

UNITED STATES AIR FORCE JOINT BASE ELMENDORF-RICHARDSON, ALASKA

ENVIRONMENTAL COMPLIANCE RESTORATION PROGRAM

POST ROAD FISH HATCHERY INVESTIGATIVE SAMPLING REPORT

FINAL

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FINAL

INVESTIGATIVE SAMPLING REPORT

POST ROAD FISH HATCHERY

Joint Base Elmendorf-Richardson, Alaska

Prepared for:

673d Civil Engineer Squadron, Asset Management Flight, Natural Resource Management Element, Compliance Section

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673 CES	673d Civil Engineer Squadron
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish & Game
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency
GRO	gasoline-range organics
JBER	Joint Base Elmendorf-Richardson
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
PAH	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PID	photoionization detector
ppm	parts per million
RRO	residual-range organics
TAH	total aromatic hydrocarbons
TAqH	total aqueous hydrocarbons
USAF	U.S. Air Force
VOCs	volatile organic compounds

LIST OF ACRONYMS AND ABBREVIATIONS



Investigative Sampling Report Post Road Fish Hatchery JBER-Elmendorf, Alaska



1.0 INTRODUCTION

This report describes investigative sampling conducted in April 2011 at the Post Road Fish Hatchery located adjacent to Joint Base Elmendorf-Richardson (JBER), Alaska. Investigative sampling activities included groundwater and soil sample collection in accordance with the 2010 Investigation and Closure Sampling for Environmental Compliance Restoration Sites Work Plan (U.S. Air Force [USAF] 2010a) and the Environmental Sampling at the Fish Hatchery Work Plan Addendum (USAF 2011).

This report was prepared for the USAF 673d Civil Engineer Squadron (673 CES) Asset Management Flight, Natural Resources Element, Restoration Section by Jacobs Engineering Group Inc. (Jacobs) under the U.S. Army Corps of Engineers (USACE) Environmental Restoration Services Contract W911KB-06-D-0006, Task Order 0025.

1.1 SCOPE AND OBJECTIVE

The objective of this project was to further investigate and delineate the lateral extent of petroleum hydrocarbon concentrations identified in soil and groundwater at the Post Road Fish Hatchery site during November 2007 site characterization activities (Shannon & Wilson 2007) and during 2010 construction activities.

Soil borings were advanced and groundwater grab samples were collected from temporary well points to investigate the current status of contamination and potential for contaminant migration through groundwater. One permanent groundwater well (0U5MW12) was also sampled to investigate the potential for contaminant migration from an upgradient source.

1.2 DOCUMENT ORGANIZATION

This report is organized as follows:

- Section 1 provides the introduction, project scope and objective, and report organization.
- Section 2 discusses the site background, hydrogeology, and historical information based on previous site investigations and actions.
- Section 3 describes the contaminants of concern and cleanup levels.
- Section 4 describes the 2011 field activities and soil and groundwater analysis results.
- Section 5 discusses conclusions and recommendations.
- Section 6 includes references.
- Appendices A through G contain additional support information associated with this project.



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2.0 SITE BACKGROUND AND SUMMARY OF PREVIOUS SAMPLING

The Post Road Fish Hatchery is located in Anchorage, Alaska, along the north bank of Ship Creek, near the intersection of Reeve Boulevard and Post Road (Figure 2-1). Ship Creek is a popular fishing location for king and silver salmon and is one of the few nonglacial salmon streams in the Anchorage area.

2.1 SITE BACKGROUND

The former Elmendorf State Fish Hatchery was constructed in 1965. It originally consisted of three small, circular wooden ponds (Alaska Department of Fish and Game [ADF&G] 2011). Improvements were made to the facility over the next four decades. Before construction of the new hatchery began in 2009, the area on which the former hatchery existed and an additional portion of the property, located immediately north of the former facility, were leased by ADF&G. This leased area includes the former Elmendorf Air Force Base Power Plant cooling pond and the new hatchery structure, which is located within the former footprint of the cooling pond (Shannon & Wilson 2008). Construction of new hatchery facilities was ongoing during the 2011 field investigation.

2.1.1 Hydrogeology

The Post Road Fish Hatchery lies adjacent to JBER and both lie within the Cook Inlet-Susitna Lowlands, which are bordered on the west by the Alaska Range and on the east by the Kenai, Chugach, and Talkeetna Ranges. The Elmendorf terminal moraine traverses JBER from the northeast to the southwest. The southern boundary of the Elmendorf moraine is a ridgeline running along the north side of the east-west runway. The topography of the Anchorage Plain is primarily a result of repeated Pleistocene glaciations. Surficial soils on the Elmendorf ground moraine are generally either well-drained silty loam or gravelly sand (USAF 2007).

The Bootlegger Cove clay formation is a fine-grained glacioestuarine deposit consisting of silt and clay that underlies the site. This clay forms an aquaclude between the shallow and deep aquifers. The depth of the formation ranges from 1 to 60 feet below ground surface (bgs) near the moraine and from 75 to 100 feet bgs throughout the outwash plain. Overall, the formation is thought to be at least 125 feet thick, with certain locations thought to be more than 250 feet thick.

Based on Elmendorf Well Atlas maps (USAF 2010b), the groundwater gradient across the Fish Hatchery site is thought to be from northeast to southwest. However, groundwater on the site may flow directly towards Ship Creek. The newly installed sheet pile retaining wall is also thought to influence groundwater flow locally on the northeast side of the site.

2.1.2 **Previous Site Investigations**

Prior to construction of the new hatchery in 2007, five soil samples (B20S2, B25S5, B25S6, B26SS, and S11) were collected from the site and analyzed for diesel-range organics (DRO), gasoline-range organics (GRO), residual-range organics (RRO), benzene, toluene,



ethylbenzene, and xylenes (BTEX), metals, volatile organic compounds (VOCs), and polychlorinated biphenyls (PCBs) (Figure 2-2).

Soil samples from two locations (B25 and B26) exceeded the Alaska Department of Environmental Conservation (ADEC) Method Two cleanup criterion for DRO (250 milligrams per kilogram [mg/kg]). Soil samples from three locations (B20, B25, S11) exceeded cleanup criteria for arsenic and chromium. The metal concentrations were believed to be due to background concentrations and did not require further investigation. One DRO exceedance (3,630 mg/kg) was found in Soil Boring B25 on the northeast corner of the former cooling pond at a depth of 8 to 9 feet bgs. The other DRO exceedance (914 mg/kg) was found in a surface sample (B26) collected on the west side of the former hatchery structure (Shannon & Wilson 2007). Approximate locations of these samples are shown on Figure 2-2.

One groundwater grab sample was collected near the northeast corner of the former hatchery structure and analyzed for DRO, GRO, RRO, BTEX, and VOCs. Only DRO exceeded cleanup levels with a concentration of 69.7 milligrams per liter (mg/L) (Shannon & Wilson 2007).

During the construction of a waterline trench in 2010, soils in the vicinity of the 2007 surface soil samples were screened using a photoionization detector (PID) and stockpiled. Soils with screening levels greater than 80 parts per million (ppm) were removed from the site.

Five additional screening samples were collected from the stockpiled material and the highest result was 72 ppm (the remaining four screening sample results ranged from 35 to 45 ppm). This soil was returned to the waterline trench.





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3.0 CONTAMINANTS AND CLEANUP LEVELS

The contaminants of potential concern for the hatchery were originally established based on prior geotechnical and environmental investigations conducted in 2007 and 2010. As described in the prior section, DRO exceeded ADEC cleanup levels for both soil and groundwater. Soil results also exceeded cleanup levels for metals, but these exceedances reflect background levels native to the area, so metals are not considered contaminants of concern.

The contaminant list for this investigation was established to reflect compounds that are known or suspected to be present at the site, or compounds that needed to be confirmed below cleanup levels. BTEX and polycyclic aromatic hydrocarbons (PAH) were added to the list of groundwater contaminants of concern to assess the results against surface water criteria (total aromatic hydrocarbons [TAH] and total aqueous hydrocarbons [TAqH]). Table 3-1 includes monitoring parameters for the hatchery.

Site Name and Media	Compounds Sampled During Previous Investigations	Compounds Exceeding Cleanup Levels in Previous Investigations	2011 Contaminants of Concern
Post Road Fish Hatchery – Soil	DRO, GRO, RRO, BTEX, VOCs, PCBs, and metals	DRO and metals	DRO
Post Road Fish Hatchery – Groundwater	DRO, GRO, RRO, BTEX, and VOCs	DRO	DRO, BTEX, and PAH

 Table 3-1

 Previous and Current Soil and Groundwater Monitoring Parameters

<u>Note</u>: For definitions, see the Acronyms and Abbreviations section.

Analytical results were compared to the cleanup levels listed in Worksheet #15 of the Work Plan (USAF 2010a). Tables 3-2 and 3-3 present cleanup levels and contaminant concentrations for this site. Cleanup levels for soil reflect those listed in Tables B1 and B2 of 18 Alaska Administrative Code (AAC) 75 (ADEC 2008). Cleanup levels for groundwater reflect those listed in Table C of 18 AAC 75 (ADEC 2008) and surface water criteria (18 AAC 70).

Table 3-2ADEC Soil Cleanup Levels

Analyte	Cleanup Level	Unit			
Petroleum Hydrocarbons					
Diesel-range organics	250	mg/kg			
Residual-range organics	10,000	mg/kg			

Note:

18 AAC 75, Tables B1 and B2, most conservative (under 40-inch zone and migration to groundwater) (ADEC 2008)



Table 3-3		
ADEC Groundwater Cleanup Levels		

Analyte	Cleanup Level	Unit		
Petroleum Hydrocarbons				
Diesel-range organics	1.5	mg/L		
Volatile Organic Co	mpounds			
Benzene	0.005	mg/L		
Toluene	1	mg/L		
Ethylbenzene	0.7	mg/L		
m-Xylene & p-Xylene	10	mg/L		
o-Xylene	10	mg/L		
Polycyclic Aromatic Hy	drocarbons			
Acenaphthene	2.2	mg/L		
Acenaphthylene	2.2	mg/L		
Anthracene	11	mg/L		
Benzo(a)anthracene	0.0012	mg/L		
Benzo(a)pyrene	0.0002	mg/L		
Benzo(b)fluoranthene	0.0012	mg/L		
Benzo(g,h,i)perylene	1.1	mg/L		
Benzo(k)fluoranthene	0.012	mg/L		
Chrysene	0.12	mg/L		
Dibenzo(a,h)anthracene	0.00012	mg/L		
Fluoranthene	1.5	mg/L		
Fluorene	1.5	mg/L		
Indeno(1,2,3-c,d)pyrene	0.0012	mg/L		
Naphthalene	0.73	mg/L		
Phenanthrene	11	mg/L		
Pyrene	1.1	mg/L		
ТАН	0.01	mg/L		
ТАqН	0.015	mg/L		

Notes: 18 AAC 75, Table C, Groundwater Cleanup Levels TAH/TAqH = Total aromatic hydrocarbons/Total aqueous hydrocarbons. TAH is the sum of benzene, toluene, ethylbenzene, and xylenes isomers (BTEX) results. TAqH is the sum of BTEX and polycyclic aromatic hydrocarbons (PAH).



4.0 2011 FIELD ACTIVITIES AND RESULTS

Soil and groundwater sampling was conducted to delineate the lateral and vertical extent of contamination and to assess potential contaminant migration to groundwater in the northeast corner of the fish hatchery and around the backfilled waterline. Groundwater samples were collected to assess whether contamination has migrated to groundwater or is currently migrating from an upgradient source.

4.1 DEVIATION FROM THE WORKPLAN

The original scope of work as proposed in the Work Plan Addendum (USAF 2011) included collecting groundwater samples from each boring location using an inertial pump (a check valve at the bottom of a sample tube). Due to high turbidity conditions, additional samples were collected from two borings (SP03 and SP04) using a peristaltic pump for comparison.

Additionally, the original scope of work included a third soil boring on the northeast side, downgradient of B25. The presence of heavy utilities located both above and below the ground surface as well as in the roadway prevented the advancement of a boring in this area.

4.2 SOIL SAMPLING LOCATIONS AND RESULTS

In April 2011, seven soil borings were advanced on the hatchery site. Three soil borings (BH01, BH02, and BH03) were advanced downgradient of the 2007 surface sample location (B26) in the southwestern section of the site (Figure 2-2). These borings also surrounded the backfilled waterline trench where field-screened contaminated soil was placed during construction. In the northeastern portion of the site, two soil borings were advanced upgradient (BH04 and BH05) and two were advanced downgradient (BH06 and BH07) of the 2007 temporary monitoring well (B25) location in the northeastern section of the site (Figure 2-2).

Borings were advanced to 10 feet bgs with the exception of BH01, which was advanced to 15 feet bgs. Groundwater was encountered between 6 to 9 feet bgs at all soil boring locations. Soil samples were field screened for total petroleum hydrocarbons using PetroFLAG[®] at a frequency of one sample per 5 feet of continuous-core boring advanced with the exception of soil borings BH03 and BH05, which were screened twice at the 0- to 5-feet bgs interval. Two analytical samples were collected from each of two different intervals: the upper 5 feet bgs (0 to 5 feet bgs) and at or near the water table (6 to 10 feet bgs), with the exception of soil borings BH03 and BH05 where three analytical samples were collected. Table 4-1 presents the PetroFLAG[®] screening results and DRO analytical results.



Soil Boring	Field Screening ID/ Sample ID	Depth (feet bgs)	PetroFLAG [®] Result (ppm)	DRO Result (mg/kg)
BH01	FH-BH01A-0-5-SO	0 to 5	91	19J
	FH-BH01A-6-9-SO	6 to 9	15	97
BH02	FH-BH02A-0-5-SO	0 to 5	571	79
	FH-BH01A-6-8.5-SO	6 to 8.5	295	57
BH03	FH-BH03A-0-5-SO	0 to 5	157	20
	FH-BH03B-0-5-SO	0 to 5	157	17J
	FH-BH03A-6-10-SO	6 to 10	345	55
BH04	FH-BH04A-0-5-SO	0 to 5	723	24
	FH-BH04A-6-6.5-SO	6 to 6.5	OR	3200
BH05	FH-BH05A-0-5-SO	0 to 5	220	47
	FH-BH05B-0-5-SO	0 to 5	220	42
	FH-BH05A-6-10-SO	6 to 10	203	13J
BH06	FH-BH06A-0-5-SO	0 to 5	690	71
	FH-BH06A-6-10-SO	6 to 10	254	19J
BH07	FH-BH07A-0-5-SO	0 to 5	5	37
	FH-BH07A-6-10-SO	6 to 10	47	13J

 Table 4-1

 Hatchery PetroFLAG[®] Screening and Analytical Results

Notes:

bgs = below ground surface

DRO = Diesel-range organics

mg/kg = milligrams per kilogram

OR = Over calibration range of PetroFLAG Instrument

ppm = parts per million

J = The analyte was positively identified, but the associated result was less than the LOQ but greater than or equal to the DL.

One DRO result for Sample FH-BH04A-6-6.5-SO exceeded the ADEC cleanup level of 250 mg/kg at 3,200 mg/kg (Table 4-1). This sample was collected from the interval between 6 and 6.5 feet bgs, which is just above the groundwater interface. All other analytical results for samples collected from this boring and the other six borings were below ADEC cleanup levels and U.S. Environmental Protection Agency (EPA) regional screening levels. Appendix A includes the analytical data table.

4.2.1 Groundwater Sampling Locations and Results

Groundwater grab sampling was conducted via SP16 from each of the seven boring locations and analyzed for DRO, BTEX, and PAH. One groundwater sample from each location was collected using an inertial pump (a check valve at the bottom of a sample tube) as proposed in the Work Plan Addendum (USAF 2011).

Three groundwater locations (BH01, BH02, and BH03) were sampled on the western side of the hatchery building to triangulate the possible downgradient groundwater flow from the contaminated soils that were returned to the waterline trench. Four additional groundwater locations (BH04, BH05, BH06, and BH07) were sampled on the northeastern section of the site. The sample locations are in an assumed upgradient and downgradient location from B25. The sample locations assume groundwater movement downgradient from the northeast corner



of the site, flowing around the retaining wall to the south. Sample locations are shown on Figure 2-2.

One additional groundwater sample was collected from the existing monitoring well OU5MW-12 on the north side of the site. This sample was collected with a submersible pump using low-flow procedures as detailed in the Work Plan (USAF 2010a). Table 4-2 presents field parameters for OU5MW-12.

Parameter	Levels
Odor	None
Sheen	None
Temperature(°C)	2.83
Turbidity (NTU)	0.5
pH (Standard Units)	6.69
DO (mg/L)	0.58
ORP (mV)	110.1
Conductivity (µS/cm)	287

	Table 4-2
2011	Field Parameters in Monitoring Well OU5MW12

As described previously, analytical samples for groundwater were analyzed for DRO, BTEX, and PAHs. Sample FH-SPO4A-WG-IP exceeded ADEC Table C cleanup criteria for DRO, PAHs, and TAqH (see Table 3-2). This sample was collected using the inertial pump. A second primary sample was collected using a peristaltic pump instead of an inertial pump for comparative reasons (due to high turbidity). Analytical results from the sample collected using the peristaltic pump did not exceed ADEC cleanup methods.

Sample vials shipped to the laboratory contained headspace bubbles that exceeded ADEC guidelines of < 6 millimeters in diameter. VOC results with headspace bubbles > 6 millimeters are not acceptable for use as data for demonstrating compliance. These samples are flagged in the data tables included in Appendix B.

Results for both sample collection methods are presented in Figure 2-2 and in Appendix A. Analytical results exceeding cleanup levels for Sample FH-SPO4A-WG-IP are listed in Table 4-3. All other analytical results for groundwater samples collected from the boring locations were below ADEC Table C cleanup criteria, and surface water criteria. Appendix A includes the full analytical data table.



Table 4-3

Hatchery Analytical Results for Groundwater Exceeding the ADEC Cleanup Level

Sample ID	Method	Analyte	Result	ADEC Cleanup Level
FH-SP04A-WG-IP	AK102	Diesel-range organics (C10- C25)	160 (mg/L)	1.5
FH-SP04A-WG-IP	8270SIM	Benzo(a)anthracene	0.0063 (mg/L)	0.0012
FH-SP04A-WG-IP	8270SIM	Benzo(a)pyrene	0.003 (mg/L)	0.0002
FH-SP04A-WG-IP	8270SIM	Benzo(b)fluoranthene	0.0055 (mg/L)	0.0012
FH-SP04A-WG-IP	8270SIM	Dibenzo(a,h)anthracene	0.00036 (mg/L)	0.00012
FH-SP04A-WG-IP	SW8260/ 8270SIM	TAqH	0.096 (mg/L)	0.015



5.0 CONCLUSIONS AND RECOMMENDATIONS

Analytical results for the 2011 Post Road Fish Hatchery sample investigation confirm DRO contamination above ADEC cleanup criteria at soil boring BH04, which is located in the northeastern portion of the site. In addition, concentrations of DRO, PAH, and TAqH at this location exceeded the ADEC Table C criteria for groundwater in a turbid grab sample. The less turbid peristaltic sample did not exceed groundwater or surface water criteria.

DRO levels in soil and groundwater above ADEC cleanup criteria had been previously documented at the area near BH04.

Based on these results and the history of contamination in the general vicinity, groundwater impacts may be present; however, groundwater analytical results are confounded by turbidity in the sample. As such, the recommended remedial action for the contaminated soil at the Fish hatchery is monitored natural attenuation and annual groundwater sampling. Three permanent monitoring wells should be installed at the following locations to further determine the degree and extent of potential groundwater impacts: one at BH04, a second hydraulically upgradient of BH04, and a third downgradient of BH04, adjacent to Ship Creek. Ongoing monitoring activities should include analysis for DRO, BTEX, and PAHs for both groundwater and soil samples. Additionally, groundwater monitoring well samples should be analyzed for TAH and TAqH.



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6.0 **REFERENCES**

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APPENDIX A

Analytical Data

		Lab Coll	Location ID Sample ID Sample ID ection Date Matrix Laboratory QA/QC	FH-BH01 FH-BH01A-0-5-SO 25610-1 4/12/2011 SO TATW Primary	FH-BH01 FH-BH01A-6-9-SO 25610-2 4/12/2011 SO TATW Primary	FH-BH02 FH-BH02A-0-5-SO 25610-3 4/12/2011 SO TATW Primary	FH-BH02 FH-BH02A-6-8_5-SO 25610-4 4/12/2011 SO TATW Primary	
Method	Analyte	ADEC Criteria ¹	Unit					
E160.3M	Solids, Percent	_	Percent	86 [0.1]	86 [0.1] 66 [0.1]		76 [0.1]	
AK102	Diesel-Range Organics (C10-C25)	250	mg/kg	19 [22] J	97 [28]	79 [22]	57 [24]	
AK103	Residual-Range Organics (C25-C36)	10000	mg/kg	73 [55]	700 [71]	350 [54]	320 [61]	

Notes:

¹ 18 AAC 75. Table B2. Most conservative "Under 40 inch Zone" (ADEC 2008).

Bold - Sample result exceeds ADEC criteria.

[] - Limit of quantitation (LOQ)

J - The analyte was positively identified, but the associated result was

less than the LOQ, but greater than or equal to the DL.

mg/kg - milligrams per kilogram

ND - Nondetect

QA/QC - Quality Assurance/Quality Control

		Lab Coll	Location ID Sample ID Sample ID ection Date Matrix Laboratory QA/QC	FH-BH03 FH-BH03A-0-5-SO 25610-5 4/12/2011 SO TATW Primary	FH-BH03 FH-BH03B-0-5-SO 25610-15 4/12/2011 SO TATW Duplicate	FH-BH03 FH-BH03A-6-10-SO 25610-6 4/12/2011 SO TATW Primary	FH-BH04 FH-BH04A-0-5-SO 25610-7 4/12/2011 SO TATW Primary	
Method	Analyte	ADEC Criteria ¹	Unit					
E160.3M	Solids, Percent –		Percent	95 [0.1]	93 [0.1]	90 [0.1]	84 [0.1]	
AK102	Diesel-Range Organics (C10-C25)	250	mg/kg	20 [19]	17 [21] J 55 [24 [23]	
AK103	Residual-Range Organics (C25-C36)	10000	mg/kg	42 [49] J	42 [51] J	96 [53]	160 [57]	

Notes:

¹ 18 AAC 75. Table B2. Most conservative "Under 40 inch Zone" (ADEC 2008).

Bold - Sample result exceeds ADEC criteria.

[] - Limit of quantitation (LOQ)

J - The analyte was positively identified, but the associated result was

less than the LOQ, but greater than or equal to the DL.

mg/kg - milligrams per kilogram

ND - Nondetect

QA/QC - Quality Assurance/Quality Control

		l Lab Colle	Location ID Sample ID Sample ID ection Date Matrix Laboratory QA/QC	FH-BH04 FH-BH04A-6-6.5-SO 25610-8 4/12/2011 SO TATW Primary	FH-BH05 FH-BH05A-0-5-SO 25610-9 4/12/2011 SO TATW Primary	FH-BH05 FH-BH05A-6-10-SO 25610-10 4/12/2011 SO TATW Primary	FH-BH05 FH-BH05B-0-5-SO 25610-16 4/12/2011 SO TATW Duplicate	
Method	Analyte	ADEC Criteria ¹	Unit					
E160.3M	Solids, Percent	Solids, Percent – Percent			82 [0.1]	92 [0.1]	84 [0.1]	
AK102	Diesel-Range Organics (C10-C25)	250	mg/kg	3200 [21] 47 [24]		13 [21] J	42 [23]	
AK103	Residual-Range Organics (C25-C36)	10000	mg/kg	38 [51] J	320 [60]	66 [53]	310 [57]	

Notes:

¹ 18 AAC 75. Table B2. Most conservative "Under 40 inch Zone" (ADEC 2008).

Bold - Sample result exceeds ADEC criteria.

[] - Limit of quantitation (LOQ)

J - The analyte was positively identified, but the associated result was

less than the LOQ, but greater than or equal to the DL.

mg/kg - milligrams per kilogram

ND - Nondetect

QA/QC - Quality Assurance/Quality Control

		l Lab Colle	Location ID Sample ID Sample ID ection Date Matrix Laboratory QA/QC	FH-BH06 FH-BH06A-0-5-SO 25610-11 4/12/2011 SO TATW Primary	FH-BH06 FH-BH06A-6-10-SO 25610-12 4/12/2011 SO TATW Primary	FH-BH07 FH-BH07A-0-5-SO 25610-13 4/12/2011 SO TATW Primary	FH-BH07 FH-BH07A-6-10-SO 25610-14 4/12/2011 SO TATW Primary	
Method	Analyte	ADEC Criteria ¹	Unit					
E160.3M	Solids, Percent	_	Percent	78 [0.1]	93 [0.1]	93 [0.1]	92 [0.1]	
AK102 Diesel-Range Organics (C10-C25) 250 mg/kg				71 [24]	19 [21] J	37 [20]	13 [21] J	
AK103	Residual-Range Organics (C25-C36)	10000	mg/kg	520 [59]	69 [52]	40 [51] J	28 [52] J	

Notes:

¹ 18 AAC 75. Table B2. Most conservative "Under 40 inch Zone" (ADEC 2008).

Bold - Sample result exceeds ADEC criteria.

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ND - Nondetect

QA/QC - Quality Assurance/Quality Control

Location ID FH-SP01 Sample ID FH-SP01A-WG Lab Sample ID 25659-1 Collection Date 4/13/2011 Matrix WG Laboratory TATW QA/QC Primary				FH-SP01 FH-SP01A-WG 25659-1 4/13/2011 WG TATW Primary	FH-SP02 FH-SP02A-WG 25659-2 4/13/2011 WG TATW Primary	FH-SP03 FH-SP03A-WG-IP 25659-3 4/14/2011 WG TATW Primary	FH-SP03 FH-SP03A-WG-PP 25659-8 4/14/2011 WG TATW Primary	FH-SP04 FH-SP04A-WG-IP 25659-4 4/14/2011 WG TATW Primary	FH-SP04 FH-SP04A-WG-PP 25659-9 4/14/2011 WG TATW Primary	FH-SP05 FH-SP05A-WG 25659-5 4/14/2011 WG TATW Primary	FH-SP06 FH-SP06A-WG 25659-6 4/14/2011 WG TATW Primary	FH-SP07 FH-SP07A-WG 25659-7 4/14/2011 WG TATW Primary	FH-SP07 FH-SP07B-WG 25659-10 4/14/2011 WG TATW Duplicate	OU5MW12 OU5MW12-2011-WG 25659-12 4/15/2011 WG TATW Primary	TB FH-TB-WG 25659-11 4/13/2011 WG TATW Trip Blank
Method	Analyte	ADEC Criteria ¹	Units												
AK102	Diesel-Range Organics (C10-C25)	1.5	mg/L	0.13 [0.096]	0.25 [0.095]	0.16 [0.1]	0.15 [0.1]	160 [5]	0.57 [0.1]	0.15 [0.099]	0.83 [0.099] J	0.12 [0.099]	0.12 [0.1]	0.13 [0.1]	-
SW8260B	Benzene	0.005	mg/L	0.00023 [0.001] J, JP-	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	0.00015 [0.001] J	ND [0.001]	ND [0.001] JP-	ND [0.001]
SW8260B	Ethylbenzene	0.7	mg/L	ND [0.001] JP-	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001] JP-	ND [0.001]
SW8260B	o-Xylene	10	mg/L	ND [0.001] JP-	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001] JP-	ND [0.001]
SW8260B	Toluene	1	mg/L	0.00021 [0.001] J, JP-	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	ND [0.001]	0.0026 [0.001]	ND [0.001]	ND [0.001]	ND [0.001] JP-	ND [0.001]
SW8260B	Xylene, Isomers m & p	10	mg/L	ND [0.002] JP-	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002]	ND [0.002] JP-	ND [0.002]
8270SIM	1-Methylnaphthalene ²	0.15	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.013 [0.0005]	0.0012 [0.0001]	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
8270SIM	2-Methylnaphthalene ²	0.15	mg/L	ND [0.00013]	ND [0.00013]	ND [0.00013]	ND [0.00013]	0.0088 [0.00065]	0.00013 [0.00013]	ND [0.00013]	ND [0.00013]	ND [0.00013]	ND [0.00013]	ND [0.00013]	-
8270SIM	Acenaphthene	2.2	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.002 [0.0005]	0.00058 [0.0001]	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
8270SIM	Acenaphthylene	2.2	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.0062 [0.0005]	0.00015 [0.0001]	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
8270SIM	Anthracene	11	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.0038 [0.0005]	0.000033 [0.0001] J	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
8270SIM	Benzo(a)anthracene	0.0012	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.0063 [0.0005]	ND [0.0001]	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
8270SIM	Benzo(a)pyrene	0.0002	mg/L	ND [0.00019]	ND [0.0002]	ND [0.0002]	ND [0.0002]	0.003 [0.001]	ND [0.0002]	ND [0.0002]	ND [0.0002]	ND [0.0002]	ND [0.0002]	ND [0.0002]	-
8270SIM	Benzo(b)fluoranthene	0.0012	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.0055 [0.0005]	ND [0.0001]	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
8270SIM	Benzo(g,h,i)perylene	1.1	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.00098 [0.0005]	ND [0.0001]	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
8270SIM	Benzo(k)fluoranthene	0.012	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.0023 [0.0005]	ND [0.0001]	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
8270SIM	Chrysene	0.12	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.0065 [0.0005]	ND [0.0001]	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
8270SIM	Dibenzo(a,h)anthracene	0.00012	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.00036 [0.0005] J	ND [0.0001]	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
8270SIM	Fluoranthene	1.5	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.018 [0.0005]	0.00011 [0.0001]	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
8270SIM	Fluorene	1.5	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.0077 [0.0005]	0.00059 [0.0001]	0.00003 [0.0001] J	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
8270SIM	Indeno(1,2,3-cd)pyrene	0.0012	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.001 [0.0005]	ND [0.0001]	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
8270SIM	Naphthalene	0.73	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.0032 [0.0005]	0.00018 [0.0001]	ND [0.0001]	ND [0.000099]	ND [0.000098]	0.000037 [0.000099] J	ND [0.0001]	-
8270SIM	Phenanthrene	11	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.013 [0.0005]	0.00033 [0.0001]	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	_
8270SIM	Pyrene	1.1	mg/L	ND [0.000097]	ND [0.0001]	ND [0.0001]	ND [0.0001]	0.014 [0.0005]	0.000082 [0.0001] J	ND [0.0001]	ND [0.000099]	ND [0.000098]	ND [0.000099]	ND [0.0001]	-
SW8260B	TAH	0.01	mg/L	0.0022	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.00485	0.0024	0.0027	0.0027	_
SW8260B/827 0SIM	TAqH	0.015	mg/L	0.0034	0.0039	0.0039	0.0039	0.097	0.0054	0.0039	0.0060	0.0036	0.0038	0.0039	_

Notes: ¹ 18 AAC 75. Table C. Groundwater Cleanup Levels (ADEC 2008). TAH and TAqH are from 18 AAC 70. ² Analytes 1-methylnaphthalene and 2-methylnaphthalene were reported by the laboratory, but were not included in the TAqH calculation. Bold = Sample result exceeds ADEC criteria. [] = Limit of quantitation (LOQ) J = The analyte was positively identified, but the associated result was less than the LOQ, but greater than or equal to the DL. JP- = The result was considered an estimated value (biased low) because incorrect or inadequate preservation methods were used and/or head space was present in a VOA vial. mg/L = milligrams per liter ND - Nondetect QA/QC = Quality Assurance/Quality Control

TAH/TAqH = Total aromatic hydrocarbons/Total aqueous hydrocarbons. TAH is the sum of benzene, toluene, ethylbenzene, and xylene isomers (BTEX) results. TAqH is the sum of BTEX and polycyclic aromatic hydrocarbons (PAH). For ND results the limit of detection (LOD) was used in the ND result's place.

APPENDIX B

Data Quality Assessment and Supporting Documentation

FINAL

INVESTIGATIVE SAMPLING REPORT

APPENDIX B: DATA QUALITY ASSESSMENT

POST ROAD FISH HATCHERY

Joint Base Elmendorf-Richardson, Alaska

Prepared for:

673d Civil Engineer Squadron, Asset Management Flight, Natural Resource Management Element, Compliance Section

Contract No. W911KB-06-D-0006

NOVEMBER 2011

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LIST OF ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
bgs	below ground surface
BTEX	benzene, toluene, ethylene, and xylenes
DL	detection limit
DoD	Department of Defense
DQA	Data Quality Assessment
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
Jacobs	Jacobs Engineering Group Inc.
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LOD	limit of detection
LOQ	limit of quantitation
MS	matrix spike
MSD	matrix spike duplicate
ND	nondetect
QC	quality control
USAF	U.S. Air Force
°C	degrees Celsius



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1.0 INTRODUCTION

This Data Quality Assessment (DQA) was performed to assess the overall quality and usability of the data collected to support the investigation of the potential for and/or extent of soil and groundwater contamination at the Post Road Fish Hatchery adjacent to Joint Base Elmendorf-Richardson (JBER), Alaska. TestAmerica Laboratories, of Seattle, Washington, provided the primary analytical support. TestAmerica Laboratories of Anchorage, Alaska provided logistical support.

This appendix to the *Post Road Fish Hatchery Investigative Sampling Report* contains this DQA, sample documentation, and a sample summary. Attachment B-1 provides the Alaska Department of Environmental Conservation (ADEC) laboratory data review checklists, case narratives, and cooler receipt information. Attachment B-2 provides the sample summary. Analytical results tables are presented in Appendix A.

Jacobs Engineering Group Inc. (Jacobs) performed this DQA and completed ADEC Laboratory Data Review Checklists for the records associated with the analytical data. The data review and DQA were performed in accordance with the 2010 Investigation and Closure Sampling for Environmental Compliance Restoration Sites Work Plan (U.S. Air Force [USAF] 2010). A completeness check of the analytical data was performed to verify that the data packages and electronic files included all information requested.

1.1 DATA REVIEW AND QUALIFICATION

All analytical data were reviewed by the Jacobs Project Chemist. This evaluation consisted of a review of chain-of-custody and sample receipt records; laboratory case narratives; laboratory data including analytical methodology, sample holding times, laboratory blanks, detection limits (DL), limits of detection (LOD), limits of quantitation (LOQ), surrogate recoveries, laboratory control sample (LCS) and LCS duplicate (LCSD) recoveries, matrix spike (MS) and MS duplicate (MSD) recoveries; and precision. Analytical data quality objectives (DQO) were considered met when the quality of the sample data met precision, accuracy, representativeness, completeness, comparability, and sensitivity requirements specified in the Work Plan (USAF 2010).

Analytical results were evaluated using the measurement performance criteria specified in Section 12.0 (Worksheet #12) of the Work Plan (USAF 2010); Department of Defense (DoD) *Quality Systems Manual for Environmental Laboratories*, Version 4.2 (DoD 2010); *Environmental Laboratory Data and Quality Assurance Requirements Technical Memorandum* (ADEC 2009); analytical methods (ADEC 2002; U.S. Environmental Protection Agency [EPA] 1996); and laboratory limits. If a result or recovery fell outside the control limits, a qualifier code was applied to that datum.

Qualifiers that were applied to the analytical data set, as appropriate, include the following:

J The analyte was positively identified, but the associated result was less than the LOQ but greater than or equal to the DL.



- The result is biased low.
- JP(-) The result was considered an estimated value because incorrect or inadequate preservation methods were used.

Qualification was not required in the following circumstances:

- Surrogate or MS recoveries were outside quality control (QC) limits, and the sample was diluted by a factor of 5 or greater.
- MS recoveries were outside QC limits, and the spiked concentration was less than that of the parent sample.
- An analyte was detected in the method blank, but there was no detection in the sample.
- MS or LCS recoveries exceeded upper control limits, and there was no detection in the sample(s).

2.0 DATA QUALITY SUMMARY

A review of the analytical results and associated QC samples determined the overall quality of the project data to be acceptable. One QC issue was identified that had a negative impact on the data set, sample preservation, which is discussed below. Complete details of the evaluation, including analytical results that did not meet project DQOs or measurement performance criteria, are provided in the ADEC Laboratory Data Review Checklists (Attachment B-1). These data are considered usable with the limitations discussed in this DQA and the ADEC checklists with regard to laboratory qualifiers (Section 1.1). Qualified results are considered estimated and, whenever possible, indicated as either biased high (+) or low (-).

Project data included in this DQA are the results for samples included in TestAmerica sample delivery groups 580-25610-1 and 580-25659-1. Completeness is a quantitative evaluation indicating the percentage of the data that was considered usable for the intent of the project. No data were rejected and all data are considered usable; therefore, the 95-percent completeness goal was met.

2.1 THERMAL PRESERVATION

A total of nine coolers were submitted to TestAmerica. Eight coolers were received at TestAmerica-Seattle with temperature readings below 2 degrees Celsius (°C).

All coolers were hand-delivered to TestAmerica-Anchorage following sample collection and were received with temperatures within specified range of $4 \pm 2^{\circ}$ C. TestAmerica-Anchorage shipped the samples to TestAmerica-Seattle on the same day. The coolers arrived at TestAmerica-Seattle with the temperature blanks measurements ranging from -0.3 to 3.2°C. The samples contained within coolers with temperature readings less than 2°C were not



frozen; therefore, there is no effect on the data quality or usability so these results were not qualified.

2.2 HEADSPACE/INADEQUATE CHEMICAL PRESERVATION

A total of five vials submitted for the analysis of benzene, toluene, ethylbenzene, and xylene isomers (BTEX) by method SW8260 were received by the laboratory with bubbles greater than 6 millimeters. Two vials with headspace, one each for samples FH-SPO1A-WG and OU5MW12-2011-WG, were used for the analysis. For sample FH-SPO1A-WG the pH was greater than 2, indicating inadequate chemical preservation. The SW8260 BTEX sample results for FH-SPO1A-WG and OU5MW12-2011-WG and OU5MW12-2011-WG have been qualified JP-, indicating an estimated result with a potential low bias due to headspace and/or inadequate chemical preservation. Although the data quality has been affected, the sample results were considered usable for investigative purposes.

3.0 CONCLUSION

The overall quality of the project data was acceptable, and the 95-percent completeness goal was met. All data were considered usable for the purposes of investigative sampling at the Post Road Fish Hatchery, with the limitations discussed in this DQA and the ADEC Laboratory Data Review Checklists (Attachment B-1).

4.0 **REFERENCES**

- ADEC (Alaska Department of Environmental Conservation). 2009 (March). *Environmental Laboratory Data and Quality Assurance Requirements*. Technical Memorandum.
- ADEC. 2002 (November). Underground Storage Tanks Procedures Manual: Guidance for Treatment of Petroleum Contaminated Soil and Water and Standard Sampling Procedures.
- DoD (U.S. Department of Defense). 2010 (October). *Department of Defense Quality Systems Manual for Environmental Laboratories*. DoD Environmental Quality Workgroup, Department of the Navy, Lead Service. Version 4.2, Final.
- EPA (U.S. Environmental Protection Agency). 1996 (September). *Test Methods for Evaluating Solid Waste*. Third Edition, Final Update IV, SW-846.
- USAF (U.S. Air Force). 2010 (September). 2010 Investigation and Closure Sampling for Environmental Compliance Restoration Sites Work Plan. Prepared by Jacobs Engineering Group Inc.



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ATTACHMENT B-1

Sample Documentation

Case Narratives Cooler Receipt Information ADEC Laboratory Data Review Checklists



ANALYTICAL REPORT

Job Number: 580-25610-1 Job Description: 05-F525-07-D-010-0013 TO 25, EAFB, AK Contract Number: W911KB-04-A-0009

> For: Jacobs Engineering Group, Inc. 4300 B Street, Suite 600 Anchorage, AK 99503-5922 Attention: Ms. Sara Hadden

Li Lones

Approved for release. Terri L Torres Project Manager II 4/25/2011 2:43 PM

Terri L Torres Project Manager II terri.torres@testamericainc.com 04/25/2011

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The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC and the DOD QSM V4.2 (10/25/2010). All data have been found to be compliant with laboratory protocol, with the exception of any items noted in the case narrative.



CASE NARRATIVE

Client: Jacobs Engineering Group, Inc. Project: 05-F525-07-D-010-0013 TO 25, EAFB, AK Report Number: 580-25610-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

Following DoD QSM guidelines, manual integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure, Acceptable Manual Integration Practices, SOP No.: Q-S-002. The reason(s) for manual integration have been documented on the affected chromatogram(s), which is/are provided in the raw data package. The raw data also includes the original chromatogram(s) prior to any manual integration being performed. Manual integrations are detailed in the manual integration summary forms following this narrative.

It should be noted that samples with elevated Limits of Quantitation (LOQs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the LOQs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 04/14/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.1 C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

DIESEL AND MOTOR OIL RANGE ORGANICS

Samples FH-BH01A-0-5-SO (580-25610-1), FH-BH01A-6-9-SO (580-25610-2), FH-BH02A-0-5-SO (580-25610-3), FH-BH02A-6-8.5-SO (580-25610-4), FH-BH03A-0-5-SO (580-25610-5), FH-BH03A-6-10-SO (580-25610-6), FH-BH04A-0-5-SO (580-25610-7), FH-BH04A-6-6.5-SO (580-25610-8), FH-BH05A-0-5-SO (580-25610-9), FH-BH05A-6-10-SO (580-25610-10), FH-BH06A-0-5-SO (580-25610-11), FH-BH06A-6-10-SO (580-25610-12), FH-BH07A-0-5-SO (580-25610-13), FH-BH07A-6-10-SO (580-25610-14), FH-BH03B-0-5-SO (580-25610-15) and FH-BH05B-0-5-SO (580-25610-16) were analyzed for diesel and motor oil range organics in accordance with AK102 and AK103. The samples were prepared on 04/18/2011 and analyzed on 04/21/2011.

DRO (nC10-<nC25) was detected in method blank MB 580-84177/1-A at a level that was above the detection limit but below ½ the limit of quantitation. The value should be considered an estimate, and has been flagged "J".

For samples FH-BH01A-6-9-SO (580-25610-2), FH-BH02A-0-5-SO (580-25610-3), FH-BH02A-6-8.5-SO (580-25610-4), FH-BH03A-0-5-SO (580-25610-5), FH-BH04A-0-5-SO (580-25610-7), FH-BH05A-0-5-SO (580-25610-9), FH-BH06A-0-5-SO (580-25610-11) and FH-BH05B-0-5-SO (580-25610-16) the results in the C10-C25 (DRO) range are due primarily overlapping results from the motor oil range and partially to biogenic interference.

For samples FH-BH03A-6-10-SO (580-25610-6), FH-BH04A-6-6.5-SO (580-25610-8) and FH-BH07A-0-5-SO (580-25610-13) the results in the C10-C25 (DRO) range are due to heavily weathered diesel fuel and/or possibly biogenic interference.

No other difficulties were encountered during the DRO and RRO analyses.

All other quality control parameters were within the acceptance limits.

PERCENT SOLIDS

Samples FH-BH01A-0-5-SO (580-25610-1), FH-BH01A-6-9-SO (580-25610-2), FH-BH02A-0-5-SO (580-25610-3), FH-BH02A-6-8.5-SO (580-25610-4), FH-BH03A-0-5-SO (580-25610-5), FH-BH03A-6-10-SO (580-25610-6), FH-BH04A-0-5-SO (580-25610-7), FH-BH04A-6-6.5-SO (580-25610-8), FH-BH05A-0-5-SO (580-25610-9), FH-BH05A-6-10-SO (580-25610-10), FH-BH06A-0-5-SO (580-25610-11), FH-BH06A-6-10-SO (580-25610-12), FH-BH07A-0-5-SO (580-25610-13), FH-BH07A-6-10-SO (580-25610-14), FH-BH03B-0-5-SO (580-25610-15) and FH-BH05B-0-5-SO (580-25610-16) were analyzed for percent solids in accordance with EPA SW846 3550C. The samples were analyzed on 04/18/2011.

No difficulties were encountered during the % solids analyses.

All quality control parameters were within the acceptance limits.

ollection Organizat	ion: JEGA				Chain-of-	Custody:	11ELM01		Cooler ID:	Rainbow Trout			
roject Number:	05F52507				Laborato	ry: T	est America	1	Bill To: JEGA	A		Report To: JEGA	
OC Sample ID	Loc ID	Collection Date	Collection Time	Sampler	Quantity	Container Type	Volume	Preservative	Motrix	Analyses Requested	Notes	тат	Noter:
H-BH01A-0-5-SO	FH-BH01	4/12/2011	11:31	CT/EB-K	1	Amber glass	8 oz	4C	SO	AK102	INDICS	30-day	110105.
H-BH01A-6-9-SO	FH-BH01	4/12/2011	11:52	CT/EB-K	1	Amber glass	8 oz	4C	SO	AK102		30-day	
H-BH02A-0-5-SO	FH-BH02	4/12/2011	12:16	CT/EB-K	<u>1</u>	Amber glass	8 oz	4C	SO	AK102		30-day	
H-BH02A-6-8.5-SO	FH-BH02	4/12/2011	12:35	CT/EB-K	1	Amber glass	8 oz	4C	SO	AK102		30-day	
H-BH03A-0-5-SO	FH-BH03	4/12/2011	13:10	CT/EB-K	N 1	Amber glass	8 oz	4C	SO	AK102		30-day	
H-BH03A-6-10-SO	FH-BH03	4/12/2011	13:15	CT/EB-K	1	Amber glass	8 oz	4C	SO	AK102		30-day	
H-BH04A-0-5-SO	FH-BH04	4/12/2011	14:47	CT/EB-K	1	Amber glass	8 oz	4C	SO	AK102	23 23	30-day	
H-BH04A-6-6.5-SO	FH-BH04	4/12/2011	14:52	CT/EB-K	1	Amber glass	8 oz	4C	SO	AK102	8	30-day	
H-BH05A-0-5-SO	FH-BH05	4/12/2011	15:28	CT/EB-K	2 N	Amber glass	8 oz	4C	SO	AK102	MS/MSD	30-day	
H-BH05A-6-10-SO	FH-BH05	4/12/2011	. 16:06	CT/EB-K	1	Amber glass	8 oz	4C	SO	AK102		30-day	
H-BH06A-0-5-SO	FH-BH06	4/12/2011	17:05	CT/EB-K	1	Amber glass	8 oz	4C	SO	AK102		30-day	
H-BH06A-6-10-SO	FH-BH06	4/12/2011	17:25	CT/EB-K	1	Amber glass	8 oz .	4C =	SO	AK102		30-day	
H-BH07A-0-5-SO	FH-BH07	4/12/2011	17:37	CT/EB-K	1	Amber glass	8 oz	4C	SO	AK102		30-day	
H-BH07A-6-10-SO	FH-BH07	4/12/2011	17:56	СТ/ЕВ-К	1	Amber glass	8 oz	4C	SO	AK102		30-day	
H-BH03B-0-5-SO	FH-BH03	4/12/2011	13:10	CT/EB-K	1	Amber glass	8 oz	4C	SO	AK102		30-day	
I-BH05B-0-5-SO	FH-BH03	4/12/2011 ·	15:28	CT/EB-K	1	Amber glass	8 oz	4C	SO	AK102		30-day	
			••		• • • •	× •						<u>ئ</u>	
ecial Instructions:	tere	Trees	t		4/12/11	<u>(20</u> 20)]	Relinquish By:	Krith Nop	tin hist		4/13/1	1215
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ATTACHMENT C COOLER RECEIPT FORM

Fax this form and the CoC records to Jacobs Program/Project Chemist within 24 hours of receiving sample.

 ${\mathcal C}_{i}$

	receiving sample.	ler)
	17 E.I. M MA (One receipt form per coo	
	COC Number	
	Cooler Number/Name on Cou Rainwo man	· · ·
	Laboratory and Location	17
	I ah SDG NN Test America	A
	Cooler forward to YES	VÕ)
	Were custody seals on outside of COOIBIT	
	If yes, how many and where? YES	ND .
	Were signatures and dates correct?	P
	Wore custody papers taped to IId Inside of cooler?	VO
	2. Were custody papers properly filled out (ink, signed, etc.) (NO O
	3. Welle would be clisted v babers in the appropriate place?	
•	4, Did you sign outloop ray	
	5. Did you attach at pooling material was	4. N W
	6. What kind of packing material Card board	
	USBOT	Torre .
	7. Was sufficient ice used in separate plastic bags?	
	B. Were all ponies search in good condition?	
	9. Did all bottles arrive in good be, laubher, date, signed, analysis, pres.,	VU
	10. Were all bottle labels complete (manuel) and the	s .
	etc.)?	NO
	11. Did all bottle labels and tags up of the tests?	NO .
	12. Were correct dotties used for absence of air bubbles, and if present noted WYES	ND
	13. Were VOA viais checked for abactics and bottle?	NO
	14. Was sufficient amount of sample some in out the D1	
	15. Chain-of-custody identification number. 15. Ugec	
	Temperature blank reading	
	Cooler temperature.	
	Identification number of thermomener	NO
	16 is temperature within 4+/- 2°C?	NO
	Ware labels correctly associated with pre-tared containers r (not place Containers)	8
	directly on lars)?	NØ
	CORRECTIVE ACTION FORM ATTACHED	
	lacebs Project Chemist contacted? Date/Time	
	Jacobs Trojost chimes forms	
	these appoclated CoC record and Conversation Confirmer Joins.	Anchorn
	Allaci association of at Testamence	
2	* cooler office to TostAmin	ren - Seill
	Explain any to Be picked of Supper.	
	discrepancies:	
1.20		
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ATTACHMENT C COOLER RECEIPT FORM

	(a)	e la la la contra Prodi	am/Project Chemist wi	ithin 24 hou	rs of	
Fax rec	this form and the CoC recu eiving sample.	ords to Jacobs Progr				
		I ELMOI	(One receipt fo	orm per coo	161)	
Col	C NUMBER/Name on CoC	Rainbow Trout			• .	
Co	oratory and Location	Test America	Seattle		·	
Lat	s SDG	580-25010				
Lar		t is standar?		(ES) I	NO	•
1.	Were custody seals on outs	SIDE OF COULER	+. Buck Right			
10	If yes, how many and where	correct?	<u> </u>	YES !		
	Were signatures and bales	to lid inside of cooler	? ·	(YES)		
2.	Were custody papers haped	arly filled out (Ink, sign	ed, etc.)?	TES !	40 40	
З.	Were custody papers prope	s in the appropriate pli	ace?			
4.	Did you attach shipper's pa	cking slip to this form?			10	
5. 6	What kind of packing mater	ial was 2.	bble wrang		_	
U.	used?		Une winp	TES I	NO Bhu	lce
7.	Was sufficient ice used (if a	aparate plastic bads?		(YES)	NO	
Β.	Were all bottles sealed in s	1 condition?		CES !		
9.	Did all bomes arrive in good	lete (number, date, sig	ined, analysis, pres.,	(YES)		23.
10.	WBIE En Donie, izpolo in f		2000rc2	VES I	NO	
11.	Did all bottle labels and tag	s agree with custody p	iapers:	(TES)	NO	
12.	Were correct bottles used t	or the tests?	es, and if present noted	? YES	no-N/A	
13.	Were VOA vials checked to	ample sent in each bol	tle?	(YES)	ND	
14.	Was sufficient amount of se	ion number:	2M01			
15.	Chain-of-cusious dentification	Corr	3.2 Uncon - 3.1			
	Cooler temperature.	Corr.	5.3 Uncor-5.2	<u> </u>		
	Identification number of the	rmometer 1018	344641	SES	NO	
16	is temperature within 4+/- 2	PC?	entainers? (not placed	YES	NO NIA	
17.	Were labels correctly asso	clated with pre-tared c				
	directly on Jars)?	TTACHED	•	YES	HONIA	
CC	RRECTIVE ACTION FURIN					
Jac	cobs Project Chemist conta	cted? Date/Time			<u>. </u>	
Ati	ach associated CoC record	and Conversation Co	onfirmer forms.			ie Na
Ev	nlain anv					
dis	crepancies:					
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C:\[Documents and Settings\downlek\Local Settin	ps/1 emporary internet missiourion				



U. ALASKA AIRLINES & HORIZON AIR

P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM

SHIPPER

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r.

TESTAMERICA LABORATORIES INC 2000 W International Airport Rd Ste 10A Anchorage, AK 99502

CONSIGNEE

Test America Laboratories Inc 5755 8TH STREET E TACOMA, WA 98498

AWB Number	Pieces	Weight	Origin / Dest	Nature of Goods	Arriving Flight Details	Customs
027-92428055	1	32.0 Lt	ANC-SEA	SOIL SAMPLES	AS 106 14-Apr-2011	
: x	•					
Storage Locations:	COOLER		1			

LOCAL CHARGES : '

Bonded Warehouse

Total Local Charges:	USD	0.00
VAT 0.70%;	USD	0.00
Grand Total:	USD	0.00

PO Number

		24
	RECEIPT	STATEMENT
The und conditio	dersigned acknowledge the receipt on .	of above mentioned consignment complete and in good
Date: Time: Driver:	14-Apr-2011 12:29 FRANCISCO LUNA	Registration:

Page 223 of 224

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Laboratory Data Review Checklist

Completed by: David Summerville
Title:Date:6-8-2011
CS Report Name: Fish Hatchery Investigative Sampling Report Date: June 2011
Consultant Firm: Jacobs Engineering Group Inc.
Laboratory Name: TestAmerica Seattle Laboratory Report Number: 580-25610-1
ADEC File Number: ADEC RecKey Number:
 Laboratory Laboratory a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? •Yes □ No □NA (Please explain.) Comments:
 b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved? □Yes □ No ●NA (Please explain.)
All samples were analyzed by TestAmerica Seattle.
 2. <u>Chain of Custody (COC)</u> a. COC information completed, signed, and dated (including released/received by)? ●Yes □ No □NA (Please explain.) Comments:
 b. Correct analyses requested? ●Yes □ No □NA (Please explain.) Comments:
 3. <u>Laboratory Sample Receipt Documentation</u> a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)? •Yes □ No □NA (Please explain.) Comments:

For cooler "Rainbow Trout" the temperatures upon receipt at Seattle were 3.2° C (temp blank) and 5.3° C (cooler).

b.	Sample preservation acceptable – acidified waters, Met Volatile Chlorinated Solvents, etc.)? ●Yes □ No □NA (Please explain.)	thanol preserved VOC soil (GRO, BTEX, Comments:
 c.	Sample condition documented – broken, leaking (Meth ●Yes □ No □NA (Please explain.)	anol), zero headspace (VOC vials)? Comments:
d.	If there were any discrepancies, were they documented containers/preservation, sample temperature outside of samples, etc.?	? For example, incorrect sample acceptable range, insufficient or missing
	\Box Yes \Box No \bullet NA (Please explain.) Comm	nents:
,	There were no discrepancies noted on the cooler receipt f	form.
e.	Data quality or usability affected? (Please explain.)	Comments:
]	The data quality and usability was not affected.	
•. <u>Case I</u> a.	Narrative Present and understandable? ●Yes □ No □NA (Please explain.)	Comments:
b.	 Discrepancies, errors or QC failures identified by the la ●Yes □ No □NA (Please explain.) 	ab? Comments:
c.	Were all corrective actions documented?●Yes □ No □NA (Please explain.)	Comments:
d.	What is the effect on data quality/usability according to	the case narrative? Comments:
,	The data quality and usability was not affected according	to the case narrative
5. <u>Samp</u> a.	les Results Correct analyses performed/reported as requested on C ●Yes □ No □NA (Please explain.)	OC? Comments:

b.	 All applicable holding times met? ●Yes □ No □NA (Please explain.) 	Comments:
c.	All soils reported on a dry weight basis? ●Yes □ No □NA (Please explain.)	Comments:
d.	Are the reported PQLs less than the Cleanup Level or project?	r the minimum required detection level for
_	•Yes \Box No \Box NA (Please explain.)	Comments:
e.	Data quality or usability affected?	Comments:
	The data quality and usability was not affected.	
	ii. All method blank results less than PQL?□Yes □ No □NA (Please explain.)	Comments:
	All method blank results were less than $\frac{1}{2}$ the LOQ.	
	iii. If above PQL, what samples are affected?	Comments:
	N/A	
	iv. Do the affected sample(s) have data flags and \Box Yes \Box No \bullet NA (Please explain.) Com	if so, are the data flags clearly defined? aments:
	No data flags were required.	
_	v. Data quality or usability affected? (Please exp	plain.) Comments:
	The data quality and usability was not affected.	

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
- Yes \Box No \Box NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

 \Box Yes \Box No \bullet NA (Please explain.) Comments:

No metal/inorganic analyses were requested.

- iii. Accuracy All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages) Comments:
- Yes \Box No \Box NA (Please explain.)
- iv. Precision All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

• Yes \Box No \Box NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected? Comments:

N/A

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined? \Box Yes \Box No \bullet NA (Please explain.) Comments:

No data flags were required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and usability was not affected.

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples? Comments:

• Yes \Box No \Box NA (Please explain.)

 ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

•Yes	\Box No	\Box NA (Please explain.)	Comments:
------	-----------	-----------------------------	-----------

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

 \Box Yes \Box No \bullet NA (Please explain.) Comments:

No data flags were required.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

The data quality and usability was not affected.

- d. Trip blank Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and</u> <u>Soil</u>
 - i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
 - \Box Yes \Box No \bullet NA (Please explain.) Comments:

No volatile analyses were requested.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
□ Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?□Yes □ No ●NA (Please explain.)

Comments:

N/A

iv. If above PQL, what samples are affected?

Comments:

N/A

v. Data quality or usability affected? (Please explain.)

Comments:

The data quality and usability was not affected.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?



The data quality and usability was not affected.

- f. Decontamination or Equipment Blank (If not used explain why).
 - \Box Yes \Box No \bullet NA (Please explain.) Comments:

No decontamination or equipment blanks were collected.

i. All results less than PQL?

 \Box Yes \Box No \bullet NA (Please explain.) Comments:

ii. If above PQL, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected? (Please explain.)

Comments:

```
The data quality and usability was not affected.
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7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>a. Defined and appropriate?

•Yes \Box No \Box NA (Please explain.)

Comments:



ANALYTICAL REPORT

Job Number: 580-25659-1 Job Description: 05-F525-07-D-010-0013 TO 25, EAFB, AK Contract Number: W911KB-04-A-0009

> For: Jacobs Engineering Group, Inc. 4300 B Street, Suite 600 Anchorage, AK 99503-5922 Attention: Ms. Sara Hadden

Li Lones

Approved for release. Terri L Torres Project Manager II 4/27/2011 5:16 PM

Terri L Torres Project Manager II terri.torres@testamericainc.com 04/27/2011

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This report shall not be reproduced except in full, without prior express written approval by the laboratory. The results relate only to the item(s) tested and the sample(s) as received by the laboratory.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC and the DOD QSM V4.2 (10/25/2010). All data have been found to be compliant with laboratory protocol, with the exception of any items noted in the case narrative.



CASE NARRATIVE

Client: Jacobs Engineering Group, Inc. Project: 05-F525-07-D-010-0013 TO 25, EAFB, AK Report Number: 580-25659-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

Following DoD QSM guidelines, manual integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure, Acceptable Manual Integration Practices, SOP No.: Q-S-002. The reason(s) for manual integration have been documented on the affected chromatogram(s), which is/are provided in the raw data package. The raw data also includes the original chromatogram(s) prior to any manual integration being performed. Manual integrations are detailed in the manual integration summary forms following this narrative.

It should be noted that samples with elevated Limits of Quantitation (LOQs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the LOQs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 04/18/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.1, 0.3, -0.3, 0.7 and 1.2 C.

The following samples were received with headspace in the sample vial: FH-SP01A-WG, FH-SP02A-WG and FH-SP03A-WG all have one VOA vial with headspace.

For sample FH-07A-WG the amber bottles were labeled as FH-07B-WG. Client wrote 07A on the caps of the amber bottles. All containers for FH-07B-WG were accounted for and labeled correctly by the client. Lined samples up per sample caps and logged in as FH-07A-WG.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Samples FH-SP01A-WG (580-25659-1), FH-SP02A-WG (580-25659-2), FH-SP03A-WG-IP (580-25659-3), FH-SP04A-WG-IP (580-25659-4), FH-SP05A-WG (580-25659-5), FH-SP06A-WG (580-25659-6), FH-SP07A-WG (580-25659-7), FH-SP03A-WG-PP (580-25659-8), FH-SP04A-WG-PP (580-25659-9), FH-SP07B-WG (580-25659-10), FH-TB-WG (580-25659-11) and OU5MW12-2011-WG (580-25659-12) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/19/2011 and 04/21/2011.

The following samples were received with headspace in the sample vial: FH-SP01A-WG (580-25659-1) and OU5MW12-2011-WG (580-25659-12). Sample 580-25659-1 had an 8 mm air bubble of headspace in one vial used and 10 mm air bubble in the second vial used. Sample 580-25659-12 had a 6 mm air bubble of headspace.

Due to the large amount of sediment present in the sample vial, the following samples were centrifuged prior to analysis: FH-SP01A-WG (580-25659-1), FH-SP03A-WG-IP (580-25659-3), FH-SP07A-WG (580-25659-7), FH-SP07B-WG (580-25659-10) and OU5MW12-2011-WG (580-25659-12).

Sample FH-SP01A-WG (580-25659-1) was re-analyzed in analytical batch 580-84535 due to surrogate failure in the initial analysis and pH >2 in the first re-analysis.

No other difficulties were encountered during the VOC analyses.

All quality control parameters were within the acceptance limits.

SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)

Samples FH-SP01A-WG (580-25659-1), FH-SP02A-WG (580-25659-2), FH-SP03A-WG-IP (580-25659-3), FH-SP04A-WG-IP (580-25659-4), FH-SP05A-WG (580-25659-5), FH-SP06A-WG (580-25659-6), FH-SP07A-WG (580-25659-7), FH-SP03A-WG-PP

(580-25659-8), FH-SP04A-WG-PP (580-25659-9), FH-SP07B-WG (580-25659-10) and OU5MW12-2011-WG (580-25659-12) were analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with EPA SW-846 Method 8270C SIM. The samples were prepared on 04/20/2011 and analyzed on 04/22/2011 and 04/25/2011.

Sample FH-SP04A-WG-IP (580-25659-4)[5X] required dilution prior to analysis due to the nature of the sample matrix. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the SVOC SIM analyses.

All quality control parameters were within the acceptance limits.

DIESEL AND MOTOR OIL RANGE ORGANICS

Samples FH-SP01A-WG (580-25659-1), FH-SP02A-WG (580-25659-2), FH-SP03A-WG-IP (580-25659-3), FH-SP04A-WG-IP (580-25659-4), FH-SP05A-WG (580-25659-5), FH-SP06A-WG (580-25659-6), FH-SP07A-WG (580-25659-7), FH-SP03A-WG-PP (580-25659-8), FH-SP04A-WG-PP (580-25659-9), FH-SP07B-WG (580-25659-10) and OU5MW12-2011-WG (580-25659-12) were analyzed for diesel and motor oil range organics in accordance with AK102 and AK103. The samples were prepared on 04/20/2011 and analyzed on 04/22/2011.

Sample FH-SP04A-WG-IP (580-25659-4)[50X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Surrogate recovery for FH-SP04A-WG-IP (580-25659-4) was not determined due to the required dilution.

Recovery and RPD values for DRO (nC10-<nC25) in the matrix spike/matrix spike duplicate of sample FH-SP06A-WG (580-25659-6) in batch 580-84541 were outside advisory QC limits. Matrix interference is indicated based on acceptable LCS/LCSD recovery and RPD.

For samples FH-SP01A-WG (580-25659-1), FH-SP02A-WG (580-25659-2), FH-SP03A-WG-IP (580-25659-3), FH-SP03A-WG-PP (580-25659-8) and OU5MW12-2011-WG (580-25659-12) the results in the nC10-<nC25 (DRO) range are due to what most closely resembles a mineral/transformer oil range product.

For samples FH-SP04A-WG-IP (580-25659-4), FH-SP05A-WG (580-25659-5), FH-SP06A-WG (580-25659-6), FH-SP07A-WG (580-25659-7), FH-SP04A-WG-PP (580-25659-9) and FH-SP07B-WG (580-25659-10) the results in the nC10-<nC25 (DRO) range are due to heavily weathered diesel fuel and/or possibly biogenic interference.

No other difficulties were encountered during the DRO and RRO analyses.

All other quality control parameters were within the acceptance limits.

					-	*	<u> </u>	9				-		25 253	759 29 CV
						Chain-of	-Custod	y Report				<u> </u>			4418
Collection Organization	n: JEGA				Chain-of-	Custody:	11ELM02	2	С	ooler ID:	Pin	k	*		
Project Number:	05F52507				Laborato	ry: T	est Americ	a	В	і‼∙То: ЈЕ	GA		R	eport To: JEG.	A
0	··· ·	Collection	Collection	·	- 10 W	Container	-			•	Ā	nalyses Requested			
COC Sample ID	Loc ID	Date	Time	Sampler	Quantity	Туре	Volume	Preservative		Matrix		Group	QČ ·	TAT	Notes:
H-SP01A-WG	FH-SP01	4/13/2011	10:15	CT/EB-	3	VOA	40 ml	4C, HCl		WG	1	SW8260	1		
H-SP02A-WG	FH-SP02	4/13/2011	11:50	CT/EB	3	VOA	40 ml	4C. HCl		WG		SW8260			
H-SP03A-WG-IP	FH-SP03	4/14/2011	10:04	CT/KC	3	VOA	40 ml	4C, HCl	H	WG		SW8260			
H-SP03A-WG-IP	FH-SP03	4/14/2011	10:04	CT/KC	2	Amber glass	1 L	4C		WG		SW8270			
H-SP03A-WG-IP	FH-SP03	4/14/2011	10:04	CT/KC	2	Amber glass	1 L	4C, HCl		WG		AK102			
H-SP04A-WG-IP	FH-SP04	4/14/2011	12:25	CT/KC	3	VOA	40 ml	4C, HCl		WG		SW8260			
H-SP05A-WG	FH-SP05	4/14/2011	12:27	CT/KC	3	VOA	40 ml	4C, HCl		WG		SW8260			
I-SP06A-WG	FH-SP06	4/14/2011	15:10	CT/KC	9	VOA	40 ml	4C, HCl		WG		SW8260	MS/MSD		
H-SP07A-WG	FH-SP07	4/14/2011	13:13	CT/KC	3	VOA	40 ml	4C, HC1		WG		SW8260			
H-SP03A-WG-PP	FH-SP03	4/14/2011	9:34	CT/KC	3	VOA	40 ml	4C; HCl		WG		SW8260			
H-SP04A-WG-PP	FH-SP04	4/14/2011	12:10	CT/KC	3	VOA	40 ml	4C, HCl		WG		SW8260		E.	
H-SP07B-WG	FH-SP07	4/14/2011	13:13	CT/KC	· 3	VOA	40 ml	4C, HCl		WG		SW8260			
H-TB-WG	TB	4/13/2011	8:00	CT/EB	3	VOA	40 ml	4C, HCl		WG		SW8260	TB		
U5MW12-2011-WG	OU5MW12	4/15/2011	12:15	CT/EB	3.	VOA	40 ml	4C, HCl		WG		SW8260			
pecial Instructions:								41		. 2	(1	е. В		1
clinquish By: Cothe	a l	nen	r	4	15/	(18=	25	Relinquish By	/:	Fal	gh	Troy En	gstrom	4-16	-11/11:05
eceived By:	À	<u> </u>	-	04/1	5 (1	18 25		Received By:	34	a	hy	janble	Cathy	Canbo	1 4/18/
D		Signature/Printed Na	ame			Date/Time			Sig	mature/Printed 1	Neme	Ŧ		Date/Tim	· //
Anderay	<u>~</u>		5									10 M			
Colen:	4.8°C		2		e.										
TB.	2.7°E						100								

						Chain-of	-Custoc	ly Report				255	251,59
Collection Organizatio	n: JEGA 05F52507				Chain-of-	Custody:	11ELM0	9	Cooler ID:	Arctic Grayling	*	Report To: 16	
COC Sample ID	Loc ID	Collection Date	Collection Time	Sampler	Quantity	Container Type	Volume	Preservative	Matrix	Analyses Reques Group	ted QC	TAT	Notes:
FH-SP01A-WG	FH-SP01	Collection Date	10:15	CT/EB	2	Amber glass	1 L	4C	WG	SW8270	\		
FH-SP01A-WG	FH-SP01	Collection Date	10:15	CT/EB	2	Amber glass	1 L	4C, HCl	WG	AK102	//		
FH-SP02A-WG	FH-SP02	Collection Date	11:50	CT/EB	2	Amber glass	1 L	4C .	WG	SW8270	17		
FH-SP02A-WG	FH-SP02	Collection Date	11:50	CT/EB	2	Amber glass	1 L	4C, HCl	WG	AK102	/*		
Special Instructions:									- (, /		-FC	1
Relinquish By:	The Te	anne			4/15/	11 18:2	-5-	Relinquish By:	Tyly	to Troy i	Engstron	2 IL	F16-11/11:05
Received By:	<u>_ h</u>	Der		14/15	<u> u </u>	Dato/Time	¢.	Received By:	Signature Printed fis	Tramble	- ANC Cramp	56 4/18/11	Fine 8:45
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Hrcherage Goolan - 4.7°C TB - 7.2°C

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Page 669 of 705

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						Chain-o	of-Custody	y Report		<u></u>	·	P	×
Collection Organization	on: JEGA 05F52507				Chain-of-	Custody:	11ELM03 Test America		Cooler ID:	Sockeye	٨	Renort To: J	EGA
COC Sample ID	Loc ID	Collection Date	Collection Time	Sampler	Quantity	Container Type	Volume	Preservative	Matrix	Analyses Requested Group	-QC	TAT	Notes:
FH-SP03A-WG-IP	-FH-SP03	4/14/2011	10:04	CI/KC	2	Amber glas	s IL	4C		SW8270	CT CY	-	
FH-SP03A-WG-IP		<u>4/14/2011</u>		ст/ке-	2	Amber-glas	8 <u> </u> <u> </u>	<u>4C, HCl</u>	WG	AK102	121		
FH-SP04A-WG-IP	FH-SP04	4/14/2011	12:25	CT/KĊ	2	Amber glas	s 1L	4C	WG	SW8270			
FH-SP04A-WG-IP	FH-SP04	4/14/2011	12:25	CI/KC	2	Amber gias	35 I L	4C, HU	WU	AKIUZ			±
Relinquish By:	reta	- mpe			4/1	5/1(6	7:25	Relinquish By:	x Ty	ly to Troy	Engstra	om 4	-16-11/11:05
Received By: X91	-a	Du		1	04/15		825.	Received By:	Slenkture Printer Name	Gamble	- ANC	4/18/11	8:115
0		F. Signature/Printed Na	ime -			Date/Time			Signature/Printed Name			Dat	c/Time
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						Chain-of	-Custoc	ly Report		·····	· · ·		÷.
Collection Organization	on: JEGA				Chain-of	-Custody:	11ELMO	4	Cooler ID:	Chum	•		
Project Number:	05F52507				Laborato	ory: To	est Ameri	ca	Bill To: JEGA	L		Report To: JE	GA
COC Sample ID	Loc ID	Collection Date	Collection Time	Sampler	Quantity	Container Type	Volume	Preservative	Matrix	Analyses Requested Group	QC	TAT	Notes:
FH-SP05A-WG	FH-SP05	4/14/2011	12:27	CT/KC	2	Amber glass	1 L	4C	WG	SW8270			
FH-SP05A-WG	FH-SP05	4/14/2011	12:27	CT/KC	2	Amber glass	1 L	4C, HCl	WG	AK102			
FH-SP07A-WG	FH-SP07	4/14/2011	13:13	CT/KĊ	2	Amber glass	1 L	4C	WG	SW8270			·
FH-SP07A-WG	FH-SP07	4/14/2011	13:13	CT/KC	2	Amber glass	1 L	4C, HCl	WG	AK102			
Special Instructions:		4			. /				\sim 1	$\int d$	1		Λ
Relinquish By:	en t	Kany			4/15	111 8'	25	Relinquish By	-hyly	D/ Tray Engst	rom	4-16-	11 /1105
Received By:		Del		1/22	5 04/1		f	Received By:	Signature Printed Nam	ramble		4/18	11 8:45
G.		7 Signature/Printed Na	me 🐰		·	Date/Time			Signature/Printed Nor	0		Date/I	ĩne
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73						Chain-of	-Custod	y Report					18
Collection Organizatio	n: JEGA 05F52507				Chain-of- Laborato	Custody: ry: To	11ELM05 est Americ	5 :a	Cooler ID: Bill To: JEGA	Chinook		Report To: JEGA	2
COC Sample ID	Loc ID	Collection Date	Collection Time	Sampler	Quantity	Container Type	Volume	Preservative	Matrix	Analyses Requested Group	QC	TAT N	otes:
FH-SP03A-WG-PP	FH-SP03	4/14/2011	9:34	СТ/КС	2	Amber glass	1 L	4C	WG	SW8270			
FH-SP03A-WG-PP	FH-SP03	4/14/2011	9:34	CT/KC	2	Amber glass	1 L	4C, HCl	WG	AK102			
FH-SP04A-WG-PP	FH-SP04	4/14/2011	12:10	CT/KÇ	2	Amber glass	1 L	4C	WG	SW8270			
FH-SP04A-WG-PP	FH-SP04	4/14/2011	12:10	CT/KC	2	Amber glass	1 L	4C, HCl	WG	AK102		(K)	14
Special Instructions:		_			Intu	100	~		1.14			4. 1111	11 pc
Relinquish By:	bat 1	nom	· · · · ·	Ÿ	12/ [[Date/Time		Relinquish By	: CYC Signating Printon Nar	ne (roy Cngsr	oper	Date/Time	1103
Received By:	D	rel	- b'	t/15/10	Ô	1825	*	Received By:	lath	. Crampell		<u> 4/18/ 11</u>	
G		Signature/Printed Na	me -	•		Date/Time			Signature/Printed Nar	Be	22	Date/Time	

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						Chain-of	f-Custod	y Report					2
Collection Organization	on: JEGA 05F52507				Chain-of- Laborato	Custody: ry: T	11ELM00 est Americ	5	Cooler ID: Co Bill To: JEGA	ho	1	Report To: .	JEGA
COC Sample ID	Loc ID	Collection Date	Collection Time	Sampler	Quantity	Container Type,	Volume	Preservative	Matrix	Analyses Requeste Group	d QC	TAT	Notes:
FH-SP06A-WG	FH-SP06	4/14/2011	15:10	CT/KC	6	Amber glass	1L	4C	WG	SW8270	MS/MSD		
Special Instructions:	trac T	nouse	-	4	4	115111	18: 25	Relinquish By	zlift	5/Troy En	gstrom	4- 1	16-11/11:05
Received By: Joh		D.L	· ·	ol	115/110	Date/Time		Received By:	Signed are Printed Name	ample	athy Crumk	4/18	11 8145
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wolen:	4.3°c			2	, r		ę.						
TB:	4.4°C	*	-							·••			

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						Chain-	of-Custo	dy Report					
Collection Organizatio	on: JEGA 05F52507				Chain-of- Laborato	Custody: ry:	11ELM0 Test Ameri)7 ica	Cooler ID: Bill To: JEG	Arctic Char		Report To: J	EGA
COC Sample ID	Loc ID	Collection Date	Collection Time	Sampler	Quantity	Containe Type	r Volume	Preservative	Matrix	Analyses Requested Group	QC	<u>TAT</u>	Notes:
FH-SP06A-WG	FH-SP06	4/14/2011	15:10	CT/KC	6	Amber gla	ss 1L	4C, HCl	WG	AK102	MS/MSD		
Special Instructions: Relinquish By:	Time _	Tau	per-	1	4/15	/11	18-75	Relinquish By	Signature	4 D Troy	Engstros	22 4 Date	4-16 -11 /16:0
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Collection Organization Project Number:	1: JEGA 05F52507				Chain-of- Laborato	Custody: ry:	11ELM08		Cooler ID: Fis Bill To: JEGA	hie		Report To: J	EGA
COC Sample ID	Loc ID	Collection Date	Collection Time	Sampler	Quantity	Container Type	Volume	Preservative	Matrix	Analyses Requested Group	QC	TAT	Notes:
FH-SP07B-WG	FH-SP07	4/14/2011	13:13	CT/KC	2	Amber glass	1 L	4C	WG	SW8270			
FH-SP07B-WG	FH-SP07	4/14/2011	13:13	CT/KC	2	Amber glass	1 L	4C, HCl	WG	AK102			
OU5MW12-2011-WG	OU5MW12	4/15/2011	12:15	СТ/ЕВ	2	Amber glass	1 L	4C	WG	SW8270			
OU5MW12-2011-WG	OU5MW12	4/15/2011	12:15	CT/EB	2	Amber glass	1 L	4C, HCl	WG	AK102			
Special Instructions:	-100				· C1	[15] [1]	8:25	Delin quich Du	The list	5/Troy Engst	NT NI	4-16	-11/11:05
Relinquish By:		come_		ŝ	()	Date/Time	•	Received By:	Signature Printed Name	umble Cath	y Game	Da 61e 4/1	8/11 8:75
		Signature/Printed N	ame -		•	Date/Time			Signature/Prished Name	-14	/ 	Da	te/Time

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an chorage Cooler: 4:7°C TB: 4.9°C

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04/27/2011

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ATTACHMENT C

	COOLER RECEIPT FORM	/27/2
	Fax this form and the Coc records is a factor of the cocket of the cocke	04
	Coc Number Cooler Number/Name on Coc Laboratory and Location Test Amuse Anchoruge	". 8
	Lab SDG YES NO	6K
	 Were custody seals on outside of cooler? Were signatures and dates correct? Were custody papers taped to ild inside of cooler? Were custody papers taped to ild inside of cooler? Were custody papers taped to ild inside of cooler? 	•
	Were custody papers properly miles appropriate place? Vere custody papers in the appropriate place? Vere Custody papers in the appropriate place? Vere Custody papers in the appropriate place?	
	 Did you attach shipper's packing slip to this form? Did you attach shipper's packing slip to this form? What kind of packing material was used? What kind of packing material was propriate)? 	¥. 133
	 7. Was sufficient its used in separate plastic bags? 8. Were all bottles sealed in separate plastic bags? 9. Did all bottles arrive in good condition? 9. Did all bottle labels complete (number, date, signed, analysis, pres., YES NO * U.e.d. 10. Were all bottle labels complete (number, date, signed, analysis, pres., YES NO * U.e.d. 	ي س
	etc.)? 11. Did all bottle labels and tags agree with custody papers? 12. Were correct bottles used for the tests? 12. Were correct bottles used for the tests? 13. Were VOA vials checked for absence of air bubbles, and if present noted? 14. Wore VOA vials checked for absence of air bubbles, and if present noted? 15. NO	16 OF 70.
	 13. Were vor manual of sample sent in each bottle? 14. Was sufficient amount of sample sent in each bottle? 15. Chain-of-custody identification number. Temperature blank reading Cooler temperature. 15. Cooler temperature. 16. Cooler temperature. 17. The sample sent in each bottle? 11. Chain-of-custody identification number. 12. Chain-of-custody identification number. 13. Chain-of-custody identification number. 14. S² <li< td=""><td>Page 67</td></li<>	Page 67
	16. Is temperature within 4+/- 2°C?	
	17. Were labels correctly associated with perturbe demonstration of the second directly on Jars)?	· ·
	Jacobs Project Chemist contacted? Date/Time	
	Attach associated CoC record and Conversation Confirmer forms.	
	Explain any discrepancies: rupacie + Ship to SERTILE	=i_
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ATTACHMENT C COOLER RECEIPT FORM

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	Fax this form and the CoC records to Jacobs Program/Project Chemist within 24 hours of receiving sample.	04/27/
÷	CoC Number IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	
	 Did you attach shipper's packing stip to use remained was what kind of packing material was used? What kind of packing material was used? Was sufficient ice used (if appropriate)? Were all bottles sealed in separate plastic bags? Did all bottles arrive in good condition? Were all bottle labels complete (number, date, signed, analysis, pres., etc.)? Did all bottle labels and tags agree with custody papers? Were correct bottles used for the tests? Were VOA vials checked for absence of air bubbles, and if present noted? Was sufficient amount of sample sent in each bottle? Chain-of-custody identification number: Temperature blank reading Cooler temperature. Identification number of thermometer Identification number of thermometer Temperature-within 4+/-2°C? 	Page 677 of 705
	17. Were labels correctly associated with pre-tared containers? (Not placed TES NO	
	CORRECTIVE ACTION FORM ATTACHED JS Jacobs Project Chemist contacted? Date/Time <u>4-18-11 4:30 via Sample confirmation</u> Attach associated CoC record and Conversation Confirmer forms.	
	Explain-&Fly discrepancies:	
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1/27/2011
NonConformance Memo F	Report	Page 1 of 1	
e	Date Open Date Clos Date Verifi	ed: 04/18/2011 ied: ied:	
eived with headspace in the sample vial	:		
Proj Torr Torr Torr Torr	ect Manager, es, Terri L es, Terri L es, Terri L res, Terri L	•	
<u>Date</u> <u>Date</u> 04/18/2011 04/18/2011	<u>Notice Level</u> Level 1 Level 1	<u>Verification Type</u> Notify Review	
	NonConformance Memo F events with headspace in the sample vial vial with headspace. Proj Torr Torr Torr Torr Torr Torr Torr T	NonConformance Memo Report Date Open Date Clos Date Verification eived with headspace in the sample viat. eived with headspace. Project Manager, Torres, Terri L Date Notice Level Ud/18/2011 Level 1	NonConformance Memo Report Page 1 of 1 Page 1 of 1 Date Opened: 04/18/2011 Date Closed: Date Verified: eived with headspace in the sample viat. Fial with headspace. Project Manager, Torres, Terri L Level 1 Notify Review

Page 678 of 705



Fax this form and the CoC records to Jacobs Program/Project Chemist within 24 hours of recelving sample. (One recelpt form per cooler) FIM DO CoC Number Cooler Number/Name on CoC krokk Grund Teitkminica Laboratory and Location Lab SDG NO YES Were custody seals on outside of cooler? NR If yes, how many and where? 1. NØ YES NA Were signatures and dates correct? 6 YES Were custody papers taped to IId Inside of cooler? NO TER -Were_custody papers properly filled out (Ink, signed, etc.)? 2. NO XES2 Did you sign custody papers in the appropriate place?-3 NO NAYES Did you attach shipper's packing slip to this form? 4, What kind of packing material was 5. bubble 6. **ÝES** NO used? Was sufficient ice used (if appropriate)? NO YES Were all bottles sealed in separate plastic bags? 7. NO YE9 Did all bottles arrive in good condition? Β. Were all bottle labels complete (number, date, signed, analysis, pres., NO YES 9. 10. ۱ı 705. NO YES YES Did all bottle labels and tags agree with custody papers? CES NO Were correct bottles used for the tests? ų 11. Were VOA vials checked for absence of air bubbles, and if present noted WYES NO 12. 680 NO Was sufficient amount of sample sent in each bottle? 13. LELM OC Chain-of-custody Identification number. 14. Page 06 15. Temperature blank reading 00 Cooler temperature. 11-S Identification number of thermometer NO quasore. YES Is temperature within 4+/- 2°C? YES NO Were labels correctly associated with pre-tared containers? (not placed 16. 17. YES NØ directly on Jars)? CORRECTIVE ACTION FORM ATTACHED VA Jacobs Project Chemist contacted? Date/Time Attach associated CoC record and Conversation Confirmer forms. droom Explain any discrepancies . C:\Documents and Settings\downlek\Local Settings\Temporary Internet Files\OLKB\Cooler ReceiptNEW2001B1.doo

Э.	Fax this form and the CoC records to Jacobs Program/Project Chemist within 24 hours of	04/27/:
	receiving sample. $\mu FIMD9$ (one receipt form per cooler)	÷
````	CoC Number     Image: Cocier Number/Name or CoC       Cooler Number/Name or CoC     Image: Cocier Number/Name or CoC       Laboratory and Location     Image: Cocier Number/Name or CoC       Lab SDG     Image: Cocier Number/Name or CoC	
	<ol> <li>Were custody seals on outside of dooler?</li> <li>If yes, how many and where?</li> <li>Were signatures and dates correct?</li> <li>Were custody papers taped to lid inside of cooler?</li> <li>Were custody papers properly filled out (ink, signed, etc.)?</li> <li>Were custody papers in-the-appropriate-place?</li> <li>Did you sign custody paper's packing slip to this form?</li> <li>Did you attach shipper's packing slip to this form?</li> </ol>	
	<ul> <li>6. What kind of packing material was pused?</li> <li>7. Was sufficient ice used (if appropriate)?</li> <li>8. Were all bottles sealed in separate plastic bags?</li> <li>9. Did all bottles arrive in good condition?</li> <li>10. Were all bottle labels complete (number, date, signed, analysis, pres., NO</li> </ul>	
-	<ul> <li>etc.)?</li> <li>11. Did all bottle labels and tags agree with custody papers?</li> <li>12. Were correct bottles used for the tests?</li> <li>13. Were VOA vials checked for absence of air bubbles, and if present noted?</li> <li>14. Was sufficient amount of sample sent in each bottle?</li> <li>15. Chain-of-custody identification number: Temperature blank reading</li> </ul>	Page 681 of 70:
	Cooler temperature. Identification number of thermometer 16. Is temperature-within 4+/- 2°C? 16. Is temperature-within 4+/- 2°C?	
	17. Were labels correctly associated with pre-tared containers (not prace	
	directly on Jars)? CORRECTIVE ACTION FORM ATTACHED CORRECTIVE ACTION FORM ATTACHED VES_NO NIR VES_NO NIR	
	Attach associated CoC record and Conversation Confirmer forms.	
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# ATTACHMENT C COOLER RECEIPT FORM

		he Drogram/Project Chen	nist within 24	f nours or
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Fax this form and the sea				
receiving sample.	•			21
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	recenning bampa	urining.	(One recei	pt form per co	voler)		
	CoC Number	ITELM 0 3	\	- 	-		
	Cooler Number/Name on	Tout Demerius -	pondnormy			L	.*
	Laboratory and Location		U				
٠	Lab SDG	· · · · · · · · · · · · · · · · · · ·		YES	(NO		
	Were custody seals o	n outside of cooler?	*		$\mathbf{U}$		•
	if ves, how many and	where?		YES	NO		
	Were signatures and	dates correct?	?	. YES	NO	85	
5	2. Were custody papers	haped to the manage of cost in a stand out (ink, sign)	ed, etc.)?	(ES	NO	2	
	<u> </u>	papers in the appropriate pli	sce?	CUN VEG			
	4. Did you sight cusion i	r's packing slip to this form?		UN ILD	NU		
	s. What kind of packing	material was	1. B. SICK	1	ć in		
	used?	pertor	<u>ju wrg</u>	YES	NO.	• 8	
	7. Was sufficient ice use	d (If appropriate)		YES	00		
	B. Were all bottles seale	and condition?	~	VES VEE	NU		
	9. Did all bottle labels	complete (number, date, slo	ned, analysis, pres.,	(YED)	NU	•	
	10. Were this better the set		enere?	. YES	NOVEN	at the	15
	11. Did all bottle labels ar	Id tags agree with custous P	арыла	Crés	NO	Ancha	-
	12. Were correct bottles L	ised for the lesion air bubbl	es, and If present no	ted? NAYES	NO		чо Г
	13. Were VOA viais check	t of sample sent in each bot	tle?	YES	NO		6.83
	14. Was summer amount	ilfication number: ILE	-M03				° B
	Temperature blank re	ading 0411244					Paç
	Cooler temperature.	5415147-72	<u><u> </u></u>				
	Identification number	of thermometer	TB	YES	NO		
	16. Is temperature within	4+/- 2°07	Intainers? (not place	ed YES	NO .		
	17. Were labels correctly			VEG	N(C)		•
	CORRECTIVE ACTION FC	IRM ATTACHED	=	160	140		
	CUMPED	ID Dete/Time	10-	•	·		
	Jacobs Project Chemist c		415			•	
		cord and Conversation Co	onfirmer forms.			5 B 5	
	Attach associated 200 10					120	
	Evolalo anv		Ducked for	Shiph.	*		5
	discrepancies:	Coden to De	picora?	pi=		<u> </u>	
	to Seattle	by TestAm	in and	srage			
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	а. <u>х</u>						
		I Dettinget Temporary internet Files OLKBV	Cooler ReceipINEW2001B1.doo	3	1	÷	
	C:\Documents and Settings\downlek\Loca	1 Settini Ast cuthowed, unedied a second set			**;		
			22 C				

	rds to Jacobs Program/Pr	oject Chemist within 24 hours of
Fax this form and the LDC Teco		
receiving sample.	5 51 10 0 7	(or a reasolut form per cooler)

	U E/M A 3 (One receipt for	<u>m per co</u>	ooler)	
1946) - 194 201	CoC Number			
	Cooler Number/Name on Coc			۰.
N	Laboratory and Location 580-25659-1			
	Lab SDG	(F)	NO	( <b>*</b> )
	where custody seals on outside of cooler?	(ES	NU	84
	Were bow many and where?	VED	NO	
	Were signatures and dates correct?	VES .	NO	
	Were custody papers taped to lid inside of cooler?	XES .	NO	
ie.	Were custody papers properly filled out (ink, signed, etc.)	TES	NO	
<u></u>	4 Did you sign custody papers in the appropriate prace.	(TES)	NO	
	5. Did you attach shipper's packing slip to this torm?	$\smile$		
	6. What kind of packing material was Bubble bag		D	/
	used?	(ES)	NO CAN	101
	7. Was sufficient ice used in separate plastic bags?	(YES)	ND	
	B. Were all bottles arrive in good condition?		NO	
	9. Did an bottle labels complete (number, date, signed, analysis, pres.,	YES	ND	
		VEC	NO	05
-	11. Did all bottle labels and tags agree with custody papers?	(TED)	NO	E 7
	12. Were correct bottles used for the tests?	YES	None	ö
	13. Were VOA vials checked for absence of all bubbles, and it process many in each bottle?	(YES)	NO	584
	14. Was sufficient amount of sample sent in each bernor I FLM 03	$\smile$		o U
	15. Chain-oi-custody identification number Uni =0.3 (orr.=0.4			ag
	Temperature Dialik reading Unc. 0.0 Covert 0.1	<u> </u>		щ
	Cooler temperative.	-		
	IDB) (incation name) of the second se	VES	NO	
	Were labels correctly associated with pre-tared containers? (not placed	YES	NO	
	directly on Jars)?	Y <del>ES-</del>	NO NH	
	CORRECTIVE ACTION FORM ATTACHED			
			<u> </u>	
	Jacobs Project Chemist contacted Paroning			
	t the hoppoplated CoC record and Conversation Confirmer forms.			
	Anacii associator o o o			
		2271		
_	discrepancies:	<del></del>		
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Page 685 of 705

	COULLITILOIL	Project Chemist With	ıln 24 houi	rs of		04/
Fax this form and the CoC rect receiving sample.	ords to Jacobs Program			lor)		-
	ILELMOY.	(One receipt for	m per coo			
CoC Number	Unin	- Na descrite	•		. =	
Laboratory and Location	Test Aminci	phillipping				
Lab SDG			· VED	în		
	side of cooler?	A Den 1	YE3 (		·	•
1. Were custouy season our	ə?	ND	YES 1	ND		
Were signatures and dates	correct?		YES (	10		
2. Were custody papers taped	to lid inside of board i	etc.)?				
-3, Were custody papers prope	s in the appropriate place	7	VES I	ND		
4. Did you sign cusious paper	cking slip to this form?	A t	y			
5. What kind of packing mate	rial was bubb	le wrat		n (	オビミ	
used?	appropriate)?		VES		•	•
7. Was sufficient ice used in a	eparate plastic bags?		SES>	NO		
B. Were all bottles arrive in goo	d condition?	d analysis, pres.,	YES	NOX	1.)	<u>مبر :</u>
10. Were all bottle labels comp	piete (number, uale, signa		XNU	t Che	Ander	rite
etc.)?	as agree with custody par	ers?	VES .	NO	10 -00	- 2H
11. Did all police labels and -	for the tests?	and if present noted?	MYES .	NO	ő	86
12. Were VOA vials checked f	or absence of all publies	7	TES	NO	8 - 8	e e
14. Was sufficient amount of a	tion number. ILELN	at Chim		•		ag.
15. Chain-of-custody loenuice	<u> </u>	röd				щ
		+5	i ```			
identification number of th	ermometer	ainore -	YES	NO		
16. is temperature within 4+/-	2°C7	tainers? (not placed	(VA) ^{ES}	NO		
17. Were labels correctly assu	Clarbo war pro tak		YES	NO		
directly on Jais/	ATTACHED					
CUARLO	antad'2 Date/Time	NA .		<u></u>		
Jacobs Project Chemist contr					•	
All the proportiated CoC record	d and Conversation Con	firmer forms.				
Affacil as soonale		1	<b>C</b>	1	10	
Fxplain any	co to he	maded and	Shipp	20		
discrepancles:	BOLA VI				a	
to scattle	8	d.		2.4		
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	а 	1.	5×.			

	and the CoC recc	ords to Jacobs Program	Project Chemist with	nin 24 hours of	04/27
	Fax this form and the coerect receiving sample.		(One receipt for	m per cooler)	0
	CoC Number Cooler Number/Name on CoC	Chum	(Chie (Chie )		
•	Laboratory and Location	580-25654	-1	YES NO	
	<ol> <li>Were custody seals on outs if yes, how many and where Were signatures and dates</li> <li>Were custody papers taped</li> <li>Were custody papers prope</li> <li>Did you sign custody paper</li> <li>Did you attach shipper's pa</li> </ol>	ide of cooler? correct? to lid inside of cooler? orly filled out (Ink, signed, s in the appropriate place cking slip to this form?	eic.)?	YES NO YES NO YES NO YES NO	
	<ol> <li>What kind of packing mater used?</li> <li>Was sufficient ice used (if e</li> <li>Were all bottles sealed in s</li> <li>Did all bottles arrive in good</li> </ol>	appropriate)? eparate plastic bags? d condition? lete (number, date, signe	d, analysis, pres.,	YES NO YES NO YES NO YES NO	и С. с.
	<ol> <li>Were all bottle labels and tag etc.)?</li> <li>Did all bottle labels and tag</li> <li>Were correct bottles used f</li> <li>Were VOA vials checked for</li> <li>Was sufficient amount of si</li> <li>Chain-of-custody identification</li> </ol>	s agree with custody pape or the tests? or absence of air bubbles, ample sent in each bottle tion number:/	and if present noted?	YES NO M YES NO M YES NO MA YES NO	Page 687 of 7(
	Cooler temperature. Identification number of the	ermometer	07 / 0.5 10/ 844/04/	YES NON	
	17. Were labels correctly asso directly on Jars)?	clated with pre-tared cont ATTACHED		TES NO NH	۲ţ.
	Jacobs Project Chemist conta	cted? Date/Time	<u>4-18-11 4:30 v</u>	ra Sample Confer	. neton
	Attach associated CoC record	and Conversation Cont	rmer ionns.		
	Explain any discrepancies:				
	2 20 a		gia la sues e un	and war or worker a	ca – * e-cos
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Page 1 of 1 NonConformance Memo Report 04/18/2011 Date Opened: 04/18/2011 NCM ID: 580-35939 NCM Type: Receiving - COC & Samples Do Not Match Date Closed: Date Verified: Lab Section: login Narrative FH-07A-WG the ambers are labeled as FH-07B-WG. Client wrote 07A on the caps of the ambers. All containers for FH-07B-WG were accounted for and labeled correctly by the client. Lined samples up per sample caps and logged in as FH-07A-WG. ١, Affected Items Project Manager Description Torres, Terri L 🔔 ÷ Login: 580-25659 Torres, Terri L Sample: 580-25659-1 Torres, Terri L Sample: 580-25659-3 Torres, Terri L Sample: 580-25659-2 **Notifications** Verification Type Notice Level <u>Date</u> Date User Full Name Notify Level 1 04/18/2011 Torres, Terri L Review Level 1 04/18/2011 Wunderlich, David ٠

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 Fax this form and the CoC records to Jacobs Program/Project Chemist within 24 hours of receiving sample.

 CoC Number

 Cooler Number/Name on CoC

 Laboratory and Location

 Lab SDG

04/27/2011

Lab SDG VES	NO
Were custody seals on outside of cooler?	
If yes, how many and where ? YES	NO
2. Were custody papers taped to IId Inside of cooler?	NO
3. Were custody papers properly line out (and eight of the place?	NO
5 Did you attach shipper's packing slip to this form?	× 5
6. What kind of packing material was pubble what	NO
Was sufficient ice used (If appropriate)?	
B. Were all bottles sealed in separate plastic bags?	NO NO
9. Did all bottle labels complete (number, date, signed, analysis, pres., Wot che	ched in Arahang
etc.)?	NO P
11. Did all bottle labels and for the tests?	NO
13. Were VOA vials checked for absence of all bubbles, and a provide the second	ND 69
14. Was sumplient amount of carry number. IELM 05/Ch ACOL	e D
Temperature blank reading	e A
Identification number of thermometer	NO
16. Is temperature within 4+/- 2°C?	NO
17. Were labels correctly associated with pic table and the set of	NO
CORRECTIVE ACTION FORM ATTACHED	
Jacobs Project Chemist contacted? Date/Time	

Attach associated CoC record and Conversation Confirmer forms.

Explain any discrepancies:

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Fax this form and the CoC records to Jacobs Program/Project Chemist within 24 hours of receiving sample.	04/27/2
CoĈ Number       II ELMOS       (One reception per coner)         Cooler Number/Name on CoC       In endot       In endot         Laboratory and Location       IA-Sun       IA-Sun         Lab SDG       580-35659-1       NO         1.       Were custody seals on outside of cooler?       If yes, how many and where?       If for the formation provide the provided of the provided of cooler?         1.       Were signatures and dates correct?       If formation provided of the provided of	
<ul> <li>Did you sign custody papers-in-the-appropriate-piade?</li> <li>Did you attach shipper's packing slip to this form?</li> <li>Did you attach shipper's packing slip to this form?</li> <li>What kind of packing material was used?</li> <li>Was sufficient ice used (if appropriate)?</li> <li>Was sufficient ice used (if appropriate)?</li> <li>Were all bottles sealed in separate plastic bags?</li> <li>Did all bottles arrive in good condition?</li> <li>Were all bottle labels complete (number, date, signed, analysis, pres., etc.)?</li> <li>Were correct bottles used for the tests?</li> <li>Were VOA vials checked for absence of air bubbles, and if present notec!?</li> <li>Were VOA vials checked for absence of air bubbles, and if present notec!?</li> <li>Was sufficient amount of sample sent in each bottle?</li> <li>Chain-of-custody identification number. Temperature blank reading Cooler temperature. Identification number of thermometer</li> <li>Is temperature within 4+/-2°C?</li> <li>Is temperature within 4+/-2°C?</li> <li>NO</li> </ul>	Page 691 of 705
17. Were labels correctly associated with pictures of Management and associated with pictures of Management and and and a conversation confirmer forms.       YES NO NA         Jacobs Project Chemist contacted? Date/Time	

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#### ATTACHMENT C TIDT EORM

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COOLER RECEIPT FORM	4/27/
Fax this form and the LBL records to read and the receiving sample.	0
Coc Number Cooler Number/Name on Coc	2 1
Laboratory and Location NK	2
<ol> <li>Were custody seals on outside of cooler?</li> <li>If yes, how many and where?</li> <li>Were signatures and dates correct?</li> <li>Were custody papers taped to iid inside of cooler?</li> <li>Were custody papers taped to iid inside of cooler?</li> <li>Were custody papers properly filled out (ink, signed, etc.)?</li> </ol>	
<ul> <li>4. Did you sign custody papers in the appropriate prace.</li> <li>5. Did you attach shipper's packing slip to this form?</li> <li>6. What kind of packing material was</li> </ul>	×
<ul> <li>What kind of particular is a subset of the second condition?</li> <li>What kind of particular is a subset of the second condition?</li> <li>Write all bottles second condition?</li> <li>Were all bottles arrive in good condition?</li> </ul>	
<ul> <li>9. Did all bottle labels complete (number, date, signed, analysis, pres.,</li> <li>10. Were all bottle labels complete (number, date, signed, analysis, pres.,</li> <li>11. View of the state o</li></ul>	artorige
<ul> <li>11. Did the portect bottles used for the tests?</li> <li>12. Were correct bottles used for the tests?</li> <li>13. Were VOA viais checked for absence of air bubbles, and if present noted? WYES NO</li> <li>14. Was sufficient amount of sample sent in each bottle?</li> <li>15. Chain-of-custody identification number:</li> <li>15. Chain-of-custody identification number:</li> <li>16. High Conference</li> <li>17. High Conference</li> <li>18. High Conference</li> <li>19. High Conference</li> <li>19. High Conference</li> <li>10. High Conference</li> <li>11. High Conference</li> <li>12. High Conference</li> <li>13. Were VOA viais checked for absence of air bubbles, and if present noted? WYES NO</li> <li>14. Was sufficient amount of sample sent in each bottle?</li> <li>14. Was sufficient amount of sample sent in each bottle?</li> <li>15. Chain-of-custody identification number:</li> <li>16. High Conference</li> <li>17. High Conference</li> <li>18. High Conference</li> <li>19. High Conferenc</li></ul>	Page 693 o
Cooler temperature.       Vector       Yes NO         Identification number of thermometer       Vector       Yes NO         16. Is temperature within 4+/- 2°C?       Sector       Yes NO         17. Were labels correctly associated with pre-tared containers? (not placed NAYES NO       NO	
CORRECTIVE ACTION FORM ATTACHED	
Jacobs Project Chemist contacted r Datermic	•
Explain any discrepancies: <u>repack and Ship to Scattle</u>	•
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**Page 694 of 705** 

### ATTACHMENT C COOLER RECEIPT FORM

			vithin 24 hoi	urs of	
Fax this form and the CoC rec receiving sample.	ords to Jacobs Progra	(One receipt	form per co	oler)	
CoC Number Cooler Number/Name on CoC Laboratory and Location Lab SDG		5659			
<ol> <li>Were custody seals on out if yes, how many and when Were signatures and dates</li> <li>Were custody papers tape</li> <li>Were custody papers prop</li> <li>Did you sign custody pape</li> <li>Did you attach shipper's page</li> </ol>	side of cooler? correct? d to lid inside of cooler erly filled out (Ink, signers in the appropriate pli acking slip to this form?	? ed, etc.)? ace?		ND NO NO NO	
<ol> <li>What kind of packing material</li> <li>Was sufficient ice used (If</li> <li>Were all bottles sealed in s</li> <li>Did all bottles arrive in god</li> </ol>	appropriate)? separate plastic bags? d condition? blete (number, date, sig	gned, analysis, pres.,	GODA	NO NO NO	-
<ol> <li>Were all bottle labels connection (10, 10, 10)</li> <li>Did all bottle labels and tag</li> <li>Did all bottle labels and tag</li> <li>Were correct bottles used</li> <li>Were VOA vials checked if</li> <li>Was sufficient amount of a chain of custody identification</li> </ol>	gs agree with custody p for the tests? or absence of air bubb ample sent in each bo tion number:	bapers? les, and if present note ttle? <u>II FLM (</u>	YES YES	NO NO NO KA NO	
<ul> <li>15. Chain-of-busicely readin Temperature blank readin Cooler temperature. Identification number of th</li> <li>16. Is temperature within 4+/-</li> <li>17. Were labels correctly asso directly on Jars)?</li> </ul>	ermometer	0.77 0-4 1.2 / 1.1 10[84464] containers? (not place	d YES	NO NO	
CORRECTIVE ACTION FORM	acted? Date/Time			<u> </u>	
Attach associated CoC recor	d and Conversation C	onfirmer forms.			
 Explain any discrepancies:	×			·	
и з		an 			
	8	R	đ.		
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Page

#### ATTACHMENT C COOLER RECEIPT FORM

Fax this form and the CoC records to Jacobs Program/Project Chemist within 24 hours of receiving sample. (One receipt form per cooler) CoC Number Cooler Number/Name on CoC Laboratory and Location Lab SDG NO YES Were custody seals on outside of cooler? NA 1. If yes, how many and where? YES NO Were signatures and dates correct? NO YES Were custody papers taped to IId Inside of cooler? NO VES -Were custody papers properly filled out (Ink, signed, etc.)? 2. <u>NO</u> XES Did you sign custody papers in the appropriate place?-2 YES NO AN Did you attach shipper's packing slip to this form? 4. 5. What kind of packing material was pher 6. NO YES used? Was sufficient ice used (if appropriate)? AD) YES Were all bottles sealed in separate plastic bags? 7. NO VES Did all bottles arrive in good condition? Β. Were all bottle labels complete (number, date, signed, analysis, pres., YES NC 9. 10. . YES NO Did all bottle labels and tags agree with custody papers? etc.)? (TES) NO 11. Were correct bottles used for the tests? Were VOA vials checked for absence of air bubbles, and if present noted? wYES NO 12. NO Was sufficient amount of sample sent in each bottle? 13. 14. Chain-of-custody Identification number: NELLO 15. Temperature blank reading 2. Cooler temperature. Identification number of thermometer then G r11 YES NO is temperature within 4+/- 2°C? - Sudore Were labels correctly associated with pre-tared containers? (not placed YES NO 16. 17. directly on Jars)? YES NØ CORRECTIVE ACTION FORM ATTACHED NA Jacobs Project Chemist contacted? Date/Time Attach associated CoC record and Conversation Confirmer forms. Explain any discrepancles ۰.

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we call records to Jacobs Program/Project Chemis	t within 24 hours of
Fax this form and the Loc records to based the	
receiving sample.	

	ATTACHMENT C CODLER RECEIPT FORM	7/2011
	Fax this form and the CoC records to Jacobs Program/Project Chemist Whim 24 notate of receiving sample.	04/2
- 0		19
	Cooler Number/Name on CoC Anti Char	
、	Laboratory and Location	
•	Lab SDG 380- 23631	
	YES NO	•
	1. Were custody seals on outside of obtain 2 1 back from (FR) 400	
•	(LES NO	
	Were signatures this taped to lid inside of cooler?	
÷	2. Were custody papers properly filled oul (ink, signed, etc.)?	
	Did you sign custody papers-in-the-appropriate-place?	
	5 Did you attach shipper's packing slip to this form?	
	6 What kind of packing material was	20(
	used? (YES NO	
	7. Was sufficient ice used (if appropriate)	
	B. Were all bottles sealed in separate provide condition?	
	9. Did all bottles arrive in good bernamber, date, signed, analysis, pres.,	
	10. Were all bothe labels bernpiere (	0.5
	Did all bottle labels and tags agree with custody papers?	E 7
-	12 Were correct bottles used for the tests?	õ
	13 Were VOA vials checked for absence of air bubbles, and in present motor VES NO	597
	14. Was sufficient amount of sample sent in each bottler I ELMUT	0
	15. Chain-of-custody identification humber.	ag
	Temperature blank reading	14
	Cooler temperature.	
	Identification nulliber of the momentum view of the	
	16. Is temperature with interview of the social ted with pre-tared containers? (not placed YES NO -	
	17. Were labels contour action NIA	
	CORRECTIVE ACTION FORM ATTACHED	2
	Jacobs Project Chemist contacted ? Daternine	
37	the second and Conversation Confirmer forms.	
	Attach associated Loc record and opinional	
÷	discrepancies.	
	· · · · · · · · · · · · · · · · · · ·	
		12-1 <b>1</b> 2-
	에게 관심했는 것 #CONNENT 10 THE THE Y 및 것 이가 가지 않는 것 같아요. 이가 가지 않는 것 같아. 이가 있는 것 같아. 이가 있는 것 같아. 이가 있는 것 같아. 이가 있는 것 	
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# Shipping Suthinary

**Client Samples:** 

Sets Bottles/Set	Bottle Type Description	Preservative	Method	Matrix	Comments
Sets Bottles/Set	Bottle Type Description Amber Glass 1 liter - Hydrochloric BHIBDER BHIDDIE # BOOS BOOSICINEE BHONE # BHONE # BOOS BOOSICINEE BHONE # BHONE # BOOS BOOSICINEE BHONE # BOOSICINEE BHONE # BHONE # BHONE # BOOSICINEE BHONE # BHONE # BH	Preservative Hydrochloric Acid	Method 1664A_Calc - Polar and Nonpolar Oil and Grease 1664A_Calc - Polar and Nonpolar Oil and Grease	Matrix Water Water Water Water Water Water Water	FOG
	SEA AS 098 SEA 1720 Bate Bate Total Weight Piece Weight Piece Weight Piece Weight Piece Weight	Goldstreak Goldstr	<ul> <li>1664A_Calc - Polar and Nonpolar Oil and Grease</li> </ul>	Water Water Water Water Water Water Water Water Water Water Water	

Please notify us immediately if an error is found in shipment

4/27/2011

### ATTACHMENT C COOLER RECEIPT FORM

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	i we and the CaC rec	ords to Jacobs Progi	am/Project Chemist wi	thin 24 hours of		4/27
	Fax this form and the observe receiving sample.	an al	One receipt fo	orm per cooler)		0
	Number	11 ELMOD /E				
	Coc Number/Name on CoC	ILELMOB / F	Din dexant :		<u>،</u> ۱	12
	Leboratory and Location	128 morth			-	
	Lab SDG					
		-ide of cooler?		YES NO	•	•
	1. Were custody seals on out	SIDE DI CODICI	NA			
	If yes, how many and when		4	VES NO		
	Were signatures and dates	d to Ild Inside of cooler	? .	AFS NO		
	2. Were custody papers htpp:	erly filled out (Ink, sign	ed, etc.)?	ES NO		
	3. Were custody papers prop	rs in the appropriate pl	ace?	YES NO		
	4. Did you sight busiles, per	acking slip to this form	/ <b>/ /</b>			
	5. Did you attacht acking mate	rial was	the work			
	B. What was of parts	_ <u>Dn</u>		TES NO	25 · · · · · · · · · · · · · · · · · · ·	20
	7 Was sufficient ice used (If	appropriate)/		YES (ND)		
	B. Were all bottles sealed in t	separate plaste page		VES NO		
	9. Did all bottles arrive in good	plete (number, date, sl	gned, analysis, pres.,	YED NUT	he lead	
	10. Were all bottle labels com		•	VES NO¥	in	02
	etc.)?	gs agree with custody	papers?	NES NO	Porch	× ⊧-gr
	11. Did all police lapere and	for the tests?	les and if present noted	? NAYES NO	1.0 1.0	5
	12. Were VOA vials checked f	or absence of air budd	Hes, and in processing over a	(ES) NO	· .	00
	Was sufficient amount of a	ample sent in each bu	and I Figure.			6
	15 Chaln-of-custody Identifica	tion number:	JOL TO TO			age
	Temperature blank reading		106	ی بر سبب		д
	Cooler temperature.		145		12	
	Identification number of th		- See Loos	YES NO		
	16. Is temperature within 4+/-	dated with pre-tared o	ontainers? (not placed	NA YES NU	(12)	
	17. Were labels correctly asso			ON VES NO		
	directly on Jais)	ATTACHED				
	COHKELINEADINE		NA			
	lacobs Project Chemist conta	acted? Date/IIme			•	. °
		,	onfirmer forms.			
	Attach associated CoC record	and Conversation o	3	a .		
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	ATTACHMENT C COOLER RECEIPT FORM	11/2011
	Fax this form and the CoC records to Jacobs Programm roject onemotion of the second state of the second st	04/2
2 2	CoC Number     II ELM Uo     (One receipt form per ceoper)       Cooler Number/Name on CoC     Fishil       Laboratory and Location     TH-Suc       Lab SDG     580-35659-1	
	<ol> <li>Were custody seals on outside of cooler?         <ol> <li>Were custody seals on outside of cooler?</li> <li>Were signatures and dates correct?</li> <li>Were custody papers taped to lid inside of cooler?</li> <li>Were custody papers properly filled oul (ink, signed, etc.)?</li> <li>Were custody papers properly filled oul (ink, signed, etc.)?</li> <li>Were custody papers properly filled oul (ink, signed, etc.)?</li> <li>Were custody papers properly filled oul (ink, signed, etc.)?</li> <li>Were custody papers properly filled oul (ink, signed, etc.)?</li> <li>Were custody papers properly filled oul (ink, signed, etc.)?</li> </ol> </li> </ol>	
	<ul> <li>A. Did you sign outside) paper</li> <li>5. Did you attach shipper's packing slip to this form?</li> <li>6. What kind of packing material was used?</li> <li>7. Was sufficient ice used (if appropriate)?</li> <li>8. Were all bottles sealed in separate plastic bags?</li> <li>9. Did all bottles arrive in good condition?</li> <li>9. Did all bottles arrive in good con</li></ul>	
-	<ul> <li>10. Were all bottle labels domplete (use etc.)?</li> <li>11. Did all bottle labels and tags agree with custody papers?</li> <li>12. Were correct bottles used for the tests?</li> <li>13. Were VOA vials checked for absence of air bubbles, and if present noted?</li> <li>14. Was sufficient amount of sample sent in each bottle?</li> <li>15. Chain-of-custody identification number: Temperature blank reading</li> <li>16. Chain-of thermometer</li> </ul>	Page 701 of 705
	16. Is temperature-within 4+/- 2°C? 17. Were labels correctly associated with pre-tared containers? (not placed YES NO 100000000000000000000000000000000000	ini ini - (Brit)
	directly on Jars)? CORRECTIVE ACTION FORM ATTACHED Jacobs Project Chemist contacted? Date/Time Attach associated CoC record and Conversation Confirmer forms.	
: 12	Explain any discrepancies:	
		-
	Dupunpents and Sellings/downlek/Local Sellings/Temporary Internal Files/OLKB/Cooler Receipt/NEW2001B1.doc	



16k argo... ALASKA AIRLINES & HORIZON AIR

P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM

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Storage Locations: COOLER

LOCAL CHARGES :

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Bonded Warehouse

Total Local Charges:	USD	0.00
VAT 0.70%:	USD	0.00
Grand Total:	USD	0.00

PO Number

RECEIPT	STATEMENT
The undersigned acknowledge the receipt c condition.	of above mentioned consignment complete and in good
Date: 18-Apr-2011	
Time: 08:15	Registration:
Driver: CURTIS ARMSTRONG	Signature:

**Page 703 of 705** 

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#### **CoC VARIANCE REQUEST**

Change Requestor:	Sara Hadden	Laboratory Project Manager:	Terri Torres		
Date/Time Requested:	4/19/11	Jacobs Project Chemist:	Sara Hadden		
Jacobs Site Manager:	Cathy Truemper	Jacobs Contracts Administrator	Sarah Nutt		
Project Name/Number	Cherry Hill TO25				
Laboratory Samp Number	le Delivery Group 580-25659				

Action to be taken (add analyses, change turnaround time, delete analysis, etc.): Change sample time

#### **Specific Requirements**

Jacobs Sample Number	Lab Sample Number	Action	Added Cost
FH-SP05A-WG	580- 25659-5	Please change the sample collection time from 1227 to 1427.	N/A
		Total Additional Cost:	0

**Comments/Justification:** 

Authorization:

To ensure proper action is authorized, transmit this form via facsimile to Jacobs Project Chemist for signature approval. Jacobs Project Chemist will sign and return this form via facsimile to the Laboratory Project Manager to initiate change implementation.

**Client Approval:** 

Date: 4/19/11

This form will be used to track changes to the chain-of-custody record and will not be used to modify or increase the value of a delivery order.

Signed Copy Routing: Jacobs Project Chemist, Jacobs Site Manager, Jacobs Contracts Administrator

# Laboratory Data Review Checklist

Completed by: David Summerville
Title: Chemist Date: 6-8-2011
CS Report Name: Fish Hatchery Investigative Sampling Report Date: June 2011
Consultant Firm: Jacobs Engineering Group Inc.
Laboratory Name:       TestAmerica Seattle       Laboratory Report Number:       580-25659-1
ADEC File Number: ADEC RecKey Number:
<ol> <li>Laboratory         <ul> <li>Laboratory</li> <li>a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?                 <ul> <li>Yes □ No □NA (Please explain.)</li> <li>Comments:</li></ul></li></ul></li></ol>
<ul> <li>b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?</li> <li>□Yes □ No ●NA (Please explain.) Comments:</li> </ul>
All samples were analyzed by TestAmerica Seattle.
<ul> <li>2. <u>Chain of Custody (COC)</u></li> <li>a. COC information completed, signed, and dated (including released/received by)?</li> <li>●Yes □ No □NA (Please explain.) Comments:</li> </ul>
b. Correct analyses requested? ●Yes □ No □NA (Please explain.) Comments:

- 3. Laboratory Sample Receipt Documentation
  - a. Sample/cooler temperature documented and within range at receipt  $(4^\circ \pm 2^\circ C)$ ?  $\Box$  Yes • No  $\Box$ NA (Please explain.) Comments:

For cooler "Pink" the temperatures upon receipt at Seattle were  $-0.3^{\circ}$  C (temp blank) and  $0.3^{\circ}$  C (cooler). For cooler "Arctic Grayling" the temperatures upon receipt at Seattle were  $0.7^{\circ}$  C (temp blank) and  $1.2^{\circ}$  C (cooler). For cooler "Sockeye" the temperatures upon receipt at Seattle were  $0.3^{\circ}$  C (temp blank) and  $0.0^{\circ}$  C (cooler). For cooler "Chum" the temperatures upon receipt at Seattle were  $0.2^{\circ}$  C (temp blank) and  $0.3^{\circ}$  C (cooler). For cooler "Chum" the temperatures upon receipt at Seattle were  $0.2^{\circ}$  C (temp blank) and  $0.3^{\circ}$  C (cooler). For cooler "Chinook" the temperatures upon receipt at Seattle were  $0.2^{\circ}$  C (temp blank) and  $-0.2^{\circ}$  C (cooler). For cooler "Coho" the temperatures upon receipt at Seattle were  $0.6^{\circ}$  C (temp blank) and  $1.1^{\circ}$  C (cooler). For cooler "Arctic Char" the temperatures upon receipt at Seattle were  $0.4^{\circ}$  C (temp blank) and  $0.7^{\circ}$  C (cooler). For cooler "Fishie" the temperatures upon receipt at Seattle were  $1.1^{\circ}$  C (cooler). For cooler

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

• Yes  $\Box$  No  $\Box$ NA (Please explain.)

Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
 ●Yes □ No □NA (Please explain.)
 Comments:

One VOA vial each from samples FH-SP01A-WG, FH-SP02A-WG, FH-SP03A-WG had headspace. Prior to analysis it was noted that an additional vial from FH-SP01A-WG and one vial from sample OU5MW12-2011-WG also had headspace.

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
  - •Yes  $\Box$  No  $\Box$ NA (Please explain.)

Comments:

For sample FH-07A-WG the amber bottles were labeled as FH-07B-WG. 07A was written on the caps of the amber bottles. All containers for FH-07B-WG were accounted for and labeled correctly. Lined samples up per sample caps and logged in as FH-07A-WG.

The VOA vials with headspace and temperatures outside of  $4^\circ \pm 2^\circ C$  were documented on the cooler receipt forms.

e. Data quality or usability affected? (Please explain.)

Comments:

The data quality is affected for vials with headspace used for the analysis of 8260 BTEX. The BTEX results may be biased slightly low for sample FH-SP01A-2011-WG and OU5MW12-2011-WG. The sample temperatures outside of acceptable range do not affect the data quality or usability, since there was no note of frozen samples.

#### 4. Case Narrative

- a. Present and understandable?
  - •Yes  $\Box$  No  $\Box$ NA (Please explain.)

Comments:

- b. Discrepancies, errors or QC failures identified by the lab?
  - •Yes  $\Box$  No  $\Box$ NA (Please explain.) Comments:

QC failures are discussed in the relevant sections of this checklist. Additional items identified by the laboratory include:

SW8260 - Several vials had headspace upon receipt at the laboratory (one vial each for samples FH-SP01A-WG, FH-SP02A-WG, FH-SP03A-WG). Two more vials were identified prior to analysis (one vial each for FH-SP01A-WG and OU5MW12-2011-WG). For samples FH-SP01A-WG and OU5MW12-2011-WG, a vial with headspace was used for the analysis. The pH was greater than 2 for sample FH-SP01A-WG. Several samples had significant amounts of sediment and were centrifuged prior to analysis.

- c. Were all corrective actions documented?
  - Yes  $\Box$  No  $\Box$  NA (Please explain.)

Comments:

d. What is the effect on data quality/usability according to the case narrative? Comments:

The data quality is affected for vials with headspace and/or pH> than 2 used for the analysis of 8260 BTEX. The BTEX results may be biased slightly low for sample FH-SP01A-2011-WG and OU5MW12-2011-WG.

#### 5. <u>Samples Results</u>

- a. Correct analyses performed/reported as requested on COC?
  - •Yes  $\Box$  No  $\Box$ NA (Please explain.)

Comments:

b. All applicable holding times met?
●Yes □ No □NA (Please explain.)

Comments:

c. All soils reported on a dry weight basis?
 Yes □ No ●NA (Please explain.)

Comments:

No soil samples were submitted.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

	•Yes $\Box$ No $\Box$ NA (Please explain.)	Comments:
e.	Data quality or usability affected?	Comments:
	The data quality and usability was not affected.	
<u>QC Sa</u> a.	amples Method Blank i. One method blank reported per matrix, analysis ●Yes □ No □NA (Please explain.)	s and 20 samples? Comments:
	<ul><li>ii. All method blank results less than PQL?</li><li>□Yes □ No □NA (Please explain.)</li></ul>	Comments:
	All method blank results were less than ½ the LOQ.	
	iii. If above PQL, what samples are affected?	Comments:
	N/A	
	iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined? $\Box$ Yes $\Box$ No $\bullet$ NA (Please explain.) Comments:	
]	No data flags were required.	
	v. Data quality or usability affected? (Please explain.) Comments:	
<i>,</i>	The data quality and usability was not affected.	
b.	Laboratory Control Sample/Duplicate (LCS/LCSD)	
	<ul> <li>i. Organics – One LCS/LCSD reported per matrix required per AK methods, LCS required per SW</li> <li>•Yes □ No □NA (Please explain.)</li> </ul>	x, analysis and 20 samples? (LCS/LCSD W846) Comments:
	<ul> <li>ii. Metals/Inorganics – one LCS and one sample d samples?</li> <li>□Yes □ No ●NA (Please explain.) Comm</li> </ul>	luplicate reported per matrix, analysis and 2

No metal/inorganic analyses were requested.

 iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Comments:

•Yes  $\Box$  No  $\Box$ NA (Please explain.)

AK102 - The DRO MS/MSD recoveries for sample FH-SP06A-WG were outside of QC limits.

- iv. Precision All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
- Yes  $\Box$  No  $\Box$ NA (Please explain.) Comments:

#### The DRO MS/MSD RPD for sample FH-SP06A-WG exceeds QC criteria.

v. If %R or RPD is outside of acceptable limits, what samples are affected? Comments:

#### FH-SP06A-WG

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  $\Box$  Yes • No NA (Please explain.) Comments:

Sample FH-SP06A-WG does not require a data flag. Data flags are not required when the parent sample concentration is greater than the spike concentration

vii. Data quality or usability affected? (Use comment box to explain.) Comments:

The data quality and usability was not affected.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
 •Yes □ No □NA (Please explain.) Comments:

 Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

•Yes  $\Box$  No  $\Box$ NA (Please explain.) Comments:

- iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
- $\Box$  Yes  $\Box$  No  $\bullet$ NA (Please explain.) Comments:

No data flags were required.

#### iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

The data quality and usability was not affected.

- d. Trip blank Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil
  - i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
  - •Yes  $\Box$  No  $\Box$ NA (Please explain.) Comments:
  - ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below) Comments:
  - •Yes  $\Box$  No  $\Box$ NA (Please explain.)

iii. All results less than PQL? •Yes  $\Box$  No NA (Please explain.)

Comments:

The trip blank results were all less than  $\frac{1}{2}$  the LOQ.

iv. If above PQL, what samples are affected?

Comments:

N/A

v. Data quality or usability affected? (Please explain.)

Comments:

The data quality and usability was not affected.

e. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?
- Yes  $\Box$  No  $\Box$ NA (Please explain.) Comments:

ii. Submitted blind to lab? •Yes  $\Box$  No  $\Box$ NA (Please explain.) Comments: iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil) RPD(%) = Absolute value of: $(R_1 - R_2)$ x 100  $((R_1+R_2)/2)$ Where  $R_1$  = Sample Concentration  $R_2$  = Field Duplicate Concentration • Yes  $\Box$  No  $\Box$  NA (Please explain.) Comments: iv. Data quality or usability affected? (Use the comment box to explain why or why not.) Comments: The data quality and usability was not affected. f. Decontamination or Equipment Blank (If not used explain why).  $\Box$  Yes  $\Box$  No  $\bullet$ NA (Please explain.) Comments: No decontamination or equipment blanks were collected. i. All results less than PQL?  $\Box$  Yes  $\Box$  No  $\bullet$ NA (Please explain.) Comments: N/A ii. If above PQL, what samples are affected? Comments: N/A iii. Data quality or usability affected? (Please explain.) Comments:

The data quality and usability was not affected.

#### 7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

#### a. Defined and appropriate?

•Yes  $\Box$  No  $\Box$ NA (Please explain.)

Comments:

#### ATTACHMENT B-2

Sample Summary
# 2011 Fish Hatchery Sample Summary

CoC ID	Sample ID	Location ID	Collection Date	Time	Sampler	Number of Containers	Container Type	Volume	Preservative	Matrix	Analyses Requested	QC	ТАТ	Sample Depth (feet bgs)	Laboratory	SDG	Cooler ID
11ELM01	FH-BH01A-0-5-SO	FH-BH01	4/12/2011	11:31	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102		30 day	0-5	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH01A-6-9-SO	FH-BH01	4/12/2011	11:52	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102		30 day	6-9	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH02A-0-5-SO	FH-BH02	4/12/2011	12:16	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102		30 day	0-5	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH02A-6-8.5-SO	FH-BH02	4/12/2011	12:35	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102		30 day	6-8.5	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH03A-0-5-SO	FH-BH03	4/12/2011	13:10	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102		30 day	0-5	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH03A-6-10-SO	FH-BH03	4/12/2011	13:15	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102		30 day	6-10	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH04A-0-5-SO	FH-BH04	4/12/2011	14:47	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102		30 day	0-5	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH04A-6-6.5-SO	FH-BH04	4/12/2011	14:52	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102		30 day	6-6.5	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH05A-0-5-SO	FH-BH05	4/12/2011	15:28	CT/EB-K	2	Amber	8 oz	4°C	SO	AK102	MS/MSD	30 day	0-5	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH05A-6-10-SO	FH-BH05	4/12/2011	16:06	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102		30 day	6-10	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH06A-0-5-SO	FH-BH06	4/12/2011	17:05	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102		30 day	0-5	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH06A-6-10-SO	FH-BH06	4/12/2011	17:25	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102		30 day	6-10	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH07A-0-5-SO	FH-BH07	4/12/2011	17:37	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102		30 day	0-5	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH07A-6-10-SO	FH-BH07	4/12/2011	17:56	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102		30 day	6-10	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH03B-0-5-SO	FH-BH03	4/12/2011	13:10	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102	DUP	30 day	0-5	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM01	FH-BH05B-0-5-SO	FH-BH05	4/12/2011	15:28	CT/EB-K	1	Amber	8 oz	4°C	SO	AK102	DUP	30 day	0-5	TestAmerica Seattle	580-25610	Rainbow Trout
11ELM02	FH-SP01A-WG	FH-SP01	4/13/2011	10:15	CT/EB	3	VOA	40 ml	4°C, HCI	WG	SW8260		30 day		TestAmerica Seattle	580-25659	Pink
11ELM09	FH-SP01A-WG	FH-SP01	4/13/2011	10:15	CT/EB	2	Amber	1 L	4°C	WG	SW8270		30 day		TestAmerica Seattle	580-25659	Arctic Grayling
11ELM09	FH-SP01A-WG	FH-SP01	4/13/2011	10:15	CT/EB	2	Amber	1 L	4°C, HCI	WG	AK102		30 day		TestAmerica Seattle	580-25659	Arctic Grayling
11ELM02	FH-SP02A-WG	FH-SP02	4/13/2011	11:50	CT/EB	3	VOA	40 ml	4°C, HCI	WG	SW8260		30 day		TestAmerica Seattle	580-25659	Pink
11ELM09	FH-SP02A-WG	FH-SP02	4/13/2011	11:50	CT/EB	2	Amber	1 L	4°C	WG	SW8270		30 day		TestAmerica Seattle	580-25659	Arctic Grayling
11ELM09	FH-SP02A-WG	FH-SP02	4/13/2011	11:50	CT/EB	2	Amber	1 L	4°C, HCI	WG	AK102		30 day		TestAmerica Seattle	580-25659	Arctic Grayling
11ELM02	FH-SP03A-WG-IP	FH-SP03	4/14/2011	10:04	CT/KC	3	VOA	40 ml	4°C, HCI	WG	SW8260		30 day		TestAmerica Seattle	580-25659	Pink
11ELM02	FH-SP03A-WG-IP	FH-SP03	4/14/2011	10:04	CT/KC	2	Amber	1 L	4°C	WG	SW8270		30 day		TestAmerica Seattle	580-25659	Pink
11ELM02	FH-SP03A-WG-IP	FH-SP03	4/14/2011	10:04	CT/KC	2	Amber	1 L	4°C, HCI	WG	AK102		30 day		TestAmerica Seattle	580-25659	Pink
11ELM02	FH-SP04A-WG-IP	FH-SP04	4/14/2011	12:25	CT/KC	3	VOA	40 ml	4°C, HCI	WG	SW8260		30 day		TestAmerica Seattle	580-25659	Pink
11ELM03	FH-SP04A-WG-IP	FH-SP04	4/14/2011	12:25	CT/KC	2	Amber	1 L	4°C	WG	SW8270		30 day		TestAmerica Seattle	580-25659	Sockeye
11ELM03	FH-SP04A-WG-IP	FH-SP04	4/14/2011	12:25	CT/KC	2	Amber	1 L	4°C, HCI	WG	AK102		30 day		TestAmerica Seattle	580-25659	Sockeye
11ELM02	FH-SP05A-WG	FH-SP05	4/14/2011	14:27	CT/KC	3	VOA	40 ml	4°C, HCI	WG	SW8260		30 day		TestAmerica Seattle	580-25659	Pink
11ELM04	FH-SP05A-WG	FH-SP05	4/14/2011	14:27	CT/KC	2	Amber	1 L	4°C	WG	SW8270		30 day		TestAmerica Seattle	580-25659	Chum
11ELM04	FH-SP05A-WG	FH-SP05	4/14/2011	14:27	CT/KC	2	Amber	1 L	4°C, HCI	WG	AK102		30 day		TestAmerica Seattle	580-25659	Chum
11ELM02	FH-SP06A-WG	FH-SP06	4/14/2011	15:10	CT/KC	9	VOA	40 ml	4°C, HCI	WG	SW8260	MS/MSD	30 day		TestAmerica Seattle	580-25659	Pink
11ELM06	FH-SP06A-WG	FH-SP06	4/14/2011	15:10	CT/KC	6	Amber	1 L	4°C	WG	SW8270	MS/MSD	30 day		TestAmerica Seattle	580-25659	Coho
11ELM07	FH-SP06A-WG	FH-SP06	4/14/2011	15:10	CT/KC	6	Amber	1 L	4°C, HCI	WG	AK102	MS/MSD	30 day		TestAmerica Seattle	580-25659	Arctic Char
11ELM02	FH-SP07A-WG	FH-SP07	4/14/2011	13:13	CT/KC	3	VOA	40 ml	4°C, HCI	WG	SW8260		30 day		TestAmerica Seattle	580-25659	Pink
11ELM04	FH-SP07A-WG	FH-SP07	4/14/2011	13:13	CT/KC	2	Amber	1 L	4°C	WG	SW8270		30 day		TestAmerica Seattle	580-25659	Chum
11ELM04	FH-SP07A-WG	FH-SP07	4/14/2011	13:13	CT/KC	2	Amber	1 L	4°C, HCI	WG	AK102		30 day		TestAmerica Seattle	580-25659	Chum
11ELM02	FH-SP03A-WG-PP	FH-SP03	4/14/2011	9:34	CT/KC	3	VOA	40 ml	4°C, HCI	WG	SW8260		30 day		TestAmerica Seattle	580-25659	Pink
11ELM05	FH-SP03A-WG-PP	FH-SP03	4/14/2011	9:34	CT/KC	2	Amber	1 L	4°C	WG	SW8270		30 day		TestAmerica Seattle	580-25659	Chinook
11ELM05	FH-SP03A-WG-PP	FH-SP03	4/14/2011	9:34	CT/KC	2	Amber	1 L	4°C, HCI	WG	AK102		30 day		TestAmerica Seattle	580-25659	Chinook
11ELM02	FH-SP04A-WG-PP	FH-SP04	4/14/2011	12:10	CT/KC	3	VOA	40 ml	4°C, HCI	WG	SW8260		30 day		TestAmerica Seattle	580-25659	Pink
11ELM05	FH-SP04A-WG-PP	FH-SP04	4/14/2011	12:10	CT/KC	2	Amber	1 L	4°C	WG	SW8270		30 day		TestAmerica Seattle	580-25659	Chinook
11ELM05	FH-SP04A-WG-PP	FH-SP04	4/14/2011	12:10	CT/KC	2	Amber	1 L	4°C, HCI	WG	AK102		30 day		TestAmerica Seattle	580-25659	Chinook
11ELM02	FH-SP07B-WG	FH-SP07	4/14/2011	13:13	CT/KC	3	VOA	40 ml	4°C, HCI	WG	SW8260	DUP	30 day		TestAmerica Seattle	580-25659	Pink
11ELM08	FH-SP07B-WG	FH-SP07	4/14/2011	13:13	CT/KC	2	Amber	1 L	4°C	WG	SW8270	DUP	30 day		TestAmerica Seattle	580-25659	Fishie
11ELM08	FH-SP07B-WG	FH-SP07	4/14/2011	13:13	CT/KC	2	Amber	1 L	4°C, HCI	WG	AK102	DUP	30 day		TestAmerica Seattle	580-25659	Fishie
11ELM02	FH-TB-WG	TB	4/13/2011	8:00	CT/EB	3	VOA	40 ml	4°C, HCI	WG	SW8260	TB	30 day		TestAmerica Seattle	580-25659	Pink
11ELM08	OU5MW12-2011-WG	OU5MW12	4/15/2011	12:15	CT/EB	2	Amber	1 L	4°C	WG	SW8270		30 day		TestAmerica Seattle	580-25659	Fishie
11ELM08	OU5MW12-2011-WG	OU5MW12	4/15/2011	12:15	CT/EB	2	Amber	1 L	4ºC, HCI	WG	AK102		30 day		TestAmerica Seattle	580-25659	Fishie
11ELM02	OU5MW12-2011-WG	OU5MW12	4/15/2011	12:15	CT/EB	3	VOA	40 ml	4°C, HCI	WG	SW8260		30 day		TestAmerica Seattle	580-25659	Pink

<u>Notes</u>: L - liter, ml - milliilter, oz - ounces DUP = duplicate HCL = hydrochloric acid MS/MSD = matrix spike/matrix spike duplicate SO = soil VOA = volatile organic analysis WG = groundwater

#### **APPENDIX C**

Field Logbook and Data Forms







"Lite in the Lain" ALL-WEATHER ENVIRONMENTAL No. 550

05552507

JUNE DOID - JAPT - DE

GROWNID JATEL

SCANNED 9/12/11 AKERS-UR-Ø5F525-HØ4-ØØØ8

Location Fish Heitering Date 4/12/11 Project/Client US+F CTYEB-K Sunny 45-905 7.20 arrive at work site 7:30 Ger tek corrives, conland rig alter torefly discussing un landing Sattery providures 7:45 Personnel to tranker for HARCOM Y SPA discussions 9:20 unload & Set yp Calibrate Petroflag Blank = 0 Cal Stol = 1999 -redo -Blank = 0 CalStol = ER 10:39 BHOI Complete Dipth = -151 4,3C 1033 Screening 1 - BHOIA-05 \$ 91 GW 979' 10.09 11:31 1-DRO YOZ SAT DW=91

Location Fish Hautchery Date 4/12/11 2 Project/Client USAF CTTEB-K Sunny 405 150 Screening 2 BHOI 6-9 11:52 10,79 9.79 R=15 10R0 402-44 BHC2 78.5 to ground weeks 11.38 Sevening \$ BH02 0-51 9.90 Reachor = 571 DRO Yoz sar = 12:16 12:30 Sreeningy BH 02 6-8.5 10.29 Krachy = 295 DRO 402 jar -12:35 13:00 Screening 5 BH05 0-51 10.3g Reading = 157 DRO + Dup -13:10 Dup Depth to water BHO3 = 10) 13:15 Screensing 6 BHOS 6-10 10.19 Reading = 345 DRO 402 jar -15:15 BHOY DTW-6.5 14:38 Screening 7 BHOY 0-5' 9.89 Reading = 723 DRO 402 jar -14:47 14:59 Screening 8 - \$H04 6-6.5 (Dr. real 9.8-10:20 Reading = Err 4 Copaque white Reading 449 Dirty Sample - alor DRO 402 Sar = 14:52

Date _ 4/13/11 25 Date 4/12/11 Location Hatchery Location Fish Hatchery Project / Client <u>NSAF</u> CT & EB & 40 23° Sunny Project / Client USAF CT & E B-K + Geo Tek 7:30 Arrive onsite - Teilgate Safety topic - Slippery mud, Traffe 15:55 Screening 9 BH 05 0-5' 9.89 10,59 Reading Er 9.89 DRO YOR SAF X 3 15:28 MS/MSD 8:00 Setup at BHOI Sp 16 Total Depth 17.83. Stick up = 3.8 DTW = 11.88 (From top of Casing) 17:02 Screening 10 BH 05 6-10 Dup2 10.1g Reaching = 203 9.9g DRO 402 var - 16:06 17:35 Screening 11 BH06 0-5-989 690 DRO 402 jar = 17:05 purch GW - highly turkid Turbidity meter = E3 used iner Hal fump method, then Baiter Purged ~ Igal, no change 18:00 Screening 12 BH 06 6-10-Peacling= 9.99 254 DRO 402 Jar - 17:25 Called office to discuss use of peristultie pump temorrow. - Will use both ment. al method and Screening 13 BH07 0-5' peristal tic to collect 2 sets off Samples from 2 wells to more 9,99 Reading = DRO-402 jas -17:37 Sample FH-SPOIA-WE Collected 10:15 3× 40 AS Vecs 2×12 un preserved SUOCS Steening 14 BHOY 6-10 ZX IL HCI preserved DRO 9.9 Reading 47 DRO-402'Sar-17,56

Location Hatchery Date 4/14/1(27 Date 4/13/11 Location Hatchery Project / Client <u>USAF</u> Project / Client USAF Sunny CTTKC (Kenton Curts) ~ 38 Sunny CTTERK 7:10 pickup kenton 7:25 arrive on spe suferty mig kenton meets w/ste solety Kuwest 11:29 Drill \$ 16 at BH02 GW28,5 put in to 214 purge ~ (gal al Inor 10al pump (IP) Very Turbid (Reading = 23) Set up at \$ 03 use perista NAC pump to reduce forbidity Collect Sample at 11:50 3 X VOAS WHEL DOCS 2XIL WIHCI BORD Collect sample from peristallic 9:34 LX (L unpres. SUDCS VOCS, SLOCS, ODRO FH-SPOSA-WE-AP Finish at BHOZ af 12:20 Collect sample from merthal fung Pack up & take lunch at 10:04 LOCS, SLOES, PDRO(-I) Ve not to East Sale of Site Arrive back at East Side of Site 13:00 Started gathering materials setupat spoy (IP + PP) together when ETRabeth was Fmishing her Lunch. As she 12:11 Collect SPOYA - WBPP (Peristaltic) 2 × 11 10 Prof SUPER was putting on herppe to Joon me, She sliced her Huger 2 XIL inpres. SUDCS on a broken dog dosh in the 2XIL HCL DRO 3 x VOAS VOCS 12:10 back of her vehicle, Turbed 14 = 41.0 Cathy drove her to the doctor 123 Collect SPOYA WGIP (Inertal and the drillers were dismissed Sample time = 12:25 Pump) after we lett. Samples were Turbedity = "ES" Haply Turbed dropped off in the tase ment finder, 2XIL un pres SUDCS 20:23 Incident Reporting Sit rep

Sample time =

Location Hatchery Date 4/14/11 Project / Client <u>USAF</u> CTAKC ZXIL HOL DRO 3 X 40 ml WOAS LOCS 12:20 CT-Stup at Spo7 The turbidity seems to go right back up as soon as the inertial pump is used. SP07, 06, 405 will be collected with ust the inershal pump. Even using the peristal the pump to purge does not affect reduce the Furbidity in the IP Sample. 12:30 Nell Kinnebrew arrives onsite Load cooters into his vehicle, Call Tracy to demot the tables Coordinate \$069 \$05 locations for the drillers Collect Sample FH- SPO 7A-WG 13:13 w/ Iner Hal pump. - Turbed Cur Collect Duplicate FH-SpozB-WG BX YOULUOAS DOCS

Location Hartchery Date 4/14/11 29 Project / Client USAF CTAKC 4x IL HCI UKO 4x 12 unpres. SUDES Neil left the Site) 19.18 Set up at \$P05 (In Readway) parked car to block traffic, set up Orange poles before car, (no safety tape, must have been taken w/ Kristi) 14:27 Collect Sample FH-SP05A-GG ul inertval pump. SX UBAS, ZXIL, ZXIL WHOI Reset Sport - no water in well I had something hard at - Reft. Reset to 23ft Southeast of initial point. MSTOSS purge 2 0,5921 w/ Inortial MSTOSS pump. Sample EU mil at 15:10 (MS/MSD) 9x UDAS 6XIL WHICL 6XIL Pack SUV, Store punge water Demot 16:30

Location_Hatehery____ Date _4/15/11 Project / Client URAF CTYEBK Sunny 15°C 8:00 Calibrate YSI pH: 10 -> 10.03 -> 10.11 7 7.03 -> 7.04 4 4. 3.99-74.00 Cond 1147 -7 1.147 ORP 246.3 -9201.4 DO 98.2 -9 00,9% get (Tailgate MTB) Indepth hard - Solehy abens and mobilize equipment to well 9:40 Monscore pump doesn't work Open up pump, check motor, retry - doesn't work no roise atall YSI vature connector broke off in tubing. 10:54 9-40 Begin purging - Good recharge Take USI readings 12:15 Sample - # FH- 045mw124-2011-45 3× 10AS 100CS ZX ILW/HCI DRO

Date 4/15/11 31 Location Hatchery Project / Client USAF CT9EB-K XXIL unpres Sibles 12:20 Kelly Mc Covern Stopped to talk 15:00 Decon equipment Store purge water in Sec. contained. Waste total: 2 x 5gal Buckets Soil Cutomgs 4 x 5gal Buckets (Rull) of 1 gal drum of methanol 14:05 Informed DOT we have denoted - Monsoon pump - used replacen. pump. - Broke connector on 1SI Wrote up coes for 8 coolers 18:25 Drepped off Samples at 18:25 20:00 S.YREP

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Site Name: I	Environmental	Complianc	e Projects		Well I	D: FH-S	P <i>€  </i>	Acce	eptable I	Range for Well	
Site ID: Ship	Creek Fish H	latcherv	-		Well Typ	e: Moni	tor-SP16	oH Sta	Dilizatio	± 0.1	
Project #: 05	F52507	,				Extra	ction	Conductiv	vity	± 3%	
Date: 4/j3/2	2011			w	ell Materia	al: PV <u>C</u>		Temperat	ture	±0.1 °C	
Start Time: 4	7:15					Stain	less Steel	Turbidity		±10% or 1 NTU	
Finish Time:	11:10			W	ell Integrit	y: Excé	llent	DO		10% or ± 0.2 mg/L	
Sampled By:	: CT/KB					Good	I	ORP		± 10 mV	
PID Reading Weather Cor	: Not taken, te nditions:	emporary Sl	P16 well			Fair Poor				2	
Probe Type:		Interface	>	Cas	ing Diame	eter (in)	Gallons/L	inear Foot	C	asing Radius ² (ft)	
	Electronic	Water Indi	cator		2	、 、	0	.17		0.0069	
	Other				( 0.5	)	0	.01		0.000434	
			·······	Purging	j Informa	tion	s location	n = 11:04	1 to 64	2, 12.16 To botto,	m - refu
	0:30		Depth to GV	1 1.2	3831 U	picor.		Purg	jing Equ	lipment	
Start Time:	10:10		Total Depth	of Casing	17	83		- And and a second s		2	
Finish Lime:	p.rq		Product Lev	el:				$\sim$	nertial P	ump C	
								Sub	mersible	e Pump	
Casing Volu	me (Gallons) =	= 3.14 x (_0	.000434) x (				) x 7.48 =		Gall	ons x 6 =	
		Casi	1g Radius ² (ft)	T.D.	. of	Dep	th to			C analise sector	
			\ /	Casin	g (ft)	GW	<u>(Π)</u> - <u>Δotu</u>	al Volume E	Purned	o casing volumes	
Time	Volume	pH	Conductivity	Temp	erature	Turbid	ity E		ORP	Water Level	
(HH:mm)	(Gallons)	(Ś.U.)	(µS/cm)	<u>(°F)</u>	(°C)	(NTU	) (m	g/L)	(mV)	(feet btoc)	
9.57	1.0					83-7	Furbed				
						-		- 1			
		1									
Color				n	-				con	tinued on back of form ->	
Clear		None	Good	Puri Ye	s No		Mete	rs Usea YSi		Discharge Water	
Cloudy		Faint	recharge		Ű	)	<u>Hori</u>	ba U-22		Treated	
Yellow		Moderate	, ,	S	heen		Hach T	urbidimətər	>	Discharged	
Brown		Strong		Ye	<u>s. No/</u>					Stored)	
Data di la	12.2			Sampling	g Informa	tion					
Start Time: 1	0:15						Samp	ling Equip	ment		
Finish Time:	10:47					_					
Depth of Tub	ing: 13,2	-			E	Bailer 🤇	Inertial Pum	p Subme	ersible P	ump PDB	
_iron (Fe 2+) :	mg/L: Not sam	pled									
Sa	mple ID #	V	olume/Container	Analy	/sis Requ	ested	Preser	vative		Comments	
FH-SP <u>⊘ í</u> A	-WG		3 x 40 mL VOA	VOC	Cs (SW82	60B)	4C, 1				
FH-SP <u>Ø/</u> A	-WG	2:	< 1 L amber glass	DF	RO (AK 1	02)	4C, 1	ICI			
FH-SP <u>()</u> A	-WG	2:	x 1 L amber glass	SVOCs	s (SW827	DC SIM)	40	;			
						۰.	*		•		
		<b>I</b>	-								
				Other Sa	ample Ty	pes					
QC	Duplicate San	nple #	Q,	A Triplica	te Sample	e #		Trip	Blank Sa	ample #	
~FH-SPB	-WG						- <del>FH-</del> TI	01-WG	Ste 7-		
					-		J-H	- TBOJ -	-W6		



Site Name: Environmental Compl	iance Projects		Well I	D: FH-S	19 <u>02</u>	Acce Stat	ptable R	ange for Well Parameters
Site ID: Ship Creek Fish Hatchery	1		Well Typ	e: Moni	tor-SP16	pН		± 0.1
Project #: 05F52507		10/	all Materia	Extra	oction	Conductiv	ity	± 3%
Start Time: 11 29		VV	ell Materia	al: PVC	loss Steel	Temperati	ure	± 0.1 °C
Finish Time: $17, 227$		w	ell Integrit		lless Steel	DO		10% or 1 NIU
Sampled By: CT/KB			en nitegrit	Good		ORP		± 10 mV
PID Reading: Not taken, temporal	ry SP16 well			Fair				
Weather Conditions:				Poor				
Probe Type: Oil/Water Interfac		Cas	ing Diame	eter (in)	Gallons/L	inear Foot	Ca	sing Radius ² (ft)
Cther	Indicator		0.5	)		.17 01		0.0069
			0.0	·	<u> </u>			0.000434
	D th A	Purging	1 Informat	tion				
Start Time: 11.'33		o GVV:ノム。J onth of Casing	>     ->	<b>,</b> ,		Purg		pment
Finish Time:	Produci	t Level:	* 1/c ð				ertial Pu	no
12.15	Amount	t of Product:				Subr	mersible I	Pump
					<b></b>			
Casing Volume (Gallons) = 3.14 x	: (_0.000434) x (	 		Dent	) x 7.48 =		Gallo	ns x 6 =
	Casing Radius ² (ft)	Casin	g (ft)	GW	(ft)		e	casing volumes
					Actua	al Volume P	urged	Gallons
Time Volume pl (HH:mm) (Gallons) (ST	Conductiv	vity Temp	erature	Turbidi	ity D	0	ORP	Water Level
11'HE D	(μο/οιιι		(0)	1 i		<u>, , , , , , , , , , , , , , , , , , , </u>	(/// • /	
			U	242				
								·· <b>·</b>
	<u> </u>			_ <b>_</b> .				
·								
ColorOd		Pure	red Dry2		Meter	re lleod	contin	Discharge
Clear No	Re Good	Ye	s (No)		meter	rsuseu		Water
Cloudy Fa	int Dack		haan?		Horik	oa U-22		Treated
Brown	ong Keck	) Ye	s (No)			Irolaimeter	>	Stored
						-		$\sim$
Date: 4 - 12 - 11		Sampling	g Informa	tion	Samal	ing Equipe		
Start Time:					Sampi	ing Equipi	ient	
Finish Time:			B	ailer 🦳	nertial Pumr	Subme	reible Puu	
Iron (Fe 2+) mg/L: Not sampled								ip i bb
			· · · · · ·	. ,		<u>.</u>		
Sample ID #	Volume/Contain	<u>ner   Analy</u>	vsis Requ	ested	Preserv	ative	C	omments
FH SPOXAWO	3 X 40 mL VO/		JS (SW 826	50B).	4C, H			
	2 x 1 L amber gla		KO (AK 10	12)	4C, H			
FH-SP_07A-WG	2 x 1 L amber gla	ass SVOCs	(SW8270	C SIM)	. 4C			
u			<u> </u>					
				5			<u> </u>	
	- <b>W</b>							
		Other Sa	ample Typ	es `	<u>.</u>		<u>.</u>	
QC Duplicate Sample #		QA Triplicat	te Sample	# *		Trip B	llank San	ple#
FH-SPB-WG				G	FH-TB	<u>01-</u> WG		



	Site Name: E	Environmenta	I Complia	nce Pr	ojects		Well	D: FH-S	R103	Accep	otable F	Range for Well
	Site ID: Ship	Creek Fish H	latchery				Well Typ	e: Monif	or-SP16	pH Stab	mzatio	$\pm 0.1$
	Project #: 05	F52507						Extra	ction	Conductivi	tv	± 3%
	Date: 4//4/2	2011				w	ell Materi	al: PVC		Temperatu	re	±0.1 °C
	Start Time: d	5: 35						Stain	less SteeD	Turbidity		+10% or 1 NTU
ĺ	Finish Time:	10:30				w	ell Inteori	V. Fxce	lient	DO		10%  or  + 0.2  mg/
	Sampled By:	CT4KB RC	_				o	Good		ORP		+ 10 mV
	PID Reading	: Not taken, t	- emporary	SP16	well			Fair		U.U.		7.10104
	Weather Cor	nditions:		0. 10	i di			Poor				
	Probe Type:	<b>Oil/Water</b>	r Interface	$\geq$		Cas	ing Diam	eter (in)	Gallons/L	inear Foot	Ca	asing Radius ² (ft)
		Electronic	c Water Ir	idicato	r		2		0.	17		0.0069
		Other					0.5	>	0.	.01		0.000434
۔ ۲	-				-							
-					Depth to ClA	Purging	j Informa ि४	tion				
	Start Time:	7:00			Depth to Gw	1: / 3,0 of Coning	~~ 	-7		Purgi	ng Equ	
	Start Time.	10:02			Dreduct Leve	or Casing	<i>i1</i> ,2,	/			Baller	De Corister/
	Finish time:	IUIUM			Product Leve	9I: •					ertial Pi	imp TTCI II II
ł					Amount of P	roduct:				Subr	nersible	Pump
	Casing Volum	ne (Gallons)	= 3.14 x (	_0.000	1434_) x (				) x 7.48 =	:	Gallo	ons x 6 =
			Ca	ising F	Radius ² (ft)	T.D	. of	Dept	th to			
ŀ						Casin	g (ft)	GW	(ft) 	al Valuma Di	ure od	6 casing volumes
ŀ	Time	Volume	nH		Conductivity	Temn	erafure	LTurbidi	ity D		<u>משר</u>	Water Loval
	(HH:mm)	(Gallons)	(S.U.	)	(uS/cm)	(°F)	(°C)	(NTU	) (me	JL) (	mV)	(feet btoc)
	9:27 -	- Derista	allic					377	<u> </u>		· · ·	
-	9:75		1770			-		811				
⊢	1.61							09.1				
Ļ	<u> 1-22</u>							38,6				
	4:34							23.5	-			
ſ	10.07	1.00110	1					52				
F	proc.		La la L		acorta llar			00				
╞		~ (gav) *	<u>forn</u>	W	servisia (Pric)	/						
-			_									
									[	_		
F	Color		Odo	r.		Pur	red Dry?	)	Mete	rs Used	cont	Discharge
	Clear		Non	$\sim$		Ye	s (No)	)		YSI		Water
	Cloudy		Fain	t					Horit	<u>ba U-22</u>		Treated
	Yellow		Moder	ate		S	heen?	<b>`</b>	Hach Tu	urbidimeter	>	Discharged
	Brown		Stron	<u>g_</u>		Ye		)				Stored
E		~				Samplin	g Informa	ation				
	Date: 4/19/	H.	5.00.1						Samp	ling Equipm	ent	h
	Start lime: p	2015-01-1-1	.959	<u>انان</u>	Jul: 0.04	ſ			68	DEOIS-	Taller	Pune .
	Depth of Tubi	1143	15 le	27.ZC	2		E	Bailer 🤇	nertial Pum	Submer	Sible Pi	PDB
L	Iron (Fe 2+) n	ng/L: Not san	npled									•
┝	Sar	mole (D #		Volun	o/Containar	Analı	ia Dom		Branch			
4		WG=rp		3 v 2			2010/12/12/12/12/12/12/12/12/12		-reserv			comments
( -	<u> </u>	wo <p< td=""><td></td><td>041</td><td></td><td></td><td></td><td>2006)</td><td>40, 1</td><td></td><td></td><td>·</td></p<>		041				2006)	40, 1			·
ŀ		-WG-J/		2 X 1 L	. amber glass	<u>الل</u>	RU (AK 1	02)	4C, F			
	<u>_</u> EH-SP <u>Q'</u> S_A	-WGJP		2 x 1 L	. amber glass	SVOCs	(SW827	OC SIM)	40	; 		
\$	<u>FH-SP03A</u>	-ind PP		<u>324</u>	OmLUDA	Vo	<u>es</u>		<u> </u>	IC/		
╞		LIKRE		ZXI	L	OR	0		4CH	'C/		
	ELL-SPO3 A	~~~~							Ur	-t		
	<u>FH-SPO3A</u> 	46-89		しょう			Юc		97			
	<u>FH-SPO3A</u> ^E H-SPO3A-l	us-fp		2X1	2	_Svc	<del>Сç</del>		<u>7C</u>			*
	F <u>H-SP03A</u> ^E H-Sp03A-l	us-fp		2X1	2	C	<u>PCS</u>		<u> </u>			
	FH-SP03A-C	Dunlicate Sar	mple #	281		Other Si	ample Ty	/pes	<u> </u>	Trin P	lank Sa	;
	FH-SPOSA- FH-SPOSA-C QCI	2007 200 - PP Duplicate San	nple#	281		Other St	ample Ty te Sample	v <b>pes</b> e #			lank Sa	mple #



Site Name: En	vironmental	Complia	ance Pro	jects		Well I	D: FH-S	P04	Acce	ptable R	ange for Well
Site ID: Ship C	reek Fish H	atcherv				Well Typ	e: Monif	or-SP16	οHα H	mzativi	± 0.1
Project #: 05F5	52507						Extra	ction	Conductiv	ity	± 3%
Date: 4/14/201	11				We	l Materia	al: PV <u>C</u>		Temperatu	ure	± 0.1 °C
Start Time: 1	100						Stain	less Steel	> Turbidity		±10% or 1 NTU
Finish Time: /	3:10				We	ell Integrit	y: (Exce	lent) -			10% or ± 0.2 mg/L
Sampled By: C	TIM KC					-	Good		ORP		± 10 mV
PID Reading: N	Not taken, te	emporary	y SP16 v	well			Fair				
Weather Cond	itions:		-				Poor				
Probe Type: <	Oil/Water	Interfac	e		Casi	ng Diame	eter (in)	Gallons	/Linear Foot	Ca	sing Radius ² (ft)
	Electronic	Wateri	ndicator			2			0.17		0.0069
	Other					(0.5)	)		0.01		0.000434
<u></u>					Puraina	Informa	tion				
<u> </u>	_			Depth to GW	:8,01				Pura	ina Eaui	oment
Start Time: 11-	:50			Total Depth	of Casing	: /7 . 7	9		3	Bailer	
Finish Time:				Product Leve	1: 8.00	2	•		- Tr	ertial Pu	mp Persnitt
				Amount of P	roduct: O	,01			Sub	mersible	Pump
						• (					<u> </u>
Casing Volume	e (Galions) =	= 3.14 x (	(_0.0004	434) x (	T.D.	 of	Dept	) x 7.48 th to	=	Gallo	ons x 6 =
		C	asing R	adius~ (ft)	Casing	g (ft)	GW	(ft)			6 casing volumes
								Ac	ual Volume P	urged	Gallons
Time	Volume	pH (SU		Conductivity	Tempe	erature	Turbidi	ity /	DO	ORP	Water Level
(IIIII)	(Gallons)			(µS/cm)		(-0)		<u> </u>	ng/L)	<u>(mv)</u>	
11.05	141570	<u>i / jič</u>					23				
1.50							344				
11:59							74.7	-			
12:07	alad						un				
100	<u></u> 9«1						1110				
12:25	Laer	7a					23				
							-				
										conti	inued on back of form>
Color		Odd	or		Purg	ed Dry?		Me	ters Used		Discharge
Clear		Nor	ne 		Ye	s (No)			YSI		Water
Yellow		Faii Mode	nt rate		ci			Hach	<u>nba U-22</u> Turbidimeter	~	I reated Discharged
Brown		Stro			Ae	S) No		Hadin			Stored
-		$\sim$	×								
Data: 1 111	11				Sampling	Informa	ation				·
Start Time: 0 :	17:10	TID	1:25	-				San		pont /	PP 1
Finish Time:	12:20	Fire	5.00					<u>J</u>	_qler	TS Fall	TE .
Depth of Tubin	g 10,5					E	Bailer 🤇	Inertial Pu		rsible Pu	imp PDB
Iron (Fe 2+) mg	g/L: Not sam	pled									
	nie ID #		Volum	e/Container	Anal	eie Daar	Inetad	Bree	nativo		Commonte
EH_SP MU A V			*0iuiii 2 - 4			SIS REQU	RUBI	-res			oonments
			3 X 4		-	S (SVV 82	.000)				
н-sp <u>(∕ч</u> _А-V	NG pp		2x1L	amber glass	DF	RO (AK 1	02)	40	, HCI		·····
FH-SP <u>04</u> A-V	NGPP		2 x 1 L	amber glass	SVOCs	(SW827	OC SIM)		4C		
FH-SPOYA.	-WG-IA	2	3×4	Oml VOA	VOC	\$		4C H	CI		
CH-SPAUL	-WR-T	e l	281	/	Den	$\tilde{n}$		ur			
	<u>A 1.20</u>	~0			- UNC	Po		10			
- <u>H-SPO9</u>	H-W6-	sp_	<u>[XX]</u>	4	300	ug		<u> </u>	_		
				<u>_</u>	Other Sa	mple Ty	pes			•	
QC Di	uplicate Sam	nple#		Q/	A Triplicat	e Sample	e#		Trip i	Blank Sa	mple #
FH-SPB-V	VG						<del>.</del>	FH-	tb <u>01</u> -WG		

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Site Name: F		moliance R	rojecte		Well IC	); сце	005	Ac	ceptable F	Range for Well
Site ID: Shin	Creek Eich Hatel		0,000					S	tabilizatio	n Parameters
Project #: 05	F52507	iei y			wen ryp	Extra	ction	Conduc	tivitv	± 0.1 ± 3%
Date: 4/14/2	011		-	We	ell Materia	i: PVC		Temper	ature	±0.1 °C
Start Time	++874:18	T				Stain	less Steel	Turbidit	у	±10% or 1 NTU
Finish Time:	3:00 15:0	Ø		We	ell Integrity	y: Exce	lien	DO		10% or ± 0.2 mg/L
Sampled By:	CT/KB					Good	È	ORP		± 10 mV
Weather Con	ditions: 46	orary SP16	weii			Fair Poor				
Probe Type:	Oil/Water Inte	rface>		Casi	ng Diame	ter (in)	Gallons	Linear Foo	ot Ca	asing Radius ² (ft)
	Electronic Wa	ter Indicato	рг		2			).17		0.0069
	Other		-		(0.5)			0.01		0.000434
				Purging	Informat	ion				
	1420		Depth to GW	: 9.27	7			Pu	rging Equ	ipment
Start Time: /	9.20		Total Depth o	of Casing	: 17,81				Bailer	
Finish Finie.7	9.0		Amount of P	n: " oduct: "				) Si	Unertial PL	Pump
				00000				0		<u> </u>
Casing Volun	ne (Gallons) = 3.1	4 x (_0.000	)434) x (			<b>D</b>	) x 7.48	=	Gallo	ons x 6 =
		Casing I	Radius ² (ft)	Casing	or a (ft)	GW	(ft)			6 casing volumes
							Act	ual Volume	Purged	Gallons
Time (HH:mm)	Volume (Gallons)	pH	Conductivity	Tempe (°⊑)	erature	Turbidi /NTU	i <b>ty</b>		ORP (m)()	Water Level
14:20	Discol	(0.0.)	(µ0/0/1/)		(0)	<u>्रि</u> न्ट्		<u>1972)</u>	(117)	
14:75	12 75000					<u>22</u> 83				
1100	<u> </u>									
									·	
	I								cont	inued on back of form>
Color ·		Odor ww	WE	Purg	ed Dry?	)	Met	ers Used	••••	Discharge
Cloudy	·	Faint		Ye	s (NO		Но	iba U-22		Water Treated
Yellow	М	oderate		SI	ieen?		Hach	urbidimete		Discharged
Brown		strong		Ye	<u>s (No)</u>					(Stored)
Detection		-	5	Sampling	Informa	tion			-	
Start Time:	ンパ レーンオー 14 5 フィ	7 0					Sam	oling Equi	pment	
Finish Time:	2.47 14.47	4			P	ailar 🦯	Portial Dur	- Cub	norsible D	
I Depth of Tubi	ng: 31 1g/L: Not sampled	1			Б			ip Subr	nersible Pt	uub 608
										·
	nple ID #	Volun	ne/Container	Analy	sis Requ	ested	Prese	vative	-	Comments
FH-SP 0 ( A	WG	2 2 1	amber aloce		0 ( DV 020	2)	40,		_	
FH-SP () ( A.			amber diese	SVOCA	(SINI2070		40,	<u> </u>		
<u></u>		2	- amber grass	37005	10110210			<u> </u>		<u> </u>
	_									
									-	
				<u></u>						
	)unlicate Samela	#		Uther Sa	mple Typ	)es .#			- Plenk C-	mala #
FH-SP B-	WG	IF	+	cropicat	e Gample	π <del>.</del>		ןחו 1001 - WO		mpie #
								<u></u>	-	
										·

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### JACOBS

	Site Name: E	Invironmental	Compli	iance Pr	ojects		Well II	D: FH-S	P_0(	2	Acce	eptable R	ange for Well	
	Site ID: Ship	Creek Fish H	atchery	,		1	Vell Typ	e: Monit	tor-SI	P16	pН	Sinzacion	±0.1	
	Project #: 05	F52507	•					Extra	ction		Conductiv	vity	± 3%	
	Date: 4/14/2	011				We	ll Materia	al: PVC			Temperat	ure	± 0.1 °C	
	Start Time: 3	N 1503						Stain	less	Steel	Turbidity		±10% or 1 NTU	
	Finish Time:	16:30	•			We	li integrit	y: Exce	llent	)	DO		10% or ± 0.2 mg/L	
	Sampled By:	CT/KBCKC						Good	I		ORP		± 10 mV	
	PID Reading	: Not taken, te	mporar	y SP16	well			Fair						
i	Probe Type:		<u>Lisua</u> Interfac	4	•	Casir		Poor ter (in)	G	allons/Li	near Foot	Ca	sing Radius ² (ft)	
		Electronic	Water	Indicato	г		2			0.1	17		0.0069	
		Other			_		().5j			0.0	D <b>1</b>		0.000434	
						Durging	Informat	lion						
					Depth to GW	rurynig : il.t/	morma	lion			Pura	ina Eaui	inment	
	Start Time: I	5:03			Total Depth	of Casing:	11.31		<b>N</b> +			Bailer		
	Finish Time:	15:09			Product Leve	el:	17121				ſ	nertial Pu	mp	
		,		_	Amount of P	roduct:					Sub	mersible	Pump	
	Casing Volur	ne (Gellons) =	3 14 -	( 0.000	131 ) V (					. 7 10 -	~	Calle	0-llana - 0 -	
	Casing volui	ne (Galions) -	· 3. 14 X	`0.000	Padius ² (#)	T.D. (	 of	Depi	), th to	(7.40 -		Gand	nis x b =	
				vasing n		Casing	(ft)	GW	(ft)				6 casing volumes	
	Time	Volume	nł		Conductivity	Tempe	raturo	Turbidi	i.	Actua	<u>il Volume P</u>	urged	Gallons	
	(HH:mm)	(Gallons)	(S.U	J.)	(µS/cm)	(°F)	(°C)	(NTU	)	(mg	/L)	(mV)	(feet btoc)	
ľ	15:05	0.5			V		· · ·	23				<u> </u>	····· · · ·	
		0.0												
													• • •	
				· · · -										
						_								
	-													
ł						-					I	conti	nued on back of form>	
	Color		Od	or		Purg	ed Dry?			Meter	s Used		Discharge	
	Cloudy		Fa	int \		(Yes	no Cecha	and		ן Horib	/SI a 11-22		Water	
	Yellow		Mode	erate		Sh	een 2	3-01	$\bigcirc$	lach Tu	rbldimeter	>	Discharged	
L	Brown		Stro	ong		Yes	(No)						Stored	
ſ				•••		Sampling	Informa	tion						
Ĩ	Date: 4/14/	11	-							Sampl	ing Equipr	nent		
	Start Time:	5:10											×, -	
	Depth of Tubi	16:00 S	1 (	IN I N	echarae)		В	ailer 🤇	Inerti	al Pump	Subme	ersible Pu	imp 'PDB	
	Iron (Fe 2+) n	ng/L: Not sam	pled											
										_				
$\left  \right $	Sar EL OD AÍA A	MC		Volum	10 mL VOA	Analys	SIS Requ	ested		Preserv	ative		Comments	
+				3 X 4			5 (59982	60B)		4C, H				
-	HH-SPUGA	-vv.G		2x1L	. amber glass		0 (AK 10	)2)		4C, H	CI			
	FH-SP <u>06</u> A	-WG		2x1L	. amber glass	SVOCs	(SW8270	DC SIM)		4C			· · · · · · · · · · · · · · · · · · ·	
		_										_		
ſ	18. 11													
ſ	Variation .		n		I						I			
ľ						<u></u>					<u></u>		· · ·	
┝		Junlicoto Com	nle #			Utner Sa	mple Ty	pes						
$\mathbf{F}$		Mic Sam	ipie#		LQA	<ul> <li>i riplicate</li> </ul>	sample	;#				siank Sa	mple #	
$\mathbf{F}$	B-									гн-1В	wG			
L			· .								_			



Site Name: F	nvironmental	Compl	iance D	rojosts		Well II	): _{ЕШ с}		7	Ace	ceptable	Range for Well
				lojecis			FM-S			St	abilizatio	on Parameters
Broiget #: 05	Creek Fish H	atchery				Well Typ	e: Moni	tor-S	P16	рН		± 0.1
Date: AlitAl2	n11				l w	oll Matoria	Extra al∙ o\/C	ICUON		Tomat	livity sture	± 3%
Start Time:	7.18				"		Stain		Steel	Turbidity	aure ,	±10% or 1 NTU
Finish Time:	14:00				W	ell Integrit		lient			,	10%  or  + 0.2  mg/
Sampled By:	CTAKE KC					on integrit	Goor	1		ORP		+ 10 mV
PID Reading	Not taken, te	empora	v SP16	well			Fair	-		014		2.00
Weather Cor	ditions:						Poor					
Probe Type:	Qil/Water	Interfac			Casi	ng Diame	eter (in)	G	allons/L	inear Foo	t   C	Casing Radius ² (ft)
	Electronic	Water	Indicato	or		2			0.	17		0.0069
	Other			_		0.5			0.	01		0.000434
	. <u> </u>				Puraina	Informa	tion					
				Depth to GW	:9.28	7				Pu	raina Ea	uipment
Start Time: /	3%00			Total Depth o	of Casing	:16.8	7				Baile	er
Finish Time:	310			Product Leve	l:		•			(	Inertial F	Pump
				Amount of Pr	oduct: -					Su	bmersib	e Pump
Contraction of the											_	
Casing Volun	ie (Gallons) =	= 3.14 x	_0.000	)434) x (			Der	))	(7.48 =		Ga	lons x 6 =
		C	asing F	Radius ² (ft)	Casine	0) a (ft)	GW	(ft)				6 casing volumes
									Actua	al Volume	Purged	Gallons
Time	Volume	pł		Conductivity	Temp	erature	Turbid	ity	D	0	ORP	Water Level
		(S.(	<i>.</i> , _	(μS/cm)	(°F)	(°C)	(NTU	)	(mg	]/L)	(mV)	(feet btoc)
15-10	20,3						25					
			1									
										,		
Color		Qd	or		Purc	ed Drv?			Mete	s Used	co	ntinued on back of form> Discharge
Clear		(No	ne)		Ye	s (No	)		Y	/SI		Water
		Mode	nt reto		e	h		_	Horib	a U-22	-	Treated
Brówn		Stro	ng		Ye	s No	<u>۱</u>	$\leq$				Stored
						$\sim$	/			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Data: 1/1/1					Sampling	<u>Informa</u>	tion			<u> </u>		·
Start Time: 13	575								Sampl	ing Equip	oment	
Finish Time: Į	3:50											
Depth of Tubi	ng: ~/0, 8							Inerti	al Pump	Subn	iersible F	'ump PDB
non (Fe 2+) n	ig/L: Not sam	ipiea					_					
San	nple ID #		Volun	ne/Container	Analy	sis Requ	ested	E	Preserv	ative		Comments
ГН-SP <u>∂́7</u> А	WG		3 x 4	40 mL VOA	VOC	s (SW 82	60B)		4C, H	ICI		
FH-SPO7A	WG		2x11	amber glass	DF	- RO (AK 10	)2)		4C. H			· · ·
FH-SP07A	WG		2 x 1 l	amber class	SVOCs	(SW8270			40			
	-		• •									
					Other Sa	mple Ty	pes					
QCE	uplicate Sam	iple#		QA	Triplicat	e Sample	; #			Trig	Biank S	ample #
FH-SP <u>ØZ</u> B-	WG								FH-TB	WG	;	



			<u></u>	Well ID	OU.	511	<u>v/2</u>	Acc	entable Ra	ange for Well
Site Name: Environmental Comp	liance Projec	cts					_	Sta	abilization	Parameters
Site ID: Ship Creek Fish Hatcher	у			Well Type	:C <u>Monit</u>	ton-/	e Arene P	史	:	± 0.1
Project #: 05F52507			1.00		Extra	ction		Conducti	ivity :	± 3%
Date: $4/p/2011$			VV 6	en material	<u>CPVC</u>	<u></u>	. ₁ <u></u>	empera	iture :	± 0.1 °C
Finish Time: 15:00			14/	-II into a dia	Eval			urbidity		±10% or 1 NTU
Sampled By: CT/KB			VV 6	en integrity		lient				$10\% \text{ or } \pm 0.2 \text{ mg/L}$
PID Reading: Net telestictempos	w.CD4Finit	<b>⊷</b> ⊘രഗ്			Guuu Eair	1		JKF	:	I IU MV
Weather Conditions: Sunny	38°F	0.08	4.		Poor					
Probe Type: OilWater Interfa			Casi	ng Diamet	er (in)	Ga	llons/Line	ear Foot	Cas	sing Radius ² (ft)
Electronic Water	r Indicator		N	(2)			0.17			0.0069
Other				0.5			0.01			0.000434
			Puraina	Informati						
2707	500 <i>n</i> r	)enth to GW	· <u> Z</u>					Pur	aina Fauir	mont
Start Time: 10:54 - motor	Groken -	otal Depth o	f Casing	2479				1 41	Bailer	Anent
Finish Time: 12:09 4520	Prince F	Product Leve	1:						Inertial Pun	no
l leren	· A	Amount of Pr	oduct: -					Sut	bmersible F	
Casing Volume (Gallons) = 3.14 :	x (_0.000434	4) × (			<b>D</b>	) x	7.48 =		Gallor	15 x 6 =
	Casing Radi	ius ² (ft)	L.D. Casino	or h(ft)	GW	(n (o (ft)			6	casing volumes
					Ç.T	<u></u>	Actual V	/olume l	Purged	Gallons
Time Volume p	H Cor	nductivity	Tempe	erature	Turbidi	ity	DO	_	ORP	Water Level
(HH:mm) (Gallons) (S.	<u>.U.) (</u>	μ <u>S/cm)</u>	<u>(°F)</u>	(°C)		)	(mg/L)	)	(mV)	(feet btoc)
11:00 0,9 0.6	57 <del>2</del>	9216 g.5	۵,۷	5-	55, /		1.07	7 1	190,6	7.58
11:11 0.75 Git	50 2	278 1	<u> </u>	15 0	10,3	5-36	0,77	7 - 1	93.90	7.518
11:22 10 6.6	16V Z	86 V	3.0	71	18,3	34	0.61	l = l	90.1	7,61
11:26 1.25 60	661 7	2824	Ζ.	27-	30	5-	0.54		178.2	761
11:30 1.5 61	71/75	シュレ	7.	55 ~	71	Ø)	05	25	1/32	711
11/32/74/01		$\overline{02.1}$	<u></u> レ フ		19	71	n ya		16229	7/1
$\frac{1}{2}$			6,	270	1.1		$\frac{0.11}{-0.00}$		198.0	- 1,6/
11.36 1.7 6.	670 (	85 -	<u> </u>		2.11	24	0.78		192.30	1.60
11.39 2.0 6,	100 2	85 0	2,	<u>79</u> F	1,43	31	<u>考.0.</u>	34	1931	7.62
Color Q	dor		Purg	ed Dry?			Meters	Used	contin	Discharge
Clear (No	one		Ye	s (No)			YS	1		Water
Cloudy Fa	aint Ierate		e:				<u>Horiba</u>	<u>U-22</u>	~.	Treated
Brown Str	ong	ł	Ye	s No		$\sim$		unneter		Stored
Date: 4/195/41		5	ampling	Informat	ion		C	 		
Start Time: 12:15							Sampiing	g Equip	iment	
Finish Time: 12:20		•		Ba	ilar 🦰		1-172-22	Cuba		
Depth of Tubing: 9,05	<b>`</b>			De				2 SUDIN		PUB C
non (r c 2 r) mg/2. Not sampled							$\bigcirc$		-	
Sample ID #	Volume/C	Container	Analy	sis Reque	ested	P	<u>reserva</u> ti	ive	С	omments
PH-SPA-WG	- <del>3 x</del> -40 n	nE-VOA	<del>\</del> oc	<del>s (S₩82</del> 6	0В)		_4 <del>C, HCI</del>	-		
EH-SPA-WG-	2-x1Lan	ber glass	DR	<del>0 (AK-10</del>	2)		4C, HC	•		
_EH-SPA-W-G	2x-1Lan	ber glass	SVOCs	(SW82700	C SIM)		4C			
FH-NU 5MW17-7011-61	3X4Dw	LIDA	Vei	CS .	,	1	IC.I			
Ell - DIA E halisto David	J VII	- Lon	0.00	>			UC I			
Luine in the second	W >V	-anvu	<u> </u>	Pe						
My-ousriwit, - Zoil-	THE LX	1 umper	210	ら			90			
· · · · · · · · · · · · · · · · · · ·		(	Other Sa	mple Typ	es					
QC Duplicate Sample #		QA	Triplicat	e Sample	#			Trip	Blank Sam	nple #
FH-SPB-WG							FH-ТВ <u><i>О</i></u>	/WG		

# Groundwater Sampling Form (continued)

×



Site Name: Fish Hatchery	Well ID: F	Acceptable Stabilizati	Range for Well
Site ID: FH	OUSMWIL	pН	±0.1
Project #: 05F52507		Conductivity	± 3%
Date: 4/15/2011		Temperature	± 0.1 °C
· ·		Turbidity	±10% or 1 NTU
		DO	10% or ± 0.2 mg/L
		ORP	± 10 mV

Time (HH:mm)	Volume (Gallons)	рН (S.U.)	Conductivity (µS/cm)	Temperature (°F) (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other
11:43	2,25	6,670	/ 788 /	3.05 4	0,881	0,520	158,24	7.62
11:47	2,5	6.692	289 2	3.05 2	1.742	0.51V	129.50	7,62
11:50	7.P5	6.69	789	3.09 -	7,04-	0,562	127,50	1.4.62
11:53	3,00	6,691	290V	3,21 1	1.STV	:5/0/	123.2	7 62-11
11:56	2,00	10.70	290 -	3.220	1.300	,55 1	118.6	768
11:59	3.75	10.69-	2,89'	3,25	1,34h	0.56	116.9	7.62
12:02	3,28	10.67	5820	2.95+	1,350	0.56	114.5	712
12:03	1.0	10,670	3874	2.864	1 480	OSTU	1130	7-63
12906	3,51	<u> </u>	12874	2.9Rt	0.64	0.540	1120	11/3
12:09	3.6	667	2874	2.83-	0,50	0,580	110.14	7.68
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#### APPENDIX D

Soil Boring Logs

BORING	101	NO.	SFSZ	2507	2	Nochescale Fish Hatchesco I
TIME START //	070	DRILLING CO	ONTRACTOR			DRILLING EQUIPMENT Geoplobe 6610 DT DATE
TIME STOP	735	DRILLING CREW	Cott & 1	Kat		DRILLING METHOD DP SAMPLING METHOD SIDE VE
TOTAL DEPTH	5-	BACKFILL	Restar	te		WATER FIRST ENCOUNTERD 9' has TO WATER 9' has
DEPTH BELOW	SAMPLER	SAMPLE NO.	INCHES DRIVEN/	BLOWS PER 6 IN.	nscs	LOG OF MATERIAL
SURFACE			RECOVERED			Gracel - ace to brue maist
1					CIA	Irg to med grad, prly grad
H						shander and
2	00	4	60%		$\left\{ \right\}$	(60/20/20)
3	61	1	195%			
Ψ						
4++	<b> </b>				41	Same às above
_ H						
°Т					1	
6++					SV	Sand - gry med gind. dry,
ΞH					<b>"</b>	pela grad Indd to sh andr,
7	CD	2	60"/		1	(2-0/70/10)
8	6/	6	190%		PT	Organiz Material - Brun, leaves
Η						Constrant With mill.
9 + -					GW	Men arm ach ach
10 -					עץׂ	(65/25/10)
H						
r1 +				u	S₩	Sand - tan, pense, wet, langt
			60%			(20/70/10)
	<u>(p</u>	3	180%			
13	10	~				· · · · · · · · · · · · · · · · · · ·
Η					1	
14					11	
15						
					10:15	
6						
7						
8-+-						
。日					1	
<u> </u>		10 -				
)GGED BY	: <i>N</i>	Kinnelo/	en			OFFICE: Anchorage DATE: 4/12/11

NO.	$H \phi 2$		SF52	507	Z	LOCATION SHEET Shitchery 10
START //	00	Geot	eK			EQUIPMENT Geoplobe 6610 DT 4/12/
TIME STOP	2	DRILLING CREW	Ite	V.t		DRILLING SAMPLING METHOD SAMPLING
TOTAL	<u> </u>	BACKFILL	8/1			WATER FIRST
DEPTH	0	MATERIAL	Dentante			ENCOUNTERD & S bys TO WATER & S bys
DEPTH BELOW SURFACE	SAMPLER TYPE	SAMPLE NO.	INCHES DRIVEN/ RECOVERED	BLOWS PER 6 IN.	USCS	LOG OF MATERIAL
					0.00	gravel - assish bring las to med gin
1-				-	6/11	prly settle, day to meist, sh and
H	0.0		607		- 1	(60/20/00)
2	61	1	170070	<u></u>	+	
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4				<u> </u>	- ↓ ↓	
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5					ML	(in/20/20) come according
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7			60/			
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8			<u>+</u>		$\nabla$	
9 П						n d
H					GW	gravel - gry - light gry wed girld to
10++						SITAL Aroint wet (80/10/10)
. 11					TV.IO	
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OCCEP DV	N.	11.	l m			11

# **PROJECT:**

# BORING LOG

BORING	thz .		CES	250	7	LOGATION SHEET
TIME START	¥ 5 20	DRILLING CO	NTRACTOR		<u> </u>	DRILLING DATE/ UP CALLON DATE/ UP CALLON DATE/
TIME STOP	35		It &	k.t		DRILLING METHOD DP METHOD Starrage
	0	BACKFILL	Real a	La		WATER FIRST ENCOUNTERD 95 - 2 TO WATER 9.5 - 6
DEPTH		· · · · · · · · · · · · · · · · · · ·	INCHES			
BELOW SURFACE	SAMPLER TYPE	SAMPLE NO.	DRIVEN/ RECOVERED	BLOWS PER 6 IN.	nsc	LOG OF MATERIAL
					GP	glavely - light ging to print, line to pres
						(60/30/10) Standy.
2	<u> </u>	4	6.0%	1		
3	GP	1	11007,			
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					-	Sam as above
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9						
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LOGGED BY	<u></u>	MEU(in			ununy Dit	OFFICE: //hchorage DATE://2///

www.RiteintheRain.com

BORING	404	NO.	5F52	250	7	Anchorage Fish Hatchery I
	115	DRILLING CO	DNTRACTOR			DRILLING EQUIPMENT Geopcobe 6610 DT 4/1
STOP /4	23		oft & K	at		METHOD D. P. METHOD Sleave
DEPTH	10'	BACKFILL MATERIAL	Bentante	2		ENCOUNTERD 6.5 65 FOS
DEPTH BELOW SURFACE	SAMPLER TYPE	SAMPLE NO.	INCHES DRIVEN/ RECOVERED	BLOWS PER 6 IN.	nscs	
			1		GM	gravel - grato brun mel gra
1+						(65/15/20)
2			100×1			
	64		/90%		-	
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4						2 
5						
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°T			6.03		Ţ	
7	6-1-	2	175%	<u></u>	<u> </u>	accurat - blk, met work and cat
8			/		GW	aust, Inda, Strong over of
Η						diesel
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10					Tor in	
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4					1	
Н					-	· · · · · · · · · · · · · · · · · · ·
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H						

BORING NO. BHOS	PROJECT NO. 05F52507	LOCATION SHEE
time start <i>1434</i>	DRILLING CONTRACTOR	DRILLING EQUIPMENT Geoprobe 6610 DT 41
TIME STOP 1440	CREW Scott & Kat	DRILLING METHOD D.P. SAMPLING METHOD Slawe
TOTAL DEPTH 10	BACKFILL MATERIAL Bentonite	WATER FIRST ENCOUNTERD 6. 605 FINAL DEPTH TO WATER 6 60
DEPTH BELOW SUBFACE TYPE	R SAMPLE INCHES BLOWS DRIVEN/ PER 6 IN.	က္ကို LOG OF MATERIAL
SURFACE	RECOVERED	1) Gard - an to him not ain
	(	poly sett mgst, so and
-		(65/, 15/20)
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3 67	J /1007,	
5		
		7
	7	
7+1-GP	2 60%	· · · · · · · · · · · · · · · · · · ·
	1801.	Gunal - blk mel wal will estil
	6	Wet, mill, some originits
9 +		
	10	· 10 ⁻
1 +		
3		
5		
6		
7 + 4		
8		
9 +		

BORING NO. RH	1166	PROJECT	CES-	) CAS	2	LOCATION E: 114	1	SHEET
TIME	-in	DRILLING CO	ONTRACTOR	<u></u> /		DRILLING	hay -	DATE
TIME	-10	DRILLING	e <u>r</u>	- 1		DRILLING	SAMPLING	
TOTAL	10	BACKFILL	<u>oft 3 K</u>	at		WATER FIRST	FINAL DEPTH	4ve
DEPTH		MATERIAL	Benton te			ENCOUNTERD 9 695	TO WATER	9 bas
DEPTH BELOW SURFACE	SAMPLER TYPE	SAMPLE NO.	INCHES DRIVEN/ RECOVERED	BLOWS PER 6 IN.	nscs	LOG O	F MATERIAL	
					(f. M	Gravel - Tan- DI	y mel-	In of
						65/30	/is-)	
2	<u>^</u>	4	607					
3	61	1	/100%					
-			-					
4 +								
5	1						· · · · · · · · · · · · · · · · · · ·	
ĹΗ								
°T	,					Same as a	bove	
7+	00	0	1.5%					<u></u>
8	GK	6	170%					· · · · · · · · · · · · · · · · · · ·
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NO. RL	107	NO.	CECT	7 ~ ~ -	7.	LOCATION F. / U.A.	SHEET
TIME		DRILLING CO	NTRACTOR	<u>. 507</u>		DRILLING	
START	550	Geote	K			EQUIPMENT Geographe 6610 DT	9/12/
TIME STOP	6	DRILLING CREW	It to k	r,t		DRILLING D. P. SAMPLING METHOD S	leave
TOTAL 2	01	BACKFILL	$\frac{1}{2}$			WATER FIRST	2
DEPTH /C	2 *	MATERIAL	Benton	ite		ENCOUNTERD 7.5 675 TO WATER	7.5 bg
DEPTH	SAMPLER	SAMPLE	INCHES	BLOWS	S		
SURFACE	TYPE	NO.	DRIVEN/ RECOVERED	PER 6 IN.	l s		1
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				,	GA	mist cal act sh	and dig
1+1						165/30/15	<u> </u>
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Ц							. <u></u>
6 +					41		
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		NI	128			/	77

# APPENDIX E Survey Data

#### Survey Data

Point ID	<b>Point Class</b>	Date/Time	Latitude	Longitude	Ellip. Hgt.	Posn. + Hgt.	Qlty
RTCM-Ref 0001	Reference	4/12/2011 11:39	61° 10' 30.81303" N	149° 59' 00.29708" W	57.4139	0	
GPS0001	Measured	4/12/2011 11:40	61° 13' 48.69891" N	149° 49' 50.68603" W	35.5625	0.0177	
GPS0002	Measured	4/12/2011 11:41	61° 13' 48.20689" N	149° 49' 49.62033" W	35.3383	0.0162	
GPS0003	Measured	4/12/2011 11:43	61° 13' 48.68681" N	149° 49' 48.39886" W	36.1037	0.0104	
GPS0004	Measured	4/12/2011 14:50	61° 13' 54.98780" N	149° 49' 37.79934" W	38.6324	0.014	
GPS0005	Measured	4/12/2011 14:50	61° 13' 55.08211" N	149° 49' 37.40144" W	38.4648	0.0147	
GPS0006	Measured	4/12/2011 14:51	61° 13' 54.30768" N	149° 49' 37.40585" W	39.2805	0.0136	
GPS0007	Measured	4/12/2011 14:56	61° 13' 54.01807" N	149° 49' 36.78368" W	38.7081	0.0143	

#### **APPENDIX F**

#### Waste Documentation

WASTE MANIFEST	1. Generator's US E	PA ID No.	-	Marifast	/	T
	A K 8 5	70028649		Document No	. 13870	2. Page 1
3. Generator's Name and Mailing Address	SINGOLA 11505	Sā Addr			1. 1 0 4 9	of
6326 ARCTIC WARRI				HERY		
JBER, AK 99506				2.6		
5. Transporter 1 Company Name	2711					
EMERALD ALASKA THC		6. US EPA ID Number		A. State Trans	sporter's ID	
7. Transporter 2 Company Name		8. US EPA ID Number	418	4 B. Transporter	1 Phone (90)	7) 258.
				D. Transporter	2 Phone	
9. Designated Facility Name and Site Address		10. US EPA ID Number		E. State Facilit	y's ID	
EMERALD ALASKA, INC	+ + 9					
ANCHORAGE AN ADEAL				F. Facility's Ph	one (907)	200 10
11 WASTE DESCRIPTION		<u>AKR00000</u>	418	4	(307)	200~10
			a la la	Containers	13. Total	1 U
a. MATERIAL NOT RECHLATE	6	,	K NU.	Туре	Quantity	Wt./
THE TOT RESULTED			2		1 1.1.	
b			$\prec$	DF	100	
MATERIAL NOT REGULATED	BY D.O.T.		2.1		· · · · · · · · · · · · · · · · · · ·	
			5	P. 17	20	
C.				-10	and I have	
α.						
G. Additional Descriptions for Materials Listed Above	3					
1)AK03200 PETROLEUM CON	TAM TRIATER	. F		H. Handling Coo	les for Wastes Listed Above	
2)AKO2906 GROUNDWATER /	TOW WATED	71				
	and an					
15. Spealal Handling Instructions and Additional Info	mation,				soil and wursh	
15. Spequi #aadingo Unstructions and Additional Inter been mixed with any ha	Meliopest of m azardous was	ly knowledge that				
15. Spegal #addingsfrstructions and Additional Info been mixed with any ha 40CFRPart279.	Ma ^{lio} best of m azardous was	y knowledge tha te regulated und				
15. Spegal Haading Instructions and Additional Info been mixed with any ha 40CFRPart279.	Me ^{lio} best of m azardous was	y knowledge tha te regulated und				
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15. Spegal Hadding Instructions and Additional Infor been mixed with any hi 40CFRPart279. 16. GENERATOR'S CERTIFICATION: I hereby certif in proper condition for transport. The materials der Printed/Typed Name Printed/Typed Name B. Transporter 1 Acknowledgement of Receipt of Ma 3 Transporter 2 Acknowledgement of Receipt of Ma	terials	a shipment afe fully and accurately describe are not subject to federal hazardous waster Signature	d and are in egulations.	all respects	Month	Date Day y Date Day y
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15. Spegal Hading Instructions and Additional Infor been mixed with any hi 40CFRPart 279.	terials	iy knowledge tha te regulated und	d and are in egulations.	all respects	Month Month Month	Date Day y Date Day y Date Date Day y
<ul> <li>15. Speqal Hadding Instructions and Additional Information in the second state of the second stat</li></ul>	terials	s shipment afe fully and accurately describe s shipment afe fully and accurately describe are not subject to federal hazardous waster Signature Signature Signature	d and are in egulations.	all respects	Month Month Month	Date Day Y Date Day Y Date Day Y
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<ul> <li>15. Speqal Hadding instructions and Additional Information in the second state of the second stat</li></ul>	Thetiopest of mazardous was y that the Konténts of this scribed on this manifest a iterials	A shipment afe fully and accurately describe as shipment afe fully and accurately describe are not subject to federal hazardous waster Signature Signature Signature	d and are in egulations.	all respects	Month Month Month	Date Day Y Date Day Y Date Day Y Date Day Y
15. Speqal J be 404 16. GENERA In proper Printed/Typed Transpor Printed/Typed 8. Transpor Printed/Typed 9. Discrepan	TOR S CERTIFICATION: I hereby certification of the second state of	TOR S CERTIFICATION: I hereby certify that the contents of the content of the conten	TOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described on this manifest are not subject to federal hazardous waste in a subject to federal hazardous wast	an mixed with any hazardous waste regulated und         TOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.         TName       Signature         Thame       Signature	TOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.	an mixed with any hazardous waste regulated und         TiOR S CERTIFICATION: I hereby certify that the Konténts of this shipment afe fully and accurately described and are in all respects         condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.         J Name       Signature         Month         ter 1 Acknowledgement of Receipt of Materials         I Name       Signature         Month         ter 2 Acknowledgement of Receipt of Materials         I Name       Signature         Month         ter 2 Acknowledgement of Receipt of Materials         I Name       Signature         Month         ter 2 Acknowledgement of Receipt of Materials         I Name       Signature         Month

NON-HAZARDOUS	1. Generator's US El	PA ID No.		Manifest		2. Page 1
WASTE MANIFEST	AK 8 5	70028649	WAS MICHING	Document No.	13849	of
3. Generator's Name and Mailing Address ANCHORAGE FISH HATC 6326 ARCTIC WARRIOF 3 BEB AK 99506 4 Generator's Phone (	CHERY USAF ( DRIVE	Site Address ANCHORAGE CES 941 NORTH ANCHORAGE,	FISH HATC REEVE BLV AK 99501	HERY		
5. Transporter 1 Company Name	2/11	6 US EPA ID Number		A. State Transpo	orter's ID	
EMERALD ALASKA INC	and the second second	AKRODOD	0418	B. Transporter 1	Phone (007	> > > > 1 =
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transpo	orter's ID	1 230 23
				D. Transporter 2	Phone	
9. Designated Facility Name and Site Address		10. US EPA ID Number		E. State Facility	s ID	
EMERALD ALASKA, IN	C.	NUMBER OF STREET, STRE		F. Facility's Pho	16	
ANCHOPAGE AK 9950	Figure age and a second second	LAKRODOD	0418	Ninthin ultranities	(907)	258-1558
11. WASTE DESCRIPTION	awkip.		C	ontainers	13.	14.
			No.	Туре	Quantity	Wt./Vol.
a. MATERIAL NOT REGULATED	BY D.O.T.					s s possile s sources
		Service - the stands - A residential	2	DE	100	and an in the
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MATERIAL NOT REGULATED	) BY D.O.I.		24		20	
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					- 10.16(a	
G. Additional Descriptions for Materials Listed Abo	ove			H. Handling Cod	les for Wastes Listed Above	3
1)AK03200 PETROLEUM CO	NTAMINATED S	SOIL				
2)AK02906 GROUNDWATER	/ IDW WATER	No. 10				
	the best of	my knowledge that	this cont	aminated rt261 or	soil and wate 40CFRPart761	r has no
15. Special Handling Instructions and Ardinopal In been mixed with any 40CFRPart279.	hazardous wa	aste regulated und	er 40CFRPa			01
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**NON-HAZARDOUS WASTE** 

	*** IN CASE OF N		1-800-424-9300 DUS WASTE N	NANIF	EST	95-914-AK138	349 (RP)
Pleas	e print or type (Form designed for use on elite (	12 pitch) typewriter)			105	LV	
	NON-HAZARDOUS	1. Generator's US EPA ID No.			Manifest		2. Page 1
	WASTE MANIFEST	A K 8 5 7 0	0 2 8 6 4 9		Document No.	13849	of 1
	3 Generator's Name and Mailing Address	THE LICOL COS	Site Address				
	ANCHORAGE PISH HATCH	ient usat 613	ANCHORAGE FIS	SH HATO	HERY		
	6326 ARCTIC WARRIOR	DRIVE CES	941 NORTH REE	EVE BLV	2		
-	JBER, AK 99506		ANCHORAGE, AK	<b>99501</b>			
	4. Generator's Phone ( (907) 384-2	711					
	5. Transporter 1 Company Name	6.	US EPA ID Number		A. State Transp	porter's ID	
	EMERALD ALASKA, INC	A	KR000004	4184	B. Transporter	1 Phone COO	7) 258 1558
	7 Transporter 2 Company Name	8.	US EPA ID Number		C. State Transp	porter's ID	,,
		0 - 11 i - 1		1	D. Transporter	2 Phone	
	9 Designated Facility Name and Site Address	10	US EPA ID Number		E. State Facility	/s ID	
				13	L olalo i dointy	0.0	
	EMERALD ALASKA, INC.	4		8			
	2020 VIKING DRIVE	1			F. Facility's Pho	one (907)	258-1558
	ANCHORAGE, AK 99501	A	KR000004	4184		(00.7	
	11. WASTE DESCRIPTION	14. A		Co	ntainers	13. Tatal	14.
				No.	Туре	Quantity	Wt./Vol.
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G	b. MATERIAL NOT REGULATED	BY D.O.T.					
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	G. Additional Descriptions for Materials Listed Abov	e			H. Handling Co	des for Wastes Listed Abov	/e
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_	2)AK02906 GROUNDWATER /	IDW WATER					
							3
	15 Special Handlinghistructions and Additional Inte	Me ^{lio} best of my kn azardous waste r	owledge that thi equlated under 4	is conta 10CFRPai	minated t261 or	soil and wate 40CFRPart761	er has not of
Cont	40CFRPart279.						
				7 / / / / /			
				1			
	16. GENERATOR'S CERTIFICATION: I hereby cer	tify that the contents of this shipme	ent are fully and accurately descrit	bed and are in.	all respects		
	in proper condition of transport. The materials c	escribed on this mannest are not s	subject to rederar hazardous wash	e regulations			
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	Shi- And Y					</th <th>90 201</th>	90 201
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-k	Iransporter 1 Acknowledgement of Receipt of	naterials	A	1			Date
A I	Pripled/Typed Negre		Signature	11 A		Moi	nth Day Year
S	Deatt GRIFFT		10-11/21	11NF		U	2111
δI	18. Transporter 2 Acknowledgement of Receipt of I	Aterials		<i>V</i>		1	Date
4	Printed/Typed Name		Signature	100000		Mor	nth Day Year
É			- x00%				
-	10 Disconance Indiantics Course						
F	19 Discrepancy indication Space						
A							
С							
Л	20. Facility Owner or Operator: Certification of recei	of the waste materials covered b	by this manifest, except as noted i	n item 19.			
- L				1			Date
÷	Printed/Typed Name		Signature	- 10 A.S.		I	h Dav Year
Ϋ́	HENVI, DINKE		Y I I I				151
	LILL YL LUNIE						
CI	-14 © 2002 LABEL MASTER ® (800) 621-	5808 www.labelmaster.co	m			🚱 – *	

**NON-HAZARDOUS WASTE** 

# NON-MAZARDOUS WASTE MANIFES

	NON-HAZARDOUS	1. Generator's US	EPAID No. 5 7 0 0	28649		Manifest Document No.	13849	2. Page 1 of	i
-		M N O		Address					-
3	Generator's Name and Maming Address					MERY.			
4	4. Generator's Phone (								
5	5. Transporter 1 Company Name		6.	US EPA ID Number		A. State Transp	orter's ID		
	EMERALD ALASKA, INC.		A K	R 0 0 0 0 0	418	B. Transporter	Phone Con	73 258-1	55
7	7. Transporter 2 Company Name		8.	US EPA ID Number		C. State Transp	orter's ID		
						D. Transporter	2 Phone		
9	9. Designated Facility Name and Site Address		10.	US EPA ID Number		E. State Facility	's ID		
						F. Facility's Pho	one (907)		
	ANCHORAGE AK 9950	1	A_1	<u> </u>	) 4 1 8	1	10		
1	11. WASTE DESCRIPTION				C	ontainers	Total	Unit	t
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<u>]</u>	b. MATERIAL NOT REGULATED				12				
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	O Additional Descentions for Materials Listed Abr							- 57	
	I ADDITIONAL DESCRIPTION OF MARCHARS LISTER ADD	ove				H. Handling Co	odes for Wastes Listed Ab	ove	
	G. Additional Descriptions for Materials Listed Add	ove				H. Handling Co	odes for Wastes Listed Ab	ove	
		ONTAMENATED				H. Handling Co	odes for Wastes Listed Ab	ove	
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		ONTAMENATED				H. Handling Co	des for Wastes Listed Ab	ove	
		ONTAMENATED / LOW WATER				H. Handling Co	des for Wastes Listed Ab	ove	
	G. Additional Descriptions for Materials Listed Additional I     Special Handling Instructions and Additional I	Information)	SOLL 1 Frank Jenn	wiedoe that	this con	H. Handling Co	des for Wastes Listed Ab	ner has r	101
	G. Additional Descriptions for Materials Listed Additional 15. Special Handling Instructions and Additional I	Information	SOIL 1 Fimy kno Weste M	wledge that gulared unde	this con r 40CFRP	H. Handling Co	son Land wet		101
	G. Additional Descriptions for Materials Listed Additional 15. Specjal Handling Instructions and Additional I	Information	SOIL 1 Pamy kno Waste M	wiedge chat gulated unde	this con r 40CFRP	H. Handling Co	des for Wastes Listed Ab	ren has r	1.01
	G. Additional Descriptions for Materials Listed Au 15. Special Hຸລຸກປຸທີ່ກອູ ໂດຮູ້ກາວຕູ່ເອກະ ລູກd Additional I	Intérióty	soil. R Pamy kno Weste ro	wledge that gulated unde	this con r 40CFRP	H. Handling Co	des for Wastes Listed Ab		101
	G. Additional Descriptions for Materials Listed Additional 15. Special Handling Instructions and Additional I	intorpation	SOIL Printy kind Valste M	wiedge that gujated unde	this con r 40cprp	H. Handling Co	des for Wastes Listed Ab		nol
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	<ul> <li>G. Additional Descriptions for Waterials Listed Automatical Science Autom</li></ul>	Intorpation certify that the contents is described on this man	of this shipmen	no feed open to ball to be a construction of the second se	escribed and after waste regulations	H. Handling Co	des for Wastes Listed Ab	Date Month Day	Yea
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TRAZSPORTER FACIL	<ul> <li>G. Additional Descriptions for Materials Listed Automatical Science Automatical Hamiltonian Descriptions for Materials Listed Automatical Hamiltonian Hamiltonian (1997)</li> <li>15. Special Hamiltonian Descriptions for Materials Listed Automatical Hamiltonian (1997)</li> <li>16. GENERATOR'S CERTIFICATION: I hereby of in proper condition for transport. The material in proper condition for transport. The material Printed/Typed Name</li> <li>18. Transporter 1 Acknowledgement of Receipt of Printed/Typed Name</li> <li>18. Transporter 2 Acknowledgement of Receipt of Printed/Typed Name</li> <li>19. Discrepancy Indication Space</li> <li>20. Facility Owner or Operator: Certification of receiption (1997)</li> </ul>	Intervalion certify that the contents is described on this man of Materials of Materials	of this shipmen ifest are not su	nt are fully and accurately o bject to federal hazardous Signature Signature Signature	escribed and are waste regulations	H. Handling Co	Addes for Wastes Listed Abi	Date Aonth Day Date Month Day Date Month Day Date Date Date	Yea
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#### **Tracking Log**

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**DF05** 

DF05

**DF05** 

Date Received 04/22/2011

Manifest 13849

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EMERALD ALASKA, INC.

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PO Number 95-914-AK13849 (RP)

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ANC060887

ANC060888

ANC060889

:P)

AK02906

AK02906

AK02906

Generator ANCHORAGE FISH HATCHE Reported by

Outbound Storage Incomplete Sludge/ Container Oil/Fuel Water Antifreeze Non-Container Profile Sam-Lab B3 Gls Solid Cons B3 Lbs Location Reg Pack Size/Type pled 3 PAD - C ANC060890 AK03200 Υ DF05 3 PAD - C ANC060891 Υ DF05 AK03200 5 PAD1 ANC060886 AK02906 DF05 -Υ --

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5

5

5

20

2 4

Total

Page

Line

1

1

2

2

2

Total Gallons: 26

Received Date



# CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: ANCHORAGE FISH HATCHERY 941 NORTH REEVE BLVD. ANCHORAGE AK 99501

DISPOSAL FACILITY: EMERALD ALASKA, INC. 2020 VIKING DRIVE ANCHORAGE AK 99501

EPA ID NUMBER:	AK8570028649
MANIFEST/DOCUMENT #:	13849
DATE OF DISPOSAL/RECYCLE:	04/22/2011

#### LINE WASTE DESCRIPTION

2 GROUNDWATER / IDW WATER

<b>CONTAINERS</b>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
2	DF05	100	Р
4	DF05	20	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits, and licenses on the date listed above.

PREPARED BY: CHERYL DUNNE

SIGNATURE: DATE: 4/25/2011

Your Local Partner for Recycling Environmental Services

425 Outer Springer Loop Road - Palmer, AK 99645 - (907) 258-1558 - Fax (907) 746-3651 - Toll Free (877) 375-504

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9	9a. 9b. U.S. DOT Description AM and Packing Group (if any	(including Proper Shipping Name, Hazard ))	d Class, ID Number,		10. Contain No.	ers Type	11. Total Quantity	12. Unit Wt./Vol.	13.	Waste Code	s
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IJNI	FORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	22. Page 2 / 3	23. Manifest Tracking Number 002948615FLE					
24. (	Generator's Name	941 NORTH REEVE BL ANCHORAGE, AK 9950	VD.	673 0	ES			
<b>2</b> 5.	Transporter Company Name	DTEM OCEAN TRALLER EXP	RESS	an an an Sao	U.S. EPA ID	Number	WAD070	397.955
26.	Transporter Company Name E	MERALD SERVICES, INC.	annes march ar corris Meanadh cannstannes	e quita fai Anna Anna	A LEAD	Numbery :	WAD058	364.647
27a. HM	27b. U.S. DOT Description (including Proper Sh and Packing Group (if any))	28. Conta No.	iners Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		
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35.	Discrepancy							
36.	Hazardous Waste Report Management Method C	odes (i.e., codes for hazardous waste treatment, dis	oosal, and recycling systems)		1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -			
### **APPENDIX G**

**Response to Comments** 

Alaska Department of Environmental Conservation

Comments on the Post Road Fish Hatchery Investigative Sampling Report (Draft), September 2011

## **Commenter: Louis Howard (ADEC)**

Comments Developed: October 10, 2011

Cmt				
No.	Pg. & Line		Comment/Recommendation	Response
1	5-1	5.0	The text states that BH04 is located in the northeastern portion of the site. This location is also referenced in the document as being upgradient. Section 4.2 on page 4-1: "In the northeastern portion of the site, two soil borings were advanced upgradient (BH04 and BH05)" This would lead the reader to believe either the site has not been characterized enough since there is not a well upgradient of it to see if there is on off-site source which is the source of the 160 mg/L DRO. The level of DRO in BH04 exceeds the theoretical solubility limit of DRO. Indicators of the presence of nonaqueous phase liquid (NAPL) include water samples above the solubility limits – in particular, water samples with DRO concentrations above 4 or 6 mg/L. ADEC requests, at a minimum, the Air Force install three permanent wells for the Hatchery site. One monitoring well be installed hydraulically downgradient and one monitoring well be installed hydraulically downgradient and one monitoring well be installed hydraulically downgradient and one monitoring well be installed hydraulically downgradient at each change in lithology or every 5-foot interval for each of these monitoring wells, <i>whichever is less</i> or as specifically stated in the project work plan.	Accepted. Section 5 Conclusions and Recommendations, page 5-1, lines 13- 17 will be updated as follows. "One permanent monitoring well should be installed at the location of BH04, a second should be installed hydraulically upgradient of BH04, and a third hydraulically downgradient, adjacent to Ship Creek to further determine the degree and extent of potential groundwater impacts. Ongoing monitoring activities should include analysis for DRO, BTEX, and PAHs for both groundwater and soil samples. Additionally, groundwater monitoring well samples should be analyzed for TAH and TAqH."
	2	2.0	groundwater well samples will also be analyzed for TAH and TAqH as was done for this investigation.	Nettal
	-	2.0	ADEC requests the Air Force ensure that the laboratories used are current in their ADEC approval. TestAmerica-Seattle WA (UST-022) certification expires on March 4, 2012 (see ADEC webpage at <u>http://www.dec.state.ak.us/eh/lab/USTLabs.aspx</u> ). Instead of repacking the coolers in the TestAmerica Anchorage, Alaska laboratory and shipping off to the TestAmerica Seattle WA laboratory, ADEC requests the Air Force analyze the samples at an Anchorage laboratory. This may minimize the issue with headspace and volatile samples that was experienced with this project.	INOTED. Issues with headspace were discussed with the laboratory. Due to contractual obligations, the Air Force relies on a competitive bidding process in order to procure the highest quality service from a myriad of ADEC- approved facilities.

#### Alaska Department of Environmental Conservation

# Comments on the Post Road Fish Hatchery Investigative Sampling Report (Draft), September 2011

#### **Commenter: Louis Howard (ADEC)**

Comments Developed: October 10, 2011

Cmt			
No.	Pg. & Line	Comment/Recommendation	Response
3	63 of the PDF	Analytical Report Job Number: 580-25659-1 Job Description: 05-F525-07-D-010-0013 TO 25, EAFB, AK Contract number: W911KB-04-A-0009 4/27/2011. Volatile Organic Compounds (GC-MS): "The following samples were received with headspace in the sample vial: FH-SP01A-WG (580-25659-1) and OU5MW12-2011-WG (580-25659-12). Sample 580-25659-1 had an 8 mm air bubble of headspace in one vial used and 10 mm air bubble in the second vial used. Sample 580-25659-12 had a 6 mm air bubble of headspace."	Noted. As documented in the ADEC checklist (Appendix B), we recognize that these results are biased low, and will only rely on these results for investigative purposes. Noted.
		AFCEE Guidance for Contract Deliverables Appendix C QAPP Final Version 4.0.02 May 2006, (see AFCEE's webpage for Quality Assurance/Guidance for Contract Deliverables <u>http://www.afcee.af.mil/resources/technologytransfer/guidanceforcontractdeliverables/index.asp</u> ) at Section 5.1.2 Sample Volumes, Container Types, and Preservation Requirements Table 5.1.2-1 states for SW8260B, SW8021B sample container - aqueous:	VOC results with headspace greater than 6mm are not acceptable for use as data for demonstrating compliance for TAH/TAqH. The results were flagged on the appropriate data tables as "JP".
		"No Headspace. NOTE: Small bubbles may occur during shipping and handling. Samples with bubbles < 6 mm in diameter (pea sized) are acceptable."	Section 4.2.1 Groundwater sampling Locations and Results, page 4-3, lines 22-25 will be updated as follows.
		This implies that aqueous samples with bubbles greater than 6mm in diameter are unacceptable. All VOC results with headspace greater than 6mm, specifically those associated with samples 580- 25659-1 and 580-25659-12, will not be accepted by ADEC for demonstrating compliance with 18 AAC 75 Table C groundwater cleanup levels or TAH/TAqH.	"Sample vials shipped to the laboratory contained headspace bubbles that exceed ADEC guidelines of <6mm in diameter. VOC results with headspace bubbles greater than 6mm are not acceptable for use as data for demonstrating compliance."