260	U	UG/KG	20	01/29/2018	DLC
Styrene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
o-Xylene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Bromoform	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Isopropylbenzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,2,3-Trichloropropane	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Bromobenzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
N-Propyl Benzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
2-Chlorotoluene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
4-Chlorotoluene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
T-Butyl Benzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
S-Butyl Benzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
P-Isopropyltoluene	EPA-8260	U	UG/KG	10	01/29/2018	DLC



**CERTIFICATE OF ANALYSIS**

CLIENT: Whatcom Environmental Svcs., Inc.  
 228 E. Champion St., Suite 101  
 Bellingham, WA 98225

DATE: 1/31/2018  
 ALS SDG#: EV18010159  
 WDOE ACCREDITATION: C601

CLIENT CONTACT: Eric Libolt  
 CLIENT PROJECT: Jensen's Shipyard

**LABORATORY BLANK RESULTS**

**MB-012918S - Batch 124751 - Soil by EPA-8260**

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
1,3-Dichlorobenzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,4-Dichlorobenzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
N-Butylbenzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,2-Dichlorobenzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	UG/KG	50	01/29/2018	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Hexachlorobutadiene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
Naphthalene	EPA-8260	U	UG/KG	10	01/29/2018	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	UG/KG	10	01/29/2018	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

**MB-012618S - Batch 124759 - Soil by EPA-8270 SIM**

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Naphthalene	EPA-8270 SIM	U	UG/KG	3.2	01/26/2018	PAB
2-Methylnaphthalene	EPA-8270 SIM	U	UG/KG	3.9	01/26/2018	PAB
1-Methylnaphthalene	EPA-8270 SIM	U	UG/KG	3.2	01/26/2018	PAB
Acenaphthylene	EPA-8270 SIM	U	UG/KG	2.8	01/26/2018	PAB
Acenaphthene	EPA-8270 SIM	U	UG/KG	2.6	01/26/2018	PAB
Fluorene	EPA-8270 SIM	U	UG/KG	3.8	01/26/2018	PAB
Phenanthrene	EPA-8270 SIM	U	UG/KG	5.1	01/26/2018	PAB
Anthracene	EPA-8270 SIM	U	UG/KG	4.3	01/26/2018	PAB
Fluoranthene	EPA-8270 SIM	U	UG/KG	4.1	01/26/2018	PAB
Pyrene	EPA-8270 SIM	U	UG/KG	4.5	01/26/2018	PAB
Benzo[A]Anthracene	EPA-8270 SIM	U	UG/KG	3.3	01/26/2018	PAB
Chrysene	EPA-8270 SIM	U	UG/KG	4.5	01/26/2018	PAB
Benzo[B]Fluoranthene	EPA-8270 SIM	U	UG/KG	4.4	01/26/2018	PAB
Benzo[K]Fluoranthene	EPA-8270 SIM	U	UG/KG	3.6	01/26/2018	PAB
Benzo[A]Pyrene	EPA-8270 SIM	U	UG/KG	3.5	01/26/2018	PAB
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	UG/KG	4.2	01/26/2018	PAB
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	UG/KG	5.0	01/26/2018	PAB
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	UG/KG	5.6	01/26/2018	PAB

U - Analyte analyzed for but not detected at level above reporting limit.

**MB-013018S - Batch 124860 - Soil by EPA-8270**

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Pyridine	EPA-8270	U	UG/KG	200	01/31/2018	PAB
N-Nitrosodimethylamine	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Phenol	EPA-8270	U	UG/KG	100	01/31/2018	PAB



**CERTIFICATE OF ANALYSIS**

CLIENT: Whatcom Environmental Svcs., Inc.  
 228 E. Champion St., Suite 101  
 Bellingham, WA 98225

DATE: 1/31/2018  
 ALS SDG#: EV18010159  
 WDOE ACCREDITATION: C601

CLIENT CONTACT: Eric Libolt  
 CLIENT PROJECT: Jensen's Shipyard

**LABORATORY BLANK RESULTS**

**MB-013018S - Batch 124860 - Soil by EPA-8270**

Aniline	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Bis(2-Chloroethyl)Ether	EPA-8270	U	UG/KG	120	01/31/2018	PAB
2-Chlorophenol	EPA-8270	U	UG/KG	120	01/31/2018	PAB
1,3-Dichlorobenzene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
1,4-Dichlorobenzene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Benzyl Alcohol	EPA-8270	U	UG/KG	100	01/31/2018	PAB
1,2-Dichlorobenzene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
2-Methylphenol	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Bis(2-Chloroisopropyl)Ether	EPA-8270	U	UG/KG	160	01/31/2018	PAB
3&4-Methylphenol	EPA-8270	U	UG/KG	100	01/31/2018	PAB
N-Nitroso-Di-N-Propylamine	EPA-8270	U	UG/KG	120	01/31/2018	PAB
Hexachloroethane	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Nitrobenzene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Isophorone	EPA-8270	U	UG/KG	100	01/31/2018	PAB
2-Nitrophenol	EPA-8270	U	UG/KG	250	01/31/2018	PAB
2,4-Dimethylphenol	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Benzoic Acid	EPA-8270	U	UG/KG	1000	01/31/2018	PAB
Bis(2-Chloroethoxy)Methane	EPA-8270	U	UG/KG	150	01/31/2018	PAB
2,4-Dichlorophenol	EPA-8270	U	UG/KG	310	01/31/2018	PAB
1,2,4-Trichlorobenzene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Naphthalene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
4-Chloroaniline	EPA-8270	U	UG/KG	710	01/31/2018	PAB
2,6-Dichlorophenol	EPA-8270	U	UG/KG	230	01/31/2018	PAB
Hexachlorobutadiene	EPA-8270	U	UG/KG	160	01/31/2018	PAB
4-Chloro-3-Methylphenol	EPA-8270	U	UG/KG	400	01/31/2018	PAB
2-Methylnaphthalene	EPA-8270	U	UG/KG	190	01/31/2018	PAB
1-Methylnaphthalene	EPA-8270	U	UG/KG	220	01/31/2018	PAB
Hexachlorocyclopentadiene	EPA-8270	U	UG/KG	500	01/31/2018	PAB
2,4,6-Trichlorophenol	EPA-8270	U	UG/KG	100	01/31/2018	PAB
2,4,5-Trichlorophenol	EPA-8270	U	UG/KG	100	01/31/2018	PAB
2-Chloronaphthalene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
2-Nitroaniline	EPA-8270	U	UG/KG	250	01/31/2018	PAB
Acenaphthylene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Dimethylphthalate	EPA-8270	U	UG/KG	100	01/31/2018	PAB
2,6-Dinitrotoluene	EPA-8270	U	UG/KG	250	01/31/2018	PAB
Acenaphthene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
3-Nitroaniline	EPA-8270	U	UG/KG	720	01/31/2018	PAB
2,4-Dinitrophenol	EPA-8270	U	UG/KG	250	01/31/2018	PAB
4-Nitrophenol	EPA-8270	U	UG/KG	500	01/31/2018	PAB
Dibenzofuran	EPA-8270	U	UG/KG	100	01/31/2018	PAB
2,4-Dinitrotoluene	EPA-8270	U	UG/KG	250	01/31/2018	PAB





**CERTIFICATE OF ANALYSIS**

CLIENT: Whatcom Environmental Svcs., Inc.  
 228 E. Champion St., Suite 101  
 Bellingham, WA 98225

DATE: 1/31/2018  
 ALS SDG#: EV18010159  
 WDOE ACCREDITATION: C601

CLIENT CONTACT: Eric Libolt  
 CLIENT PROJECT: Jensen's Shipyard

**LABORATORY BLANK RESULTS**

**MB-013018S - Batch 124860 - Soil by EPA-8270**

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
2,3,4,6-Tetrachlorophenol	EPA-8270	U	UG/KG	250	01/31/2018	PAB
Diethylphthalate	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Fluorene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
4-Chlorophenyl-Phenylether	EPA-8270	U	UG/KG	100	01/31/2018	PAB
4-Nitroaniline	EPA-8270	U	UG/KG	250	01/31/2018	PAB
4,6-Dinitro-2-Methylphenol	EPA-8270	U	UG/KG	100	01/31/2018	PAB
N-Nitrosodiphenylamine	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Azobenzene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
4-Bromophenyl-Phenylether	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Hexachlorobenzene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Pentachlorophenol	EPA-8270	U	UG/KG	500	01/31/2018	PAB
Phenanthrene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Anthracene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Carbazole	EPA-8270	U	UG/KG	130	01/31/2018	PAB
Di-N-Butylphthalate	EPA-8270	U	UG/KG	130	01/31/2018	PAB
Fluoranthene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Pyrene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Butylbenzylphthalate	EPA-8270	U	UG/KG	100	01/31/2018	PAB
3,3-Dichlorobenzidine	EPA-8270	U	UG/KG	250	01/31/2018	PAB
Benzo[A]Anthracene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Chrysene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Bis(2-Ethylhexyl)Phthalate	EPA-8270	U	UG/KG	130	01/31/2018	PAB
Di-N-Octylphthalate	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Benzo[B]Fluoranthene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Benzo[K]Fluoranthene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Benzo[A]Pyrene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Indeno[1,2,3-Cd]Pyrene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Dibenz[A,H]Anthracene	EPA-8270	U	UG/KG	100	01/31/2018	PAB
Benzo[G,H,I]Perylene	EPA-8270	U	UG/KG	100	01/31/2018	PAB

U - Analyte analyzed for but not detected at level above reporting limit.

**MB-012918S - Batch 124813 - Soil by EPA-8082**

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
PCB-1016	EPA-8082	U	MG/KG	0.10	01/29/2018	PAB
PCB-1221	EPA-8082	U	MG/KG	0.10	01/29/2018	PAB
PCB-1232	EPA-8082	U	MG/KG	0.10	01/29/2018	PAB
PCB-1242	EPA-8082	U	MG/KG	0.10	01/29/2018	PAB
PCB-1248	EPA-8082	U	MG/KG	0.10	01/29/2018	PAB
PCB-1254	EPA-8082	U	MG/KG	0.10	01/29/2018	PAB
PCB-1260	EPA-8082	U	MG/KG	0.10	01/29/2018	PAB



**CERTIFICATE OF ANALYSIS**

CLIENT:	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	DATE:	1/31/2018
CLIENT CONTACT:	Eric Libolt	ALS SDG#:	EV18010159
CLIENT PROJECT:	Jensen's Shipyard	WDOE ACCREDITATION:	C601

**LABORATORY BLANK RESULTS**

**MB-012918S - Batch 124813 - Soil by EPA-8082**

PCB-1268	EPA-8082	U	MG/KG	0.10	01/29/2018	PAB
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U - Analyte analyzed for but not detected at level above reporting limit.

**MBLK-309968 - Batch R309968 - Soil by EPA-7471**

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Mercury	EPA-7471	U	MG/KG	0.020	01/30/2018	RAL

U - Analyte analyzed for but not detected at level above reporting limit.

**MB-012918S - Batch 124814 - Soil by EPA-6020**

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Arsenic	EPA-6020	U	MG/KG	0.20	01/29/2018	RAL
Cadmium	EPA-6020	U	MG/KG	0.10	01/29/2018	RAL
Chromium	EPA-6020	U	MG/KG	0.10	01/29/2018	RAL
Copper	EPA-6020	U	MG/KG	0.10	01/29/2018	RAL
Lead	EPA-6020	U	MG/KG	0.10	01/29/2018	RAL
Zinc	EPA-6020	U	MG/KG	0.50	01/29/2018	RAL

U - Analyte analyzed for but not detected at level above reporting limit.



**CERTIFICATE OF ANALYSIS**

CLIENT:	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	DATE:	1/31/2018
CLIENT CONTACT:	Eric Libolt	ALS SDG#:	EV18010159
CLIENT PROJECT:	Jensen's Shipyard	WDOE ACCREDITATION:	C601

**LABORATORY CONTROL SAMPLE RESULTS**

**ALS Test Batch ID: 124728 - Soil by NWTPH-GX**

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
TPH-Volatile Range - BS	NWTPH-GX	89.0			66.5	122.7	01/26/2018	SNC
TPH-Volatile Range - BSD	NWTPH-GX	86.4	3		66.5	122.7	01/26/2018	SNC

**ALS Test Batch ID: 124728 - Soil by EPA-8021**

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Benzene - BS	EPA-8021	112			67.7	124	01/26/2018	SNC
Benzene - BSD	EPA-8021	111	1		67.7	124	01/26/2018	SNC
Toluene - BS	EPA-8021	115			71	123	01/26/2018	SNC
Toluene - BSD	EPA-8021	113	2		71	123	01/26/2018	SNC
Ethylbenzene - BS	EPA-8021	115			69.8	117	01/26/2018	SNC
Ethylbenzene - BSD	EPA-8021	114	0		69.8	117	01/26/2018	SNC
Xylenes - BS	EPA-8021	113			70	119	01/26/2018	SNC
Xylenes - BSD	EPA-8021	114	0		70	119	01/26/2018	SNC

**ALS Test Batch ID: 124740 - Soil by NWTPH-DX**

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
TPH-Diesel Range - BS	NWTPH-DX	107			75.5	122.1	01/25/2018	EBS
TPH-Diesel Range - BSD	NWTPH-DX	101	5		75.5	122.1	01/25/2018	EBS

**ALS Test Batch ID: 124751 - Soil by EPA-8260**

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
1,1-Dichloroethene - BS	EPA-8260	86.3			73	138	01/29/2018	DLC
1,1-Dichloroethene - BSD	EPA-8260	84.6	2		73	138	01/29/2018	DLC
Benzene - BS	EPA-8260	101			75	138	01/29/2018	DLC
Benzene - BSD	EPA-8260	97.8	3		75	138	01/29/2018	DLC
Trichloroethene - BS	EPA-8260	102			75	136	01/29/2018	DLC
Trichloroethene - BSD	EPA-8260	99.0	3		75	136	01/29/2018	DLC
Toluene - BS	EPA-8260	102			76	134	01/29/2018	DLC
Toluene - BSD	EPA-8260	98.7	3		76	134	01/29/2018	DLC
Chlorobenzene - BS	EPA-8260	102			79	128	01/29/2018	DLC
Chlorobenzene - BSD	EPA-8260	101	1		79	128	01/29/2018	DLC

**ALS Test Batch ID: 124759 - Soil by EPA-8270 SIM**

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Naphthalene - BS	EPA-8270 SIM	89.4			49.2	140	01/26/2018	PAB



**CERTIFICATE OF ANALYSIS**

<b>CLIENT:</b>	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	<b>DATE:</b>	1/31/2018
<b>CLIENT CONTACT:</b>	Eric Libolt	<b>ALS SDG#:</b>	EV18010159
<b>CLIENT PROJECT:</b>	Jensen's Shipyard	<b>WDOE ACCREDITATION:</b>	C601

**LABORATORY CONTROL SAMPLE RESULTS**

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Naphthalene - BSD	EPA-8270 SIM	83.4	7		49.2	140	01/29/2018	PAB
Acenaphthene - BS	EPA-8270 SIM	91.8			55	147	01/26/2018	PAB
Acenaphthene - BSD	EPA-8270 SIM	82.8	10		55	147	01/29/2018	PAB
Pyrene - BS	EPA-8270 SIM	92.2			47.9	176	01/26/2018	PAB
Pyrene - BSD	EPA-8270 SIM	104	12		47.9	176	01/29/2018	PAB
Benzo[G,H,I]Perylene - BS	EPA-8270 SIM	88.2			40.4	143	01/26/2018	PAB
Benzo[G,H,I]Perylene - BSD	EPA-8270 SIM	98.1	11		40.4	143	01/29/2018	PAB

**ALS Test Batch ID: 124860 - Soil by EPA-8270**

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Phenol - BS	EPA-8270	67.4			36.1	131	01/31/2018	PAB
Phenol - BSD	EPA-8270	67.4	0		36.1	131	01/31/2018	PAB
2-Chlorophenol - BS	EPA-8270	65.2			59.9	111	01/31/2018	PAB
2-Chlorophenol - BSD	EPA-8270	65.4	0		59.9	111	01/31/2018	PAB
1,4-Dichlorobenzene - BS	EPA-8270	65.1			44.3	122	01/31/2018	PAB
1,4-Dichlorobenzene - BSD	EPA-8270	65.5	1		44.3	122	01/31/2018	PAB
N-Nitroso-Di-N-Propylamine - BS	EPA-8270	65.9			31.6	134	01/31/2018	PAB
N-Nitroso-Di-N-Propylamine - BSD	EPA-8270	67.4	2		31.6	134	01/31/2018	PAB
1,2,4-Trichlorobenzene - BS	EPA-8270	67.2			44.6	122	01/31/2018	PAB
1,2,4-Trichlorobenzene - BSD	EPA-8270	66.5	1		44.6	122	01/31/2018	PAB
4-Chloro-3-Methylphenol - BS	EPA-8270	59.5			49.2	135	01/31/2018	PAB
4-Chloro-3-Methylphenol - BSD	EPA-8270	59.2	1		49.2	135	01/31/2018	PAB
Acenaphthene - BS	EPA-8270	67.4			49.3	117	01/31/2018	PAB
Acenaphthene - BSD	EPA-8270	65.9	2		49.3	117	01/31/2018	PAB
4-Nitrophenol - BS	EPA-8270	54.0			29.8	137	01/31/2018	PAB
4-Nitrophenol - BSD	EPA-8270	52.8	2		29.8	137	01/31/2018	PAB
2,4-Dinitrotoluene - BS	EPA-8270	61.8			55.3	130	01/31/2018	PAB
2,4-Dinitrotoluene - BSD	EPA-8270	58.6	5		55.3	130	01/31/2018	PAB
Pentachlorophenol - BS	EPA-8270	64.7			41.3	113	01/31/2018	PAB
Pentachlorophenol - BSD	EPA-8270	61.2	6		41.3	113	01/31/2018	PAB
Pyrene - BS	EPA-8270	68.3			57.4	145	01/31/2018	PAB
Pyrene - BSD	EPA-8270	63.6	7		48.9	150	01/31/2018	PAB

**ALS Test Batch ID: 124813 - Soil by EPA-8082**

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
PCB-1016 - BS	EPA-8082	90.2			50	150	01/29/2018	PAB
PCB-1016 - BSD	EPA-8082	84.1	7		50	150	01/29/2018	PAB
PCB-1260 - BS	EPA-8082	92.3			50	150	01/29/2018	PAB



**CERTIFICATE OF ANALYSIS**

CLIENT:	Whatcom Environmental Svcs., Inc. 228 E. Champion St., Suite 101 Bellingham, WA 98225	DATE:	1/31/2018
CLIENT CONTACT:	Eric Libolt	ALS SDG#:	EV18010159
CLIENT PROJECT:	Jensen's Shipyard	WDOE ACCREDITATION:	C601

**LABORATORY CONTROL SAMPLE RESULTS**

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
PCB-1260 - BSD	EPA-8082	88.1	5		50	150	01/29/2018	PAB

**ALS Test Batch ID: R309968 - Soil by EPA-7471**

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Mercury - BS	EPA-7471	109			81.8	117	01/30/2018	RAL
Mercury - BSD	EPA-7471	108	1		81.8	117	01/30/2018	RAL

**ALS Test Batch ID: 124814 - Soil by EPA-6020**

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS		ANALYSIS DATE	ANALYSIS BY
					MIN	MAX		
Arsenic - BS	EPA-6020	96.2			80	120	01/29/2018	RAL
Arsenic - BSD	EPA-6020	96.6	0		80	120	01/29/2018	RAL
Cadmium - BS	EPA-6020	96.5			80	120	01/29/2018	RAL
Cadmium - BSD	EPA-6020	95.3	1		80	120	01/29/2018	RAL
Chromium - BS	EPA-6020	97.3			80	120	01/29/2018	RAL
Chromium - BSD	EPA-6020	97.3	0		80	120	01/29/2018	RAL
Copper - BS	EPA-6020	96.8			80	120	01/29/2018	RAL
Copper - BSD	EPA-6020	96.8	0		80	120	01/29/2018	RAL
Lead - BS	EPA-6020	96.3			80	120	01/29/2018	RAL
Lead - BSD	EPA-6020	94.4	2		80	120	01/29/2018	RAL
Zinc - BS	EPA-6020	95.5			80	119	01/29/2018	RAL
Zinc - BSD	EPA-6020	95.8	0		80	119	01/29/2018	RAL

APPROVED BY

Technical Manager



**ALS Environmental**  
 8620 Holly Drive, Suite 100  
 Everett, WA 98208  
 Phone (425) 356-2600  
 Fax (425) 356-2626  
 http://www.alsglobal.com

# Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)

EV18010159

Date 1/25/18 Page 1 of 2

PROJECT ID: Jensen's Shipyard					ANALYSIS REQUESTED												OTHER (Specify)																	
REPORT TO COMPANY: Whatcom Environmental Services					NWTPH-HCID NWTPH-DX NWTPH-GX BTEX by EPA 8260 <input type="checkbox"/> MTBE by EPA 8021 <input type="checkbox"/> Halogenated Volatiles by EPA 8260 Volatile Organic Compounds by EPA 8260 EDB / EDC by EPA 8260 SIM (water) EDB / EDC by EPA 8260 (soil) Semivolatile Organic Compounds by EPA 8270 Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM PCB by EPA 8082 <input checked="" type="checkbox"/> Pesticides by EPA 8081 <input type="checkbox"/> Metals-MTCA-5 <input checked="" type="checkbox"/> RCRA-8 <input type="checkbox"/> Pri Po <input type="checkbox"/> TAL <input type="checkbox"/> Metals Other (Specify) TCLP-Metals <input type="checkbox"/> VOA <input type="checkbox"/> Semi-Vol <input type="checkbox"/> Pest <input type="checkbox"/> Herbs <input type="checkbox"/>	Zinc		Copper		PCBs		NWTPH-DX w/ SGA		NUMBER OF CONTAINERS		RECEIVED IN GOOD CONDITION?																		
PROJECT MANAGER: Eric Libolt						PCB by EPA 8082 <input checked="" type="checkbox"/>		Pesticides by EPA 8081 <input type="checkbox"/>		Metals-MTCA-5 <input checked="" type="checkbox"/>		RCRA-8 <input type="checkbox"/>		Pri Po <input type="checkbox"/>		TAL <input type="checkbox"/>																		
ADDRESS: 228 E. Champion St. #101 Bellingham, WA 98225						PCB by EPA 8082 <input checked="" type="checkbox"/>		Pesticides by EPA 8081 <input type="checkbox"/>		Metals-MTCA-5 <input checked="" type="checkbox"/>		RCRA-8 <input type="checkbox"/>		Pri Po <input type="checkbox"/>		TAL <input type="checkbox"/>																		
PHONE: 360-752-9571 FAX: 360-752-9573						PCB by EPA 8082 <input checked="" type="checkbox"/>		Pesticides by EPA 8081 <input type="checkbox"/>		Metals-MTCA-5 <input checked="" type="checkbox"/>		RCRA-8 <input type="checkbox"/>		Pri Po <input type="checkbox"/>		TAL <input type="checkbox"/>																		
P.O. #: E-MAIL: elibolt@whatcom.com						PCB by EPA 8082 <input checked="" type="checkbox"/>		Pesticides by EPA 8081 <input type="checkbox"/>		Metals-MTCA-5 <input checked="" type="checkbox"/>		RCRA-8 <input type="checkbox"/>		Pri Po <input type="checkbox"/>		TAL <input type="checkbox"/>																		
INVOICE TO COMPANY:						PCB by EPA 8082 <input checked="" type="checkbox"/>		Pesticides by EPA 8081 <input type="checkbox"/>		Metals-MTCA-5 <input checked="" type="checkbox"/>		RCRA-8 <input type="checkbox"/>		Pri Po <input type="checkbox"/>		TAL <input type="checkbox"/>																		
ATTENTION: SAME AS ABOVE						PCB by EPA 8082 <input checked="" type="checkbox"/>		Pesticides by EPA 8081 <input type="checkbox"/>		Metals-MTCA-5 <input checked="" type="checkbox"/>		RCRA-8 <input type="checkbox"/>		Pri Po <input type="checkbox"/>		TAL <input type="checkbox"/>																		
ADDRESS:						PCB by EPA 8082 <input checked="" type="checkbox"/>		Pesticides by EPA 8081 <input type="checkbox"/>		Metals-MTCA-5 <input checked="" type="checkbox"/>		RCRA-8 <input type="checkbox"/>		Pri Po <input type="checkbox"/>		TAL <input type="checkbox"/>																		
SAMPLE I.D.	DATE	TIME	TYPE	LAB#		NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8260	MTBE by EPA 8021	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082	Pesticides by EPA 8081	Metals-MTCA-5	RCRA-8	Pri Po	TAL	Metals Other (Specify)	TCLP-Metals	VOA	Semi-Vol	Pest	Herbs	Zinc	Copper	PCBs	NWTPH-DX w/ SGA	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. Shop Floor Drain -1	1/24/18	10:20	Soil	1			X	X	X								X												X	X			4	
2. Shop Floor Drain -2		10:40		2		X	X	X								X												X	X			4		
3. Shop Floor Drain -3		11:15		3		X	X	X		X				X	X	X												X	X			4		
4. OPAICO Pad		12:45		4		X	X	X								X	X											X	X			4		
5. Stormwater Pond		1:10		5												X												X	X			3		
6. BLWA -1		1:30		6		X										X												X	X			1		
7. BLWA -2		1:45		7		X										X												X	X			1		
8. FDA -1		9:15		8												X												X	X	X		1		
9. FDA -2		2:15		9												X												X	X	X		1		
10. FDA -3		2:35		10												X												X	X	X		2		

SPECIAL INSTRUCTIONS: Hold extra volume for possible further analysis. 10A's filled via 5035-

SIGNATURES (Name, Company, Date, Time):  
 1. Relinquished By: Mike Ryan, WES, 1/25/18, 12:30 PM  
 Received By: \_\_\_\_\_  
 2. Relinquished By: \_\_\_\_\_  
 Received By: Shawn Robson ALS 1/26/18 9:25 AM

TURNAROUND REQUESTED in Business Days\*  
 Organic, Metals & Inorganic Analysis  
 10 (Standard) 5 3 2 1 SAME DAY  
 Fuels & Hydrocarbon Analysis  
 5 (Standard) 3 1 SAME DAY  
 OTHER: Specify: Limited Volume on some samples

\*Turnaround request less than standard may incur Rush Charges



**ALS Environmental**  
 8620 Holly Drive, Suite 100  
 Everett, WA 98208  
 Phone (425) 356-2600  
 Fax (425) 356-2626  
 http://www.alsglobal.com

# Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)

EX18010159

Date 1/25/18 Page 2 Of 2

PROJECT ID: <u>Jensens Shipyard</u>					ANALYSIS REQUESTED												OTHER (Specify)	
REPORT TO COMPANY: <u>Whatcom Environmental Services</u>					NWTPH-HCID NWTPH-DX NWTPH-GX BTEX by EPA 8021 <input checked="" type="checkbox"/> BTEX by EPA 8260 <input type="checkbox"/> MTBE by EPA 8021 <input type="checkbox"/> MTBE by EPA 8260 <input type="checkbox"/> Halogenated Volatiles by EPA 8260 Volatile Organic Compounds by EPA 8260 EDB / EDC by EPA 8260 SIM (water) EDB / EDC by EPA 8260 (soil) Semivolatile Organic Compounds by EPA 8270 Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM PCB by EPA 8082 <input checked="" type="checkbox"/> Pesticides by EPA 8081 <input type="checkbox"/> Metals-MTCA-5 <input checked="" type="checkbox"/> RCRA-8 <input type="checkbox"/> Pri Pol <input type="checkbox"/> TAL <input type="checkbox"/> Metals Other (Specify) TCLP-Metals <input type="checkbox"/> VOA <input type="checkbox"/> Semi-Vol <input type="checkbox"/> Pest <input type="checkbox"/> Herbs <input type="checkbox"/>	<u>Zinc</u> <u>Copper</u> <u>NWTPH-DX w/SGA</u>		NUMBER OF CONTAINERS RECEIVED IN GOOD CONDITION?										
PROJECT MANAGER: <u>Eric Libolt</u>																		
ADDRESS: <u>228 E. Champion St. #101</u>																		
<u>Bellingham, WA 98225</u>																		
PHONE: <u>360-752-9571</u> FAX: <u>360-752-9573</u>																		
P.O. #: _____ E-MAIL: <u>elibolt@whatcom--</u>																		
INVOICE TO COMPANY: _____																		
ATTENTION: <u>SAME AS ABOVE</u>																		
ADDRESS: _____																		
SAMPLE I.D.	DATE	TIME	TYPE	LAB#														
1. UST-1	1/24/18	8:45	SOIL	11	X	X	X											2
2. UST-2		9:00		12	X	X	X											2
3. SRWA-1		12:00		13						X	X	X		X	X	X		1
4. SRWA-2		12:10		14						X	X	X		X	X	X		1
5. SRWA-3		2:00		15	X	X		X		X	X	X	X	X	X	X		4
6.																		
7.																		
8.																		
9.																		
10.																		

SPECIAL INSTRUCTIONS: Hold extra Volume for possible furth analysis - Vols filled via 5035

SIGNATURES (Name, Company, Date, Time):  
 1. Relinquished By: [Signature], WES, 1/25/18, 12:30PM  
 Received By: \_\_\_\_\_  
 2. Relinquished By: \_\_\_\_\_  
 Received By: Shawn Libolt ALS 1/26/18 9:25a

TURNAROUND REQUESTED in Business Days\*  
OTHER:

Organic, Metals & Inorganic Analysis  
 10 Standard     5     3     2     1     SAME DAY

Fuels & Hydrocarbon Analysis  
 5 Standard     3     1     SAME DAY

Specify: \*limited Volume in Some Samples

\*Turnaround request less than standard may incur Rush Charges

## **APPENDIX C**

Laboratory Analytical Data Reports – Marine Sediment





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ALS Environmental  
ALS Group USA, Corp  
1317 South 13th Avenue  
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F : +1 360 636 1068  
[www.alsglobal.com](http://www.alsglobal.com)

April 03, 2018

**Analytical Report for Service Request No: K1801446**

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

**RE: Jensen Shipyard Sediment**

Dear Dan,

Enclosed are the results of the sample(s) submitted to our laboratory February 14, 2018  
For your reference, these analyses have been assigned our service request number **K1801446**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at [www.alsglobal.com](http://www.alsglobal.com). All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at [Mark.Harris@alsglobal.com](mailto:Mark.Harris@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Mark Harris  
Project Manager



---

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## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

### **Inorganic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

### **Metals Data Qualifiers**

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.  
  - i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

### **Organic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.  
  - i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

### **Additional Petroleum Hydrocarbon Specific Qualifiers**

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso  
State Certifications, Accreditations, and Licenses**

<b>Agency</b>	<b>Web Site</b>	<b>Number</b>
Alaska DEH	<a href="http://dec.alaska.gov/eh/lab/cs/csapproval.htm">http://dec.alaska.gov/eh/lab/cs/csapproval.htm</a>	UST-040
Arizona DHS	<a href="http://www.azdhs.gov/lab/license/env.htm">http://www.azdhs.gov/lab/license/env.htm</a>	AZ0339
Arkansas - DEQ	<a href="http://www.adeq.state.ar.us/techsvs/labcert.htm">http://www.adeq.state.ar.us/techsvs/labcert.htm</a>	88-0637
California DHS (ELAP)	<a href="http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx">http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx</a>	2795
DOD ELAP	<a href="http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm">http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm</a>	L16-58-R4
Florida DOH	<a href="http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm">http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm</a>	E87412
Hawaii DOH	<a href="http://health.hawaii.gov/">http://health.hawaii.gov/</a>	-
ISO 17025	<a href="http://www.pjllabs.com/">http://www.pjllabs.com/</a>	L16-57
Louisiana DEQ	<a href="http://www.deq.louisiana.gov/page/la-lab-accreditation">http://www.deq.louisiana.gov/page/la-lab-accreditation</a>	03016
Maine DHS	<a href="http://www.maine.gov/dhhs/">http://www.maine.gov/dhhs/</a>	WA01276
Minnesota DOH	<a href="http://www.health.state.mn.us/accreditation">http://www.health.state.mn.us/accreditation</a>	053-999-457
Nevada DEP	<a href="http://ndep.nv.gov/bsdw/labservice.htm">http://ndep.nv.gov/bsdw/labservice.htm</a>	WA01276
New Jersey DEP	<a href="http://www.nj.gov/dep/enforcement/oqa.html">http://www.nj.gov/dep/enforcement/oqa.html</a>	WA005
New York - DOH	<a href="https://www.wadsworth.org/regulatory/elap">https://www.wadsworth.org/regulatory/elap</a>	12060
North Carolina DEQ	<a href="https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification">https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification</a>	605
Oklahoma DEQ	<a href="http://www.deq.state.ok.us/CSDnew/labcert.htm">http://www.deq.state.ok.us/CSDnew/labcert.htm</a>	9801
Oregon – DEQ (NELAP)	<a href="http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx">http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx</a>	WA100010
South Carolina DHEC	<a href="http://www.scdhec.gov/environment/EnvironmentalLabCertification/">http://www.scdhec.gov/environment/EnvironmentalLabCertification/</a>	61002
Texas CEQ	<a href="http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html">http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html</a>	T104704427
Washington DOE	<a href="http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html">http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html</a>	C544
Wyoming (EPA Region 8)	<a href="https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water">https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water</a>	-
Kelso Laboratory Website	<a href="http://www.alsglobal.com">www.alsglobal.com</a>	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at [www.ALSGlobal.com](http://www.ALSGlobal.com) or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



## Case Narrative

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577- 7222 Fax (360)636- 1068  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Received:** 02/14/2018

### CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

#### Sample Receipt:

Thirteen sediment samples were received for analysis at ALS Environmental on 02/14/2018. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

#### Semivolatiles by GC/MS:

The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS29 \0307F034.D: Benzo(g,h,i)perylene. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was taken.

Method 8270D, 03/08/2018: The control criteria for matrix spike recovery of Benzoic Acid for sample SED-6 were not applicable. The analysis of this sample required a dilution such that the added spike concentration was diluted below the reporting limit. No further corrective action was required.

Method 8270D, 03/08/2018: The upper control criterion was exceeded for the following analyte in the replicate Matrix Spike analyses (MS/MSD) for sample SED-6: Pentachlorophenol. The analyte in question was not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Method 8270D, 03/08/2018: The detection limit was elevated for all analytes in all samples. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extract was highly colored and viscous, which indicated the need to perform a dilution prior to injection into the instrument. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. The reporting limits were adjusted to reflect the dilution.

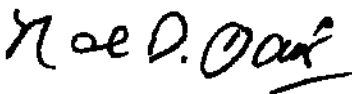
The detection limits were elevated for samples SED-1, SED-3, SED-4, SED-5, SED-6, SED-8, and SED-9 due to less than optimal sample mass extracted for analysis. The samples contained low percent solids which prevented extraction of the sample mass necessary to achieve target detection limits.

Method 8270D, 03/08/2018: The lower control criterion was exceeded by 4% for Phenol-d6 in method blank KQ1802442-04. No target analytes were detected in the Method Blank. The problem indicated a potential negative bias to the Method Blank results. Target analytes detected in the field samples could contain a high bias. All surrogate recovery in the associated field samples and quality control samples was in control, indicating that the issue of low surrogate recovery was isolated to the Method Blank. No further corrective action was taken. The data was flagged to indicate the problem.

#### Semivolatile GC:

Method 8081B, : The recoveries of Oxychlordane and trans-Nonachlor in Lab Control Sample KWG1801137-7 and Aldrin, 4,4'-DDD, cis-Nonachlor, Oxychlordane and trans-Nonachlor in SED-6MS/DMS were outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

Method 8081B: The upper control criterion was exceeded for 2,4'-DDD in Continuing Calibration Verification (CCV) 0308F002C.D. The field samples analyzed in this sequence did not contain the analyte(s) in question. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.



Approved by \_\_\_\_\_

Date 04/03/2018

Method 8082A: The recovery of Decachlorobiphenyl in SED-7, SED-6MS, and Lab Control Sample KWG1801138-3 was outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

Method ALS SOP Butyltins, 03/29/2018: The control criteria for Tri-n-propyltin in sample SED-10 were not applicable. The analysis of the sample required a dilution, which resulted in a surrogate concentration below the reporting limit. No further corrective action was appropriate.

**Metals:**

Method 6020A, 03/05/2018: The matrix spike recovery of Lead for sample SED-6 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was appropriate.

Method 6020A, 03/05/2018: Antimony recoveries are generally low for soil and sediment samples when digested using EPA Method 3050B. Despite anticipated low recoveries, the method is still generally prescribed because of its versatility for general metals analysis. Antimony results (in conjunction with the matrix spike recovery) from this procedure should only be used as indicators to estimate concentrations. The matrix spike recovery of Antimony for sample SED-6 was below the ALS control criterion. Since low recoveries resulted from a method defect and were possibly magnified by certain matrix components, no corrective action was appropriate. Alternative procedures that specifically target Antimony are available but were not specified for this project. The associated QA/QC results (e.g. control sample, calibration standards, etc.) indicated the analysis was in control.

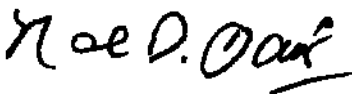
**General Chemistry:**

Method 9030M, 02/19/2018: The Relative Percent Difference (RPD) for the replicate analysis of Total Sulfide in sample SED-6 was outside the normal ALS control limits. The variability in the results was attributed to the heterogeneous character of the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

**Subcontracted Analytical Parameters:**

Dioxins and Furans by EPA Method 1613B

The analysis for Dioxins and Furans was performed at ALS Houston, Texas Laboratory. The data for this analysis is included in the corresponding section of this report.



Approved by \_\_\_\_\_

Date 04/03/2018





# Chain of Custody

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577- 7222 Fax (360)636- 1068  
[www.alsglobal.com](http://www.alsglobal.com)



ALS Environmental



CHAIN OF CUSTODY

87030

001

SR# K1801446  
COC Set \_\_\_\_\_ of \_\_\_\_\_  
COC# \_\_\_\_\_

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 638-1068  
www.alsglobal.com

Project Name <b>Jensen Shipyard Sediment</b>		Project Number:		NUMBER OF CONTAINERS	7D		14D		28D		180D		Remarks				
Project Manager <b>Dan Heimbigner</b>					160.4 Modified / TVS	350.1M / NH3 Plumb	3030M / Sulfide	3081B / PEST OC LL	3082A / PCB LL	3270D / SVO LL	Butyltins / BUTYL TINS	7471B / Hg		9060 / TOC	3020A / Metals T	ASTM D422M / Particulate	PSEP TS / PSEP TS
Company <b>Whatcom Environmental Services</b>																	
Address <b>228 E Champion Street, #101</b>																	
Phone # <b>(360) 752-9571</b>		email <b>dheimbigner@WhatcomEnvironmental.com</b>															
Sampler Signature 		Sampler Printed Name <b>Dan Heimbigner (W.E.S.)</b>															
CLIENT SAMPLE ID	LABID	SAMPLING Date Time	Matrix														
1. SED-1		2-12-18, 12:10		3	X	X	X	X	X	X	X	X	X	X			
2. SED-2		2-12-18, 11:50		3	X	X	X	X	X	X	X	X	X	X			
3. SED-3		2-12-18, 12:45		3	X	X	X	X	X	X	X	X	X	X			
4. SED-4		2-12-18, 1:05		3	X	X	X	X	X	X	X	X	X	X			
5. SED-5		2-12-18, 12:35		3	X	X	X	X	X	X	X	X	X	X			
6. SED-6		2-12-18, 12:20		3	X	X	X	X	X	X	X	X	X	X	See comments		
7. SED-7		2-12-18, 1:35		3	X	X	X	X	X	X	X	X	X	X			
8. SED-8		2-12-18, 1:40		3	X	X	X	X	X	X	X	X	X	X			
9. SED-9		2-12-18, 1:45		3	X	X	X	X	X	X	X	X	X	X			
10. SED-10		2-12-18, 2:00		3	X	X	X	X	X	X	X	X	X	X			

<b>Report Requirements</b> <input checked="" type="checkbox"/> I. Routine Report: Method Blank, Surrogate, as required <input checked="" type="checkbox"/> II. Report Dup., MS, MSD as required <input checked="" type="checkbox"/> III. CLP Like Summary (no raw data) <input type="checkbox"/> IV. Data Validation Report <input checked="" type="checkbox"/> V. EDD	<b>Invoice Information</b> P.O.# _____ Bill To: <u>W.E.S.</u> _____ _____	Circle which metals are to be analyzed Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg
	<b>Turnaround Requirements</b> _____ 24 hr. _____ 48 hr. <input checked="" type="checkbox"/> Standard	Special Instructions/Comments: _____ *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other _____ (Circle One)

<b>Relinquished By:</b>	<b>Received By:</b>	<b>Relinquished By:</b>	<b>Received By:</b>	<b>Relinquished By:</b>	<b>Received By:</b>
Signature 	Signature 	Signature	Signature	Signature	Signature
Printed Name <b>Dan Heimbigner</b>	Printed Name <b>ALS-K</b>	Printed Name	Printed Name	Printed Name	Printed Name
Firm <b>W.E.S.</b>	Firm <b>2-14-18 1030</b>	Firm	Firm	Firm	Firm
Date/Time <b>2-13-18 / 2:45</b>	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time



CHAIN OF CUSTODY  
**87030**

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SR# K1801446  
COC Set \_\_\_\_\_ of \_\_\_\_\_  
COC# \_\_\_\_\_

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068  
www.alsglobal.com

Project Name <b>Jensen Shipyard Sediment</b>		Project Number:		NUMBER OF CONTAINERS	7D		14D		28D		180D							Remarks				
Project Manager <b>Dan Heimbigner</b>					160.4 Modified / TVS	350.1M / NH3 Plumb	9030M / Sulfide	8081B / PEST OC LL	8082A / PCB LL	8270D / SVO LL	Butyltins / BUTYL TINS	7471B / Hg	9060 / TOC	8020A / Metals T	ASTM D422M / Particle Size	PSEP TS / PSEP TS	1		2	3	4	5
Company <b>Whatcom Environmental Services</b>																						
Address <b>228 E Champion Street, #101</b>																						
Phone # <b>(360) 752-9571</b>		email <b>dheimbigner@WhatcomEnvironmental.com</b>																				
Sampler Signature 		Sampler Printed Name <b>Dan Heimbigner (W.E.S.)</b>																				
CLIENT SAMPLE ID	LABID	SAMPLING Date Time	Matrix																			
1. SED-11		2-12-18, 2:10		3	X	X	X	X	X	X	X	X	X	X	X							
2. SED-12		2-12-18, 2:15		3	X	X	X	X	X	X	X	X	X	X	X							
3. SED-13		2-12-18, 2:25		3	X	X	X	X	X	X	X	X	X	X	X							
4.																						
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						

<b>Report Requirements</b> <input checked="" type="checkbox"/> I. Routine Report: Method Blank, Surrogate, as required <input checked="" type="checkbox"/> II. Report Dup., MS, MSD as required <input checked="" type="checkbox"/> III. CLP Like Summary (no raw data) <input type="checkbox"/> IV. Data Validation Report <input checked="" type="checkbox"/> V. EDD	<b>Invoice Information</b> P.O.# _____ Bill To: <u>W.E.S.</u> _____ _____	Circle which metals are to be analyzed Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg	
	<b>Turnaround Requirements</b> ___ 24 hr. ___ 48 hr. ___ 5 Day <input checked="" type="checkbox"/> Standard Requested Report Date _____	Special Instructions/Comments: <b>Please homogenize sample material (32 oz jars) prior to analysis.</b> *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other _____ (Circle One)	
<b>Relinquished By:</b> Signature Printed Name <u>Dan Heimbigner</u> Firm <u>W.E.S.</u> Date/Time <u>2-13-18 / 2:45</u>	<b>Received By:</b> Signature Printed Name <u>DANIEL HEIMBIGNER</u> Firm <u>ALS-K</u> Date/Time <u>2-14-18 10:30</u>	<b>Relinquished By:</b> Signature _____ Printed Name _____ Firm _____ Date/Time _____	<b>Received By:</b> Signature _____ Printed Name _____ Firm _____ Date/Time _____
<b>Relinquished By:</b> Signature _____ Printed Name _____ Firm _____ Date/Time _____	<b>Received By:</b> Signature _____ Printed Name _____ Firm _____ Date/Time _____	<b>Relinquished By:</b> Signature _____ Printed Name _____ Firm _____ Date/Time _____	<b>Received By:</b> Signature _____ Printed Name _____ Firm _____ Date/Time _____



### Cooler Receipt and Preservation Form

Client WHATEAM ENVIRONMENTAL SERVICES Service Request K18 01446  
 Received: 2-14-18 Opened: 2-14-18 By: ASP Unloaded: 2-14-18 By: ASP

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered  
 2. Samples were received in: (circle) Cooler Box Envelope Other NA  
 3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 TOP FRONT  
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
-0.4	-0.5	0.8	0.7	-0.1	378	Cooler 1	12 129 F26 03 9438 4333		
0.9	0.7	1.1	0.9	-0.2	391	Cooler 2	12 129 F26 03 9440 6747		
0.6	0.5	1.8	1.7	-0.1	383	Cooler 3	12 129 F26 03 9445 8558		
-0.5	-0.5	0.5	0.5	0.0	360		12 129 F26 03 9383 5767		

4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves  
 5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N  
 6. Were samples received in good condition (temperature, unbroken)? Indicate in the table below. NA Y N  
 If applicable, tissue samples were received: Frozen Partially Thawed Thawed  
 7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N  
 8. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA Y N  
 9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N  
 10. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N  
 11. Were VOA vials received without headspace? Indicate in the table below. NA Y N  
 12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



# Total Solids

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Analysis Method:** 160.3 Modified  
**Prep Method:** None

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Units:** Percent  
**Basis:** As Received

**Solids, Total**

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SED-1	K1801446-001	47.3	-	-	1	02/26/18 12:30	
SED-2	K1801446-002	56.3	-	-	1	02/26/18 12:30	
SED-3	K1801446-003	42.1	-	-	1	02/26/18 12:30	
SED-4	K1801446-004	48.5	-	-	1	02/26/18 12:30	
SED-5	K1801446-005	37.5	-	-	1	02/26/18 12:30	
SED-6	K1801446-006	37.4	-	-	1	02/26/18 12:30	
SED-7	K1801446-007	66.0	-	-	1	02/26/18 12:30	
SED-8	K1801446-008	48.7	-	-	1	02/26/18 12:30	
SED-9	K1801446-009	37.5	-	-	1	02/26/18 12:30	
SED-10	K1801446-010	71.8	-	-	1	02/26/18 12:30	
SED-11	K1801446-011	52.9	-	-	1	02/26/18 12:30	
SED-12	K1801446-012	64.0	-	-	1	02/26/18 12:30	
SED-13	K1801446-013	75.6	-	-	1	02/26/18 12:30	

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Analysis Method:** 160.3 Modified  
**Prep Method:** None

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18

**Units:** Percent  
**Basis:** As Received

**Replicate Sample Summary**  
**Inorganic Parameters**

<b>Sample Name:</b>	<b>Lab Code:</b>	<b>MRL</b>	<b>Sample Result</b>	<b>Duplicate Result</b>	<b>Average</b>	<b>RPD</b>	<b>RPD Limit</b>	<b>Date Analyzed</b>
SED-6	K1801446-006DUP	-	37.4	37.4	37.4	<1	20	02/26/18
SED-13	K1801446-013DUP	-	75.6	73.3	74.5	3	20	02/26/18

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Analysis Method:** 160.4 Modified  
**Prep Method:** None

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18

**Units:** Percent  
**Basis:** Dry, per Method

**Solids, Total Volatile**

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SED-1	K1801446-001	<b>4.80</b>	0.10	-	1	02/26/18 20:54	
SED-2	K1801446-002	<b>3.10</b>	0.10	-	1	02/26/18 20:54	
SED-3	K1801446-003	<b>6.20</b>	0.10	-	1	02/26/18 20:54	
SED-4	K1801446-004	<b>3.60</b>	0.10	-	1	02/26/18 20:54	
SED-5	K1801446-005	<b>6.40</b>	0.10	-	1	02/26/18 20:54	
SED-6	K1801446-006	<b>7.20</b>	0.10	-	1	02/26/18 20:54	
SED-7	K1801446-007	<b>3.10</b>	0.10	-	1	02/26/18 20:54	
SED-8	K1801446-008	<b>6.20</b>	0.10	-	1	02/26/18 20:54	
SED-9	K1801446-009	<b>11.3</b>	0.10	-	1	02/26/18 20:54	
SED-10	K1801446-010	<b>3.40</b>	0.10	-	1	02/26/18 20:54	
SED-11	K1801446-011	<b>6.50</b>	0.10	-	1	02/26/18 20:54	
SED-12	K1801446-012	<b>3.40</b>	0.10	-	1	02/26/18 20:54	
SED-13	K1801446-013	<b>4.20</b>	0.10	-	1	02/26/18 20:54	
Method Blank	K1801446-MB	ND U	0.10	-	1	02/26/18 20:54	



ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 02/26/18

**Replicate Sample Summary**  
**General Chemistry Parameters**

**Sample Name:** SED-6  
**Lab Code:** K1801446-006

**Units:** Percent  
**Basis:** Dry, per Method

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>MRL</u>	<u>MDL</u>	<u>Sample Result</u>	<u>Duplicate Sample K1801446-006DUP Result</u>	<u>Average</u>	<u>RPD</u>	<u>RPD Limit</u>
Solids, Total Volatile	160.4 Modified	0.10	-	7.20	7.40	7.30	3	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Analysis Method:** PSEP TS  
**Prep Method:** None

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Units:** Percent  
**Basis:** As Received

**Solids, Total**

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SED-1	K1801446-001	47.3	-	-	1	02/26/18 12:30	
SED-2	K1801446-002	56.3	-	-	1	02/26/18 12:30	
SED-3	K1801446-003	42.1	-	-	1	02/26/18 12:30	
SED-4	K1801446-004	48.5	-	-	1	02/26/18 12:30	
SED-5	K1801446-005	37.5	-	-	1	02/26/18 12:30	
SED-6	K1801446-006	37.4	-	-	1	02/26/18 12:30	
SED-7	K1801446-007	66.0	-	-	1	02/26/18 12:30	
SED-8	K1801446-008	48.7	-	-	1	02/26/18 12:30	
SED-9	K1801446-009	37.5	-	-	1	02/26/18 12:30	
SED-10	K1801446-010	71.8	-	-	1	02/26/18 12:30	
SED-11	K1801446-011	52.9	-	-	1	02/26/18 12:30	
SED-12	K1801446-012	64.0	-	-	1	02/26/18 12:30	
SED-13	K1801446-013	75.6	-	-	1	02/26/18 12:30	

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Analysis Method:** PSEP TS  
**Prep Method:** None

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18

**Units:** Percent  
**Basis:** As Received

Replicate Sample Summary  
Solids, Total

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
SED-6	K1801446-006DUP	-	37.4	37.4	37.4	<1	10	02/26/18
SED-13	K1801446-013DUP	-	75.6	73.3	74.5	3	10	02/26/18

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# General Chemistry

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577- 7222 Fax (360)636- 1068  
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**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Analysis Method:** 350.1M  
**Prep Method:** EPA Plumb 5-1981 KCl

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Units:** mg/Kg  
**Basis:** Dry

**Ammonia as Nitrogen**

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
SED-1	K1801446-001	<b>4.4</b>	1.0	0.09	1	03/02/18 10:28	2/16/18	
SED-2	K1801446-002	<b>4.16</b>	0.88	0.08	1	03/02/18 10:28	2/16/18	
SED-3	K1801446-003	<b>6.1</b>	1.2	0.10	1	03/02/18 10:28	2/16/18	
SED-4	K1801446-004	<b>2.5</b>	1.0	0.09	1	03/02/18 10:28	2/16/18	
SED-5	K1801446-005	<b>10.8</b>	1.3	0.2	1	03/02/18 10:28	2/16/18	
SED-6	K1801446-006	<b>10.2</b>	1.3	0.2	1	03/02/18 10:28	2/16/18	
SED-7	K1801446-007	<b>4.57</b>	0.76	0.07	1	03/02/18 10:28	2/16/18	
SED-8	K1801446-008	<b>5.6</b>	1.0	0.09	1	03/02/18 10:28	2/16/18	
SED-9	K1801446-009	<b>7.3</b>	1.3	0.2	1	03/02/18 10:28	2/16/18	
SED-10	K1801446-010	<b>4.07</b>	0.68	0.06	1	03/02/18 10:28	2/16/18	
SED-11	K1801446-011	<b>5.83</b>	0.94	0.08	1	03/02/18 10:28	2/16/18	
SED-12	K1801446-012	<b>3.83</b>	0.78	0.07	1	03/02/18 10:28	2/16/18	
SED-13	K1801446-013	<b>4.37</b>	0.66	0.06	1	03/02/18 10:28	2/16/18	
Method Blank	K1801446-MB	<b>0.14 J</b>	0.50	0.04	1	03/02/18 10:28	2/16/18	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 03/02/18

**Triplicate Sample Summary**  
**General Chemistry Parameters**

**Sample Name:** SED-6 **Units:** mg/Kg  
**Lab Code:** K1801446-006 **Basis:** Dry  
**Analysis Method:** 350.1M  
**Prep Method:** EPA Plumb 5-1981 KCl

Analyte Name	MRL	MDL	Sample Result	Duplicate K1801446-006DUP Result	Triplicate K1801446-006TRP Result	Average	RSD	RSD Limit
Ammonia as Nitrogen	1.3	0.2	10.2	11.1	11.2	10.8	5	32

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 03/02/18

**Triplicate Sample Summary**  
**General Chemistry Parameters**

**Sample Name:** SED-11 **Units:** mg/Kg  
**Lab Code:** K1801446-011 **Basis:** Dry  
**Analysis Method:** 350.1M  
**Prep Method:** EPA Plumb 5-1981 KCl

Analyte Name	MRL	MDL	Sample Result	Duplicate K1801446-011DUP Result	Triplicate K1801446-011TRP Result	Average	RSD	RSD Limit
Ammonia as Nitrogen	0.94	0.08	5.83	5.36	6.21	5.80	7	32

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 03/2/18  
**Date Extracted:** 02/16/18

**Duplicate Matrix Spike Summary**  
**Ammonia as Nitrogen**

**Sample Name:** SED-6  
**Lab Code:** K1801446-006  
**Analysis Method:** 350.1M  
**Prep Method:** EPA Plumb 5-1981 KCl

**Units:** mg/Kg  
**Basis:** Dry

Analyte Name	Sample Result	Result	Matrix Spike K1801446-006MS		Duplicate Matrix Spike K1801446-006DMS		% Rec Limits	RPD	RPD Limit	
			Spike Amount	% Rec	Result	Spike Amount				% Rec
Ammonia as Nitrogen	10.2	1220	1310	92	1160	1320	87	55-135	5	32

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 03/2/18  
**Date Extracted:** 02/16/18

**Duplicate Matrix Spike Summary**  
**Ammonia as Nitrogen**

**Sample Name:** SED-11  
**Lab Code:** K1801446-011  
**Analysis Method:** 350.1M  
**Prep Method:** EPA Plumb 5-1981 KCl

**Units:** mg/Kg  
**Basis:** Dry

Analyte Name	Sample Result	Result	Matrix Spike K1801446-011MS		Duplicate Matrix Spike K1801446-011DMS		% Rec Limits	RPD	RPD Limit	
			Spike Amount	% Rec	Result	Spike Amount				% Rec
Ammonia as Nitrogen	5.83	854	929	91	857	930	92	55-135	<1	32

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/02/18  
**Date Extracted:** 02/16/18

**Lab Control Sample Summary**  
**Ammonia as Nitrogen**

**Analysis Method:** 350.1M  
**Prep Method:** EPA Plumb 5-1981 KCl

**Units:** mg/Kg  
**Basis:** Dry  
**Analysis Lot:** 582415

<b>Sample Name</b>	<b>Lab Code</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Lab Control Sample	K1801446-LCS	5.99	6.17	97	90-110

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

### Continuing Calibration Verification (CCV) Summary

#### Ammonia as Nitrogen

**Analysis Method:** 350.1M

**Units:** mg/L

	<b>Analysis Lot</b>	<b>Lab Code</b>	<b>Date Analyzed</b>	<b>True Value</b>	<b>Measured Value</b>	<b>Percent Recovery</b>	<b>Acceptance Limits</b>
CCV1	582415	KQ1802840-01	03/02/18 10:28	2.00	1.97	98	90-110
CCV2	582415	KQ1802840-02	03/02/18 10:28	2.00	1.96	98	90-110
CCV3	582415	KQ1802840-03	03/02/18 10:28	2.00	1.95	98	90-110
CCV4	582415	KQ1802840-04	03/02/18 10:28	2.00	1.94	97	90-110
CCV5	582415	KQ1802840-05	03/02/18 10:28	2.00	1.93	96	90-110

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:**K1801446

**Continuing Calibration Blank (CCB) Summary**  
**Ammonia as Nitrogen**

**Analysis Method:** 350.1M

**Units:**mg/Kg

	<b>Analysis Lot</b>	<b>Lab Code</b>	<b>Date Analyzed</b>	<b>MRL</b>	<b>MDL</b>	<b>Result</b>	<b>Q</b>
CCB1	582415	KQ1802840-06	03/02/18 10:28	0.50	0.04	0.16	J
CCB2	582415	KQ1802840-07	03/02/18 10:28	0.50	0.04	0.17	J
CCB3	582415	KQ1802840-08	03/02/18 10:28	0.50	0.04	0.19	J
CCB4	582415	KQ1802840-09	03/02/18 10:28	0.50	0.04	0.18	J
CCB5	582415	KQ1802840-10	03/02/18 10:28	0.50	0.04	0.24	J

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Analysis Method:** 9030M  
**Prep Method:** EPA 9030B Modified

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Units:** mg/Kg  
**Basis:** Dry

**Sulfide, Total**

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
SED-1	K1801446-001	<b>27.9</b>	4.2	1.7	4	02/19/18 21:31	2/19/18	
SED-2	K1801446-002	<b>3.34</b>	0.89	0.36	1	02/19/18 21:31	2/19/18	
SED-3	K1801446-003	<b>405</b>	48	20	40	02/19/18 21:31	2/19/18	
SED-4	K1801446-004	<b>2.5</b>	1.0	0.5	1	02/19/18 21:31	2/19/18	
SED-5	K1801446-005	<b>261</b>	53	22	40	02/19/18 21:31	2/19/18	
SED-6	K1801446-006	<b>29.8</b>	5.3	2.2	4	02/19/18 21:31	2/19/18	
SED-7	K1801446-007	ND U	0.76	0.31	1	02/19/18 21:31	2/19/18	
SED-8	K1801446-008	<b>4.9</b>	1.0	0.5	1	02/19/18 21:31	2/19/18	
SED-9	K1801446-009	<b>730</b>	110	50	80	02/19/18 21:31	2/19/18	
SED-10	K1801446-010	<b>709</b>	56	23	80	02/19/18 21:31	2/19/18	
SED-11	K1801446-011	<b>2.06</b>	0.95	0.38	1	02/19/18 21:31	2/19/18	
SED-12	K1801446-012	<b>29.0</b>	3.1	1.3	4	02/19/18 21:31	2/19/18	
SED-13	K1801446-013	<b>219</b>	66	27	100	02/19/18 21:31	2/19/18	
Method Blank	K1801446-MB	ND U	0.50	0.20	1	02/19/18 21:31	2/19/18	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Whatcom Environmental Services Inc.  
Project: Jensen Shipyard Sediment  
Sample Matrix: Sediment

Service Request: K1801446  
Date Collected: 02/12/18  
Date Received: 02/14/18  
Date Analyzed: 02/19/18

Replicate Sample Summary  
General Chemistry Parameters

Sample Name: SED-6  
Lab Code: K1801446-006

Units: mg/Kg  
Basis: Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1801446-006DUP Result	Average	RPD	RPD Limit
Sulfide, Total	9030M	1.3	0.6	29.8	12.7	21.3	80 *	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 02/19/18  
**Date Extracted:** 02/19/18

**Duplicate Matrix Spike Summary**  
**Sulfide, Total**

**Sample Name:** SED-6  
**Lab Code:** K1801446-006  
**Analysis Method:** 9030M  
**Prep Method:** EPA 9030B Modified

**Units:** mg/Kg  
**Basis:** Dry

Analyte Name	Sample Result	Result	Matrix Spike K1801446-006MS		Duplicate Matrix Spike K1801446-006DMS		% Rec Limits	RPD	RPD Limit	
			Spike Amount	% Rec	Result	Spike Amount				% Rec
Sulfide, Total	29.8	1380	1600	84	1380	1600	84	45-150	<1	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.  
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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Analyzed:** 02/19/18  
**Date Extracted:** 02/19/18

**Lab Control Sample Summary**  
**Sulfide, Total**

**Analysis Method:** 9030M  
**Prep Method:** EPA 9030B Modified

**Units:** mg/Kg  
**Basis:** Dry  
**Analysis Lot:** 580874

<b>Sample Name</b>	<b>Lab Code</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Lab Control Sample	K1801446-LCS	6.85	7.36	93	55-130



**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

### Continuing Calibration Verification (CCV) Summary

#### Sulfide, Total

**Analysis Method:** 9030M

**Units:** mg/L

	<b>Analysis Lot</b>	<b>Lab Code</b>	<b>Date Analyzed</b>	<b>True Value</b>	<b>Measured Value</b>	<b>Percent Recovery</b>	<b>Acceptance Limits</b>
CCV1	580874	KQ1802564-01	02/19/18 21:31	1.84	1.85	100	90-110
CCV2	580874	KQ1802564-02	02/19/18 21:31	1.84	1.85	100	90-110
CCV3	580874	KQ1802564-03	02/19/18 21:31	1.84	1.85	100	90-110
CCV4	580874	KQ1802564-04	02/19/18 21:31	1.84	1.85	100	90-110
CCV5	580874	KQ1802564-05	02/19/18 21:31	1.84	1.85	100	90-110

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:**K1801446

**Continuing Calibration Blank (CCB) Summary**  
**Sulfide, Total**

**Analysis Method:** 9030M

**Units:**mg/Kg

	<b>Analysis Lot</b>	<b>Lab Code</b>	<b>Date Analyzed</b>	<b>MRL</b>	<b>MDL</b>	<b>Result</b>	<b>Q</b>
CCB1	580874	KQ1802564-06	02/19/18 21:31	0.50	0.20	ND	U
CCB2	580874	KQ1802564-07	02/19/18 21:31	0.50	0.20	ND	U
CCB3	580874	KQ1802564-08	02/19/18 21:31	0.50	0.20	ND	U
CCB4	580874	KQ1802564-09	02/19/18 21:31	0.50	0.20	ND	U
CCB5	580874	KQ1802564-10	02/19/18 21:31	0.50	0.20	ND	U

**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Analysis Method:** 9060  
**Prep Method:** Method

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18

**Units:** Percent  
**Basis:** Dry, per Method

**Carbon, Total Organic (TOC)**

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
SED-1	K1801446-001	<b>1.37</b>	0.10	0.02	1	03/08/18 13:20	3/8/18	
SED-2	K1801446-002	<b>0.80</b>	0.10	0.02	1	03/08/18 13:20	3/8/18	
SED-3	K1801446-003	<b>1.88</b>	0.10	0.02	1	03/08/18 13:20	3/8/18	
SED-4	K1801446-004	<b>1.81</b>	0.10	0.02	1	03/08/18 13:20	3/8/18	
SED-5	K1801446-005	<b>1.92</b>	0.10	0.02	1	03/08/18 13:20	3/8/18	
SED-6	K1801446-006	<b>2.21</b>	0.10	0.02	1	03/08/18 13:20	3/8/18	
SED-7	K1801446-007	<b>1.41</b>	0.10	0.02	1	03/08/18 13:20	3/8/18	
SED-8	K1801446-008	<b>2.54</b>	0.10	0.02	1	03/08/18 13:20	3/8/18	
SED-9	K1801446-009	<b>4.29</b>	0.10	0.02	1	03/08/18 13:20	3/8/18	
SED-10	K1801446-010	<b>1.26</b>	0.10	0.02	1	03/08/18 13:20	3/8/18	
SED-11	K1801446-011	<b>2.69</b>	0.10	0.02	1	03/08/18 13:20	3/8/18	
SED-12	K1801446-012	<b>1.03</b>	0.10	0.02	1	03/08/18 13:20	3/8/18	
SED-13	K1801446-013	<b>1.98</b>	0.10	0.02	1	03/08/18 13:20	3/8/18	
Method Blank	K1801446-MB	ND U	0.10	0.02	1	03/08/18 13:20	3/8/18	

ALS Group USA, Corp.

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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 03/08/18

**Replicate Sample Summary**  
**General Chemistry Parameters**

**Sample Name:** SED-6  
**Lab Code:** K1801446-006

**Units:** Percent  
**Basis:** Dry, per Method

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>MRL</u>	<u>MDL</u>	<u>Sample Result</u>	<u>Duplicate Sample K1801446-006DUP Result</u>	<u>Average</u>	<u>RPD</u>	<u>RPD Limit</u>
Carbon, Total Organic (TOC)	9060	0.10	0.02	2.21	2.22	2.22	<1	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.  
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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 03/8/18  
**Date Extracted:** 03/8/18

**Duplicate Matrix Spike Summary**  
**Carbon, Total Organic (TOC)**

**Sample Name:** SED-6  
**Lab Code:** K1801446-006  
**Analysis Method:** 9060  
**Prep Method:** Method

**Units:** Percent  
**Basis:** Dry, per Method

Analyte Name	Sample Result	Matrix Spike K1801446-006MS			Duplicate Matrix Spike K1801446-006DMS			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Carbon, Total Organic (TOC)	2.21	4.51	2.40	96	4.56	2.41	97	70-122	1	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/18  
**Date Extracted:** 03/08/18

**Lab Control Sample Summary**  
**Carbon, Total Organic (TOC)**

**Analysis Method:** 9060  
**Prep Method:** Method

**Units:** Percent  
**Basis:** Dry, per Method  
**Analysis Lot:** 583023

<b>Sample Name</b>	<b>Lab Code</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Lab Control Sample	K1801446-LCS	0.560	0.60	93	72-122

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

### Continuing Calibration Verification (CCV) Summary

#### Carbon, Total Organic (TOC)

**Analysis Method:** 9060

**Units:** Percent

	<b>Analysis Lot</b>	<b>Lab Code</b>	<b>Date Analyzed</b>	<b>True Value</b>	<b>Measured Value</b>	<b>Percent Recovery</b>	<b>Acceptance Limits</b>
CCV1	583023	KQ1803248-01	03/08/18 13:20	12.0	11.5	96	85-115
CCV2	583023	KQ1803248-02	03/08/18 13:20	12.0	11.5	96	85-115
CCV3	583023	KQ1803248-03	03/08/18 13:20	12.0	11.6	96	85-115

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:**K1801446

**Continuing Calibration Blank (CCB) Summary**  
**Carbon, Total Organic (TOC)**

**Analysis Method:** 9060

**Units:**Percent

	<b>Analysis Lot</b>	<b>Lab Code</b>	<b>Date Analyzed</b>	<b>MRL</b>	<b>MDL</b>	<b>Result</b>	<b>Q</b>
CCB1	583023	KQ1803248-04	03/08/18 13:20	0.10	0.02	ND	U
CCB2	583023	KQ1803248-05	03/08/18 13:20	0.10	0.02	ND	U
CCB3	583023	KQ1803248-06	03/08/18 13:20	0.10	0.02	ND	U



dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-1  
Lab Code: K1801446-001

Sand Fraction: Dry Weight (Grams) 6.1958  
Sand Fraction: Weight Recovered (Grams) 6.1363  
Sand Fraction: Percent Recovery 99.04

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	0.0000	0.00
Gravel, Fine	-2 Ø to -1 Ø	0.0000	0.00
Sand, Very Coarse	-1 to 0 Ø	0.0353	0.21
Sand, Coarse	0 to 1 Ø	0.0630	0.38
Sand, Medium	1 to 2 Ø	0.2427	1.46
Sand, Fine	2 to 3 Ø	0.7202	4.33
Sand, Very Fine	3 to 4 Ø	2.5315	15.20
75.0 µm	4 Ø	7.2050	43.27
31.3 µm	5 Ø	1.4600	8.77
15.6 µm	6 Ø	1.1150	6.70
7.8 µm	7 Ø	0.7100	4.26
3.9 µm	8 Ø	0.7350	4.41
1.95 µm	9 Ø	0.4050	2.43
0.98 µm	> 10 Ø	1.0500	6.31
		16.2727	97.73

dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-2  
Lab Code: K1801446-002

Sand Fraction: Dry Weight (Grams) 6.5076  
Sand Fraction: Weight Recovered (Grams) 6.4511  
Sand Fraction: Percent Recovery 99.13

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	0.0000	0.00
Gravel, Fine	-2 Ø to -1 Ø	0.0000	0.00
Sand, Very Coarse	-1 to 0 Ø	0.0322	0.19
Sand, Coarse	0 to 1 Ø	0.0899	0.53
Sand, Medium	1 to 2 Ø	0.1703	1.00
Sand, Fine	2 to 3 Ø	0.7043	4.15
Sand, Very Fine	3 to 4 Ø	2.2172	13.08
75.0 µm	4 Ø	9.5000	56.03
31.3 µm	5 Ø	1.5200	8.96
15.6 µm	6 Ø	0.7100	4.19
7.8 µm	7 Ø	0.4150	2.45
3.9 µm	8 Ø	0.4250	2.51
1.95 µm	9 Ø	0.2750	1.62
0.98 µm	> 10 Ø	0.7700	4.54
		16.8289	99.25

dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-3  
Lab Code: K1801446-003

Sand Fraction: Dry Weight (Grams) 3.8391  
Sand Fraction: Weight Recovered (Grams) 3.8569  
Sand Fraction: Percent Recovery 100.46

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	0.0000	0.00
Gravel, Fine	-2 Ø to -1 Ø	0.0000	0.00
Sand, Very Coarse	-1 to 0 Ø	0.0165	0.13
Sand, Coarse	0 to 1 Ø	0.1337	1.02
Sand, Medium	1 to 2 Ø	0.3117	2.37
Sand, Fine	2 to 3 Ø	0.5281	4.02
Sand, Very Fine	3 to 4 Ø	1.2238	9.31
75.0 µm	4 Ø	5.7150	43.48
31.3 µm	5 Ø	1.3500	10.27
15.6 µm	6 Ø	1.1900	9.05
7.8 µm	7 Ø	0.6800	5.17
3.9 µm	8 Ø	0.8100	6.16
1.95 µm	9 Ø	0.4550	3.46
0.98 µm	> 10 Ø	0.9550	7.27
		13.3688	101.72

dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-4  
 Lab Code: K1801446-004

Sand Fraction: Dry Weight (Grams) 6.9715  
 Sand Fraction: Weight Recovered (Grams) 6.8720  
 Sand Fraction: Percent Recovery 98.57

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	1.6492	10.85
Gravel, Fine	-2 Ø to -1 Ø	1.4887	9.79
Sand, Very Coarse	-1 to 0 Ø	0.4562	3.00
Sand, Coarse	0 to 1 Ø	0.4138	2.72
Sand, Medium	1 to 2 Ø	0.4480	2.95
Sand, Fine	2 to 3 Ø	0.7528	4.95
Sand, Very Fine	3 to 4 Ø	0.6075	4.00
75.0 µm	4 Ø	4.5700	30.07
31.3 µm	5 Ø	1.1850	7.80
15.6 µm	6 Ø	1.0400	6.84
7.8 µm	7 Ø	0.6850	4.51
3.9 µm	8 Ø	0.5850	3.85
1.95 µm	9 Ø	0.4550	2.99
0.98 µm	> 10 Ø	1.0250	6.74
		15.3612	101.06

dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-5  
Lab Code: K1801446-005

Sand Fraction: Dry Weight (Grams) 2.9058  
Sand Fraction: Weight Recovered (Grams) 2.8154  
Sand Fraction: Percent Recovery 96.89

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	0.0000	0.00
Gravel, Fine	-2 Ø to -1 Ø	0.0000	0.00
Sand, Very Coarse	-1 to 0 Ø	0.0621	0.52
Sand, Coarse	0 to 1 Ø	0.0463	0.39
Sand, Medium	1 to 2 Ø	0.0991	0.83
Sand, Fine	2 to 3 Ø	0.4348	3.64
Sand, Very Fine	3 to 4 Ø	0.8265	6.91
75.0 µm	4 Ø	4.8300	40.40
31.3 µm	5 Ø	1.6000	13.38
15.6 µm	6 Ø	1.3950	11.67
7.8 µm	7 Ø	0.6300	5.27
3.9 µm	8 Ø	0.6100	5.10
1.95 µm	9 Ø	0.4050	3.39
0.98 µm	> 10 Ø	0.9550	7.99
		11.8938	99.48

dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-6  
Lab Code: K1801446-006

Sand Fraction: Dry Weight (Grams) 3.1094  
Sand Fraction: Weight Recovered (Grams) 3.0011  
Sand Fraction: Percent Recovery 96.52

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	0.0000	0.00
Gravel, Fine	-2 Ø to -1 Ø	0.0000	0.00
Sand, Very Coarse	-1 to 0 Ø	0.0602	0.53
Sand, Coarse	0 to 1 Ø	0.0413	0.36
Sand, Medium	1 to 2 Ø	0.1200	1.06
Sand, Fine	2 to 3 Ø	0.5314	4.68
Sand, Very Fine	3 to 4 Ø	0.6616	5.82
75.0 µm	4 Ø	3.8750	34.09
31.3 µm	5 Ø	1.9950	17.55
15.6 µm	6 Ø	1.4750	12.98
7.8 µm	7 Ø	0.8100	7.13
3.9 µm	8 Ø	0.5750	5.06
1.95 µm	9 Ø	0.3300	2.90
0.98 µm	> 10 Ø	0.8850	7.79
		11.3595	99.94

dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-6  
Lab Code: K1801446-006DUP

Sand Fraction: Dry Weight (Grams) 2.6077  
Sand Fraction: Weight Recovered (Grams) 2.5980  
Sand Fraction: Percent Recovery 99.63

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	0.0000	0.00
Gravel, Fine	-2 Ø to -1 Ø	0.0065	0.06
Sand, Very Coarse	-1 to 0 Ø	0.0060	0.05
Sand, Coarse	0 to 1 Ø	0.0315	0.28
Sand, Medium	1 to 2 Ø	0.1093	0.96
Sand, Fine	2 to 3 Ø	0.5185	4.57
Sand, Very Fine	3 to 4 Ø	0.7522	6.63
75.0 µm	4 Ø	3.9850	35.12
31.3 µm	5 Ø	1.9450	17.14
15.6 µm	6 Ø	1.4450	12.74
7.8 µm	7 Ø	0.7150	6.30
3.9 µm	8 Ø	0.5000	4.41
1.95 µm	9 Ø	0.3250	2.86
0.98 µm	> 10 Ø	0.8650	7.62
		11.2040	98.74

dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-7  
Lab Code: K1801446-007

Sand Fraction: Dry Weight (Grams) 21.4858  
Sand Fraction: Weight Recovered (Grams) 21.4162  
Sand Fraction: Percent Recovery 99.68

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	12.4181	44.87
Gravel, Fine	-2 Ø to -1 Ø	4.7085	17.01
Sand, Very Coarse	-1 to 0 Ø	0.6629	2.40
Sand, Coarse	0 to 1 Ø	0.6592	2.38
Sand, Medium	1 to 2 Ø	0.8715	3.15
Sand, Fine	2 to 3 Ø	1.4388	5.20
Sand, Very Fine	3 to 4 Ø	0.3496	1.26
75.0 µm	4 Ø	1.2350	4.46
31.3 µm	5 Ø	0.7650	2.76
15.6 µm	6 Ø	0.5500	1.99
7.8 µm	7 Ø	0.5200	1.88
3.9 µm	8 Ø	0.3900	1.41
1.95 µm	9 Ø	0.1850	0.67
0.98 µm	> 10 Ø	0.7700	2.78
		25.5236	92.22



dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-8  
Lab Code: K1801446-008

Sand Fraction: Dry Weight (Grams) 6.7217  
Sand Fraction: Weight Recovered (Grams) 6.4069  
Sand Fraction: Percent Recovery 95.32

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	0.1917	1.29
Gravel, Fine	-2 Ø to -1 Ø	0.0000	0.00
Sand, Very Coarse	-1 to 0 Ø	0.0370	0.25
Sand, Coarse	0 to 1 Ø	0.0789	0.53
Sand, Medium	1 to 2 Ø	0.0235	0.16
Sand, Fine	2 to 3 Ø	2.3386	15.78
Sand, Very Fine	3 to 4 Ø	1.9362	13.06
75.0 µm	4 Ø	5.2000	35.08
31.3 µm	5 Ø	1.6050	10.83
15.6 µm	6 Ø	0.7350	4.96
7.8 µm	7 Ø	0.8050	5.43
3.9 µm	8 Ø	0.4250	2.87
1.95 µm	9 Ø	0.2600	1.75
0.98 µm	> 10 Ø	0.7350	4.96
		14.3709	96.95

dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-9  
Lab Code: K1801446-009

Sand Fraction: Dry Weight (Grams) 19.5949  
Sand Fraction: Weight Recovered (Grams) 19.5306  
Sand Fraction: Percent Recovery 99.67

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	14.4552	72.39
Gravel, Fine	-2 Ø to -1 Ø	0.7241	3.63
Sand, Very Coarse	-1 to 0 Ø	0.3947	1.98
Sand, Coarse	0 to 1 Ø	0.4145	2.08
Sand, Medium	1 to 2 Ø	0.5244	2.63
Sand, Fine	2 to 3 Ø	1.5302	7.66
Sand, Very Fine	3 to 4 Ø	0.8916	4.47
75.0 µm	4 Ø	6.2450	31.28
31.3 µm	5 Ø	1.1100	5.56
15.6 µm	6 Ø	0.3800	1.90
7.8 µm	7 Ø	0.3150	1.58
3.9 µm	8 Ø	0.1800	0.90
1.95 µm	9 Ø	0.0050	0.03
0.98 µm	> 10 Ø	0.8850	4.43
		28.0547	140.50

dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-10  
Lab Code: K1801446-010

Sand Fraction: Dry Weight (Grams) 23.6762  
Sand Fraction: Weight Recovered (Grams) 23.6146  
Sand Fraction: Percent Recovery 99.74

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	7.9172	26.22
Gravel, Fine	-2 Ø to -1 Ø	6.4189	21.26
Sand, Very Coarse	-1 to 0 Ø	2.0151	6.67
Sand, Coarse	0 to 1 Ø	1.4886	4.93
Sand, Medium	1 to 2 Ø	1.4375	4.76
Sand, Fine	2 to 3 Ø	2.8171	9.33
Sand, Very Fine	3 to 4 Ø	0.9120	3.02
75.0 µm	4 Ø	2.2050	7.30
31.3 µm	5 Ø	0.9200	3.05
15.6 µm	6 Ø	0.7750	2.57
7.8 µm	7 Ø	0.3750	1.24
3.9 µm	8 Ø	0.3000	0.99
1.95 µm	9 Ø	0.1750	0.58
0.98 µm	> 10 Ø	0.5850	1.94
		28.3414	93.87

dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-11  
Lab Code: K1801446-011

Sand Fraction: Dry Weight (Grams) 8.4820  
Sand Fraction: Weight Recovered (Grams) 8.3622  
Sand Fraction: Percent Recovery 98.59

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	0.0691	0.42
Gravel, Fine	-2 Ø to -1 Ø	0.0667	0.41
Sand, Very Coarse	-1 to 0 Ø	0.0682	0.42
Sand, Coarse	0 to 1 Ø	0.1858	1.13
Sand, Medium	1 to 2 Ø	0.4156	2.53
Sand, Fine	2 to 3 Ø	3.0741	18.75
Sand, Very Fine	3 to 4 Ø	2.4474	14.93
75.0 µm	4 Ø	6.1350	37.41
31.3 µm	5 Ø	0.9750	5.95
15.6 µm	6 Ø	0.5800	3.54
7.8 µm	7 Ø	0.4250	2.59
3.9 µm	8 Ø	0.3050	1.86
1.95 µm	9 Ø	0.2300	1.40
0.98 µm	> 10 Ø	0.6250	3.81
		15.6019	95.15

dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-12  
 Lab Code: K1801446-012

Sand Fraction: Dry Weight (Grams) 12.3790  
 Sand Fraction: Weight Recovered (Grams) 12.3207  
 Sand Fraction: Percent Recovery 99.53

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	0.0989	0.47
Gravel, Fine	-2 Ø to -1 Ø	0.2404	1.15
Sand, Very Coarse	-1 to 0 Ø	0.3113	1.49
Sand, Coarse	0 to 1 Ø	0.4320	2.07
Sand, Medium	1 to 2 Ø	0.5059	2.42
Sand, Fine	2 to 3 Ø	4.2270	20.25
Sand, Very Fine	3 to 4 Ø	3.9187	18.78
75.0 µm	4 Ø	7.4550	35.72
31.3 µm	5 Ø	0.8500	4.07
15.6 µm	6 Ø	0.5100	2.44
7.8 µm	7 Ø	0.4000	1.92
3.9 µm	8 Ø	0.3300	1.58
1.95 µm	9 Ø	0.3000	1.44
0.98 µm	> 10 Ø	0.6250	2.99
		20.2042	96.81

dba ALS Environmental  
Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 2/12/2018  
**Date Received:** 2/14/2018  
**Date Analyzed:** 2/28/2018

Particle Size Determination  
ASTM D422M

Sample Name: SED-13  
Lab Code: K1801446-013

Sand Fraction: Dry Weight (Grams) 23.1313  
Sand Fraction: Weight Recovered (Grams) 23.1064  
Sand Fraction: Percent Recovery 99.89

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	<-2 Ø	8.2441	30.54
Gravel, Fine	-2 Ø to -1 Ø	5.0551	18.73
Sand, Very Coarse	-1 to 0 Ø	2.1304	7.89
Sand, Coarse	0 to 1 Ø	1.6698	6.19
Sand, Medium	1 to 2 Ø	1.6702	6.19
Sand, Fine	2 to 3 Ø	2.9216	10.82
Sand, Very Fine	3 to 4 Ø	1.1289	4.18
75.0 µm	4 Ø	1.6700	6.19
31.3 µm	5 Ø	0.3150	1.17
15.6 µm	6 Ø	0.2650	0.98
7.8 µm	7 Ø	0.2450	0.91
3.9 µm	8 Ø	0.2300	0.85
1.95 µm	9 Ø	0.0200	0.07
0.98 µm	> 10 Ø	0.3550	1.32
		25.9201	96.03



# Metals

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
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[www.alsglobal.com](http://www.alsglobal.com)

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** SED-1  
**Lab Code:** K1801446-001

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:10  
**Date Received:** 02/14/18 10:30

**Basis:** Dry

**Total Metals**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Antimony	6020A	<b>0.092</b>	mg/Kg	0.052	0.021	5	03/05/18 11:32	03/02/18	
Arsenic	6020A	<b>8.47</b>	mg/Kg	0.52	0.04	5	03/05/18 11:32	03/02/18	
Cadmium	6020A	<b>1.15</b>	mg/Kg	0.021	0.007	5	03/05/18 11:32	03/02/18	
Chromium	6020A	<b>32.7</b>	mg/Kg	0.21	0.06	5	03/05/18 11:32	03/02/18	
Copper	6020A	<b>32.8</b>	mg/Kg	0.52	0.04	5	03/05/18 11:32	03/02/18	
Lead	6020A	<b>12.0</b>	mg/Kg	0.052	0.021	5	03/05/18 11:32	03/02/18	
Mercury	7471B	<b>0.067</b>	mg/Kg	0.013	0.001	1	02/28/18 12:04	02/27/18	
Nickel	6020A	<b>25.0</b>	mg/Kg	0.21	0.03	5	03/05/18 11:32	03/02/18	
Silver	6020A	<b>0.101</b>	mg/Kg	0.021	0.004	5	03/05/18 11:32	03/02/18	
Zinc	6020A	<b>96.1</b>	mg/Kg	0.52	0.21	5	03/05/18 11:32	03/02/18	



**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** SED-2  
**Lab Code:** K1801446-002

**Service Request:** K1801446  
**Date Collected:** 02/12/18 11:50  
**Date Received:** 02/14/18 10:30  
**Basis:** Dry

**Total Metals**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Antimony	6020A	<b>0.036 J</b>	mg/Kg	0.040	0.016	5	03/05/18 11:35	03/02/18	
Arsenic	6020A	<b>4.84</b>	mg/Kg	0.40	0.03	5	03/05/18 11:35	03/02/18	
Cadmium	6020A	<b>1.45</b>	mg/Kg	0.016	0.006	5	03/05/18 11:35	03/02/18	
Chromium	6020A	<b>21.9</b>	mg/Kg	0.16	0.05	5	03/05/18 11:35	03/02/18	
Copper	6020A	<b>14.0</b>	mg/Kg	0.40	0.03	5	03/05/18 11:35	03/02/18	
Lead	6020A	<b>4.36</b>	mg/Kg	0.040	0.016	5	03/05/18 11:35	03/02/18	
Mercury	7471B	<b>0.035</b>	mg/Kg	0.012	0.001	1	02/28/18 11:19	02/27/18	
Nickel	6020A	<b>16.7</b>	mg/Kg	0.16	0.02	5	03/05/18 11:35	03/02/18	
Silver	6020A	<b>0.052</b>	mg/Kg	0.016	0.003	5	03/05/18 11:35	03/02/18	
Zinc	6020A	<b>53.1</b>	mg/Kg	0.40	0.16	5	03/05/18 11:35	03/02/18	

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dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** SED-3  
**Lab Code:** K1801446-003

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:45  
**Date Received:** 02/14/18 10:30  
**Basis:** Dry

**Total Metals**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Antimony	6020A	<b>0.083</b>	mg/Kg	0.056	0.022	5	03/05/18 11:37	03/02/18	
Arsenic	6020A	<b>7.39</b>	mg/Kg	0.56	0.04	5	03/05/18 11:37	03/02/18	
Cadmium	6020A	<b>1.53</b>	mg/Kg	0.022	0.008	5	03/05/18 11:37	03/02/18	
Chromium	6020A	<b>33.9</b>	mg/Kg	0.22	0.07	5	03/05/18 11:37	03/02/18	
Copper	6020A	<b>42.1</b>	mg/Kg	0.56	0.04	5	03/05/18 11:37	03/02/18	
Lead	6020A	<b>13.6</b>	mg/Kg	0.056	0.022	5	03/05/18 11:37	03/02/18	
Mercury	7471B	<b>0.081</b>	mg/Kg	0.014	0.001	1	02/28/18 11:20	02/27/18	
Nickel	6020A	<b>25.2</b>	mg/Kg	0.22	0.03	5	03/05/18 11:37	03/02/18	
Silver	6020A	<b>0.099</b>	mg/Kg	0.022	0.004	5	03/05/18 11:37	03/02/18	
Zinc	6020A	<b>95.9</b>	mg/Kg	0.56	0.22	5	03/05/18 11:37	03/02/18	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** SED-4  
**Lab Code:** K1801446-004

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:05  
**Date Received:** 02/14/18 10:30  
**Basis:** Dry

**Total Metals**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Antimony	6020A	<b>0.067</b>	mg/Kg	0.050	0.020	5	03/05/18 11:46	03/02/18	
Arsenic	6020A	<b>6.19</b>	mg/Kg	0.50	0.04	5	03/05/18 11:46	03/02/18	
Cadmium	6020A	<b>2.50</b>	mg/Kg	0.020	0.007	5	03/05/18 11:46	03/02/18	
Chromium	6020A	<b>32.7</b>	mg/Kg	0.20	0.06	5	03/05/18 11:46	03/02/18	
Copper	6020A	<b>36.6</b>	mg/Kg	0.50	0.04	5	03/05/18 11:46	03/02/18	
Lead	6020A	<b>16.8</b>	mg/Kg	0.050	0.020	5	03/05/18 11:46	03/02/18	
Mercury	7471B	<b>0.078</b>	mg/Kg	0.011	0.001	1	02/28/18 11:22	02/27/18	
Nickel	6020A	<b>25.6</b>	mg/Kg	0.20	0.03	5	03/05/18 11:46	03/02/18	
Silver	6020A	<b>0.090</b>	mg/Kg	0.020	0.004	5	03/05/18 11:46	03/02/18	
Zinc	6020A	<b>78.1</b>	mg/Kg	0.50	0.20	5	03/05/18 11:46	03/02/18	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** SED-5  
**Lab Code:** K1801446-005

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:35  
**Date Received:** 02/14/18 10:30  
**Basis:** Dry

**Total Metals**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Antimony	6020A	<b>0.161</b>	mg/Kg	0.059	0.024	5	03/05/18 11:49	03/02/18	
Arsenic	6020A	<b>9.51</b>	mg/Kg	0.59	0.05	5	03/05/18 11:49	03/02/18	
Cadmium	6020A	<b>2.05</b>	mg/Kg	0.024	0.008	5	03/05/18 11:49	03/02/18	
Chromium	6020A	<b>34.1</b>	mg/Kg	0.24	0.07	5	03/05/18 11:49	03/02/18	
Copper	6020A	<b>62.8</b>	mg/Kg	0.59	0.05	5	03/05/18 11:49	03/02/18	
Lead	6020A	<b>17.1</b>	mg/Kg	0.059	0.024	5	03/05/18 11:49	03/02/18	
Mercury	7471B	<b>0.100</b>	mg/Kg	0.016	0.002	1	02/28/18 11:23	02/27/18	
Nickel	6020A	<b>25.4</b>	mg/Kg	0.24	0.04	5	03/05/18 11:49	03/02/18	
Silver	6020A	<b>0.126</b>	mg/Kg	0.024	0.005	5	03/05/18 11:49	03/02/18	
Zinc	6020A	<b>109</b>	mg/Kg	0.59	0.24	5	03/05/18 11:49	03/02/18	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** SED-6  
**Lab Code:** K1801446-006

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:20  
**Date Received:** 02/14/18 10:30  
**Basis:** Dry

**Total Metals**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Antimony	6020A	<b>0.071</b>	mg/Kg	0.058	0.023	5	03/05/18 11:17	03/02/18	
Arsenic	6020A	<b>7.06</b>	mg/Kg	0.58	0.05	5	03/05/18 11:17	03/02/18	
Cadmium	6020A	<b>1.87</b>	mg/Kg	0.023	0.008	5	03/05/18 11:17	03/02/18	
Chromium	6020A	<b>27.9</b>	mg/Kg	0.23	0.07	5	03/05/18 11:17	03/02/18	
Copper	6020A	<b>41.6</b>	mg/Kg	0.58	0.05	5	03/05/18 11:17	03/02/18	
Lead	6020A	<b>12.5</b>	mg/Kg	0.058	0.023	5	03/05/18 11:17	03/02/18	
Mercury	7471B	<b>0.094</b>	mg/Kg	0.019	0.002	1	02/28/18 11:25	02/27/18	
Nickel	6020A	<b>20.0</b>	mg/Kg	0.23	0.03	5	03/05/18 11:17	03/02/18	
Silver	6020A	<b>0.099</b>	mg/Kg	0.023	0.005	5	03/05/18 11:17	03/02/18	
Zinc	6020A	<b>78.0</b>	mg/Kg	0.58	0.23	5	03/05/18 11:17	03/02/18	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** SED-7  
**Lab Code:** K1801446-007

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:35  
**Date Received:** 02/14/18 10:30  
**Basis:** Dry

**Total Metals**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Antimony	6020A	<b>0.122</b>	mg/Kg	0.027	0.011	5	03/05/18 11:52	03/02/18	
Arsenic	6020A	<b>6.11</b>	mg/Kg	0.27	0.02	5	03/05/18 11:52	03/02/18	
Cadmium	6020A	<b>0.096</b>	mg/Kg	0.011	0.004	5	03/05/18 11:52	03/02/18	
Chromium	6020A	<b>22.2</b>	mg/Kg	0.11	0.03	5	03/05/18 11:52	03/02/18	
Copper	6020A	<b>82.3</b>	mg/Kg	0.27	0.02	5	03/05/18 11:52	03/02/18	
Lead	6020A	<b>26.5</b>	mg/Kg	0.027	0.011	5	03/05/18 11:52	03/02/18	
Mercury	7471B	<b>0.0848</b>	mg/Kg	0.0069	0.0007	1	02/28/18 11:35	02/27/18	
Nickel	6020A	<b>15.7</b>	mg/Kg	0.11	0.02	5	03/05/18 11:52	03/02/18	
Silver	6020A	<b>0.127</b>	mg/Kg	0.011	0.002	5	03/05/18 11:52	03/02/18	
Zinc	6020A	<b>92.0</b>	mg/Kg	0.27	0.11	5	03/05/18 11:52	03/02/18	

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dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** SED-8  
**Lab Code:** K1801446-008

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:40  
**Date Received:** 02/14/18 10:30

**Basis:** Dry

**Total Metals**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Antimony	6020A	<b>0.189</b>	mg/Kg	0.041	0.017	5	03/05/18 11:55	03/02/18	
Arsenic	6020A	<b>8.12</b>	mg/Kg	0.41	0.03	5	03/05/18 11:55	03/02/18	
Cadmium	6020A	<b>1.51</b>	mg/Kg	0.017	0.006	5	03/05/18 11:55	03/02/18	
Chromium	6020A	<b>34.4</b>	mg/Kg	0.17	0.05	5	03/05/18 11:55	03/02/18	
Copper	6020A	<b>202</b>	mg/Kg	0.41	0.03	5	03/05/18 11:55	03/02/18	
Lead	6020A	<b>59.9</b>	mg/Kg	0.041	0.017	5	03/05/18 11:55	03/02/18	
Mercury	7471B	<b>0.275</b>	mg/Kg	0.013	0.001	1	02/28/18 11:36	02/27/18	
Nickel	6020A	<b>21.3</b>	mg/Kg	0.17	0.02	5	03/05/18 11:55	03/02/18	
Silver	6020A	<b>0.129</b>	mg/Kg	0.017	0.003	5	03/05/18 11:55	03/02/18	
Zinc	6020A	<b>141</b>	mg/Kg	0.41	0.17	5	03/05/18 11:55	03/02/18	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** SED-9  
**Lab Code:** K1801446-009

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:45  
**Date Received:** 02/14/18 10:30  
**Basis:** Dry

**Total Metals**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Antimony	6020A	<b>0.275</b>	mg/Kg	0.053	0.021	5	03/05/18 11:57	03/02/18	
Arsenic	6020A	<b>12.8</b>	mg/Kg	0.53	0.04	5	03/05/18 11:57	03/02/18	
Cadmium	6020A	<b>2.01</b>	mg/Kg	0.021	0.007	5	03/05/18 11:57	03/02/18	
Chromium	6020A	<b>50.9</b>	mg/Kg	0.21	0.06	5	03/05/18 11:57	03/02/18	
Copper	6020A	<b>578</b>	mg/Kg	0.53	0.04	5	03/05/18 11:57	03/02/18	
Lead	6020A	<b>106</b>	mg/Kg	0.053	0.021	5	03/05/18 11:57	03/02/18	
Mercury	7471B	<b>0.353</b>	mg/Kg	0.010	0.001	1	02/28/18 11:38	02/27/18	
Nickel	6020A	<b>24.0</b>	mg/Kg	0.21	0.03	5	03/05/18 11:57	03/02/18	
Silver	6020A	<b>0.149</b>	mg/Kg	0.021	0.004	5	03/05/18 11:57	03/02/18	
Zinc	6020A	<b>206</b>	mg/Kg	0.53	0.21	5	03/05/18 11:57	03/02/18	



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dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** SED-10  
**Lab Code:** K1801446-010

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:00  
**Date Received:** 02/14/18 10:30  
**Basis:** Dry

**Total Metals**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Antimony	6020A	<b>0.913</b>	mg/Kg	0.025	0.010	5	03/05/18 12:00	03/02/18	
Arsenic	6020A	<b>9.02</b>	mg/Kg	0.25	0.02	5	03/05/18 12:00	03/02/18	
Cadmium	6020A	<b>0.611</b>	mg/Kg	0.0099	0.0035	5	03/05/18 12:00	03/02/18	
Chromium	6020A	<b>22.4</b>	mg/Kg	0.099	0.030	5	03/05/18 12:00	03/02/18	
Copper	6020A	<b>1370</b>	mg/Kg	49	4	1000	03/05/18 12:12	03/02/18	
Lead	6020A	<b>105</b>	mg/Kg	0.025	0.010	5	03/05/18 12:00	03/02/18	
Mercury	7471B	<b>1.45</b>	mg/Kg	0.090	0.009	10	02/28/18 12:07	02/27/18	
Nickel	6020A	<b>14.5</b>	mg/Kg	0.099	0.015	5	03/05/18 12:00	03/02/18	
Silver	6020A	<b>0.0986</b>	mg/Kg	0.0099	0.0020	5	03/05/18 12:00	03/02/18	
Zinc	6020A	<b>589</b>	mg/Kg	49	20	1000	03/05/18 12:12	03/02/18	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** SED-11  
**Lab Code:** K1801446-011

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:10  
**Date Received:** 02/14/18 10:30  
**Basis:** Dry

**Total Metals**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Antimony	6020A	<b>0.323</b>	mg/Kg	0.038	0.015	5	03/05/18 12:03	03/02/18	
Arsenic	6020A	<b>9.42</b>	mg/Kg	0.38	0.03	5	03/05/18 12:03	03/02/18	
Cadmium	6020A	<b>1.29</b>	mg/Kg	0.015	0.005	5	03/05/18 12:03	03/02/18	
Chromium	6020A	<b>25.5</b>	mg/Kg	0.15	0.05	5	03/05/18 12:03	03/02/18	
Copper	6020A	<b>168</b>	mg/Kg	0.38	0.03	5	03/05/18 12:03	03/02/18	
Lead	6020A	<b>109</b>	mg/Kg	0.038	0.015	5	03/05/18 12:03	03/02/18	
Mercury	7471B	<b>0.438</b>	mg/Kg	0.024	0.002	5	02/28/18 12:08	02/27/18	
Nickel	6020A	<b>16.5</b>	mg/Kg	0.15	0.02	5	03/05/18 12:03	03/02/18	
Silver	6020A	<b>0.093</b>	mg/Kg	0.015	0.003	5	03/05/18 12:03	03/02/18	
Zinc	6020A	<b>116</b>	mg/Kg	0.38	0.15	5	03/05/18 12:03	03/02/18	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** SED-12  
**Lab Code:** K1801446-012

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:15  
**Date Received:** 02/14/18 10:30  
**Basis:** Dry

**Total Metals**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Antimony	6020A	<b>0.103</b>	mg/Kg	0.039	0.016	5	03/05/18 12:06	03/02/18	
Arsenic	6020A	<b>5.82</b>	mg/Kg	0.39	0.03	5	03/05/18 12:06	03/02/18	
Cadmium	6020A	<b>0.934</b>	mg/Kg	0.016	0.005	5	03/05/18 12:06	03/02/18	
Chromium	6020A	<b>19.0</b>	mg/Kg	0.16	0.05	5	03/05/18 12:06	03/02/18	
Copper	6020A	<b>49.6</b>	mg/Kg	0.39	0.03	5	03/05/18 12:06	03/02/18	
Lead	6020A	<b>18.8</b>	mg/Kg	0.039	0.016	5	03/05/18 12:06	03/02/18	
Mercury	7471B	<b>0.0884</b>	mg/Kg	0.0097	0.0010	1	02/28/18 11:46	02/27/18	
Nickel	6020A	<b>13.2</b>	mg/Kg	0.16	0.02	5	03/05/18 12:06	03/02/18	
Silver	6020A	<b>0.055</b>	mg/Kg	0.016	0.003	5	03/05/18 12:06	03/02/18	
Zinc	6020A	<b>56.9</b>	mg/Kg	0.39	0.16	5	03/05/18 12:06	03/02/18	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** SED-13  
**Lab Code:** K1801446-013

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:25  
**Date Received:** 02/14/18 10:30

**Basis:** Dry

**Total Metals**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Antimony	6020A	<b>5.34</b>	mg/Kg	0.033	0.013	5	03/05/18 12:09	03/02/18	
Arsenic	6020A	<b>16.4</b>	mg/Kg	0.33	0.03	5	03/05/18 12:09	03/02/18	
Cadmium	6020A	<b>0.365</b>	mg/Kg	0.013	0.005	5	03/05/18 12:09	03/02/18	
Chromium	6020A	<b>32.6</b>	mg/Kg	0.13	0.04	5	03/05/18 12:09	03/02/18	
Copper	6020A	<b>1380</b>	mg/Kg	66	5	1000	03/05/18 12:21	03/02/18	
Lead	6020A	<b>193</b>	mg/Kg	0.033	0.013	5	03/05/18 12:09	03/02/18	
Mercury	7471B	<b>0.847</b>	mg/Kg	0.041	0.004	5	02/28/18 12:10	02/27/18	
Nickel	6020A	<b>19.5</b>	mg/Kg	0.13	0.02	5	03/05/18 12:09	03/02/18	
Silver	6020A	<b>0.104</b>	mg/Kg	0.013	0.003	5	03/05/18 12:09	03/02/18	
Zinc	6020A	<b>928</b>	mg/Kg	66	26	1000	03/05/18 12:21	03/02/18	

ALS Group USA, Corp.  
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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** Method Blank  
**Lab Code:** KQ1802455-03

**Service Request:** K1801446  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** Dry

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Antimony	6020A	ND U	mg/Kg	0.05	0.020	5	03/05/18 11:12	03/02/18	
Arsenic	6020A	ND U	mg/Kg	0.5	0.04	5	03/05/18 11:12	03/02/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.007	5	03/05/18 11:12	03/02/18	
Chromium	6020A	ND U	mg/Kg	0.20	0.06	5	03/05/18 11:12	03/02/18	
Copper	6020A	ND U	mg/Kg	0.5	0.04	5	03/05/18 11:12	03/02/18	
Lead	6020A	ND U	mg/Kg	0.05	0.020	5	03/05/18 11:12	03/02/18	
Nickel	6020A	ND U	mg/Kg	0.20	0.03	5	03/05/18 11:12	03/02/18	
Silver	6020A	ND U	mg/Kg	0.020	0.004	5	03/05/18 11:12	03/02/18	
Zinc	6020A	<b>0.36 J</b>	mg/Kg	0.5	0.20	5	03/05/18 11:12	03/02/18	

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dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment  
**Sample Name:** Method Blank  
**Lab Code:** KQ1802454-03

**Service Request:** K1801446  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** Dry

Total Metals

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Mercury	7471B	ND U	mg/Kg	0.02	0.002	1	02/28/18 11:14	02/27/18	

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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 03/05/18

Replicate Sample Summary

Total Metals

**Sample Name:** SED-6  
**Lab Code:** K1801446-006

**Units:** mg/Kg  
**Basis:** Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate	Average	RPD	RPD Limit
					Sample KQ1802455-01 Result			
Antimony	6020A	0.058	0.023	0.071	0.070	0.071	<1	20
Arsenic	6020A	0.58	0.05	7.06	7.24	7.15	3	20
Cadmium	6020A	0.023	0.008	1.87	1.85	1.86	1	20
Chromium	6020A	0.23	0.07	27.9	29.0	28.5	4	20
Copper	6020A	0.58	0.05	41.6	39.0	40.3	6	20
Lead	6020A	0.058	0.023	12.5	12.9	12.7	3	20
Nickel	6020A	0.23	0.03	20.0	20.6	20.3	3	20
Silver	6020A	0.023	0.005	0.099	0.123	0.111	22 #	20
Zinc	6020A	0.58	0.23	78.0	80.5	79.3	3	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Whatcom Environmental Services Inc.  
Project: Jensen Shipyard Sediment  
Sample Matrix: Sediment

Service Request: K1801446  
Date Collected: 02/12/18  
Date Received: 02/14/18  
Date Analyzed: 02/28/18

Replicate Sample Summary

Total Metals

Sample Name: SED-6  
Lab Code: K1801446-006

Units: mg/Kg  
Basis: Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample	Average	RPD	RPD Limit
					KQ1802454-01 Result			
Mercury	7471B	0.018	0.002	0.094	0.104	0.099	10	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 03/5/18  
**Date Extracted:** 03/2/18

**Matrix Spike Summary**  
**Total Metals**

**Sample Name:** SED-6  
**Lab Code:** K1801446-006  
**Analysis Method:** 6020A  
**Prep Method:** EPA 3050B

**Units:** mg/Kg  
**Basis:** Dry

**Matrix Spike**  
KQ1802455-02

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Antimony	0.071	31.4	92.0	34 N	75-125
Arsenic	7.06	104	92.0	105	75-125
Cadmium	1.87	11.5	9.20	104	75-125
Chromium	27.9	67.2	36.6	107	75-125
Copper	41.6	85.8	46.0	96	75-125
Lead	12.5	128	92.0	126 N	75-125
Nickel	20.0	110	92.0	98	75-125
Silver	0.099	9.06	9.20	98	75-125
Zinc	78.0	172	92.0	102	75-125

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 02/28/18  
**Date Extracted:** 02/27/18

**Matrix Spike Summary**  
**Total Metals**

**Sample Name:** SED-6  
**Lab Code:** K1801446-006  
**Analysis Method:** 7471B  
**Prep Method:** Method

**Units:** mg/Kg  
**Basis:** Dry

**Matrix Spike**  
KQ1802454-02

<u>Analyte Name</u>	<u>Sample Result</u>	<u>Result</u>	<u>Spike Amount</u>	<u>% Rec</u>	<u>% Rec Limits</u>
Mercury	0.094	0.564	0.449	104	80-120

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.  
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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/05/18

**Lab Control Sample Summary**  
**Total Metals**

**Units:**mg/Kg  
**Basis:**Dry

**Lab Control Sample**  
KQ1802455-04

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Antimony	6020A	82.1	105	78	20-254
Arsenic	6020A	101	98.5	102	69-145
Cadmium	6020A	149	146	102	73-127
Chromium	6020A	175	182	96	71-130
Copper	6020A	99.0	106	93	75-125
Lead	6020A	128	130	99	72-127
Nickel	6020A	143	149	96	73-127
Silver	6020A	39.5	40.9	97	66-134
Zinc	6020A	185	191	97	70-130

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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Analyzed:** 02/28/18

**Lab Control Sample Summary**  
**Total Metals**

**Units:**mg/Kg  
**Basis:**Dry

**Lab Control Sample**  
KQ1802454-04

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Mercury	7471B	8.32	7.10	117	51-149

**ALS Group USA, Corp.**  
dba ALS Environmental

Prep Summary Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:**K1801446

**Metals**

**Prep Method:** EPA 3050B  
**Analytical Method:** 6020A

**Extraction Lot:**308964

<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Collected</b>	<b>Date Received</b>	<b>Sample Amount</b>	<b>Final Amount</b>	<b>Percent Solids</b>
SED-1	K1801446-001	2/12/18	2/14/18	2.024 g	100 mL	
SED-2	K1801446-002	2/12/18	2/14/18	2.223 g	100 mL	
SED-3	K1801446-003	2/12/18	2/14/18	2.138 g	100 mL	
SED-4	K1801446-004	2/12/18	2/14/18	2.077 g	100 mL	
SED-5	K1801446-005	2/12/18	2/14/18	2.245 g	100 mL	
SED-6	K1801446-006	2/12/18	2/14/18	2.299 g	100 mL	
SED-7	K1801446-007	2/12/18	2/14/18	2.849 g	100 mL	
SED-8	K1801446-008	2/12/18	2/14/18	2.487 g	100 mL	
SED-9	K1801446-009	2/12/18	2/14/18	2.529 g	100 mL	
SED-10	K1801446-010	2/12/18	2/14/18	2.817 g	100 mL	
SED-11	K1801446-011	2/12/18	2/14/18	2.518 g	100 mL	
SED-12	K1801446-012	2/12/18	2/14/18	2.011 g	100 mL	
SED-13	K1801446-013	2/12/18	2/14/18	2.004 g	100 mL	
Duplicate	KQ1802455-01DUP	2/12/18	2/14/18	2.309 g	100 mL	
Matrix Spike	KQ1802455-02MS	2/12/18	2/14/18	2.911 g	100 mL	
Method Blank	KQ1802455-03MB	NA	NA	1.00 g	100 mL	
Lab Control Sample	KQ1802455-04LCS	NA	NA	1.0100 g	100 mL	

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Prep Summary Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:**K1801446

**Metals**

**Prep Method:** Method  
**Analytical Method:** 7471B

**Extraction Lot:**308878

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
SED-1	K1801446-001	2/12/18	2/14/18	1.662 g	50 mL	
SED-2	K1801446-002	2/12/18	2/14/18	1.482 g	50 mL	
SED-3	K1801446-003	2/12/18	2/14/18	1.691 g	50 mL	
SED-4	K1801446-004	2/12/18	2/14/18	1.822 g	50 mL	
SED-5	K1801446-005	2/12/18	2/14/18	1.623 g	50 mL	
SED-6	K1801446-006	2/12/18	2/14/18	1.415 g	50 mL	
SED-7	K1801446-007	2/12/18	2/14/18	2.205 g	50 mL	
SED-8	K1801446-008	2/12/18	2/14/18	1.633 g	50 mL	
SED-9	K1801446-009	2/12/18	2/14/18	2.604 g	50 mL	
SED-10	K1801446-010	2/12/18	2/14/18	1.541 g	50 mL	
SED-11	K1801446-011	2/12/18	2/14/18	3.978 g	50 mL	
SED-12	K1801446-012	2/12/18	2/14/18	1.607 g	50 mL	
SED-13	K1801446-013	2/12/18	2/14/18	1.613 g	50 mL	
Duplicate	KQ1802454-01DUP	2/12/18	2/14/18	1.482 g	50 mL	
Matrix Spike	KQ1802454-02MS	2/12/18	2/14/18	1.485 g	50 mL	
Method Blank	KQ1802454-03MB	NA	NA	0.5000 g	50 mL	
Lab Control Sample	KQ1802454-04LCS	NA	NA	0.2620 g	50 mL	

ALS Group USA, Corp.  
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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**INITIAL AND CONTINUING CALIBRATION VERIFICATION**

Concentration Units: ug/L

Sample ID	Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits
CCV 02/28/18 11:11	Mercury	7471B	582038	5.01	5.00	100	90-110
CCV 02/28/18 11:30	Mercury	7471B	582038	5.10	5.00	102	90-110
CCV 02/28/18 11:54	Mercury	7471B	582038	5.18	5.00	104	90-110
CCV 02/28/18 12:12	Mercury	7471B	582038	5.27	5.00	105	90-110
ICV 02/28/18 11:06	Mercury	7471B	582038	5.24	5.00	105	90-110
CCV 03/05/18 09:03	Antimony	6020A	582353	12.8	12.5	102	90-110
	Arsenic	6020A	582353	25.2	25.0	101	90-110
	Cadmium	6020A	582353	25.2	25.0	101	90-110
	Chromium	6020A	582353	25.0	25.0	100	90-110
	Copper	6020A	582353	25.1	25.0	100	90-110
	Lead	6020A	582353	25.0	25.0	100	90-110
	Nickel	6020A	582353	25.4	25.0	102	90-110
	Silver	6020A	582353	12.5	12.5	100	90-110
	Zinc	6020A	582353	25.0	25.0	100	90-110
CCV 03/05/18 09:51	Antimony	6020A	582353	12.7	12.5	101	90-110
	Arsenic	6020A	582353	25.7	25.0	103	90-110
	Cadmium	6020A	582353	25.6	25.0	103	90-110
	Chromium	6020A	582353	25.5	25.0	102	90-110
	Copper	6020A	582353	25.8	25.0	103	90-110
	Lead	6020A	582353	25.0	25.0	100	90-110
	Nickel	6020A	582353	25.5	25.0	102	90-110
	Silver	6020A	582353	12.8	12.5	102	90-110
	Zinc	6020A	582353	25.6	25.0	103	90-110
CCV 03/05/18 10:23	Antimony	6020A	582353	12.9	12.5	103	90-110
	Arsenic	6020A	582353	25.7	25.0	103	90-110
	Cadmium	6020A	582353	24.8	25.0	99	90-110
	Chromium	6020A	582353	24.8	25.0	99	90-110
	Copper	6020A	582353	24.5	25.0	98	90-110
	Lead	6020A	582353	24.1	25.0	96	90-110

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**INITIAL AND CONTINUING CALIBRATION VERIFICATION**

Concentration Units: ug/L

Sample ID	Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits
CCV 03/05/18 10:23	Nickel	6020A	582353	24.2	25.0	97	90-110
	Silver	6020A	582353	12.1	12.5	97	90-110
	Zinc	6020A	582353	25.3	25.0	101	90-110
CCV 03/05/18 10:58	Antimony	6020A	582353	12.7	12.5	101	90-110
	Arsenic	6020A	582353	24.7	25.0	99	90-110
	Cadmium	6020A	582353	24.1	25.0	97	90-110
	Chromium	6020A	582353	23.6	25.0	95	90-110
	Copper	6020A	582353	23.1	25.0	92	90-110
	Lead	6020A	582353	23.9	25.0	95	90-110
	Nickel	6020A	582353	23.2	25.0	93	90-110
	Silver	6020A	582353	11.5	12.5	92	90-110
	Zinc	6020A	582353	23.8	25.0	95	90-110
CCV 03/05/18 11:40	Antimony	6020A	582353	13.0	12.5	104	90-110
	Arsenic	6020A	582353	25.3	25.0	101	90-110
	Cadmium	6020A	582353	25.2	25.0	101	90-110
	Chromium	6020A	582353	24.5	25.0	98	90-110
	Copper	6020A	582353	24.1	25.0	96	90-110
	Lead	6020A	582353	25.0	25.0	100	90-110
	Nickel	6020A	582353	24.3	25.0	97	90-110
	Silver	6020A	582353	12.2	12.5	97	90-110
	Zinc	6020A	582353	25.3	25.0	101	90-110
CCV 03/05/18 12:15	Antimony	6020A	582353	12.9	12.5	103	90-110
	Arsenic	6020A	582353	25.3	25.0	101	90-110
	Cadmium	6020A	582353	25.0	25.0	100	90-110
	Chromium	6020A	582353	24.4	25.0	98	90-110
	Copper	6020A	582353	24.7	25.0	99	90-110
	Lead	6020A	582353	24.4	25.0	98	90-110
	Nickel	6020A	582353	24.3	25.0	97	90-110
	Silver	6020A	582353	12.4	12.5	99	90-110
	Zinc	6020A	582353	24.9	25.0	100	90-110
CCV 03/05/18 12:23	Antimony	6020A	582353	12.8	12.5	102	90-110
	Arsenic	6020A	582353	25.1	25.0	100	90-110



**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**INITIAL AND CONTINUING CALIBRATION VERIFICATION**

Concentration Units: ug/L

Sample ID	Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits
CCV 03/05/18 12:23	Cadmium	6020A	582353	25.1	25.0	101	90-110
	Chromium	6020A	582353	24.3	25.0	97	90-110
	Copper	6020A	582353	24.9	25.0	100	90-110
	Lead	6020A	582353	24.8	25.0	99	90-110
	Nickel	6020A	582353	24.5	25.0	98	90-110
	Silver	6020A	582353	12.4	12.5	99	90-110
	Zinc	6020A	582353	24.8	25.0	99	90-110
ICV 03/05/18 09:00	Antimony	6020A	582353	12.8	12.5	102	90-110
	Arsenic	6020A	582353	24.9	25.0	100	90-110
	Cadmium	6020A	582353	12.7	12.5	102	90-110
	Chromium	6020A	582353	10.1	10.0	101	90-110
	Copper	6020A	582353	12.4	12.5	99	90-110
	Lead	6020A	582353	25.3	25.0	101	90-110
	Nickel	6020A	582353	25.4	25.0	102	90-110
	Silver	6020A	582353	12.4	12.5	99	90-110
	Zinc	6020A	582353	25.9	25.0	104	90-110

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**INITIAL AND CONTINUING CALIBRATION BLANKS**

**Concentration Units:** ug/L

Sample ID	Analyte	Method	Analysis Batch:	Result	C
CCB 02/28/18 11:12	Mercury	7471B	582038	-0.0310	J
CCB 02/28/18 11:32	Mercury	7471B	582038	0.02	U
CCB 02/28/18 11:55	Mercury	7471B	582038	0.02	U
CCB 02/28/18 12:14	Mercury	7471B	582038	0.02	U
ICB 02/28/18 11:07	Mercury	7471B	582038	-0.0630	J
CCB 03/05/18 09:09	Antimony	6020A	582353	0.04	U
	Arsenic	6020A	582353	0.08	U
	Cadmium	6020A	582353	0.014	U
	Chromium	6020A	582353	0.12	U
	Copper	6020A	582353	0.08	U
	Lead	6020A	582353	0.04	U
	Nickel	6020A	582353	0.06	U
	Silver	6020A	582353	0.008	U
	Zinc	6020A	582353	0.4	U
CCB 03/05/18 09:54	Antimony	6020A	582353	0.04	U
	Arsenic	6020A	582353	0.08	U
	Cadmium	6020A	582353	0.014	U
	Chromium	6020A	582353	0.12	U
	Copper	6020A	582353	0.08	U
	Lead	6020A	582353	0.04	U
	Nickel	6020A	582353	0.06	U
	Silver	6020A	582353	0.008	U
	Zinc	6020A	582353	0.4	U
CCB 03/05/18 10:26	Antimony	6020A	582353	0.04	U
	Arsenic	6020A	582353	0.08	U
	Cadmium	6020A	582353	0.014	U
	Chromium	6020A	582353	0.12	U
	Copper	6020A	582353	0.08	U
	Lead	6020A	582353	0.04	U

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**INITIAL AND CONTINUING CALIBRATION BLANKS**

**Concentration Units:** ug/L

Sample ID	Analyte	Method	Analysis Batch:	Result	C
CCB 03/05/18 10:26	Nickel	6020A	582353	0.06	U
	Silver	6020A	582353	0.008	U
	Zinc	6020A	582353	0.4	U
CCB 03/05/18 11:01	Antimony	6020A	582353	0.04	U
	Arsenic	6020A	582353	0.08	U
	Cadmium	6020A	582353	0.014	U
	Chromium	6020A	582353	0.12	U
	Copper	6020A	582353	0.09	J
	Lead	6020A	582353	0.04	U
	Nickel	6020A	582353	0.06	U
	Silver	6020A	582353	0.008	U
	Zinc	6020A	582353	0.4	U
CCB 03/05/18 11:43	Antimony	6020A	582353	0.04	U
	Arsenic	6020A	582353	0.08	U
	Cadmium	6020A	582353	0.014	U
	Chromium	6020A	582353	0.12	U
	Copper	6020A	582353	0.08	U
	Lead	6020A	582353	0.04	U
	Nickel	6020A	582353	0.06	U
	Silver	6020A	582353	0.008	U
	Zinc	6020A	582353	0.4	U
CCB 03/05/18 12:18	Antimony	6020A	582353	0.04	U
	Arsenic	6020A	582353	0.08	U
	Cadmium	6020A	582353	0.014	U
	Chromium	6020A	582353	0.12	U
	Copper	6020A	582353	0.3	J
	Lead	6020A	582353	0.04	U
	Nickel	6020A	582353	0.06	U
	Silver	6020A	582353	0.008	U
	Zinc	6020A	582353	0.4	U
CCB 03/05/18 12:26	Antimony	6020A	582353	0.04	U
	Arsenic	6020A	582353	0.08	U

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**INITIAL AND CONTINUING CALIBRATION BLANKS**

**Concentration Units:** ug/L

Sample ID	Analyte	Method	Analysis Batch:	Result	C
CCB 03/05/18 12:26	Cadmium	6020A	582353	0.014	U
	Chromium	6020A	582353	0.12	U
	Copper	6020A	582353	0.2	J
	Lead	6020A	582353	0.04	U
	Nickel	6020A	582353	0.06	U
	Silver	6020A	582353	0.008	U
	Zinc	6020A	582353	0.4	U
ICB 03/05/18 09:06	Antimony	6020A	582353	0.04	U
	Arsenic	6020A	582353	0.08	U
	Cadmium	6020A	582353	0.014	U
	Chromium	6020A	582353	0.12	U
	Copper	6020A	582353	0.08	U
	Lead	6020A	582353	0.04	U
	Nickel	6020A	582353	0.06	U
	Silver	6020A	582353	0.008	U
	Zinc	6020A	582353	0.4	U

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**LOW LEVEL INITIAL AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION**

Concentration Units: ug/L

Sample ID	Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
LLICV								
	Mercury	7471B	582038	0.15	0.2	73	50-150	02/28/18 11:09
LLCCVS								
	Antimony	6020A	582353	0.10	0.1	102	70-130	03/05/18 11:06
	Arsenic	6020A	582353	0.97	1.0	97	70-130	03/05/18 11:06
	Cadmium	6020A	582353	0.039	0.04	97	70-130	03/05/18 11:06
	Chromium	6020A	582353	0.36	0.4	89	70-130	03/05/18 11:06
	Copper	6020A	582353	0.24	0.2	122	70-130	03/05/18 11:06
	Lead	6020A	582353	0.088	0.1	88	70-130	03/05/18 11:06
	Nickel	6020A	582353	0.43	0.4	106	70-130	03/05/18 11:06
	Silver	6020A	582353	0.038	0.04	96	70-130	03/05/18 11:06
	Zinc	6020A	582353	1.1	1.0	109	70-130	03/05/18 11:06
LLCCVS								
	Antimony	6020A	582353	0.094	0.1	94	70-130	03/05/18 12:32
	Arsenic	6020A	582353	1.0	1.0	100	70-130	03/05/18 12:32
	Cadmium	6020A	582353	0.039	0.04	98	70-130	03/05/18 12:32
	Chromium	6020A	582353	0.40	0.4	99	70-130	03/05/18 12:32
	Lead	6020A	582353	0.095	0.1	95	70-130	03/05/18 12:32
	Nickel	6020A	582353	0.45	0.4	112	70-130	03/05/18 12:32
	Silver	6020A	582353	0.037	0.04	93	70-130	03/05/18 12:32
	Zinc	6020A	582353	1.3	1.0	126	70-130	03/05/18 12:32
LLCCVS								
	Copper	6020A	582353	1.1	1.0	112	70-130	03/05/18 12:35
LLICVS								
	Antimony	6020A	582353	0.099	0.1	99	70-130	03/05/18 09:17
	Arsenic	6020A	582353	0.98	1.0	98	70-130	03/05/18 09:17
	Cadmium	6020A	582353	0.036	0.04	89	70-130	03/05/18 09:17
	Chromium	6020A	582353	0.41	0.4	102	70-130	03/05/18 09:17
	Copper	6020A	582353	0.24	0.2	121	70-130	03/05/18 09:17
	Lead	6020A	582353	0.10	0.1	101	70-130	03/05/18 09:17
	Nickel	6020A	582353	0.41	0.4	103	70-130	03/05/18 09:17
	Silver	6020A	582353	0.045	0.04	113	70-130	03/05/18 09:17
	Zinc	6020A	582353	0.95	1.0	95	70-130	03/05/18 09:17

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSA

Concentration Units: ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Antimony	6020A	582353	0.04	-	-	-	03/05/18 09:19
Arsenic	6020A	582353	0.08	-	-	-	03/05/18 09:19
Cadmium	6020A	582353	0.017	-	-	-	03/05/18 09:19
Chromium	6020A	582353	0.56	-	-	-	03/05/18 09:19
Copper	6020A	582353	0.61	-	-	-	03/05/18 09:19
Lead	6020A	582353	0.07	-	-	-	03/05/18 09:19
Nickel	6020A	582353	0.53	-	-	-	03/05/18 09:19
Silver	6020A	582353	0.008	-	-	-	03/05/18 09:19
Zinc	6020A	582353	0.5	-	-	-	03/05/18 09:19

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

ICP INTERFERENCE CHECK SAMPLE

**Sample ID** ICSAB

**Concentration Units:** ug/L

<b>Analyte</b>	<b>Method</b>	<b>Analysis Batch:</b>	<b>Result</b>	<b>True Value</b>	<b>% Rec</b>	<b>% Rec. Limits</b>	<b>Analysis Date</b>
Antimony	6020A	582353	0.04	-	-	-	03/05/18 09:22
Arsenic	6020A	582353	24.3	25.0	97	80-120	03/05/18 09:22
Cadmium	6020A	582353	24.5	25.0	98	80-120	03/05/18 09:22
Chromium	6020A	582353	47.5	50.0	95	80-120	03/05/18 09:22
Copper	6020A	582353	45.3	50.0	91	80-120	03/05/18 09:22
Lead	6020A	582353	0.07	-	-	-	03/05/18 09:22
Nickel	6020A	582353	46.1	50.0	92	80-120	03/05/18 09:22
Silver	6020A	582353	11.7	12.5	94	80-120	03/05/18 09:22
Zinc	6020A	582353	24.0	25.0	96	80-120	03/05/18 09:22

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**POST SPIKE SAMPLE RECOVERY**

Concentration Units: ug/L

Sample ID	Analyte	Method	Analysis Batch:	Initial Sample Result	Post Spike Result	True Value	% Rec	% Rec. Limits	Analysis Date
K1801446-006A	Mercury	7471B	582038	1.00	6.29	5.00	106	80-120	02/28/18 11:27
K1801446-006A	Antimony	6020A	582353	0.12	53.7	50.0	107	80-120	03/05/18 11:26
	Arsenic	6020A	582353	12.1	62.2	50.0	100	80-120	03/05/18 11:26
	Cadmium	6020A	582353	3.22	52.3	50.0	98	80-120	03/05/18 11:26
	Chromium	6020A	582353	48.0	96.6	50.0	97	80-120	03/05/18 11:26
	Copper	6020A	582353	71.5	118	50.0	93	80-120	03/05/18 11:26
	Lead	6020A	582353	21.5	68.6	50.0	94	80-120	03/05/18 11:26
	Nickel	6020A	582353	34.4	82.5	50.0	96	80-120	03/05/18 11:26
	Silver	6020A	582353	0.17	8.97	10.0	88	80-120	03/05/18 11:26
	Zinc	6020A	582353	134	181	50.0	93	80-120	03/05/18 11:26

Results flagged with a pound (#) indicate the control criteria is not applicable.



**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**ICP SERIAL DILUTIONS**

Concentration Units: ug/L

Sample ID	Analyte	Method	Analysis Batch:	Initial Sample Result	Serial Dillution Result	% Diff	% Diff. Limit	Analysis Date
K1801446-001SDL	Mercury	7471B	582038	1.1	1.0	1	10	02/28/18 12:05
K1801446-006SDL	Antimony	6020A	582353	0.6	0.1 U	82	10	03/05/18 11:23
	Arsenic	6020A	582353	61	59	3	10	03/05/18 11:23
	Cadmium	6020A	582353	16.1	16.3	1	10	03/05/18 11:23
	Chromium	6020A	582353	240	240	0	10	03/05/18 11:23
	Copper	6020A	582353	357	362	1	10	03/05/18 11:23
	Lead	6020A	582353	108	113	5	10	03/05/18 11:23
	Nickel	6020A	582353	172	175	2	10	03/05/18 11:23
	Silver	6020A	582353	0.9	0.9 J	7	10	03/05/18 11:23
	Zinc	6020A	582353	670	667	1	10	03/05/18 11:23

ALS Group USA, Corp.  
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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment/

**Service Request:** K1801446

**Detection Limits**

**Matrix:** Sediment

<b>Analyte</b>	<b>Wavelength (nm)</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Method</b>
Mercury	253	ug/L	0.2	0.02	7471B

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment/

**Service Request:** K1801446

**Detection Limits**

**Matrix:** Sediment

Analyte	Mass	Units	MRL	MDL	Method
Antimony	121	ug/L	0.1	0.04	6020A
Arsenic	75	ug/L	1	0.08	6020A
Cadmium	111	ug/L	0.04	0.014	6020A
Chromium	52	ug/L	0.4	0.12	6020A
Copper	65	ug/L	1.0	0.08	6020A
Lead	208	ug/L	0.1	0.04	6020A
Nickel	60	ug/L	0.4	0.06	6020A
Silver	107	ug/L	0.04	0.008	6020A
Zinc	66	ug/L	1	0.4	6020A

**ALS Group USA, Corp.**  
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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment/

**Service Request:** K1801446

**ICP Linear Range (Quarterly)**

**Instrument:** K-CVAA-02

<b>Analyte</b>	<b>Concentration (ug/L)</b>	<b>Method</b>
Mercury	10	7471B

ALS Group USA, Corp.  
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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment/

**Service Request:** K1801446

**ICP Linear Range (Quarterly)**

**Instrument:** K-ICP-MS-05

<b>Analyte</b>	<b>Concentration (ug/L)</b>	<b>Method</b>
Antimony 121	3000	6020A
Arsenic 75	3000	6020A
Cadmium 111	3000	6020A
Chromium 52	3000	6020A
Copper 65	3000	6020A
Lead 208	3000	6020A
Nickel 60	3000	6020A
Silver 107	225	6020A
Zinc 66	3000	6020A

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment/

**Service Request:** K1801446

**Analysis Run Log**

**Instrument ID:** K-CVAA-02

**Analytical BatchID:** 582038

Sample	Dilution Factor	Date/Time	H g
ZZZZZZ	1	02/28/18 10:56	
ZZZZZZ	1	02/28/18 10:58	
ZZZZZZ	1	02/28/18 10:59	
ZZZZZZ	1	02/28/18 11:01	
ZZZZZZ	1	02/28/18 11:02	
ZZZZZZ	1	02/28/18 11:04	
ICV1	1	02/28/18 11:06	X
ICB1	1	02/28/18 11:07	X
LLICV1	1	02/28/18 11:09	X
CCV1	1	02/28/18 11:11	X
CCB1	1	02/28/18 11:12	X
KQ1802454-03MB	1	02/28/18 11:14	X
KQ1802454-04LCS1	10	02/28/18 11:15	X
ZZZZZZ	1	02/28/18 11:17	
K1801446-002	1	02/28/18 11:19	X
K1801446-003	1	02/28/18 11:20	X
K1801446-004	1	02/28/18 11:22	X
K1801446-005	1	02/28/18 11:23	X
K1801446-006	1	02/28/18 11:25	X
K1801446-006PS	1	02/28/18 11:27	X
K1801446-006DUP	1	02/28/18 11:28	X
CCV2	1	02/28/18 11:30	X
CCB2	1	02/28/18 11:32	X
K1801446-006MS	1	02/28/18 11:33	X
K1801446-007	1	02/28/18 11:35	X
K1801446-008	1	02/28/18 11:36	X
K1801446-009	1	02/28/18 11:38	X
ZZZZZZ	1	02/28/18 11:40	
ZZZZZZ	1	02/28/18 11:43	
K1801446-012	1	02/28/18 11:46	X
ZZZZZZ	1	02/28/18 11:47	
ZZZZZZ	1	02/28/18 11:50	
ZZZZZZ	1	02/28/18 11:52	
CCV3	1	02/28/18 11:54	X
CCB3	1	02/28/18 11:55	X
K1801446-001SDL	5	02/28/18 11:58	X
K1801446-001	1	02/28/18 12:04	X

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment/

**Service Request:** K1801446

**Analysis Run Log**

**Instrument ID:** K-CVAA-02

**Analytical BatchID:** 582038

<b>Sample</b>	<b>Dilution Factor</b>	<b>Date/Time</b>	<b>H g</b>
K1801446-001SDL	5	02/28/18 12:05	X
K1801446-010	10	02/28/18 12:07	X
K1801446-011	5	02/28/18 12:08	X
K1801446-013	5	02/28/18 12:10	X
CCV4	1	02/28/18 12:12	X
CCB4	1	02/28/18 12:14	X

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment/

**Service Request:** K1801446

**Analysis Run Log**

**Instrument ID:** K-ICP-MS-05

**Analytical BatchID:** 582353

Sample	Dilution Factor	Date/Time	S	A	C	C	C	P	N	A	Z
			b	s	d	r	u	b	i	g	n
ZZZZZZ	1	03/05/18 08:54									
ZZZZZZ	1	03/05/18 08:57									
ICV	1	03/05/18 09:00	X	X	X	X	X	X	X	X	X
CCV	1	03/05/18 09:03	X	X	X	X	X	X	X	X	X
ICB	1	03/05/18 09:06	X	X	X	X	X	X	X	X	X
CCB	1	03/05/18 09:09	X	X	X	X	X	X	X	X	X
ZZZZZZ	1	03/05/18 09:12									
LLICVS	1	03/05/18 09:17	X	X	X	X	X	X	X	X	X
ICSA	1	03/05/18 09:19	X	X	X	X	X	X	X	X	X
ICSAB	1	03/05/18 09:22	X	X	X	X	X	X	X	X	X
ZZZZZZ	5	03/05/18 09:25									
ZZZZZZ	20	03/05/18 09:28									
ZZZZZZ	20	03/05/18 09:31									
ZZZZZZ	5	03/05/18 09:34									
ZZZZZZ	5	03/05/18 09:37									
ZZZZZZ	25	03/05/18 09:40									
ZZZZZZ	5	03/05/18 09:43									
ZZZZZZ	5	03/05/18 09:45									
ZZZZZZ	5	03/05/18 09:48									
CCV	1	03/05/18 09:51	X	X	X	X	X	X	X	X	X
CCB	1	03/05/18 09:54	X	X	X	X	X	X	X	X	X
ZZZZZZ	5	03/05/18 09:57									
ZZZZZZ	5	03/05/18 10:00									
ZZZZZZ	5	03/05/18 10:03									
ZZZZZZ	5	03/05/18 10:06									
ZZZZZZ	5	03/05/18 10:09									
ZZZZZZ	5	03/05/18 10:11									
ZZZZZZ	5	03/05/18 10:14									
ZZZZZZ	5	03/05/18 10:17									
ZZZZZZ	5	03/05/18 10:20									
CCV	1	03/05/18 10:23	X	X	X	X	X	X	X	X	X
CCB	1	03/05/18 10:26	X	X	X	X	X	X	X	X	X
ZZZZZZ	5	03/05/18 10:29									
ZZZZZZ	5	03/05/18 10:32									
ZZZZZZ	5	03/05/18 10:35									
ZZZZZZ	5	03/05/18 10:37									
ZZZZZZ	5	03/05/18 10:40									



**ALS Group USA, Corp.**  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment/

**Service Request:** K1801446

**Analysis Run Log**

**Instrument ID:** K-ICP-MS-05

**Analytical BatchID:** 582353

Sample	Dilution Factor	Date/Time	S	A	C	C	C	P	N	A	Z
			b	s	d	r	u	b	i	g	n
ZZZZZZ	5	03/05/18 10:43									
ZZZZZZ	5	03/05/18 10:46									
ZZZZZZ	5	03/05/18 10:49									
ZZZZZZ	5	03/05/18 10:52									
ZZZZZZ	5	03/05/18 10:55									
CCV	1	03/05/18 10:58	X	X	X	X	X	X	X	X	X
CCB	1	03/05/18 11:01	X	X	X	X	X	X	X	X	X
LLCCVS	1	03/05/18 11:06	X	X	X	X	X	X	X	X	X
ZZZZZZ	1	03/05/18 11:09									
KQ1802455-03MB	5	03/05/18 11:12	X	X	X	X	X	X	X	X	X
KQ1802455-04LCS1	20	03/05/18 11:15	X	X	X	X	X	X	X	X	X
K1801446-006	5	03/05/18 11:17	X	X	X	X	X	X	X	X	X
K1801446-006DUP	5	03/05/18 11:20	X	X	X	X	X	X	X	X	X
K1801446-006SDL	25	03/05/18 11:23	X	X	X	X	X	X	X	X	X
K1801446-006PS	5	03/05/18 11:26	X	X	X	X	X	X	X	X	X
K1801446-006MS	5	03/05/18 11:29	X	X	X	X	X	X	X	X	X
K1801446-001	5	03/05/18 11:32	X	X	X	X	X	X	X	X	X
K1801446-002	5	03/05/18 11:35	X	X	X	X	X	X	X	X	X
K1801446-003	5	03/05/18 11:37	X	X	X	X	X	X	X	X	X
CCV	1	03/05/18 11:40	X	X	X	X	X	X	X	X	X
CCB	1	03/05/18 11:43	X	X	X	X	X	X	X	X	X
K1801446-004	5	03/05/18 11:46	X	X	X	X	X	X	X	X	X
K1801446-005	5	03/05/18 11:49	X	X	X	X	X	X	X	X	X
K1801446-007	5	03/05/18 11:52	X	X	X	X	X	X	X	X	X
K1801446-008	5	03/05/18 11:55	X	X	X	X	X	X	X	X	X
K1801446-009	5	03/05/18 11:57	X	X	X	X	X	X	X	X	X
K1801446-010	5	03/05/18 12:00	X	X	X	X		X	X	X	
K1801446-011	5	03/05/18 12:03	X	X	X	X	X	X	X	X	X
K1801446-012	5	03/05/18 12:06	X	X	X	X	X	X	X	X	X
K1801446-013	5	03/05/18 12:09	X	X	X	X		X	X	X	
K1801446-010	1000	03/05/18 12:12					X				X
CCV	1	03/05/18 12:15	X	X	X	X	X	X	X	X	X
CCB	1	03/05/18 12:18	X	X	X	X	X	X	X	X	X
K1801446-013	1000	03/05/18 12:21					X				X
CCV	1	03/05/18 12:23	X	X	X	X	X	X	X	X	X
CCB	1	03/05/18 12:26	X	X	X	X	X	X	X	X	X
ZZZZZZ	1	03/05/18 12:29									

**ALS Group USA, Corp.**  
 dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment/

**Service Request:** K1801446

**Analysis Run Log**

**Instrument ID:** K-ICP-MS-05

**Analytical BatchID:** 582353

Sample	Dilution Factor	Date/Time	S b	A s	C d	C r	C u	P b	N i	A g	Z n
LLCCVS	1	03/05/18 12:32	X	X	X	X		X	X	X	X
LLCCVS 1.0 ppb	1	03/05/18 12:35					X				

**ALS Group USA, Corp.**  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment/

**Service Request:** K1801446

**ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY**

**Instrument ID:** K-ICP-MS-05

**Analytical BatchID:** 582353

Sample	Date/Time	Sc45NG	Ge72He	Ge72H2	In115He	Lu175He	Th232He
ZZZZZZ	03/05/18 08:54						
ZZZZZZ	03/05/18 08:57						
ICV	03/05/18 09:00	98	98	98	98	96	100
CCV	03/05/18 09:03	98	97	99	97	98	101
ICB	03/05/18 09:06	98	98	99	98	98	99
CCB	03/05/18 09:09	98	97	99	99	98	101
ZZZZZZ	03/05/18 09:12						
LLICVS	03/05/18 09:17	98	97	98	97	98	99
ICSA	03/05/18 09:19	84	85	87	84	91	94
ICSAB	03/05/18 09:22	90	89	91	87	93	96
ZZZZZZ	03/05/18 09:25						
ZZZZZZ	03/05/18 09:28						
ZZZZZZ	03/05/18 09:31						
ZZZZZZ	03/05/18 09:34						
ZZZZZZ	03/05/18 09:37						
ZZZZZZ	03/05/18 09:40						
ZZZZZZ	03/05/18 09:43						
ZZZZZZ	03/05/18 09:45						
ZZZZZZ	03/05/18 09:48						
CCV	03/05/18 09:51	99	95	98	96	97	100
CCB	03/05/18 09:54	99	97	99	97	98	102
ZZZZZZ	03/05/18 09:57						
ZZZZZZ	03/05/18 10:00						
ZZZZZZ	03/05/18 10:03						
ZZZZZZ	03/05/18 10:06						
ZZZZZZ	03/05/18 10:09						
ZZZZZZ	03/05/18 10:11						
ZZZZZZ	03/05/18 10:14						
ZZZZZZ	03/05/18 10:17						
ZZZZZZ	03/05/18 10:20						
CCV	03/05/18 10:23	90	99	94	100	100	100
CCB	03/05/18 10:26	91	99	94	100	100	99
ZZZZZZ	03/05/18 10:29						
ZZZZZZ	03/05/18 10:32						
ZZZZZZ	03/05/18 10:35						
ZZZZZZ	03/05/18 10:37						
ZZZZZZ	03/05/18 10:40						

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment/

**Service Request:** K1801446

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

**Instrument ID:** K-ICP-MS-05

**Analytical BatchID:** 582353

Sample	Date/Time	Sc45NG	Ge72He	Ge72H2	In115He	Lu175He	Th232He
ZZZZZ	03/05/18 10:43						
ZZZZZ	03/05/18 10:46						
ZZZZZ	03/05/18 10:49						
ZZZZZ	03/05/18 10:52						
ZZZZZ	03/05/18 10:55						
CCV	03/05/18 10:58	79	95	84	97	95	92
CCB	03/05/18 11:01	78	94	83	96	96	93
LLCCVS	03/05/18 11:06	79	92	82	95	94	93
ZZZZZ	03/05/18 11:09						
KQ1802455-03MB	03/05/18 11:12	80	91	82	95	93	92
KQ1802455-04LCS1	03/05/18 11:15	74	84	75	86	89	93
K1801446-006	03/05/18 11:17	72	81	73	85	90	91
K1801446-006DUP	03/05/18 11:20	74	85	75	88	92	93
K1801446-006SDL	03/05/18 11:23	75	86	79	89	91	93
K1801446-006PS	03/05/18 11:26	76	85	79	88	93	94
K1801446-006MS	03/05/18 11:29	79	85	79	87	93	96
K1801446-001	03/05/18 11:32	84	88	82	89	95	96
K1801446-002	03/05/18 11:35	84	90	85	89	93	97
K1801446-003	03/05/18 11:37	86	90	86	92	96	98
CCV	03/05/18 11:40	79	85	85	89	91	95
CCB	03/05/18 11:43	84	90	87	93	94	97
K1801446-004	03/05/18 11:46	88	88	84	87	93	97
K1801446-005	03/05/18 11:49	89	90	87	90	95	98
K1801446-007	03/05/18 11:52	91	91	86	90	96	100
K1801446-008	03/05/18 11:55	91	91	88	90	94	100
K1801446-009	03/05/18 11:57	89	90	87	90	95	100
K1801446-010	03/05/18 12:00	90	89	87	90	94	99
K1801446-011	03/05/18 12:03	93	92	88	93	97	101
K1801446-012	03/05/18 12:06	90	90	88	91	96	100
K1801446-013	03/05/18 12:09	94	91	89	92	97	100
K1801446-010	03/05/18 12:12	88	90	89	91	94	98
CCV	03/05/18 12:15	88	92	90	93	95	98
CCB	03/05/18 12:18	91	91	91	95	96	98
K1801446-013	03/05/18 12:21	90	91	91	94	94	99
CCV	03/05/18 12:23	91	92	90	93	94	100
CCB	03/05/18 12:26	90	91	90	94	94	98
ZZZZZ	03/05/18 12:29						

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment/

**Service Request:** K1801446

**ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY**

**Instrument ID:** K-ICP-MS-05

**Analytical BatchID:** 582353

<b>Sample</b>	<b>Date/Time</b>	Sc45NG	Ge72He	Ge72H2	In115He	Lu175He	Th232He
LLCCVS	03/05/18 12:32	90	88	89	92	94	98
LLCCVS 1.0 ppb	03/05/18 12:35	89	89	89	91	93	97



## Butyl Tins

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:10  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-1  
**Lab Code:** K1801446-001

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	3.8	2.1	0.90	1	03/28/18 18:36	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	54	10 - 120	03/28/18 18:36	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 11:50  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-2  
**Lab Code:** K1801446-002

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	1.3 J	1.8	0.76	1	03/28/18 18:54	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	84	10 - 120	03/28/18 18:54	



ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:45  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-3  
**Lab Code:** K1801446-003

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	7.5	2.3	1.1	1	03/28/18 19:13	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	75	10 - 120	03/28/18 19:13	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:05  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-4  
**Lab Code:** K1801446-004

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	3.8	2.0	0.87	1	03/28/18 19:31	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	84	10 - 120	03/28/18 19:31	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:35  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-5  
**Lab Code:** K1801446-005

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	25	2.6	1.2	1	03/28/18 19:49	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	82	10 - 120	03/28/18 19:49	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:20  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-6  
**Lab Code:** K1801446-006

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	10	2.6	1.2	1	03/28/18 20:08	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	74	10 - 120	03/28/18 20:08	

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dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:35  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-7  
**Lab Code:** K1801446-007

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	75	1.5	0.65	1	03/28/18 21:03	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	73	10 - 120	03/28/18 21:03	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:40  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-8  
**Lab Code:** K1801446-008

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	210	10	4.4	5	03/29/18 08:30	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	63	10 - 120	03/29/18 08:30	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:45  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-9  
**Lab Code:** K1801446-009

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	300	26	12	10	03/29/18 08:49	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	60	10 - 120	03/29/18 08:49	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:00  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-10  
**Lab Code:** K1801446-010

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	4000	69	30	50	03/29/18 09:07	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	151	10 - 120	03/28/18 22:35	*



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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:10  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-11  
**Lab Code:** K1801446-011

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	53	1.9	0.80	1	03/28/18 22:53	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	32	10 - 120	03/28/18 22:53	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:15  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-12  
**Lab Code:** K1801446-012

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	9.3	1.5	0.67	1	03/28/18 23:12	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	55	10 - 120	03/28/18 23:12	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:25  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-13  
**Lab Code:** K1801446-013

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	4000	65	28	50	03/29/18 09:26	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	66	10 - 120	03/28/18 23:30	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** KQ1802453-04

**Units:** ug/Kg  
**Basis:** Dry

**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	1.0	0.43	1	03/29/18 00:07	2/26/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	49	10 - 120	03/29/18 00:07	

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446

**SURROGATE RECOVERY SUMMARY**

**Butyltins**

**Analysis Method:** ALS SOP  
**Extraction Method:** Method

Sample Name	Lab Code	Tri-n-propyltin
		10 - 120
SED-1	K1801446-001	54
SED-2	K1801446-002	84
SED-3	K1801446-003	75
SED-4	K1801446-004	84
SED-5	K1801446-005	82
SED-6	K1801446-006	74
SED-7	K1801446-007	73
SED-8	K1801446-008	63
SED-9	K1801446-009	60
SED-10	K1801446-010	151 *
SED-11	K1801446-011	32
SED-12	K1801446-012	55
SED-13	K1801446-013	66
SED-6 MS	KQ1802453-01	68
SED-6 DMS	KQ1802453-02	66
Lab Control Sample	KQ1802453-03	37
Method Blank	KQ1802453-04	49

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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 03/28/18  
**Date Extracted:** 02/26/18

**Duplicate Matrix Spike Summary**  
**Butyltins**

**Sample Name:** SED-6 **Units:** ug/Kg  
**Lab Code:** K1801446-006 **Basis:** Dry  
**Analysis Method:** ALS SOP  
**Prep Method:** Method

Analyte Name	Sample Result	Result	Matrix Spike KQ1802453-01		Duplicate Matrix Spike KQ1802453-02		% Rec Limits	RPD	RPD Limit	
			Spike Amount	% Rec	Result	Spike Amount				% Rec
Tri-n-butyltin Cation	10	56.2	58.2	79	55.0	58.2	77	10-115	2	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/28/18  
**Date Extracted:** 02/26/18

**Lab Control Sample Summary**  
**Butyltins**

**Analysis Method:** ALS SOP  
**Prep Method:** Method

**Units:** ug/Kg  
**Basis:** Dry  
**Analysis Lot:** 585383

**Lab Control Sample**  
**KQ1802453-03**

<b>Analyte Name</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Tri-n-butyltin Cation	12.3	22.3	55	10-122

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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/29/18 00:07  
**Date Extracted:** 02/26/18

**Method Blank Summary**  
**Butyltins**

**Sample Name:** Method Blank  
**Lab Code:** KQ1802453-04

**Instrument ID:** K-GC-26  
**File ID:** J:\GC26\DATA\032818\0328F032.D\

**Analysis Method:** ALS SOP  
**Prep Method:** Method

**Analysis Lot:** 585383  
**Extraction Lot:** 308961

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
SED-1	K1801446-001	J:\GC26\DATA\032818\0328F014.D\	03/28/18 18:36
SED-2	K1801446-002	J:\GC26\DATA\032818\0328F015.D\	03/28/18 18:54
SED-3	K1801446-003	J:\GC26\DATA\032818\0328F016.D\	03/28/18 19:13
SED-4	K1801446-004	J:\GC26\DATA\032818\0328F017.D\	03/28/18 19:31
SED-5	K1801446-005	J:\GC26\DATA\032818\0328F018.D\	03/28/18 19:49
SED-6	K1801446-006	J:\GC26\DATA\032818\0328F019.D\	03/28/18 20:08
SED-6	KQ1802453-01	J:\GC26\DATA\032818\0328F020.D\	03/28/18 20:26
SED-6	KQ1802453-02	J:\GC26\DATA\032818\0328F021.D\	03/28/18 20:45
SED-7	K1801446-007	J:\GC26\DATA\032818\0328F022.D\	03/28/18 21:03
SED-10	K1801446-010	J:\GC26\DATA\032818\0328F027.D\	03/28/18 22:35
SED-11	K1801446-011	J:\GC26\DATA\032818\0328F028.D\	03/28/18 22:53
SED-12	K1801446-012	J:\GC26\DATA\032818\0328F029.D\	03/28/18 23:12
SED-13	K1801446-013	J:\GC26\DATA\032818\0328F030.D\	03/28/18 23:30
Lab Control Sample	KQ1802453-03	J:\GC26\DATA\032818\0328F031.D\	03/28/18 23:49
SED-8	K1801446-008	J:\GC26\DATA\032818\0328F051.D\	03/29/18 08:30
SED-9	K1801446-009	J:\GC26\DATA\032818\0328F052.D\	03/29/18 08:49
SED-10	K1801446-010	J:\GC26\DATA\032818\0328F053.D\	03/29/18 09:07
SED-13	K1801446-013	J:\GC26\DATA\032818\0328F054.D\	03/29/18 09:26



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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/28/18 23:49  
**Date Extracted:** 02/26/18

**Lab Control Sample Summary**  
**Butyltins**

**Sample Name:** Lab Control Sample      **Instrument ID:** K-GC-26  
**Lab Code:** KQ1802453-03      **File ID:** J:\GC26\DATA\032818\0328F031.D\  
**Analysis Method:** ALS SOP      **Analysis Lot:** 585383  
**Prep Method:** Method      **Extraction Lot:** 308961

This Lab Control Sample applies to the following analyses.

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>
SED-1	K1801446-001	J:\GC26\DATA\032818\0328F014.D\	03/28/18 18:36
SED-2	K1801446-002	J:\GC26\DATA\032818\0328F015.D\	03/28/18 18:54
SED-3	K1801446-003	J:\GC26\DATA\032818\0328F016.D\	03/28/18 19:13
SED-4	K1801446-004	J:\GC26\DATA\032818\0328F017.D\	03/28/18 19:31
SED-5	K1801446-005	J:\GC26\DATA\032818\0328F018.D\	03/28/18 19:49
SED-6	K1801446-006	J:\GC26\DATA\032818\0328F019.D\	03/28/18 20:08
SED-6	KQ1802453-01	J:\GC26\DATA\032818\0328F020.D\	03/28/18 20:26
SED-6	KQ1802453-02	J:\GC26\DATA\032818\0328F021.D\	03/28/18 20:45
SED-7	K1801446-007	J:\GC26\DATA\032818\0328F022.D\	03/28/18 21:03
SED-10	K1801446-010	J:\GC26\DATA\032818\0328F027.D\	03/28/18 22:35
SED-11	K1801446-011	J:\GC26\DATA\032818\0328F028.D\	03/28/18 22:53
SED-12	K1801446-012	J:\GC26\DATA\032818\0328F029.D\	03/28/18 23:12
SED-13	K1801446-013	J:\GC26\DATA\032818\0328F030.D\	03/28/18 23:30
Method Blank	KQ1802453-04	J:\GC26\DATA\032818\0328F032.D\	03/29/18 00:07
SED-8	K1801446-008	J:\GC26\DATA\032818\0328F051.D\	03/29/18 08:30
SED-9	K1801446-009	J:\GC26\DATA\032818\0328F052.D\	03/29/18 08:49
SED-10	K1801446-010	J:\GC26\DATA\032818\0328F053.D\	03/29/18 09:07
SED-13	K1801446-013	J:\GC26\DATA\032818\0328F054.D\	03/29/18 09:26

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-1  
**Lab Code:** K1801446-001

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:10  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 47.3

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	0.90	3.8	4.6	19		1	03/28/18 18:36

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-2  
**Lab Code:** K1801446-002

**Service Request:** K1801446  
**Date Collected:** 02/12/18 11:50  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 56.3

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	0.76	1.3	1.8	32	J	1	03/28/18 18:54

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-3  
**Lab Code:** K1801446-003

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:45  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 42.1

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	1.1	7.5	8.5	12		1	03/28/18 19:13

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-4  
**Lab Code:** K1801446-004

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:05  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 48.5

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	0.87	3.8	4.4	15		1	03/28/18 19:31

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-5  
**Lab Code:** K1801446-005

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:35  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 37.5

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	1.2	25	26	4		1	03/28/18 19:49

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-6  
**Lab Code:** K1801446-006

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:20  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 37.4

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Tri-n-butyltin Cation	1.2	10	11	10		1	03/28/18 20:08

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-7  
**Lab Code:** K1801446-007

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:35  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 66.0

**Butyltins**

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	0.65	75	83	10		1	03/28/18 21:03



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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-8  
**Lab Code:** K1801446-008

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:40  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 48.7

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	4.4	210	200	5		5	03/29/18 08:30

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-9  
**Lab Code:** K1801446-009

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:45  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 37.5

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	12	300	320	6		10	03/29/18 08:49

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-10  
**Lab Code:** K1801446-010

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:00  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 71.8

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	30	4000	4700	16		50	03/29/18 09:07

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-11  
**Lab Code:** K1801446-011

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:10  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 52.9

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	0.80	53	72	30		1	03/28/18 22:53

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-12  
**Lab Code:** K1801446-012

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:15  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 64.0

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	0.67	9.3	12	25		1	03/28/18 23:12

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-13  
**Lab Code:** K1801446-013

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:25  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 75.6

**Butyltins**

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	28	4000	4600	14		50	03/29/18 09:26

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-6  
**Lab Code:** KQ1802453-01

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:20  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 37.4

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	1.2	56.2	59.1	5		1	03/28/18 20:26

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** SED-6  
**Lab Code:** KQ1802453-02

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:20  
**Date Received:** 2/14/18

**Units:** ug/Kg  
**Basis:** Dry  
**Percent Solids:** 37.4

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Tri-n-butyltin Cation	1.2	55.0	55.1	<1		1	03/28/18 20:45



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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**SRM Matrix:** Sediment  
**Sample Name:** Lab Control Sample  
**Lab Code:** KQ1802453-03

**Service Request:** K1801446  
**Date Collected:** NA  
**Date Received:**

**Units:** ug/Kg  
**Basis:** Dry

Butyltins

**Analytical Method:** ALS SOP  
**Prep Method:** Method

	<b>MDL</b>	<b>Primary Result</b>	<b>Confirmation Result</b>	<b>RPD</b>	<b>Q</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
Tri-n-butyltin Cation	0.43	12.3	14.9	19		1	03/28/18 23:49

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 3/28/2018

**Initial Calibration Summary**  
**Butyltins**

**Calibration ID:** KC1800124  
**Instrument ID:** K-GC-26

**Signal ID:** RTX-1

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1800124-01	TINS @ 2PPB OT5-08G	J:\GC26\DATA\032818\0328F004.D	03/28/2018 15:31
02	KC1800124-02	TINS @ 5PPB OT5-08H	J:\GC26\DATA\032818\0328F005.D	03/28/2018 15:50
03	KC1800124-03	TINS @ 10PPB OT5-08I	J:\GC26\DATA\032818\0328F006.D	03/28/2018 16:08
04	KC1800124-04	TINS @ 20PPB OT5-08J	J:\GC26\DATA\032818\0328F007.D	03/28/2018 16:26
05	KC1800124-05	TINS @ 50PPB OT5-09F	J:\GC26\DATA\032818\0328F008.D	03/28/2018 16:45
06	KC1800124-06	TINS @200PPB OT5-08K	J:\GC26\DATA\032818\0328F009.D	03/28/2018 17:04
07	KC1800124-07	TINS @ 500PPB OT5-08L	J:\GC26\DATA\032818\0328F010.D	03/28/2018 17:22

**Analyte**

**Tri-n-butyltin Cation**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.782	3.367E4	02	4.455	4.676E4	03	8.910	4.232E4	04	17.820	4.65E4
05	44.550	4.548E4	06	178.200	5.115E4	07	445.500	5.022E4			

**Tri-n-propyltin**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	4.85E4	02	5.000	3.195E4	03	10.000	3.891E4	04	20.000	3.309E4
05	50.000	3.588E4	06	200.000	4.008E4	07	500.000	4.05E4			

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 3/28/2018

**Initial Calibration Summary**  
**Butyltins**

**Calibration ID:** KC1800124  
**Instrument ID:** K-GC-26

**Signal ID:** RTX-1

Analyte Name	Compound Type	Calibration Evaluation				Calibration Evaluation	
		Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Tri-n-butyltin Cation	TRG	Average RF	% RSD	13.0	20	4.516E4	
Tri-n-propyltin	SURR	Average RF	% RSD	14.5	20	3.841E4	

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 3/28/2018

**Initial Calibration Summary**  
**Butyltins**

**Calibration ID:** KC1800124  
**Instrument ID:** K-GC-26

**Signal ID:** RTX-35

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1800124-01	TINS @ 2PPB OT5-08G	J:\GC26\DATA\032818\0328F004.D	03/28/2018 15:31
02	KC1800124-02	TINS @ 5PPB OT5-08H	J:\GC26\DATA\032818\0328F005.D	03/28/2018 15:50
03	KC1800124-03	TINS @ 10PPB OT5-08I	J:\GC26\DATA\032818\0328F006.D	03/28/2018 16:08
04	KC1800124-04	TINS @ 20PPB OT5-08J	J:\GC26\DATA\032818\0328F007.D	03/28/2018 16:26
05	KC1800124-05	TINS @ 50PPB OT5-09F	J:\GC26\DATA\032818\0328F008.D	03/28/2018 16:45
06	KC1800124-06	TINS @200PPB OT5-08K	J:\GC26\DATA\032818\0328F009.D	03/28/2018 17:04
07	KC1800124-07	TINS @ 500PPB OT5-08L	J:\GC26\DATA\032818\0328F010.D	03/28/2018 17:22

**Analyte**

**Tri-n-butyltin Cation**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.782	1.092E5	02	4.455	7.768E4	03	8.910	7.892E4	04	17.820	8.518E4
05	44.550	7.699E4	06	178.200	8.05E4	07	445.500	7.882E4			

**Tri-n-propyltin**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	6.999E4	02	5.000	6.724E4	03	10.000	5.689E4	04	20.000	6.633E4
05	50.000	6.723E4	06	200.000	6.537E4	07	500.000	6.415E4			

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 3/28/2018

**Initial Calibration Summary**  
**Butyltins**

**Calibration ID:** KC1800124  
**Instrument ID:** K-GC-26

**Signal ID:** RTX-35

Analyte Name	Compound Type	Calibration Evaluation				Calibration Evaluation	
		Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Tri-n-butyltin Cation	TRG	Average RF	% RSD	13.7	20	8.39E4	
Tri-n-propyltin	SURR	Average RF	% RSD	6.3	20	6.531E4	

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 3/28/2018

**Initial Calibration Verification Summary**  
**Butyltins**

**Calibration ID:** KC1800124  
**Instrument ID:** K-GC-26

**Signal ID:** RTX-1

#	Lab Code	Sample Name	File Location	Acquisition Date
08	KC1800124-08	TINS @ 500PPB OT5-09C	J:\GC26\DATA\032818\0328F011.D	03/28/2018 17:41

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	50.6	4.516E4	5.13E4	13.60	±25	Average RF

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 3/28/2018

**Initial Calibration Verification Summary**  
**Butyltins**

**Calibration ID:** KC1800124  
**Instrument ID:** K-GC-26

**Signal ID:** RTX-35

#	Lab Code	Sample Name	File Location	Acquisition Date
08	KC1800124-08	TINS @ 500PPB OT5-09C	J:\GC26\DATA\032818\0328F011.D	03/28/2018 17:41

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	44.4	8.39E4	8.369E4	-0.260	±25	Average RF

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/28/18 17:59

**Continuing Calibration Verification (CCV) Summary**  
**Butyltins**

**Analysis Method:** ALS SOP  
**File ID:** J:\GC26\DATA\032818\0328F012.D\  
**Signal ID:** RTX-35

**Calibration Date:** 3/28/2018  
**Calibration ID:** KC1800124  
**Analysis Lot:** 585383  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	41.4	8.39E4	7.796E4	-7.1	NA	±25	Average RF
Tri-n-propyltin	50.0	47.6	6.531E4	6.213E4	-4.9	NA	±25	Average RF



**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/28/18 17:59

**Continuing Calibration Verification (CCV) Summary**  
**Butyltins**

**Analysis Method:** ALS SOP  
**File ID:** J:\GC26\DATA\032818\0328F012.D\  
**Signal ID:** RTX-35

**Calibration Date:** 3/28/2018  
**Calibration ID:** KC1800124  
**Analysis Lot:** 585383  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	45.8	4.516E4	4.647E4	2.9	NA	±25	Average RF
Tri-n-propyltin	50.0	51.6	3.841E4	3.964E4	3.2	NA	±25	Average RF

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/28/18 21:40

**Continuing Calibration Verification (CCV) Summary**  
**Butyltins**

**Analysis Method:** ALS SOP  
**File ID:** J:\GC26\DATA\032818\0328F024.D\  
**Signal ID:** RTX-35

**Calibration Date:** 3/28/2018  
**Calibration ID:** KC1800124  
**Analysis Lot:** 585383  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	43.7	8.39E4	8.225E4	-2.0	NA	±25	Average RF
Tri-n-propyltin	50.0	48.3	6.531E4	6.315E4	-3.3	NA	±25	Average RF

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/28/18 21:40

**Continuing Calibration Verification (CCV) Summary**  
**Butyltins**

**Analysis Method:** ALS SOP  
**File ID:** J:\GC26\DATA\032818\0328F024.D\  
**Signal ID:** RTX-35

**Calibration Date:** 3/28/2018  
**Calibration ID:** KC1800124  
**Analysis Lot:** 585383  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	44.6	4.516E4	4.52E4	0.1	NA	±25	Average RF
Tri-n-propyltin	50.0	47.2	3.841E4	3.623E4	-5.7	NA	±25	Average RF

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/29/18 00:44

**Continuing Calibration Verification (CCV) Summary**  
**Butyltins**

**Analysis Method:** ALS SOP  
**File ID:** J:\GC26\DATA\032818\0328F034.D\  
**Signal ID:** RTX-35

**Calibration Date:** 3/28/2018  
**Calibration ID:** KC1800124  
**Analysis Lot:** 585383  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	35.1	8.39E4	6.607E4	-21.3	NA	±25	Average RF
Tri-n-propyltin	50.0	40.0	6.531E4	5.229E4	-19.9	NA	±25	Average RF

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/29/18 00:44

**Continuing Calibration Verification (CCV) Summary**  
**Butyltins**

**Analysis Method:** ALS SOP  
**File ID:** J:\GC26\DATA\032818\0328F034.D\  
**Signal ID:** RTX-35

**Calibration Date:** 3/28/2018  
**Calibration ID:** KC1800124  
**Analysis Lot:** 585383  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	39.1	4.516E4	3.963E4	-12.2	NA	±25	Average RF
Tri-n-propyltin	50.0	40.3	3.841E4	3.098E4	-19.4	NA	±25	Average RF

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/29/18 04:24

**Continuing Calibration Verification (CCV) Summary**  
**Butyltins**

**Analysis Method:** ALS SOP  
**File ID:** J:\GC26\DATA\032818\0328F048.D\  
**Signal ID:** RTX-35

**Calibration Date:** 3/28/2018  
**Calibration ID:** KC1800124  
**Analysis Lot:** 585383  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	38.0	8.39E4	7.163E4	-14.6	NA	±25	Average RF
Tri-n-propyltin	50.0	47.4	6.531E4	6.193E4	-5.2	NA	±25	Average RF

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/29/18 04:24

**Continuing Calibration Verification (CCV) Summary**  
**Butyltins**

**Analysis Method:** ALS SOP  
**File ID:** J:\GC26\DATA\032818\0328F048.D\  
**Signal ID:** RTX-35

**Calibration Date:** 3/28/2018  
**Calibration ID:** KC1800124  
**Analysis Lot:** 585383  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	44.9	4.516E4	4.553E4	0.8	NA	±25	Average RF
Tri-n-propyltin	50.0	44.4	3.841E4	3.415E4	-11.1	NA	±25	Average RF

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/29/18 09:44

**Continuing Calibration Verification (CCV) Summary**  
**Butyltins**

**Analysis Method:** ALS SOP  
**File ID:** J:\GC26\DATA\032818\0328F055.D\  
**Signal ID:** RTX-35

**Calibration Date:** 3/28/2018  
**Calibration ID:** KC1800124  
**Analysis Lot:** 585383  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	38.0	8.39E4	7.154E4	-14.7	NA	±25	Average RF
Tri-n-propyltin	50.0	45.5	6.531E4	5.941E4	-9.0	NA	±25	Average RF



ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/29/18 09:44

**Continuing Calibration Verification (CCV) Summary**  
**Butyltins**

**Analysis Method:** ALS SOP  
**File ID:** J:\GC26\DATA\032818\0328F055.D\  
**Signal ID:** RTX-35

**Calibration Date:** 3/28/2018  
**Calibration ID:** KC1800124  
**Analysis Lot:** 585383  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	44.5	4.516E4	4.514E4	0.0	NA	±25	Average RF
Tri-n-propyltin	50.0	43.4	3.841E4	3.335E4	-13.2	NA	±25	Average RF

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

Client: Whatcom Environmental Services Inc.  
Project: Jensen Shipyard Sediment

Service Request:K1801446

Analysis Run Log  
Butyltins

Analysis Method: ALS SOP

Analysis Lot:585383  
Instrument ID:K-GC-26

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\GC26\DATA\032818\0328F012.D\	Continuing Calibration Verification	KQ1803999-01	3/28/2018	17:59:00	
J:\GC26\DATA\032818\0328F013.D\	ZZZZZZZ	ZZZZZZZ	3/28/2018	18:18:00	
J:\GC26\DATA\032818\0328F014.D\	SED-1	K1801446-001	3/28/2018	18:36:00	
J:\GC26\DATA\032818\0328F015.D\	SED-2	K1801446-002	3/28/2018	18:54:00	
J:\GC26\DATA\032818\0328F016.D\	SED-3	K1801446-003	3/28/2018	19:13:00	
J:\GC26\DATA\032818\0328F017.D\	SED-4	K1801446-004	3/28/2018	19:31:00	
J:\GC26\DATA\032818\0328F018.D\	SED-5	K1801446-005	3/28/2018	19:49:00	
J:\GC26\DATA\032818\0328F019.D\	SED-6	K1801446-006	3/28/2018	20:08:00	
J:\GC26\DATA\032818\0328F020.D\	SED-6 MS	KQ1802453-01	3/28/2018	20:26:00	
J:\GC26\DATA\032818\0328F021.D\	SED-6 DMS	KQ1802453-02	3/28/2018	20:45:00	
J:\GC26\DATA\032818\0328F022.D\	SED-7	K1801446-007	3/28/2018	21:03:00	
J:\GC26\DATA\032818\0328F023.D\	SED-8	K1801446-008	3/28/2018	21:21:00	
J:\GC26\DATA\032818\0328F024.D\	Continuing Calibration Verification	KQ1803999-02	3/28/2018	21:40:00	
J:\GC26\DATA\032818\0328F025.D\	ZZZZZZZ	ZZZZZZZ	3/28/2018	21:58:00	
J:\GC26\DATA\032818\0328F026.D\	SED-9	K1801446-009	3/28/2018	22:17:00	
J:\GC26\DATA\032818\0328F027.D\	SED-10	K1801446-010	3/28/2018	22:35:00	
J:\GC26\DATA\032818\0328F028.D\	SED-11	K1801446-011	3/28/2018	22:53:00	
J:\GC26\DATA\032818\0328F029.D\	SED-12	K1801446-012	3/28/2018	23:12:00	
J:\GC26\DATA\032818\0328F030.D\	SED-13	K1801446-013	3/28/2018	23:30:00	
J:\GC26\DATA\032818\0328F031.D\	Lab Control Sample	KQ1802453-03	3/28/2018	23:49:00	
J:\GC26\DATA\032818\0328F032.D\	Method Blank	KQ1802453-04	3/29/2018	00:07:00	
J:\GC26\DATA\032818\0328F034.D\	Continuing Calibration Verification	KQ1803999-03	3/29/2018	00:44:00	
J:\GC26\DATA\032818\0328F035.D\	ZZZZZZZ	ZZZZZZZ	3/29/2018	01:02:00	
J:\GC26\DATA\032818\0328F048.D\	Continuing Calibration Verification	KQ1803999-07	3/29/2018	04:24:00	
J:\GC26\DATA\032818\0328F049.D\	ZZZZZZZ	ZZZZZZZ	3/29/2018	04:43:00	
J:\GC26\DATA\032818\0328F051.D\	SED-8	K1801446-008	3/29/2018	08:30:00	
J:\GC26\DATA\032818\0328F052.D\	SED-9	K1801446-009	3/29/2018	08:49:00	
J:\GC26\DATA\032818\0328F053.D\	SED-10	K1801446-010	3/29/2018	09:07:00	
J:\GC26\DATA\032818\0328F054.D\	SED-13	K1801446-013	3/29/2018	09:26:00	
J:\GC26\DATA\032818\0328F055.D\	Continuing Calibration Verification	KQ1803999-08	3/29/2018	09:44:00	
J:\GC26\DATA\032818\0328F056.D\	ZZZZZZZ	ZZZZZZZ	3/29/2018	10:02:00	

**ALS Group USA, Corp.**  
dba ALS Environmental

Prep Summary Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446

**Butyltins**

**Prep Method:** Method  
**Analytical Method:** ALS SOP

**Extraction Lot:** 308961  
**Extraction Date:** 02/26/18 12:22

<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Collected</b>	<b>Date Received</b>	<b>Sample Amount</b>	<b>Final Amount</b>	<b>Percent Solids</b>
SED-1	K1801446-001	2/12/18	2/14/18	20.242 g	4 mL	47.3
SED-2	K1801446-002	2/12/18	2/14/18	20.261 g	4 mL	56.3
SED-3	K1801446-003	2/12/18	2/14/18	20.391 g	4 mL	42.1
SED-4	K1801446-004	2/12/18	2/14/18	20.482 g	4 mL	48.5
SED-5	K1801446-005	2/12/18	2/14/18	20.281 g	4 mL	37.5
SED-6	K1801446-006	2/12/18	2/14/18	20.338 g	4 mL	37.4
SED-7	K1801446-007	2/12/18	2/14/18	20.325 g	4 mL	66.0
SED-8	K1801446-008	2/12/18	2/14/18	20.107 g	4 mL	48.7
SED-9	K1801446-009	2/12/18	2/14/18	20.343 g	4 mL	37.5
SED-10	K1801446-010	2/12/18	2/14/18	20.226 g	4 mL	71.8
SED-10	K1801446-010	2/12/18	2/14/18	20.226 g	4 mL	71.8
SED-11	K1801446-011	2/12/18	2/14/18	20.421 g	4 mL	52.9
SED-12	K1801446-012	2/12/18	2/14/18	20.177 g	4 mL	64.0
SED-13	K1801446-013	2/12/18	2/14/18	20.374 g	4 mL	75.6
SED-13	K1801446-013	2/12/18	2/14/18	20.374 g	4 mL	75.6
Matrix Spike	KQ1802453-01MS	2/12/18	2/14/18	20.468 g	4 mL	37.4
Duplicate Matrix Spike	KQ1802453-02DMS	2/12/18	2/14/18	20.450 g	4 mL	37.4
Lab Control Sample	KQ1802453-03LCS	NA	NA	20.00 g	4 mL	
Method Blank	KQ1802453-04MB	NA	NA	20.00 g	4 mL	



# Organochlorine Pesticides

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577- 7222 Fax (360)636- 1068  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**Cover Page - Organic Analysis Data Package  
 Organochlorine Pesticides**

<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Collected</b>	<b>Date Received</b>
SED-1	K1801446-001	02/12/2018	02/14/2018
SED-2	K1801446-002	02/12/2018	02/14/2018
SED-3	K1801446-003	02/12/2018	02/14/2018
SED-4	K1801446-004	02/12/2018	02/14/2018
SED-5	K1801446-005	02/12/2018	02/14/2018
SED-6	K1801446-006	02/12/2018	02/14/2018
SED-7	K1801446-007	02/12/2018	02/14/2018
SED-8	K1801446-008	02/12/2018	02/14/2018
SED-9	K1801446-009	02/12/2018	02/14/2018
SED-10	K1801446-010	02/12/2018	02/14/2018
SED-11	K1801446-011	02/12/2018	02/14/2018
SED-12	K1801446-012	02/12/2018	02/14/2018
SED-13	K1801446-013	02/12/2018	02/14/2018
SED-6MS	KWG1801137-1	02/12/2018	02/14/2018
SED-6DMS	KWG1801137-2	02/12/2018	02/14/2018

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Organochlorine Pesticides

**Sample Name:** SED-1  
**Lab Code:** K1801446-001  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	1.7	JP	1.9	0.59	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	Ui	4.2	4.2	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	1.9	1.2	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	U	1.9	0.72	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	ND	U	1.9	0.78	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	ND	U	1.9	0.42	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	ND	U	1.9	0.76	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	ND	U	1.9	1.2	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	Ui	3.2	3.2	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	U	1.9	0.89	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	ND	U	1.9	0.52	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDT	ND	U	1.9	0.91	1	02/26/18	03/08/18	KWG1801137	
Oxychlordane	2.8		1.9	0.48	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	ND	U	1.9	0.55	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	U	1.9	1.4	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	78	70-130	03/08/18	Acceptable
Decachlorobiphenyl	85	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Organochlorine Pesticides

**Sample Name:** SED-2  
**Lab Code:** K1801446-002  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND	Ui	1.6	0.86	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	U	1.6	0.61	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	1.6	0.92	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	Ui	1.6	1.1	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	ND	U	1.6	0.64	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	ND	U	1.6	0.35	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	ND	U	1.6	0.63	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	ND	Ui	2.4	2.4	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	U	1.6	0.95	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	U	1.6	0.73	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	ND	U	1.6	0.42	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDT	ND	U	1.6	0.75	1	02/26/18	03/08/18	KWG1801137	
Oxychlordane	ND	U	1.6	0.39	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	ND	U	1.6	0.46	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	U	1.6	1.2	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	88	70-130	03/08/18	Acceptable
Decachlorobiphenyl	83	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

**Comments:** \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Organochlorine Pesticides

**Sample Name:** SED-3  
**Lab Code:** K1801446-003  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	1.8	JP	2.3	0.69	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	Ui	2.6	2.6	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	2.3	1.4	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	U	2.3	0.85	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	ND	U	2.3	0.91	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	0.75	JP	2.3	0.49	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	ND	U	2.3	0.89	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	ND	U	2.3	1.4	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	U	2.3	1.4	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	U	2.3	1.1	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	ND	Ui	2.3	1.5	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDT	ND	U	2.3	1.1	1	02/26/18	03/08/18	KWG1801137	
Oxychlordane	5.3		2.3	0.56	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	ND	Ui	2.3	1.2	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	U	2.3	1.6	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	82	70-130	03/08/18	Acceptable
Decachlorobiphenyl	81	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: \_\_\_\_\_



Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Organochlorine Pesticides

**Sample Name:** SED-4  
**Lab Code:** K1801446-004  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND	U	1.8	0.55	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	U	1.8	0.69	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	1.8	1.1	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	Ui	1.8	1.3	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	ND	U	1.8	0.72	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	ND	U	1.8	0.39	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	ND	U	1.8	0.70	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	ND	U	1.8	1.1	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	U	1.8	1.1	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	U	1.8	0.83	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	ND	Ui	1.8	1.0	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDT	ND	U	1.8	0.84	1	02/26/18	03/08/18	KWG1801137	
Oxychlordane	ND	U	1.8	0.44	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	ND	Ui	1.8	1.6	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	U	1.8	1.3	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	77	70-130	03/08/18	Acceptable
Decachlorobiphenyl	78	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Organochlorine Pesticides

**Sample Name:** SED-5  
**Lab Code:** K1801446-005  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	2.6	P	2.3	0.70	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	Ui	3.1	3.1	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	2.3	1.4	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	U	2.3	0.86	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	ND	U	2.3	0.92	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	1.9	J	2.3	0.50	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	ND	U	2.3	0.90	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	ND	U	2.3	1.4	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	U	2.3	1.4	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	U	2.3	1.1	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	2.1	J	2.3	0.61	1	02/26/18	03/08/18	KWG1801137	*
2,4'-DDT	ND	U	2.3	1.1	1	02/26/18	03/08/18	KWG1801137	
Oxychlordane	4.9	P	2.3	0.56	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	ND	Ui	2.3	1.7	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	U	2.3	1.6	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	72	70-130	03/08/18	Acceptable
Decachlorobiphenyl	77	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Organochlorine Pesticides

**Sample Name:** SED-6  
**Lab Code:** K1801446-006  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND	U	2.4	0.74	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	U	2.4	0.93	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	2.4	1.5	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	Ui	2.4	2.0	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	ND	U	2.4	0.98	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	ND	Ui	2.4	0.93	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	ND	U	2.4	0.96	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	ND	Ui	4.5	4.5	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	U	2.4	1.5	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	U	2.4	1.2	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	ND	U	2.4	0.65	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDT	ND	U	2.4	1.2	1	02/26/18	03/08/18	KWG1801137	
Oxychlordane	ND	U	2.4	0.60	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	ND	U	2.4	0.70	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	U	2.4	1.7	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	91	70-130	03/08/18	Acceptable
Decachlorobiphenyl	78	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Organochlorine Pesticides

**Sample Name:** SED-7  
**Lab Code:** K1801446-007  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND	U	1.4	0.41	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	U	1.4	0.52	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	1.4	0.78	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	U	1.4	0.50	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	ND	U	1.4	0.54	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	ND	Ui	1.4	1.3	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	ND	Ui	1.4	0.86	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	ND	U	1.4	0.79	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	Ui	2.4	2.4	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	U	1.4	0.62	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	ND	Ui	1.4	0.79	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDT	1.2	JP	1.4	0.63	1	02/26/18	03/08/18	KWG1801137	*
Oxychlordane	ND	U	1.4	0.33	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	ND	Ui	1.4	1.2	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	U	1.4	0.94	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	92	70-130	03/08/18	Acceptable
Decachlorobiphenyl	73	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Organochlorine Pesticides

**Sample Name:** SED-8  
**Lab Code:** K1801446-008  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND	U	1.7	0.52	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	U	1.7	0.65	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	1.7	0.98	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	U	1.7	0.64	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	ND	U	1.7	0.69	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	ND	U	1.7	0.37	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	ND	U	1.7	0.67	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	ND	Ui	1.7	1.1	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	Ui	4.9	4.9	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	U	1.7	0.79	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	ND	Ui	6.4	6.4	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDT	ND	Ui	7.2	7.2	1	02/26/18	03/08/18	KWG1801137	
Oxychlordane	ND	U	1.7	0.42	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	ND	Ui	4.8	4.8	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	U	1.7	1.2	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	83	70-130	03/08/18	Acceptable
Decachlorobiphenyl	79	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Organochlorine Pesticides

**Sample Name:** SED-9  
**Lab Code:** K1801446-009  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND	U	2.3	0.69	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	Ui	2.3	2.2	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	2.3	1.4	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	U	2.3	0.85	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	ND	Ui	3.0	3.0	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	<b>5.3</b>		2.3	0.49	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	<b>1.0</b>	JP	2.3	0.89	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	<b>4.1</b>	P	2.3	1.4	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	Ui	5.9	5.9	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	U	2.3	1.1	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	<b>6.7</b>	P	2.3	0.60	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDT	ND	U	2.3	1.1	1	02/26/18	03/08/18	KWG1801137	
Oxychlordane	ND	Ui	2.3	1.4	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	ND	Ui	5.0	5.0	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	U	2.3	1.6	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	82	70-130	03/08/18	Acceptable
Decachlorobiphenyl	81	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

**Comments:** \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Organochlorine Pesticides

**Sample Name:** SED-10  
**Lab Code:** K1801446-010  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	0.72	JP	1.2	0.37	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	Ui	1.2	0.52	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	1.2	0.70	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	U	1.2	0.45	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	ND	Ui	1.2	1.2	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	ND	Ui	4.8	4.8	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	ND	Ui	2.5	2.5	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	19		1.2	0.71	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	Ui	8.2	8.2	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	U	1.2	0.56	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	ND	Ui	38	38	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDT	ND	Ui	17	17	1	02/26/18	03/08/18	KWG1801137	
Oxychlordane	ND	U	1.2	0.30	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	7.5	P	1.2	0.35	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	U	1.2	0.84	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	83	70-130	03/08/18	Acceptable
Decachlorobiphenyl	77	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Organochlorine Pesticides

**Sample Name:** SED-11  
**Lab Code:** K1801446-011  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	0.59	JP	1.6	0.49	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	U	1.6	0.61	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	1.6	0.93	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	U	1.6	0.60	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	ND	Ui	2.7	2.7	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	ND	Ui	1.6	1.6	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	2.5		1.6	0.63	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	5.7	P	1.6	0.94	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	Ui	5.3	5.3	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	U	1.6	0.74	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	ND	Ui	15	15	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDT	ND	U	1.6	0.76	1	02/26/18	03/08/18	KWG1801137	
Oxychlordane	ND	U	1.6	0.40	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	ND	Ui	4.6	4.6	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	U	1.6	1.2	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	76	70-130	03/08/18	Acceptable
Decachlorobiphenyl	76	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: \_\_\_\_\_



Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Organochlorine Pesticides

**Sample Name:** SED-12  
**Lab Code:** K1801446-012  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND	U	1.4	0.42	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	U	1.4	0.53	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	1.4	0.79	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	Ui	1.4	1.3	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	1.1	J	1.4	0.55	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	1.6		1.4	0.30	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	0.85	J	1.4	0.54	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	ND	U	1.4	0.81	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	Ui	2.4	2.4	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	U	1.4	0.63	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	ND	Ui	2.2	2.2	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDT	ND	U	1.4	0.65	1	02/26/18	03/08/18	KWG1801137	
Oxychlordane	ND	U	1.4	0.34	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	ND	Ui	1.4	0.73	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	U	1.4	0.95	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	84	70-130	03/08/18	Acceptable
Decachlorobiphenyl	82	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Organochlorine Pesticides

**Sample Name:** SED-13  
**Lab Code:** K1801446-013  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	0.84	JP	1.2	0.35	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	Ui	1.2	1.2	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	1.2	0.66	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	Ui	4.0	4.0	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	ND	U	1.2	0.46	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	ND	Ui	4.7	4.7	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	4.0	P	1.2	0.45	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	36		1.2	0.67	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	Ui	30	30	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	Ui	1.2	1.1	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	ND	Ui	25	25	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDT	ND	Ui	2.3	2.3	1	02/26/18	03/08/18	KWG1801137	
Oxychlordane	ND	U	1.2	0.28	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	12		1.2	0.33	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	Ui	1.2	1.1	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	70	70-130	03/08/18	Acceptable
Decachlorobiphenyl	72	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** NA  
**Date Received:** NA

Organochlorine Pesticides

**Sample Name:** Method Blank  
**Lab Code:** KWG1801137-10  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND	U	1.0	0.31	1	02/26/18	03/08/18	KWG1801137	
Heptachlor	ND	U	1.0	0.39	1	02/26/18	03/08/18	KWG1801137	
Aldrin	ND	U	1.0	0.59	1	02/26/18	03/08/18	KWG1801137	
gamma-Chlordane†	ND	U	1.0	0.38	1	02/26/18	03/08/18	KWG1801137	
alpha-Chlordane	ND	U	1.0	0.41	1	02/26/18	03/08/18	KWG1801137	
Dieldrin	ND	U	1.0	0.22	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDE	ND	U	1.0	0.40	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDD	ND	U	1.0	0.60	1	02/26/18	03/08/18	KWG1801137	
4,4'-DDT	ND	U	1.0	0.61	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDE	ND	U	1.0	0.47	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDD	ND	U	1.0	0.27	1	02/26/18	03/08/18	KWG1801137	
2,4'-DDT	ND	U	1.0	0.48	1	02/26/18	03/08/18	KWG1801137	
Oxychlordane	ND	U	1.0	0.25	1	02/26/18	03/08/18	KWG1801137	*
cis-Nonachlor	ND	U	1.0	0.29	1	02/26/18	03/08/18	KWG1801137	
trans-Nonachlor	ND	U	1.0	0.71	1	02/26/18	03/08/18	KWG1801137	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	74	70-130	03/08/18	Acceptable
Decachlorobiphenyl	79	70-130	03/08/18	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

**Comments:** \_\_\_\_\_

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446

**Surrogate Recovery Summary  
 Organochlorine Pesticides**

**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** Percent  
**Level:** Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
SED-1	K1801446-001	78	85
SED-2	K1801446-002	88	83
SED-3	K1801446-003	82	81
SED-4	K1801446-004	77	78
SED-5	K1801446-005	72	77
SED-6	K1801446-006	91	78
SED-7	K1801446-007	92	73
SED-8	K1801446-008	83	79
SED-9	K1801446-009	82	81
SED-10	K1801446-010	83	77
SED-11	K1801446-011	76	76
SED-12	K1801446-012	84	82
SED-13	K1801446-013	70	72
Method Blank	KWG1801137-10	74	79
SED-6MS	KWG1801137-1	88	81
SED-6DMS	KWG1801137-2	81	84
Lab Control Sample	KWG1801137-7	74	79

**Surrogate Recovery Control Limits (%)**

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Sur1 = Tetrachloro-m-xylene	70-130
Sur2 = Decachlorobiphenyl	70-130

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Results flagged with an asterisk (\*) indicate values outside control criteria.  
 Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/2018  
**Time Analyzed:** 07:57

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\030818\0308F002.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801351-3  
**Analysis Lot:** KWG1801351  
**Column :** DB XLB

	1-Bromo-2-nitrobenzene	
	<u>Area</u>	<u>RT</u>
ICAL Average ==>	9,529,772	5.75
Upper Limit ==>	19,059,544	6.25
Lower Limit ==>	4,764,886	5.25

*Associated Analyses*

Continuing Calibration VerificationCCV	KWG1801351-3	12,024,030	5.71
SED-1	K1801446-001	10,932,880	5.72
SED-2	K1801446-002	11,199,580	5.72
SED-3	K1801446-003	10,832,990	5.72
SED-5	K1801446-005	13,925,060	5.72
SED-6	K1801446-006	11,689,150	5.71
SED-7	K1801446-007	12,380,610	5.71
SED-4	K1801446-004	14,845,450	5.71
SED-8	K1801446-008	15,305,070	5.72
SED-9	K1801446-009	11,522,070	5.71
SED-10	K1801446-010	10,263,540	5.72
SED-11	K1801446-011	12,466,480	5.72
SED-12	K1801446-012	11,304,940	5.72
SED-13	K1801446-013	12,345,100	5.72
SED-6MS	KWG1801137-1	10,320,870	5.72
SED-6DMS	KWG1801137-2	10,343,920	5.72
SED-6MS	KWG1801137-1	11,704,060	5.72
Lab Control Sample	KWG1801137-7	12,447,300	5.72
Lab Control Sample	KWG1801137-7	11,480,660	5.72
Method Blank	KWG1801137-10	11,982,070	5.72

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/2018  
**Time Analyzed:** 07:57

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\030818\0308F002.D\0308F002C.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801351-3  
**Analysis Lot:** KWG1801351  
**Column :** DB-35MS

	1-Bromo-2-nitrobenzene	
	<u>Area</u>	<u>RT</u>
ICAL Average ==>	2,006,618	5.13
Upper Limit ==>	4,013,236	5.63
Lower Limit ==>	1,003,309	4.63

*Associated Analyses*

Continuing Calibration VerificationCCV	KWG1801351-3	2,335,160	5.09
SED-1	K1801446-001	2,369,637	5.10
SED-2	K1801446-002	2,465,156	5.10
SED-3	K1801446-003	2,361,848	5.10
SED-5	K1801446-005	2,726,363	5.09
SED-6	K1801446-006	2,384,295	5.09
SED-7	K1801446-007	2,656,111	5.09
SED-4	K1801446-004	3,139,510	5.09
SED-8	K1801446-008	3,279,985	5.09
SED-9	K1801446-009	2,519,552	5.10
SED-10	K1801446-010	2,290,085	5.10
SED-11	K1801446-011	2,712,977	5.10
SED-12	K1801446-012	2,399,847	5.10
SED-13	K1801446-013	2,648,580	5.10
SED-6MS	KWG1801137-1	2,263,497	5.10
SED-6DMS	KWG1801137-2	2,280,157	5.10
SED-6MS	KWG1801137-1	2,585,374	5.10
Lab Control Sample	KWG1801137-7	2,718,642	5.10
Lab Control Sample	KWG1801137-7	2,504,196	5.10
Method Blank	KWG1801137-10	2,642,517	5.10

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/2018  
**Time Analyzed:** 08:27

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\030818\0308F003.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801351-3  
**Analysis Lot:** KWG1801351  
**Column :** DB XLB

1-Bromo-2-nitrobenzene {4}

	<u>Area</u>	<u>RT</u>
<b>ICAL Average ==&gt;</b>	7,364,371	5.82
<b>Upper Limit ==&gt;</b>	14,728,742	6.32
<b>Lower Limit ==&gt;</b>	3,682,186	5.32

*Associated Analyses*

Continuing Calibration VerificationCCV	KWG1801351-3	11,385,830	5.71
SED-1	K1801446-001	10,932,880	5.72
SED-2	K1801446-002	11,199,580	5.72
SED-3	K1801446-003	10,832,990	5.72
SED-5	K1801446-005	13,925,060	5.72
SED-6	K1801446-006	11,689,150	5.71
SED-7	K1801446-007	12,380,610	5.71
SED-4	K1801446-004	14,845,450*	5.71
SED-8	K1801446-008	15,305,070*	5.72
SED-9	K1801446-009	11,522,070	5.71
SED-10	K1801446-010	10,263,540	5.72
SED-11	K1801446-011	12,466,480	5.72
SED-12	K1801446-012	11,304,940	5.72
SED-13	K1801446-013	12,345,100	5.72
SED-6MS	KWG1801137-1	10,320,870	5.72
SED-6DMS	KWG1801137-2	10,343,920	5.72
Lab Control Sample	KWG1801137-7	12,447,300	5.72
Method Blank	KWG1801137-10	11,982,070	5.72

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/2018  
**Time Analyzed:** 08:27

**Internal Standard Area and RT Summary**  
**Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\030818\0308F003.D\0308F003C.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801351-3  
**Analysis Lot:** KWG1801351  
**Column :** DB-35MS

1-Bromo-2-nitrobenzene {4}

	<u>Area</u>	<u>RT</u>
<b>ICAL Average ==&gt;</b>	1,836,874	5.22
<b>Upper Limit ==&gt;</b>	3,673,748	5.72
<b>Lower Limit ==&gt;</b>	918,437	4.72

*Associated Analyses*

Continuing Calibration VerificationCCV	KWG1801351-3	2,374,838	5.09
SED-1	K1801446-001	2,369,637	5.10
SED-2	K1801446-002	2,465,156	5.10
SED-3	K1801446-003	2,361,848	5.10
SED-5	K1801446-005	2,726,363	5.09
SED-6	K1801446-006	2,384,295	5.09
SED-7	K1801446-007	2,656,111	5.09
SED-4	K1801446-004	3,139,510	5.09
SED-8	K1801446-008	3,279,985	5.09
SED-9	K1801446-009	2,519,552	5.10
SED-10	K1801446-010	2,290,085	5.10
SED-11	K1801446-011	2,712,977	5.10
SED-12	K1801446-012	2,399,847	5.10
SED-13	K1801446-013	2,648,580	5.10
SED-6MS	KWG1801137-1	2,263,497	5.10
SED-6DMS	KWG1801137-2	2,280,157	5.10
Lab Control Sample	KWG1801137-7	2,718,642	5.10
Method Blank	KWG1801137-10	2,642,517	5.10

Results flagged with an asterisk (\*) indicate values outside control criteria.



QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/2018  
**Time Analyzed:** 08:56

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\030818\0308F004.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801351-3  
**Analysis Lot:** KWG1801351  
**Column :** DB XLB

	1-Bromo-2-nitrobenzene	
	<u>Area</u>	<u>RT</u>
<b>ICAL Average ==&gt;</b>	9,529,772	5.75
<b>Upper Limit ==&gt;</b>	19,059,544	6.25
<b>Lower Limit ==&gt;</b>	4,764,886	5.25

*Associated Analyses*

Continuing Calibration VerificationCCV	KWG1801351-3	9,462,162	5.72
SED-1	K1801446-001	10,932,880	5.72
SED-2	K1801446-002	11,199,580	5.72
SED-3	K1801446-003	10,832,990	5.72
SED-5	K1801446-005	13,925,060	5.72
SED-6	K1801446-006	11,689,150	5.71
SED-7	K1801446-007	12,380,610	5.71
SED-4	K1801446-004	14,845,450	5.71
SED-8	K1801446-008	15,305,070	5.72
SED-9	K1801446-009	11,522,070	5.71
SED-10	K1801446-010	10,263,540	5.72
SED-11	K1801446-011	12,466,480	5.72
SED-12	K1801446-012	11,304,940	5.72
SED-13	K1801446-013	12,345,100	5.72
SED-6MS	KWG1801137-1	10,320,870	5.72
SED-6DMS	KWG1801137-2	10,343,920	5.72
SED-6MS	KWG1801137-1	11,704,060	5.72
Lab Control Sample	KWG1801137-7	12,447,300	5.72
Lab Control Sample	KWG1801137-7	11,480,660	5.72
Method Blank	KWG1801137-10	11,982,070	5.72

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/2018  
**Time Analyzed:** 08:56

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\030818\0308F004.D\0308F004C.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801351-3  
**Analysis Lot:** KWG1801351  
**Column :** DB-35MS

	1-Bromo-2-nitrobenzene	
	<u>Area</u>	<u>RT</u>
ICAL Average ==>	2,006,618	5.13
Upper Limit ==>	4,013,236	5.63
Lower Limit ==>	1,003,309	4.63

*Associated Analyses*

Sample Name	Lab Code	Area	RT
Continuing Calibration VerificationCCV	KWG1801351-3	2,021,765	5.10
SED-1	K1801446-001	2,369,637	5.10
SED-2	K1801446-002	2,465,156	5.10
SED-3	K1801446-003	2,361,848	5.10
SED-5	K1801446-005	2,726,363	5.09
SED-6	K1801446-006	2,384,295	5.09
SED-7	K1801446-007	2,656,111	5.09
SED-4	K1801446-004	3,139,510	5.09
SED-8	K1801446-008	3,279,985	5.09
SED-9	K1801446-009	2,519,552	5.10
SED-10	K1801446-010	2,290,085	5.10
SED-11	K1801446-011	2,712,977	5.10
SED-12	K1801446-012	2,399,847	5.10
SED-13	K1801446-013	2,648,580	5.10
SED-6MS	KWG1801137-1	2,263,497	5.10
SED-6DMS	KWG1801137-2	2,280,157	5.10
SED-6MS	KWG1801137-1	2,585,374	5.10
Lab Control Sample	KWG1801137-7	2,718,642	5.10
Lab Control Sample	KWG1801137-7	2,504,196	5.10
Method Blank	KWG1801137-10	2,642,517	5.10

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/2018  
**Time Analyzed:** 23:03

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\030818\0308F027.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801351-6  
**Analysis Lot:** KWG1801351  
**Column :** DB XLB

1-Bromo-2-nitrobenzene		
	<u>Area</u>	<u>RT</u>
<b>ICAL Average ==&gt;</b>	9,529,772	5.75
<b>Upper Limit ==&gt;</b>	19,059,544	6.25
<b>Lower Limit ==&gt;</b>	4,764,886	5.25
<hr/>		
<b>Associated Analyses</b>		
Continuing Calibration VerificationCC\ KWG1801351-6	10,647,340	5.72

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/2018  
**Time Analyzed:** 23:03

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\030818\0308F027.D\0308F027C.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801351-6  
**Analysis Lot:** KWG1801351  
**Column :** DB-35MS

1-Bromo-2-nitrobenzene		
	<u>Area</u>	<u>RT</u>
ICAL Average ==>	2,006,618	5.13
Upper Limit ==>	4,013,236	5.63
Lower Limit ==>	1,003,309	4.63
<hr/>		
Continuing Calibration VerificationCC\ KWG1801351-6	2,336,919	5.10

*Associated Analyses*

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/09/2018  
**Time Analyzed:** 00:03

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\030818\0308F029.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801351-6  
**Analysis Lot:** KWG1801351  
**Column :** DB XLB

1-Bromo-2-nitrobenzene {4}		
	<u>Area</u>	<u>RT</u>
<b>ICAL Average ==&gt;</b>	7,364,371	5.82
<b>Upper Limit ==&gt;</b>	14,728,742	6.32
<b>Lower Limit ==&gt;</b>	3,682,186	5.32
<hr/>		
<i>Associated Analyses</i>		
Continuing Calibration VerificationCC\ KWG1801351-6	10,827,170	5.72

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/09/2018  
**Time Analyzed:** 00:03

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\030818\0308F029.D\0308F029C.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801351-6  
**Analysis Lot:** KWG1801351  
**Column :** DB-35MS

1-Bromo-2-nitrobenzene {4}		
	<u>Area</u>	<u>RT</u>
<b>ICAL Average ==&gt;</b>	1,836,874	5.22
<b>Upper Limit ==&gt;</b>	3,673,748	5.72
<b>Lower Limit ==&gt;</b>	918,437	4.72
<hr/>		
<i>Associated Analyses</i>		
Continuing Calibration VerificationCC\ KWG1801351-6	2,378,077	5.10

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/09/2018  
**Time Analyzed:** 07:23

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\030818\0308F044.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801351-9  
**Analysis Lot:** KWG1801351  
**Column :** DB XLB

1-Bromo-2-nitrobenzene		
	<u>Area</u>	<u>RT</u>
<b>ICAL Average ==&gt;</b>	9,529,772	5.75
<b>Upper Limit ==&gt;</b>	19,059,544	6.25
<b>Lower Limit ==&gt;</b>	4,764,886	5.25
<hr/>		
<i>Associated Analyses</i>		
Continuing Calibration VerificationCC\ KWG1801351-9	11,532,770	5.72

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/09/2018  
**Time Analyzed:** 07:23

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\030818\0308F044.D\0308F044C.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801351-9  
**Analysis Lot:** KWG1801351  
**Column :** DB-35MS

1-Bromo-2-nitrobenzene		
	<u>Area</u>	<u>RT</u>
<b>ICAL Average ==&gt;</b>	2,006,618	5.13
<b>Upper Limit ==&gt;</b>	4,013,236	5.63
<b>Lower Limit ==&gt;</b>	1,003,309	4.63
<hr/>		
<i>Associated Analyses</i>		
Continuing Calibration VerificationCC\ KWG1801351-9	2,425,892	5.10

Results flagged with an asterisk (\*) indicate values outside control criteria.



QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/29/2018  
**Time Analyzed:** 10:45

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\032918\0329F002.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801701-3  
**Analysis Lot:** KWG1801701  
**Column :** DB XLB

		1-Bromo-2-nitrobenzene	
		<u>Area</u>	<u>RT</u>
	<b>ICAL Average ==&gt;</b>	9,529,772	5.75
	<b>Upper Limit ==&gt;</b>	19,059,544	6.25
	<b>Lower Limit ==&gt;</b>	4,764,886	5.25
<b>Associated Analyses</b>			
Continuing Calibration Verification	CC\ KWG1801701-3	10,730,210	5.69
SED-6DMS	KWG1801137-2	8,831,898	5.70

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/29/2018  
**Time Analyzed:** 10:45

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\032918\0329F002.D\0329F002C.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801701-3  
**Analysis Lot:** KWG1801701  
**Column :** DB-35MS

		1-Bromo-2-nitrobenzene	
		<u>Area</u>	<u>RT</u>
	<b>ICAL Average ==&gt;</b>	2,006,618	5.13
	<b>Upper Limit ==&gt;</b>	4,013,236	5.63
	<b>Lower Limit ==&gt;</b>	1,003,309	4.63
<hr/>			
<i>Associated Analyses</i>			
Continuing Calibration Verification	CC\ KWG1801701-3	2,182,910	5.08
SED-6DMS	KWG1801137-2	1,930,318	5.08

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/29/2018  
**Time Analyzed:** 11:15

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\032918\0329F003.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801701-3  
**Analysis Lot:** KWG1801701  
**Column :** DB XLB

		1-Bromo-2-nitrobenzene	
		<u>Area</u>	<u>RT</u>
<b>ICAL Average ==&gt;</b>		9,529,772	5.75
<b>Upper Limit ==&gt;</b>		19,059,544	6.25
<b>Lower Limit ==&gt;</b>		4,764,886	5.25
<hr/>			
<i>Associated Analyses</i>			
Continuing Calibration Verification	CC\ KWG1801701-3	12,730,180	5.70
SED-6DMS	KWG1801137-2	8,831,898	5.70

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/29/2018  
**Time Analyzed:** 11:15

**Internal Standard Area and RT Summary  
 Organochlorine Pesticides**

**File ID:** J:\GC23\DATA\032918\0329F003.D\0329F003C.D  
**Instrument ID:** GC23  
**Analysis Method:** 8081B

**Lab Code:** KWG1801701-3  
**Analysis Lot:** KWG1801701  
**Column :** DB-35MS

		1-Bromo-2-nitrobenzene	
		<u>Area</u>	<u>RT</u>
	<b>ICAL Average ==&gt;</b>	2,006,618	5.13
	<b>Upper Limit ==&gt;</b>	4,013,236	5.63
	<b>Lower Limit ==&gt;</b>	1,003,309	4.63
<hr/>			
<i>Associated Analyses</i>			
Continuing Calibration Verification	CC\ KWG1801701-3	2,671,913	5.08
SED-6DMS	KWG1801137-2	1,930,318	5.08

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Extracted:** 02/26/2018  
**Date Analyzed:** 03/08/2018 - 03/29/2018

**Matrix Spike/Duplicate Matrix Spike Summary**  
**Organochlorine Pesticides**

**Sample Name:** SED-6  
**Lab Code:** K1801446-006  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low  
**Extraction Lot:** KWG1801137

Analyte Name	Sample Result	SED-6MS KWG1801137-1 Matrix Spike			SED-6DMS KWG1801137-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
gamma-BHC (Lindane)	ND	49.3	58.9	84	43.8	59.2	74	70-130	12	40
Heptachlor	ND	46.9	58.9	80	45.3	59.2	77	70-130	4	40
Aldrin	ND	39.7	58.9	67 *	41.3	59.2	70	70-130	4	40
gamma-Chlordane	ND	52.4	58.9	89	49.9	59.2	84	70-130	5	40
alpha-Chlordane	ND	42.9	58.9	73	48.1	59.2	81	70-130	11	40
Dieldrin	ND	45.0	58.9	76	45.1	59.2	76	70-130	0	40
4,4'-DDE	ND	46.8	58.9	79	48.2	59.2	82	70-130	3	40
4,4'-DDD	ND	37.5	58.9	64 #	38.8	59.2	66 #	70-130	4	40
4,4'-DDT	ND	58.7	58.9	100	55.4	59.2	94	70-130	6	40
2,4'-DDE	ND	42.5	59.8	71	49.8	59.2	84	70-130	16	40
2,4'-DDD	ND	57.0	59.8	95	67.9	59.2	115	70-130	17	40
2,4'-DDT	ND	63.0	59.8	105	68.0	59.2	115	70-130	8	40
Oxychlordane	ND	32.2	58.9	55 *	24.2	59.2	41 *	70-130	28	40
cis-Nonachlor	ND	41.4	58.9	70	40.3	59.2	68 *	70-130	3	40
trans-Nonachlor	ND	39.7	58.9	67 *	35.9	59.2	61 *	70-130	10	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Extracted:** 02/26/2018  
**Date Analyzed:** 03/08/2018

**Lab Control Spike Summary**  
**Organochlorine Pesticides**

**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low  
**Extraction Lot:** KWG1801137

Lab Control Sample  
 KWG1801137-7  
**Lab Control Spike**

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
gamma-BHC (Lindane)	21.3	25.0	85	70-130
Heptachlor	22.1	25.0	88	70-130
Aldrin	18.7	25.0	75	70-130
gamma-Chlordane	18.0	25.0	72	70-130
alpha-Chlordane	20.9	25.0	84	70-130
Dieldrin	18.9	25.0	76	70-130
4,4'-DDE	19.7	25.0	79	70-130
4,4'-DDD	18.6	25.0	74	70-130
4,4'-DDT	22.8	25.0	91	70-130
2,4'-DDE	19.4	25.0	78	70-130
2,4'-DDD	25.2	25.0	101	70-130
2,4'-DDT	25.7	25.0	103	70-130
Oxychlordane	15.5	25.0	62 *	70-130
cis-Nonachlor	17.9	25.0	72	70-130
trans-Nonachlor	16.7	25.0	67 *	70-130

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Extracted:** 02/26/2018  
**Date Analyzed:** 03/08/2018  
**Time Analyzed:** 22:03

**Method Blank Summary**  
**Organochlorine Pesticides**

**Sample Name:** Method Blank **Instrument ID:** GC23  
**Lab Code:** KWG1801137-10 **File ID:** J:\GC23\DATA\030818\0308F025.D  
**Extraction Method:** EPA 3546 **Level:** Low  
**Analysis Method:** 8081B **Extraction Lot:** KWG1801137

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
SED-1	K1801446-001	J:\GC23\DATA\030818\0308F006.D	03/08/18	09:56
SED-2	K1801446-002	J:\GC23\DATA\030818\0308F007.D	03/08/18	10:26
SED-3	K1801446-003	J:\GC23\DATA\030818\0308F008.D	03/08/18	10:56
SED-5	K1801446-005	J:\GC23\DATA\030818\0308F010.D	03/08/18	14:08
SED-6	K1801446-006	J:\GC23\DATA\030818\0308F011.D	03/08/18	14:38
SED-7	K1801446-007	J:\GC23\DATA\030818\0308F012.D	03/08/18	15:08
SED-4	K1801446-004	J:\GC23\DATA\030818\0308FX09.D	03/08/18	15:37
SED-8	K1801446-008	J:\GC23\DATA\030818\0308F013.D	03/08/18	16:07
SED-9	K1801446-009	J:\GC23\DATA\030818\0308F014.D	03/08/18	16:36
SED-10	K1801446-010	J:\GC23\DATA\030818\0308F015.D	03/08/18	17:06
SED-11	K1801446-011	J:\GC23\DATA\030818\0308F016.D	03/08/18	17:35
SED-12	K1801446-012	J:\GC23\DATA\030818\0308F017.D	03/08/18	18:05
SED-13	K1801446-013	J:\GC23\DATA\030818\0308F018.D	03/08/18	18:34
SED-6MS	KWG1801137-1	J:\GC23\DATA\030818\0308F019.D	03/08/18	19:04
SED-6DMS	KWG1801137-2	J:\GC23\DATA\030818\0308F020.D	03/08/18	19:34
SED-6MS	KWG1801137-1	J:\GC23\DATA\030818\0308F021.D	03/08/18	20:04
Lab Control Sample	KWG1801137-7	J:\GC23\DATA\030818\0308F023.D	03/08/18	21:04
Lab Control Sample	KWG1801137-7	J:\GC23\DATA\030818\0308F024.D	03/08/18	21:34
SED-6DMS	KWG1801137-2	J:\GC23\DATA\032918\0329F005.D	03/29/18	12:13

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Extracted:** 02/26/2018  
**Date Analyzed:** 03/08/2018  
**Time Analyzed:** 21:04

**Lab Control Sample Summary**  
**Organochlorine Pesticides**

**Sample Name:** Lab Control Sample **Instrument ID:** GC23  
**Lab Code:** KWG1801137-7 **File ID:** J:\GC23\DATA\030818\0308F023.D  
**Extraction Method:** EPA 3546 **Level:** Low  
**Analysis Method:** 8081B **Extraction Lot:** KWG1801137

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
SED-1	K1801446-001	J:\GC23\DATA\030818\0308F006.D	03/08/18	09:56
SED-2	K1801446-002	J:\GC23\DATA\030818\0308F007.D	03/08/18	10:26
SED-3	K1801446-003	J:\GC23\DATA\030818\0308F008.D	03/08/18	10:56
SED-5	K1801446-005	J:\GC23\DATA\030818\0308F010.D	03/08/18	14:08
SED-6	K1801446-006	J:\GC23\DATA\030818\0308F011.D	03/08/18	14:38
SED-7	K1801446-007	J:\GC23\DATA\030818\0308F012.D	03/08/18	15:08
SED-4	K1801446-004	J:\GC23\DATA\030818\0308FX09.D	03/08/18	15:37
SED-8	K1801446-008	J:\GC23\DATA\030818\0308F013.D	03/08/18	16:07
SED-9	K1801446-009	J:\GC23\DATA\030818\0308F014.D	03/08/18	16:36
SED-10	K1801446-010	J:\GC23\DATA\030818\0308F015.D	03/08/18	17:06
SED-11	K1801446-011	J:\GC23\DATA\030818\0308F016.D	03/08/18	17:35
SED-12	K1801446-012	J:\GC23\DATA\030818\0308F017.D	03/08/18	18:05
SED-13	K1801446-013	J:\GC23\DATA\030818\0308F018.D	03/08/18	18:34
SED-6MS	KWG1801137-1	J:\GC23\DATA\030818\0308F019.D	03/08/18	19:04
SED-6DMS	KWG1801137-2	J:\GC23\DATA\030818\0308F020.D	03/08/18	19:34
SED-6MS	KWG1801137-1	J:\GC23\DATA\030818\0308F021.D	03/08/18	20:04
Method Blank	KWG1801137-10	J:\GC23\DATA\030818\0308F025.D	03/08/18	22:03
SED-6DMS	KWG1801137-2	J:\GC23\DATA\032918\0329F005.D	03/29/18	12:13



QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Extracted:** 02/26/2018  
**Date Analyzed:** 03/08/2018  
**Time Analyzed:** 21:34

**Lab Control Sample Summary**  
**Organochlorine Pesticides**

**Sample Name:** Lab Control Sample **Instrument ID:** GC23  
**Lab Code:** KWG1801137-7 **File ID:** J:\GC23\DATA\030818\0308F024.D  
**Extraction Method:** EPA 3546 **Level:** Low  
**Analysis Method:** 8081B **Extraction Lot:** KWG1801137

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
SED-1	K1801446-001	J:\GC23\DATA\030818\0308F006.D	03/08/18	09:56
SED-2	K1801446-002	J:\GC23\DATA\030818\0308F007.D	03/08/18	10:26
SED-3	K1801446-003	J:\GC23\DATA\030818\0308F008.D	03/08/18	10:56
SED-5	K1801446-005	J:\GC23\DATA\030818\0308F010.D	03/08/18	14:08
SED-6	K1801446-006	J:\GC23\DATA\030818\0308F011.D	03/08/18	14:38
SED-7	K1801446-007	J:\GC23\DATA\030818\0308F012.D	03/08/18	15:08
SED-4	K1801446-004	J:\GC23\DATA\030818\0308FX09.D	03/08/18	15:37
SED-8	K1801446-008	J:\GC23\DATA\030818\0308F013.D	03/08/18	16:07
SED-9	K1801446-009	J:\GC23\DATA\030818\0308F014.D	03/08/18	16:36
SED-10	K1801446-010	J:\GC23\DATA\030818\0308F015.D	03/08/18	17:06
SED-11	K1801446-011	J:\GC23\DATA\030818\0308F016.D	03/08/18	17:35
SED-12	K1801446-012	J:\GC23\DATA\030818\0308F017.D	03/08/18	18:05
SED-13	K1801446-013	J:\GC23\DATA\030818\0308F018.D	03/08/18	18:34
SED-6MS	KWG1801137-1	J:\GC23\DATA\030818\0308F019.D	03/08/18	19:04
SED-6DMS	KWG1801137-2	J:\GC23\DATA\030818\0308F020.D	03/08/18	19:34
SED-6MS	KWG1801137-1	J:\GC23\DATA\030818\0308F021.D	03/08/18	20:04
Method Blank	KWG1801137-10	J:\GC23\DATA\030818\0308F025.D	03/08/18	22:03
SED-6DMS	KWG1801137-2	J:\GC23\DATA\032918\0329F005.D	03/29/18	12:13

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 04/09/2017

**Initial Calibration Summary**  
**Organochlorine Pesticides**

**Calibration ID:** CAL15707  
**Instrument ID:** GC23

**Column:** DB XLB

Level ID	File ID	Level ID	File ID
A	J:\GC23\DATA\040817\0409F014.D	R	J:\GC23\DATA\040817\0409F065.D
B	J:\GC23\DATA\040817\0409F015.D	S	J:\GC23\DATA\040817\0409F066.D
C	J:\GC23\DATA\040817\0409F016.D	T	J:\GC23\DATA\040817\0409F070.D
D	J:\GC23\DATA\040817\0409F017.D	U	J:\GC23\DATA\111417\1114F016.D
E	J:\GC23\DATA\040817\0409F019.D	V	J:\GC23\DATA\111417\1114F017.D
F	J:\GC23\DATA\040817\0409F020.D	W	J:\GC23\DATA\111417\1114F018.D
G	J:\GC23\DATA\040817\0409F022.D	X	J:\GC23\DATA\111417\1114F019.D
H	J:\GC23\DATA\040817\0409F023.D	Y	J:\GC23\DATA\111417\1114F020.D
I	J:\GC23\DATA\040817\0409F024.D	Z	J:\GC23\DATA\111417\1114F021.D
J	J:\GC23\DATA\040817\0409F025.D	AA	J:\GC23\DATA\021418CAL\0214F019.D
K	J:\GC23\DATA\040817\0409F026.D	AB	J:\GC23\DATA\021418CAL\0214F020.D
L	J:\GC23\DATA\040817\0409F027.D	AC	J:\GC23\DATA\021418CAL\0214F021.D
M	J:\GC23\DATA\040817\0409F028.D	AD	J:\GC23\DATA\021418CAL\0214F022.D
N	J:\GC23\DATA\040817\0409F061.D	AE	J:\GC23\DATA\021418CAL\0214F023.D
O	J:\GC23\DATA\040817\0409F062.D	AF	J:\GC23\DATA\021418CAL\0214F024.D
P	J:\GC23\DATA\040817\0409F063.D		
Q	J:\GC23\DATA\040817\0409F064.D		

Analyte Name	Level ID			Level ID			Level ID			Level ID					
	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF			
Tetrachloro-m-xylene				AA	0.20	1.39	AB	0.50	1.22	AC	1.0	1.19	AD	2.0	1.19
	AE	5.0	1.02	AF	10	0.935									
Decachlorobiphenyl				AA	0.20	0.679	AB	0.50	0.774	AC	1.0	0.655	AD	2.0	0.702
	AE	5.0	0.604	AF	10	0.560									
gamma-BHC (Lindane)				AA	0.20	1.54	AB	0.50	1.59	AC	1.0	1.42	AD	2.0	1.40
	AE	5.0	1.23	AF	10	1.15									

Results flagged with an asterisk (\*) indicate values outside control criteria.

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 04/09/2017

**Initial Calibration Summary**  
**Organochlorine Pesticides**

**Calibration ID:** CAL15707  
**Instrument ID:** GC23

**Column:** DB XLB

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Heptachlor				AA	0.20	1.42	AB	0.50	1.31	AC	1.0	1.16	AD	2.0	1.24
	AE	5.0	1.06	AF	10	0.948									
Aldrin				AA	0.20	1.50	AB	0.50	1.39	AC	1.0	1.42	AD	2.0	1.35
	AE	5.0	1.16	AF	10	1.07									
gamma-Chlordane				AA	0.20	1.53	AB	0.50	1.31	AC	1.0	1.22	AD	2.0	1.19
	AE	5.0	1.03	AF	10	0.938									
alpha-Chlordane				AA	0.20	1.34	AB	0.50	1.25	AC	1.0	1.20	AD	2.0	1.19
	AE	5.0	1.01	AF	10	0.905									
Dieldrin				AA	0.20	1.49	AB	0.50	1.38	AC	1.0	1.23	AD	2.0	1.25
	AE	5.0	1.07	AF	10	0.969									

Results flagged with an asterisk (\*) indicate values outside control criteria.

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 04/09/2017

**Initial Calibration Summary**  
**Organochlorine Pesticides**

**Calibration ID:** CAL15707  
**Instrument ID:** GC23

**Column:** DB XLB

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4,4'-DDE				AA	0.20	1.46	AB	0.50	1.31	AC	1.0	1.20	AD	2.0	1.22
	AE	5.0	1.03	AF	10	0.944									
4,4'-DDD				AA	0.20	1.26	AB	0.50	1.15	AC	1.0	1.02	AD	2.0	1.01
	AE	5.0	0.843	AF	10	0.767									
4,4'-DDT				AA	0.20	1.10	AB	0.50	0.884	AC	1.0	0.883	AD	2.0	0.917
	AE	5.0	0.797	AF	10	0.723									
2,4'-DDE															
	U	0.20	1.05	V	0.50	1.04	W	1.0	0.891	X	2.0	0.852	Y	5.0	0.724
	Z	10	0.703												
2,4'-DDD															
	U	0.20	1.16	V	0.50	0.724	W	1.0	0.706	X	2.0	0.666	Y	5.0	0.574
	Z	10	0.559												

Results flagged with an asterisk (\*) indicate values outside control criteria.

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 04/09/2017

**Initial Calibration Summary**  
**Organochlorine Pesticides**

**Calibration ID:** CAL15707  
**Instrument ID:** GC23

**Column:** DB XLB

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2,4'-DDT	U	0.20	1.30	V	0.50	0.810	W	1.0	0.767	X	2.0	0.742	Y	5.0	0.629
	Z	10	0.616												
Oxychlorane	P	2.0	1.23	Q	5.0	1.20	R	10	1.05	N	0.50	1.40	O	1.0	1.21
										S	20	1.04	T	0.20	1.48
cis-Nonachlor	P	2.0	1.41	Q	5.0	1.37	R	10	1.20	N	0.50	1.55	O	1.0	1.39
										S	20	1.20	T	0.20	1.83
trans-Nonachlor	P	2.0	1.31	Q	5.0	1.26	R	10	1.10	N	0.50	1.41	O	1.0	1.22
										S	20	1.10	T	0.20	1.57

Results flagged with an asterisk (\*) indicate values outside control criteria.

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 04/09/2017

**Initial Calibration Summary**  
**Organochlorine Pesticides**

**Calibration ID:** CAL15707  
**Instrument ID:** GC23

**Column:** DB XLB

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Tetrachloro-m-xylene	SURR	AverageRF	% RSD	13.7		≤20	1.16		
Decachlorobiphenyl	SURR	AverageRF	% RSD	11.3		≤20	0.662		
gamma-BHC (Lindane)	MS	AverageRF	% RSD	12.4		≤20	1.39		
Heptachlor	MS	AverageRF	% RSD	14.3		≤20	1.19		
Aldrin	MS	AverageRF	% RSD	12.5		≤20	1.31		
gamma-Chlordane	MS	AverageRF	% RSD	17.4		≤20	1.20		
alpha-Chlordane	MS	AverageRF	% RSD	14.0		≤20	1.15		
Dieldrin	MS	AverageRF	% RSD	15.6		≤20	1.23		
4,4'-DDE	MS	AverageRF	% RSD	15.6		≤20	1.20		
4,4'-DDD	MS	Quadratic	COD	0.999		≥0.990	1.01		
4,4'-DDT	MS	AverageRF	% RSD	14.4		≤20	0.884		
2,4'-DDE	MS	Quadratic	COD	0.998		≥0.990	0.875		
2,4'-DDD	MS	Quadratic	COD	0.999		≥0.990	0.732		
2,4'-DDT	MS	Quadratic	COD	0.999		≥0.990	0.811		
Oxychlordane	MS	AverageRF	% RSD	13.4		≤20	1.23		
cis-Nonachlor	MS	AverageRF	% RSD	15.4		≤20	1.42		
trans-Nonachlor	MS	AverageRF	% RSD	13.2		≤20	1.28		

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 04/09/2017  
**Date Analyzed:** 04/10/2017 - 02/15/2018

**Second Source Calibration Verification**  
**Organochlorine Pesticides**

**Calibration Type:** Internal Standard  
**Analysis Method:** 8081B

**Calibration ID:** CAL15707  
**Units:** ug/L

**File ID:** J:\GC23\DATA\021418CAL\0214F026.D  
 J:\GC23\DATA\111417-CAL\0409F021.D  
 J:\GC23\DATA\111417-CAL\0409F029.D  
 J:\GC23\DATA\111417-CAL\0409F071.D  
 J:\GC23\DATA\111417-CAL\0409F080.D  
 J:\GC23\DATA\111417-CAL\1114F023.D

**Column ID:** DB XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
gamma-BHC (Lindane)	2.0	1.8	1.39	1.24	-11	NA	± 20 %	AverageRF
Heptachlor	2.0	1.7	1.19	1.03	-13	NA	± 20 %	AverageRF
Aldrin	2.0	1.8	1.31	1.15	-12	NA	± 20 %	AverageRF
gamma-Chlordane	2.0	1.7	1.20	1.05	-13	NA	± 20 %	AverageRF
alpha-Chlordane	2.0	1.8	1.15	1.03	-10	NA	± 20 %	AverageRF
Dieldrin	2.0	1.7	1.23	1.02	-17	NA	± 20 %	AverageRF
4,4'-DDE	2.0	1.8	1.20	1.05	-12	NA	± 20 %	AverageRF
4,4'-DDD	2.0	1.8	1.01	0.876	NA	-10	± 20 %	Quadratic
4,4'-DDT	2.0	1.8	0.884	0.805	-9	NA	± 20 %	AverageRF
2,4'-DDE	2.0	2.3	0.875	0.926	NA	14	± 20 %	Quadratic
2,4'-DDD	2.0	2.3	0.732	0.729	NA	17	± 20 %	Quadratic
2,4'-DDT	2.0	2.3	0.811	0.782	NA	13	± 20 %	Quadratic
Oxychlordane	2.0	1.8	1.23	1.12	-9	NA	± 20 %	AverageRF
cis-Nonachlor	2.0	1.9	1.42	1.36	-5	NA	± 20 %	AverageRF
trans-Nonachlor	2.0	2.1	1.28	1.32	3	NA	± 20 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 04/09/2017

**Initial Calibration Summary**  
**Organochlorine Pesticides**

**Calibration ID:** CAL15707  
**Instrument ID:** GC23

**Column:** DB-35MS

Level ID	File ID	Level ID	File ID
A	J:\GC23\DATA\040817\0409F014.D\0409F014c.d	R	J:\GC23\DATA\040817\0409F065.D\0409F065c.d
B	J:\GC23\DATA\040817\0409F015.D\0409F015c.d	S	J:\GC23\DATA\040817\0409F066.D\0409F066c.d
C	J:\GC23\DATA\040817\0409F016.D\0409F016c.d	T	J:\GC23\DATA\040817\0409F070.D\0409F070c.d
D	J:\GC23\DATA\040817\0409F017.D\0409F017c.d	U	J:\GC23\DATA\111417\1114F016.D\1114F016c.d
E	J:\GC23\DATA\040817\0409F019.D\0409F019c.d	V	J:\GC23\DATA\111417\1114F017.D\1114F017c.d
F	J:\GC23\DATA\040817\0409F020.D\0409F020c.d	W	J:\GC23\DATA\111417\1114F018.D\1114F018c.d
G	J:\GC23\DATA\040817\0409F022.D\0409F022c.d	X	J:\GC23\DATA\111417\1114F019.D\1114F019c.d
H	J:\GC23\DATA\040817\0409F023.D\0409F023c.d	Y	J:\GC23\DATA\111417\1114F020.D\1114F020c.d
I	J:\GC23\DATA\040817\0409F024.D\0409F024c.d	Z	J:\GC23\DATA\111417\1114F021.D\1114F021c.d
J	J:\GC23\DATA\040817\0409F025.D\0409F025c.d	AA	J:\GC23\DATA\021418CAL\0214F019.D\0214F019c.d
K	J:\GC23\DATA\040817\0409F026.D\0409F026c.d	AB	J:\GC23\DATA\021418CAL\0214F020.D\0214F020c.d
L	J:\GC23\DATA\040817\0409F027.D\0409F027c.d	AC	J:\GC23\DATA\021418CAL\0214F021.D\0214F021c.d
M	J:\GC23\DATA\040817\0409F028.D\0409F028c.d	AD	J:\GC23\DATA\021418CAL\0214F022.D\0214F022c.d
N	J:\GC23\DATA\040817\0409F061.D\0409F061c.d	AE	J:\GC23\DATA\021418CAL\0214F023.D\0214F023c.d
O	J:\GC23\DATA\040817\0409F062.D\0409F062c.d	AF	J:\GC23\DATA\021418CAL\0214F024.D\0214F024c.d
P	J:\GC23\DATA\040817\0409F063.D\0409F063c.d		
Q	J:\GC23\DATA\040817\0409F064.D\0409F064c.d		

Analyte Name	Level ID			Level ID			Level ID			Level ID					
	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF			
Tetrachloro-m-xylene				AA	0.20	1.44	AB	0.50	1.33	AC	1.0	1.20	AD	2.0	1.19
	AE	5.0	1.06	AF	10	0.976									
Decachlorobiphenyl				AA	0.20	1.15	AB	0.50	1.15	AC	1.0	1.04	AD	2.0	1.01
	AE	5.0	0.892	AF	10	0.828									
gamma-BHC (Lindane)				AA	0.20	1.55	AB	0.50	1.47	AC	1.0	1.38	AD	2.0	1.40
	AE	5.0	1.24	AF	10	1.17									

Results flagged with an asterisk (\*) indicate values outside control criteria.



**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 04/09/2017

**Initial Calibration Summary**  
**Organochlorine Pesticides**

**Calibration ID:** CAL15707  
**Instrument ID:** GC23

**Column:** DB-35MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Heptachlor				AA	0.20	1.67	AB	0.50	1.45	AC	1.0	1.33	AD	2.0	1.37
	AE	5.0	1.21	AF	10	1.11									
Aldrin				AA	0.20	1.65	AB	0.50	1.53	AC	1.0	1.39	AD	2.0	1.39
	AE	5.0	1.25	AF	10	1.15									
gamma-Chlordane				AA	0.20	1.51	AB	0.50	1.44	AC	1.0	1.29	AD	2.0	1.28
	AE	5.0	1.14	AF	10	1.05									
alpha-Chlordane				AA	0.20	1.41	AB	0.50	1.40	AC	1.0	1.29	AD	2.0	1.28
	AE	5.0	1.16	AF	10	1.05									
Dieldrin				AA	0.20	1.66	AB	0.50	1.40	AC	1.0	1.28	AD	2.0	1.29
	AE	5.0	1.13	AF	10	1.05									

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 04/09/2017

**Initial Calibration Summary**  
**Organochlorine Pesticides**

**Calibration ID:** CAL15707  
**Instrument ID:** GC23

**Column:** DB-35MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4,4'-DDE				AA	0.20	1.36	AB	0.50	1.37	AC	1.0	1.24	AD	2.0	1.27
	AE	5.0	1.12	AF	10	1.02									
4,4'-DDD				AA	0.20	1.23	AB	0.50	1.14	AC	1.0	1.03	AD	2.0	1.01
	AE	5.0	0.930	AF	10	0.837									
4,4'-DDT				AA	0.20	0.999	AB	0.50	0.961	AC	1.0	0.930	AD	2.0	0.936
	AE	5.0	0.845	AF	10	0.781									
2,4'-DDE															
	U	0.20	1.06	V	0.50	0.958	W	1.0	0.912	X	2.0	0.916	Y	5.0	0.844
	Z	10	0.824												
2,4'-DDD															
	U	0.20	0.834	V	0.50	0.804	W	1.0	0.738	X	2.0	0.715	Y	5.0	0.601
	Z	10	0.589												

Results flagged with an asterisk (\*) indicate values outside control criteria.

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 04/09/2017

**Initial Calibration Summary**  
**Organochlorine Pesticides**

**Calibration ID:** CAL15707  
**Instrument ID:** GC23

**Column:** DB-35MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2,4'-DDT	U	0.20	1.41	V	0.50	0.838	W	1.0	0.803	X	2.0	0.763	Y	5.0	0.641
	Z	10	0.642												
Oxychlorthane	P	2.0	1.30	Q	5.0	1.27	R	10	1.14	N	0.50	1.34	O	1.0	1.25
										S	20	1.16	T	0.20	1.42
cis-Nonachlor	P	2.0	1.48	Q	5.0	1.43	R	10	1.29	N	0.50	1.64	O	1.0	1.43
										S	20	1.32	T	0.20	1.91
trans-Nonachlor	P	2.0	1.39	Q	5.0	1.34	R	10	1.19	N	0.50	1.49	O	1.0	1.33
										S	20	1.21	T	0.20	1.72

Results flagged with an asterisk (\*) indicate values outside control criteria.

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 04/09/2017

**Initial Calibration Summary**  
**Organochlorine Pesticides**

**Calibration ID:** CAL15707  
**Instrument ID:** GC23

**Column:** DB-35MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Tetrachloro-m-xylene	SURR	AverageRF	% RSD	14.2		≤20	1.20		
Decachlorobiphenyl	SURR	AverageRF	% RSD	13.0		≤20	1.01		
gamma-BHC (Lindane)	MS	AverageRF	% RSD	10.3		≤20	1.37		
Heptachlor	MS	AverageRF	% RSD	14.3		≤20	1.36		
Aldrin	MS	AverageRF	% RSD	13.1		≤20	1.39		
gamma-Chlordane	MS	AverageRF	% RSD	13.5		≤20	1.29		
alpha-Chlordane	MS	AverageRF	% RSD	11.1		≤20	1.26		
Dieldrin	MS	AverageRF	% RSD	16.5		≤20	1.30		
4,4'-DDE	MS	AverageRF	% RSD	11.2		≤20	1.23		
4,4'-DDD	MS	AverageRF	% RSD	13.5		≤20	1.03		
4,4'-DDT	MS	AverageRF	% RSD	8.9		≤20	0.909		
2,4'-DDE	MS	AverageRF	% RSD	9.4		≤20	0.919		
2,4'-DDD	MS	AverageRF	% RSD	14.2		≤20	0.713		
2,4'-DDT	MS	Quadratic	COD	0.999		≥0.990	0.850		
Oxychlordane	MS	AverageRF	% RSD	7.8		≤20	1.27		
cis-Nonachlor	MS	AverageRF	% RSD	14.1		≤20	1.50		
trans-Nonachlor	MS	AverageRF	% RSD	13.0		≤20	1.38		

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 04/09/2017  
**Date Analyzed:** 04/10/2017 - 02/15/2018

**Second Source Calibration Verification  
 Organochlorine Pesticides**

**Calibration Type:** Internal Standard  
**Analysis Method:** 8081B

**Calibration ID:** CAL15707  
**Units:** ug/L

**File ID:** J:\GC23\DATA\021418CAL\0214F026.D\0214F026c.d  
 J:\GC23\DATA\111417-CAL\0409F021.D\0409F021c.d  
 J:\GC23\DATA\111417-CAL\0409F029.D\0409F029c.d  
 J:\GC23\DATA\111417-CAL\0409F071.D\0409F071c.d  
 J:\GC23\DATA\111417-CAL\0409F080.D\0409F080c.d  
 J:\GC23\DATA\111417-CAL\1114F023.D\1114F023c.d

**Column ID:** DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
gamma-BHC (Lindane)	2.0	1.8	1.37	1.21	-12	NA	± 20 %	AverageRF
Heptachlor	2.0	1.8	1.36	1.22	-10	NA	± 20 %	AverageRF
Aldrin	2.0	1.7	1.39	1.20	-14	NA	± 20 %	AverageRF
gamma-Chlordane	2.0	1.8	1.29	1.13	-12	NA	± 20 %	AverageRF
alpha-Chlordane	2.0	1.8	1.26	1.13	-11	NA	± 20 %	AverageRF
Dieldrin	2.0	1.7	1.30	1.07	-17	NA	± 20 %	AverageRF
4,4'-DDE	2.0	1.8	1.23	1.13	-8	NA	± 20 %	AverageRF
4,4'-DDD	2.0	1.8	1.03	0.905	-12	NA	± 20 %	AverageRF
4,4'-DDT	2.0	1.8	0.909	0.824	-9	NA	± 20 %	AverageRF
2,4'-DDE	2.0	2.2	0.919	1.01	9	NA	± 20 %	AverageRF
2,4'-DDD	2.0	2.3	0.713	0.736	3	NA	± 20 %	AverageRF
2,4'-DDT	2.0	1.9	0.850	0.798	NA	-6	± 20 %	Quadratic
Oxychlordane	2.0	1.8	1.27	1.17	-8	NA	± 20 %	AverageRF
cis-Nonachlor	2.0	1.9	1.50	1.42	-6	NA	± 20 %	AverageRF
trans-Nonachlor	2.0	2.0	1.38	1.41	2	NA	± 20 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/2018

**Continuing Calibration Verification Summary  
 Organochlorine Pesticides**

**Calibration Type:** Internal Standard  
**Analysis Method:** 8081B

**Calibration Date:** 04/09/2017  
**Calibration ID:** CAL15707  
**Analysis Lot:** KWG1801351  
**Units:** ug/L  
**Column ID:** DB XLB

**File ID:** J:\GC23\DATA\030818\0308F002.D  
 J:\GC23\DATA\030818\0308F003.D  
 J:\GC23\DATA\030818\0308F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Tetrachloro-m-xylene	2.0	2.1		1.16	1.24	7	NA	± 20	AverageRF
Decachlorobiphenyl	2.0	2.1		0.662	0.702	6	NA	± 20	AverageRF
gamma-BHC (Lindane)	2.0	2.2		1.39	1.53	10	NA	± 20	AverageRF
Heptachlor	2.0	2.0		1.19	1.22	2	NA	± 20	AverageRF
Aldrin	2.0	2.2		1.31	1.45	10	NA	± 20	AverageRF
gamma-Chlordane	2.0	2.1		1.20	1.29	7	NA	± 20	AverageRF
alpha-Chlordane	2.0	2.2		1.15	1.25	8	NA	± 20	AverageRF
Dieldrin	2.0	2.1		1.23	1.31	6	NA	± 20	AverageRF
4,4'-DDE	2.0	2.1		1.20	1.26	5	NA	± 20	AverageRF
4,4'-DDD	2.0	2.1		1.01	0.995	NA	3	± 20	Quadratic
4,4'-DDT	2.0	2.0		0.884	0.905	2	NA	± 20	AverageRF
2,4'-DDE	2.0	2.3		0.875	0.949	NA	17	± 20	Quadratic
2,4'-DDD	2.0	2.7		0.732	0.832	NA	35 *	± 20	Quadratic
2,4'-DDT	2.0	2.6		0.811	0.878	NA	29 *	± 20	Quadratic
Oxychlordane	5.0	4.3		1.23	1.07	-13	NA	± 20	AverageRF
cis-Nonachlor	5.0	4.4		1.42	1.24	-13	NA	± 20	AverageRF
trans-Nonachlor	5.0	4.6		1.28	1.18	-8	NA	± 20	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/2018

**Continuing Calibration Verification Summary  
 Organochlorine Pesticides**

**Calibration Type:** Internal Standard  
**Analysis Method:** 8081B

**Calibration Date:** 04/09/2017  
**Calibration ID:** CAL15707  
**Analysis Lot:** KWG1801351  
**Units:** ug/L  
**Column ID:** DB-35MS

**File ID:** J:\GC23\DATA\030818\0308F002.D\0308F002C.D  
 J:\GC23\DATA\030818\0308F003.D\0308F003C.D  
 J:\GC23\DATA\030818\0308F004.D\0308F004C.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Tetrachloro-m-xylene	2.0	2.1		1.20	1.27	6	NA	± 20	AverageRF
Decachlorobiphenyl	2.0	2.1		1.01	1.05	4	NA	± 20	AverageRF
gamma-BHC (Lindane)	2.0	2.2		1.37	1.52	11	NA	± 20	AverageRF
Heptachlor	2.0	2.1		1.36	1.44	6	NA	± 20	AverageRF
Aldrin	2.0	2.2		1.39	1.54	11	NA	± 20	AverageRF
gamma-Chlordane	2.0	2.2		1.29	1.40	9	NA	± 20	AverageRF
alpha-Chlordane	2.0	2.3		1.26	1.45	14	NA	± 20	AverageRF
Dieldrin	2.0	2.2		1.30	1.40	8	NA	± 20	AverageRF
4,4'-DDE	2.0	2.3		1.23	1.39	13	NA	± 20	AverageRF
4,4'-DDD	2.0	2.2		1.03	1.13	10	NA	± 20	AverageRF
4,4'-DDT	2.0	2.3		0.909	1.02	13	NA	± 20	AverageRF
2,4'-DDE	2.0	2.3		0.919	1.04	13	NA	± 20	AverageRF
2,4'-DDD	2.0	2.4		0.713	0.843	18	NA	± 20	AverageRF
2,4'-DDT	2.0	2.7		0.850	0.945	NA	36 *	± 20	Quadratic
Oxychlordane	5.0	4.8		1.27	1.22	-4	NA	± 20	AverageRF
cis-Nonachlor	5.0	4.7		1.50	1.40	-6	NA	± 20	AverageRF
trans-Nonachlor	5.0	4.8		1.38	1.33	-4	NA	± 20	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/2018 - 03/09/2018

**Continuing Calibration Verification Summary  
 Organochlorine Pesticides**

**Calibration Type:** Internal Standard  
**Analysis Method:** 8081B

**Calibration Date:** 04/09/2017  
**Calibration ID:** CAL15707  
**Analysis Lot:** KWG1801351  
**Units:** ug/L  
**Column ID:** DB XLB

**File ID:** J:\GC23\DATA\030818\0308F027.D  
 J:\GC23\DATA\030818\0308F029.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Tetrachloro-m-xylene	2.0	2.1		1.16	1.24	7	NA	± 20	AverageRF
Decachlorobiphenyl	2.0	2.1		0.662	0.690	4	NA	± 20	AverageRF
gamma-BHC (Lindane)	2.0	2.3		1.39	1.58	14	NA	± 20	AverageRF
Heptachlor	2.0	2.0		1.19	1.20	1	NA	± 20	AverageRF
Aldrin	2.0	2.2		1.31	1.44	10	NA	± 20	AverageRF
gamma-Chlordane	2.0	2.2		1.20	1.30	8	NA	± 20	AverageRF
alpha-Chlordane	2.0	2.2		1.15	1.27	10	NA	± 20	AverageRF
Dieldrin	2.0	2.2		1.23	1.33	8	NA	± 20	AverageRF
4,4'-DDE	2.0	2.1		1.20	1.26	6	NA	± 20	AverageRF
4,4'-DDD	2.0	2.2		1.01	1.06	NA	11	± 20	Quadratic
4,4'-DDT	2.0	2.0		0.884	0.873	-1	NA	± 20	AverageRF
Oxychlordane	5.0	4.5		1.23	1.10	-11	NA	± 20	AverageRF
cis-Nonachlor	5.0	4.4		1.42	1.25	-12	NA	± 20	AverageRF
trans-Nonachlor	5.0	4.5		1.28	1.17	-9	NA	± 20	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.



QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/2018 - 03/09/2018

**Continuing Calibration Verification Summary  
 Organochlorine Pesticides**

**Calibration Type:** Internal Standard  
**Analysis Method:** 8081B

**Calibration Date:** 04/09/2017  
**Calibration ID:** CAL15707  
**Analysis Lot:** KWG1801351  
**Units:** ug/L  
**Column ID:** DB-35MS

**File ID:** J:\GC23\DATA\030818\0308F027.D\0308F027C.D  
 J:\GC23\DATA\030818\0308F029.D\0308F029C.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Tetrachloro-m-xylene	2.0	2.0		1.20	1.23	2	NA	± 20	AverageRF
Decachlorobiphenyl	2.0	2.0		1.01	1.01	0	NA	± 20	AverageRF
gamma-BHC (Lindane)	2.0	2.2		1.37	1.51	10	NA	± 20	AverageRF
Heptachlor	2.0	2.0		1.36	1.39	2	NA	± 20	AverageRF
Aldrin	2.0	2.1		1.39	1.48	6	NA	± 20	AverageRF
gamma-Chlordane	2.0	2.2		1.29	1.39	8	NA	± 20	AverageRF
alpha-Chlordane	2.0	2.2		1.26	1.38	9	NA	± 20	AverageRF
Dieldrin	2.0	2.1		1.30	1.38	6	NA	± 20	AverageRF
4,4'-DDE	2.0	2.2		1.23	1.35	10	NA	± 20	AverageRF
4,4'-DDD	2.0	2.1		1.03	1.09	6	NA	± 20	AverageRF
4,4'-DDT	2.0	2.0		0.909	0.908	0	NA	± 20	AverageRF
Oxychlordane	5.0	4.8		1.27	1.21	-5	NA	± 20	AverageRF
cis-Nonachlor	5.0	4.6		1.50	1.39	-7	NA	± 20	AverageRF
trans-Nonachlor	5.0	4.8		1.38	1.31	-5	NA	± 20	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/09/2018

**Continuing Calibration Verification Summary  
 Organochlorine Pesticides**

**Calibration Type:** Internal Standard  
**Analysis Method:** 8081B

**Calibration Date:** 04/09/2017  
**Calibration ID:** CAL15707  
**Analysis Lot:** KWG1801351  
**Units:** ug/L  
**Column ID:** DB XLB

**File ID:** J:\GC23\DATA\030818\0308F044.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Tetrachloro-m-xylene	2.0	2.1		1.16	1.23	6	NA	± 20	AverageRF
Decachlorobiphenyl	2.0	2.1		0.662	0.705	6	NA	± 20	AverageRF
gamma-BHC (Lindane)	2.0	2.2		1.39	1.53	11	NA	± 20	AverageRF
Heptachlor	2.0	2.1		1.19	1.22	3	NA	± 20	AverageRF
Aldrin	2.0	2.2		1.31	1.43	9	NA	± 20	AverageRF
gamma-Chlordane	2.0	2.2		1.20	1.29	8	NA	± 20	AverageRF
alpha-Chlordane	2.0	2.2		1.15	1.25	8	NA	± 20	AverageRF
Dieldrin	2.0	2.1		1.23	1.30	5	NA	± 20	AverageRF
4,4'-DDE	2.0	2.1		1.20	1.24	4	NA	± 20	AverageRF
4,4'-DDD	2.0	2.2		1.01	1.06	NA	11	± 20	Quadratic
4,4'-DDT	2.0	2.0		0.884	0.869	-2	NA	± 20	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/09/2018

**Continuing Calibration Verification Summary  
 Organochlorine Pesticides**

**Calibration Type:** Internal Standard  
**Analysis Method:** 8081B

**Calibration Date:** 04/09/2017  
**Calibration ID:** CAL15707  
**Analysis Lot:** KWG1801351  
**Units:** ug/L  
**Column ID:** DB-35MS

**File ID:** J:\GC23\DATA\030818\0308F044.D\0308F044C.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Tetrachloro-m-xylene	2.0	2.0		1.20	1.23	2	NA	± 20	AverageRF
Decachlorobiphenyl	2.0	2.1		1.01	1.04	3	NA	± 20	AverageRF
gamma-BHC (Lindane)	2.0	2.2		1.37	1.51	10	NA	± 20	AverageRF
Heptachlor	2.0	2.1		1.36	1.43	6	NA	± 20	AverageRF
Aldrin	2.0	2.1		1.39	1.46	5	NA	± 20	AverageRF
gamma-Chlordane	2.0	2.1		1.29	1.38	7	NA	± 20	AverageRF
alpha-Chlordane	2.0	2.2		1.26	1.38	9	NA	± 20	AverageRF
Dieldrin	2.0	2.1		1.30	1.39	7	NA	± 20	AverageRF
4,4'-DDE	2.0	2.2		1.23	1.37	12	NA	± 20	AverageRF
4,4'-DDD	2.0	2.1		1.03	1.08	5	NA	± 20	AverageRF
4,4'-DDT	2.0	2.2		0.909	0.986	9	NA	± 20	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/29/2018

**Continuing Calibration Verification Summary**  
**Organochlorine Pesticides**

**Calibration Type:** Internal Standard  
**Analysis Method:** 8081B

**Calibration Date:** 04/09/2017  
**Calibration ID:** CAL15707  
**Analysis Lot:** KWG1801701  
**Units:** ug/L  
**Column ID:** DB XLB

**File ID:** J:\GC23\DATA\032918\0329F002.D  
 J:\GC23\DATA\032918\0329F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit	
Tetrachloro-m-xylene	2.0	2.2		1.16	1.27	10	NA	± 20	AverageRF	
Decachlorobiphenyl	2.0	2.1		0.662	0.694	5	NA	± 20	AverageRF	
gamma-BHC (Lindane)	2.0	2.1		1.39	1.45	4	NA	± 20	AverageRF	
Heptachlor	2.0	1.8		1.19	1.07	-10	NA	± 20	AverageRF	
Aldrin	2.0	2.2		1.31	1.47	12	NA	± 20	AverageRF	
gamma-Chlordane	2.0	2.1		1.20	1.26	5	NA	± 20	AverageRF	
alpha-Chlordane	2.0	2.2		1.15	1.23	8	NA	± 20	AverageRF	
Dieldrin	2.0	2.1		1.23	1.31	6	NA	± 20	AverageRF	
4,4'-DDE	2.0	2.1		1.20	1.25	5	NA	± 20	AverageRF	
4,4'-DDD	2.0	2.0		1.01	0.962	NA	0	± 20	Quadratic	
4,4'-DDT	2.0	1.6		0.884	0.692	-22	*	± 20	AverageRF	
2,4'-DDE	2.0	2.4		0.875	0.974	NA	20	± 20	Quadratic	
2,4'-DDD	2.0	2.6		0.732	0.811	NA	31	*	± 20	Quadratic
2,4'-DDT	2.0	2.3		0.811	0.782	NA	14	± 20	Quadratic	

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/29/2018

**Continuing Calibration Verification Summary  
 Organochlorine Pesticides**

**Calibration Type:** Internal Standard  
**Analysis Method:** 8081B

**Calibration Date:** 04/09/2017  
**Calibration ID:** CAL15707  
**Analysis Lot:** KWG1801701  
**Units:** ug/L  
**Column ID:** DB-35MS

**File ID:** J:\GC23\DATA\032918\0329F002.D\0329F002C.D  
 J:\GC23\DATA\032918\0329F003.D\0329F003C.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Tetrachloro-m-xylene	2.0	2.1		1.20	1.26	5	NA	± 20	AverageRF
Decachlorobiphenyl	2.0	2.1		1.01	1.04	3	NA	± 20	AverageRF
gamma-BHC (Lindane)	2.0	2.1		1.37	1.45	6	NA	± 20	AverageRF
Heptachlor	2.0	2.0		1.36	1.35	-1	NA	± 20	AverageRF
Aldrin	2.0	2.1		1.39	1.49	7	NA	± 20	AverageRF
gamma-Chlordane	2.0	2.1		1.29	1.35	5	NA	± 20	AverageRF
alpha-Chlordane	2.0	2.2		1.26	1.37	8	NA	± 20	AverageRF
Dieldrin	2.0	2.1		1.30	1.36	4	NA	± 20	AverageRF
4,4'-DDE	2.0	2.2		1.23	1.34	9	NA	± 20	AverageRF
4,4'-DDD	2.0	1.9		1.03	0.987	-4	NA	± 20	AverageRF
4,4'-DDT	2.0	1.9		0.909	0.861	-5	NA	± 20	AverageRF
2,4'-DDE	2.0	2.2		0.919	1.02	11	NA	± 20	AverageRF
2,4'-DDD	2.0	2.5		0.713	0.889	25 *	NA	± 20	AverageRF
2,4'-DDT	2.0	2.5		0.850	0.876	NA	26 *	± 20	Quadratic

Results flagged with an asterisk (\*) indicate values outside control criteria.

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**Analysis Run Log**  
**Organochlorine Pesticides**

**Analysis Method:** 8081B

**Analysis Lot:** KWG1801351  
**Instrument ID:** GC23  
**Column:** DB XLB

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0308F001.D	Performance Evaluation Mixture	KWG1801351-2	3/8/2018	07:28		3/8/2018	07:50
0308F002.D	Continuing Calibration Verification	KWG1801351-3	3/8/2018	07:57		3/8/2018	08:19
0308F003.D	Continuing Calibration Verification	KWG1801351-3	3/8/2018	08:27		3/8/2018	08:49
0308F004.D	Continuing Calibration Verification	KWG1801351-3	3/8/2018	08:56		3/8/2018	09:18
0308F005.D	Instrument Blank	KWG1801351-1	3/8/2018	09:26		3/8/2018	09:48
0308F006.D	SED-1	K1801446-001	3/8/2018	09:56		3/8/2018	10:18
0308F007.D	SED-2	K1801446-002	3/8/2018	10:26		3/8/2018	10:48
0308F008.D	SED-3	K1801446-003	3/8/2018	10:56		3/8/2018	11:18
0308F010.D	SED-5	K1801446-005	3/8/2018	14:08		3/8/2018	14:30
0308F011.D	SED-6	K1801446-006	3/8/2018	14:38		3/8/2018	15:00
0308F012.D	SED-7	K1801446-007	3/8/2018	15:08		3/8/2018	15:30
0308FX09.D	SED-4	K1801446-004	3/8/2018	15:37		3/8/2018	15:59
0308F013.D	SED-8	K1801446-008	3/8/2018	16:07		3/8/2018	16:29
0308F014.D	SED-9	K1801446-009	3/8/2018	16:36		3/8/2018	16:58
0308F015.D	SED-10	K1801446-010	3/8/2018	17:06		3/8/2018	17:28
0308F016.D	SED-11	K1801446-011	3/8/2018	17:35		3/8/2018	17:57
0308F017.D	SED-12	K1801446-012	3/8/2018	18:05		3/8/2018	18:27
0308F018.D	SED-13	K1801446-013	3/8/2018	18:34		3/8/2018	18:56
0308F019.D	SED-6MS	KWG1801137-1	3/8/2018	19:04		3/8/2018	19:26
0308F020.D	SED-6DMS	KWG1801137-2	3/8/2018	19:34		3/8/2018	19:56
0308F021.D	SED-6MS	KWG1801137-1	3/8/2018	20:04		3/8/2018	20:26
0308F023.D	Lab Control Sample	KWG1801137-7	3/8/2018	21:04		3/8/2018	21:26
0308F024.D	Lab Control Sample	KWG1801137-7	3/8/2018	21:34		3/8/2018	21:56
0308F025.D	Method Blank	KWG1801137-10	3/8/2018	22:03		3/8/2018	22:25
0308F026.D	Performance Evaluation Mixture	KWG1801351-5	3/8/2018	22:33		3/8/2018	22:55
0308F027.D	Continuing Calibration Verification	KWG1801351-6	3/8/2018	23:03		3/8/2018	23:25
0308F028.D	Continuing Calibration Verification	KWG1801351-6	3/8/2018	23:33		3/8/2018	23:55
0308F029.D	Continuing Calibration Verification	KWG1801351-6	3/9/2018	00:03		3/9/2018	00:25
0308F030.D	Instrument Blank	KWG1801351-4	3/9/2018	00:32		3/9/2018	00:54
0308F031.D	ZZZZZZ	ZZZZZZ	3/9/2018	01:01		3/9/2018	01:23
0308F032.D	ZZZZZZ	ZZZZZZ	3/9/2018	01:31		3/9/2018	01:53
0308F033.D	ZZZZZZ	ZZZZZZ	3/9/2018	02:00		3/9/2018	02:22
0308F034.D	ZZZZZZ	ZZZZZZ	3/9/2018	02:31		3/9/2018	02:53
0308F035.D	ZZZZZZ	ZZZZZZ	3/9/2018	03:00		3/9/2018	03:22
0308F036.D	ZZZZZZ	ZZZZZZ	3/9/2018	03:30		3/9/2018	03:52

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**Analysis Run Log**  
**Organochlorine Pesticides**

**Analysis Method:** 8081B

**Analysis Lot:** KWG1801351  
**Instrument ID:** GC23  
**Column:** DB XLB

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0308F037.D	ZZZZZZ	ZZZZZZ	3/9/2018	03:59		3/9/2018	04:21
0308F038.D	ZZZZZZ	ZZZZZZ	3/9/2018	04:28		3/9/2018	04:50
0308F039.D	ZZZZZZ	ZZZZZZ	3/9/2018	04:57		3/9/2018	05:19
0308F040.D	ZZZZZZ	ZZZZZZ	3/9/2018	05:26		3/9/2018	05:48
0308F041.D	ZZZZZZ	ZZZZZZ	3/9/2018	05:56		3/9/2018	06:18
0308F042.D	ZZZZZZ	ZZZZZZ	3/9/2018	06:25		3/9/2018	06:47
0308F043.D	Performance Evaluation Mixture	KWG1801351-8	3/9/2018	06:54		3/9/2018	07:16
0308F044.D	Continuing Calibration Verification	KWG1801351-9	3/9/2018	07:23		3/9/2018	07:45
0308F045.D	Continuing Calibration Verification	KWG1801351-9	3/9/2018	07:52		3/9/2018	08:14
0308F046.D	Instrument Blank	KWG1801351-7	3/9/2018	08:21		3/9/2018	08:43
0308F047.D	ZZZZZZ	ZZZZZZ	3/9/2018	08:51		3/9/2018	09:13
0308F048.D	ZZZZZZ	ZZZZZZ	3/9/2018	09:20		3/9/2018	09:42
0308F049.D	ZZZZZZ	ZZZZZZ	3/9/2018	09:49		3/9/2018	10:11
0308F050.D	ZZZZZZ	ZZZZZZ	3/9/2018	10:18		3/9/2018	10:40
0308F051.D	ZZZZZZ	ZZZZZZ	3/9/2018	10:47		3/9/2018	11:09
0308F052.D	ZZZZZZ	ZZZZZZ	3/9/2018	11:17		3/9/2018	11:39
0308F053.D	ZZZZZZ	ZZZZZZ	3/9/2018	11:46		3/9/2018	12:08
0308F054.D	ZZZZZZ	ZZZZZZ	3/9/2018	12:16		3/9/2018	12:38
0308F055.D	ZZZZZZ	ZZZZZZ	3/9/2018	12:45		3/9/2018	13:07
0308F056.D	ZZZZZZ	ZZZZZZ	3/9/2018	13:14		3/9/2018	13:36
0308F057.D	ZZZZZZ	ZZZZZZ	3/9/2018	13:43		3/9/2018	14:05

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**Analysis Run Log  
 Organochlorine Pesticides**

**Analysis Method:** 8081B

**Analysis Lot:** KWG1801701  
**Instrument ID:** GC23  
**Column:** DB XLB

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0329F001.D	Performance Evaluation Mixture	KWG1801701-2	3/29/2018	10:16		3/29/2018	10:38
0329F002.D	Continuing Calibration Verification	KWG1801701-3	3/29/2018	10:45		3/29/2018	11:07
0329F003.D	Continuing Calibration Verification	KWG1801701-3	3/29/2018	11:15		3/29/2018	11:37
0329F004.D	Instrument Blank	KWG1801701-1	3/29/2018	11:44		3/29/2018	12:06
0329F005.D	SED-6DMS	KWG1801137-2	3/29/2018	12:13		3/29/2018	12:35

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis



QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Extracted:** 02/26/2018

**Extraction Prep Log**  
**Organochlorine Pesticides**

**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Extraction Lot:** KWG1801137  
**Level:** Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
SED-1	K1801446-001	02/12/18	02/14/18	2.233g	10mL	47.3	
SED-2	K1801446-002	02/12/18	02/14/18	2.288g	10mL	56.3	
SED-3	K1801446-003	02/12/18	02/14/18	2.146g	10mL	42.1	
SED-4	K1801446-004	02/12/18	02/14/18	2.362g	10mL	48.5	
SED-5	K1801446-005	02/12/18	02/14/18	2.382g	10mL	37.5	
SED-6	K1801446-006	02/12/18	02/14/18	2.243g	10mL	37.4	
SED-7	K1801446-007	02/12/18	02/14/18	2.312g	10mL	66	
SED-8	K1801446-008	02/12/18	02/14/18	2.473g	10mL	48.7	
SED-9	K1801446-009	02/12/18	02/14/18	2.412g	10mL	37.5	
SED-10	K1801446-010	02/12/18	02/14/18	2.367g	10mL	71.8	
SED-11	K1801446-011	02/12/18	02/14/18	2.418g	10mL	52.9	
SED-12	K1801446-012	02/12/18	02/14/18	2.342g	10mL	64	
SED-13	K1801446-013	02/12/18	02/14/18	2.378g	10mL	75.6	
Method Blank	KWG1801137-10	NA	NA	2.473g	10mL	NA	
SED-6MS	KWG1801137-1	02/12/18	02/14/18	2.235g	10mL	37.4	
SED-6MS	KWG1801137-1	02/12/18	02/14/18	2.268g	10mL	37.4	
SED-6DMS	KWG1801137-2	02/12/18	02/14/18	2.260g	10mL	37.4	
Lab Control Sample	KWG1801137-7	NA	NA	2.000g	10mL	NA	

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Organochlorine Pesticides

**Sample Name:** SED-1  
**Lab Code:** K1801446-001  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
gamma-BHC (Lindane)	1.9	0.59	1.7	3.0	55.3	JP	1	03/08/18
Oxychlorane	1.9	0.48	2.8	3.8	30.3		1	03/08/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Organochlorine Pesticides

**Sample Name:** SED-3  
**Lab Code:** K1801446-003  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
gamma-BHC (Lindane)	2.3	0.69	1.8	3.1	53.1	JP	1	03/08/18
Dieldrin	2.3	0.49	0.75	1.7	77.6	JP	1	03/08/18
Oxychlorane	2.3	0.56	5.3	6.1	14.0		1	03/08/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Organochlorine Pesticides

**Sample Name:** SED-5  
**Lab Code:** K1801446-005  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
gamma-BHC (Lindane)	2.3	0.70	2.6	4.3	49.3	P	1	03/08/18
Dieldrin	2.3	0.50	1.9	2.0	5.1	J	1	03/08/18
2,4'-DDD	2.3	0.61	2.1	2.2	4.7	J	1	03/08/18
Oxychlordan	2.3	0.56	4.9	7.8	45.7	P	1	03/08/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Organochlorine Pesticides

**Sample Name:** SED-7  
**Lab Code:** K1801446-007  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
2,4'-DDT	1.4	0.63	1.2	2.2	58.8	JP	1	03/08/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Organochlorine Pesticides

**Sample Name:** SED-9  
**Lab Code:** K1801446-009  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Dieldrin	2.3	0.49	5.3	7.1	29.0		1	03/08/18
4,4'-DDE	2.3	0.89	1.0	2.8	94.7	JP	1	03/08/18
4,4'-DDD	2.3	1.4	4.1	10	83.7	P	1	03/08/18
2,4'-DDD	2.3	0.60	6.7	13	64.0	P	1	03/08/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Organochlorine Pesticides

**Sample Name:** SED-10  
**Lab Code:** K1801446-010  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
gamma-BHC (Lindane)	1.2	0.37	0.72	1.2	50.0	JP	1	03/08/18
4,4'-DDD	1.2	0.71	19	23	19.0		1	03/08/18
cis-Nonachlor	1.2	0.35	7.5	16	72.3	P	1	03/08/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Organochlorine Pesticides

**Sample Name:** SED-11  
**Lab Code:** K1801446-011  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
gamma-BHC (Lindane)	1.6	0.49	0.59	1.4	81.4	JP	1	03/08/18
4,4'-DDE	1.6	0.63	2.5	3.6	36.1		1	03/08/18
4,4'-DDD	1.6	0.94	5.7	12	71.2	P	1	03/08/18



Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Organochlorine Pesticides

**Sample Name:** SED-12  
**Lab Code:** K1801446-012  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
alpha-Chlordane	1.4	0.55	1.1	1.5	30.8	J	1	03/08/18
Dieldrin	1.4	0.30	1.6	2.1	27.0		1	03/08/18
4,4'-DDE	1.4	0.54	0.85	1.1	25.6	J	1	03/08/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Organochlorine Pesticides

**Sample Name:** SED-13  
**Lab Code:** K1801446-013  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8081B

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
gamma-BHC (Lindane)	1.2	0.35	0.84	2.4	96.3	JP	1	03/08/18
4,4'-DDE	1.2	0.45	4.0	12	100.0	P	1	03/08/18
4,4'-DDD	1.2	0.67	36	38	5.4		1	03/08/18
cis-Nonachlor	1.2	0.33	12	14	15.4		1	03/08/18



## Polychlorinated Biphenyls (PCBs)

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

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 Polychlorinated Biphenyls (PCBs)**

<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Collected</b>	<b>Date Received</b>
SED-1	K1801446-001	02/12/2018	02/14/2018
SED-2	K1801446-002	02/12/2018	02/14/2018
SED-3	K1801446-003	02/12/2018	02/14/2018
SED-4	K1801446-004	02/12/2018	02/14/2018
SED-5	K1801446-005	02/12/2018	02/14/2018
SED-6	K1801446-006	02/12/2018	02/14/2018
SED-7	K1801446-007	02/12/2018	02/14/2018
SED-8	K1801446-008	02/12/2018	02/14/2018
SED-9	K1801446-009	02/12/2018	02/14/2018
SED-10	K1801446-010	02/12/2018	02/14/2018
SED-11	K1801446-011	02/12/2018	02/14/2018
SED-12	K1801446-012	02/12/2018	02/14/2018
SED-13	K1801446-013	02/12/2018	02/14/2018
SED-6MS	KWG1801138-1	02/12/2018	02/14/2018
SED-6DMS	KWG1801138-2	02/12/2018	02/14/2018

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-1  
**Lab Code:** K1801446-001  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	19	5.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1221	ND	U	38	5.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1232	ND	U	19	5.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1242	ND	U	19	5.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1248	ND	U	19	5.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1254	17	JP	19	5.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1260	ND	U	19	5.5	1	02/26/18	03/05/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	75	70-130	03/05/18	Acceptable

**Comments:** \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-2  
**Lab Code:** K1801446-002  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	16	4.6	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1221	ND	U	32	4.6	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1232	ND	U	16	4.6	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1242	ND	U	16	4.6	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1248	ND	U	16	4.6	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1254	ND	U	16	4.6	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1260	ND	U	16	4.6	1	02/26/18	03/05/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	73	70-130	03/05/18	Acceptable

**Comments:** \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-3  
**Lab Code:** K1801446-003  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1221	ND	U	45	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1232	ND	U	23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1242	ND	U	23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1248	ND	U	23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1254	<b>26</b>		23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1260	<b>8.6</b>	JP	23	6.5	1	02/26/18	03/05/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	84	70-130	03/05/18	Acceptable

**Comments:** \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-4  
**Lab Code:** K1801446-004  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	18	5.1	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1221	ND	U	35	5.1	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1232	ND	U	18	5.1	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1242	ND	U	18	5.1	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1248	ND	U	18	5.1	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1254	6.9	JP	18	5.1	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1260	ND	U	18	5.1	1	02/26/18	03/05/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	76	70-130	03/05/18	Acceptable

**Comments:** \_\_\_\_\_



Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-5  
**Lab Code:** K1801446-005  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1221	ND	U	45	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1232	ND	U	23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1242	ND	U	23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1248	ND	U	23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1254	<b>30</b>		23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1260	<b>25</b>		23	6.5	1	02/26/18	03/05/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	84	70-130	03/05/18	Acceptable

**Comments:** \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-6  
**Lab Code:** K1801446-006  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	24	7.0	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1221	ND	U	48	7.0	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1232	ND	U	24	7.0	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1242	ND	U	24	7.0	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1248	ND	U	24	7.0	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1254	17	J	24	7.0	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1260	10	J	24	7.0	1	02/26/18	03/05/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	70	70-130	03/05/18	Acceptable

**Comments:** \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-7  
**Lab Code:** K1801446-007  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	14	3.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1221	ND	U	27	3.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1232	ND	U	14	3.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1242	ND	U	14	3.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1248	ND	U	14	3.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1254	16	P	14	3.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1260	7.0	J	14	3.9	1	02/26/18	03/05/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	64	70-130	03/05/18	Outside Control Limits

**Comments:** \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-8  
**Lab Code:** K1801446-008  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	17	4.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1221	ND	U	34	4.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1232	ND	U	17	4.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1242	ND	U	17	4.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1248	ND	U	17	4.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1254	<b>85</b>		17	4.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1260	<b>62</b>		17	4.9	1	02/26/18	03/05/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	75	70-130	03/05/18	Acceptable

**Comments:** \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-9  
**Lab Code:** K1801446-009  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1221	ND	U	45	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1232	ND	U	23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1242	<b>77</b>		23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1248	ND	U	23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1254	<b>130</b>		23	6.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1260	<b>45</b>		23	6.5	1	02/26/18	03/05/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	81	70-130	03/05/18	Acceptable

**Comments:** \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-10  
**Lab Code:** K1801446-010  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	12	3.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1221	ND	U	24	3.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1232	ND	U	12	3.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1242	<b>200</b>	P	12	3.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1248	ND	U	12	3.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1254	<b>320</b>		12	3.5	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1260	<b>130</b>		12	3.5	1	02/26/18	03/05/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	84	70-130	03/05/18	Acceptable

**Comments:** \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-11  
**Lab Code:** K1801446-011  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	16	4.6	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1221	ND	U	32	4.6	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1232	ND	U	16	4.6	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1242	<b>36</b>	P	16	4.6	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1248	ND	U	16	4.6	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1254	<b>160</b>		16	4.6	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1260	<b>38</b>		16	4.6	1	02/26/18	03/05/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	96	70-130	03/05/18	Acceptable

**Comments:** \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-12  
**Lab Code:** K1801446-012  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	14	3.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1221	ND	U	27	3.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1232	ND	U	14	3.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1242	ND	U	14	3.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1248	ND	U	14	3.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1254	<b>28</b>		14	3.9	1	02/26/18	03/05/18	KWG1801138	
Aroclor 1260	<b>7.3</b>	J	14	3.9	1	02/26/18	03/05/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	70	70-130	03/05/18	Acceptable

**Comments:** \_\_\_\_\_



Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018

**Polychlorinated Biphenyls (PCBs)**

**Sample Name:** SED-13  
**Lab Code:** K1801446-013  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	56	17	5	02/26/18	03/06/18	KWG1801138	
Aroclor 1221	ND	U	120	17	5	02/26/18	03/06/18	KWG1801138	
Aroclor 1232	ND	U	56	17	5	02/26/18	03/06/18	KWG1801138	
Aroclor 1242	<b>220</b>	PD	56	17	5	02/26/18	03/06/18	KWG1801138	
Aroclor 1248	ND	U	56	17	5	02/26/18	03/06/18	KWG1801138	
Aroclor 1254	<b>650</b>	D	56	17	5	02/26/18	03/06/18	KWG1801138	
Aroclor 1260	<b>310</b>	D	56	17	5	02/26/18	03/06/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	119	70-130	03/06/18	Acceptable

**Comments:** \_\_\_\_\_

Analytical Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** NA  
**Date Received:** NA

Polychlorinated Biphenyls (PCBs)

**Sample Name:** Method Blank  
**Lab Code:** KWG1801138-4  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	10	2.9	1	02/26/18	03/02/18	KWG1801138	
Aroclor 1221	ND	U	17	2.9	1	02/26/18	03/02/18	KWG1801138	
Aroclor 1232	ND	U	10	2.9	1	02/26/18	03/02/18	KWG1801138	
Aroclor 1242	ND	U	10	2.9	1	02/26/18	03/02/18	KWG1801138	
Aroclor 1248	ND	U	10	2.9	1	02/26/18	03/02/18	KWG1801138	
Aroclor 1254	ND	U	10	2.9	1	02/26/18	03/02/18	KWG1801138	
Aroclor 1260	ND	U	10	2.9	1	02/26/18	03/02/18	KWG1801138	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	71	70-130	03/02/18	Acceptable

**Comments:** \_\_\_\_\_

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446

**Surrogate Recovery Summary  
 Polychlorinated Biphenyls (PCBs)**

**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** Percent  
**Level:** Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
SED-1	K1801446-001	75
SED-2	K1801446-002	73
SED-3	K1801446-003	84
SED-4	K1801446-004	76
SED-5	K1801446-005	84
SED-6	K1801446-006	70
SED-7	K1801446-007	64 *
SED-8	K1801446-008	75
SED-9	K1801446-009	81
SED-10	K1801446-010	84
SED-11	K1801446-011	96
SED-12	K1801446-012	70
SED-13	K1801446-013	119 D
Method Blank	KWG1801138-4	71
SED-6MS	KWG1801138-1	69 *
SED-6DMS	KWG1801138-2	72
Lab Control Sample	KWG1801138-3	69 *

**Surrogate Recovery Control Limits (%)**

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Sur1 = Decachlorobiphenyl 70-130

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Results flagged with an asterisk (\*) indicate values outside control criteria.  
 Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Extracted:** 02/26/2018  
**Date Analyzed:** 03/02/2018

**Matrix Spike/Duplicate Matrix Spike Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Sample Name:** SED-6  
**Lab Code:** K1801446-006  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low  
**Extraction Lot:** KWG1801138

Analyte Name	Sample Result	SED-6MS KWG1801138-1 Matrix Spike			SED-6DMS KWG1801138-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	ND	246	243	101	234	243	97	70-130	5	40
Aroclor 1260	10	241	243	95	240	243	95	70-130	0	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Extracted:** 02/26/2018  
**Date Analyzed:** 03/02/2018

**Lab Control Spike Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low  
**Extraction Lot:** KWG1801138

Lab Control Sample  
 KWG1801138-3  
 Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Aroclor 1016	93.0	100	93	70-130
Aroclor 1260	91.2	100	91	70-130

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Extracted:** 02/26/2018  
**Date Analyzed:** 03/02/2018  
**Time Analyzed:** 22:52

**Method Blank Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Sample Name:** Method Blank  
**Lab Code:** KWG1801138-4  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Instrument ID:** GC32.i  
**File ID:** J:\GC32\DATA\030118.B\0301F065.D  
**Level:** Low  
**Extraction Lot:** KWG1801138

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
SED-6MS	KWG1801138-1	J:\GC32\DATA\030118.B\0301F062.D	03/02/18	21:16
SED-6DMS	KWG1801138-2	J:\GC32\DATA\030118.B\0301F063.D	03/02/18	21:48
Lab Control Sample	KWG1801138-3	J:\GC32\DATA\030118.B\0301F064.D	03/02/18	22:20
SED-1	K1801446-001	J:\GC32\DATA\030518.B\0305F003.D	03/05/18	15:02
SED-2	K1801446-002	J:\GC32\DATA\030518.B\0305F004.D	03/05/18	15:34
SED-3	K1801446-003	J:\GC32\DATA\030518.B\0305F005.D	03/05/18	16:06
SED-4	K1801446-004	J:\GC32\DATA\030518.B\0305F006.D	03/05/18	16:37
SED-5	K1801446-005	J:\GC32\DATA\030518.B\0305F007.D	03/05/18	17:09
SED-6	K1801446-006	J:\GC32\DATA\030518.B\0305F008.D	03/05/18	17:41
SED-7	K1801446-007	J:\GC32\DATA\030518.B\0305F009.D	03/05/18	18:12
SED-8	K1801446-008	J:\GC32\DATA\030518.B\0305F010.D	03/05/18	18:44
SED-9	K1801446-009	J:\GC32\DATA\030518.B\0305F011.D	03/05/18	19:16
SED-10	K1801446-010	J:\GC32\DATA\030518.B\0305F012.D	03/05/18	19:48
SED-11	K1801446-011	J:\GC32\DATA\030518.B\0305F015.D	03/05/18	21:23
SED-12	K1801446-012	J:\GC32\DATA\030518.B\0305F016.D	03/05/18	21:55
SED-13	K1801446-013	J:\GC32\DATA\030518.B\0305F046.D	03/06/18	13:45

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Extracted:** 02/26/2018  
**Date Analyzed:** 03/02/2018  
**Time Analyzed:** 22:20

**Lab Control Sample Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Sample Name:** Lab Control Sample  
**Lab Code:** KWG1801138-3  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Instrument ID:** GC32.i  
**File ID:** J:\GC32\DATA\030118.B\0301F064.D  
**Level:** Low  
**Extraction Lot:** KWG1801138

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
SED-6MS	KWG1801138-1	J:\GC32\DATA\030118.B\0301F062.D	03/02/18	21:16
SED-6DMS	KWG1801138-2	J:\GC32\DATA\030118.B\0301F063.D	03/02/18	21:48
Method Blank	KWG1801138-4	J:\GC32\DATA\030118.B\0301F065.D	03/02/18	22:52
SED-1	K1801446-001	J:\GC32\DATA\030518.B\0305F003.D	03/05/18	15:02
SED-2	K1801446-002	J:\GC32\DATA\030518.B\0305F004.D	03/05/18	15:34
SED-3	K1801446-003	J:\GC32\DATA\030518.B\0305F005.D	03/05/18	16:06
SED-4	K1801446-004	J:\GC32\DATA\030518.B\0305F006.D	03/05/18	16:37
SED-5	K1801446-005	J:\GC32\DATA\030518.B\0305F007.D	03/05/18	17:09
SED-6	K1801446-006	J:\GC32\DATA\030518.B\0305F008.D	03/05/18	17:41
SED-7	K1801446-007	J:\GC32\DATA\030518.B\0305F009.D	03/05/18	18:12
SED-8	K1801446-008	J:\GC32\DATA\030518.B\0305F010.D	03/05/18	18:44
SED-9	K1801446-009	J:\GC32\DATA\030518.B\0305F011.D	03/05/18	19:16
SED-10	K1801446-010	J:\GC32\DATA\030518.B\0305F012.D	03/05/18	19:48
SED-11	K1801446-011	J:\GC32\DATA\030518.B\0305F015.D	03/05/18	21:23
SED-12	K1801446-012	J:\GC32\DATA\030518.B\0305F016.D	03/05/18	21:55
SED-13	K1801446-013	J:\GC32\DATA\030518.B\0305F046.D	03/06/18	13:45

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 01/24/2018

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL15681  
**Instrument ID:** GC32.i

**Column:** DB-35MS

Level ID	File ID	Level ID	File ID
A	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0124F005.D	S	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F015.D
B	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0124F006.D	T	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F016.D
C	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0124F007.D	U	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F017.D
D	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0124F008.D	V	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F018.D
E	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0124F009.D	W	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F019.D
F	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0124F010.D	X	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F020.D
G	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0124F011.D	Y	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F021.D
H	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F004.D	Z	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F022.D
I	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F005.D	AA	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F023.D
J	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F006.D	AB	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F024.D
K	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F007.D	AC	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F025.D
L	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F008.D	AD	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F026.D
M	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F009.D	AE	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F027.D
N	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F010.D	AF	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F028.D
O	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F011.D	AG	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F029.D
P	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F012.D	AH	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F030.D
Q	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F013.D	AI	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F031.D
R	\\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F014.D		

Analyte Name	Level ID			Level ID			Level ID			Level ID			Level ID		
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF
Decachlorobiphenyl	A	0.10	1.22E+6	B	0.20	1.14E+6	C	0.50	1.04E+6	D	1.0	9.96E+5	E	2.0	9.49E+5
	F	5.0	8.76E+5	G	10	8.14E+5									
Aroclor 1016 {1}	A	1.0	23300	B	2.0	26000	C	5.0	24300	D	10	23800	E	20	24100
	F	50	23100	G	100	21100									
Aroclor 1016 {2}	A	1.0	58100	B	2.0	56400	C	5.0	64100	D	10	62200	E	20	56600
	F	50	56700	G	100	52700									
Aroclor 1016 {3}	A	1.0	43300	B	2.0	42000	C	5.0	38700	D	10	41500	E	20	38900
	F	50	36900	G	100	33900									
Aroclor 1016 {4}	A	1.0	36800	B	2.0	32900	C	5.0	33300	D	10	33100	E	20	31600
	F	50	28100	G	100	25900									
Aroclor 1016 {5}	A	1.0	23000	B	2.0	21400	C	5.0	25400	D	10	25800	E	20	25200
	F	50	23800	G	100	21300									
Aroclor 1260 {1}	A	1.0	67400	B	2.0	64000	C	5.0	61800	D	10	60200	E	20	57300
	F	50	52200	G	100	48500									
Aroclor 1260 {2}	A	1.0	38900	B	2.0	41600	C	5.0	35300	D	10	39500	E	20	35500
	F	50	31800	G	100	29500									
Aroclor 1260 {3}	A	1.0	39300	B	2.0	40600	C	5.0	41200	D	10	40400	E	20	39500
	F	50	36200	G	100	34500									

Results flagged with an asterisk (\*) indicate values outside control criteria.



ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 01/24/2018

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL15681  
**Instrument ID:** GC32.i

**Column:** DB-35MS

Analyte Name	Level			Level			Level			Level					
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF			
Aroclor 1260 {4}	A	1.0	99000	B	2.0	96300	C	5.0	84100	D	10	83600	E	20	82200
	F	50	74500	G	100	71200									
Aroclor 1260 {5}	A	1.0	75900	B	2.0	71600	C	5.0	67700	D	10	64900	E	20	62300
	F	50	58200	G	100	54400									

Results flagged with an asterisk (\*) indicate values outside control criteria.

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 01/24/2018

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL15681  
**Instrument ID:** GC32.i

**Column:** DB-35MS

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	14.3		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	6.2		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	6.6		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	8.2		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	11.4		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	8.0		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	11.3		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	12.0		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	6.4		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	12.2		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	11.5		≤ 20

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 01/24/2018  
**Date Analyzed:** 01/24/2018 -  
 01/31/2018

**Second Source Calibration Verification**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration ID:** CAL15681  
**Units:** ng/mL

**File ID:** \\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F033.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F035.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F036.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F037.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL.b\0124F040.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F032.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F034.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F038.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL.b\0130F039.D

**Column ID:** DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	20	21	23700	24800	5	NA	± 100 %	AverageRF
Aroclor 1016 {2}	20	20	58100	58800	1	NA	± 100 %	AverageRF
Aroclor 1016 {3}	20	19	39300	37800	-4	NA	± 100 %	AverageRF
Aroclor 1016 {4}	20	18	31700	28600	-10	NA	± 100 %	AverageRF
Aroclor 1016 {5}	20	20	23700	23500	-1	NA	± 100 %	AverageRF
Aroclor 1016	20	20	NA	NA	NA	-2	± 20 %	NA
Aroclor 1260 {1}	50	50	58800	58600	0	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	50	36000	36100	0	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	61	38800	47600	23	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	57	84400	96600	14	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	57	65000	73800	14	NA	± 100 %	AverageRF
Aroclor 1260	50	55	NA	NA	NA	10	± 20 %	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 01/24/2018

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL15681  
**Instrument ID:** GC32.i

**Column:** DB-XLB

Level ID	File ID	Level ID	File ID
A	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0124F005.D	S	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F015.D
B	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0124F006.D	T	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F016.D
C	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0124F007.D	U	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F017.D
D	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0124F008.D	V	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F018.D
E	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0124F009.D	W	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F019.D
F	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0124F010.D	X	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F020.D
G	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0124F011.D	Y	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F021.D
H	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F004.D	Z	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F022.D
I	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F005.D	AA	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F023.D
J	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F006.D	AB	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F024.D
K	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F007.D	AC	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F025.D
L	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F008.D	AD	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F026.D
M	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F009.D	AE	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F027.D
N	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F010.D	AF	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F028.D
O	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F011.D	AG	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F029.D
P	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F012.D	AH	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F030.D
Q	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F013.D	AI	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F031.D
R	\\alklsws002\instdata\GC32\DATA\012418ICAL_r.b\0130F014.D		

Analyte Name	Level ID			Level ID			Level ID			Level ID			Level ID		
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF
Decachlorobiphenyl	A	0.10	1.33E+6	B	0.20	1.26E+6	C	0.50	1.13E+6	D	1.0	1.11E+6	E	2.0	1.05E+6
	F	5.0	9.47E+5	G	10	8.71E+5									
Aroclor 1016 {1}	A	1.0	31400	B	2.0	33200	C	5.0	27600	D	10	25900	E	20	24900
	F	50	20300	G	100	19800									
Aroclor 1016 {2}	A	1.0	16900	B	2.0	19800	C	5.0	20800	D	10	20900	E	20	21600
	F	50	20800	G	100	20000									
Aroclor 1016 {3}	A	1.0	49500	B	2.0	49800	C	5.0	49600	D	10	49500	E	20	50000
	F	50	48900	G	100	46600									
Aroclor 1016 {4}	A	1.0	39400	B	2.0	35400	C	5.0	29800	D	10	30700	E	20	30700
	F	50	28900	G	100	27500									
Aroclor 1016 {5}	A	1.0	14500	B	2.0	18100	C	5.0	15600	D	10	17200	E	20	15700
	F	50	15900	G	100	15100									
Aroclor 1260 {1}	A	1.0	20800	B	2.0	27300	C	5.0	19200	D	10	19900	E	20	22900
	F	50	20800	G	100	19400									
Aroclor 1260 {2}	A	1.0	48300	B	2.0	46800	C	5.0	40400	D	10	39800	E	20	40000
	F	50	37500	G	100	35800									
Aroclor 1260 {3}	A	1.0	46500	B	2.0	43000	C	5.0	41300	D	10	39700	E	20	40300
	F	50	37000	G	100	35600									

Results flagged with an asterisk (\*) indicate values outside control criteria.

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 01/24/2018

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL15681  
**Instrument ID:** GC32.i

**Column:** DB-XLB

Analyte Name	Level			Level			Level			Level					
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF			
Aroclor 1260 {4}	A	1.0	94800	B	2.0	94400	C	5.0	87100	D	10	88200	E	20	83700
	F	50	78700	G	100	74600									
Aroclor 1260 {5}	A	1.0	79200	B	2.0	79000	C	5.0	61600	D	10	57600	E	20	57300
	F	50	52000	G	100	49200									

Results flagged with an asterisk (\*) indicate values outside control criteria.

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 01/24/2018

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL15681  
**Instrument ID:** GC32.i

**Column:** DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	14.6		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	19.5		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	7.7		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	2.4		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	13.1		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	7.8		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	13.4		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	11.2		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	9.0		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	8.8		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	19.6		≤ 20

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 01/24/2018  
**Date Analyzed:** 01/24/2018 -  
 01/31/2018

**Second Source Calibration Verification**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration ID:** CAL15681  
**Units:** ng/mL

**File ID:** \\alklsws002\instdata\GC32\DATA\012418ICAL\_r.b\0124F040.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL\_r.b\0130F032.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL\_r.b\0130F033.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL\_r.b\0130F034.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL\_r.b\0130F035.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL\_r.b\0130F036.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL\_r.b\0130F037.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL\_r.b\0130F038.D  
 \\alklsws002\instdata\GC32\DATA\012418ICAL\_r.b\0130F039.D

**Column ID:** DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	20	15	26200	20300	-23	NA	± 100 %	AverageRF
Aroclor 1016 {2}	20	21	20100	21100	5	NA	± 100 %	AverageRF
Aroclor 1016 {3}	20	20	49100	48200	-2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	20	18	31800	28500	-10	NA	± 100 %	AverageRF
Aroclor 1016 {5}	20	23	16000	18100	13	NA	± 100 %	AverageRF
Aroclor 1016	20	19	NA	NA	NA	-3	± 20 %	NA
Aroclor 1260 {1}	50	47	21400	20100	-6	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	62	41200	50900	23	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	60	40500	48600	20	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	60	85900	104000	21	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	54	62300	66800	7	NA	± 100 %	AverageRF
Aroclor 1260	50	57	NA	NA	NA	13	± 20 %	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/02/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801265  
**Units:** ng/mL  
**Column ID:** DB-35MS

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030118.B\0301F060.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	2.0	1010000	818000	-19	NA	± 20	AverageRF
Aroclor 1016 {1}	25	30	23700	28300	19	NA	± 100	AverageRF
Aroclor 1016 {2}	25	30	58100	69100	19	NA	± 100	AverageRF
Aroclor 1016 {3}	25	27	39300	42400	8	NA	± 100	AverageRF
Aroclor 1016 {4}	25	26	31700	32500	3	NA	± 100	AverageRF
Aroclor 1016 {5}	25	30	23700	28900	22	NA	± 100	AverageRF
Aroclor 1016	25	29	NA	NA	NA	14	± 20	NA
Aroclor 1260 {1}	25	25	58800	59600	1	NA	± 100	AverageRF
Aroclor 1260 {2}	25	25	36000	35400	-2	NA	± 100	AverageRF
Aroclor 1260 {3}	25	26	38800	39700	2	NA	± 100	AverageRF
Aroclor 1260 {4}	25	23	84400	77500	-8	NA	± 100	AverageRF
Aroclor 1260 {5}	25	22	65000	57900	-11	NA	± 100	AverageRF
Aroclor 1260	25	24	NA	NA	NA	-3	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.



ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/02/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801265  
**Units:** ng/mL  
**Column ID:** DB-XLB

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030118\_R.B\0301F060.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	2.0	1100000	899000	-18	NA	± 20	AverageRF
Aroclor 1016 {1}	25	22	26200	23000	-12	NA	± 100	AverageRF
Aroclor 1016 {2}	25	31	20100	25400	26	NA	± 100	AverageRF
Aroclor 1016 {3}	25	27	49100	53900	10	NA	± 100	AverageRF
Aroclor 1016 {4}	25	27	31800	33800	6	NA	± 100	AverageRF
Aroclor 1016 {5}	25	27	16000	17400	9	NA	± 100	AverageRF
Aroclor 1016	25	27	NA	NA	NA	8	± 20	NA
Aroclor 1260 {1}	25	26	21400	22700	6	NA	± 100	AverageRF
Aroclor 1260 {2}	25	25	41200	41700	1	NA	± 100	AverageRF
Aroclor 1260 {3}	25	25	40500	39900	-2	NA	± 100	AverageRF
Aroclor 1260 {4}	25	23	85900	80300	-7	NA	± 100	AverageRF
Aroclor 1260 {5}	25	21	62300	51600	-17	NA	± 100	AverageRF
Aroclor 1260	25	24	NA	NA	NA	-4	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/02/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801265  
**Units:** ng/mL  
**Column ID:** DB-35MS

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030118.B\0301F066.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	2.1	1010000	859000	-15	NA	± 20	AverageRF
Aroclor 1016 {1}	25	27	23700	25600	8	NA	± 100	AverageRF
Aroclor 1016 {2}	25	30	58100	70500	21	NA	± 100	AverageRF
Aroclor 1016 {3}	25	27	39300	42300	8	NA	± 100	AverageRF
Aroclor 1016 {4}	25	27	31700	34600	9	NA	± 100	AverageRF
Aroclor 1016 {5}	25	32	23700	30200	28	NA	± 100	AverageRF
Aroclor 1016	25	29	NA	NA	NA	15	± 20	NA
Aroclor 1260 {1}	25	26	58800	62200	6	NA	± 100	AverageRF
Aroclor 1260 {2}	25	26	36000	37800	5	NA	± 100	AverageRF
Aroclor 1260 {3}	25	26	38800	40200	4	NA	± 100	AverageRF
Aroclor 1260 {4}	25	22	84400	75400	-11	NA	± 100	AverageRF
Aroclor 1260 {5}	25	22	65000	58000	-11	NA	± 100	AverageRF
Aroclor 1260	25	25	NA	NA	NA	-1	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/02/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801265  
**Units:** ng/mL  
**Column ID:** DB-XLB

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030118\_R.B\0301F066.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	2.1	1100000	929000	-15	NA	± 20	AverageRF
Aroclor 1016 {1}	25	23	26200	24100	-8	NA	± 100	AverageRF
Aroclor 1016 {2}	25	33	20100	26600	32	NA	± 100	AverageRF
Aroclor 1016 {3}	25	28	49100	55400	13	NA	± 100	AverageRF
Aroclor 1016 {4}	25	28	31800	35000	10	NA	± 100	AverageRF
Aroclor 1016 {5}	25	27	16000	17200	8	NA	± 100	AverageRF
Aroclor 1016	25	28	NA	NA	NA	11	± 20	NA
Aroclor 1260 {1}	25	28	21400	24100	12	NA	± 100	AverageRF
Aroclor 1260 {2}	25	25	41200	41200	0	NA	± 100	AverageRF
Aroclor 1260 {3}	25	25	40500	41100	2	NA	± 100	AverageRF
Aroclor 1260 {4}	25	23	85900	79400	-8	NA	± 100	AverageRF
Aroclor 1260 {5}	25	21	62300	52200	-16	NA	± 100	AverageRF
Aroclor 1260	25	25	NA	NA	NA	-2	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/05/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801434  
**Units:** ng/mL  
**Column ID:** DB-35MS

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030518.B\0303F089.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	2.0	1010000	791000	-21 *	NA	± 20	AverageRF
Aroclor 1016 {1}	25	26	23700	24600	4	NA	± 100	AverageRF
Aroclor 1016 {2}	25	28	58100	64400	11	NA	± 100	AverageRF
Aroclor 1016 {3}	25	25	39300	39500	1	NA	± 100	AverageRF
Aroclor 1016 {4}	25	26	31700	32800	4	NA	± 100	AverageRF
Aroclor 1016 {5}	25	29	23700	27000	14	NA	± 100	AverageRF
Aroclor 1016	25	27	NA	NA	NA	7	± 20	NA
Aroclor 1260 {1}	25	25	58800	58500	0	NA	± 100	AverageRF
Aroclor 1260 {2}	25	25	36000	35500	-1	NA	± 100	AverageRF
Aroclor 1260 {3}	25	25	38800	39200	1	NA	± 100	AverageRF
Aroclor 1260 {4}	25	22	84400	73600	-13	NA	± 100	AverageRF
Aroclor 1260 {5}	25	21	65000	55700	-14	NA	± 100	AverageRF
Aroclor 1260	25	24	NA	NA	NA	-6	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/05/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801434  
**Units:** ng/mL  
**Column ID:** DB-XLB

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030518\_R.B\0303F089.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	2.2	1100000	978000	-11	NA	± 20	AverageRF
Aroclor 1016 {1}	25	23	26200	24100	-8	NA	± 100	AverageRF
Aroclor 1016 {2}	25	33	20100	26900	34	NA	± 100	AverageRF
Aroclor 1016 {3}	25	28	49100	54900	12	NA	± 100	AverageRF
Aroclor 1016 {4}	25	27	31800	34800	9	NA	± 100	AverageRF
Aroclor 1016 {5}	25	28	16000	17900	12	NA	± 100	AverageRF
Aroclor 1016	25	28	NA	NA	NA	12	± 20	NA
Aroclor 1260 {1}	25	28	21400	24300	13	NA	± 100	AverageRF
Aroclor 1260 {2}	25	26	41200	43500	6	NA	± 100	AverageRF
Aroclor 1260 {3}	25	26	40500	42100	4	NA	± 100	AverageRF
Aroclor 1260 {4}	25	24	85900	82400	-4	NA	± 100	AverageRF
Aroclor 1260 {5}	25	22	62300	54300	-13	NA	± 100	AverageRF
Aroclor 1260	25	25	NA	NA	NA	1	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/05/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801434  
**Units:** ng/mL  
**Column ID:** DB-35MS

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030518.B\0305F013.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	1.8	1010000	732000	-27 *	NA	± 20	AverageRF
Aroclor 1016 {1}	25	26	23700	24400	3	NA	± 100	AverageRF
Aroclor 1016 {2}	25	24	58100	56900	-2	NA	± 100	AverageRF
Aroclor 1016 {3}	25	26	39300	40800	4	NA	± 100	AverageRF
Aroclor 1016 {4}	25	23	31700	29600	-7	NA	± 100	AverageRF
Aroclor 1016 {5}	25	29	23700	27400	16	NA	± 100	AverageRF
Aroclor 1016	25	26	NA	NA	NA	3	± 20	NA
Aroclor 1260 {1}	25	23	58800	54100	-8	NA	± 100	AverageRF
Aroclor 1260 {2}	25	23	36000	33100	-8	NA	± 100	AverageRF
Aroclor 1260 {3}	25	23	38800	35900	-7	NA	± 100	AverageRF
Aroclor 1260 {4}	25	20	84400	66100	-22	NA	± 100	AverageRF
Aroclor 1260 {5}	25	19	65000	50100	-23	NA	± 100	AverageRF
Aroclor 1260	25	22	NA	NA	NA	-14	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/05/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801434  
**Units:** ng/mL  
**Column ID:** DB-XLB

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030518\_R.B\0305F013.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	2.1	1100000	906000	-18	NA	± 20	AverageRF
Aroclor 1016 {1}	25	20	26200	21300	-19	NA	± 100	AverageRF
Aroclor 1016 {2}	25	27	20100	21900	9	NA	± 100	AverageRF
Aroclor 1016 {3}	25	24	49100	47000	-4	NA	± 100	AverageRF
Aroclor 1016 {4}	25	25	31800	32000	1	NA	± 100	AverageRF
Aroclor 1016 {5}	25	24	16000	15400	-4	NA	± 100	AverageRF
Aroclor 1016	25	24	NA	NA	NA	-4	± 20	NA
Aroclor 1260 {1}	25	26	21400	21900	2	NA	± 100	AverageRF
Aroclor 1260 {2}	25	23	41200	38600	-6	NA	± 100	AverageRF
Aroclor 1260 {3}	25	24	40500	39000	-4	NA	± 100	AverageRF
Aroclor 1260 {4}	25	22	85900	76300	-11	NA	± 100	AverageRF
Aroclor 1260 {5}	25	20	62300	49600	-20	NA	± 100	AverageRF
Aroclor 1260	25	23	NA	NA	NA	-8	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/06/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801434  
**Units:** ng/mL  
**Column ID:** DB-35MS

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030518.B\0305F025.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	1.9	1010000	754000	-25 *	NA	± 20	AverageRF
Aroclor 1016 {1}	25	26	23700	24600	4	NA	± 100	AverageRF
Aroclor 1016 {2}	25	26	58100	61000	5	NA	± 100	AverageRF
Aroclor 1016 {3}	25	28	39300	44000	12	NA	± 100	AverageRF
Aroclor 1016 {4}	25	24	31700	30700	-3	NA	± 100	AverageRF
Aroclor 1016 {5}	25	29	23700	27200	15	NA	± 100	AverageRF
Aroclor 1016	25	27	NA	NA	NA	6	± 20	NA
Aroclor 1260 {1}	25	25	58800	59000	0	NA	± 100	AverageRF
Aroclor 1260 {2}	25	24	36000	35000	-3	NA	± 100	AverageRF
Aroclor 1260 {3}	25	24	38800	37100	-4	NA	± 100	AverageRF
Aroclor 1260 {4}	25	21	84400	70800	-16	NA	± 100	AverageRF
Aroclor 1260 {5}	25	21	65000	53600	-18	NA	± 100	AverageRF
Aroclor 1260	25	23	NA	NA	NA	-8	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.



ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/06/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801434  
**Units:** ng/mL  
**Column ID:** DB-XLB

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030518\_R.B\0305F025.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	2.1	1100000	934000	-15	NA	± 20	AverageRF
Aroclor 1016 {1}	25	23	26200	23700	-10	NA	± 100	AverageRF
Aroclor 1016 {2}	25	30	20100	23900	19	NA	± 100	AverageRF
Aroclor 1016 {3}	25	27	49100	52900	8	NA	± 100	AverageRF
Aroclor 1016 {4}	25	27	31800	34000	7	NA	± 100	AverageRF
Aroclor 1016 {5}	25	27	16000	17000	6	NA	± 100	AverageRF
Aroclor 1016	25	26	NA	NA	NA	6	± 20	NA
Aroclor 1260 {1}	25	31	21400	26200	22	NA	± 100	AverageRF
Aroclor 1260 {2}	25	26	41200	43200	5	NA	± 100	AverageRF
Aroclor 1260 {3}	25	25	40500	40300	0	NA	± 100	AverageRF
Aroclor 1260 {4}	25	23	85900	80000	-7	NA	± 100	AverageRF
Aroclor 1260 {5}	25	21	62300	53100	-15	NA	± 100	AverageRF
Aroclor 1260	25	25	NA	NA	NA	1	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/06/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801434  
**Units:** ng/mL  
**Column ID:** DB-35MS

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030518.B\0305F037.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	1.9	1010000	781000	-22	*	NA	± 20 AverageRF
Aroclor 1016 {1}	25	27	23700	25300	7		NA	± 100 AverageRF
Aroclor 1016 {2}	25	29	58100	68100	17		NA	± 100 AverageRF
Aroclor 1016 {3}	25	25	39300	39700	1		NA	± 100 AverageRF
Aroclor 1016 {4}	25	23	31700	29400	-7		NA	± 100 AverageRF
Aroclor 1016 {5}	25	29	23700	27300	15		NA	± 100 AverageRF
Aroclor 1016	25	27	NA	NA	NA	7	± 20	NA
Aroclor 1260 {1}	25	26	58800	60200	2		NA	± 100 AverageRF
Aroclor 1260 {2}	25	25	36000	36400	1		NA	± 100 AverageRF
Aroclor 1260 {3}	25	25	38800	38200	-2		NA	± 100 AverageRF
Aroclor 1260 {4}	25	22	84400	74000	-12		NA	± 100 AverageRF
Aroclor 1260 {5}	25	21	65000	55500	-15		NA	± 100 AverageRF
Aroclor 1260	25	24	NA	NA	NA	-5	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/06/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801434  
**Units:** ng/mL  
**Column ID:** DB-XLB

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030518\_R.B\0305F037.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	2.2	1100000	975000	-11	NA	± 20	AverageRF
Aroclor 1016 {1}	25	23	26200	24500	-6	NA	± 100	AverageRF
Aroclor 1016 {2}	25	32	20100	25700	28	NA	± 100	AverageRF
Aroclor 1016 {3}	25	29	49100	56100	14	NA	± 100	AverageRF
Aroclor 1016 {4}	25	28	31800	35700	12	NA	± 100	AverageRF
Aroclor 1016 {5}	25	27	16000	17600	10	NA	± 100	AverageRF
Aroclor 1016	25	28	NA	NA	NA	12	± 20	NA
Aroclor 1260 {1}	25	28	21400	23700	10	NA	± 100	AverageRF
Aroclor 1260 {2}	25	26	41200	42700	4	NA	± 100	AverageRF
Aroclor 1260 {3}	25	26	40500	42200	4	NA	± 100	AverageRF
Aroclor 1260 {4}	25	24	85900	82700	-4	NA	± 100	AverageRF
Aroclor 1260 {5}	25	22	62300	54800	-12	NA	± 100	AverageRF
Aroclor 1260	25	25	NA	NA	NA	0	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/06/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801434  
**Units:** ng/mL  
**Column ID:** DB-35MS

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030518.B\0305F047.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	2.0	1010000	800000	-21 *	NA	± 20	AverageRF
Aroclor 1016 {1}	25	27	23700	25900	9	NA	± 100	AverageRF
Aroclor 1016 {2}	25	28	58100	65600	13	NA	± 100	AverageRF
Aroclor 1016 {3}	25	27	39300	41900	7	NA	± 100	AverageRF
Aroclor 1016 {4}	25	27	31700	34400	8	NA	± 100	AverageRF
Aroclor 1016 {5}	25	32	23700	30700	30	NA	± 100	AverageRF
Aroclor 1016	25	28	NA	NA	NA	13	± 20	NA
Aroclor 1260 {1}	25	26	58800	60300	3	NA	± 100	AverageRF
Aroclor 1260 {2}	25	26	36000	37100	3	NA	± 100	AverageRF
Aroclor 1260 {3}	25	25	38800	38900	0	NA	± 100	AverageRF
Aroclor 1260 {4}	25	22	84400	74200	-12	NA	± 100	AverageRF
Aroclor 1260 {5}	25	21	65000	55700	-14	NA	± 100	AverageRF
Aroclor 1260	25	24	NA	NA	NA	-4	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

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QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/06/2018

**Continuing Calibration Verification Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard  
**Analysis Method:** 8082A

**Calibration Date:** 01/24/2018  
**Calibration ID:** CAL15681  
**Analysis Lot:** KWG1801434  
**Units:** ng/mL  
**Column ID:** DB-XLB

**File ID:** \\ALKLSWS002\INSTDATA\GC32\DATA\030518\_R.B\0305F047.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	2.5	2.2	1100000	978000	-11	NA	± 20	AverageRF
Aroclor 1016 {1}	25	23	26200	23900	-9	NA	± 100	AverageRF
Aroclor 1016 {2}	25	33	20100	26600	32	NA	± 100	AverageRF
Aroclor 1016 {3}	25	29	49100	56600	15	NA	± 100	AverageRF
Aroclor 1016 {4}	25	29	31800	36300	14	NA	± 100	AverageRF
Aroclor 1016 {5}	25	28	16000	17900	12	NA	± 100	AverageRF
Aroclor 1016	25	28	NA	NA	NA	13	± 20	NA
Aroclor 1260 {1}	25	28	21400	23800	11	NA	± 100	AverageRF
Aroclor 1260 {2}	25	26	41200	42400	3	NA	± 100	AverageRF
Aroclor 1260 {3}	25	27	40500	44000	9	NA	± 100	AverageRF
Aroclor 1260 {4}	25	24	85900	84000	-2	NA	± 100	AverageRF
Aroclor 1260 {5}	25	22	62300	54800	-12	NA	± 100	AverageRF
Aroclor 1260	25	25	NA	NA	NA	2	± 20	NA

Results flagged with an asterisk (\*) indicate values outside control criteria.

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**Analysis Run Log**  
**Polychlorinated Biphenyls (PCBs)**

**Analysis Method:** 8082A

**Analysis Lot:** KWG1801265  
**Instrument ID:** GC32.i  
**Column:** DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0228F053.D	Continuing Calibration Verification	KWG1801265-1	3/1/2018	11:23		3/1/2018	11:23
0228F054.D	Instrument Blank	KWG1801265-2	3/1/2018	11:55		3/1/2018	11:55
0301F001.D	ZZZZZZ	ZZZZZZ	3/1/2018	12:52		3/1/2018	12:52
0301F002.D	ZZZZZZ	ZZZZZZ	3/1/2018	13:24		3/1/2018	13:24
0301F003.D	ZZZZZZ	ZZZZZZ	3/1/2018	13:55		3/1/2018	13:55
0301F004.D	ZZZZZZ	ZZZZZZ	3/1/2018	14:27		3/1/2018	14:27
0301F005.D	ZZZZZZ	ZZZZZZ	3/1/2018	14:59		3/1/2018	14:59
0301F006.D	ZZZZZZ	ZZZZZZ	3/1/2018	15:31		3/1/2018	15:31
0301F007.D	ZZZZZZ	ZZZZZZ	3/1/2018	16:03		3/1/2018	16:03
0301F008.D	ZZZZZZ	ZZZZZZ	3/1/2018	16:35		3/1/2018	16:35
0301F009.D	ZZZZZZ	ZZZZZZ	3/1/2018	17:07		3/1/2018	17:07
0301F010.D	ZZZZZZ	ZZZZZZ	3/1/2018	17:39		3/1/2018	17:39
0301F011.D	Continuing Calibration Verification	KWG1801265-3	3/1/2018	18:11		3/1/2018	18:11
0301F012.D	Instrument Blank	KWG1801265-4	3/1/2018	18:43		3/1/2018	18:43
0301F013.D	ZZZZZZ	ZZZZZZ	3/1/2018	19:15		3/1/2018	19:15
0301F014.D	ZZZZZZ	ZZZZZZ	3/1/2018	19:47		3/1/2018	19:47
0301F015.D	ZZZZZZ	ZZZZZZ	3/1/2018	20:18		3/1/2018	20:18
0301F016.D	ZZZZZZ	ZZZZZZ	3/1/2018	20:50		3/1/2018	20:50
0301F017.D	ZZZZZZ	ZZZZZZ	3/1/2018	21:22		3/1/2018	21:22
0301F018.D	ZZZZZZ	ZZZZZZ	3/1/2018	21:54		3/1/2018	21:54
0301F019.D	ZZZZZZ	ZZZZZZ	3/1/2018	22:26		3/1/2018	22:26
0301F020.D	ZZZZZZ	ZZZZZZ	3/1/2018	22:58		3/1/2018	22:58
0301F021.D	ZZZZZZ	ZZZZZZ	3/1/2018	23:30		3/1/2018	23:30
0301F022.D	ZZZZZZ	ZZZZZZ	3/2/2018	00:02		3/2/2018	00:02
0301F023.D	Continuing Calibration Verification	KWG1801265-5	3/2/2018	00:34		3/2/2018	00:34
0301F024.D	Instrument Blank	KWG1801265-6	3/2/2018	01:06		3/2/2018	01:06
0301F025.D	ZZZZZZ	ZZZZZZ	3/2/2018	01:37		3/2/2018	01:37
0301F026.D	ZZZZZZ	ZZZZZZ	3/2/2018	02:09		3/2/2018	02:09
0301F027.D	ZZZZZZ	ZZZZZZ	3/2/2018	02:41		3/2/2018	02:41
0301F028.D	ZZZZZZ	ZZZZZZ	3/2/2018	03:13		3/2/2018	03:13
0301F029.D	ZZZZZZ	ZZZZZZ	3/2/2018	03:45		3/2/2018	03:45
0301F030.D	ZZZZZZ	ZZZZZZ	3/2/2018	04:17		3/2/2018	04:17
0301F031.D	ZZZZZZ	ZZZZZZ	3/2/2018	04:49		3/2/2018	04:49
0301F032.D	ZZZZZZ	ZZZZZZ	3/2/2018	05:20		3/2/2018	05:20

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

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QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**Analysis Run Log**  
**Polychlorinated Biphenyls (PCBs)**

**Analysis Method:** 8082A

**Analysis Lot:** KWG1801265  
**Instrument ID:** GC32.i  
**Column:** DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0301F033.D	ZZZZZZ	ZZZZZZ	3/2/2018	05:52		3/2/2018	05:52
0301F034.D	ZZZZZZ	ZZZZZZ	3/2/2018	06:24		3/2/2018	06:24
0301F035.D	ZZZZZZ	ZZZZZZ	3/2/2018	06:56		3/2/2018	06:56
0301F036.D	Continuing Calibration Verification	KWG1801265-7	3/2/2018	07:28		3/2/2018	07:28
0301F037.D	Instrument Blank	KWG1801265-8	3/2/2018	08:00		3/2/2018	08:00
0301F060.D	Continuing Calibration Verification	KWG1801265-11	3/2/2018	20:12		3/2/2018	20:12
0301F061.D	Instrument Blank	KWG1801265-12	3/2/2018	20:44		3/2/2018	20:44
0301F062.D	SED-6MS	KWG1801138-1	3/2/2018	21:16		3/2/2018	21:16
0301F063.D	SED-6DMS	KWG1801138-2	3/2/2018	21:48		3/2/2018	21:48
0301F064.D	Lab Control Sample	KWG1801138-3	3/2/2018	22:20		3/2/2018	22:20
0301F065.D	Method Blank	KWG1801138-4	3/2/2018	22:52		3/2/2018	22:52
0301F066.D	Continuing Calibration Verification	KWG1801265-13	3/2/2018	23:24		3/2/2018	23:24
0301F067.D	Instrument Blank	KWG1801265-14	3/2/2018	23:55		3/2/2018	23:55

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**Analysis Run Log**  
**Polychlorinated Biphenyls (PCBs)**

**Analysis Method:** 8082A

**Analysis Lot:** KWG1801434  
**Instrument ID:** GC32.i  
**Column:** DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0303F089.D	Continuing Calibration Verification	KWG1801434-1	3/5/2018	13:54		3/5/2018	13:54
0303F090.D	Instrument Blank	KWG1801434-2	3/5/2018	14:26		3/5/2018	14:26
0305F003.D	SED-1	K1801446-001	3/5/2018	15:02		3/5/2018	15:02
0305F004.D	SED-2	K1801446-002	3/5/2018	15:34		3/5/2018	15:34
0305F005.D	SED-3	K1801446-003	3/5/2018	16:06		3/5/2018	16:06
0305F006.D	SED-4	K1801446-004	3/5/2018	16:37		3/5/2018	16:37
0305F007.D	SED-5	K1801446-005	3/5/2018	17:09		3/5/2018	17:09
0305F008.D	SED-6	K1801446-006	3/5/2018	17:41		3/5/2018	17:41
0305F009.D	SED-7	K1801446-007	3/5/2018	18:12		3/5/2018	18:12
0305F010.D	SED-8	K1801446-008	3/5/2018	18:44		3/5/2018	18:44
0305F011.D	SED-9	K1801446-009	3/5/2018	19:16		3/5/2018	19:16
0305F012.D	SED-10	K1801446-010	3/5/2018	19:48		3/5/2018	19:48
0305F013.D	Continuing Calibration Verification	KWG1801434-3	3/5/2018	20:19		3/5/2018	20:19
0305F014.D	Instrument Blank	KWG1801434-4	3/5/2018	20:51		3/5/2018	20:51
0305F015.D	SED-11	K1801446-011	3/5/2018	21:23		3/5/2018	21:23
0305F016.D	SED-12	K1801446-012	3/5/2018	21:55		3/5/2018	21:55
0305F017.D	ZZZZZZ	ZZZZZZ	3/5/2018	22:26		3/5/2018	22:26
0305F018.D	ZZZZZZ	ZZZZZZ	3/5/2018	22:58		3/5/2018	22:58
0305F019.D	ZZZZZZ	ZZZZZZ	3/5/2018	23:30		3/5/2018	23:30
0305F020.D	ZZZZZZ	ZZZZZZ	3/6/2018	00:01		3/6/2018	00:01
0305F021.D	ZZZZZZ	ZZZZZZ	3/6/2018	00:33		3/6/2018	00:33
0305F022.D	ZZZZZZ	ZZZZZZ	3/6/2018	01:05		3/6/2018	01:05
0305F023.D	ZZZZZZ	ZZZZZZ	3/6/2018	01:36		3/6/2018	01:36
0305F024.D	ZZZZZZ	ZZZZZZ	3/6/2018	02:08		3/6/2018	02:08
0305F025.D	Continuing Calibration Verification	KWG1801434-5	3/6/2018	02:40		3/6/2018	02:40
0305F026.D	Instrument Blank	KWG1801434-6	3/6/2018	03:11		3/6/2018	03:11
0305F027.D	ZZZZZZ	ZZZZZZ	3/6/2018	03:43		3/6/2018	03:43
0305F028.D	ZZZZZZ	ZZZZZZ	3/6/2018	04:15		3/6/2018	04:15
0305F029.D	ZZZZZZ	ZZZZZZ	3/6/2018	04:46		3/6/2018	04:46
0305F030.D	ZZZZZZ	ZZZZZZ	3/6/2018	05:18		3/6/2018	05:18
0305F031.D	ZZZZZZ	ZZZZZZ	3/6/2018	05:49		3/6/2018	05:49
0305F032.D	ZZZZZZ	ZZZZZZ	3/6/2018	06:21		3/6/2018	06:21
0305F033.D	ZZZZZZ	ZZZZZZ	3/6/2018	06:53		3/6/2018	06:53
0305F034.D	ZZZZZZ	ZZZZZZ	3/6/2018	07:24		3/6/2018	07:24

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis



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QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446

**Analysis Run Log**  
**Polychlorinated Biphenyls (PCBs)**

**Analysis Method:** 8082A

**Analysis Lot:** KWG1801434  
**Instrument ID:** GC32.i  
**Column:** DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0305F035.D	ZZZZZZ	ZZZZZZ	3/6/2018	07:56		3/6/2018	07:56
0305F036.D	ZZZZZZ	ZZZZZZ	3/6/2018	08:27		3/6/2018	08:27
0305F037.D	Continuing Calibration Verification	KWG1801434-7	3/6/2018	08:59		3/6/2018	08:59
0305F038.D	Instrument Blank	KWG1801434-8	3/6/2018	09:31		3/6/2018	09:31
0305F039.D	ZZZZZZ	ZZZZZZ	3/6/2018	10:02		3/6/2018	10:02
0305F040.D	ZZZZZZ	ZZZZZZ	3/6/2018	10:34		3/6/2018	10:34
0305F041.D	ZZZZZZ	ZZZZZZ	3/6/2018	11:06		3/6/2018	11:06
0305F042.D	ZZZZZZ	ZZZZZZ	3/6/2018	11:38		3/6/2018	11:38
0305F043.D	ZZZZZZ	ZZZZZZ	3/6/2018	12:09		3/6/2018	12:09
0305F044.D	ZZZZZZ	ZZZZZZ	3/6/2018	12:41		3/6/2018	12:41
0305F045.D	ZZZZZZ	ZZZZZZ	3/6/2018	13:13		3/6/2018	13:13
0305F046.D	SED-13	K1801446-013	3/6/2018	13:45		3/6/2018	13:45
0305F047.D	Continuing Calibration Verification	KWG1801434-9	3/6/2018	14:16		3/6/2018	14:16
0305F048.D	Instrument Blank	KWG1801434-10	3/6/2018	14:48		3/6/2018	14:48

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

QA/QC Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Extracted:** 02/26/2018

**Extraction Prep Log**  
**Polychlorinated Biphenyls (PCBs)**

**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Extraction Lot:** KWG1801138  
**Level:** Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
SED-1	K1801446-001	02/12/18	02/14/18	2.233g	8mL	47.3	
SED-2	K1801446-002	02/12/18	02/14/18	2.288g	8mL	56.3	
SED-3	K1801446-003	02/12/18	02/14/18	2.146g	8mL	42.1	
SED-4	K1801446-004	02/12/18	02/14/18	2.362g	8mL	48.5	
SED-5	K1801446-005	02/12/18	02/14/18	2.382g	8mL	37.5	
SED-6	K1801446-006	02/12/18	02/14/18	2.243g	8mL	37.4	
SED-7	K1801446-007	02/12/18	02/14/18	2.312g	8mL	66	
SED-8	K1801446-008	02/12/18	02/14/18	2.473g	8mL	48.7	
SED-9	K1801446-009	02/12/18	02/14/18	2.412g	8mL	37.5	
SED-10	K1801446-010	02/12/18	02/14/18	2.367g	8mL	71.8	
SED-11	K1801446-011	02/12/18	02/14/18	2.418g	8mL	52.9	
SED-12	K1801446-012	02/12/18	02/14/18	2.342g	8mL	64	
SED-13	K1801446-013	02/12/18	02/14/18	2.378g	8mL	75.6	
Method Blank	KWG1801138-4	NA	NA	2.473g	8mL	NA	
SED-6MS	KWG1801138-1	02/12/18	02/14/18	2.198g	8mL	37.4	
SED-6DMS	KWG1801138-2	02/12/18	02/14/18	2.202g	8mL	37.4	
Lab Control Sample	KWG1801138-3	NA	NA	2.000g	8mL	NA	

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-1  
**Lab Code:** K1801446-001  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	19	5.5	17	37	74.1	JP	1	03/05/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-3  
**Lab Code:** K1801446-003  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	23	6.5	26	31	17.5		1	03/05/18
Aroclor 1260	23	6.5	8.6	13	40.7	JP	1	03/05/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-4  
**Lab Code:** K1801446-004  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	18	5.1	6.9	11	45.8	JP	1	03/05/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-5  
**Lab Code:** K1801446-005  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	23	6.5	30	34	12.5		1	03/05/18
Aroclor 1260	23	6.5	25	28	11.3		1	03/05/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-6  
**Lab Code:** K1801446-006  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	24	7.0	17	22	25.6	J	1	03/05/18
Aroclor 1260	24	7.0	10	10	0.0	J	1	03/05/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-7  
**Lab Code:** K1801446-007  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	14	3.9	16	29	57.8	P	1	03/05/18
Aroclor 1260	14	3.9	7.0	10	35.3	J	1	03/05/18



Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-8  
**Lab Code:** K1801446-008  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	17	4.9	85	110	25.6		1	03/05/18
Aroclor 1260	17	4.9	62	64	3.2		1	03/05/18

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Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-9  
**Lab Code:** K1801446-009  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1242	23	6.5	77	95	20.9		1	03/05/18
Aroclor 1254	23	6.5	130	140	7.4		1	03/05/18
Aroclor 1260	23	6.5	45	60	28.6		1	03/05/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-10  
**Lab Code:** K1801446-010  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1242	12	3.5	200	330	49.1	P	1	03/05/18
Aroclor 1254	12	3.5	320	330	3.1		1	03/05/18
Aroclor 1260	12	3.5	130	130	0.0		1	03/05/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-11  
**Lab Code:** K1801446-011  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1242	16	4.6	36	65	57.4	P	1	03/05/18
Aroclor 1254	16	4.6	160	170	6.1		1	03/05/18
Aroclor 1260	16	4.6	38	52	31.1		1	03/05/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-12  
**Lab Code:** K1801446-012  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	14	3.9	28	29	3.5		1	03/05/18
Aroclor 1260	14	3.9	7.3	9.3	24.1	J	1	03/05/18

Confirmation Results

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/2018  
**Date Received:** 02/14/2018  
**Date Extracted:** 02/26/2018

Polychlorinated Biphenyls (PCBs)

**Sample Name:** SED-13  
**Lab Code:** K1801446-013  
**Extraction Method:** EPA 3546  
**Analysis Method:** 8082A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1242	56	17	220	350	45.6	PD	5	03/06/18
Aroclor 1254	56	17	650	680	4.5	D	5	03/06/18
Aroclor 1260	56	17	310	340	9.2	D	5	03/06/18



# Semi-Volatile Organic Compounds by GC/MS

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:10  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-1  
**Lab Code:** K1801446-001

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	110	28	10	03/08/18 04:42	2/26/18	
1,2-Dichlorobenzene	ND U	110	26	10	03/08/18 04:42	2/26/18	
1,4-Dichlorobenzene	ND U	110	27	10	03/08/18 04:42	2/26/18	
2,4-Dimethylphenol	ND U	530	67	10	03/08/18 04:42	2/26/18	
2-Methylnaphthalene	ND U	110	30	10	03/08/18 04:42	2/26/18	
2-Methylphenol	ND U	110	44	10	03/08/18 04:42	2/26/18	
4-Methylphenol	ND U	110	48	10	03/08/18 04:42	2/26/18	
Acenaphthene	ND U	110	34	10	03/08/18 04:42	2/26/18	
Acenaphthylene	ND U	110	28	10	03/08/18 04:42	2/26/18	
Anthracene	<b>38 J</b>	110	34	10	03/08/18 04:42	2/26/18	
Benz(a)anthracene	<b>100 J</b>	110	38	10	03/08/18 04:42	2/26/18	
Benzo(a)pyrene	<b>94 J</b>	110	38	10	03/08/18 04:42	2/26/18	
Benzo(b)fluoranthene	<b>210</b>	110	36	10	03/08/18 04:42	2/26/18	
Benzo(g,h,i)perylene	ND U	110	39	10	03/08/18 04:42	2/26/18	*
Benzo(k)fluoranthene	<b>77 J</b>	110	43	10	03/08/18 04:42	2/26/18	
Benzoic Acid	ND U	4200	1100	10	03/08/18 04:42	2/26/18	
Benzyl Alcohol	ND U	210	52	10	03/08/18 04:42	2/26/18	
Bis(2-ethylhexyl) Phthalate	ND U	1100	94	10	03/08/18 04:42	2/26/18	
Butyl Benzyl Phthalate	ND U	110	39	10	03/08/18 04:42	2/26/18	
Chrysene	<b>510</b>	110	44	10	03/08/18 04:42	2/26/18	
Dibenz(a,h)anthracene	ND U	110	32	10	03/08/18 04:42	2/26/18	
Dibenzofuran	ND U	110	36	10	03/08/18 04:42	2/26/18	
Diethyl Phthalate	ND U	110	39	10	03/08/18 04:42	2/26/18	
Dimethyl Phthalate	ND U	110	43	10	03/08/18 04:42	2/26/18	
Di-n-butyl Phthalate	ND U	210	51	10	03/08/18 04:42	2/26/18	
Di-n-octyl Phthalate	ND U	110	34	10	03/08/18 04:42	2/26/18	
Fluoranthene	<b>660</b>	110	39	10	03/08/18 04:42	2/26/18	
Fluorene	ND U	110	35	10	03/08/18 04:42	2/26/18	
Hexachlorobenzene	ND U	110	35	10	03/08/18 04:42	2/26/18	
Hexachlorobutadiene	ND U	110	32	10	03/08/18 04:42	2/26/18	
Hexachloroethane	ND U	110	27	10	03/08/18 04:42	2/26/18	
Indeno(1,2,3-cd)pyrene	<b>59 J</b>	110	34	10	03/08/18 04:42	2/26/18	
Naphthalene	ND U	110	31	10	03/08/18 04:42	2/26/18	
N-Nitrosodiphenylamine	ND U	110	34	10	03/08/18 04:42	2/26/18	
Pentachlorophenol (PCP)	ND U	1100	56	10	03/08/18 04:42	2/26/18	
Phenanthrene	<b>230</b>	110	38	10	03/08/18 04:42	2/26/18	
Phenol	ND U	320	33	10	03/08/18 04:42	2/26/18	
Pyrene	<b>400</b>	110	39	10	03/08/18 04:42	2/26/18	



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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:10  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-1  
**Lab Code:** K1801446-001

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	63	10 - 124	03/08/18 04:42	
2-Fluorobiphenyl	53	35 - 105	03/08/18 04:42	
Nitrobenzene-d5	61	10 - 84	03/08/18 04:42	
Phenol-d6	54	39 - 109	03/08/18 04:42	
p-Terphenyl-d14	79	30 - 102	03/08/18 04:42	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 11:50  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-2  
**Lab Code:** K1801446-002

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	88	26	10	03/08/18 05:10	2/26/18	
1,2-Dichlorobenzene	ND U	88	24	10	03/08/18 05:10	2/26/18	
1,4-Dichlorobenzene	ND U	88	25	10	03/08/18 05:10	2/26/18	
2,4-Dimethylphenol	ND U	440	63	10	03/08/18 05:10	2/26/18	
2-Methylnaphthalene	<b>33 J</b>	88	28	10	03/08/18 05:10	2/26/18	
2-Methylphenol	ND U	88	41	10	03/08/18 05:10	2/26/18	
4-Methylphenol	ND U	88	45	10	03/08/18 05:10	2/26/18	
Acenaphthene	<b>47 J</b>	88	32	10	03/08/18 05:10	2/26/18	
Acenaphthylene	ND U	88	26	10	03/08/18 05:10	2/26/18	
Anthracene	<b>39 J</b>	88	32	10	03/08/18 05:10	2/26/18	
Benz(a)anthracene	<b>43 J</b>	88	36	10	03/08/18 05:10	2/26/18	
Benzo(a)pyrene	ND U	88	36	10	03/08/18 05:10	2/26/18	
Benzo(b)fluoranthene	<b>64 J</b>	88	34	10	03/08/18 05:10	2/26/18	
Benzo(g,h,i)perylene	ND U	88	37	10	03/08/18 05:10	2/26/18	*
Benzo(k)fluoranthene	ND U	88	40	10	03/08/18 05:10	2/26/18	
Benzoic Acid	ND U	3500	960	10	03/08/18 05:10	2/26/18	
Benzyl Alcohol	ND U	180	49	10	03/08/18 05:10	2/26/18	
Bis(2-ethylhexyl) Phthalate	ND U	880	89	10	03/08/18 05:10	2/26/18	
Butyl Benzyl Phthalate	ND U	88	37	10	03/08/18 05:10	2/26/18	
Chrysene	<b>100</b>	88	41	10	03/08/18 05:10	2/26/18	
Dibenz(a,h)anthracene	ND U	88	30	10	03/08/18 05:10	2/26/18	
Dibenzofuran	<b>60 J</b>	88	34	10	03/08/18 05:10	2/26/18	
Diethyl Phthalate	ND U	88	37	10	03/08/18 05:10	2/26/18	
Dimethyl Phthalate	ND U	88	40	10	03/08/18 05:10	2/26/18	
Di-n-butyl Phthalate	ND U	180	48	10	03/08/18 05:10	2/26/18	
Di-n-octyl Phthalate	ND U	88	32	10	03/08/18 05:10	2/26/18	
Fluoranthene	<b>450</b>	88	37	10	03/08/18 05:10	2/26/18	
Fluorene	<b>49 J</b>	88	33	10	03/08/18 05:10	2/26/18	
Hexachlorobenzene	ND U	88	33	10	03/08/18 05:10	2/26/18	
Hexachlorobutadiene	ND U	88	30	10	03/08/18 05:10	2/26/18	
Hexachloroethane	ND U	88	25	10	03/08/18 05:10	2/26/18	
Indeno(1,2,3-cd)pyrene	ND U	88	32	10	03/08/18 05:10	2/26/18	
Naphthalene	<b>38 J</b>	88	29	10	03/08/18 05:10	2/26/18	
N-Nitrosodiphenylamine	ND U	88	32	10	03/08/18 05:10	2/26/18	
Pentachlorophenol (PCP)	ND U	880	53	10	03/08/18 05:10	2/26/18	
Phenanthrene	<b>480</b>	88	36	10	03/08/18 05:10	2/26/18	
Phenol	ND U	270	31	10	03/08/18 05:10	2/26/18	
Pyrene	<b>260</b>	88	37	10	03/08/18 05:10	2/26/18	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 11:50  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-2  
**Lab Code:** K1801446-002

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	50	10 - 124	03/08/18 05:10	
2-Fluorobiphenyl	42	35 - 105	03/08/18 05:10	
Nitrobenzene-d5	49	10 - 84	03/08/18 05:10	
Phenol-d6	40	39 - 109	03/08/18 05:10	
p-Terphenyl-d14	66	30 - 102	03/08/18 05:10	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:45  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-3  
**Lab Code:** K1801446-003

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	120	31	10	03/08/18 05:39	2/26/18	
1,2-Dichlorobenzene	ND U	120	29	10	03/08/18 05:39	2/26/18	
1,4-Dichlorobenzene	ND U	120	30	10	03/08/18 05:39	2/26/18	
2,4-Dimethylphenol	ND U	590	75	10	03/08/18 05:39	2/26/18	
2-Methylnaphthalene	ND U	120	34	10	03/08/18 05:39	2/26/18	
2-Methylphenol	ND U	120	49	10	03/08/18 05:39	2/26/18	
4-Methylphenol	ND U	120	54	10	03/08/18 05:39	2/26/18	
Acenaphthene	ND U	120	38	10	03/08/18 05:39	2/26/18	
Acenaphthylene	ND U	120	31	10	03/08/18 05:39	2/26/18	
Anthracene	<b>55 J</b>	120	38	10	03/08/18 05:39	2/26/18	
Benz(a)anthracene	<b>130</b>	120	43	10	03/08/18 05:39	2/26/18	
Benzo(a)pyrene	<b>120</b>	120	43	10	03/08/18 05:39	2/26/18	
Benzo(b)fluoranthene	<b>240</b>	120	41	10	03/08/18 05:39	2/26/18	
Benzo(g,h,i)perylene	ND U	120	44	10	03/08/18 05:39	2/26/18	*
Benzo(k)fluoranthene	<b>88 J</b>	120	48	10	03/08/18 05:39	2/26/18	
Benzoic Acid	ND U	4700	1200	10	03/08/18 05:39	2/26/18	
Benzyl Alcohol	ND U	240	58	10	03/08/18 05:39	2/26/18	
Bis(2-ethylhexyl) Phthalate	ND U	1200	110	10	03/08/18 05:39	2/26/18	
Butyl Benzyl Phthalate	ND U	120	44	10	03/08/18 05:39	2/26/18	
Chrysene	<b>280</b>	120	49	10	03/08/18 05:39	2/26/18	
Dibenz(a,h)anthracene	ND U	120	36	10	03/08/18 05:39	2/26/18	
Dibenzofuran	ND U	120	41	10	03/08/18 05:39	2/26/18	
Diethyl Phthalate	ND U	120	44	10	03/08/18 05:39	2/26/18	
Dimethyl Phthalate	ND U	120	48	10	03/08/18 05:39	2/26/18	
Di-n-butyl Phthalate	ND U	240	57	10	03/08/18 05:39	2/26/18	
Di-n-octyl Phthalate	ND U	120	38	10	03/08/18 05:39	2/26/18	
Fluoranthene	<b>510</b>	120	44	10	03/08/18 05:39	2/26/18	
Fluorene	ND U	120	39	10	03/08/18 05:39	2/26/18	
Hexachlorobenzene	ND U	120	39	10	03/08/18 05:39	2/26/18	
Hexachlorobutadiene	ND U	120	36	10	03/08/18 05:39	2/26/18	
Hexachloroethane	ND U	120	30	10	03/08/18 05:39	2/26/18	
Indeno(1,2,3-cd)pyrene	<b>66 J</b>	120	38	10	03/08/18 05:39	2/26/18	
Naphthalene	ND U	120	35	10	03/08/18 05:39	2/26/18	
N-Nitrosodiphenylamine	ND U	120	38	10	03/08/18 05:39	2/26/18	
Pentachlorophenol (PCP)	ND U	1200	63	10	03/08/18 05:39	2/26/18	
Phenanthrene	<b>130</b>	120	43	10	03/08/18 05:39	2/26/18	
Phenol	ND U	350	37	10	03/08/18 05:39	2/26/18	
Pyrene	<b>320</b>	120	44	10	03/08/18 05:39	2/26/18	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:45  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-3  
**Lab Code:** K1801446-003

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	51	10 - 124	03/08/18 05:39	
2-Fluorobiphenyl	47	35 - 105	03/08/18 05:39	
Nitrobenzene-d5	52	10 - 84	03/08/18 05:39	
Phenol-d6	45	39 - 109	03/08/18 05:39	
p-Terphenyl-d14	69	30 - 102	03/08/18 05:39	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:05  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-4  
**Lab Code:** K1801446-004

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	100	27	10	03/08/18 06:08	2/26/18	
1,2-Dichlorobenzene	ND U	100	25	10	03/08/18 06:08	2/26/18	
1,4-Dichlorobenzene	ND U	100	26	10	03/08/18 06:08	2/26/18	
2,4-Dimethylphenol	ND U	510	65	10	03/08/18 06:08	2/26/18	
2-Methylnaphthalene	ND U	100	29	10	03/08/18 06:08	2/26/18	
2-Methylphenol	ND U	100	43	10	03/08/18 06:08	2/26/18	
4-Methylphenol	ND U	100	47	10	03/08/18 06:08	2/26/18	
Acenaphthene	<b>51 J</b>	100	33	10	03/08/18 06:08	2/26/18	
Acenaphthylene	ND U	100	27	10	03/08/18 06:08	2/26/18	
Anthracene	<b>43 J</b>	100	33	10	03/08/18 06:08	2/26/18	
Benz(a)anthracene	<b>80 J</b>	100	37	10	03/08/18 06:08	2/26/18	
Benzo(a)pyrene	<b>57 J</b>	100	37	10	03/08/18 06:08	2/26/18	
Benzo(b)fluoranthene	<b>100</b>	100	35	10	03/08/18 06:08	2/26/18	
Benzo(g,h,i)perylene	ND U	100	38	10	03/08/18 06:08	2/26/18	*
Benzo(k)fluoranthene	ND U	100	42	10	03/08/18 06:08	2/26/18	
Benzoic Acid	ND U	4100	990	10	03/08/18 06:08	2/26/18	
Benzyl Alcohol	ND U	210	51	10	03/08/18 06:08	2/26/18	
Bis(2-ethylhexyl) Phthalate	ND U	1000	92	10	03/08/18 06:08	2/26/18	
Butyl Benzyl Phthalate	ND U	100	38	10	03/08/18 06:08	2/26/18	
Chrysene	<b>140</b>	100	43	10	03/08/18 06:08	2/26/18	
Dibenz(a,h)anthracene	ND U	100	31	10	03/08/18 06:08	2/26/18	
Dibenzofuran	ND U	100	35	10	03/08/18 06:08	2/26/18	
Diethyl Phthalate	ND U	100	38	10	03/08/18 06:08	2/26/18	
Dimethyl Phthalate	ND U	100	42	10	03/08/18 06:08	2/26/18	
Di-n-butyl Phthalate	ND U	210	50	10	03/08/18 06:08	2/26/18	
Di-n-octyl Phthalate	ND U	100	33	10	03/08/18 06:08	2/26/18	
Fluoranthene	<b>520</b>	100	38	10	03/08/18 06:08	2/26/18	
Fluorene	ND U	100	34	10	03/08/18 06:08	2/26/18	
Hexachlorobenzene	ND U	100	34	10	03/08/18 06:08	2/26/18	
Hexachlorobutadiene	ND U	100	31	10	03/08/18 06:08	2/26/18	
Hexachloroethane	ND U	100	26	10	03/08/18 06:08	2/26/18	
Indeno(1,2,3-cd)pyrene	<b>34 J</b>	100	33	10	03/08/18 06:08	2/26/18	
Naphthalene	ND U	100	30	10	03/08/18 06:08	2/26/18	
N-Nitrosodiphenylamine	ND U	100	33	10	03/08/18 06:08	2/26/18	
Pentachlorophenol (PCP)	ND U	1000	55	10	03/08/18 06:08	2/26/18	
Phenanthrene	<b>220</b>	100	37	10	03/08/18 06:08	2/26/18	
Phenol	ND U	310	32	10	03/08/18 06:08	2/26/18	
Pyrene	<b>420</b>	100	38	10	03/08/18 06:08	2/26/18	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:05  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-4  
**Lab Code:** K1801446-004

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	67	10 - 124	03/08/18 06:08	
2-Fluorobiphenyl	69	35 - 105	03/08/18 06:08	
Nitrobenzene-d5	75	10 - 84	03/08/18 06:08	
Phenol-d6	62	39 - 109	03/08/18 06:08	
p-Terphenyl-d14	79	30 - 102	03/08/18 06:08	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:35  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-5  
**Lab Code:** K1801446-005

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	130	35	10	03/08/18 06:36	2/26/18	
1,2-Dichlorobenzene	ND U	130	32	10	03/08/18 06:36	2/26/18	
1,4-Dichlorobenzene	ND U	130	33	10	03/08/18 06:36	2/26/18	
2,4-Dimethylphenol	ND U	660	83	10	03/08/18 06:36	2/26/18	
2-Methylnaphthalene	ND U	130	37	10	03/08/18 06:36	2/26/18	
2-Methylphenol	ND U	130	55	10	03/08/18 06:36	2/26/18	
4-Methylphenol	ND U	130	60	10	03/08/18 06:36	2/26/18	
Acenaphthene	ND U	130	43	10	03/08/18 06:36	2/26/18	
Acenaphthylene	ND U	130	35	10	03/08/18 06:36	2/26/18	
Anthracene	ND U	130	43	10	03/08/18 06:36	2/26/18	
Benz(a)anthracene	<b>77 J</b>	130	48	10	03/08/18 06:36	2/26/18	
Benzo(a)pyrene	<b>75 J</b>	130	48	10	03/08/18 06:36	2/26/18	
Benzo(b)fluoranthene	<b>150</b>	130	45	10	03/08/18 06:36	2/26/18	
Benzo(g,h,i)perylene	ND U	130	49	10	03/08/18 06:36	2/26/18	*
Benzo(k)fluoranthene	<b>55 J</b>	130	53	10	03/08/18 06:36	2/26/18	
Benzoic Acid	ND U	5300	1300	10	03/08/18 06:36	2/26/18	
Benzyl Alcohol	ND U	260	65	10	03/08/18 06:36	2/26/18	
Bis(2-ethylhexyl) Phthalate	ND U	1300	120	10	03/08/18 06:36	2/26/18	
Butyl Benzyl Phthalate	ND U	130	49	10	03/08/18 06:36	2/26/18	
Chrysene	<b>190</b>	130	55	10	03/08/18 06:36	2/26/18	
Dibenz(a,h)anthracene	ND U	130	40	10	03/08/18 06:36	2/26/18	
Dibenzofuran	ND U	130	45	10	03/08/18 06:36	2/26/18	
Diethyl Phthalate	ND U	130	49	10	03/08/18 06:36	2/26/18	
Dimethyl Phthalate	ND U	130	53	10	03/08/18 06:36	2/26/18	
Di-n-butyl Phthalate	ND U	260	64	10	03/08/18 06:36	2/26/18	
Di-n-octyl Phthalate	ND U	130	43	10	03/08/18 06:36	2/26/18	
Fluoranthene	<b>300</b>	130	49	10	03/08/18 06:36	2/26/18	
Fluorene	ND U	130	44	10	03/08/18 06:36	2/26/18	
Hexachlorobenzene	ND U	130	44	10	03/08/18 06:36	2/26/18	
Hexachlorobutadiene	ND U	130	40	10	03/08/18 06:36	2/26/18	
Hexachloroethane	ND U	130	33	10	03/08/18 06:36	2/26/18	
Indeno(1,2,3-cd)pyrene	ND U	130	43	10	03/08/18 06:36	2/26/18	
Naphthalene	ND U	130	39	10	03/08/18 06:36	2/26/18	
N-Nitrosodiphenylamine	ND U	130	43	10	03/08/18 06:36	2/26/18	
Pentachlorophenol (PCP)	ND U	1300	70	10	03/08/18 06:36	2/26/18	
Phenanthrene	<b>77 J</b>	130	48	10	03/08/18 06:36	2/26/18	
Phenol	ND U	400	41	10	03/08/18 06:36	2/26/18	
Pyrene	<b>200</b>	130	49	10	03/08/18 06:36	2/26/18	



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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:35  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-5  
**Lab Code:** K1801446-005

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	62	10 - 124	03/08/18 06:36	
2-Fluorobiphenyl	53	35 - 105	03/08/18 06:36	
Nitrobenzene-d5	59	10 - 84	03/08/18 06:36	
Phenol-d6	51	39 - 109	03/08/18 06:36	
p-Terphenyl-d14	77	30 - 102	03/08/18 06:36	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:20  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-6  
**Lab Code:** K1801446-006

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	130	35	10	03/08/18 04:13	2/26/18	
1,2-Dichlorobenzene	ND U	130	32	10	03/08/18 04:13	2/26/18	
1,4-Dichlorobenzene	ND U	130	34	10	03/08/18 04:13	2/26/18	
2,4-Dimethylphenol	ND U	670	84	10	03/08/18 04:13	2/26/18	
2-Methylnaphthalene	ND U	130	38	10	03/08/18 04:13	2/26/18	
2-Methylphenol	ND U	130	55	10	03/08/18 04:13	2/26/18	
4-Methylphenol	ND U	130	60	10	03/08/18 04:13	2/26/18	
Acenaphthene	ND U	130	43	10	03/08/18 04:13	2/26/18	
Acenaphthylene	ND U	130	35	10	03/08/18 04:13	2/26/18	
Anthracene	<b>68 J</b>	130	43	10	03/08/18 04:13	2/26/18	
Benz(a)anthracene	<b>130 J</b>	130	48	10	03/08/18 04:13	2/26/18	
Benzo(a)pyrene	<b>94 J</b>	130	48	10	03/08/18 04:13	2/26/18	
Benzo(b)fluoranthene	<b>200</b>	130	46	10	03/08/18 04:13	2/26/18	
Benzo(g,h,i)perylene	ND U	130	50	10	03/08/18 04:13	2/26/18	*
Benzo(k)fluoranthene	<b>76 J</b>	130	54	10	03/08/18 04:13	2/26/18	
Benzoic Acid	ND U	5300	1300	10	03/08/18 04:13	2/26/18	
Benzyl Alcohol	ND U	270	66	10	03/08/18 04:13	2/26/18	
Bis(2-ethylhexyl) Phthalate	ND U	1300	120	10	03/08/18 04:13	2/26/18	
Butyl Benzyl Phthalate	ND U	130	50	10	03/08/18 04:13	2/26/18	
Chrysene	<b>280</b>	130	55	10	03/08/18 04:13	2/26/18	
Dibenz(a,h)anthracene	ND U	130	40	10	03/08/18 04:13	2/26/18	
Dibenzofuran	ND U	130	46	10	03/08/18 04:13	2/26/18	
Diethyl Phthalate	ND U	130	50	10	03/08/18 04:13	2/26/18	
Dimethyl Phthalate	ND U	130	54	10	03/08/18 04:13	2/26/18	
Di-n-butyl Phthalate	ND U	270	64	10	03/08/18 04:13	2/26/18	
Di-n-octyl Phthalate	ND U	130	43	10	03/08/18 04:13	2/26/18	
Fluoranthene	<b>400</b>	130	50	10	03/08/18 04:13	2/26/18	
Fluorene	ND U	130	44	10	03/08/18 04:13	2/26/18	
Hexachlorobenzene	ND U	130	44	10	03/08/18 04:13	2/26/18	
Hexachlorobutadiene	ND U	130	40	10	03/08/18 04:13	2/26/18	
Hexachloroethane	ND U	130	34	10	03/08/18 04:13	2/26/18	
Indeno(1,2,3-cd)pyrene	<b>62 J</b>	130	43	10	03/08/18 04:13	2/26/18	
Naphthalene	ND U	130	39	10	03/08/18 04:13	2/26/18	
N-Nitrosodiphenylamine	ND U	130	43	10	03/08/18 04:13	2/26/18	
Pentachlorophenol (PCP)	ND U	1300	71	10	03/08/18 04:13	2/26/18	
Phenanthrene	<b>140</b>	130	48	10	03/08/18 04:13	2/26/18	
Phenol	ND U	400	42	10	03/08/18 04:13	2/26/18	
Pyrene	<b>230</b>	130	50	10	03/08/18 04:13	2/26/18	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 12:20  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-6  
**Lab Code:** K1801446-006

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	56	10 - 124	03/08/18 04:13	
2-Fluorobiphenyl	50	35 - 105	03/08/18 04:13	
Nitrobenzene-d5	59	10 - 84	03/08/18 04:13	
Phenol-d6	49	39 - 109	03/08/18 04:13	
p-Terphenyl-d14	70	30 - 102	03/08/18 04:13	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:35  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-7  
**Lab Code:** K1801446-007

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	38	13	5	03/08/18 07:05	2/26/18	
1,2-Dichlorobenzene	ND U	38	12	5	03/08/18 07:05	2/26/18	
1,4-Dichlorobenzene	ND U	38	13	5	03/08/18 07:05	2/26/18	
2,4-Dimethylphenol	ND U	190	32	5	03/08/18 07:05	2/26/18	
2-Methylnaphthalene	ND U	38	14	5	03/08/18 07:05	2/26/18	
2-Methylphenol	ND U	38	21	5	03/08/18 07:05	2/26/18	
4-Methylphenol	<b>390</b>	38	23	5	03/08/18 07:05	2/26/18	
Acenaphthene	ND U	38	16	5	03/08/18 07:05	2/26/18	
Acenaphthylene	ND U	38	13	5	03/08/18 07:05	2/26/18	
Anthracene	<b>47</b>	38	16	5	03/08/18 07:05	2/26/18	
Benz(a)anthracene	<b>100</b>	38	18	5	03/08/18 07:05	2/26/18	
Benzo(a)pyrene	<b>98</b>	38	18	5	03/08/18 07:05	2/26/18	
Benzo(b)fluoranthene	<b>200</b>	38	17	5	03/08/18 07:05	2/26/18	
Benzo(g,h,i)perylene	<b>50</b>	38	19	5	03/08/18 07:05	2/26/18	*
Benzo(k)fluoranthene	<b>68</b>	38	20	5	03/08/18 07:05	2/26/18	
Benzoic Acid	ND U	1500	480	5	03/08/18 07:05	2/26/18	
Benzyl Alcohol	ND U	75	25	5	03/08/18 07:05	2/26/18	
Bis(2-ethylhexyl) Phthalate	ND U	380	45	5	03/08/18 07:05	2/26/18	
Butyl Benzyl Phthalate	ND U	38	19	5	03/08/18 07:05	2/26/18	
Chrysene	<b>270</b>	38	21	5	03/08/18 07:05	2/26/18	
Dibenz(a,h)anthracene	<b>15 J</b>	38	15	5	03/08/18 07:05	2/26/18	
Dibenzofuran	ND U	38	17	5	03/08/18 07:05	2/26/18	
Diethyl Phthalate	ND U	38	19	5	03/08/18 07:05	2/26/18	
Dimethyl Phthalate	<b>33 J</b>	38	20	5	03/08/18 07:05	2/26/18	
Di-n-butyl Phthalate	ND U	75	24	5	03/08/18 07:05	2/26/18	
Di-n-octyl Phthalate	ND U	38	16	5	03/08/18 07:05	2/26/18	
Fluoranthene	<b>460</b>	38	19	5	03/08/18 07:05	2/26/18	
Fluorene	ND U	38	17	5	03/08/18 07:05	2/26/18	
Hexachlorobenzene	ND U	38	17	5	03/08/18 07:05	2/26/18	
Hexachlorobutadiene	ND U	38	15	5	03/08/18 07:05	2/26/18	
Hexachloroethane	ND U	38	13	5	03/08/18 07:05	2/26/18	
Indeno(1,2,3-cd)pyrene	<b>62</b>	38	16	5	03/08/18 07:05	2/26/18	
Naphthalene	ND U	38	15	5	03/08/18 07:05	2/26/18	
N-Nitrosodiphenylamine	ND U	38	16	5	03/08/18 07:05	2/26/18	
Pentachlorophenol (PCP)	<b>98 J</b>	380	27	5	03/08/18 07:05	2/26/18	
Phenanthrene	<b>120</b>	38	18	5	03/08/18 07:05	2/26/18	
Phenol	<b>140</b>	110	16	5	03/08/18 07:05	2/26/18	
Pyrene	<b>240</b>	38	19	5	03/08/18 07:05	2/26/18	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:35  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-7  
**Lab Code:** K1801446-007

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	65	10 - 124	03/08/18 07:05	
2-Fluorobiphenyl	55	35 - 105	03/08/18 07:05	
Nitrobenzene-d5	56	10 - 84	03/08/18 07:05	
Phenol-d6	52	39 - 109	03/08/18 07:05	
p-Terphenyl-d14	74	30 - 102	03/08/18 07:05	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:40  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-8  
**Lab Code:** K1801446-008

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	100	27	10	03/08/18 07:33	2/26/18	
1,2-Dichlorobenzene	ND U	100	25	10	03/08/18 07:33	2/26/18	
1,4-Dichlorobenzene	ND U	100	26	10	03/08/18 07:33	2/26/18	
2,4-Dimethylphenol	ND U	510	65	10	03/08/18 07:33	2/26/18	
2-Methylnaphthalene	ND U	100	29	10	03/08/18 07:33	2/26/18	
2-Methylphenol	ND U	100	42	10	03/08/18 07:33	2/26/18	
4-Methylphenol	ND U	100	46	10	03/08/18 07:33	2/26/18	
Acenaphthene	ND U	100	33	10	03/08/18 07:33	2/26/18	
Acenaphthylene	81 J	100	27	10	03/08/18 07:33	2/26/18	
Anthracene	260	100	33	10	03/08/18 07:33	2/26/18	
Benz(a)anthracene	990	100	37	10	03/08/18 07:33	2/26/18	
Benzo(a)pyrene	800	100	37	10	03/08/18 07:33	2/26/18	
Benzo(b)fluoranthene	1800	100	35	10	03/08/18 07:33	2/26/18	
Benzo(g,h,i)perylene	370	100	38	10	03/08/18 07:33	2/26/18	*
Benzo(k)fluoranthene	670	100	41	10	03/08/18 07:33	2/26/18	
Benzoic Acid	ND U	4100	980	10	03/08/18 07:33	2/26/18	
Benzyl Alcohol	ND U	200	50	10	03/08/18 07:33	2/26/18	
Bis(2-ethylhexyl) Phthalate	230 J	1000	91	10	03/08/18 07:33	2/26/18	
Butyl Benzyl Phthalate	49 J	100	38	10	03/08/18 07:33	2/26/18	
Chrysene	2400	100	42	10	03/08/18 07:33	2/26/18	
Dibenz(a,h)anthracene	100	100	31	10	03/08/18 07:33	2/26/18	
Dibenzofuran	ND U	100	35	10	03/08/18 07:33	2/26/18	
Diethyl Phthalate	ND U	100	38	10	03/08/18 07:33	2/26/18	
Dimethyl Phthalate	130	100	41	10	03/08/18 07:33	2/26/18	
Di-n-butyl Phthalate	79 J	200	49	10	03/08/18 07:33	2/26/18	
Di-n-octyl Phthalate	ND U	100	33	10	03/08/18 07:33	2/26/18	
Fluoranthene	3700	100	38	10	03/08/18 07:33	2/26/18	
Fluorene	95 J	100	34	10	03/08/18 07:33	2/26/18	
Hexachlorobenzene	ND U	100	34	10	03/08/18 07:33	2/26/18	
Hexachlorobutadiene	ND U	100	31	10	03/08/18 07:33	2/26/18	
Hexachloroethane	ND U	100	26	10	03/08/18 07:33	2/26/18	
Indeno(1,2,3-cd)pyrene	420	100	33	10	03/08/18 07:33	2/26/18	
Naphthalene	ND U	100	30	10	03/08/18 07:33	2/26/18	
N-Nitrosodiphenylamine	ND U	100	33	10	03/08/18 07:33	2/26/18	
Pentachlorophenol (PCP)	280 J	1000	54	10	03/08/18 07:33	2/26/18	
Phenanthrene	640	100	37	10	03/08/18 07:33	2/26/18	
Phenol	ND U	310	32	10	03/08/18 07:33	2/26/18	
Pyrene	2300	100	38	10	03/08/18 07:33	2/26/18	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:40  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-8  
**Lab Code:** K1801446-008

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	60	10 - 124	03/08/18 07:33	
2-Fluorobiphenyl	50	35 - 105	03/08/18 07:33	
Nitrobenzene-d5	54	10 - 84	03/08/18 07:33	
Phenol-d6	47	39 - 109	03/08/18 07:33	
p-Terphenyl-d14	72	30 - 102	03/08/18 07:33	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:45  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-9  
**Lab Code:** K1801446-009

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	130	35	10	03/08/18 08:02	2/26/18	
1,2-Dichlorobenzene	ND U	130	32	10	03/08/18 08:02	2/26/18	
1,4-Dichlorobenzene	ND U	130	33	10	03/08/18 08:02	2/26/18	
2,4-Dimethylphenol	ND U	660	84	10	03/08/18 08:02	2/26/18	
2-Methylnaphthalene	ND U	130	37	10	03/08/18 08:02	2/26/18	
2-Methylphenol	ND U	130	55	10	03/08/18 08:02	2/26/18	
4-Methylphenol	<b>190</b>	130	60	10	03/08/18 08:02	2/26/18	
Acenaphthene	ND U	130	43	10	03/08/18 08:02	2/26/18	
Acenaphthylene	<b>93 J</b>	130	35	10	03/08/18 08:02	2/26/18	
Anthracene	<b>380</b>	130	43	10	03/08/18 08:02	2/26/18	
Benz(a)anthracene	<b>1900</b>	130	48	10	03/08/18 08:02	2/26/18	
Benzo(a)pyrene	<b>1200</b>	130	48	10	03/08/18 08:02	2/26/18	
Benzo(b)fluoranthene	<b>2500</b>	130	45	10	03/08/18 08:02	2/26/18	
Benzo(g,h,i)perylene	<b>520</b>	130	49	10	03/08/18 08:02	2/26/18	*
Benzo(k)fluoranthene	<b>940</b>	130	53	10	03/08/18 08:02	2/26/18	
Benzoic Acid	ND U	5300	1300	10	03/08/18 08:02	2/26/18	
Benzyl Alcohol	<b>68 J</b>	260	65	10	03/08/18 08:02	2/26/18	
Bis(2-ethylhexyl) Phthalate	<b>370 J</b>	1300	120	10	03/08/18 08:02	2/26/18	
Butyl Benzyl Phthalate	<b>70 J</b>	130	49	10	03/08/18 08:02	2/26/18	
Chrysene	<b>4100</b>	130	55	10	03/08/18 08:02	2/26/18	
Dibenz(a,h)anthracene	<b>130</b>	130	40	10	03/08/18 08:02	2/26/18	
Dibenzofuran	ND U	130	45	10	03/08/18 08:02	2/26/18	
Diethyl Phthalate	ND U	130	49	10	03/08/18 08:02	2/26/18	
Dimethyl Phthalate	<b>190</b>	130	53	10	03/08/18 08:02	2/26/18	
Di-n-butyl Phthalate	ND U	260	64	10	03/08/18 08:02	2/26/18	
Di-n-octyl Phthalate	<b>170</b>	130	43	10	03/08/18 08:02	2/26/18	
Fluoranthene	<b>5500</b>	130	49	10	03/08/18 08:02	2/26/18	
Fluorene	<b>72 J</b>	130	44	10	03/08/18 08:02	2/26/18	
Hexachlorobenzene	ND U	130	44	10	03/08/18 08:02	2/26/18	
Hexachlorobutadiene	ND U	130	40	10	03/08/18 08:02	2/26/18	
Hexachloroethane	ND U	130	33	10	03/08/18 08:02	2/26/18	
Indeno(1,2,3-cd)pyrene	<b>580</b>	130	43	10	03/08/18 08:02	2/26/18	
Naphthalene	ND U	130	39	10	03/08/18 08:02	2/26/18	
N-Nitrosodiphenylamine	ND U	130	43	10	03/08/18 08:02	2/26/18	
Pentachlorophenol (PCP)	ND U	1300	70	10	03/08/18 08:02	2/26/18	
Phenanthrene	<b>690</b>	130	48	10	03/08/18 08:02	2/26/18	
Phenol	<b>46 J</b>	400	41	10	03/08/18 08:02	2/26/18	
Pyrene	<b>3200</b>	130	49	10	03/08/18 08:02	2/26/18	



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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 13:45  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-9  
**Lab Code:** K1801446-009

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	63	10 - 124	03/08/18 08:02	
2-Fluorobiphenyl	62	35 - 105	03/08/18 08:02	
Nitrobenzene-d5	64	10 - 84	03/08/18 08:02	
Phenol-d6	54	39 - 109	03/08/18 08:02	
p-Terphenyl-d14	77	30 - 102	03/08/18 08:02	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:00  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-10  
**Lab Code:** K1801446-010

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	69	26	10	03/08/18 08:30	2/26/18	
1,2-Dichlorobenzene	ND U	69	24	10	03/08/18 08:30	2/26/18	
1,4-Dichlorobenzene	ND U	69	25	10	03/08/18 08:30	2/26/18	
2,4-Dimethylphenol	ND U	340	63	10	03/08/18 08:30	2/26/18	
2-Methylnaphthalene	ND U	69	28	10	03/08/18 08:30	2/26/18	
2-Methylphenol	ND U	69	41	10	03/08/18 08:30	2/26/18	
4-Methylphenol	ND U	69	45	10	03/08/18 08:30	2/26/18	
Acenaphthene	<b>220</b>	69	32	10	03/08/18 08:30	2/26/18	
Acenaphthylene	<b>44 J</b>	69	26	10	03/08/18 08:30	2/26/18	
Anthracene	<b>420</b>	69	32	10	03/08/18 08:30	2/26/18	
Benz(a)anthracene	<b>1700</b>	69	36	10	03/08/18 08:30	2/26/18	
Benzo(a)pyrene	<b>1700</b>	69	36	10	03/08/18 08:30	2/26/18	
Benzo(b)fluoranthene	<b>2600</b>	69	34	10	03/08/18 08:30	2/26/18	
Benzo(g,h,i)perylene	<b>1400</b>	69	37	10	03/08/18 08:30	2/26/18	*
Benzo(k)fluoranthene	<b>960</b>	69	40	10	03/08/18 08:30	2/26/18	
Benzoic Acid	ND U	2800	960	10	03/08/18 08:30	2/26/18	
Benzyl Alcohol	ND U	140	49	10	03/08/18 08:30	2/26/18	
Bis(2-ethylhexyl) Phthalate	<b>340 J</b>	690	89	10	03/08/18 08:30	2/26/18	
Butyl Benzyl Phthalate	ND U	69	37	10	03/08/18 08:30	2/26/18	
Chrysene	<b>2300</b>	69	41	10	03/08/18 08:30	2/26/18	
Dibenz(a,h)anthracene	<b>280</b>	69	30	10	03/08/18 08:30	2/26/18	
Dibenzofuran	<b>97</b>	69	34	10	03/08/18 08:30	2/26/18	
Diethyl Phthalate	ND U	69	37	10	03/08/18 08:30	2/26/18	
Dimethyl Phthalate	<b>300</b>	69	40	10	03/08/18 08:30	2/26/18	
Di-n-butyl Phthalate	<b>94 J</b>	140	48	10	03/08/18 08:30	2/26/18	
Di-n-octyl Phthalate	<b>48 J</b>	69	32	10	03/08/18 08:30	2/26/18	
Fluoranthene	<b>5500</b>	69	37	10	03/08/18 08:30	2/26/18	
Fluorene	<b>200</b>	69	33	10	03/08/18 08:30	2/26/18	
Hexachlorobenzene	ND U	69	33	10	03/08/18 08:30	2/26/18	
Hexachlorobutadiene	ND U	69	30	10	03/08/18 08:30	2/26/18	
Hexachloroethane	ND U	69	25	10	03/08/18 08:30	2/26/18	
Indeno(1,2,3-cd)pyrene	<b>1200</b>	69	32	10	03/08/18 08:30	2/26/18	
Naphthalene	<b>32 J</b>	69	29	10	03/08/18 08:30	2/26/18	
N-Nitrosodiphenylamine	ND U	69	32	10	03/08/18 08:30	2/26/18	
Pentachlorophenol (PCP)	<b>240 J</b>	690	53	10	03/08/18 08:30	2/26/18	
Phenanthrene	<b>2300</b>	69	36	10	03/08/18 08:30	2/26/18	
Phenol	ND U	210	31	10	03/08/18 08:30	2/26/18	
Pyrene	<b>3500</b>	69	37	10	03/08/18 08:30	2/26/18	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:00  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-10  
**Lab Code:** K1801446-010

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	61	10 - 124	03/08/18 08:30	
2-Fluorobiphenyl	57	35 - 105	03/08/18 08:30	
Nitrobenzene-d5	64	10 - 84	03/08/18 08:30	
Phenol-d6	55	39 - 109	03/08/18 08:30	
p-Terphenyl-d14	71	30 - 102	03/08/18 08:30	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:10  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-11  
**Lab Code:** K1801446-011

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	94	26	10	03/08/18 08:59	2/26/18	
1,2-Dichlorobenzene	ND U	94	24	10	03/08/18 08:59	2/26/18	
1,4-Dichlorobenzene	ND U	94	25	10	03/08/18 08:59	2/26/18	
2,4-Dimethylphenol	ND U	470	63	10	03/08/18 08:59	2/26/18	
2-Methylnaphthalene	ND U	94	28	10	03/08/18 08:59	2/26/18	
2-Methylphenol	ND U	94	41	10	03/08/18 08:59	2/26/18	
4-Methylphenol	ND U	94	45	10	03/08/18 08:59	2/26/18	
Acenaphthene	ND U	94	32	10	03/08/18 08:59	2/26/18	
Acenaphthylene	27 J	94	26	10	03/08/18 08:59	2/26/18	
Anthracene	77 J	94	32	10	03/08/18 08:59	2/26/18	
Benz(a)anthracene	250	94	36	10	03/08/18 08:59	2/26/18	
Benzo(a)pyrene	240	94	36	10	03/08/18 08:59	2/26/18	
Benzo(b)fluoranthene	440	94	34	10	03/08/18 08:59	2/26/18	
Benzo(g,h,i)perylene	120	94	37	10	03/08/18 08:59	2/26/18	*
Benzo(k)fluoranthene	160	94	40	10	03/08/18 08:59	2/26/18	
Benzoic Acid	ND U	3800	960	10	03/08/18 08:59	2/26/18	
Benzyl Alcohol	ND U	190	49	10	03/08/18 08:59	2/26/18	
Bis(2-ethylhexyl) Phthalate	150 J	940	89	10	03/08/18 08:59	2/26/18	
Butyl Benzyl Phthalate	ND U	94	37	10	03/08/18 08:59	2/26/18	
Chrysene	500	94	41	10	03/08/18 08:59	2/26/18	
Dibenz(a,h)anthracene	33 J	94	30	10	03/08/18 08:59	2/26/18	
Dibenzofuran	ND U	94	34	10	03/08/18 08:59	2/26/18	
Diethyl Phthalate	ND U	94	37	10	03/08/18 08:59	2/26/18	
Dimethyl Phthalate	100	94	40	10	03/08/18 08:59	2/26/18	
Di-n-butyl Phthalate	160 J	190	48	10	03/08/18 08:59	2/26/18	
Di-n-octyl Phthalate	ND U	94	32	10	03/08/18 08:59	2/26/18	
Fluoranthene	850	94	37	10	03/08/18 08:59	2/26/18	
Fluorene	ND U	94	33	10	03/08/18 08:59	2/26/18	
Hexachlorobenzene	ND U	94	33	10	03/08/18 08:59	2/26/18	
Hexachlorobutadiene	ND U	94	30	10	03/08/18 08:59	2/26/18	
Hexachloroethane	ND U	94	25	10	03/08/18 08:59	2/26/18	
Indeno(1,2,3-cd)pyrene	150	94	32	10	03/08/18 08:59	2/26/18	
Naphthalene	ND U	94	29	10	03/08/18 08:59	2/26/18	
N-Nitrosodiphenylamine	ND U	94	32	10	03/08/18 08:59	2/26/18	
Pentachlorophenol (PCP)	ND U	940	53	10	03/08/18 08:59	2/26/18	
Phenanthrene	220	94	36	10	03/08/18 08:59	2/26/18	
Phenol	ND U	280	31	10	03/08/18 08:59	2/26/18	
Pyrene	560	94	37	10	03/08/18 08:59	2/26/18	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:10  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-11  
**Lab Code:** K1801446-011

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	58	10 - 124	03/08/18 08:59	
2-Fluorobiphenyl	49	35 - 105	03/08/18 08:59	
Nitrobenzene-d5	57	10 - 84	03/08/18 08:59	
Phenol-d6	48	39 - 109	03/08/18 08:59	
p-Terphenyl-d14	65	30 - 102	03/08/18 08:59	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:15  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-12  
**Lab Code:** K1801446-012

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	77	26	10	03/08/18 09:28	2/26/18	
1,2-Dichlorobenzene	ND U	77	24	10	03/08/18 09:28	2/26/18	
1,4-Dichlorobenzene	ND U	77	25	10	03/08/18 09:28	2/26/18	
2,4-Dimethylphenol	ND U	390	63	10	03/08/18 09:28	2/26/18	
2-Methylnaphthalene	ND U	77	28	10	03/08/18 09:28	2/26/18	
2-Methylphenol	ND U	77	41	10	03/08/18 09:28	2/26/18	
4-Methylphenol	ND U	77	45	10	03/08/18 09:28	2/26/18	
Acenaphthene	ND U	77	32	10	03/08/18 09:28	2/26/18	
Acenaphthylene	ND U	77	26	10	03/08/18 09:28	2/26/18	
Anthracene	ND U	77	32	10	03/08/18 09:28	2/26/18	
Benz(a)anthracene	<b>86</b>	77	36	10	03/08/18 09:28	2/26/18	
Benzo(a)pyrene	<b>100</b>	77	36	10	03/08/18 09:28	2/26/18	
Benzo(b)fluoranthene	<b>150</b>	77	34	10	03/08/18 09:28	2/26/18	
Benzo(g,h,i)perylene	ND U	77	37	10	03/08/18 09:28	2/26/18	*
Benzo(k)fluoranthene	<b>53 J</b>	77	40	10	03/08/18 09:28	2/26/18	
Benzoic Acid	ND U	3100	960	10	03/08/18 09:28	2/26/18	
Benzyl Alcohol	ND U	150	49	10	03/08/18 09:28	2/26/18	
Bis(2-ethylhexyl) Phthalate	ND U	770	89	10	03/08/18 09:28	2/26/18	
Butyl Benzyl Phthalate	ND U	77	37	10	03/08/18 09:28	2/26/18	
Chrysene	<b>210</b>	77	41	10	03/08/18 09:28	2/26/18	
Dibenz(a,h)anthracene	ND U	77	30	10	03/08/18 09:28	2/26/18	
Dibenzofuran	ND U	77	34	10	03/08/18 09:28	2/26/18	
Diethyl Phthalate	ND U	77	37	10	03/08/18 09:28	2/26/18	
Dimethyl Phthalate	ND U	77	40	10	03/08/18 09:28	2/26/18	
Di-n-butyl Phthalate	ND U	150	48	10	03/08/18 09:28	2/26/18	
Di-n-octyl Phthalate	ND U	77	32	10	03/08/18 09:28	2/26/18	
Fluoranthene	<b>350</b>	77	37	10	03/08/18 09:28	2/26/18	
Fluorene	ND U	77	33	10	03/08/18 09:28	2/26/18	
Hexachlorobenzene	ND U	77	33	10	03/08/18 09:28	2/26/18	
Hexachlorobutadiene	ND U	77	30	10	03/08/18 09:28	2/26/18	
Hexachloroethane	ND U	77	25	10	03/08/18 09:28	2/26/18	
Indeno(1,2,3-cd)pyrene	<b>58 J</b>	77	32	10	03/08/18 09:28	2/26/18	
Naphthalene	ND U	77	29	10	03/08/18 09:28	2/26/18	
N-Nitrosodiphenylamine	ND U	77	32	10	03/08/18 09:28	2/26/18	
Pentachlorophenol (PCP)	ND U	770	53	10	03/08/18 09:28	2/26/18	
Phenanthrene	<b>120</b>	77	36	10	03/08/18 09:28	2/26/18	
Phenol	ND U	230	31	10	03/08/18 09:28	2/26/18	
Pyrene	<b>220</b>	77	37	10	03/08/18 09:28	2/26/18	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:15  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-12  
**Lab Code:** K1801446-012

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	71	10 - 124	03/08/18 09:28	
2-Fluorobiphenyl	63	35 - 105	03/08/18 09:28	
Nitrobenzene-d5	70	10 - 84	03/08/18 09:28	
Phenol-d6	62	39 - 109	03/08/18 09:28	
p-Terphenyl-d14	82	30 - 102	03/08/18 09:28	

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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:25  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-13  
**Lab Code:** K1801446-013

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	66	26	10	03/08/18 09:56	2/26/18	
1,2-Dichlorobenzene	ND U	66	24	10	03/08/18 09:56	2/26/18	
1,4-Dichlorobenzene	ND U	66	25	10	03/08/18 09:56	2/26/18	
2,4-Dimethylphenol	ND U	330	63	10	03/08/18 09:56	2/26/18	
2-Methylnaphthalene	ND U	66	28	10	03/08/18 09:56	2/26/18	
2-Methylphenol	ND U	66	41	10	03/08/18 09:56	2/26/18	
4-Methylphenol	<b>93</b>	66	45	10	03/08/18 09:56	2/26/18	
Acenaphthene	<b>67</b>	66	32	10	03/08/18 09:56	2/26/18	
Acenaphthylene	<b>39 J</b>	66	26	10	03/08/18 09:56	2/26/18	
Anthracene	<b>180</b>	66	32	10	03/08/18 09:56	2/26/18	
Benz(a)anthracene	<b>1000</b>	66	36	10	03/08/18 09:56	2/26/18	
Benzo(a)pyrene	<b>1200</b>	66	36	10	03/08/18 09:56	2/26/18	
Benzo(b)fluoranthene	<b>1900</b>	66	34	10	03/08/18 09:56	2/26/18	
Benzo(g,h,i)perylene	<b>1100</b>	66	37	10	03/08/18 09:56	2/26/18	*
Benzo(k)fluoranthene	<b>620</b>	66	40	10	03/08/18 09:56	2/26/18	
Benzoic Acid	ND U	2600	960	10	03/08/18 09:56	2/26/18	
Benzyl Alcohol	ND U	130	49	10	03/08/18 09:56	2/26/18	
Bis(2-ethylhexyl) Phthalate	<b>540 J</b>	660	89	10	03/08/18 09:56	2/26/18	
Butyl Benzyl Phthalate	<b>71</b>	66	37	10	03/08/18 09:56	2/26/18	
Chrysene	<b>1700</b>	66	41	10	03/08/18 09:56	2/26/18	
Dibenz(a,h)anthracene	<b>210</b>	66	30	10	03/08/18 09:56	2/26/18	
Dibenzofuran	ND U	66	34	10	03/08/18 09:56	2/26/18	
Diethyl Phthalate	ND U	66	37	10	03/08/18 09:56	2/26/18	
Dimethyl Phthalate	<b>840</b>	66	40	10	03/08/18 09:56	2/26/18	
Di-n-butyl Phthalate	<b>210</b>	130	48	10	03/08/18 09:56	2/26/18	
Di-n-octyl Phthalate	ND U	66	32	10	03/08/18 09:56	2/26/18	
Fluoranthene	<b>3400</b>	66	37	10	03/08/18 09:56	2/26/18	
Fluorene	<b>69</b>	66	33	10	03/08/18 09:56	2/26/18	
Hexachlorobenzene	ND U	66	33	10	03/08/18 09:56	2/26/18	
Hexachlorobutadiene	ND U	66	30	10	03/08/18 09:56	2/26/18	
Hexachloroethane	ND U	66	25	10	03/08/18 09:56	2/26/18	
Indeno(1,2,3-cd)pyrene	<b>950</b>	66	32	10	03/08/18 09:56	2/26/18	
Naphthalene	ND U	66	29	10	03/08/18 09:56	2/26/18	
N-Nitrosodiphenylamine	ND U	66	32	10	03/08/18 09:56	2/26/18	
Pentachlorophenol (PCP)	<b>230 J</b>	660	53	10	03/08/18 09:56	2/26/18	
Phenanthrene	<b>920</b>	66	36	10	03/08/18 09:56	2/26/18	
Phenol	<b>68 J</b>	200	31	10	03/08/18 09:56	2/26/18	
Pyrene	<b>2100</b>	66	37	10	03/08/18 09:56	2/26/18	



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Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18 14:25  
**Date Received:** 02/14/18 10:30

**Sample Name:** SED-13  
**Lab Code:** K1801446-013

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	69	10 - 124	03/08/18 09:56	
2-Fluorobiphenyl	61	35 - 105	03/08/18 09:56	
Nitrobenzene-d5	68	10 - 84	03/08/18 09:56	
Phenol-d6	59	39 - 109	03/08/18 09:56	
p-Terphenyl-d14	75	30 - 102	03/08/18 09:56	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** KQ1802442-04

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	6.0	2.6	1	03/08/18 02:19	2/26/18	
1,2-Dichlorobenzene	ND U	6.0	2.4	1	03/08/18 02:19	2/26/18	
1,4-Dichlorobenzene	ND U	6.0	2.5	1	03/08/18 02:19	2/26/18	
2,4-Dimethylphenol	ND U	25	6.3	1	03/08/18 02:19	2/26/18	
2-Methylnaphthalene	ND U	6.0	2.8	1	03/08/18 02:19	2/26/18	
2-Methylphenol	ND U	6.0	4.1	1	03/08/18 02:19	2/26/18	
4-Methylphenol	ND U	6.0	4.5	1	03/08/18 02:19	2/26/18	
Acenaphthene	ND U	6.0	3.2	1	03/08/18 02:19	2/26/18	
Acenaphthylene	ND U	6.0	2.6	1	03/08/18 02:19	2/26/18	
Anthracene	ND U	6.0	3.2	1	03/08/18 02:19	2/26/18	
Benz(a)anthracene	ND U	6.0	3.6	1	03/08/18 02:19	2/26/18	
Benzo(a)pyrene	ND U	6.0	3.6	1	03/08/18 02:19	2/26/18	
Benzo(b)fluoranthene	ND U	6.0	3.4	1	03/08/18 02:19	2/26/18	
Benzo(g,h,i)perylene	ND U	6.0	3.7	1	03/08/18 02:19	2/26/18	
Benzo(k)fluoranthene	ND U	6.0	4.0	1	03/08/18 02:19	2/26/18	
Benzoic Acid	ND U	200	96	1	03/08/18 02:19	2/26/18	
Benzyl Alcohol	ND U	9.9	4.9	1	03/08/18 02:19	2/26/18	
Bis(2-ethylhexyl) Phthalate	ND U	49	8.9	1	03/08/18 02:19	2/26/18	
Butyl Benzyl Phthalate	ND U	6.0	3.7	1	03/08/18 02:19	2/26/18	
Chrysene	ND U	6.0	4.1	1	03/08/18 02:19	2/26/18	
Dibenz(a,h)anthracene	ND U	6.0	3.0	1	03/08/18 02:19	2/26/18	
Dibenzofuran	ND U	6.0	3.4	1	03/08/18 02:19	2/26/18	
Diethyl Phthalate	ND U	6.0	3.7	1	03/08/18 02:19	2/26/18	
Dimethyl Phthalate	ND U	6.0	4.0	1	03/08/18 02:19	2/26/18	
Di-n-butyl Phthalate	ND U	9.9	4.8	1	03/08/18 02:19	2/26/18	
Di-n-octyl Phthalate	4.6 J	6.0	3.2	1	03/08/18 02:19	2/26/18	
Fluoranthene	ND U	6.0	3.7	1	03/08/18 02:19	2/26/18	
Fluorene	ND U	6.0	3.3	1	03/08/18 02:19	2/26/18	
Hexachlorobenzene	ND U	6.0	3.3	1	03/08/18 02:19	2/26/18	
Hexachlorobutadiene	ND U	6.0	3.0	1	03/08/18 02:19	2/26/18	
Hexachloroethane	ND U	6.0	2.5	1	03/08/18 02:19	2/26/18	
Indeno(1,2,3-cd)pyrene	ND U	6.0	3.2	1	03/08/18 02:19	2/26/18	
Naphthalene	ND U	6.0	2.9	1	03/08/18 02:19	2/26/18	
N-Nitrosodiphenylamine	ND U	6.0	3.2	1	03/08/18 02:19	2/26/18	
Pentachlorophenol (PCP)	ND U	49	5.3	1	03/08/18 02:19	2/26/18	
Phenanthrene	ND U	6.0	3.6	1	03/08/18 02:19	2/26/18	
Phenol	ND U	15	3.1	1	03/08/18 02:19	2/26/18	
Pyrene	ND U	6.0	3.7	1	03/08/18 02:19	2/26/18	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** KQ1802442-04

**Units:** ug/Kg  
**Basis:** Dry

Low Level Semivolatile Organic Compounds by GC/MS

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	34	10 - 124	03/08/18 02:19	
2-Fluorobiphenyl	36	35 - 105	03/08/18 02:19	
Nitrobenzene-d5	38	10 - 84	03/08/18 02:19	
Phenol-d6	35	39 - 109	03/08/18 02:19	*
p-Terphenyl-d14	48	30 - 102	03/08/18 02:19	

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446

**SURROGATE RECOVERY SUMMARY**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Extraction Method:** EPA 3541

Sample Name	Lab Code	2,4,6-Tribromophenol	2-Fluorobiphenyl	Nitrobenzene-d5
		10 - 124	35 - 105	10 - 84
SED-1	K1801446-001	63	53	61
SED-2	K1801446-002	50	42	49
SED-3	K1801446-003	51	47	52
SED-4	K1801446-004	67	69	75
SED-5	K1801446-005	62	53	59
SED-6	K1801446-006	56	50	59
SED-7	K1801446-007	65	55	56
SED-8	K1801446-008	60	50	54
SED-9	K1801446-009	63	62	64
SED-10	K1801446-010	61	57	64
SED-11	K1801446-011	58	49	57
SED-12	K1801446-012	71	63	70
SED-13	K1801446-013	69	61	68
SED-6 MS	KQ1802442-01	63	61	67
SED-6 DMS	KQ1802442-02	58	59	63
Lab Control Sample	KQ1802442-03	68	65	64
Method Blank	KQ1802442-04	34	36	38

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446

**SURROGATE RECOVERY SUMMARY**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Extraction Method:** EPA 3541

Sample Name	Lab Code	Phenol-d6	p-Terphenyl-d14
		39 - 109	30 - 102
SED-1	K1801446-001	54	79
SED-2	K1801446-002	40	66
SED-3	K1801446-003	45	69
SED-4	K1801446-004	62	79
SED-5	K1801446-005	51	77
SED-6	K1801446-006	49	70
SED-7	K1801446-007	52	74
SED-8	K1801446-008	47	72
SED-9	K1801446-009	54	77
SED-10	K1801446-010	55	71
SED-11	K1801446-011	48	65
SED-12	K1801446-012	62	82
SED-13	K1801446-013	59	75
SED-6	KQ1802442-01	63	80
SED-6	KQ1802442-02	58	75
Lab Control Sample	KQ1802442-03	59	77
Method Blank	KQ1802442-04	35 *	48

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/18 01:50

**Internal Standard Area and RT SUMMARY**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**File ID:** J:\MS29\DATA\030718\0307F034.D\  
**Instrument ID:** K-MS-29  
**Analysis Method:** 8270D

**Lab Code:** KQ1803253-02  
**Analysis Lot:** 582804  
**Signal ID:**

	1,4-Dichlorobenzene-d4		Acenaphthene-d10		Chrysene-d12	
	Area	RT	Area	RT	Area	RT
<b>ICAL Result ==&gt;</b>	92,302	4.94	156,999	9.54	311,735	15.32
<b>Upper Limit ==&gt;</b>	184,604	5.44	313,998	10.04	623,470	15.82
<b>Lower Limit ==&gt;</b>	46,151	4.44	78,500	9.04	155,868	14.82

**Associated Analyses**

Sample Name	ID	Area	RT	Area	RT	Area	RT
Method Blank	KQ1802442-04	93063	4.94	146183	9.54	303809	15.31
Lab Control Sample	KQ1802442-03	92717	4.94	161866	9.53	301827	15.32
SED-6	KQ1802442-01	94856	4.93	159263	9.53	306704	15.31
SED-6	KQ1802442-02	92096	4.94	154167	9.53	310507	15.31
SED-6	K1801446-006	93453	4.94	148775	9.53	301916	15.31
SED-1	K1801446-001	92974	4.93	157546	9.53	291145	15.31
SED-2	K1801446-002	93054	4.93	155461	9.53	301031	15.31
SED-3	K1801446-003	90980	4.93	148385	9.53	281496	15.31
SED-4	K1801446-004	92473	4.94	158576	9.54	323208	15.32
SED-5	K1801446-005	91041	4.93	144763	9.54	296741	15.31
SED-7	K1801446-007	91766	4.94	158029	9.53	294687	15.32
SED-8	K1801446-008	91772	4.93	149233	9.54	317825	15.32
SED-9	K1801446-009	91617	4.94	148062	9.54	315215	15.32
SED-10	K1801446-010	91089	4.93	149784	9.54	337984	15.32
SED-11	K1801446-011	92924	4.93	153386	9.54	314593	15.31
SED-12	K1801446-012	91810	4.94	149319	9.53	329129	15.32
SED-13	K1801446-013	89980	4.94	153401	9.54	334697	15.32

**ALS Group USA, Corp.**  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/18 01:50

**Internal Standard Area and RT SUMMARY**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**File ID:** J:\MS29\DATA\030718\0307F034.D\  
**Instrument ID:** K-MS-29  
**Analysis Method:** 8270D

**Lab Code:** KQ1803253-02  
**Analysis Lot:** 582804  
**Signal ID:**

	Naphthalene-d8		Perylene-d12		Phenanthrene-d10	
	Area	RT	Area	RT	Area	RT
<b>ICAL Result ==&gt;</b>	349,150	6.18	289,455	18.45	273,402	11.91
<b>Upper Limit ==&gt;</b>	698,300	6.68	578,910	18.95	546,804	12.41
<b>Lower Limit ==&gt;</b>	174,575	5.68	144,728	17.95	136,701	11.41

**Associated Analyses**

Sample Name	ID	Area	RT	Area	RT	Area	RT
Method Blank	KQ1802442-04	353554	6.18	311364	18.45	269942	11.91
Lab Control Sample	KQ1802442-03	353510	6.18	308816	18.45	290304	11.91
SED-6	KQ1802442-01	360884	6.18	326615	18.45	296731	11.91
SED-6	KQ1802442-02	353238	6.17	330448	18.45	283838	11.91
SED-6	K1801446-006	351323	6.17	318561	18.45	283238	11.91
SED-1	K1801446-001	359318	6.17	303406	18.45	281044	11.91
SED-2	K1801446-002	347089	6.17	315908	18.45	280776	11.91
SED-3	K1801446-003	338070	6.18	295960	18.45	274962	11.91
SED-4	K1801446-004	354603	6.18	343476	18.46	293867	11.91
SED-5	K1801446-005	335895	6.18	323702	18.45	267053	11.91
SED-7	K1801446-007	348283	6.17	311167	18.45	281986	11.91
SED-8	K1801446-008	340384	6.17	339760	18.45	280052	11.91
SED-9	K1801446-009	347171	6.18	331293	18.46	283288	11.91
SED-10	K1801446-010	334711	6.18	354610	18.46	294428	11.91
SED-11	K1801446-011	342318	6.17	341846	18.45	274670	11.91
SED-12	K1801446-012	339493	6.18	360122	18.47	291099	11.91
SED-13	K1801446-013	340991	6.18	358094	18.46	291120	11.91

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 03/8/18  
**Date Extracted:** 02/26/18

**Duplicate Matrix Spike Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Sample Name:** SED-6 **Units:** ug/Kg  
**Lab Code:** K1801446-006 **Basis:** Dry  
**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Sample Result	Matrix Spike KQ1802442-01			Duplicate Matrix Spike KQ1802442-02			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
1,2,4-Trichlorobenzene	ND U	214	333	64	192	333	58	18-85	11	40
1,2-Dichlorobenzene	ND U	213	333	64	183	333	55	17-79	15	40
1,4-Dichlorobenzene	ND U	215	333	65	185	333	56	15-80	15	40
2,4-Dimethylphenol	ND U	753	998	75	646 J	998	65	10-103	15	40
2-Methylnaphthalene	ND U	223	333	67	191	333	57	10-117	16	40
2-Methylphenol	ND U	222	333	67	183	333	55	10-94	19	40
4-Methylphenol	ND U	226	333	68	194	333	58	10-103	15	40
Acenaphthene	ND U	254	333	76	221	333	67	10-108	14	40
Acenaphthylene	ND U	243	333	73	204	333	61	10-108	17	40
Anthracene	68 J	376	333	93	298	333	69	10-119	23	40
Benz(a)anthracene	130 J	391	333	79	332	333	61	13-120	16	40
Benzo(a)pyrene	94 J	361	333	80	298	333	61	10-148	19	40
Benzo(b)fluoranthene	200	464	333	79	406	333	62	10-128	13	40
Benzo(g,h,i)perylene	ND U	305	333	92	258	333	78	10-126	16	40
Benzo(k)fluoranthene	76 J	367	333	88	305	333	69	15-114	19	40
Benzoic Acid	ND U	ND U	998	0 *	ND U	998	0 *	10-125	NC	40
Benzyl Alcohol	ND U	226 J	333	68	190 J	333	57	16-83	17	40
Bis(2-ethylhexyl) Phthalate	ND U	290 J	333	87	261 J	333	78	23-123	11	40
Butyl Benzyl Phthalate	ND U	354	333	106	299	333	90	18-123	17	40
Chrysene	280	528	333	73	448	333	49	10-138	16	40
Dibenz(a,h)anthracene	ND U	262	333	79	234	333	70	29-102	11	40
Dibenzofuran	ND U	265	333	80	229	333	69	15-96	15	40
Diethyl Phthalate	ND U	290	333	87	249	333	75	20-108	15	40
Dimethyl Phthalate	ND U	274	333	82	230	333	69	11-109	17	40
Di-n-butyl Phthalate	ND U	358	333	108	314	333	94	16-130	13	40
Di-n-octyl Phthalate	ND U	390	333	117	352	333	106	25-120	10	40
Fluoranthene	400	863	333	139	817	333	125	10-140	5	40
Fluorene	ND U	299	333	90	250	333	75	10-110	18	40
Hexachlorobenzene	ND U	238	333	72	209	333	63	33-92	13	40
Hexachlorobutadiene	ND U	219	333	66	186	333	56	18-87	16	40
Hexachloroethane	ND U	221	333	66	184	333	55	10-111	18	40
Indeno(1,2,3-cd)pyrene	62 J	304	333	73	266	333	61	10-143	13	40
Naphthalene	ND U	239	333	72	202	333	61	10-109	17	40
N-Nitrosodiphenylamine	ND U	249	333	75	208	333	63	10-118	18	40
Pentachlorophenol (PCP)	ND U	506 J	333	152 *	469 J	333	141 *	10-134	8	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Collected:** 02/12/18  
**Date Received:** 02/14/18  
**Date Analyzed:** 03/8/18  
**Date Extracted:** 02/26/18

**Duplicate Matrix Spike Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Sample Name:** SED-6 **Units:** ug/Kg  
**Lab Code:** K1801446-006 **Basis:** Dry  
**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

Analyte Name	Sample Result	Matrix Spike KQ1802442-01			Duplicate Matrix Spike KQ1802442-02			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Phenanthrene	140	451	333	94	386	333	74	10-132	16	40
Phenol	ND U	216 J	333	65	180 J	333	54	10-93	18	40
Pyrene	230	580	333	105	523	333	88	10-132	10	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/18  
**Date Extracted:** 02/26/18

**Lab Control Sample Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3541

**Units:** ug/Kg  
**Basis:** Dry  
**Analysis Lot:** 582804

**Lab Control Sample**  
**KQ1802442-03**

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
1,2,4-Trichlorobenzene	139	250	56	30-75
1,2-Dichlorobenzene	135	250	54	30-70
1,4-Dichlorobenzene	133	250	53	30-69
2,4-Dimethylphenol	299	750	40	21-87
2-Methylnaphthalene	147	250	59	26-80
2-Methylphenol	125	250	50	27-74
4-Methylphenol	127	250	51	26-79
Acenaphthene	155	250	62	31-77
Acenaphthylene	157	250	63	30-79
Anthracene	178	250	71	36-87
Benz(a)anthracene	174	250	69	43-98
Benzo(a)pyrene	178	250	71	43-102
Benzo(b)fluoranthene	178	250	71	39-99
Benzo(g,h,i)perylene	206	250	83	39-99
Benzo(k)fluoranthene	185	250	74	38-93
Benzoic Acid	201 J	750	27	10-34
Benzyl Alcohol	144	250	58	25-83
Bis(2-ethylhexyl) Phthalate	198	250	79	39-113
Butyl Benzyl Phthalate	200	250	80	43-103
Chrysene	179	250	72	41-98
Dibenz(a,h)anthracene	179	250	71	38-101
Dibenzofuran	158	250	63	30-78
Diethyl Phthalate	190	250	76	35-95
Dimethyl Phthalate	177	250	71	36-85
Di-n-butyl Phthalate	216	250	86	30-120
Di-n-octyl Phthalate	214	250	85	41-105
Fluoranthene	202	250	81	25-115
Fluorene	167	250	67	30-81
Hexachlorobenzene	154	250	62	36-86
Hexachlorobutadiene	138	250	55	30-79
Hexachloroethane	133	250	53	23-76
Indeno(1,2,3-cd)pyrene	172	250	69	36-105
Naphthalene	143	250	57	30-74
N-Nitrosodiphenylamine	160	250	64	37-87
Pentachlorophenol (PCP)	150	250	60	19-103
Phenanthrene	166	250	66	36-85
Phenol	138	250	55	27-75
Pyrene	166	250	66	40-99



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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/18 02:47  
**Date Extracted:** 02/26/18

**Lab Control Sample Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Sample Name:** Lab Control Sample      **Instrument ID:** K-MS-29  
**Lab Code:** KQ1802442-03      **File ID:** J:\MS29\DATA\030718\0307F036.D\  
**Analysis Method:** 8270D      **Analysis Lot:** 582804  
**Prep Method:** EPA 3541      **Extraction Lot:** 308941

This Lab Control Sample applies to the following analyses.

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>
Method Blank	KQ1802442-04	J:\MS29\DATA\030718\0307F035.D\	03/08/18 02:19
SED-6	KQ1802442-01	J:\MS29\DATA\030718\0307F037.D\	03/08/18 03:16
SED-6	KQ1802442-02	J:\MS29\DATA\030718\0307F038.D\	03/08/18 03:45
SED-6	K1801446-006	J:\MS29\DATA\030718\0307F039.D\	03/08/18 04:13
SED-1	K1801446-001	J:\MS29\DATA\030718\0307F040.D\	03/08/18 04:42
SED-2	K1801446-002	J:\MS29\DATA\030718\0307F041.D\	03/08/18 05:10
SED-3	K1801446-003	J:\MS29\DATA\030718\0307F042.D\	03/08/18 05:39
SED-4	K1801446-004	J:\MS29\DATA\030718\0307F043.D\	03/08/18 06:08
SED-5	K1801446-005	J:\MS29\DATA\030718\0307F044.D\	03/08/18 06:36
SED-7	K1801446-007	J:\MS29\DATA\030718\0307F045.D\	03/08/18 07:05
SED-8	K1801446-008	J:\MS29\DATA\030718\0307F046.D\	03/08/18 07:33
SED-9	K1801446-009	J:\MS29\DATA\030718\0307F047.D\	03/08/18 08:02
SED-10	K1801446-010	J:\MS29\DATA\030718\0307F048.D\	03/08/18 08:30
SED-11	K1801446-011	J:\MS29\DATA\030718\0307F049.D\	03/08/18 08:59
SED-12	K1801446-012	J:\MS29\DATA\030718\0307F050.D\	03/08/18 09:28
SED-13	K1801446-013	J:\MS29\DATA\030718\0307F051.D\	03/08/18 09:56

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QC/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/18 01:22

**Tune Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**File ID:** J:\MS29\DATA\030718\0307F033.D\  
**Instrument ID:** K-MS-29

**Analytical Method:** 8270D  
**Analysis Lot:** 582804

Target Mass	Relative to Mass	Lower Limit %	Upper Limit %	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	27.68	631530	Pass
68	69	0	2	1.61	12546	Pass
69	198	0	100	34.10	778016	Pass
70	69	0	2	0.51	3957	Pass
127	198	10	80	44.72	1020160	Pass
197	198	0	2	0.00	0	Pass
198	442	30	100	80.56	2281301	Pass
199	198	5	9	6.72	153322	Pass
275	198	10	60	29.09	663594	Pass
365	442	1	50	2.50	70805	Pass
441	443	0.01	100	78.81	440042	Pass
442	442	30	100	100.00	2831872	Pass
443	442	15	24	19.72	558336	Pass

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1803253-02	J:\MS29\DATA\030718\0307F034.D\	03/08/18 01:50	
Method Blank	KQ1802442-04	J:\MS29\DATA\030718\0307F035.D\	03/08/18 02:19	
Lab Control Sample	KQ1802442-03	J:\MS29\DATA\030718\0307F036.D\	03/08/18 02:47	
SED-6	KQ1802442-01	J:\MS29\DATA\030718\0307F037.D\	03/08/18 03:16	
SED-6	KQ1802442-02	J:\MS29\DATA\030718\0307F038.D\	03/08/18 03:45	
SED-6	K1801446-006	J:\MS29\DATA\030718\0307F039.D\	03/08/18 04:13	
SED-1	K1801446-001	J:\MS29\DATA\030718\0307F040.D\	03/08/18 04:42	
SED-2	K1801446-002	J:\MS29\DATA\030718\0307F041.D\	03/08/18 05:10	
SED-3	K1801446-003	J:\MS29\DATA\030718\0307F042.D\	03/08/18 05:39	
SED-4	K1801446-004	J:\MS29\DATA\030718\0307F043.D\	03/08/18 06:08	
SED-5	K1801446-005	J:\MS29\DATA\030718\0307F044.D\	03/08/18 06:36	
SED-7	K1801446-007	J:\MS29\DATA\030718\0307F045.D\	03/08/18 07:05	
SED-8	K1801446-008	J:\MS29\DATA\030718\0307F046.D\	03/08/18 07:33	
SED-9	K1801446-009	J:\MS29\DATA\030718\0307F047.D\	03/08/18 08:02	
SED-10	K1801446-010	J:\MS29\DATA\030718\0307F048.D\	03/08/18 08:30	
SED-11	K1801446-011	J:\MS29\DATA\030718\0307F049.D\	03/08/18 08:59	
SED-12	K1801446-012	J:\MS29\DATA\030718\0307F050.D\	03/08/18 09:28	
SED-13	K1801446-013	J:\MS29\DATA\030718\0307F051.D\	03/08/18 09:56	

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 2/27/2018

**Initial Calibration Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Calibration ID:** KC1800085  
**Instrument ID:** K-MS-29

**Signal ID:** 1

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1800085-01	SVO_LL ICAL @ 0.05ug/mL   SVM57-73A	J:\MS29\DATA\022718\0227F003.D	02/27/2018 09:27
02	KC1800085-02	SVO_LL ICAL @ 0.10ug/mL   SVM57-73B	J:\MS29\DATA\022718\0227F004.D	02/27/2018 09:55
03	KC1800085-03	SVO_LL ICAL @ 0.20ug/mL   SVM57-73C	J:\MS29\DATA\022718\0227F005.D	02/27/2018 10:24
04	KC1800085-04	SVO_LL ICAL @ 0.50ug/mL   SVM57-73D	J:\MS29\DATA\022718\0227F006.D	02/27/2018 10:52
05	KC1800085-05	SVO_LL ICAL @ 1.0ug/mL   SVM57-73E	J:\MS29\DATA\022718\0227F007.D	02/27/2018 11:21
06	KC1800085-06	SVO_LL ICAL @ 2.0ug/mL   SVM57-73F	J:\MS29\DATA\022718\0227F008.D	02/27/2018 11:50
07	KC1800085-07	SVO_LL ICAL @ 3.0ug/mL   SVM57-73G	J:\MS29\DATA\022718\0227F009.D	02/27/2018 12:18
08	KC1800085-08	SVO_LL ICAL @ 5.0ug/mL   SVM57-73H	J:\MS29\DATA\022718\0227F010.D	02/27/2018 12:47
09	KC1800085-09	SVO_LL ICAL @ 7.0ug/mL   SVM57-73I	J:\MS29\DATA\022718\0227F011.D	02/27/2018 13:15
10	KC1800085-10	SVO_LL ICAL @ 10ug/mL   SVM57-73J	J:\MS29\DATA\022718\0227F012.D	02/27/2018 13:44

**Analyte**

**1,2,4-Trichlorobenzene**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.301	02	100.000	0.272	03	200.000	0.2942	04	500.000	0.2864
05	1000.000	0.2928	06	2000.000	0.2982	07	3000.000	0.2935	08	5000.000	0.2965
09	7000.000	0.2958	10	10000.000	0.2968						

**1,2-Dichlorobenzene**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.393	02	100.000	1.345	03	200.000	1.392	04	500.000	1.41
05	1000.000	1.438	06	2000.000	1.446	07	3000.000	1.439	08	5000.000	1.442
09	7000.000	1.443	10	10000.000	1.455						

**1,4-Dichlorobenzene**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.454	02	100.000	1.412	03	200.000	1.496	04	500.000	1.505
05	1000.000	1.524	06	2000.000	1.551	07	3000.000	1.53	08	5000.000	1.539
09	7000.000	1.539	10	10000.000	1.548						

**2,4-Dimethylphenol**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.2437	02	100.000	0.2567	03	200.000	0.2958	04	500.000	0.2627
05	1000.000	0.269	06	2000.000	0.2899	07	3000.000	0.2824	08	5000.000	0.2988
09	7000.000	0.2847	10	10000.000	0.2938						

**2-Methylnaphthalene**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.4969	02	100.000	0.4948	03	200.000	0.5116	04	500.000	0.5267
05	1000.000	0.5348	06	2000.000	0.5543	07	3000.000	0.5498	08	5000.000	0.5569
09	7000.000	0.5612	10	10000.000	0.5642						

ALS Group USA, Corp.  
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QA/QC Report

Client: Whatcom Environmental Services Inc.  
Project: Jensen Shipyard Sediment

Service Request: K1801446  
Calibration Date: 2/27/2018

Initial Calibration Summary  
Low Level Semivolatile Organic Compounds by GC/MS

Calibration ID: KC1800085  
Instrument ID: K-MS-29

Signal ID: 1

Analyte

2-Methylphenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.03	02	100.000	1.012	03	200.000	1.032	04	500.000	1.053
05	1000.000	1.085	06	2000.000	1.113	07	3000.000	1.105	08	5000.000	1.121
09	7000.000	1.11	10	10000.000	1.128						

4-Methylphenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.372	02	100.000	1.402	03	200.000	1.414	04	500.000	1.463
05	1000.000	1.494	06	2000.000	1.577	07	3000.000	1.581	08	5000.000	1.587
09	7000.000	1.586	10	10000.000	1.634						

Acenaphthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.1	02	100.000	1.079	03	200.000	1.161	04	500.000	1.145
05	1000.000	1.177	06	2000.000	1.197	07	3000.000	1.2	08	5000.000	1.201
09	7000.000	1.187	10	10000.000	1.206						

Acenaphthylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.667	02	100.000	1.563	03	200.000	1.763	04	500.000	1.797
05	1000.000	1.885	06	2000.000	2.035	07	3000.000	2.008	08	5000.000	1.996
09	7000.000	2.026	10	10000.000	2.048						

Anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.9071	02	100.000	0.873	03	200.000	0.9621	04	500.000	0.9979
05	1000.000	1.024	06	2000.000	1.087	07	3000.000	1.077	08	5000.000	1.101
09	7000.000	1.09	10	10000.000	1.085						

Benz(a)anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.107	02	100.000	1.041	03	200.000	1.041	04	500.000	1.065
05	1000.000	1.076	06	2000.000	1.144	07	3000.000	1.165	08	5000.000	1.2
09	7000.000	1.24	10	10000.000	1.21						

Benzo(a)pyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.9545	02	100.000	0.879	03	200.000	0.8756	04	500.000	0.9066
05	1000.000	0.9176	06	2000.000	0.9789	07	3000.000	0.9782	08	5000.000	1.035
09	7000.000	1.027	10	10000.000	1.03						

Benzo(b)fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.9885	02	100.000	0.9241	03	200.000	0.9711	04	500.000	1.002
05	1000.000	0.997	06	2000.000	1.09	07	3000.000	1.089	08	5000.000	1.168
09	7000.000	1.163	10	10000.000	1.166						

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

Client: Whatcom Environmental Services Inc.  
Project: Jensen Shipyard Sediment

Service Request: K1801446  
Calibration Date: 2/27/2018

Initial Calibration Summary  
Low Level Semivolatile Organic Compounds by GC/MS

Calibration ID: KC1800085  
Instrument ID: K-MS-29

Signal ID: 1

Analyte

Benzo(g,h,i)perylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	100.000	1.046	03	200.000	1.094	04	500.000	1.083	05	1000.000	0.7536
06	2000.000	0.7578	07	3000.000	0.7686	08	5000.000	0.8049	09	7000.000	0.7964
10	10000.000	0.8033									

Benzo(k)fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.9747	02	100.000	0.931	03	200.000	0.9611	04	500.000	1.009
05	1000.000	1.051	06	2000.000	1.128	07	3000.000	1.113	08	5000.000	1.179
09	7000.000	1.18	10	10000.000	1.165						

Benzoic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	500.000	0.05184	05	1000.000	0.06672	06	2000.000	0.09021	07	3000.000	0.1114
08	5000.000	0.1217	09	7000.000	0.1313	10	10000.000	0.1425			

Benzyl Alcohol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.7515	02	100.000	0.773	03	200.000	0.796	04	500.000	0.8018
05	1000.000	0.8403	06	2000.000	0.8771	07	3000.000	0.8874	08	5000.000	0.8977
09	7000.000	0.9073	10	10000.000	0.9251						

Bis(2-ethylhexyl) Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	100.000	0.6474	03	200.000	0.5702	04	500.000	0.6761	05	1000.000	0.7395
06	2000.000	0.8035	07	3000.000	0.8376	08	5000.000	0.8421	09	7000.000	0.8761
10	10000.000	0.8523									

Butyl Benzyl Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.3848	02	100.000	0.3401	03	200.000	0.3698	04	500.000	0.3954
05	1000.000	0.4126	06	2000.000	0.4662	07	3000.000	0.5021	08	5000.000	0.529
09	7000.000	0.5619	10	10000.000	0.5572						

Chrysene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.023	02	100.000	1.029	03	200.000	1.072	04	500.000	1.079
05	1000.000	1.091	06	2000.000	1.112	07	3000.000	1.094	08	5000.000	1.097
09	7000.000	1.111	10	10000.000	1.1						

Dibenz(a,h)anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.044	02	100.000	1.056	03	200.000	0.9967	04	500.000	1.026
05	1000.000	0.9463	06	2000.000	0.9357	07	3000.000	0.93	08	5000.000	1.002
09	7000.000	1.016	10	10000.000	1.038						



ALS Group USA, Corp.  
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QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 2/27/2018

**Initial Calibration Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Calibration ID:** KC1800085  
**Instrument ID:** K-MS-29

**Signal ID:** 1

**Analyte**

**Dibenzofuran**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.513	02	100.000	1.496	03	200.000	1.609	04	500.000	1.613
05	1000.000	1.638	06	2000.000	1.704	07	3000.000	1.683	08	5000.000	1.683
09	7000.000	1.667	10	10000.000	1.701						

**Diethyl Phthalate**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.247	02	100.000	1.167	03	200.000	1.27	04	500.000	1.269
05	1000.000	1.291	06	2000.000	1.357	07	3000.000	1.34	08	5000.000	1.372
09	7000.000	1.371	10	10000.000	1.387						

**Dimethyl Phthalate**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.25	02	100.000	1.208	03	200.000	1.306	04	500.000	1.319
05	1000.000	1.349	06	2000.000	1.396	07	3000.000	1.378	08	5000.000	1.394
09	7000.000	1.377	10	10000.000	1.409						

**Di-n-butyl Phthalate**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.9809	02	100.000	0.9223	03	200.000	0.9817	04	500.000	1.023
05	1000.000	1.082	06	2000.000	1.154	07	3000.000	1.162	08	5000.000	1.202
09	7000.000	1.191	10	10000.000	1.216						

**Di-n-octyl Phthalate**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	100.000	0.624	03	200.000	0.6395	04	500.000	0.791	05	1000.000	0.8874
06	2000.000	1.043	07	3000.000	1.113	08	5000.000	1.228	09	7000.000	1.241
10	10000.000	1.312									

**Fluoranthene**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.105	02	100.000	0.9447	03	200.000	1.04	04	500.000	1.032
05	1000.000	1.034	06	2000.000	1.087	07	3000.000	1.085	08	5000.000	1.112
09	7000.000	1.083	10	10000.000	1.087						

**Fluorene**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.175	02	100.000	1.158	03	200.000	1.253	04	500.000	1.297
05	1000.000	1.315	06	2000.000	1.387	07	3000.000	1.362	08	5000.000	1.371
09	7000.000	1.358	10	10000.000	1.391						

**Hexachlorobenzene**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.2778	02	100.000	0.2718	03	200.000	0.2881	04	500.000	0.2801
05	1000.000	0.2916	06	2000.000	0.2991	07	3000.000	0.2889	08	5000.000	0.2871
09	7000.000	0.2902	10	10000.000	0.2929						

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 2/27/2018

**Initial Calibration Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Calibration ID:** KC1800085  
**Instrument ID:** K-MS-29

**Signal ID:** 1

**Analyte**

**Hexachlorobutadiene**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.1822	02	100.000	0.1585	03	200.000	0.1635	04	500.000	0.1676
05	1000.000	0.1675	06	2000.000	0.1707	07	3000.000	0.1673	08	5000.000	0.1697
09	7000.000	0.1695	10	10000.000	0.1705						

**Hexachloroethane**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.5399	02	100.000	0.4954	03	200.000	0.5124	04	500.000	0.5218
05	1000.000	0.5294	06	2000.000	0.5484	07	3000.000	0.5528	08	5000.000	0.5548
09	7000.000	0.5586	10	10000.000	0.5663						

**Indeno(1,2,3-cd)pyrene**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.031	02	100.000	0.9785	03	200.000	1.04	04	500.000	1.008
05	1000.000	0.8101	06	2000.000	0.8678	07	3000.000	0.8821	08	5000.000	0.9144
09	7000.000	0.9448	10	10000.000	0.9478						

**Naphthalene**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.9997	02	100.000	0.9166	03	200.000	0.9849	04	500.000	0.9821
05	1000.000	0.9834	06	2000.000	1.012	07	3000.000	0.9892	08	5000.000	0.9982
09	7000.000	0.9976	10	10000.000	1.002						

**N-Nitrosodiphenylamine**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.7863	02	100.000	0.7789	03	200.000	0.8505	04	500.000	0.875
05	1000.000	0.872	06	2000.000	0.9148	07	3000.000	0.9031	08	5000.000	0.9136
09	7000.000	0.895	10	10000.000	0.8923						

**Pentachlorophenol (PCP)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	500.000	0.08534	05	1000.000	0.09558	06	2000.000	0.1169	07	3000.000	0.1251
08	5000.000	0.1349	09	7000.000	0.1415	10	10000.000	0.1476			

**Phenanthrene**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.068	02	100.000	0.9884	03	200.000	1.046	04	500.000	1.062
05	1000.000	1.064	06	2000.000	1.108	07	3000.000	1.091	08	5000.000	1.097
09	7000.000	1.098	10	10000.000	1.08						

**Phenol**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.52	02	100.000	1.518	03	200.000	1.586	04	500.000	1.59
05	1000.000	1.621	06	2000.000	1.693	07	3000.000	1.683	08	5000.000	1.695
09	7000.000	1.698	10	10000.000	1.719						

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 2/27/2018

**Initial Calibration Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Calibration ID:** KC1800085  
**Instrument ID:** K-MS-29

**Signal ID:** 1

**Analyte**

**Pyrene**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.326	02	100.000	1.277	03	200.000	1.451	04	500.000	1.463
05	1000.000	1.341	06	2000.000	1.339	07	3000.000	1.334	08	5000.000	1.249
09	7000.000	1.311	10	10000.000	1.235						

**2,4,6-Tribromophenol**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	500.000	0.1042	05	1000.000	0.1172	06	2000.000	0.1324	07	3000.000	0.1345
08	5000.000	0.1381	09	7000.000	0.1448	10	10000.000	0.1471			

**2-Fluorobiphenyl**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.447	02	100.000	1.424	03	200.000	1.515	04	500.000	1.484
05	1000.000	1.513	06	2000.000	1.557	07	3000.000	1.544	08	5000.000	1.546
09	7000.000	1.526	10	10000.000	1.555						

**Nitrobenzene-d5**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.282	02	100.000	1.249	03	200.000	1.23	04	500.000	1.311
05	1000.000	1.351	06	2000.000	1.42	07	3000.000	1.424	08	5000.000	1.436
09	7000.000	1.44	10	10000.000	1.466						

**Phenol-d6**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	1.46	02	100.000	1.435	03	200.000	1.569	04	500.000	1.557
05	1000.000	1.617	06	2000.000	1.659	07	3000.000	1.658	08	5000.000	1.675
09	7000.000	1.675	10	10000.000	1.7						

**p-Terphenyl-d14**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.9129	02	100.000	0.8792	03	200.000	0.9298	04	500.000	0.9017
05	1000.000	0.8251	06	2000.000	0.866	07	3000.000	0.854	08	5000.000	0.8188
09	7000.000	0.8877	10	10000.000	0.8579						

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 2/27/2018

**Initial Calibration Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Calibration ID:** KC1800085  
**Instrument ID:** K-MS-29

**Signal ID:** 1

Analyte Name	Compound Type	Calibration Evaluation				Calibration Evaluation	
		Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
1,2,4-Trichlorobenzene	TRG	Average RF	% RSD	2.8	20	0.2927	0.010
1,2-Dichlorobenzene	TRG	Average RF	% RSD	2.4	20	1.42	0.010
1,4-Dichlorobenzene	TRG	Average RF	% RSD	3.0	20	1.51	0.010
2,4-Dimethylphenol	TRG	Average RF	% RSD	6.7	20	0.2778	0.100
2-Methylnaphthalene	TRG	Average RF	% RSD	4.9	20	0.5351	0.300
2-Methylphenol	TRG	Average RF	% RSD	4.0	20	1.079	0.500
4-Methylphenol	TRG	Average RF	% RSD	6.2	20	1.511	0.600
Acenaphthene	TRG	Average RF	% RSD	3.8	20	1.165	0.700
Acenaphthylene	TRG	Average RF	% RSD	9.2	20	1.879	0.900
Anthracene	TRG	Average RF	% RSD	8.1	20	1.02	0.600
Benz(a)anthracene	TRG	Average RF	% RSD	6.5	20	1.129	0.600
Benzo(a)pyrene	TRG	Average RF	% RSD	6.4	20	0.9583	0.600
Benzo(b)fluoranthene	TRG	Average RF	% RSD	8.6	20	1.056	0.600
Benzo(g,h,i)perylene	TRG	Quadratic	COD	0.9994	0.990	0.8786	0.500
Benzo(k)fluoranthene	TRG	Average RF	% RSD	9.0	20	1.069	0.600
Benzoic Acid	TRG	Quadratic	COD	0.9996	0.990	0.1022	0.010
Benzyl Alcohol	TRG	Average RF	% RSD	7.3	20	0.8457	0.010
Bis(2-ethylhexyl) Phthalate	TRG	Average RF	% RSD	14.2	20	0.7605	0.010
Butyl Benzyl Phthalate	TRG	Quadratic	COD	0.9981	0.990	0.4519	0.010
Chrysene	TRG	Average RF	% RSD	2.9	20	1.081	0.600
Dibenz(a,h)anthracene	TRG	Average RF	% RSD	4.7	20	0.9991	0.400
Dibenzofuran	TRG	Average RF	% RSD	4.6	20	1.631	0.800
Diethyl Phthalate	TRG	Average RF	% RSD	5.4	20	1.307	0.010
Dimethyl Phthalate	TRG	Average RF	% RSD	5.0	20	1.339	0.010
Di-n-butyl Phthalate	TRG	Average RF	% RSD	9.9	20	1.092	0.010
Di-n-octyl Phthalate	TRG	Quadratic	COD	0.9991	0.990	0.9865	0.010
Fluoranthene	TRG	Average RF	% RSD	4.7	20	1.061	0.600
Fluorene	TRG	Average RF	% RSD	6.5	20	1.307	0.800
Hexachlorobenzene	TRG	Average RF	% RSD	2.8	20	0.2868	0.100
Hexachlorobutadiene	TRG	Average RF	% RSD	3.6	20	0.1687	0.010
Hexachloroethane	TRG	Average RF	% RSD	4.2	20	0.538	0.300
Indeno(1,2,3-cd)pyrene	TRG	Average RF	% RSD	8.0	20	0.9425	0.500
Naphthalene	TRG	Average RF	% RSD	2.7	20	0.9866	0.700
N-Nitrosodiphenylamine	TRG	Average RF	% RSD	5.7	20	0.8682	0.010

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 2/27/2018

**Initial Calibration Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Calibration ID:** KC1800085  
**Instrument ID:** K-MS-29

**Signal ID:** 1

Analyte Name	Compound Type	Calibration Evaluation				Calibration Evaluation	
		Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Pentachlorophenol (PCP)	TRG	Quadratic	COD	0.9999	0.990	0.121	0.050
Phenanthrene	TRG	Average RF	% RSD	3.2	20	1.07	0.600
Phenol	TRG	Average RF	% RSD	4.6	20	1.632	0.800
Pyrene	TRG	Average RF	% RSD	5.7	20	1.333	0.600
2,4,6-Tribromophenol	SURR	Average RF	% RSD	11.7	20	0.1312	0.010
2-Fluorobiphenyl	SURR	Average RF	% RSD	3.0	20	1.511	0.010
Nitrobenzene-d5	SURR	Average RF	% RSD	6.4	20	1.361	0.010
Phenol-d6	SURR	Average RF	% RSD	5.8	20	1.6	0.010
p-Terphenyl-d14	SURR	Average RF	% RSD	4.1	20	0.8733	0.010

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 2/27/2018

**Initial Calibration Verification Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Calibration ID:** KC1800085  
**Instrument ID:** K-MS-29

**Signal ID:** 1

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC1800085-11	SVO_LL ICV @ 3.0ug/mL   SVM57-77C	J:\MS29\DATA\022718\0227F013.D	02/27/2018 14:12

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
1,2,4-Trichlorobenzene	3000	3000	2.927E-1	2.927E-1	-0.010	±30	Average RF
1,2-Dichlorobenzene	3000	3010	1.42E0	1.424E0	0.252	±30	Average RF
1,4-Dichlorobenzene	3000	3000	1.51E0	1.508E0	-0.113	±30	Average RF
2,4-Dimethylphenol	3000	3260	2.778E-1	3.023E-1	8.82	±30	Average RF
2-Methylnaphthalene	3000	3440	5.351E-1	6.128E-1	14.52	±30	Average RF
2-Methylphenol	3000	3270	1.079E0	1.176E0	9.05	±30	Average RF
4-Methylphenol	3000	3400	1.511E0	1.71E0	13.18	±30	Average RF
Acenaphthene	3000	3150	1.165E0	1.223E0	4.93	±30	Average RF
Acenaphthylene	3000	2870	1.879E0	1.8E0	-4.194	±30	Average RF
Anthracene	3000	3280	1.02E0	1.115E0	9.32	±30	Average RF
Benz(a)anthracene	3000	3250	1.129E0	1.225E0	8.50	±30	Average RF
Benzo(a)pyrene	3000	3280	9.583E-1	1.049E0	9.49	±30	Average RF
Benzo(b)fluoranthene	3000	3020	1.056E0	1.064E0	0.779	±30	Average RF
Benzo(g,h,i)perylene	3000	2880	8.786E-1	7.547E-1	-4.162	±30	Quadratic
Benzo(k)fluoranthene	3000	3210	1.069E0	1.145E0	7.07	±30	Average RF
Benzoic Acid	3000	3390	1.022E-1	1.264E-1	12.98	±30	Quadratic
Benzyl Alcohol	3000	3370	8.457E-1	9.513E-1	12.49	±30	Average RF
Bis(2-ethylhexyl) Phthalate	3000	3350	7.605E-1	8.486E-1	11.58	±30	Average RF
Butyl Benzyl Phthalate	3000	3180	4.519E-1	5.247E-1	5.85	±30	Quadratic
Chrysene	3000	3070	1.081E0	1.105E0	2.24	±30	Average RF
Dibenz(a,h)anthracene	3000	2940	9.991E-1	9.791E-1	-2.001	±30	Average RF
Dibenzofuran	3000	3420	1.631E0	1.86E0	14.07	±30	Average RF
Diethyl Phthalate	3000	3120	1.307E0	1.361E0	4.11	±30	Average RF
Dimethyl Phthalate	3000	3050	1.339E0	1.362E0	1.73	±30	Average RF
Di-n-butyl Phthalate	3000	3210	1.092E0	1.168E0	7.02	±30	Average RF
Di-n-octyl Phthalate	3000	3030	9.865E-1	1.114E0	0.971	±30	Quadratic
Fluoranthene	3000	3130	1.061E0	1.105E0	4.18	±30	Average RF
Fluorene	3000	3150	1.307E0	1.37E0	4.87	±30	Average RF
Hexachlorobenzene	3000	3020	2.868E-1	2.882E-1	0.511	±30	Average RF
Hexachlorobutadiene	3000	2930	1.687E-1	1.649E-1	-2.268	±30	Average RF
Hexachloroethane	3000	3070	5.38E-1	5.51E-1	2.42	±30	Average RF
Indeno(1,2,3-cd)pyrene	3000	2710	9.425E-1	8.509E-1	-9.721	±30	Average RF
Naphthalene	3000	3060	9.866E-1	1.005E0	1.85	±30	Average RF
N-Nitrosodiphenylamine	3000	3090	8.682E-1	8.947E-1	3.06	±30	Average RF

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Calibration Date:** 2/27/2018

**Initial Calibration Verification Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Calibration ID:** KC1800085  
**Instrument ID:** K-MS-29

**Signal ID:** 1

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC1800085-11	SVO_LL ICV @ 3.0ug/mL   SVM57-77C	J:\MS29\DATA\022718\0227F013.D	02/27/2018 14:12

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Pentachlorophenol (PCP)	3000	3610	1.21E-1	1.561E-1	20.49	±30	Quadratic
Phenanthrene	3000	3090	1.07E0	1.102E0	2.96	±30	Average RF
Phenol	3000	3280	1.632E0	1.787E0	9.49	±30	Average RF
Pyrene	3000	3070	1.333E0	1.364E0	2.35	±30	Average RF
2,4,6-Tribromophenol	3000	3720	1.312E-1	1.626E-1	23.98	±30	Average RF
2-Fluorobiphenyl	3000	3610	1.511E0	1.821E0	20.48	±30	Average RF
Nitrobenzene-d5	3000	3660	1.361E0	1.66E0	21.98	±30	Average RF
Phenol-d6	3000	3560	1.6E0	1.9E0	18.68	±30	Average RF
p-Terphenyl-d14	3000	3770	8.733E-1	1.096E0	25.51	±30	Average RF

Client: Whatcom Environmental Services Inc.  
Project: Jensen Shipyard Sediment

Service Request: K1801446  
Date Analyzed: 03/08/18 01:50

**Continuing Calibration Verification (CCV) Summary  
Low Level Semivolatile Organic Compounds by GC/MS**

Analysis Method: 8270D  
File ID: J:\MS29\DATA\030718\0307F034.D\  
Signal ID: 1

Calibration Date: 2/27/2018  
Calibration ID: KC1800085  
Analysis Lot: 582804  
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
1,2,4-Trichlorobenzene	3000	3000	0.2927	0.2926	0.0	NA	±20	Average RF
1,2-Dichlorobenzene	3000	3020	1.4202	1.4301	0.7	NA	±20	Average RF
1,4-Dichlorobenzene	3000	3020	1.5097	1.5212	0.8	NA	±20	Average RF
2,4-Dimethylphenol	3000	3140	0.2778	0.291	4.8	NA	±20	Average RF
2-Methylnaphthalene	3000	3040	0.5351	0.5416	1.2	NA	±20	Average RF
2-Methylphenol	3000	2980	1.0789	1.0723	-0.6	NA	±20	Average RF
4-Methylphenol	3000	3010	1.5111	1.5153	0.3	NA	±20	Average RF
Acenaphthene	3000	3060	1.1652	1.1887	2.0	NA	±20	Average RF
Acenaphthylene	3000	3220	1.8789	2.0188	7.4	NA	±20	Average RF
Anthracene	3000	3310	1.0204	1.1245	10.2	NA	±20	Average RF
Benz(a)anthracene	3000	2920	1.129	1.1004	-2.5	NA	±20	Average RF
Benzo(a)pyrene	3000	3170	0.9583	1.014	5.8	NA	±20	Average RF
Benzo(b)fluoranthene	3000	3050	1.0559	1.0733	1.6	NA	±20	Average RF
Benzo(g,h,i)perylene	3000	3640	0.8786	0.9539	NA	21.2*	±20	Quadratic
Benzo(k)fluoranthene	3000	3370	1.0691	1.2002	12.3	NA	±20	Average RF
Benzoic Acid	3000	3510	0.1022	0.1317	NA	16.8	±20	Quadratic
Benzyl Alcohol	3000	3040	0.8457	0.8563	1.3	NA	±20	Average RF
Bis(2-ethylhexyl) Phthalate	3000	2860	0.7605	0.7263	-4.5	NA	±20	Average RF
Butyl Benzyl Phthalate	3000	2950	0.4519	0.4856	NA	-1.5	±20	Quadratic
Chrysene	3000	3090	1.0809	1.1137	3.0	NA	±20	Average RF
Dibenz(a,h)anthracene	3000	3150	0.9991	1.0507	5.2	NA	±20	Average RF
Dibenzofuran	3000	3070	1.6308	1.6695	2.4	NA	±20	Average RF
Diethyl Phthalate	3000	3180	1.3072	1.3858	6.0	NA	±20	Average RF
Dimethyl Phthalate	3000	3080	1.3388	1.3761	2.8	NA	±20	Average RF
Di-n-butyl Phthalate	3000	3430	1.0915	1.248	14.3	NA	±20	Average RF
Di-n-octyl Phthalate	3000	3190	0.9865	1.1798	NA	6.3	±20	Quadratic
Fluoranthene	3000	3530	1.061	1.2489	17.7	NA	±20	Average RF
Fluorene	3000	3180	1.3067	1.3834	5.9	NA	±20	Average RF
Hexachlorobenzene	3000	2940	0.2868	0.2812	-1.9	NA	±20	Average RF
Hexachlorobutadiene	3000	2990	0.1687	0.1682	-0.3	NA	±20	Average RF
Hexachloroethane	3000	3110	0.538	0.5574	3.6	NA	±20	Average RF
Indeno(1,2,3-cd)pyrene	3000	2990	0.9425	0.9395	-0.3	NA	±20	Average RF
Naphthalene	3000	3020	0.9866	0.9946	0.8	NA	±20	Average RF
N-Nitrosodiphenylamine	3000	3180	0.8682	0.9212	6.1	NA	±20	Average RF
Pentachlorophenol (PCP)	3000	2870	0.121	0.1203	NA	-4.3	±20	Quadratic
Phenanthrene	3000	3090	1.0702	1.1011	2.9	NA	±20	Average RF
Phenol	3000	2990	1.6324	1.6264	-0.4	NA	±20	Average RF
Pyrene	3000	2750	1.3326	1.2212	-8.4	NA	±20	Average RF
2,4,6-Tribromophenol	3000	3090	0.1312	0.1351	3.0	NA	±20	Average RF
2-Fluorobiphenyl	3000	3020	1.5111	1.5221	0.7	NA	±20	Average RF
Nitrobenzene-d5	3000	3110	1.3608	1.4092	3.6	NA	±20	Average RF
Phenol-d6	3000	3050	1.6005	1.6262	1.6	NA	±20	Average RF



**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:** K1801446  
**Date Analyzed:** 03/08/18 01:50

**Continuing Calibration Verification (CCV) Summary  
Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**File ID:** J:\MS29\DATA\030718\0307F034.D\  
**Signal ID:** 1

**Calibration Date:** 2/27/2018  
**Calibration ID:** KC1800085  
**Analysis Lot:** 582804  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
p-Terphenyl-d14	3000	2910	0.8733	0.8474	-3.0	NA	±20	Average RF

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment

**Service Request:**K1801446

**Analysis Run Log**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:**

**Analysis Lot:**582804  
**Instrument ID:**K-MS-29

<b>Raw Data File</b>	<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>	<b>Q</b>
J:\MS29\DATA\030718\0307F033.D\	ZZZZZZZ	ZZZZZZZ	3/8/2018	01:22:00	
J:\MS29\DATA\030718\0307F034.D\	Continuing Calibration Verification	KQ1803253-02	3/8/2018	01:50:00	
J:\MS29\DATA\030718\0307F035.D\	Method Blank	KQ1802442-04	3/8/2018	02:19:00	
J:\MS29\DATA\030718\0307F036.D\	Lab Control Sample	KQ1802442-03	3/8/2018	02:47:00	
J:\MS29\DATA\030718\0307F037.D\	SED-6 MS	KQ1802442-01	3/8/2018	03:16:00	
J:\MS29\DATA\030718\0307F038.D\	SED-6 DMS	KQ1802442-02	3/8/2018	03:45:00	
J:\MS29\DATA\030718\0307F039.D\	SED-6	K1801446-006	3/8/2018	04:13:00	
J:\MS29\DATA\030718\0307F040.D\	SED-1	K1801446-001	3/8/2018	04:42:00	
J:\MS29\DATA\030718\0307F041.D\	SED-2	K1801446-002	3/8/2018	05:10:00	
J:\MS29\DATA\030718\0307F042.D\	SED-3	K1801446-003	3/8/2018	05:39:00	
J:\MS29\DATA\030718\0307F043.D\	SED-4	K1801446-004	3/8/2018	06:08:00	
J:\MS29\DATA\030718\0307F044.D\	SED-5	K1801446-005	3/8/2018	06:36:00	
J:\MS29\DATA\030718\0307F045.D\	SED-7	K1801446-007	3/8/2018	07:05:00	
J:\MS29\DATA\030718\0307F046.D\	SED-8	K1801446-008	3/8/2018	07:33:00	
J:\MS29\DATA\030718\0307F047.D\	SED-9	K1801446-009	3/8/2018	08:02:00	
J:\MS29\DATA\030718\0307F048.D\	SED-10	K1801446-010	3/8/2018	08:30:00	
J:\MS29\DATA\030718\0307F049.D\	SED-11	K1801446-011	3/8/2018	08:59:00	
J:\MS29\DATA\030718\0307F050.D\	SED-12	K1801446-012	3/8/2018	09:28:00	
J:\MS29\DATA\030718\0307F051.D\	SED-13	K1801446-013	3/8/2018	09:56:00	

ALS Group USA, Corp.  
dba ALS Environmental

Prep Summary Report

**Client:** Whatcom Environmental Services Inc.  
**Project:** Jensen Shipyard Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1801446

Low Level Semivolatile Organic Compounds by GC/MS

**Prep Method:** EPA 3541  
**Analytical Method:** 8270D

**Extraction Lot:** 308941  
**Extraction Date:** 02/26/18 09:46

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
SED-1	K1801446-001	2/12/18	2/14/18	40.238 g	2 mL	47.3
SED-2	K1801446-002	2/12/18	2/14/18	40.210 g	2 mL	56.3
SED-3	K1801446-003	2/12/18	2/14/18	40.251 g	2 mL	42.1
SED-4	K1801446-004	2/12/18	2/14/18	40.188 g	2 mL	48.5
SED-5	K1801446-005	2/12/18	2/14/18	40.482 g	2 mL	37.5
SED-6	K1801446-006	2/12/18	2/14/18	40.182 g	2 mL	37.4
SED-7	K1801446-007	2/12/18	2/14/18	40.246 g	2 mL	66.0
SED-8	K1801446-008	2/12/18	2/14/18	40.335 g	2 mL	48.7
SED-9	K1801446-009	2/12/18	2/14/18	40.478 g	2 mL	37.5
SED-10	K1801446-010	2/12/18	2/14/18	40.470 g	2 mL	71.8
SED-11	K1801446-011	2/12/18	2/14/18	40.308 g	2 mL	52.9
SED-12	K1801446-012	2/12/18	2/14/18	40.341 g	2 mL	64.0
SED-13	K1801446-013	2/12/18	2/14/18	40.284 g	2 mL	75.6
Matrix Spike	KQ1802442-01MS	2/12/18	2/14/18	40.176 g	2 mL	37.4
Duplicate Matrix Spike	KQ1802442-02DMS	2/12/18	2/14/18	40.180 g	2 mL	37.4
Lab Control Sample	KQ1802442-03LCS	NA	NA	20.00 g	2 mL	
Method Blank	KQ1802442-04MB	NA	NA	40.4820 g	2 mL	



## Raw Data

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)

## **APPENDIX D**

Sediment Sample Collection Field Logs

# Sediment Grab Sample Collection Log

**Project:** Lovric's Sea-Craft JENSEN      **Station Name:** SED-1  
**Location:** NW END OF BREAKWATER      **Date/Time:** 2-12-18 / 12:10  
**Crew:** JENNY H.W.B.S.

Grab #	Bottom Depth	Penetration depth	Time
1		0-4m	12:10
Sediment Type:	Sediment Color:	Sediment Odor:	Comments:
Cobble	Drab olive	None	ALL SEDIMENT SAMPLES WILL BE COLLECTED BY HAND BY DIVER, JABS WILL BE QUOS UNDER WATER.
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			
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			
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			
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			

# Sediment Grab Sample Collection Log

**Project:** JENSEN Lovric's Sea-Craft      **Station Name:** SED-2  
**Location:** NE OF BREAKWATER      **Date/Time:** 2-12-18 / 11:50  
**Crew:** JEN-JAY (BRANDON, KEVIN, CHRIS)

Grab #	Bottom Depth	Penetration depth	Time
1		0-4"	11:50
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	Collected by SCUBA DIVER JARS FILLED UNDER WATER
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: Lovric's Sea-Craft JENSEN  
 Location: NOF DECK ACROSS FROM ZONE  
TO LAST BAY  
 Crew: JEN-JAY / W.P.S.

Station Name: SED-3  
 Date/Time: 12:45 / 2-12-18

Grab #	Bottom Depth	Penetration depth	Time
1		0-10cm	12:45
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			
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			
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			
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			
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			

DAN H.



# JENSEN Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft

Station Name: SED-4

Location: WEST LENSE BOUNDARY

Date/Time: 1:05 2-8-18

Crew: JEN-JAY / W.C.S.

Grab #	Bottom Depth	Penetration depth	Time
1		0-9"	1:05
Sediment Type:	Sediment Color:	Sediment Odor:	Comments:
Cobble	Drab olive	None	ALSO COLLECTED CORE SAMPLE, BUT ONLY 0-12" RECOVERED, CORE SAMPLE WAS REJECTED.
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			

## Sediment Grab Sample Collection Log

**Project:** ~~Lovric's Sea-Craft~~ SENSEN      **Station Name:** SED-5  
**Location:** 6<sup>th</sup> SLIP BEHIND FRONT OF STORED BOAT      **Date/Time:** 12:35      2-12-18  
**Crew:** SEN-JAY/WES

Grab #	Bottom Depth	Penetration depth	Time
1		0-4"	12:35
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			

# Sediment Grab Sample Collection Log

**Project:** JENSEN Lovric's Sea-Craft      **Station Name:** SED-6  
**Location:** EAST OF COVERED SLIDS      **Date/Time:** 12:20  
**Crew:** JEN-JAY / W.P.S.

Grab #	Bottom Depth	Penetration depth	Time
1		0-4"	12:20
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: ~~Lovric's Sea-Craft~~ JENSEN

Station Name: SET-7

Location: JUST OFF OLD LOADING DOCK

Date/Time: 1:35 2-8-18

Crew: JEN-JAY / V.E.S.

Grab #	Bottom Depth	Penetration depth	Time
1		0-4"	1:35
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble Gravel <u>&lt; 1/2"</u> Sand C M F Silt/Clay Detritus/organic matter Woody debris <u>BARK</u> Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	<u>LOTS OF UP TO 1/2" GRAVEL</u> <u>SMALL CRAWLY WHITE BUGS - LIKE TINY WHITE POLYPS</u>
Grab #	Bottom Depth	Penetration depth	Time
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
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
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
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
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
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

**JENSEN**

Project: ~~Lovric's Sea-Craft~~

Station Name: SED 8

Location: BETWEEN OLD LOADING DOCK & TRAVEL LIFT

Date/Time: 1:40 2-12-18

Crew: JAN-JAY / W.E.S.

Grab #	Bottom Depth	Penetration depth	Time
1		0-4"	1:40
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 FINE ORGANIC PEAT-MOSS LIKE
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:** SENSEN ~~Lowrie's Sea-Craft~~      **Station Name:** SED-9  
**Location:** END OF TRAVEL LIFT      **Date/Time:** 1:45  
**Crew:** SEN-SAY / WICKS

Grab #	Bottom Depth	Penetration depth	Time
			1:45
Sediment Type:	Sediment Color:	Sediment Odor:	Comments:
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris 1"-2" Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	CORE ATTEMPTED, NOT IN ADEQUATE RECOVERY COULD NOT FORCE INTO GROUND W/ DIVER ONLY
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 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 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	

MINDY  
 LOTS OF SHELLS

# Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft JENSEN

Station Name: SED-10

Location: CENTER OF W. RAILWAY

Date/Time: 2:00 2-12-18

Crew: SEN-JAY / W.P.S.

Grab #	Bottom Depth	Penetration depth	Time
1		9-4"	2:00
Sediment Type:	Sediment Color:	Sediment Odor:	Comments:
Cobble Gravel <u>&lt; 1/2"</u> 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	
(LIVES) (PNEUMOS) (LES)			
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:** Lovrie's Sea-Craft SEMEN      **Station Name:** SED-11  
**Location:** IN FRONT OF EAST RAILWAY      **Date/Time:** 2:10  
**Crew:** SEN-JAY / W.E.S.

Grab #	Bottom Depth	Penetration depth	Time
			2:10
Sediment Type:	Sediment Color:	Sediment Odor:	Comments:
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris <i>Red Moss</i> Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	PINE NEEDLES LARGE CHUNK OF BARK RED MOSS CORE SAMPLE ATTEMPTED BUT SAMPLER WAS REJECTED.
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: ~~Lovric's Sea-Craft~~ JENSEN Station Name: SED-12  
 Location: APPROX 120 FT EAST OF PIETZ Date/Time: 2:15 2-12-18  
 Crew: \_\_\_\_\_

Grab #	Bottom Depth	Penetration depth	Time
1		0-4"	2:15
Sediment Type:	Sediment Color:	Sediment Odor:	Comments:
Cobble	Drab olive	None	LEAVES COBBLES PINE NEEDLES
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			

# Sediment Grab Sample Collection Log

**Project:** Lovrie's Sea-Craft JENSEN      **Station Name:** SED-13  
**Location:** WEST RAILWAY, NEAR HIGH TIDE      **Date/Time:** 2:25  
**Crew:** JEN-JAY / W.E.S.

Grab #	Bottom Depth	Penetration depth	Time
1		0-4"	2:25
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
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	COLLECTED BY HAND ON FOOT.  LOTS OF GRAVEL POSSIBLY 50% GRAVEL
Grab #	Bottom Depth	Penetration depth	Time
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
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
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
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
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
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	

## **APPENDIX E**

### Sediment Data Quality Assurance Review

# Memo

**To: Todd Nicholson – Port of Friday Harbor**

**Date: April 2, 2018**

**From: Dan Heimbigner**

**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 thirteen marine sediment samples collected during a sampling event which occurred on February 12, 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 ALS laboratory, located in Kelso, Washington. This data quality evaluation covers ALS data package K1801446.

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 Initial Investigation 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 laboratory data package 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). No case narrative identifying any complications was provided by the laboratory. 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, with the following exception:

- All tributyltin analyses associated with all samples in data package K1801446 were completed outside the method recommended holding time. The holding time exceedance has been noted in the data tables.

### **Lab Method Blanks**

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

- Zinc was detected in the method blank associated with metals analysis in data package K1801446. All associated sample result concentrations are greater than 10x the method blank result and are considered unaffected.
- Di-n-octyl Phthalate was detected in the method blank associated with low level semivolatile organic compounds analysis (8270D) in data package K1801446. All associated sample result concentrations are greater than 10x the method blank result and are considered unaffected.

### **Surrogate Recoveries**

Appropriate compounds were used as surrogate spikes for the PCB analysis. Recovery values for the surrogate spikes were within the laboratory-specified control limits for all samples with the exception that the surrogate recovery associated with sample K1801446-007 was recovered slightly below the laboratory specified control limit. 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 exception:

- Laboratory control sample results for oxychlordan and trans-nonachlor in data package K1801446 were below the laboratory recommended percent recovery limit. Oxychlordan and trans-nonachlor are used in the calculation for total chlordan. Associated data (total chlordan) have been qualified as estimated concentrations (J) as indicated in Table 8.

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

A sample duplicate and Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed with each batch of samples as required by the National Functional Guidelines (EPA, 2017a; EPA, 2017b). The recovery values for all duplicates and for each required

spiking compound were within the laboratory-specified control limits for all project samples with the following exceptions:

- The MS recovery for antimony in data package K1801446 was below the laboratory-specified control limits. The spike was performed using sample K1801446-006. No post digestion spike was performed. Low MS recovery indicates reported antimony results are likely biased low. Antimony data is not being used to evaluate the site, therefore no qualification of the data is deemed necessary.
- The MS recovery for lead associated with the metals analysis for sample K1801446-006 in data package K1801446 was above the laboratory-specified control limits. The spike was performed using sample K1801446-006. No post digestion spike was performed. Associated sample results have been qualified as estimated concentrations which may be biased high (J+) as indicated in Table 4 and Table 5.
- The MS and MSD recoveries for benzoic acid in data package K1801446 were less than the lower acceptance limits. The MS and MSD was performed using sample K1801446-006. The data are unusable due to deficiencies in meeting quality control criteria. Benzoic acid may or may not be present in the samples. Associated sample results have been qualified as being rejected data (R) as indicated in Table 4 and Table 5.
- The MS and MSD recoveries pentachlorophenol in data package K1801446 were above the upper acceptance limits. The spike was performed using sample K1801446-006. Associated detected sample results have been qualified as estimated concentrations (J) as indicated in Table 4 and Table 6.
- The sample duplicate result for total sulfide associated with sample K1801446-006 was outside of the laboratory specified allowable limit. The MS and MSD recoveries for total sulfide associated with the sample were within acceptable limits, therefore no qualification of the data is deemed necessary.
- The MS recovery for Aldrin in data package K1801446 was slightly below the recommended percent recovery limit. The associated MSD was within acceptable limits, therefore no qualification of the data is deemed necessary.

- The MS and MSD recoveries for oxychlordanes and trans-nonachlor in data package K1801446 were below the laboratory recommended percent recovery limit. Oxychlordanes and trans-nonachlor are used in the sum calculation for total chlordane. Associated data (total chlordane) have been qualified as estimated concentrations (J) as indicated in Table 8.

**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 with the following exception. Benzoic acid results have been rejected due to deficiencies in meeting the associated quality control criteria. No other data were rejected.



## **APPENDIX F**

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 subsurface soil and groundwater 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.