# HISTORIC DUMP SITE INVESTIGATION

# **APPENDIX E**



June 30, 2003

55343

Ms. Royce L. Conlon, P.E. Senior Associate Civil/Environmental Engineer PDC INC. CONSULTING ENGINEERS 1028 Aurora Drive Fairbanks, Alaska 99709

Historic Dump Site Investigation Report Ekwok Airport Rehabilitation ADOT&PF State Project No. 55377

Dear Royce:

PDC Consulting Engineers, Inc. (PDC), retained MACTEC to provide environmental support for the Natural/Biological Environment and Hazardous Materials portion of the Alaska Department of Transportation and Public Facilities (DOT&PF) Ekwok Airport Rehabilitation Project. The general scope of the proposed project is to expand the airport to meet current DOT&PF and Federal Aviation Administration (FAA) standards. MACTEC prepared this report to document soil sampling activities at the historic dump site, Ekwok, Alaska.

#### BACKGROUND

#### Site Location and Conditions

The survey area is in the City of Ekwok, Alaska, in the Bristol Bay area, approximately 43 miles northeast of Dillingham and 285 miles southwest of Anchorage (Figure 1). Site access is along a gravel road at the south end of the existing airport that leads to the Housing and Urban Development (Nakelutin) subdivision (Figure 2).

Sampling was conducted north of the gravel access road that turns west into the subdivision, between the gravel road and the tree line (Figures 2 and 3). The area was lightly vegetated and predominantly covered with gravel. Photographs of the area are included as an attachment.

#### STATEMENT OF WORK

- Provide an estimate of the lateral extents of the solid waste by digging up to eight test pits.
- Collect two soil samples in situ below the solid waste at two test pits.

MACTEC Engineering and Consulting, Inc. 601 East 57th Place • Anchorage, AK 99518 907-563-8102 • Fax: 907-561-4574 Home Page: www.mactec.com June 30, 2003 55377 Ms. Royce Conlon PDC INC. CONSULTING ENGINEERS Page 2

- Summarize laboratory results and complete a summary of field activities.
- Prepare a figure showing the location of the test pits with estimated extents of the historic landfill.

### FIELD OPERATIONS

MACTEC conducted site activities on May 29, 2003. Descriptions of project field procedures are below.

#### Soil Sampling

A steel-track backhoe was used at the site to dig test pits to assist in identifying the lateral extent of the historic dump site. Luki Akelkok Sr., president of Ekwok Natives Limited, operated the backhoe and provided insight into the approximate boundaries of the dump site. A total of five test pits were dug to identify the extent of the dump site.

Soil samples for laboratory analysis were collected from the final excavation with the bucket of the backhoe. Soil near the middle of the bucket was sampled by field personnel using a new pair of nitrile gloves for each sample. Laboratory-supplied sample containers were completely filled except for samples for analysis of gasoline-range organics (GRO) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by State of Alaska Method AK101 and U.S. Environmental Protection Agency (EPA) Method 8021B. Sample containers for AK101/EPA 8021B were filled approximately one-quarter full, then a premeasured volume of methanol was added to completely submerge the sample.

#### RESULTS

Table 1 presents analytical laboratory results for samples collected from the test pits where solid waste was found. A data quality assessment performed by MACTEC personnel is included in the laboratory data attachment. On the basis of MACTEC's review, all data are considered acceptable without further qualification.

#### Soil Test Pits

Sample locations and results are included in Figure 3.

No waste was found in two 4- to 5-foot-deep test pits that were excavated approximately 50 feet north of the access road at the point where the road turns west into the subdivision (Figure 3).

Signs of waste (wood fragments, iron staining in the gravel) were found in the test pit excavated approximately 40 feet south of the first test pits, and a soil sample was taken (Sample Number 03EKW01SL) at 6 feet below ground surface (bgs), below the solid waste. Soil at 6 feet consisted of dry brown gravelly silt.

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A test pit was then excavated approximately 100 feet south of the access road into the subdivision. No signs of waste or previous soil disturbance were detected; excavation was stopped at 3 feet.

The fifth test pit was then excavated approximately 80 feet south of the access road into the subdivision. Waste was found at 3 feet. Waste identified included plastics, glass, cut wood, rubber belts, aluminum cans, and tin cans. A sample (03EKW02SL) and a duplicate (03EKW03SL) were taken at 7 feet bgs, below the solid waste. The soil at 7 feet consisted of dry brown silt with gravel.

Occurrences of waste in the test pits indicate that the north-south axis of the historic dump extends approximately from the where the gravel access road turns west into the subdivision to between 80 and 100 feet south of that point (Figure 3). Because waste was found in the fifth test pit, dug close to the access road (approximately 10 feet off the east edge of the road), presumably the road was placed over the west side of the dump. Therefore, the east-west axis was approximated by the line of alder/birch trees on either side of the access road into the subdivision.

No groundwater or saturated soil was found in any of the test pits.

#### Soil Samples

Laboratory results for the final excavation confirmation samples were compared to cleanup levels under Title 18, Alaska Administrative Code, Chapter 75 (18 AAC 75), Methods 1 and 2. Table 2 is the completed Method 1 matrix for petroleum hydrocarbon soil cleanup levels in nonarctic zones. Where site-specific information was not available, the most conservative score was used to calculate the cleanup level. Cleanup levels for BTEX, metals, and other detected volatile organic compounds are from Method 2, Table B1, under 40-inch precipitation zone, most conservative pathway (18 AAC 75). The cleanup levels are summarized in Table 1.

Gasoline-range organics were not present at concentrations above practical quantitation limits (PQLs). Diesel-range organics (DRO) were detected in each of the three samples (two project, one duplicate quality control) at concentrations of 38.3, 36.0, and 44.2 milligrams per kilogram (mg/kg). These concentrations are above the PQL, but well below the 200-mg/kg cleanup level. Residual-range organics (RRO) were also detected in each of the three samples at concentrations of 198, 206, and 209 mg/kg. These concentrations are slightly above the PQL and well below the 2,000-mg/kg cleanup level.

Benzene, ethylbenzene, and total xylenes were not detected in any of the samples. Toluene was detected at low concentrations with EPA Method 8021B in each of the three samples (Table 1). These concentrations were well below the cleanup level.

The metals cadmium, mercury, selenium, and silver were not detected. Chromium was detected in each of the three samples at concentrations of 17.2, 16.3, and 17.9 mg/kg. Lead was detected in each of the three samples at concentrations of 4.88, 17.30, and 9.10 mg/kg. Concentrations for chromium and lead were both below the cleanup levels. Arsenic was detected in each of the three samples at concentrations

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of 5.59, 5.49, and 6.64 mg/kg. These concentrations were above the cleanup level of 2.0 mg/kg. Because the metals concentrations are similar for all three samples, the results can likely be attributed to background levels.

In addition to being detected with EPA Method 8021B, toluene was detected with EPA Method 8260B for volatile organic compounds at low concentrations in two of the samples. Low concentrations of p-isopropyltoluene were detected in all three samples with EPA Method 8260B.

Thank you for the opportunity to provide service. Please call me at 907-563-8102 if you have questions.

Yours very truly,

#### **MACTEC Engineering and Consulting**

mark 9

Brandon M. Miner Project Environmental Scientist

w QC/TE/cc/A0134R

Bryan D. Lund Principal Geologist

Attachments:

Tables Figures Photographs Laboratory Data Packages and Sample Record Log TABLES

#### **Table 1. Soil Analytical Results**

			mple Number	03EKW01SL	03EKW02SL	03EKW03SL	03EKW04SL
			ate Collected	5/29/2003	5/29/2003	5/29/2003	5/29/2003
		De	pth (feet bgs)	6.0	7.0	7.0	NA
			Sample Type	Project	Droigot	QC (duplicate of 03EKW02SL)	OC (trip block)
			Sample Type	Project	Project	0321(00232)	QC (trip blank)
			Cleanup				
Analyte	Analytical Method	Units	Criteria <sup>a</sup>				
Gasoline-Range Organics	AK101	mg/kg	100	ND(3.09)	ND(4.33)	ND(4.08)	ND(13.8)
Diesel-Range Organics	AK102	mg/kg	200	38.3	36.0	44.2	
Residual-Range Organics	AK103	mg/kg	2,000	198	206	209	
BTEX							
Benzene	EPA 8021B	mg/kg	0.02	ND(0.0124)	ND(0.0173)	ND(0.0163)	ND(0.0550)
Toluene	EPA 8021B	mg/kg	5.4	0.0464	0.0442	0.0694	ND(0.138)
Ethylbenzene	EPA 8021B	mg/kg	5.5	ND(0.0309)	ND(0.0433)	ND(0.0408)	ND(0.138)
Xylenes (total)	EPA 8021B	mg/kg	78	ND(0.0618)	ND(0.0866)	ND(0.0815)	ND(0.275)
Vietals							
Arsenic	EPA 6000/7000	mg/kg	2.0	5.59	5.49	6.64	
Cadmium	EPA 6000/7000	mg/kg	5.0	ND(0.500)	ND(0.500)	ND(0.500)	
Chromium	EPA 6000/7000	mg/kg	26	17.2	16.3	17.9	
_ead	EPA 6000/7000	mg/kg	400 <sup>b</sup>	4.88	17.30	9.10	
Vercury	EPA 6000/7000	mg/kg	1.4	ND(0.200)	ND(0.200)	ND(0.200)	
Selenium	EPA 6000/7000	mg/kg	3.5	ND(0.500)	ND(0.500)	ND(0.500)	
Silver	EPA 6000/7000	mg/kg	21	ND(0.500)	ND(0.500)	ND(0.500)	
Volatile Organics							
p-Isopropyltoluene	EPA 8260B	mg/kg	NA	0.0583	0.0780	0.405	ND(0.220)
Toluene	EPA 8260B	mg/kg	5	0.0592	ND(0.0693)	0.0812	ND(0.220)
	2.7.02000		-	0.0002		0.0012	
ogs	Below ground surface						

	<b>J</b>
BTEX	Benzene, toluene, ethylbenzene, and xylenes
EPA	U.S. Environmental Protection Agency
mg/kg	Milligrams per kilogram
NA	Not applicable

 ND
 Not detected at or above the concentration in parentheses

 QC
 Quality control

 Results highlighted with shading exceeded the cleanup criteria.

a. Cleanup criteria are from Alaska Department of Environmental Conservation (ADEC) Title 18, Alaska Administrative Code, Chapter 75 (18 AAC 75), Method One,

Category B, for GRO, DRO, RRO; and Method Two, Table B1, under 40-inch zone, most conservative pathway for all other parameters.

b. Residential land use cleanup level.

Note: Only analytes with detected concentrations are summarized. All other results are included in the attached laboratory data package

# Table 2. Method One – Petroleum Hydrocarbon SoilCleanup Levels In Nonarctic Zones

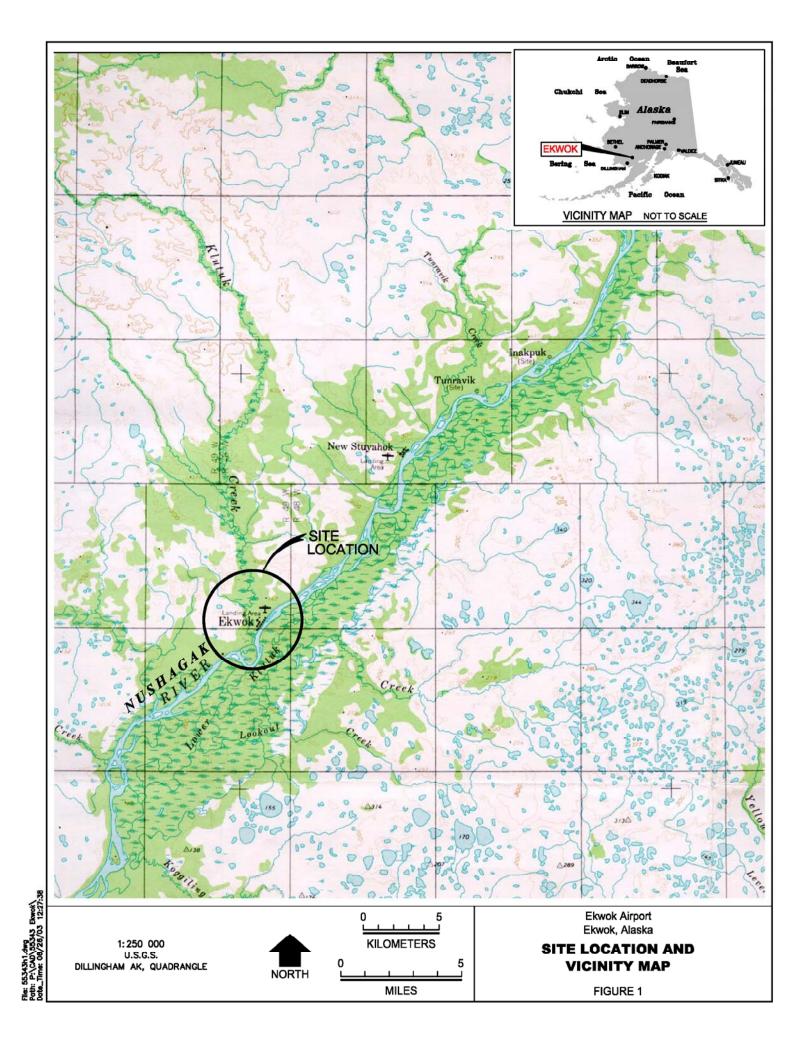
Part A: Determine score for each item*		
1. Depth to Groundwater Less than 5 feet 5 feet to 15 feet More than 15 feet to 25 feet More than 25 feet to 50 feet	$(10) \\ (8) \\ (6) \\ (4) \\ (1)$	8
More than 50 feet	(1)	
2. Mean Annual Precipitation More than 40 inches More than 25 inches to 40 inches 15 inches to 25 inches Less than 15 inches	(10) (5) (3) (1)	5
<b>3. Soil Type (Unified Soil Classification)</b> Clean, coarse-grained soils Coarse-grained soils with fines Fine-grained soils (low organic carbon) Fine-grained soils (high organic carbon)	(10) (8) (3) (1)	15
<ul> <li>4. Potential Receptors <ul> <li>(Select the most applicable category)</li> <li>a. Public water system within 1000 feet, or private water system within 500 feet</li> <li>b. Public/private water system within 1/2 mile</li> <li>c. Public/private water system within one mile</li> <li>d. No water system within one mile</li> <li>e. Nonpotable groundwater</li> </ul> </li> </ul>	(15) (12) (8) (4) (1)	8
<b>5. Volume of Contaminated Soil</b> More than 500 cubic yards More than 100 cubic yards to 500 cubic yards More than 25 cubic yards to 100 cubic yards 10 cubic yards to 25 cubic yards Less than 10 cubic yards	(10) (8) (5) (2) (0)	0

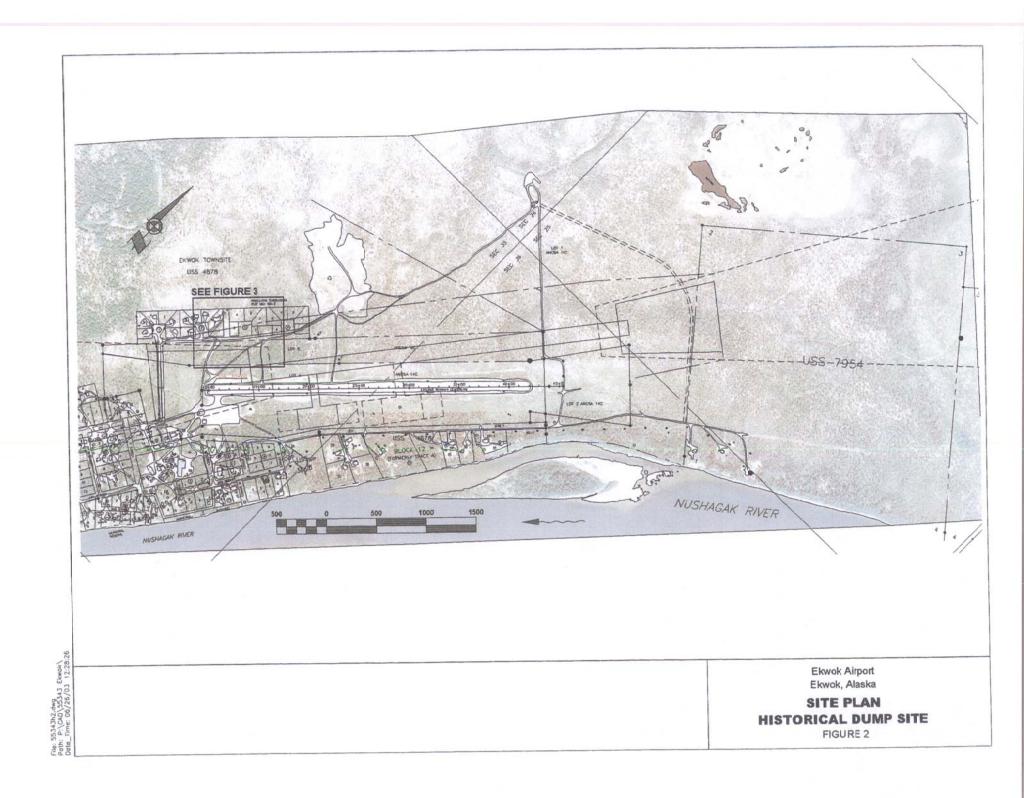
## Part A: Determine score for each item\*

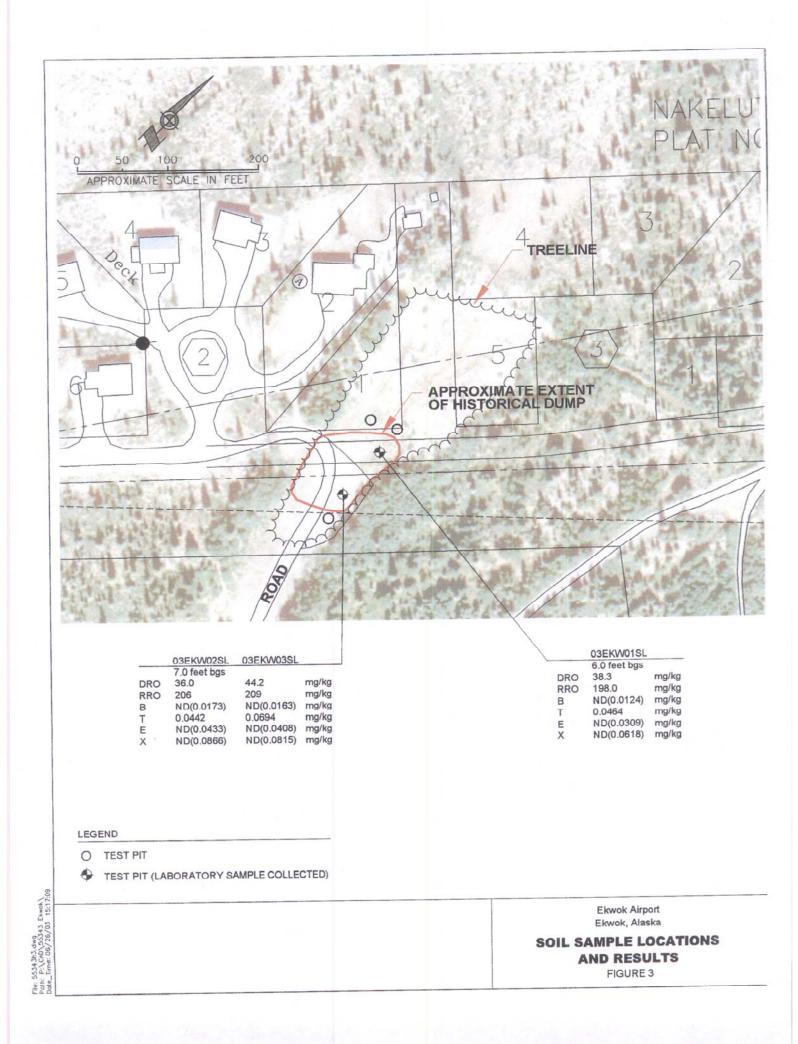
# Part B: Add scores from Part A to determine matrix score and cleanup level

Total Score 36	С	Cleanup Level in mg/kg									
Matrix Score for Each Category	Gasoline Range Organics	Diesel Range Organics	Residual Range Organics								
Category A: More than 40	50	100	2000								
Category B: More than 26 to 40	100	200	2000								
Category C: 21 - 26	500	1000	2000								
Category D: Less than 21	1000	2000	2000								

**FIGURES** 







LABORATORY DATA PACKAGES AND SAMPLE RECORD LOG

#### DATA QUALITY ASSESSMENT (Note: Any "No" answer requires a comment)

Project: Ekwok Dump Investigation Laboratory Work Order No.: B3F0053

			Not
	Yes	Νο	Required
1. Were samples received in good condition?	<u> </u>		
2. Were samples analyzed for requested parameters?	<u> </u>		
3. Is the ADEC Data Deliverables package complete?			<u> </u>
4. Were samples extracted/analyzed within holding time acceptance criteria?	X		
5. For soils, were sample results reported on a "dry weight" basis?	X		
6. For volatiles, were trip blank analytes all reported as ND?	X		
7. Were calibration and CCV/LS criteria met?			<u> </u>
8. Were instrument blanks reported as ND?			<u> </u>
9. Were method blanks reported as ND?	X		
10. Are the LCS/LCSDs within acceptance criteria?	X		
11. Are the MS/MSDs within acceptance criteria?		<u> </u>	
12. Are the LCS/LCSD relative percent differences within acceptance criteria?	X		
13. Are the MS/MSD relative percent differences within acceptance criteria?		X	
14. Are the sample duplicate relative percent differences within acceptance criteria?			<u> </u>
15. Are the surrogate percent recoveries within acceptance criteria?		X	
16. Are the field duplicate relative percent differences less than 50 percent?		X	

#### Comments:

- Analytical data were reviewed according to the Chemical Quality Assurance for Hazardous, Toxic, and Radioactive Waste (HTRW) Projects, USACE EM-200-1-6, October 10, 1997.
- Results in the diesel organics range are primarily due to the overlap from a heavy oil range product.
- An anomaly associated with the Organochlorine Pesticides by EPA Method 8081A analysis caused the continuing calibration verification (CCV) to fail low for DDT and Methoxychlor for samples 03EKW01SL, 03EKW02SL, and 03EKW03SL. These samples were re-analyzed and the results verified. The results for these two compounds should be considered biased low in these samples.
- Sample 03EKW02SL was used for the Organochlorine Pesticides (EPA 8081A) MS/MSD analyses. The following MS and/or MSD %Recoveries
  were outside the QC limits because of sample matrix interference. Affected results for sample 03EKW02SL were qualified as indicated.

Analyte	MS/MSD	Control	Qualifier			
	%Recoveries	Limits				
Dieldrin	NA / NA	30-150%	none *			
Endrin Aldehyde	21.3 / 23.8	30-150%	none *			
Methoxychlor	168 / 152	30-150%	none *			

\* Because the analyte was not detected in the sample and not affected by the potential high bias of the surrogate, no qualifiers were required.

 The %Recoveriees for Polychlorinated Biphenyls (PCBs) surrogate Decachlorobiphenyl were outside the 48-150% QC limits for samples 03EKW01SL (199%) and 03EKW02SL (152%). Review of associated QC indicates the recovery for this surrogate does not represent an out-ofcontrol condition.

#### MACTEC

- The %Recoveries for SVOC surrogate p-Terphenyl-d14 was outside the 44-144% QC limits for samples 03EKW02SL (156%). Review of associated QC indicates the recovery for this surrogate does not represent an out-of-control condition.
- Field duplicates 03EKW02SL and 03EKW03SL had an RPD greater than 50% for lead (62.12%), and p-Isopropyltoluene (63.29%).

Reviewer: Scott Finnegan

Date: June 25, 2003

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Laboratory Copy	 Project Office Copy
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Seattle	11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244 425.420.9200 fax 425.420.9210
Spokane	East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
Portland	509.924.9200 fax 509.924.9290 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
Bend	503,906,9200 fax 503,906,9210 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
	541.383.9310 fax 541.382.7588
Anchorage	2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119 907.563.9200 fax 907.563.9210

16 June 2003

Donna Robertson MACTEC - Anchorage 601 East 57th Place Anchorage, AK 99518 RE: EKWOK

Enclosed are the results of analyses for samples received by the laboratory on 06/03/03 14:35. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kortland Orr For Emanuel Hignutt PM



 Seattle
 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244

 425.420.9200
 fax 425.420.9210

 Spokane
 East 11115 Montgomery, Suite B, Spokane, WA 99206-4776

 509.924.9200
 fax 309924.9290

 Portland
 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132

 503.906.9200
 fax 503.906.9210

 Bend
 2032 Empire Avenue, Suite F-1, Bend, OR 97701-5711

 541.383.9310
 fax 541.382.7588

 Anchorage
 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119

 907.553.9200
 fax 907.563.9210

MACTEC - Anchorage	Project: EKWOK	
601 East 57th Place	Project Number: 55343.1.6	Reported:
Anchorage AK, 99518	Project Manager: Donna Robertson	06/16/03 16:20

## ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
03EKWO1SL	<b>B</b> 3F0053-01	Soil	05/29/03 10:20	06/03/03 14:35
03EKWO2SL	B3F0053-02	Soil	05/29/03 10:55	06/03/03 14:35
03EKWO3SL	B3F0053-03	Soil	05/29/03 11:05	06/03/03 14:35
03EKW04SL	B3F0053-04	Soil	05/29/03 11:15	06/03/03 14:35

North Creek Analytical - Bothell

Kortland Orr For Emanuel Hignutt, PM



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Bend	20332 Empire Avenue, Sulte F-1, Bend, OR 97701-5711 541.383.9310 fax 541.382.7588
Anchorage	2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119 907.563.9200 fax 907.563.9210

MACTEC - Anchorage	Project:	EKWOK	
601 East 57th Place	Project Number:	55343.1.6	Reported:
Anchorage AK, 99518	Project Manager:	Donna Robertson	06/16/03 16:20

A

# Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101/EPA 8021B

North Creek Analytical - Bothell

	-				Jothen				
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKWO1SL (B3F0053-01) Soil	Sampled: 05/29/	03 10:20 Re		<u>3/03 14:35</u>					
Gasoline Range Hydrocarbons	ND	3.09	mg/kg dry	1	3F05001	06/05/03	06/05/03	AK 101	
Benzene	ND	0.0124	n		11	17		N	
Toluene	0.0464	0.0309	"		и	U	-	*1	
Ethylbenzene	ND	0.0309		-	10	D	н	**	
Xylenes (total)	ND	0.0618	11	**	и	п	•	и	
Surrogate: 4-BFB (FID)	91.6 %	60-120			II.	0	"	"	<u> </u>
Surrogate: a,a,a-TFT (FID)	71.9 %	50-150			-	"	~	"	
Surrogate: 4-BFB (PID)	110 %	60-120				"	N	<b>`</b> M	
Surrogate: a,a,a-TFT (PID)	77.3 %	50-150			л	"	n	"	
03EKWO2SL (B3F0053-02) So <u>il</u>	Sampled: 05/29/0	03 10:55 Re	ceived: 06/0	3/03 14:35					
Gasoline Range Hydrocarbons	ND	4.33	mg/kg dry	1	3F05001	06/05/03	06/05/03	AK 101	
Benzene	ND	0.0173		"		"	•		
Toluene	0.0442	0.0433	۲	H		"		*1	
Ethylbenzene	ND	0.0433	н	Ir	и				
Xylenes (total)	ND	0.0866	-	μ	"	"	"	"	
Surrogate: 4-BFB (FID)	93.I %	60-120			н	n	"	"	
Surrogate: a,a,a-TFT (FID)	87.3 %	50-150			п	"	"	*	
Surrogate: 4-BFB (PID)	112 %	60-120			"	"	"	*	
Surrogate: a,a,a-TFT (PID)	95.4 %	50-150			"	"	"	*	
03EKWO3SL (B3F0053-03) Soil	Sampled: 05/29/0	03 11:05 Re	ceived: 06/0	3/03 14 <u>:35</u>					
Gasoline Range Hydrocarbons	ND	4.08	mg/kg dry	I	3F05001	06/05/03	06/05/03	AK 101	
Benzene	ND	0.0163		۲	я	"	"		
Toluene	0.0694	0.0408	•		*	**	۲	٣	
Ethylbenzene	ND	0.0408	2		n	*	۹۲		
Xylenes (total)	ND	0.0815	n	14	n	"	tı		
Surrogate: 4-BFB (FID)	94.0 %	60-120			"	"	"	17	
Surrogate: a,a,a-TFT (FID)	88.4 %	50-150			н		"	"	
Surrogate: 4-BFB (PID)	108 %	60-120			"	**	n	"	
Surrogate: a,a,a-TFT (PID)	92.8 %	50-150			и	"	"	"	

North Creek Analytical - Bothell

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MACTEC - AnchorageProject:EKWOK601 East 57th PlaceProject Number:55343.1.6Reported:Anchorage AK, 99518Project Manager:Donna Robertson06/16/03 16:20

## Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101/EPA 8021B

North (	Creek	Analytica	1 -	<b>Bothell</b>
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		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKW04SL (B3F0053-04) Soil	Sampled: 05/29/0	311:15 Re	ceived: 06/03	/03 14:35					
Gasoline Range Hydrocarbons	ND	13.8	mg/kg wet	1	3F05001	06/05/03	06/05/03	AK 101	
Benzene	ND	0.0550	It	17	11	"	14	17	
Toluene	ND	0.138	It	н	н		'n	n	
Ethylbenzene	ND	0.138	н	и	н	19	н	*1	
Xylenes (total)	ND	0.275	H.	м	It	H	11	**	
Surrogate: 4-BFB (FID)	89.4 %	60-120			7	"	"	"	
Surrogate: a,a,a-TFT (FID)	105 %	50-150			-	"	"	"	
Surrogate: 4-BFB (PID)	108 %	60-120			"	"	7	"	
Surrogate: a,a,a-TFT (PID)	112 %	50-150			7	"	-	-	

North Creek Analytical - Bothell

Kortland Orr For Emanuel Hignutt, PM



MACTEC - Anchorage

Anchorage AK, 99518

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Project: EKWOK

Project Number: 55343.1.6 Project Manager: Donna Robertson **Reported:** 06/16/03 16:20

### Diesel Hydrocarbons (C10-C25) and Heavy Oil (C25-C36) by AK102 and AK103 North Creek Analytical - Bothell

		NORTH CR	еек Апагу	ticai - i	sotnen				
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKWO1SL (B3F0053-01) Soil	Sampled: 05/29/	03 10:20 Re	ceived: 06/0	3/03 14:35	i				
Diesel Range Hydrocarbons Residual Range Organics	38.3 198	4.00 25.0	mg/kg dry "	1	3F05031 "	06/05/03 "	06/06/03	AK102/103	D-09
Surrogate: 2-FBP Surrogate: Octacosane	97.1 % 93.1 %	50-150 50-150			"	M rt	n 11	n 11	
03EKWO2SL (B3F0053-02) Soil	Sampled: 05/29/0	03 10:55 Re	ceived: 06/0	3/03 14:35	i				
Diesel Range Hydrocarbons Residuat Range Organics	36.0 206	4.00 50.0	mg/kg dry "	1 2	3F05031 "	06/05/03 "	06/06/03 06/06/03	AK102/103 "	D-09
Surrogate: 2-FBP Surrogate: Octacosane	86.2 % 87.3 %	50-150 50-150			n n	N N	06/06/03 06/06/03	ri 17	
03EKWO3SL (B3F0053-03) Soil	Sampled: 05/29/0	03 11:05 Re	ceived: 06/0	3/03 14:35	1				
Diesel Range Hydrocarbons Residual Range Organics	44.2 209	4.00 25.0	mg/kg dry "	1 "	3F05031 "	06/05/03 "	06/06/03 06/06/03	AK102/103	D-09
Surrogate: 2-FBP Surrogate: Octacosane	97.5 % 106 %	50-150 50-150			"	11 N	06/06/03 06/06/03	ri 1	; .

North Creek Analytical - Bothell

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MACTEC - Anchorage	Project:	EKWOK	
601 East 57th Place	Project Number:	55343.1.6	Reported:
Anchorage AK, 99518	Project Manager:	Donna Robertson	06/16/03 16:20

# Total Metals by EPA 6000/7000 Series Methods

## North Creek Analytical - Bothell

		Reporting			· · · ·				
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKWO1SL (B3F0053-01) Soli	Sampled: 05/29/03	10:20 Re	ceived: 06/0	<u>3/03 14:35</u>	5				
Silver	ND	0.500	mg/kg dry	1	3F09032	06/09/03	06/11/03	EPA 6020	
Arsenic	5.59	0.500	19	11	м		7	н	
Barium	102	5.00	11	n	۳	**	*1	H.	
Cadmium	ND	0.500	*	*1	۲	**	*1	к	
Chromium	17.2	0.500	*	*1		"	n	н	
Mercury	ND	0.200	"	11	3F04025	06/04/03	06/04/03	EPA 7471A	
Lead	4.88	0.500	"	-	3F09032	06/09/03	06/11/03	EPA 6020	
Selenium	ND	0.500		۳	н	"	"	14	
03EKWO2SL (B3F0053-02) Soll	Sampled: 05/29/03	10:55 Re	ceived: 06/0	<u>3/03 14:35</u>	i				
Silver	ND	0.500	mg/kg dry	1	3F09032	06/09/03	06/11/03	EPA 6020	
Arsenic	5.49	0.500		*	*	"	•	n	
Barium	99.0	5.00	ir.	"	*		*1	"	
Cadmium	ND	0.500	n	**			M	It	
Chromium	16.3	0.500	п	*1	*	"	*1	H	
Мегсигу	ND	0.200	U		3F04025	06/04/03	06/04/03	EPA 7471A	
Lead	17.3	0.500	и	U II	3F09032	06/09/03	06/11/03	EPA 6020	
Selenium	ND	0.500	n	u		P	n	"	
3EKWO3SL (B3F0053-03) Soil	Sampled: 05/29/03	11:05 Re	ceived: 06/0	<u>3/03 14:35</u>					
Silver	ND	0.500	mg/kg dry	1	3F09032	06/09/03	06/11/03	EPA 6020	
Arsenic	6,64	0.500	*		19	P	Π		
Barium	103	5.00		"	19		н	"	
Cadmium	ND	0.500	14	tr		н	h	н	
Chromium	17.9	0.500	14	++	N.	n	11	u	
Мегсигу	ND	0.200	14		3F04025	06/04/03	06/04/03	EPA 7471A	
Lead	9.10	0.500	μ		3F09032	06/09/03	06/11/03	EPA 6020	
Selenium	ND	0.500	H		*	н	r.	+1	

North Creek Analytical - Bothell

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	MACTEC - Anchorage	Project: EKWOK	
1	601 East 57th Place	Project Number: 55343.1.6	Reported:
	Anchorage AK, 99518	Project Manager: Donna Robertson	06/16/03 16:20

# Organochlorine Pesticides by EPA Method 8081A

## North Creek Analytical - Bothell

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKWO1SL (B3F0053-01) Soil	Sampled: 05/29/	03 10:20 Re	ceived: 06/0	3/03 14:35					,
Aldrin	ND	1.00	ug/kg dry	1	3F05033	06/05/03	06/10/03	EPA 8081A	
alpha-BHC	ND	1.00	н	11	н	**	ti i	*1	
beta-BHC	ND	2.00	*	"	Η	**	11	*1	
delta-BHC	ND	1.00	н	"		**	in .	-	
gamma-BHC (Lindane)	ND	1.00	-	"		<b>†</b> 1	н	н	
Chlordane (tech)	ND	10.0	۳	"		**	Π		
alpha-Chlordane	ND	1.00	•	.,	-	n	ч	"	
gamma-Chlordane	ND	1.00	•	"		"	u	*1	
4,4'-DDD	ND	2.00	"	**	H	**	11	ir	
4,4´-DDE	ND	2.00	"	"	۳	**	п	n	
4,4´-DDT	ND	2.00	н	•		**	+1	H.	
Dieldrin	ND	2.00		-	"	n	н	н	
Endosulfan I	ND	1.00	It	м	"	**	n		
Endosulfan II	ND	2.00	H	۳	H	**	н		
Endosulfan sulfate	ND	2.00		"	"	۳	н		
Endrin	ND	2.00		11	"	**	11	11	
Endrin aldehyde	ND	2.00	۳	"	11	**	"		
Endrin ketone	ND	2.00	"	*		Ħ	11	n	
Heptachlor	ND	1.00	"	*1	u	"	11	It.	
Heptachlor epoxide	ND	1.00	"	••	U	"	11		
Methoxychlor	ND	10.0	"	••		**	11	P.	
Toxaphene	ND	50.0	н	-	17	*1	н	"	
Surrogate: TCX	80.8 %	28-128			"	"	"	N N	··
Surrogate: Decachlorobiphenyl	<i>89.8 %</i>	29-141			"	,	"	"	

North Creek Analytical - Bothell

Kortland Orr For Emanuel Hignutt, PM



 
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MACTEC - Anchorage 601 East 57th Place Anchorage AK, 99518

# Project: EKWOK

Project Number: 55343.1.6 Project Manager: Donna Robertson

**Reported:** 06/16/03 16:20

# Organochlorine Pesticides by EPA Method 8081A

## North Creek Analytical - Bothell

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKWO2SL (B3F0053-02) Soil	Sampled: 05/29/0	03 10:55 Re	ceived: 06/0	3/03 14:35					X
Aldrin	ND	1.00	ug/kg dry	1	3F05033	06/05/03	06/11/03	EPA 8081A	
alpha-BHC	ND	1.00	н	**	и	14	н	и	
beta-BHC	ND	2.00	0	**	н	**	11	μ	
delta-BHC	ND	1.00	u		н		n	н	
gamma-BHC (Lindane)	ND	1.00	71	*		n	Ħ	И	
Chlordane (tech)	ND	10.0	"	р Ц		n	۳	*	
alpha-Chlordane	ND	1.00	0	*	H	н	"	н	
gamma-Chlordane	ND	1.00	u	*		н	*		
4,4´-DDD	ND	2.00	n	"	۲	D	W		
4,4´-DDE	ND	2.00	11	*	н	U	"		
4,4´-DDT	ND	2.00	n	*		U	'n		
Dieldrin	ND	2.00	"	**	17	U		**	
Endosulfan I	ND	1.00	"	*		a	п	н	
Endosulfan II	ND	2.00		••	-	"	D	14	
Endosulfan sulfate	ND	2.00	**		-	**	U	IT.	
Endrin	ND	2.00	•		n		U U	17	
Endrin aldehyde	ND	2.00		-	۲	**	U	•	
Endrin ketone	ND	2.00	14		H	"	U	"	
Heptachlor	ND	1.00			н	**	U	"	
Heptachlor epoxide	ND	1.00	"	۳		"	0	0	
Methoxychlor	ND	10.0		۳	m	"	u		
Toxaphene	ND	50.0	μ	н	17	"	n	0	
Surrogate: TCX	72.9 %	28-128			4	"		"	
Surrogate: Decachlorobiphenyl	84.9 %	29-141			п	"	"	"	

North Creek Analytical - Bothell

Kortland Orr For Emanuel Hignutt, PM



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1	MACTEC - Anchorage	Project: EKWOK	
	601 East 57th Place	Project Number: 55343.1.6	Reported:
İ	Anchorage AK, 99518	Project Manager: Donna Robertson	06/16/03 16:20

# Organochlorine Pesticides by EPA Method 8081A

### North Creek Analytical - Bothell

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKWO3SL (B3F0053-03) Soil	Sampled: 05/29/	03 11:05 Re	ceived: 06/0	3/03 14:35	5				,
Aldrin	ND	1.00	ug/kg dry	1	3F05033	06/05/03	06/11/03	EPA 8081A	
alpha-BHC	ND	1.00	*	H	**	n	0	H	
beta-BHC	ND	2.00	**	*	**		D.	n	
delta-BHC	ND	1.00	•	"	**	*		n	
gamma-BHC (Lindane)	ND	1.00		"	"	*)	0	н	
Chlordane (tech)	ND	10.0	-	*	**	"	"	11	
alpha-Chlordane	ND	1.00	H	"	•	"	"	u	
gamma-Chlordane	ND	1.00	N.	"	"	"	•1	. **	
4,4'-DDD	ND	2,00	*	••	**	"	**	71	
4,4´-DDE	ND	2.00	"		**	"	**	*	
4,4'-DDT	ND	2.00	*	U	۹r	•1	"	,,	
Dieldrin	ND	2.00	U.	U	"	••	**	IF.	
Endosulfan I	ND	1.00	0		"	,,	*	н	
Endosulfan II	ND	2.00	0		н	*1	"	H.	
Endosulfan sulfate	ND	2.00	17	11	н	*1	**	*	
Endrin	ND	2.00	*	"	"	"	**	"	
Endrin aldehyde	ND	2.00		"	н	"	••	H	
Endrin ketone	ND	2.00	"	*	n		**	19	
Heptachlor	ND	1.00	H	**	14	"	**	1+	
Heptachlor epoxide	ND	1.00	14	**		"	10	14	
Methoxychlor	ND	10.0	"	"	**	*1	10		
Toxaphene	ND	50.0	14	۲	**	**	"	14	
Surrogate: TCX	74.7 %	28-128			"	N	"	"	
Surrogate: Decachlorobiphenyl	82.2 %	29-141			"		"	"	

North Creek Analytical - Bothell

Kortland Orr For Emanuel Hignutt, PM



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MACTEC - Anchorage	Project: EKWOK	
601 East 57th Place	Project Number: 55343,1.6	Reported:
Anchorage AK, 99518	Project Manager: Donna Robertson	06/16/03 16:20

# Polychlorinated Biphenyls by EPA Method 8082

North	Creek	Analytical	-	Bothell	
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Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	
				Dilution	Daten	Frepareu	Analyzeu	Method	Notes
03EKWO1SL (B3F0053-01) Soil	Sampled: 05/29/	03 10:20 Re	ceived: 06/0	3/03 14:35					
Aroclor 1016	ND	25.0	ug/kg dry	I	3F05033	06/05/03	06/10/03	EPA 8082	
Aroclor 1221	ND	50.0	14	•	17		"	1.	
Aroclor 1232	ND	25.0	**	-	IT.	IF	"	**	
Aroclor 1242	ND	25.0	*		۳	14	"	••	
Atoclor 1248	ND	25.0	"		٣	17	и		
Aroclor 1254	ND	25.0	"	-	-	14	н		
Aroclor 1260	ND	25.0	Ħ	٣	10		н	**	
Aroclor 1262	ND	25.0	U II		17	и	۳	*	
Aroclor 1268	ND	25.0	Ð	"	11	"	M	w	
Surrogate: TCX	83.9 %	49-124			"	7	N	7	
Surrogate: Decachlorobiphenyl	199 %	48-150			"	*	"	~	S-03
03EKWO2SL (B3F0053-02) Soil	Sampled: 05/29/0	03 10:55 Re	ceived: 06/0	3/03 14:35					
Aroclor 1016	ND	25.0	ug/kg dry	1	3F05033	06/05/03	06/10/03	EPA 8082	
Aroclor 1221	ND	50.0	"				"	D	
Aroclor 1232	ND	25.0	н	"		"	"	D	
Aroclor 1242	ND	25.0	M	н	"	"	tu.		
Aroclor 1248	ND	25.0	*	μ.	**		**	11	
Aroclor 1254	ND	25.0	"		0	10	**	11	
Aroclor 1260	ND	25.0	"	μ	U U		"		
Aroclor 1262	ND	25.0	"	n				n	
Aroclor 1268	ND	25.0	U	n	"	"	**	u	
Surrogate: TCX	83.9 %	49-124			n		"	"	
Surrogate: Decachlorobiphenyl	152 %	48-150			"	7	"	"	S-03

North Creek Analytical - Bothell

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MACTEC - AnchorageProject:EKWOK601 East 57th PlaceProject Number:55343.1.6Anchorage AK, 99518Project Manager:Donna Robertson06/16/03 16:20

## Polychlorinated Biphenyls by EPA Method 8082 North Creek Analytical - Bothell

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKWO3SL (B3F0053-03) Soil	Sampled: 05/29/	)3 11:05 Re	celved: 06/0	3/03 14:35	1				_
Aroclor 1016	ND	25.0	ug/kg dry	1	3F05033	06/05/03	06/10/03	EPA 8082	
Aroclor 1221	ND	50.0	۳.	н	Ð		**	и	
Aroclor 1232	ND	25.0	n	н	0	**	IL.	le .	
Aroclor 1242	ND	25.0	0	II	ы	١٢	и	10	
Aroclor 1248	ND	25. <b>0</b>	11	۲	N	11	D	и	
Aroclor 1254	ND	25.0	**	•		•	ti		
Aroclor 1260	ND	25.0	0	н	Ħ	10	U	'n	
Aroclor 1262	ND	25.0	0	n	"		U U	, и	
Aroclor 1268	ND	25.0	U	•	N	"	н	"	
Surrogate: TCX	99.1 %	49-124		•	"	"		N	
Surrogate: Decachlorobiphenyl	48.4 %	48-150			"	"	"		

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MACTEC - Anchorage 601 East 57th Place Anchorage AK, 99518 Project: EKWOK

Project Number:55343.1.6Reported:Project Manager:Donna Robertson06/16/03 16:20

# Volatile Organic Compounds by EPA Method 8260B

North Creek Analytical - Bothell Reporting Analyte Result Limit Units Dilution Batch Prepared Analyzed Method Notes 03EKWO1SL (B3F0053-01) Soil Sampled: 05/29/03 10:20 Received: 06/03/03 14:35 1,1,1,2-Tetrachloroethane ND 0.0495 mg/kg dry 3F05019 1 06/04/03 06/05/03 EPA 8260B 1,1,1-Trichloroethane ND 0.0495 1,1,2,2-Tetrachloroethane ND 0.0495 n 1,1,2-Trichloroethane 11 ND 0.0495 11 t,1-Dichloroethane ND 0.0495 • ... 1,1-Dichloroethene ND 0.0495 . ... 1,1-Dichloropropene ND • 0.0495 1,2,3-Trichlorobenzene v ND 0.0495 " 1,2,3-Trichloropropane ND 0.0495 17 n 1,2,4-Trichlorobenzene ND j+ 0.0495 n 1,2,4-Trimethylbenzene ND 0.0495 н 17 1,2-Dibromo-3-chloropropane ND 0.247 •• 1,2-Dibromoethane ND 0.0495 1,2-Dichlorobenzene ND 0.0495 19 1,2-Dichloroethane ND 0.0495 1.2-Dichloropropane ND 0.0495 1,3,5-Trimethylbenzene ND 0.0495 1,3-Dichlorobenzene ND 0.0495 ø 1,3-Dichloropropane ND 0.0495 U D) 1,4-Dichlorobenzene ND n 0.0495 D. 2,2-Dichloropropane ND 0.0495 11 2-Butanone ND ... 0.495 2-Chlorotoluene \*\* ND 0.0495 2-Hexanone ND 0.495 \*\* 4-Chlorotoluene ND 0.0495 •1 4-Methyl-2-pentanone ND 0.495 Acetone ND 0.495 •• Benzene ND 0.0495 Bromobenzene ND 0.0495 Ð Bromochloromethane ND 0.0495 0 11 Bromodichloromethane ND 0.0495 ... •• Bromoform ND 0.0495 37 n • Bromomethane ND 0.0495 ... •• Carbon disulfide ND 0.0495 Carbon tetrachloride ND 0.0495 ÷. ... Chlorobenzene ND 0.0495 а Chloroethane ND 0.0495 Chloroform ND 0.0495 в

North Creek Analytical - Bothell

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MACTEC - Anchorage 601 East 57th Place Anchorage AK, 99518

Project: EKWOK Project Number: 55343.1.6 Project Manager: Donna Robertson

**Reported:** 06/16/03 16:20

# Volatile Organic Compounds by EPA Method 8260B

		North Cro	eek Analy	rtical - E	Bothell				
Analyte	Result	Reporting Limit	Units	Dilution	<b>D</b> 4 1				
		L_[[1]]]L_[[1]]]L_[[1]]]L_[[1]]]L_[[1]]]L_[[1]]]L_[[1]]L_[[	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKWO1SL (B3F0053-01) Soil	Sampled: 05/29/	03 10:20 Re	ceived: 06/0	<u>3/03 14:35</u>					
Chloromethane	ND	0.247	mg/kg dry	1	3F05019	06/04/03	06/05/03	EPA 8260B	
cis-1,2-Dichloroethene	ND	0.0495	"	"	11	'n	**	н	
cis-1,3-Dichloropropene	ND	0.0495	17	"	н	μ		н	
Dibromochloromethane	ND	0.0495		"	*1	н		н	
Dibromomethane	ND	0.0495	11	"	*1	μ	۰r		
Dichlorodifluoromethane	ND	0.0495	11	"		Ir	W	**	
Ethylbenzene	ND	0.0495	*	"	н	н	11	"	
Hexachlorobutadiene	ND	0.0495	n	"	*	н	"	м	
Isopropylbenzene	ND	0.0495		H.	н	n	"	17	
m,p-Xylene	ND	0.0989	M	11	*1	u	**		
Methylene chloride	ND	0.495	"	н	*1	н	"	"	
n-Butylbenzene	ND	0.0495	и	U U	*	н		"	
n-Propylbenzene	ND	0.0495	и	U		μ	, m	"	
Naphthalene	ND	0.0495	н	U U		и		*	
o-Xylene	ND	0.0495	u	U U	-	μ	•		
p-lsopropyltoluene	0.0583	0.0495	U U			μ	-	,,	
sec-Butylbenzene	ND	0.0495	h	н.	м	н		**	
Styrene	ND	0.0495	и		•	н		**	
tert-Butylbenzene	ND	0.0495	•	IT	н	μ	м	"	
Tetrachloroethene	ND	0.0495	*	**	н	н	n	"	
Toluene	0.0592	0.0495	"	*1		н	n		
trans-1,2-Dichloroethene	ND	0.0495	н	•		**			
trans-1,3-Dichloropropene	ND	0.0495	M				n	**	
Trichloroethene	ND	0.0495		**	10	μ		**	
Trichlorofluoromethane	ND	0.0495	H		19	н	м		
Vinyl chloride	ND	0.0495	"	н	14	μ	н	"	
Surrogate: 1,2-DCA-d4	99.3 %	70-130			"	"	"		
Surrogate: Toluene-d8	108 %	70-130			"	"	"	n	
Surrogate: 4-BFB	87.4 %	70-130			n	н	"		

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MACTEC - Anchorage 601 East 57th Place Anchorage AK, 99518 Project: EKWOK

Project Number: 55343.1.6 Project Manager: Donna Robertson **Reported:** 06/16/03 16:20

# Volatile Organic Compounds by EPA Method 8260B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKWO2SL (B3F0053-02) Soil	Sampled: 05/29/0	3 10:55 Re	ceived: 06/0	3/03 14:35					
1,1,1,2-Tetrachloroethane	ND	0.0693	mg/kg dry	I	3F05019	06/04/03	06/05/03	EPA 8260B	
1,1,1-Trichloroethane	ND	0.0693		۳	**	U	0	н	
1,1,2,2-Tetrachloroethane	ND	0.0693	и		*	n		P	
1,1,2-Trichloroethane	ND	0.0693	11	•			*		
1,1-Dichloroethane	ND	0.0693	'n		**	н	**	14	
1,1-Dichloroethene	ND	0.0693	11			**		۲	
1,1-Dichloropropene	ND	0.0693	*	-	*	*	, P		
1,2,3-Trichlorobenzene	ND	0.0693	*			**			
1,2,3-Trichloropropane	ND	0.0693	*	-	n	**	11	۲	
1,2,4-Trichlorobenzene	ND	0.0693			n	**		**	
1,2,4-Trimethylbenzene	ND	0.0693	•		"	"	м		
1,2-Dibromo-3-chloropropane	ND	0.347	"	r.			H		
1,2-Dibromoethane	ND	0.0693	-			17			
1,2-Dichlorobenzene	ND	0.0693		н	*	**		**	
1,2-Dichloroethane	ND	0.0693		R	10	19		*	
1,2-Dichloropropane	ND	0.0693		ir.	*	**		*	
1,3,5-Trimethylbenzene	ND	0.0693		"	**	**	"	**	
1,3-Dichlorobenzene	ND	0.0693	R	"	**	7			
1,3-Dichloropropane	ND	0.0693	"	a	**	н	n	**	
1,4-Dichlorobenzene	ND	0.0693	••	u	**		п	**	
2,2-Dichloropropane	ND	0.0693	•	11	**	17	*	•	
2-Butanone	ND	0.693				н	"		
2-Chlorotoluene	ND	0.0693	"	0		н	н		
2-Hexanone	ND	0.693	н	н	**	-	м	11	
4-Chlorotoluene	ND	0.0693		11	*	*	μ	.,	
4-Methyl-2-pentanone	ND	0.693	**			Η	*	"	
Acetone	ND	0.693	**	ю	**		u		
Benzene	ND	0.0693		14	*		н		
Bromobenzene	ND	0.0693	n	10	۲	7	н		
Bromochloromethane	ND	0.0693	"	10	м	н	μ	17	
Bromodichloromethane	ND	0.0693	0	ŧr	н		n	.,	
Bromoform	ND	0.0693		-	18		•1		
Bromomethane	ND	0.0693	и	-		"	••	**	
Carbon disulfide	ND	0.0693	71	п		17	*1	10	
Carbon tetrachloride	ND	0.0693	N	10			91		
Chlorobenzene	ND	0.0693	м	le	,,	11	*1	**	
Chloroethane	ND	0.0693	п	μ	10	78		**	
Chloroform	ND	0.0693		17		*		**	
Chiofololilli	IND	0.0093						**	

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MACTEC - Anchorage 601 East 57th Place Anchorage AK, 99518 Project: EKWOK Project Number: 55343.1.6 Project Manager: Donna Robertson

**Reported:** 06/16/03 16:20

# Volatile Organic Compounds by EPA Method 8260B

North	Creek A	Analyti	cal -	Bothell
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Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKWO2SL (B3F0053-02) Soil	Sampled: 05/29/	03 10:55 Re	ceived: 06/0	3/03 14:35					
Chloromethane	ND	0.347	mg/kg dry	J	3F05019	06/04/03	06/05/03	EPA 8260B	
cis-1,2-Dichloroethene	ND	0.0693	<b>n</b>			*	h	H.	
cis-1,3-Dichloropropene	ND	0. <b>0693</b>	"	14	•	14	u	u .	
Dibromochloromethane	ND	0.0693	н	н			ч	U	
Dibromomethane	ND	0.0693	-	۳			11	0	
Dichlorodifluoromethane	ND	0.0693	-	١٢			*1	n	
Ethylbenzene	ND	0.0693	11	н	ĸ	**	u	U	
Hexachlorobutadiene	ND	0.0693	**	н		-	*1	н	
Isopropylbenzene	ND	0.0693		"	Ir.	"	н		
m,p-Xylene	ND	0.139	"	0	н		11	н	
Methylene chloride	ND	0.693	n	0	н		"	"	
n-Butylbenzene	ND	0.0693	H		"	**	u.		
n-Propylbenzene	ND	0.0693	ν	D	'n	*	N	"	
Naphthalene	ND	0.0693		11	+1	11	tı	*	
o-Xylene	ND	0.0693	н	"	11	"	11	N	
p-Isopropyltoluene	0.0780	0.0693	11	*	11	"	11	"	
sec-Butylbenzene	ND	<b>0</b> .0693	•	**	11	M	н	**	
Styrene	ND	0.0693		*	0	"	μ	**	
ert-Butylbenzene	ND	0.0693	P		"		a		
Tetrachloroethene	ND	0.0693	10	н	n	*	ti		
Foluene	ND	0.0693	*	м	17	"	и	**	
rans-1,2-Dichloroethene	ND	0.0693	"	"	"	**	11	**	
rans-1,3-Dichloropropene	ND	0.0693	"	и	17	м	н	**	
Frichloroethene	ND	0.0693	0	It		*	н	**	
<b>Frichlorofluoromethane</b>	ND	0.0693		14	**	*	н	**	
Vinyl chloride	ND	0.0693	17	н	۳		н	**	
Surrogate: 1,2-DCA-d4	98.8 %	70-130				"	"	N	
Surrogate: Toluene-d8	106 %	70-130			*	"	"		
Surrogate: 4-BFB	91.3 %	70-130			"	**	"	u.	

North Creek Analytical - Bothell

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**MACTEC - Anchorage** 601 East 57th Place Anchorage AK, 99518

Project: EKWOK Project Number: 55343.1.6

Project Manager: Donna Robertson

Reported: 06/16/03 16:20

#### Volatile Organic Compounds by EPA Method 8260B North Creek Analytical Rothell

	<b>I</b>	North Cro	eek Analy	/tical - H	Bothell				
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
03EKWO3SL (B3F0053-03) Soil		3 11:05 Re	ceived: 06/0	3/03 14:35					
1,1,1,2-Tetrachloroethane	ND	0.0652	mg/kg dry	1	3F05019	06/04/03	06/05/03	EPA 8260B	
1,1,1-Trichloroethane	ND	0.0652	N	"	U.	н	۳.	<b>D</b>	
1,1,2,2-Tetrachloroethane	ND	0.0652	b <b>r</b>		U	ж		D	
1,1,2-Trichloroethane	ND	0.0652	н			и		U	
1,1-Dichloroethane	ND	0.0652	и	11	н	je stali se			
1,1-Dichloroethene	ND	0.0652	17		"	н	**		
1,1-Dichloropropene	ND	0.0652	н	"	**	н	*	*	
1,2,3-Trichlorobenzene	ND	0. <b>0</b> 652	*	"	"	-	,•	••	
1,2,3-Trichloropropane	ND	0.0652	μ	17	*	-		**	
1,2,4-Trichlorobenzene	ND	0.0652	11	"	"			**	
1,2,4-Trimethylbenzene	ND	0.0652	"	"	"	**	n	٣	
1,2-Dibromo-3-chloropropane	ND	0.326	-	D.	"	•1	"	н	
1,2-Dibromoethane	ND	0.0652	•	μ.	**	*	9	н	
1,2-Dichlorobenzene	ND	0.0652		"	**	*	9	**	
1,2-Dichloroethane	ND	0.0652	×		**		11	n	
1,2-Dichloropropane	ND	0.0652	. <b>n</b>	"	**	**	n	*1	
1,3,5-Trimethylbenzene	ND	0.0652	**	IT		*	н	**	
1,3-Dichlorobenzene	ND	0.0652	**				н	*	
1,3-Dichloropropane	ND	0.0652	"	*1	"		n	n	
1,4-Dichlorobenzenc	ND	0.0652	*1	"			n	n	
2,2-Dichloropropane	ND	0.0652	•1	*	**		n	н	
2-Butanone	ND	0.652	n	*1	**		"	μ	
2-Chlorotoluene	ND	0.0652	n	**	"	.,	H	n	
2-Hexanone	ND	0.652	н	**	"			D	
4-Chlorotoluene	ND	0.0652	н	**	14	U		u	
4-Methyl-2-pentanone	ND	0.652	U.	91	"				
Acetone	ND	0.652	в	*1	**	n	N	0	
Benzene	ND	0.0652	17	н	"	н			
Bromobenzene	ND	0.0652		н	**	р		D	
Bromochloromethane	ND	0.0652	11	м		U	Ħ	*1	
Bromodichloromethane	ND	0.0652	"	н			*1	*1	
Bromoform	ND	0.0652		н	**	u	н	"	
Bromomethane	ND	0.0652	п	14	**	a	н	**	
Carbon disulfide	ND ND	0.0652	14	11	"	U	'n		
Carbon tetrachloride	ND	0.0652	14		ri	u U	H		
Chlorobenzene	ND		۶r		**	u	*	**	
Chloroethane	ND	0.0652	17	44	"	"	**	*	
		0.0652	11				••	11	
Chloroform	ND	0.0652		**	1		**	7*	

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MACTEC - Anchorage 601 East 57th Place Anchorage AK, 99518 Project: EKWOK Project Number: 55343.1.6

Project Manager: Donna Robertson

**Reported:** 06/16/03 16:20

# Volatile Organic Compounds by EPA Method 8260B

North	Creek	Analytical	- Bothell
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		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
03EKWO3SL (B3F0053-03) Soil_	Sampled: 05/29/	03 11:05 Re	ceived: 06/0	3/03 14:35					
Chloromethane	ND	0.326	mg/kg dry	1	3F05019	06/04/03	06/05/03	EPA 8260B	
cis-1,2-Dichloroethene	ND	0.0652	"	"	. "	"	۳.	<b>n</b>	
cis-1,3-Dichloropropene	ND	0.0652	n	*	"	n	"	н	
Dibromochloromethane	ND	0.0652	11	**		н	н	и	
Dibromomethane	ND	0.0652	71	H	н	11	**	v	
Dichlorodifluoromethane	ND	0.0652	n	10	н	17	"	•1	
Ethylbenzene	ND	0.0652	0	**	n	"	"	n	
Hexachlorobutadiene	ND	0.0652	u	*	n		••	0	
Isopropylbenzene	ND	0.0652	0	"	n	n	*	11	
m,p-Xylene	ND	0.130	u u	17	١٣		,,	**	
Methylene chloride	ND	0.652	n	*	"	н		u	
n-Butylbenzene	ND	0.0652	n	"	н	U U	U	*	
n-Propylbenzene	ND	0.0652	19	"		*1	D	-	
Naphthalene	ND	0.0652	n	*	H	"	D		
o-Xylene	ND	0.0652	**	"	H	*	U II	r.	
p-lsopropyltoluene	0.405	0.0652	"	۹r	"	"	0	-	
sec-Butylbenzene	ND	0.0652	"	**	н	••	"	by	
Styrene	ND	<b>0</b> .0652	**	"	. н	"	*	**	
tert-Butylbenzene	ND	0.0652	"	**	*	"	"	*	
Tetrachloroethene	ND	0.0652	"	*1		"	"	**	
Toluene	0.0812	0.0652		"	"	**	"	**	
trans-1,2-Dichloroethene	ND	0.0652	n	*1	*	11	**	"	
trans-1,3-Dichloropropene	ND	0.0652	H	"	м	"	**	n	
Trichloroethene	ND	0.0652	n	11	и	P	19	n	
Trichlorofluoromethane	ND	0.0652	n	17	н		*	"	
Vinyl chloride	ND	0.0652	н	10	-	•*	"		
Surrogate: 1,2-DCA-d4	100 %	70-130			"	#	"	и	
Surrogate: Toluene-d8	107%	70-130			~	"		"	
Surrogate: 4-BFB	90.4 %	7 <b>0-130</b>			н	n	"	"	

North Creek Analytical - Bothell

Kortland Orr For Emanuel Hignutt, PM



 
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MACTEC - Anchorage 601 East 57th Place Anchorage AK, 99518 Project: EKWOK Project Number: 55343.1.6

Project Manager: Donna Robertson

**Reported:** 06/16/03 16:20

### Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

	Ν	orth Cr	eek Analy	rtical - H	Bothell				
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<u>03EKW04SL (B3F0053-04) Soil</u>	Sampled: 05/29/03	11:15 Re	ceived: 06/03	<u>/03 14:35</u>					
1,1,1,2-Tetrachloroethane	ND	0.220	mg/kg wet	1	3F05019	06/04/03	06/05/03	EPA 8260B	
1,1,1-Trichloroethane	ND	0.220				"		н	
1,1,2,2-Tetrachloroethane	ND	0.220		14		н		IT	
1,1,2-Trichloroethane	ND	0.220		**	10	n		17	
1,1-Dichloroethane	ND	0.220			"	0	۳	н	
1,1-Dichloroethene	ND	0.220	•	-	N	n	-	м	
1,1-Dichloropropene	ND	0.220	-	**	"	н	-	n	
1,2,3-Trichlorobenzene	ND	0.220		"		0	**	H	
1,2,3-Trichloropropane	ND	0.220	••	"		D.	"	11	
1,2,4-Trichlorobenzene	ND	0.220	**	**		н	**	0	
1,2,4-Trimethylbenzene	ND	0.220	**	"		a -	R	•	
1,2-Dibromo-3-chloropropane	ND	1.10	U	۲r		n -	W.	•	
1,2-Dibromoethane	ND	0.220	° — 0	н	"	н	R	•	
1,2-Dichlorobenzene	ND	0.220	н .	"		н	R	m	
1,2-Dichloroethane	ND	0.220	н	н			1+	**	
1,2-Dichloropropane	ND	0.220		0	и	u	"	*	
1,3,5-Trimethylbenzene	ND	0.220	**	0		u	17	*	
1,3-Dichlorobenzene	ND	0.220	**			*		n	
1,3-Dichloropropane	ND	0.220	**	It	"	71	17	14	
1,4-Dichlorobenzene	ND	0.220	w	IT					
2,2-Dichloropropane	ND	0.220	۳	14	u	"			
2-Butanone	ND	2.20	D.	11	μ	**	(1	"	
2-Chlorotoluene	ND	0.220	"	"	н		9		
2-Hexanone	ND	2.20	**	*1	н	*	0	11	
4-Chlorotoluene	ND	0.220	"	n	и		0	14	
4-Methyl-2-pentanone	ND	2.20	+1	*1	н		0	11	
Acetone	ND	2.20	u	*	n	*1	0	11	
Benzene	ND	0.220	μ	"		••	0	17	
Bromobenzene	ND	0.220	n	٣		*1	u	"	
Bromochloromethane	ND	0.220	n	TT	*1	11	11	19	
Bromodichloromethane	ND	0.220	"		"	11	0	n	
Bromoform	ND	0.220		**		n		*	
Bromomethane	ND	0.220				0	u		
Carbon disulfide	ND	0.220	н	DT .		*1	0		
Carbon tetrachloride	ND	0.220						17 17	
Chlorobenzene	ND ND	0.220		n			u U	H	
		-	*		14			14	
Chloroethane	ND	0.220	н И			u u	"		
Chloroform	ND	0.220				U.	17	**	

North Creek Analytical - Bothell

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North Creek Analytical, Inc. Environmental Laboratory Network Page 17 of 49



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MACTEC - Anchorage 601 East 57th Place Anchorage AK, 99518

Project: EKWOK Project Number: 55343.1.6

Project Manager: Donna Robertson

**Reported:** 06/16/03 16:20

# Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

North Creek Analytical - Dotten										
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	
03EKW04SL (B3F0053-04) Soil	Sampled: 05/29/0	3 11:15 Re	ceived: 06/03	W03 14:35						
Chloromethane	ND	I.10	mg/kg wet	1	3F05019	06/04/03	06/05/03	EPA 8260B		
cis-1,2-Dichloroethene	ND	0.220	0	*				*1		
cis-1,3-Dichloropropene	ND	0.220	U	77		**	"	н		
Dibromochloromethane	ND	0.220	17	"		**	**	*1		
Dibromomethane	ND	0.220	10	•1	"	**	*	71		
Dichlorodifluoromethane	ND	0.220	*			*	"	31		
Ethylbenzene	ND	0.220	**		u	11	) T	11		
Hexachlorobutadiene	ND	0.220	•	U	19	**	17	. 11		
lsopropylbenzene	ND	0.220	۳	D		*	**	tr		
m,p-Xylene	ND	0.440	"	U	19	"		н		
Methylene chloride	ND	2.20	10	"	17	ų	н	14		
n-Butylbenzene	ND	0.220	и		**	"	ņ	11		
n-Propylbenzene	ND	0.220	и	*	**	"	ņ	μ		
Naphthalene	ND	0. <b>220</b>	••	*	*	"	п	n		
o-Xylene	ND	0.220	N	"	**	**	U II	14		
p-Isopropyltoluene	ND	0.220	-	н	••	*	U U			
sec-Butylbenzene	ND	0.220	14	r.	"	"	р	)e		
Styrene	ND	0.220		14	Ħ	*	n	H.		
tert-Butylbenzene	ND	0.220	**	"	W	*1	"	"		
Tetrachloroethene	ND	0.220	**			"	"			
Toluene	ND	0.220	"	H	н	"	n	H.		
trans-1,2-Dichloroethene	ND	0.220		н	н	*	n	IT		
trans-1,3-Dichloropropene	ND	0.220	**	п	11	"	"	IT.		
Trichloroethene	ND	0.220	ų	71		*	n	и		
Trichlorofluoromethane	ND	0.220	н	**		"	n	Ir		
Vinyl chloride	ND	0.220	**	u	и		D	14		
Surrogate: 1,2-DCA-d4	99.5 %	70-130			"	"	"	<i>it</i>		
Surrogate: Toluene-d8	107 %	70-130			"	n	"	"		
Surrogate: 4-BFB	91.1 %	70-130			"	"	"	"		

North Creek Analytical - Bothell

Kortland Orr For Emanuel Hignutt, PM



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Project: EKWOK Project Number: 55343.1.6

Project Manager: Donna Robertson

**Reported:** 06/16/03 16:20

## Semivolatile Organic Compounds by EPA Method 8270C

North Creek Analytical - Bothell									
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
·,,, · · · · · · · · · · · · · · ·									
03EKWO1SL (B3F0053-01) Soil	Sampled: 05/29/0			3/03 14:35					
1,2,4-Trichlorobenzene	ND	0.330	mg/kg dry	1	3F04005	06/04/03	06/10/03	EPA 8270C	
1,2-Dichlorobenzene	ND	0.330			••	IT.	IT.		
1,3-Dichlorobenzene	ND	0.330	**	**	*1	14	11	IF.	
1,4-Dichlorobenzene	ND	0.330	0	**	+1	14	tr	I.	
2,4,5-Trichlorophenol	ND	0.330	U U	*	*1	10		н	
2,4,6-Trichlorophenol	ND	0.330	"	14	*1		-	м	
2,4-Dichlorophenol	ND	0.330	U II	47	,,	۲	H	**	
2,4-Dimethylphenol	ND	0.330	Ð	"	*	H	Ħ	ŧr	
2,4-Dinitrophenol	ND	0.500	U	"	11		n	**	
2,4-Dinitrotoluene	ND	0.500	н		"	-	н	**	
2,6-Dinitrotoluene	ND	0.500	h	**	"	**	n	1.	
2-Chloronaphthalene	ND	0.330	*		"	*1	n		
2-Chlorophenol	ND	0.330	••	"	*	**	n	11	
2-Methylnaphthalene	ND	0.330	••		"	**		17	
2-Methylphenol	ND	0.330	"		٩T	*		n	
2-Nitroaniline	ND	0.500	н	U	*			u	
2-Nitrophenol	ND	0.330	IT	n	•	17	"	u	
3 & 4-Methylphenol	ND	0.330		н	*		**	u	
3,3'-Dichlorobenzidine	ND	5.00		11	n	"	"	11	
3-Nitroaniline	ND	0.500	"	D	14	n	*	μ	
4,6-Dinitro-2-methylphenol	ND	0.500	"	P	н	D.	**	"	
4-Bromophenyl phenyl ether	ND	0.330	"		11	n	*	н	
4-Chloro-3-methylphenol	ND	0.330	*		**	11		14	
4-Chloroaniline	ND	0.500		р	11	11	H	n .	
4-Chlorophenyl phenyl ether	ND	0.330	**	17	IT	11	•	14	
4-Nitroaniline	ND	0.500	u	19	н	4	н	14	
4-Nitrophenol	ND	0.500	u	14	**	tı			
Acenaphthene	ND	0.330	IJ		и	11	*1		
Acenaphthylene	ND	0.330	в	**	*1	11	*1	14	
Aniline	ND	0.330		**	11	а	*1		
Anthracene	ND	0.330	17	**	11	п	11		
Anthracene Benzo (a) anthracene	ND	0.330		*	11	н	11		
	ND	0.330	**	4 11	11				
Benzo (a) pyrene Banzo (b) fluoropthono			"		91	11			
Benzo (b) fluoranthene	ND	0.330		-	,,	,	"	-	
Benzo (ghi) perylene	ND	0.330	11	N		1	" "	7	
Benzo (k) fluoranthene	ND	0.330							
Benzoic Acid	ND	1.00	It	11	*1	н	II	11	
Benzyl alcohol	ND	0.330	14	и	*1	н	IT	**	

North Creek Analytical - Bothell

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Project: EKWOK Project Number: 55343.1.6

Project Manager: Donna Robertson

**Reported:** 06/16/03 16:20

### Semivolatile Organic Compounds by EPA Method 8270C North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKWO1SL (B3F0053-01) Soil	Sampled: 05/29/	03 10:20 Re	ceived: 06/0	3/03 14:35	1				
Bis(2-chloroethoxy)methane	ND	0.330	mg/kg dry	1	3F04005	06/04/03	06/10/03	EPA 8270C	
Bis(2-chloroethyl)ether	ND	0.330		**				"	
Bis(2-chloroisopropyl)ether	ND	0.330	0	*			н	It	
Bis(2-ethylhexyl)phthalate	ND	0.330	U.	"	Ħ		0	11	
Butyl benzyl phthalate	ND	0.330	0	н	H	"	D	n	
Carbazole	ND	0.330	n	*	н		"	•	
Chrysene	ND	0.330	и		н	-	"	"	
Di-n-butyl phthalate	ND	0.330		**	и	**	"	. 11	
Di-n-octyl phthalate	ND	0.330	19	"	n	v	"	10	
Dibenz (a,h) anthracene	ND	0.330	ņ	"	14	*1	"	**	
Dibenzofuran	ND	0.330			n	11	"		
Diethyl phthalate	ND	0.330		n	n	"	"	•	
Dimethyl phthalate	ND	0.330	"	•	n				
Fluoranthene	ND	0.330	*	"	n	n	'n		
Fluorene	ND	0.330	-	"			n		
Hexachlorobenzene	ND	0.330	-	"	n		17	19	
Hexachlorobutadiene	ND	0.330	U	"	μ	'n	n	u	
Hexachlorocyclopentadiene	ND	0.500	-		н		н	**	
Hexachloroethane	ND	0.330	.,		11	"		*1	
Indeno (1,2,3-cd) pyrene	ND	0.330			r,	0	•1	**	
Isophorone	ND	0.330	10	0	11	0	"	*1	
N-Nitrosodi-n-propylamine	ND	0.330			п		11	**	
N-Nitrosodiphenylamine	ND	0.330	"		0	0	н	*	
Naphthalene	ND	0.330	"	D.		н	h	**	
Nitrobenzene	ND	0.330	**		u.		14	•	
Pentachlorophenol	ND	0.500	"	0		п		н	
Phenanthrene	ND	0.330	*1	μ	U	н	IT	-	
Phenol	ND	0.330	0	U.		н		н	
Рутепе	ND	0.330	u	Ð	11	п	10		
Surrogate: 2-FP	97.8 %	26-137			и	"	"	π	
Surrogate: Phenol-d6	99.1 %	10-153			-	"	м		
Surrogate: 2,4,6-TBP	102 %	10-133			7	"	-	-	
Surrogate: 2,4,0-111 Surrogate: Nitrobenzene-d5	93.9%	48-127			"	"		"	
Surrogate: p-Terphenyl-d14	107 %	44-144			н	"	7	-	
Surrogate: 2-FBP	87.3 %	36-146			н	"	"	*	

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Project: EKWOK Project Number: 55343.1.6 Project Manager: Donna Robertson

Reported: 06/16/03 16:20

## Semivolatile Organic Compounds by EPA Method 8270C North Creek Analytical - Bothell

		Reporting	Reporting												
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes						
03EKWO2SL (B3F0053-02) Soil	Sampled: 05/29/03	10:55 Re	ceived: 06/0	3/03 14:35											
1,2,4-Trichlorobenzene	ND	0.330	mg/kg dry	1	3F04005	06/04/03	06/11/03	EPA 8270C							
1,2-Dichlorobenzene	ND	0.330	۱۳	н	**	v	"	н							
1,3-Dichlorobenzene	ND	0.330	ir.	н	**	0	14	н							
1,4-Dichlorobenzene	ND	0.330	**	п	"	U	If.	н							
2,4,5-Trichlorophenol	ND	0.330	μ	tı		U	n	P1							
2,4,6-Trichlorophenol	ND	0.330		n	"	۹r		U.							
2,4-Dichlorophenol	ND	0.330	*	יז	"	**		0							
2,4-Dimethylphenol	ND	0.330	н	0	**		••	"							
2,4-Dinitrophenol	ND	0.500		11			Ħ								
2,4-Dinitrotoluene	ND	0.500	m	n	*	U		D							
2,6-Dinitrotoluene	ND	0.500	**	u	*		*	0							
2-Chloronaphthalene	ND	0.330	*	n	**		*								
2-Chlorophenol	ND	0.330	**	n	**	"		"							
2-Methylnaphthalene	ND	0.330	н	11			**	*1							
2-Methylphenol	ND	0.330	н	9	*	**	"	"							
2-Nitroaniline	ND	0.500	U.	**	*1	"		"							
2-Nitrophenol	ND	0.330			**	••	"	**							
3 & 4-Methylphenol	ND	0.330	n			**	*								
3,3'-Dichlorobenzidine	ND	5.00	"	'n	н	•	*	"							
3-Nitroaniline	ND	0.500	**	н	н	**									
4,6-Dinitro-2-methylphenol	ND	0.500	"	H	H	**		"							
4-Bromophenyl phenyl ether	ND	0.330	н	и		**		**							
4-Chloro-3-methylphenol	ND	0.330	۳	۳		**		**							
4-Chloroaniline	ND	0.500			м	**		,,							
4-Chlorophenyl phenyl ether	ND	0.330	n	٣	-	**	в								
4-Nitroaniline	ND	0.500	•r	W		**	н	*							
4-Nitrophenol	ND	0.500	**	H	н	*	0	-							
Acenaphthene	ND	0.330	ti	•1		"	1.	11							
Acenaphthylene	ND	0.330	U	•1	и	"	19								
Aniline	ND	0.330	н	*1			n	н							
Anthracene	ND	0.330	14	н	H	*1	u								
Benzo (a) anthracene	ND	0.330	**	н		*1									
Benzo (a) pyrene	ND	0.330	**	**	n	tı.	,,								
Benzo (b) fluoranthene	ND	0.330		"	11			**							
Benzo (ghi) perylene	ND	0.330	**	"	9	п	n	**							
Benzo (k) fluoranthene	ND	0.330	*	N	11	n	11	17							
Benzoic Acid	ND	1.00	**	*1	a			н							
Benzyl alcohol	ND	0.330	u –	U	U	0	p								
beneyi alconor	IND	0.330													

North Creek Analytical - Bothell

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North Creek Analytical, Inc. Environmental Laboratory Network Page 21 of 49



Anchorage AK, 99518

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Project: EKWOK Project Number: 55343.1.6

Project Manager: Donna Robertson

Reported: 06/16/03 16:20

### Semivolatile Organic Compounds by EPA Method 8270C North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKWO2SL (B3F0053-02) Soil	Sampled: 05/29/	03 10:55 Re	ceived: 06/0	3/03 14:35				<i>"</i>	
Bis(2-chloroethoxy)methsne	ND	0.330	mg/kg dry	l	3F04005	06/04/03	06/11/03	EPA 8270C	
Bis(2-chloroethyl)ether	ND	0.330				**	н		
Bis(2-chloroisopropyl)ether	ND	0.330	"	H	۳	10	н	u.	• •
Bis(2-ethylhexyl)phthalare	ND	0.330	*	14			н	"	
Butyl benzyl phthalate	ND	0.330	n	17	N		"	-	
Carbazole	ND	0.330	H	н	-		11	-	
Chrysene	ND	0.330	н	19		•	•	r.	
Di-n-butyl phthalate	ND	0.330	н				"	-	
Di-n-octyl phthalate	ND	0.330	0		н		"		
Dibenz (a,h) anthracene	ND	0.330	0		۲	H	11	-	
Dibenzofuran	ND	0.330	0	IF		н	17	••	
Diethyl phthalate	ND	0.330	n	н			TH	"	
Dimethyl phthalate	ND	0.330		н	*		N		
Fluoranthene	ND	0.330	"	11	W		11	н	
Fluorene	ND	0.330	"	T		17	"		
Hexachlorobenzene	ND	0.330		9		11	*1	"	
Hexachlorobutadiene	ND	0.330	M	U	*	10	11		
Hexachlorocyclopentadiene	ND	0.500	۲	U.	"		H	•	
Hexachloroethane	ND	0.330	H	n		"	11	11	
Indeno (1,2,3-cd) pyrene	ND	0.330	r	0	n	14	"	**	
Isophorone	ND	0.330	н	n	н		H	"	
N-Nitrosodi-n-propylamine	ND	0.330	μ	14	"	"	**	**	
N-Nitrosodiphenylamine	ND	0.330	н	•	"	H	и	"	
Naphthalene	ND	0.330	*1	"	н	"	н	"	
Nitrobenzene	ND	0.330	M	10	"	It	H		
Pentachlorophenol	ND	0.500		"		14	*1	"	
Phenanthrene	ND	0.330	7			11	Ħ	**	
Phenol	ND	0.330	*1	H	0	<b>*</b> *	11	**	
Ругепе	ND	0.330	**	11		**	*1	*	
Surrogate: 2-FP	98.0 %	26-137	·		,,	"	"	"	
Surrogate: Phenol-d6	100 %	10-153			"	"	"	"	
Surrogate: 2,4,6-TBP	115 %	10-133				0	n	п	
Surrogate: Nitrobenzene-d5	91.2 %	48-127			"	0		n	
Surrogate: p-Terphenyl-d14	156 %	44-144			*	ŧı	п	п	S-03
Surrogate: 2-FBP	98.5 %	36-146			"	"		н	J*0.

North Creek Analytical - Bothell

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North Creek Analytical, Inc. Environmental Laboratory Network Page 22 of 49



Anchorage AK, 99518

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Project: EKWOK Project Number: 55343.1.6

Project Manager: Donna Robertson

**Reported:** 06/16/03 16:20

## Semivolatile Organic Compounds by EPA Method 8270C

	Ν	orth Cro	eek Analy	ytical - H	Bothell				
	Result	Reporting	•••						
Analyte		Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
03EKWO3SL (B3F0053-03) Soil	Sampled: 05/29/03	11:05 Re	ceived: 06/0	3/03 14:35			<u> </u>		
1,2,4-Trichlorobenzene	ND	0.330	mg/kg dry	1	3F04005	06/04/03	06/10/03	EPA 8270C	
1,2-Dichlorobenzene	ND	0.330	4		M	**	۳	IT.	
1,3-Dichlorobenzene	ND	0.330	**		**	*	8	H	
1,4-Dichlorobenzene	ND	0.330			#	•1	"	۲	
2,4,5-Trichlorophenol	ND	0.330	u		"	"	•	ſŢ	
2,4,6-Trichlorophenol	ND	0.330	u		**	**	*	н	
2,4-Dichlorophenol	ND	0.330		-	"	n	*	17	
2,4-Dimethylphenol	ND	0.330			**	*1	"		
2,4-Dinitrophenol	ND	0.500	51	**	۹r	"	Ħ		
2,4-Dinitrotoluene	ND	0.500	••	•	+1	"	"	۲	
2,6-Dinitrotoluene	ND	0.500	**	*	**	*			
2-Chloronaphthalene	ND	0.330	**	*		"	μ	**	
2-Chlorophenol	ND	0.330		••	*1	**	н	**	
2-Methylnaphthalene	ND	0.330	н	*		<b>1</b> 7	в	*	
2-Methylphenol	ND	0.330		**		"	h	**	
2-Nitroaniline	ND	0.500	17	•7		**	в		
2-Nitrophenol	ND	0.330	14		*1		n	**	
3 & 4-Methylphenol	ND	0.330		a a	n	**	н	,,	
3.3'-Dichlorobenzidine	ND	5.00		0		"	и	**	
3-Nitroaniline	ND	0.500	IF.	0	0	*	м		
4,6-Dinitro-2-methylphenol	ND	0.500	#		n	**	п		
4-Bromophenyl phenyl ether	ND	0.330	11	0	n	*	17	19	
4-Chloro-3-methylphenol	ND	0.330	**	U	н	11		19	
4-Chloroaniline	ND	0.500	•	U	61	14	U		
4-Chlorophenyl phenyl ether	ND	0.330	*1	U	ri		ø	14	
4-Nitroaniline	ND	0.500	*1	0	IJ	14	0		
4-Nitrophenol	ND	0.500	м	11		11	D		
Acenaphthene	ND	0.330	-	19	u	,,	ρ		
Acenaphthylene	ND	0.330	14	.,	н	,r	0		
Aniline	ND	0.330 0.330	77	*	14		p	U	
Anthracene	ND		••	11	D	**		19	
		0.330	"	W	"	*1			
Benzo (a) anthracene	ND	0.330	U U		17		"		
Benzo (s) pyrene	ND	0.330						19	
Benzo (b) fluoranthene	ND	0.330	U L		14	*1		19	
Benzo (ghi) perylene	ND	0.330		۲	14	**	D.	11	
Benzo (k) fluoranthene	ND	0.330	n	μ	14	*)	n	19	
Benzoic Acid	ND	1.00	**	μ	<b>9</b> T	"	н	ja	
Benzyl alcohol	ND	0.330	<b>†1</b>	14	**	0	n	n	

North Creek Analytical - Bothell

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MACTEC - Anchorage 601 East 57th Place Anchorage AK, 99518 Project: EKWOK Project Number: 55343.1.6 Project Manager: Donna Robertson

**Reported:** 06/16/03 16:20

#### Semivolatile Organic Compounds by EPA Method 8270C

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
03EKWO3SL (B3F0053-03) Soil		<u>03 11:05 Re</u>	ceived: 06/0	<u>3/03 14:35</u>					
Bis(2-chloroethoxy)methane	ND	0.330	mg/kg dry	L	3F04005	06/04/03	06/10/03	EPA 8270C	
Bis(2-chloroethyl)ether	ND	0.330	D	*1	*1	D	u –	u.	
Bis(2-chloroisopropyl)ether	ND	0.330	в	*1	**	n	r,	u	
Bis(2-ethylhexyl)phthalate	ND	0.330	'n	н	n	11		n	
Butyl benzyl phthalate	ND	0.330	11	н	н	17	U U	n	
Carbazole	ND	0.330	n	**	"	U	"	41	
Chrysene	ND	0.330		۲	v	0	*1	11	
Di-n-butyl phthalate	ND	0.330	۳	ы	••	u	н	*	
Di-n-octyl phthalate	ND	0.330	"	n	*	u	**	*1	
Dibenz (a,h) anthracene	ND	0.330	*		"	11	*	*1	
Dibenzofuran	ND	0.330		14	*	0		71	
Diethyl phthalate	ND	0.330		17	•		**	н	
Dimethyl phthalate	ND	0.330	-	н	*1	0			
Fluoranthene	ND	0.330	-	h	*	2	H.	*	
Fluorene	ND	0.330	**	10	*	"	n		
Hexachlorobenzene	ND	0.330	"	17		н	•		
Hexachlorobutadiene	ND	0.330	**	**		н			
Hexachlorocyclopentadiene	ND	0.500	*	**	n	"			
Hexachloroethane	ND	0.330	n	*	*	"		н	
Indeno (1,2,3-cd) pyrene	ND	0.330	n	**		"			
Isophorone	ND	0.330	11	"	••	"	n	W	
N-Nitrosodi-n-propylamine	ND	0.330	n	"	"	*			
N-Nitrosodiphenylamine	ND	0.330	h	"	-	"			
Naphthalene	ND	0.330	Ņ	*		ĸ	н	•	
Nitrobenzene	ND	0.330	14		*		*	"	
Pentachlorophenol	ND	0.500	IF	n			*	*	
Phenanthrene	ND	0.330	*	н			11	77	
Phenol	ND	0.330	**	u	**		*	*1	
Ругепе	ND	0.330	Π	0	n	*	•	"	
Surrogate: 2-FP	103 %	26-137			"	"	"	"	
Surrogate: Phenol-d6	104 %	10-153			н	"	11	-	
Surrogate: 2,4,6-TBP	119 %	10-133			-	"	"	-	
Surrogate: Nitrobenzene-d5	98.6 %	48-127			-	"	"	"	
Surrogate: p-Terphenyl-d14	110 %	44-144			"	11	"	"	
Surrogate: 2-FBP	<i>92.5 %</i>	36-146			"	"	"	н	

North Creek Analytical - Bothell

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	MACTEC - Anchorage	Project: EKWO	К
l	601 East 57th Place	Project Number: 55343.1	1.6 Reported:
	Anchorage AK, 99518	Project Manager: Donna	Robertson 06/16/03 16:20

## Physical Parameters by APHA/ASTM/EPA Methods

North Creek Analytical - Bothell

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
)3EKWO1SL (B3F0053-01) Soil	Sampled: 05/29/03	10:20 Rec	eived: 06/	03/03 14:35					
Dry Weight	73.2	1.00	%	1	3F06021	06/06/03	06/08/03	BSOPSPL003R07	
03EKWO2SL (B3F0053-02) Soil_	Sampled: 05/29/03	10:55 Rec	eived: 06/	03/03 14:35	i .				
Dry Weight	80.3	1.00	%	1	3F06021	06/0 <mark>6/03</mark>	06/08/03	BSOPSPL003R07	
D3EKWO3SL (B3F0053-03) Soil	Sampled: 05/29/03	11:05 Rec	eived: 06/	03/03 14:35					
Dry Weight	78.1	1.00	%	1	3F06021	06/06/03	06/08/03	BSOPSPL003R07	

North Creek Analytical - Bothell

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MACTEC - Anchorage	Project:	EKWOK		
601 East 57th Place	Project Number:	55343.1.6	Reported:	
Anchorage AK, 99518	Project Manager:	Donna Robertson	06/16/03 16:20	

#### Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101/EPA 8021B - Quality Control

North Creek Analytical - Bothell

			Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F05001:	Prepared 06/05/03	Using EP	A 5030B	(P/T)							
Blank (3F05001-Bl	LKI)										
Gasoline Ränge Hydro	carbons	ND 🗇	5.00	mg/kg							
Benzene		ND 1	0.0200								
Тоіцепе		ND (	0.0500	-							
Ethylbenzene		ND 1	0.0500								
Xylencs (total)		ND	0.100	-							
Surrogate: 4-BFB (FII	D)	2.30		"	2.40		95.8	60-120	,	····	
Surrogate: a,a,a-TFT		2.63		"	2.40		110	50-150			
Surrogate: 4-BFB (PII	•	2.57		"	2.40		<b>10</b> 7	60-120			
Surrogate: a,a,a-TFT	(PID)	2.63		*	2.40		110	50-150			
LCS (3F05001-BS1	)										
Gasoline Range Hydro	carbons	21.8	5.00	mg/kg	25.0		87.2	60-120			
Benzene		0.346	0.0200	•1	0.332		104	80-120			
Toluene		1.74	0.0500	n	1.85		94.1	80-120			
Ethylbenzene		0.461	0.0500	**	0.428		108	80-120			
Xylenes (total)		2.24	0.100		2.15		104	80-120			
Surrogale: 4-BFB (FII		2.71		"	2.40		113	60-120			
Surrogate: a,a,a-TFT (	(FID)	2.60		"	2.40		108	50-150			
Surrogate: 4-BFB (P11		2.74		"	2.40		114	60-120			
Surrogate: a,a,a-TFT (	(PID)	2.56		"	2.40		107	50-150			
LCS Dup (3F05001	-BSD1)										
Gasoline Range Hydro	carbons	22.1	5.00	mg/kg	25.0		88.4	60-120	1.37	20	
Benzenc		0.356	0.0200	н	0.332		107	80-120	2.85	40	
Toluene		1.78	0.0500	n	1.85		96.2	80-120	2.27	40	
Ethylbenzene		0.474	0.0500	11	0.428		111	80-120	2.78	40	
Xylenes (total)		2.30	0.100	"	2.15		107	80-120	2.64	40	
Surrogate: 4-BFB (FIL	))	2.71		#	2.40		113	60-120		· · · ·	• ••
Surrogate: a,a,a-TFT (	(FID)	2.57		-	2.40		107	50-150			
Surrogate: 4-BFB (PIL	)	2.73		"	2.40		114	60-120			
Surrogate: a,a,a-TFT (	(PID)	2.55		"	2.40		106	50-150			

North Creek Analytical - Bothell

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MACTEC - AnchorageProject: EKWOK601 East 57th PlaceProject Number: 55343.1.6Anchorage AK, 99518Project Manager: Donna Robertson06/16/03 16:20

## Diesel Hydrocarbons (C10-C25) and Heavy Oil (C25-C36) by AK102 and AK103 - Quality Control North Creek Analytical - Bothell

	14	orui Cr	еек Апац	vucai - r	sotnell					
Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3F05031: Prepared 06/05/03	Using EI	PA 3550B	<u> </u>							
Blank (3F05031-BLK1)										
Diesel Range Hydrocarbons	ND -	4,00	mg/kg							
Residual Range Organics	ND 🗠	25.0	"							
Surrogate: 2-FBP	14,0		"	12.8		109	50-150			
Surrogate: Octacosane	6.28		"	6.40		98,1	50-150			
LCS (3 <b>F05031-BS</b> 1)										
Diesel Range Hydrocarbons	74.3	4.00	mg/kg	80.0		92.9	75-125			
Surrogate: 2-FBP	15.0		"	12.8		117	50-150			
LCS (3F05031-BS2)										
Residual Range Organies	49.5	25.0	mg/kg	60.0		82.5	60-120			
Surrogate: Octacosane	6.28		π	6.40		98.1	50-150			
LCS Dup (3F05031-BSD1)										
Diesel Range Hydrocarbons	70.8	4.00	mg/kg	80.0		88.5	75-125	4.82	20	••.
Surrogate: 2-FBP	13.6		м	12.8		106	50-150			••••
LCS Dup (3F05031-BSD2)							-			
Residual Range Organics	50.6	25.0	mg/kg	60.0		84.3	60-120	2.20	20	
Surrogate: Octacosane	6.55		"	6.40		102	50-150	····	· · ·	
Matrix Spike (3F05031-MS1)					Source: B	13F0053-1	)1			
Diesel Range Hydrocarbons	124	4.00	mg/kg dry	107	38.3	80.1	75-125			
Surrogate: 2-FBP	19.4		"	17.1		113	50-150			
Matrix Spike Dup (3F05031-MSD1)					Source: B					
Diesel Range Hydrocarbons	135	4.00	mg/kg dry	108	38.3	89.5	75-125	8.49	20	
Surrogate: 2-FBP	20.2			17.3		117	50-150		20	
Internet a t MI	20.2			17.3		117	20-130			

North Creek Analytical - Bothell

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MACTEC - AnchorageProject:EKWOK601 East 57th PlaceProject Number:55343.1.6Reported:Anchorage AK, 99518Project Manager:Donna Robertson06/16/03 16:20

### Total Metals by EPA 6000/7000 Series Methods - Quality Control

North Creek Analytical - Bothell

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F04025: Prepared 06/04/03	Using EP	A 7471A								
Blank (3F04025-BLK1)										
Mercury	ND -	0.200	mg/kg							
LCS (3F04025-BS1)										
Mercury	0.484	0,200	mg/kg	0.500		96.8	80-120			
LCS Dup (3F04025-BSD1)										
Mercury	0.524	0.200	mg/kg	0.500		105	80-120	7.94	20	
Matrix Spike (3F04025-MS1)					Source: B	3F0053-0	D1			
Mercury	0.783	0.200	mg/kg dry	0.683	0.0395	109	70-130			
Matrix Spike Dup (3F04025-MSD1)					Source: B	<b>3F0053-</b> (	01			
Mercury	0.783	0.200	mg/kg dry	0.683	0.0395	109	70-130	0.00	30	

#### Batch 3F09032: Prepared 06/09/03 Using EPA 3050B

Blank (3F09032-BLK1)							
Arsenic	ND	0.500	mg/kg				
Barium	ND -	5.00	P.				
Cadmium	ND <sup>-</sup>	0,500	"				
Chromium	ND (	0.500	n				
Lead	ND	0.500	"				
Selenium	ND 1	0.500	*				
Silver	ND	0.500	н				
LCS (3F09032-BS1)							
Arsenic	39.0	0.500	mg/kg	39,2	99.5	80-120	
Barium	39.5	5.00	*	39.2	101	80-120	
Cadmium	38.9	0.500	*1	39.2	99.2	80-120	
Chromium	39.8	0.500		39.2	102	80-120	
Lead	38.0	0.500		39.2	96.9	80-120	
Selenium	39.3	0.500	Ð	39.2	100	80-120	
Silver	38.4	0.500	**	39.2	98.0	80-120	

North Creek Analytical - Bothell

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	MACTEC - Anchorage	Project: EKWOK	
1	601 East 57th Place	Project Number: 55343,1.6	Reported:
	Anchorage AK, 99518	Project Manager: Donna Robertson	06/16/03 16:20

#### Total Metals by EPA 6000/7000 Series Methods - Quality Control

		N	orth Cr	eek Analy	tical - E	Bothell					
Analyte		Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3F09032:	Prepared 06/09/03	Using EF	A 3050B							<u>-</u>	
LCS Dup (3F09032	-BSD1)										
Arsenic		37.4	0.500	mg/kg	39,2		95.4	80-120	4.19	20	
Barium		38.2	5.00	"	39.2		97.4	80-120	3.35	20	
Cadmium		36.8	0.500	H	39.2		<b>93.9</b>	80-120	5.55	20	
Chromium		38.1	0.500	"	39.2		97.2	80-120	4.36	20	
ead		36.3	0.500	n	39.2		92.6	80-120	4.58	20	
Selenium		37.8	0.500	n	39.2		96.4	80-120	3.89	20	
ilver		37.0	0.500	11	39.2		94.4	80-120	3.71	20	
Matrix Spike (3F09	9032-MS1)					Source: E	<b>33F0053-</b> (	)1			
Arsenic		61.1	0.500	mg/kg dry	60.0	5.59	92.5	72-130			
Barium		174	5.00	M	60.0	102	120	53-147			
Cadmium		57.8	0.500	"	60.0	0.141	96.1	70-130			
Chromium		76.6	0.500		60.0	17.2	<b>99</b> .0	53-147			
ead		62.2	0.500	"	60.0	4.88	95.5	62-137			
elenium		57.0	0.500		60.0	0.303	94.5	70-130			
ilver		55.0	0.500	U	60.0	ND	91.7	63-125			
latrix Spike Dup (	(3F09032-MSD1)					Source: H	<b>3</b> 500 <b>5</b> 3-(	)1			
Arsenic		59.7	0.500	mg/kg dry	57.5	5.59	94.1	72-130	2.32	30	
Barium		169	5.00	*	57.5	102	117	53-147	2.92	30	
Cadmium		54.8	0.500	"	57.5	0.141	95.1	70-130	5.33	30	
Chromium		72.8	0.500	**	57.5	17.2	<b>96</b> .7	53-147	5.09	30	
ead		58.3	0.500	47	57.5	4.88	92.9	62-137	6.47	30	
elenium		53.9	0.500	H	57.5	0.303	93.2	70-130	5.59	30	
ilver		52.2	0.500	"	57.5	ND	90.8	63-125	5.22	50	
ost Spike (3F0903)	2-PS1)					Source: B	I3F00 <b>5</b> 3-(	)1			
rsenic		74.3	0.500	mg/kg dry	70.4	5,59	97.6	75-125			
larium		177	5.00	"	70.4	102	107	75-125			
admium		68.5	0.500	н	70.4	0.141	97.1	75-125			
hromium		87.8	0.500	II	70.4	17.2	100	75-125			
.ead		73.7	0.500	<b>'H</b>	70.4	4.88	97.8	75-125			
elenium		70.4	0.500	Ŧ	70.4	0.303	99.6	75-125			
ilver		68.7	0.500	r,	70.4	ND	97.6	75-125			

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MACTEC - AnchorageProject:EKWOK601 East 57th PlaceProject Number:55343.1.6Anchorage AK, 99518Project Manager:Donna Robertson06/16/03 16:20

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

North Creek Analytical - Bothell

· · · · · · · · · · · · · · · · · · ·		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F05033: Prepared 06/05/03	Using EP	A 3550B						<u></u>		
Blank (3F05033-BLK1)										
Aldrin	ND		ug/kg							
alpha-BHC	ND	1.00	11							
beta-BHC	ND	2.00	0							
delta-BHC	ND	1.00	U							
gamma-BHC (Lindane)	ND	1.00	n							
Chlordane (tech)	ND	10.0								
alpha-Chlordane	ND	1.00	n							
gamma-Chlordane	ND	1.00	**							
4,4´-DDD	ND	2.00	+r							
4,4´-DDE	ND	2.00	"							
4,4´-DDT	ND	2.00	**							
Dieldrin	ND	2.00	۳							
Endosulfan I	ND	1.00								
Endosulfan H	ND	2,00	ir.							
Endosulfan sulfate	ND	2.00	и							
Endrin	ND	2.00	"							
Endrín aldehyde	ND	2.00								
Endrín ketone	ND	2.00	. "							
Heptachlor	ND	1.00	н							
leptachlor epoxide	ND	1.00								
Methoxychlor	ND	10.0	н							
Toxaphene	ND	50.0	11							
Surrogate: TCX	6.43		"	6.67		96.4	28-128			
Surrogate: Decachlorobiphenyl	6.31		"	6.67		94.6	29-141			
LCS (3F05033-BS1)										
Aldrin	7.95	1.00	ug/kg	8.33		95.4	40-122			
Ilpha-BHC	8.26	1.00	"	8.33		<b>99</b> .2	40-160			
eta-BHC	8.80	2.00	ir.	8.33		106	40-160			
lelta-BHC	8.07	1.00	11	8.33		96.9	40-160			
amma-BHC (Lindane)	8.04	1.00	*1	8.33		96.5	38-125			
lpha-Chlordane	7.69	1.00	*1	8.33		92.3	40-160			
amma-Chlordane	7.7 <b>7</b>	1.00	п	8.33		93.3	40-160			
,4'-DDD	7.74	2.00	11	8.33		92.9	40-160			
,4'-DDE	7.95	2.00	14	8.33		95.4	40-160			

North Creek Analytical - Bothell

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MACTEC - AnchorageProject:EKWOK601 East 57th PlaceProject Number:55343.1.6Anchorage AK, 99518Project Manager:Donna Robertson06/16/03 16:20

#### Organochlorine Pesticides by EPA Method 8081A - Quality Control

	2	N	orth Cre	•	ytical - E		Yuunt	J	-		
			Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F05033:	Prepared 06/05/03	Using EF	A 3550B							_	
LCS (3F05033-BS1)	1										
4,4'-DDT		9.68	2.00	ug/kg	8.33		116	40-160			·
Dieldrin		7.53	2.00	"	8.33		90.4	40-160			
Endosulfan I		8.06	1.00	н	8.33		96.8	40-160			
Endosulfan II		7.69	2.00	H	8.33		92.3	40-160			
Endosulfan sulfate		8.27	2,00	н	8.33		99.3	40-160			
Endrin		8.65	2.00	"	8.33		104	40-160			
Endrin aldehyde		6.37	2.00	-	8.33		76.5	40-160			
Endrin ketone		7.92	2.00		8.33		95.ł	40-160			
Heptachior		6.32	1.00	-	8.33		75.9	47-132			
Heptachlor epoxide		8.11	1.00		8.33		97.4	40-160			
Methoxychlor		9.00	10.0	**	8.33		108	40-160			
Surrogate: TCX		6.64		"	6.67		99.6	28-128			
Surrogate: Decachloroi	biphenyl	6.65		*	6.67		<b>99</b> .7	29-141			
LCS Dup (3F05033-	BSD1)										
Aldrin		8.10	1.00	ug/kg	8.33		97.2	40-122	1.87	30	
alpha-BHC		8.38	1.00		8.33		101	40-160	1,44	35	
beta-BHC		8.17	2.00	Ð	8.33		98.1	40-160	7.42	35	
delta-BHC		8.15	1.00	н	8.33		97.8	40-160	0.986	35	
gamma-BHC (Lindanc)		<b>7.9</b> 7	1.00	n	8.33		95.7	38-125	0.874	30	
alpha-Chlordane		7.91	1.00	"	8.33		95.0	40-160	2.82	35	
gamma-Chlordane		7.87	1.00	*	8.33		94.5	40-160	1.28	35	
4,4´-DDD		7.96	2.00		8.33		95.6	40-160	2.80	35	
4,4´-DDE		8.17	2.00	"	8.33		98.1	40-160	2.73	35	
4,4'-DDT		9.82	2.00	'n	8.33		118	40-160	1.44	35	
Dieldrin		7.65	2.00	17	8.33		91.8	40-160	1.58	35	
Endosulfan I		8.24	1.00	*	8.33		98.9	40-160	2.21	35	
Endosulfan II		7.88	2.00	**	8.33		94.6	40-160	2.44	35	
Endosulfan sulfate		8,42	2.00	n	8.33		101	40-160	1.80	35	
Endrin		8.87	2.00	P	8.33		106	40-160	2.51	35	
Endrin al <b>d</b> ehyde		6.59	2.00	D	8.33		79.1	40-160	3.40	35	
Endrin ketone		7.97	2.00	n	8.33		95.7	40-160	0.629	35	
Heptachlor		6.46	1.00	p	8.33		77.6	47-132	2,19	30	
Heptachlor epoxide		8.14	1.00	**	8.33		97.7	40-160	0.369	35	
Methoxychlor		9.07	10.0	**	8.33		109	40-160	0.775	35	

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MACTEC - Anchorage	Project:	EKWOK	
601 East 57th Place	Project Number:	55343.1.6	Reported:
Anchorage AK, 99518	Project Manager:	Donna Robertson	06/16/03 16:20

#### Organochlorine Pesticides by EPA Method 8081A - Quality Control

	ľ	North Cre	eek Analy	rtical - I	Bothell					
		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F05033: Prepared 06/05/0	3 Using H	EPA 3550B								
LCS Dup (3F05033-BSD1)							<u></u>			
Surrogate: TCX	<b>6</b> .73		ug/kg	6.67			28-128			
Surrogate: Decachlorobiphenyl	6.47		"	6.67		97.0	29-141			
Matrix Spike (3F05033-MS1)					Source: 1	B3F0053-	02			х
Aldrin	8.84	1.00	ug/kg dry	10.4	ND	85.0	32-130			
alpha-BHC	7.87	1.00		10.4	ND	75.7	30-150			
beta-BHC	6.15	2.00	0	10.4	ND	59.1	30-150			
delta-BHC	6.84	1.00	n	10.4	ND	65.8	30-150			
gamma-BHC (Lindanc)	7.01	1.00	"	10.4	ND	67.4	31-120			
alpha-Chlordane	8.57	1.00	19	10.4	ND	82.4	30-150			
gamma-Chlordane	7.12	1.00	*	10.4	ND	68.5	30-150			
4,4´-DDD	7.25	2.00	**	10.4	ND	69.7	30-150			
4,4'-DDE	9.46	2.00	**	10.4	ND	91.0	30-150			
4,4'-DDT	15.0	2.00	**	10.4	ND	144	30-150			
Dieldrin	ND	2.00	H	10.4	ND		30-150	NA		Q-02
Endosulfan i	8.85	1.00	"	10,4	ND	85.1	30-150			
Endosulfan II	8.41	2.00	**	10.4	ND	80.9	30-150			
Endosulfan sulfate	6.29	2.00	*	10.4	ND	60.5	30-150			
Endrin	8.32	2.00	"	10,4	ND	80.0	30-150			
Endrin aldehyde	2.22	2.00	"	10.4	ND	21.3	30-150			Q-02
Endrin ketone	7.46	2.00	"	10.4	ND	71.7	30-150			
Heptaehlor	9.72	1.00	"	10,4	ND	93.5	40-129			
Heptachlor epoxide	9.43	1.00		10.4	ND	90.7	30-150			
Methoxychlor	17.5	10.0		10.4	ND	168	30-1 <b>50</b>			Q-02
Surrogate: TCX	6.09		и	8.31		73.3	28-128			
Surrogate: Decachlorobiphenyl	7.45		"	8,31		89.7	29-141			
Matrix Spike Dup (3F05033-MSD1)					Source: 1	B3F0053-	02			х
Aldrin	8.23	1.00	ug/kg dry	10.3	ND	79.9	32-130	7.15	35	
L. BUG										

Aldrin	8.23	1.00	ug/kg dry	10.3	ND	79.9	32-130	7.15	35	
alpha-BHC	7.24	1.00	"	10.3	ND	70.3	30-150	8.34	35	
beta-BHC	6.18	2.00	'n	10.3	ND	60.0	30-150	0.487	35	
deira-BHC	6.15	1.00	14	10.3	ND	59.7	30-150	10.6	35	
gamma-BHC (Lindane)	6.84	1.00	m	10.3	ND	66.4	31-120	2.45	35	
alpha-Chlordane	7.99	1.00		10.3	ND	77.6	30-150	7.00	35	
gamma-Chlordane	7.04	1.00	18	10.3	ND	68.3	30-150	1.13	35	
4,4′-DDD	7.25	2.00	н	10.3	ND	70.4	30-150	0.00	35	

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MACTEC - Anchorage	Project: EKWOK	
601 East 57th Place	Project Number: 55343.1.6	Reported:
Anchorage AK, 99518	Project Manager: Donna Robertson	06/16/03 16:20

#### Organochlorine Pesticides by EPA Method 8081A - Quality Control North Creek Analytical - Bothell

[			Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F05033:	Prepared 06/05/03	Using EP	A 3550B								
Matrix Spike Dup (	(3F05033-MSD1)					Source: H	33F00 <b>5</b> 3-0	)2			X
4,4'-DDE		12.9	2.00	ug/kg dry	10.3	ND	.125	30-150	30.8	35	
4,4´-DDT		14.5	2.00	"	10.3	ND	141	30-150	3.39	35	
Dieldrín		ND	2.00	"	10.3	ND		30-150	NA	35	Q-02
Endosulfan I		8.24	1.00	"	10.3	ND	80.0	30-150	7.14	35	
Endosulfan II		7.62	2.00	*	10.3	ND	74.0	30-150	9.86	35	
Endosulfan sulfate		6.31	2.00	U	10.3	NÐ	61.3	30-150	0.317	35	
Endrin		8.09	2.00	0	10.3	ND	78.5	30-150	2.80	35	
Endrin aldehyde		2,45	2.00	U	10.3	ND	23.8	30-150	9.85	35	Q-02
Endrin ketone		7.69	2.00	**	10.3	ND	74.7	30-150	3.04	35	
Heptachlor		9.16	1.00	в	10.3	ND	88.9	40-129	5.93	35	
Heptachlor epoxide		9.11	1.00	н	10.3	ND	88.4	30-150	3.45	35	
Methoxychlor		15.7	10.0	**	10.3	ND	152	30-150	10.8	35	Q-0
Surrogate: TCX		5.93		"	8.22		72.1	28-128			
Surrogate: Decachloro	biphenyl	7.34		*	8.22		89.3	29-141			

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MACTEC - AnchorageProject:EKWOK601 East 57th PlaceProject Number:55343.1.6Reported:Anchorage AK, 99518Project Manager:Donna Robertson06/16/03 16:20

## Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

North Creek Analytical - Bothell

			Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F05033:	Prepared 06/05/03	Using E	PA 3550B								
Blank (3F05033-BL	. <b>K</b> 1)								1		
Aroclor 1016		ND .	25.0	ug/kg							
Aroclor 1221		ND	50.0	11							
Aroclor 1232		ND	25.0	*1							
Aroclor 1242		ND	25.0								
Aroclor 1248		ND	25.0	м							
Aroclor 1254		ND	25.0								
Aroclor 1260		ND	25.0								
Aroclor 1262		ND	25.0	**							
Aroclor 1268		ND	25.0	**							
Surrogate: TCX		5,71		n	6.67		85,6	49-124			
Surrogaie: Decachloro	biphenyl	5 <b>.38</b>		· #	6.67		80.7	48-150			
LCS (3F05033-BS2)	)										
Aroclor 1016		70.2	25.0	ug/kg	83.3		84.3	69-123			
Aroclor 1260		74.1	25.0	P	83.3		89.0	66-140			
Surrogate: TCX	·····	6.28		N	6.67		94.2	49-124			
Surrogate: Decachloro	biphenyl	5. <i>52</i>		~	6.67		82.8	48-150			
LCS Dup (3F05033	-BSD2)										
Araclor 1016	· · · · · · · · · · · · · · · · · · ·	76.5	25.0	ug/kg	83.3		91.8	69-123	8.59	30	-
Aroclor 1260		79.2	25.0	"	83.3		95.1	66-140	6.65	30	
Surrogate: TCX		6.60		n	6.67		99.0	49-124			
Surrogate: Decachioro	biphenyl	5.80		"	6. <b>6</b> 7		87.0	48-150			

North Creek Analytical - Bothell

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North Creek Analytical, Inc. Environmental Laboratory Network Page 34 of 49



 
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MACTEC - AnchorageProject:EKWOK.601 East 57th PlaceProject Number:55343.1.6Anchorage AK, 99518Project Manager:Donna Robertson06/16/03 16:20

#### Volatile Organic Compounds by EPA Method 8260B - Quality Control

North Creek Analytical - Bothell

		Reporting		Spike	Source		%REC		RPD	<u></u>
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F05019: Prepared 06/04/03	Using EP	A 5030B	MeOH]							
Blank (3F05019-BLK1)										
Methyl tert-butył ether	ND	0.100 -	mg/kg							
1,1,1,2-Tetrachloroethane	ND	0.100	11							
1,1,1-Trichloroethane	ND	0.100	*1							
I, I, 2, 2-Tetrachloroethane	ND	0.100								
1,1,2-Trichloroethane	ND	0.100	n							
1,1-Dichloroethane	ND	0.100	n							
l, l-Dichloroethene	ND	0.100	11							
I, I-Dichloropropene	ND	0.100	17							
1,2,3-Trichtorobenzene	ND	0.100								
1,2,3-Trichloropropane	ND	0.100	**							
1,2,4-Trichlorobenzene	ND	0.100								
1,2,4-Trimethylbenzene	ND	0.100	Ħ							
1,2-Dibromo-3-chloropropane	ND	0.500	۲							
1,2-Dibromoethane	ND	0.100								
,2-Diehlorobenzene	ND	0.100								
1,2-Dichloroethane	ND	0.100	*							
,2-Dichloropropane	ND	0.100	"							
1,3,5-Trimethylbenzene	ND	0.100	u							
1,3-Dichlorobenzene	ND	0.100	0							
,3-Dichloropropane	ND	0.100	n							
,4-Dichlorobenzene	ND	0.100	17							
2,2-Dichloropropane	ND	0.100	II.							
2-Butanonę	ND	1.00	**							
2-Chiorotoluene	ND	0.100	۹r							
2-Hexanone	ND	1.00	7							
-Chlorotoluene	ND	0.100	н							
-Methyl-2-pentanone	ND	1.00	"							
Acetone	ND	1.00	H							
Benzene	ND	0.100	н							
Bromobenzene	ND	0.100	0							
Bromochloromethane	ND	0.100	u							
Bromodichloromethane	ND	0.100	14							
Bromoform	ND	0.100	11							
Bromomethane	ND	0.100	71							
Carbon disulfide	ND	0.100								

North Creek Analytical - Bothell

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 MACTEC - Anchorage
 Project:
 EKWOK

 601 East 57th Place
 Project Number:
 55343.1.6

 Anchorage AK, 99518
 Project Manager:
 Donna Robertson

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

North Creek Analytical - Bothell

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F05019: Prepared 06/04/	03 Using EF	PA 5030B	[MeOH]							
Blank (3F05019-BLK1)										
Carbon tetrachloride	ND	0.100	mg/kg						·····	
Chlorobenzene	ND	0.100	"							
Chloroethane	ND	0.100	**							
Chloroform	ND	0.100	"							
Chloromethane	ND	0.500	u							
cis-1,2-Dichloroethene	ND	0.100								
cis-1,3-Dichloropropene	ND	0.100	U							
Dibromochloromethane	ND	0.100								
Dibromomethane	ND	0.100	*							
Dichlorodifluoromethane	ND	0.100	n							
Ethylbenzene	ND	0.100	"							
Hexachlorobutadiene	ND	0.100	"							
sopropylbenzene	ND	0.100	*							
n,p-Xylene	ND	0.200	"							
Methylene chloride	ND	1.00	u							
n-Butylbenzene	ND	0.100								
n-Propylbenzene	ND	0.100	U							
Naphthalenc	ND	0.100	"							
<b>-Xylene</b>	ND	0.100	**							
p-Isopropyltoluene	ND	0.100	**							
cc-Butylbenzene	ND	0.100	н							
Styrene	ND	0.100	h							
ert-Butylbenzenc	ND	0.100	"							
Fetrachloroethene	ND	0.100	)r							
[olu <b>e</b> ne	ND	0.100	"							
rans-1,2-Dichloroethene	ND	0.100	U							
rans-1,3-Dichloropropene	ND	0.100	n							
Frichloroethene	ND	0.100	**							
richlorofluoromethane	ND	0.100	**							
Vinyl chloride	ND	0.100	н							
urrogate: 1,2-DCA-d4	3.37			4.00		84.2	70-130			
Surrogate: Toluene-d8	3.38		"	4.00		84.5	70-130			
Surrogate: 4-BFB	<b>3.0</b> 0		"	4.00		7 <b>5</b> .0	70-130			

North Creek Analytical - Bothell

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MACTEC - AnchorageProject:EKWOK601 East 57th PlaceProject Number:55343.1.6Anchorage AK, 99518Project Manager:Donna Robertson06/16/03 16:20

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

North Creek Analytical - Bothell

		Reporting		Spike	Source		%REC		RPD	<u> </u>
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F05019: Prepared 06/04/03	Using <b>E</b>	PA 5030B	[MeOH]							
Blank (3F05019-BLK2)										
Methyl tert-butyl ether	ND	0,100	mg/kg							
1,1,1,2-Tetrachloroethane	ND	0,100								
1,1,1-Trichloroethane	ND	0.100	h							
1,1,2,2-Tetrachloroethane	ND	0.100								
1,1,2-Trichloroethane	ND	0.100	P							
l,I-Dichloroethane	ND	0.100	*							
1,1-Dichloroethene	ND	0.100	"							
1,1-Dichloropropene	ND	0.100	n							
1,2,3-Trichlorobenzene	ND	0.100	0							
1,2,3-Trichloropropane	ND	0.100	17							
,2,4-Trichlorobenzene	ND	0.100	"							
,2,4-Trimethylbenzene	ND	0.100	*							
,2-Dibromo-3-chloropropane	ND	0.500	"							
,2-Dibromoethane	ND	0.100	н							
,2-Dichlorobenzene	ND	0.100	**							
,2-Dichloroethane	ND	0.100	٩r							
,2-Dichloropropane	ND	0.100	"							
,3,5-Trimethylbenzene	ND	0.100	u							
,3-Dichlorobenzene	ND	0.100	0							
,3-Dichloropropanc	ND	0.100	19							
,4-Dichlorobenzene	ND	0.100	n							
2,2-Dichloropropane	ND	0.100	H.							
-Butanone	ND	1.00	4t							
-Chlorotoluene	ND	0.100	м							
2-Hexanonc	ND	1.00	۲							
-Chlorotoluene	ND	0.100	IF.							
-Methyl-2-pentanone	ND	1.00	n							
Acetone	ND	1.00	n							
Benzene	ND	0.100	u							
Iromobenzene	ND	0.100	11							
Bromochloromethane	ND	0.100	14							
Bromodichloromethane	ND	0.100	**							
Bromoform	ND	0.100	۲							
Fornomethane	ND	0.100								
Carbon disulfide	ND	0.100	и							

North Creek Analytical - Bothell

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MACTEC - AnchorageProject: EKWOK601 East 57th PlaceProject Number: 55343.1.6Anchorage AK, 99518Project Manager: Donna Robertson06/16/03 16:20

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

North Creek Analytical - Bothell

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F05019: Prepared 06/04/03	Using EF	PA 5030B	[MeOH]							
Blank (3F05019-BL/K2)										-
Carbon tetrachloride	ND	0.100	mg/kg				· · · · ·		_	
Chlorobenzene	ND	0.100	"							
Chlorocthanc	ND	0,100	"							
Chloroform	ND	0.100	"							
Chloromethane	ND	0.500	"							
cis-1,2-Dichloroethene	ND	0.100	P							
cis-1,3-Dichloropropene	ND	0,100								
Dibromochloromethane	ND	0.100	IT							
Dibromomethane	ND	0.100	n							
Dichlorodifluoromethane	ND	0.100	n							
Ethylbenzene	ND	0.100	*							
Hexachlorobutadiene	ND	0.100	-							
Isopropylbenzene	ND	0.100	۳							
m,p-Xylene	ND	0.200	**							
Methylene chloride	ND	1.00	"							
n-Butylbenzene	ND	0.100	"							
n-Propylbenzene	ND	0.100	n							
Naphthalene	ND	0.100	D							
o-Xylene	ND	0.100	11							
p-Isopropyltoluene	ND	0.100	H							
sec-Butylbenzene	ND	0.100								
Styrenc	ND	0.100	11							
lert-Butylbenzene	ND	0.100	•							
Tetrachloroethene	ND	0.100	н							
Toluene	ND	0.100								
Tans-1,2-Dichloroethene	ND	0.100	*							
rrans-1,3-Dichloropropene	ND	0.100	"							
Trichloroethene	ND	0.100								
Frichlorofluoromethane	ND	0.100	6							
Vinyl chloride	ND	0.100	17							
Surrogate: 1,2-DCA-d4	<b>3</b> .77		"	4.00		94,2	70-130			
Surrogate: Toluene-d8	3.67		"	4.00		91.8	70-130			
Surrogate: 4-BFB	3,0 <b>9</b>		*	4.00		77.2	70-130			

North Creek Analytical - Bothell

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 Project:
 EKWOK

601 East 57th PlaceProject Number:55343.1.6Reported:Anchorage AK, 99518Project Manager:Donna Robertson06/16/03 16:20

# Volatile Organic Compounds by EPA Method 8260B - Quality Control

		Ν	orth Cre	ek Analy	rtical - F	Bothell					
A - elato	· · · · · · · · · · · · · · · · · · ·	Result	Reporting	<b>TT</b> 14.	Spike	Source		%REC		RPD	
Analyte	,	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F05019:	Ргерагед 06/04/03	Using El	PA 5030B	[MeOH]							
Blank (3F05019-BL	K3)										
1,1,1,2-Tetrachloroetha	ne	ND	0.100	mg/kg							
1,1,1-Trichloroethane		ND	0.100	n							
1,1,2,2-Tetrachloroetha	ne	ND	0.100	14							
1,1,2-Trichloroethane		ND	0.100	۳							
1,1-Dichloroethane		ND	0.100	P.							
1,1-Dichloroethene		ND	0.100	**							
l, l-Dichloropropene		ND	0.100	-							
1,2,3-Trichlorobenzene		ND	0.100								
1,2,3-Trichloropropane		ND	0.100	H							
1,2,4-Trichlorobenzene		ND	0.100								
1,2,4-Trimethylbenzene	;	ND	0.100	"							
1,2-Dibromo-3-chlorop	ropane	ND	0.500	"							
1,2-Dibromoethane		ND	0.100								
1,2-Dichlorobenzene		ND	0.100								
1,2-Dichloroethane		ND	0.100	U							
1,2-Dichloropropane		ND	0.100	"							
1,3,5-Trimethylbenzene		ND	0.100	n							
,3-Dichlorobenzene		ND	0.100	*							
1,3-Dichloropropane		ND	0.100	*							
,4-Dichlorobenzene		ND	0.100	-							
2,2-Dichloropropane		ND	0.100								
2-Butanone		ND	1.00								
2-Chlorotoluene		ND	0.100								
2-Hexanone		ND	1.00	"							
4-Chlorotoluene		ND	0.100	н							
I-Methyl-2-pentanone		ND	1.00	"							
Acetone		ND	1.00	н							
Benzenc		ND	0.100	0							
Bromobenzene		ND	0.100	0							
Bromochloromethane		ND	0.100	0							
Bromodichloromethane		ND	0.100	"							
Bromoform		ND	0.100	"							
Bromomethane		ND	0.100	61							
Carbon disulfide		ND	0.100	"							
		ND	0.100	н							

North Creek Analytical - Bothell

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 MACTEC - Anchorage
 Project:
 EKWOK

 601 East 57th Place
 Project Number:
 55343.1.6

 Anchorage AK, 99518
 Project Manager:
 Donna Robertson

#### Volatile Organic Compounds by EPA Method 8260B - Quality Control North Creek Analytical - Bothell

		Γ	orth Cre	ek Analy	tical - B	othell					
Analyte		Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3F05019:	Prepared 06/04/03	Using E	PA 5030B	[MeOH]							
Blank (3F05019-BL	K3)										- w .
Chlorobenzene		ND	0.100	mg/kg						····	
Chloroethane		ND	0.100								
Chloroform		ND	0.100								
Chloromethane		ND	0.500								
cis-1,2-Dichloroethene		ND	0.100	n							
cis-1,3-Dichloropropen	e	ND	0.100								
Dibromochloromethane		ND	0.100	IT							
Dibromomethane		ND	0.100	11							
Dichlorodi fluoromethar	ne	ND	0.100	11							
Ethylbenzene		ND	0.100	"							
Hexachlorobutadiene		ND	0,100	н							
Isopropylbenzene		ND	0.100	н							
m,p-Xylene		ND	0.200	"							
Methylene chloride		ND	1.00								
n-Butylbenzene		ND	0.100	**							
n-Propylbenzene		ND	0.100	n							
Naphthalene		ND	0.100	, D							
o-Xylene		ND	0.100	IT							
o-Isopropyltoluene		ND	0.100	н							
sec-Butylbenzene		ND	0.100	*1							
Styrene		ND	0.100	•							
ert-Butylbenzene		ND	0.100								
Tetrachloroethene		ND	0.100								
Foluene		ND	0.100	*							
rans-1,2-Dichloroethen	e	ND	0.100	**							
rans-1,3-Dichloroprope		ND	0.100	*							
Frichloroethene		ND	0.100	n							
Frichlorofluoromethane		ND	0.100	U.							
vinyl chloride		ND	0.100	11							
Surrogate: 1,2-DCA-d4	······	3.65		n	4.00		91.2	70-130			
Surrogate: Toluene-d8		3.70		n	4.00		92.5	70-130			
Surrogate: 4-BFB		3.08		"	4.00		77,0	70-130			

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		5210
MACTEC - Anchorage	Project: EKWOK	
601 East 57th Place	Project Number: 55343.1.6	Reported:
Anchorage AK, 99518	Project Manager: Donna Robertson	06/16/03 16:20

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

			Reporting		Spike	Source		%REC		RPD	
Analyte	<u></u>	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F05019:	Prepared 06/04/03	Using EF	PA 5030B	[MeOH]							
LCS (3F05019-BS1	)										
1,1-Dichloroethene		1.22	0.100	mg/kg	1.00		122	70-130			-
Benzenc		1.09	0.100	•	1.00		109	78-121			
Chlorobenzene		1.12	0.100		1.00		112	74-128			
Toluene		1.23	0.100	н	1.00		123	70-130			
Trichloroethene		1.02	0.100	"	1.00		102	72-122			
Surrogate: 1,2-DCA-de	/	3.79		"	4.00		94.8	70-130			
Surrogate: Toluene-d8		3.94		"	4.00		98.5	70-130			
Surrogate: 4-BFB		3.28		"	4.00		82.0	70-130			
LCS Dup (3F05019	-BSD1)										
1,1-Dichloroethene		1.19	0.100	mg/kg	1.00	••••••••	119	70-130	2.49	20	
Benzene		1.06	0.100	11	1.00		106	78-121	2.79	20	
Chlorobenzene		1.11	0.100		1.00		111	74-128	0.897	20	
Toluenc		1.21	0.100		1.00		121	70-130	1.64	20	
Trichloroethenc		0.991	0.100	n '	1.00		99.1	72-122	2.88	20	
Surrogate: 1,2-DCA-d4	1	3.80		"	4.00		95.0	70-130			
Surrogate: Toluene-d8		3.94		"	4.00		98.5	70-130			
Surrogate: 4-BFB		3.23		"	4.00		80,8	70-1 <b>3</b> 0			
Matrlx Spike (3F05	019-MS1)					Source: H	<b>3F0004-</b> 1	5			
1,1-Dichloroethene		1.30	0.100	mg/kg dry	1.09	ND	119	42-127			
Benzene		1.14	0.100	P.	1.09	ND	105	61-130			
Chlorobenzene		1.18	0.100	"	1.09	ND	108	62-129			
Toluene		1.22	0.100		1.09	0.246	89.4	62-125			
Trichloroethene		1.08	0.100	11	1.09	ND	99.1	55-130			
Surrogate: 1,2-DCA-d4	· · · · · · · · · · · · · · · · · · ·	5.05		"	4.36		116	70-130	· · · · · · · · · · · · · · · · · · ·	····· ···	
Surrogate: Toluene-d8		5.17		"	4.36		119	70 <b>-130</b>			
Surrogate: 4-BFB		4.29		"	4.36		98.4	70 <b>-130</b>			

North Creek Analytical - Bothell

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

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North Creek Analytical, Inc. Environmental Laboratory Network Page 41 of 49 .



 
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 MACTEC - Anchorage
 Project:
 EKWOK

 601 East 57th Place
 Project Number:
 55343.1.6

 Anchorage AK, 99518
 Project Manager:
 Donna Robertson

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

	Ν	orth Cro	eek Analy	tical - E	Bothell					
Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3F05019: Prepared 06/04/03	Using E	PA 5030B	[MeOH]			v				
Matrix Spike Dup (3F05019-MSD1)					Source: I	<b>33F0004</b> -1	15			,
I, I-Dichloroethene	1.24	0.100	mg/kg dry	1.09	ND	114	42-127	4.72	25	
Benzene	J.10	0.100		1.09	ND	101	61-130	3.57	25	
Chlorobenzene	I.14	0.100		1.09	ND	105	62-129	3,45	25	
Toluene	1.18	0.100	·	1.09	0.246	85.7	62-125	3.33	25	
Trichloroethene	1.03	0.100	IR	1.09	ND	94.5	55-130	4.74	25	
Surrogate: 1,2-DCA-d4	5.04		"	4.36		116	70-130			
Surrogate: Toluene-d8	5.06		"	4.36		116	70-130			
Surrogate: 4-BFB	4.12		н	4.36		94.5	70-130			

North Creek Analytical - Bothell

Kortland Orr For Emanuel Hignutt, PM

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North Creek Analytical, Inc. Environmental Laboratory Network Page 42 of 49



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Project: EKWOK Project Number: 55343.1.6

Project Manager: Donna Robertson

Reported: 06/16/03 16:20

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

North Creek Analytical - Bothell

Analyte         Result         Limit         Units         Level         Result         %REC         Limits         RPD         Limit         Notes           Batch 3F04005:         Prepared 06/04/03         Using EPA 3550B			Reporting		Spike	Source		%REC		RPD	
Black (3F04005-BLK1)           12,4-Trichloroberazene         ND         0.330         mg/kg           1,2-Dichloroberazene         ND         0.330         "           1,2-Dichloroberazene         ND         0.330         "           1,4-Dichloroberazene         ND         0.330         "           1,4-Dichloroberazene         ND         0.330         "           2,4-5-Trichlorophenol         ND         0.330         "           2,4-Dintrophenol         ND         0.330         "           2,4-Dintrophenol         ND         0.330         "           2,4-Dintrophenol         ND         0.500         "           2,4-Dintrophenol         ND         0.500         "           2,4-Dintrophenol         ND         0.500         "           2,4-Dintrophenol         ND         0.330         "           2,4-Dintrophenol         ND         0.330         "           2,4-Dintrophenol         ND         0.330         "           2,6-Dinitrocohene         ND         0.330         "           2,6-Mitriphenol         ND         0.330         "           2-Mitrophenol         ND         0.500         "	Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD		Notes
1,2.4         Trichlorobenzene         ND         0.330         mgkg           1,2.Dichlorobenzene         ND         0.330         -           1,4.Dichlorobenzene         ND         0.330         -           2,4.5-Trichlorophenol         ND         0.330         -           2,4.6-Trichlorophenol         ND         0.330         -           2,4.6-Trichlorophenol         ND         0.330         -           2,4.0-Entirophenol         ND         0.330         -           2,4-Dinitrophenol         ND         0.500         -           2,4-Dinitrophenol         ND         0.500         -           2,4-Dinitrophenol         ND         0.500         -           2,4-Dinitrophenol         ND         0.330         -           2,4-Dinitrophenol         ND         0.330         -           2,4-Dinitrophenol         ND         0.330         -           2,4-Dinitrophenol         ND         0.330         -           2,6-Dinitrophenol         ND         0.330         -           2,6-Dinitrophenol         ND         0.330         -           2,6-Dinitrophenol         ND         0.330         -           2,6-Dinit	Batch 3F04005: Prepared 06/04/03	Using EP	A 3550B							··· <u>·</u>	
1.2-Dichlorobenzene         ND         0.330         •           1.3-Dichlorobenzene         ND         0.330         •           2.4.5-Trichlorophenol         ND         0.500         •           2.4-Dinitrophenol         ND         0.500         •           2.4-Dinitrophenol         ND         0.500         •           2.4-Dinitrophenol         ND         0.330         •           2.Chlorophenol         ND         0.330         •           2.Chlorophenol         ND         0.330         •           2.Mitophinol         ND         0.330         •           2.Mitophinol         ND         0.330         •           3.3-Dichorobenzidine         ND         0.330         •           3.3-Dichorobenzidine         ND         0.330         •           4.6-Dinitro-2-methylphenol	Blank (3F04005-BLK1)										
1.3-Dichlorobenzene       ND       0.330       "         1.4-Dichlorobenzene       ND       0.330       "         2.4.6-Trichlorophenol       ND       0.330       "         2.4.6-Trichlorophenol       ND       0.330       "         2.4.Dinitrophenol       ND       0.330       "         2.4.Dinitrophenol       ND       0.300       "         2.4.Dinitrophenol       ND       0.500       "         2.4.Dinitrophenol       ND       0.500       "         2.4.Dinitrophenol       ND       0.300       "         2.4.Dinitrophenol       ND       0.300 <td>1,2,4-Trichlorobenzene</td> <td>ND</td> <td>0.330</td> <td>mg/kg</td> <td></td> <td></td> <td></td> <td></td> <td>•••••</td> <td></td> <td></td>	1,2,4-Trichlorobenzene	ND	0.330	mg/kg					•••••		
1,4-Dichlorobenzene       ND       0.330       *         2,4-5. Trichlorophenol       ND       0.330       *         2,4-Dichlorophenol       ND       0.330       *         2,4-Dinitryhphenol       ND       0.330       *         2,4-Dinitryhphenol       ND       0.300       *         2,4-Dinitryhphenol       ND       0.500       *         2,4-Dinitryhphenol       ND       0.500       *         2,6-Dinitryholuene       ND       0.330       *         2,Chlorophenol       ND       0.330       *         2,Chlorophenol       ND       0.330       *         2,Chlorophenol       ND       0.330       *         2,Chlorophenol       ND       0.330       *         2,Altryhphenol       ND       0.330       *         2,Altryhphenol       ND       0.330       *         2,Altryhphenol       ND       0.330       *         3,3' Dichlorobenzidine       ND       0.300       *         4,6-Dinitro-2-methylphenol       ND       0.300       *         4,6-Dinitro-2-methylphenol       ND       0.300       *         4,6-Dinitro-2-methylphenol       ND	1,2-Dichlorobenzene	ND	0.330								
24.5-TrichlorophenolND0.30*24.6-TrichlorophenolND0.30*24-DichtlychphenolND0.30*24-DinitrychphenolND0.500*24-DinitrychphenolND0.500*24-DinitrychphenolND0.500*24-DinitrychphenolND0.300*2-ChlorochphenolND0.300*2-ChlorochphenolND0.300*2-ChlorochphenolND0.300*2-ChlorochphenolND0.300*2-MitrydnythaleneND0.300*2-MitrydnythaleneND0.300*2-NitroanilineND0.300*2-NitroanilineND0.300*3-J-DichlorobenzidineND0.300*4-Chloroch-andtyhphenolND0.300*4-Chloroch-andtyhphenolND0.300*4-ChlorochanilineND0.300*4-ChlorochanilineND0.300*4-ChlorochanilineND0.300*4-ChlorochanilineND0.300*4-ChlorochanilineND0.300*4-ChlorochanilineND0.300*4-ChlorochanilineND0.300*4-ChlorochanilineND0.300*4-ChlorochanilineND0.300*4-ChlorochanilineND0.300*4-ChlorochanilineND0.300* <td>1,3-Dichlorobenzene</td> <td>ND</td> <td>0.330</td> <td>"</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	1,3-Dichlorobenzene	ND	0.330	"							
2.4.6-Tricklorophenol       ND       0.330       "         2.4-Dimitplyphenol       ND       0.330       "         2.4-Dimitplyphenol       ND       0.500       "         2.4-Dimitplyphenol       ND       0.500       "         2.4-Dimitplyphenol       ND       0.500       "         2.4-Dimitplyphenol       ND       0.300       "         2.6-Dimitplyphenol       ND       0.300       "         2.6-Dimitplyphenol       ND       0.300       "         2.Chlorophenol       ND       0.300       "         2.Chlorophenol       ND       0.300       "         2.Mitrophenol       ND       0.300       "         2.Mitrophenol       ND       0.300       "         2.Mitrophenol       ND       0.300       "         2.Mitrophenol       ND       0.300       "         3.4 Methylphenol       ND       0.300       "         4.Mitrophenol       ND       0.500       "         4.Chlorophenyl ether       ND       0.300       "         4.Chlorophenyl ether       ND       0.300       "         4.Chlorophenyl ether       ND       0.300       "	1,4-Dichlorobenzene	ND	0.330	-							
2.4-Dichlorophenol         ND         0.330         "           2.4-Dinitrobphenol         ND         0.300         "           2.4-Dinitrobuenol         ND         0.500         "           2.4-Dinitrobueno         ND         0.500         "           2.4-Dinitrobueno         ND         0.300         "           2.4-Dinitrobueno         ND         0.300         "           2.4-Dinitrobueno         ND         0.300         "           2.4-Dinitrobueno         ND         0.300         "           2.4-Mithylphenol         ND         0.300         "           2.4-Mithylphenol         ND         0.300         "           2.4-Mithylphenol         ND         0.300         "           3.4-Mithylphenol         ND         0.300         "           3.4-Mithylphenol         ND         0.500         "           4.5-Dinitro-2-mithylphenol         ND         0.300         "           4.6-Dinitro-2-mithylphenol         ND         0.300         "           4.6-Dinitro-2-mithylphenol         ND         0.300         "           4.6-Dinitro-2-mithylphenol         ND         0.300         "           4.6-Dinitro-2-mithylphe	2,4,5-Trichlorophenol	ND	0.330	H							
2.4-Dimetry benol         ND         0.330         *           2.4-Dimitry benol         ND         0.500         *           2.4-Dimitry benol         ND         0.500         *           2.4-Dimitry benol         ND         0.500         *           2.4-Dimitry benol         ND         0.330         *           2.Chorosphthalene         ND         0.330         *           2.Chorosphthalene         ND         0.330         *           2.Metry benol         ND         0.330         *           2.Metry benol         ND         0.330         *           2.Mitroaniine         ND         0.330         *           3.Mitroaniine         ND         0.330         *           4.Go Dimitro 2-methylphenol         ND         0.330         *           4.Go Dimitro 2-methylphenol         ND         0.330         *           4.Chorosphenyl phenyl ether         ND         0.330         *           4.Niros	2,4,6-Trichlorophenol	ND	0.330	•							
2.4-Dinitrophenol         ND         0.500           2.4-Dinitrotoluenc         ND         0.500           2.6-Dinitrotoluenc         ND         0.500           2.6-Dinitrotoluenc         ND         0.330           2Chloropaphthalene         ND         0.330           2Chlorophenol         ND         0.330           2Methylaphthalene         ND         0.330           2Methylaphthalene         ND         0.330           2Methylaphthalene         ND         0.330           2Mitrophenol         ND         0.330           2Mitrophenol         ND         0.330           2Mitrophenol         ND         0.330           3.4-Methylphenol         ND         0.330           3.5         -Dichorobenzidine         ND         0.500           3.4-Methylphenol         ND         0.500         *           4.6-Dinitro-2-methylphenol         ND         0.330         *           4.6-Dinitro-2-methylphenol         ND         0.330         *           4.6-Dinitro-2-methylphenol         ND         0.330         *           4.6-Dinitro-2-methylphenol         ND         0.330         *           4.0-Morophenyl phenyl ether </td <td>2,4-Dichlorophenol</td> <td>ND</td> <td>0.330</td> <td>**</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	2,4-Dichlorophenol	ND	0.330	**							
2,4-Dinitrotoluene         ND         0,500         "           2,6-Dinitrotoluene         ND         0,500         "           2-Chloropaphthalene         ND         0,330         "           2-Methylaphthalene         ND         0,330         "           2-Methylaphthalene         ND         0,330         "           2-Methylaphthalene         ND         0,330         "           2-Methylaphthalene         ND         0,330         "           2-Mitrophenol         ND         0,330         "           2-Mitrophenol         ND         0,330         "           3-Mitrophenol         ND         0,330         "           3-Mitrophenol         ND         0,500         "           3-Mitrophenol         ND         0,500         "           4-Kelhoromethylphenol         ND         0,330         "           4-Chlorophenyl ether         ND         0,330         "           4-Chlorophenyl phenyl ether         ND         0,330         "           4-Chlorophenyl phenyl ether         ND         0,330         "           4-Nitroafiline         ND         0,330         "           4-Nitroafiline         ND <td>2,4-Dimethylphenol</td> <td>ND</td> <td>0.330</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	2,4-Dimethylphenol	ND	0.330	*							
2,6-Dinitrotoluene         ND         0.300         "           2-Chloronaphthalene         ND         0.330         "           2-Chlorophenol         ND         0.330         "           2-Methylphaphthalene         ND         0.330         "           2-Methylphenol         ND         0.330         "           2-Methylphenol         ND         0.330         "           2-Nitroaniline         ND         0.330         "           2-Nitrobenol         ND         0.330         "           3.4 -Methylphenol         ND         0.330         "           2-Nitroaniline         ND         0.500         "           3.4 -Methylphenol         ND         0.500         "           4-Methylphenol         ND         0.500         "           4-Chloro-2-methylphenol         ND         0.500         "           4-Chloro-3-methylphenol         ND         0.330         "           4-Chloro-3-methylphenol         ND         0.330         "           4-Chloro-3-methylphenol         ND         0.300         "           4-Chloro-3-methylphenol         ND         0.300         "           4-Nitroaniline         ND <td>2,4-Dinitrophenol</td> <td>ND</td> <td>0.500</td> <td>••</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	2,4-Dinitrophenol	ND	0.500	••							
C-Chloronaphthalene         ND         0.330         "           2-Chlorophenol         ND         0.330         "           2-Methylaphthalene         ND         0.330         "           2-Methylphenol         ND         0.330         "           2-Nitroaniline         ND         0.330         "           2-Nitroaniline         ND         0.330         "           3-Nitroaniline         ND         0.330         "           3.4 -Methylphenol         ND         0.330         "           3.4 -Methylphenol         ND         0.330         "           3.5 -Dichforobenzidine         ND         0.500         "           3.7 -Dichforobenzidine         ND         0.500         "           4.6 -Dinitro-2-methylphenol         ND         0.330         "           4-Chlorophenyl phenyl etter         ND         0.330         "           4-Chlorophenyl phenyl etter         ND         0.330         "           4-Chlorophenyl phenyl etter         ND         0.330         "           4-Nitroaniline         ND         0.330         "           4-Nitroaniline         ND         0.330         "           4-Nitroaniline	2,4-Dinitrotoluenc	ND	0.500	U							
2-Altorynenol         ND         0.330         "           2-Methylaphthalene         ND         0.330         "           2-Methylaphthalene         ND         0.330         "           2-Methylaphthalene         ND         0.330         "           2-Methylaphthalene         ND         0.330         "           2-Nitrophenol         ND         0.330         "           3-Mitrophenol         ND         0.330         "           3.4 -Methylaphenol         ND         0.500         "           3.4 -Dichlorobenzidine         ND         0.500         "           4.6-Dinitro-2-methylaphenol         ND         0.500         "           4-Chlorobenzidine         ND         0.330         "           4-Chlorobenyl phenyl ether         ND         0.330         "           4-Chlorobenyl phenyl ether         ND         0.330         "           4-Nitroaniline         ND         0.500         "           4-Nitroaniline         ND         0.330         "           4-Nitroaniline         ND         0.330         "           4-Nitroaniline         ND         0.330         "           Anthracene         ND	2,6-Dinitrotoluene	ND	0.500	"							
2-Methylnaphthalene         ND         0.330         "           2-Methylphenol         ND         0.330         "           2-Nitroaniline         ND         0.330         "           2-Nitroaniline         ND         0.330         "           3-Archthylphenol         ND         0.330         "           3-Archthylphenol         ND         0.330         "           3-Dichlorobenzidine         ND         0.500         "           4-Nitroaniline         ND         0.500         "           4-Choro-2-methylphenol         ND         0.500         "           4-Choro-3-methylphenol         ND         0.330         "           4-Choro-3-methylphenol         ND         0.330         "           4-Choro-3-methylphenol         ND         0.330         "           4-Choro-3-methylphenol         ND         0.330         "           4-Chorophenyl phenyl ether         ND         0.330         "           4-Chorophenyl phenyl ether         ND         0.300         "           4-Nitroaniline         ND         0.300         "           4-Nitroaniline         ND         0.300         "           Avenaphthylenc	2-Chloronaphthalene	ND	0.330	n							
2-Methylphenol         ND         0.330         "           2-Nitroaniline         ND         0.330         "           2-Nitrophenol         ND         0.330         "           3.4 - Methylphenol         ND         0.330         "           3.4 - Methylphenol         ND         0.330         "           3.4 - Methylphenol         ND         0.500         "           3-Nitroaniline         ND         0.500         "           4-Gonitro-2-methylphenol         ND         0.330         "           4-Chloro-3-methylphenol         ND         0.330         "           4-Nitroaniline         ND         0.330         "           Avenaphth	2-Chlorophenol	ND	0.330								
2-Nitroaniline       ND       0.500       "         2-Nitrophenol       ND       0.330       "         3.4 4-Methylphenol       ND       0.330       "         3.5 - Dichlorobenzidine       ND       5.00       "         3.4 - Methylphenol       ND       0.500       "         3.5 - Dichlorobenzidine       ND       0.500       "         3.6 - Dinitro-2-methylphenol       ND       0.500       "         4-Gronophenyl phenyl ether       ND       0.330       "         4-Chloro-3-methylphenol       ND       0.330       "         4-Chloro-3-methylphenol       ND       0.330       "         4-Chloro-3-methylphenol       ND       0.330       "         4-Chloro-3-methylphenol       ND       0.500       "         4-Chloro-3-methylphenol       ND       0.330       "         4-Chlorophenyl phenyl ether       ND       0.330       "         4-Nitrophenol       ND       0.330       "         4-Nitrophenol       ND       0.330       "         Accenaphthere       ND       0.330       "         Aniline       ND       0.330       "         Anithracene	2-Methylnaphthalene	ND	0.330								
2-Nitrophenol       ND       0.330       "         3.8 4-Methylphenol       ND       0.330       "         3.3 - Dichlorobenzidine       ND       5.00       "         3.4 - Dinitro-2-methylphenol       ND       0.500       "         4.6 - Dinitro-2-methylphenol       ND       0.330       "         4-Chloro-3-methylphenol       ND       0.330       "         4-Chloro-3-methylphenol       ND       0.330       "         4-Chloro-3-methylphenol       ND       0.330       "         4-Chloro-3-methylphenol       ND       0.500       "         4-Chloro-3-methylphenol       ND       0.500       "         4-Chloroaniline       ND       0.500       "         4-Chloroaniline       ND       0.500       "         4-Nitroaniline       ND       0.500       "         4-Nitroaniline       ND       0.500       "         4-Nitroaniline       ND       0.330       "         Acenaphtene       ND       0.330       "         Acenaphtene       ND       0.330       "         Anitracene       ND       0.330       "         Baenzo (a) anthracene       ND	2-Methylphenol	ND	0.330	-							
B & 4-Methylphenol         ND         0.330         "           3.3'-Dichlorobenzidine         ND         5.00         "           3Nitroaniline         ND         0.500         "           4.6-Dinitro-2-methylphenol         ND         0.330         "           4-Bromophenyl phenyl ether         ND         0.330         "           4-Chloro-3-methylphenol         ND         0.330         "           4-Chloro-aimethylphenol         ND         0.500         "           4-Chlorophenyl phenyl ether         ND         0.500         "           4-Nitroaniline         ND         0.500         "           4-Aenaphthene         ND         0.330         "           Accenaphthylene         ND         0.330         "           Anitracene         ND         0.330         "           Baezo (a) anthracene         ND         0.330         "           Baezo (b) fluoranthene         ND         0.330         " <td>2-Nitroaniline</td> <td>ND</td> <td>0.500</td> <td>Η</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	2-Nitroaniline	ND	0.500	Η							
3.3'-Dichlorobenzidine       ND       5.00       "         3.4'Dichlorobenzidine       ND       0.500       "         4.6-Dinitro-2-methylphenol       ND       0.330       "         4-Enomophenyl phenyl ether       ND       0.330       "         4-Chloro-3-methylphenol       ND       0.330       "         4-Chloro-3-methylphenol       ND       0.330       "         4-Chloroaniline       ND       0.500       "         4-Chlorophenyl phenyl ether       ND       0.330       "         4-Nitroaniline       ND       0.500       "         4-Nitrophenol       ND       0.500       "         4-Nitrophenol       ND       0.500       "         Accanaphthene       ND       0.500       "         Accanaphthylene       ND       0.330       "         Aniline       ND       0.330       "         Anihracene       ND       0.330       "         Banzo (a) anthracene       ND       0.330       "         Banzo (b) fluoranthene       ND       0.330       "	2-Nitrophenoł	ND	0.330								
Anitroaniline         ND         0.500         "           4,6-Dinitro-2-methylphenol         ND         0.500         "           4-Bromophenyl phenyl ether         ND         0.330         "           4-Chloro-3-methylphenol         ND         0.330         "           4-Chlorophenyl phenyl ether         ND         0.330         "           4-Chlorophenyl phenyl ether         ND         0.330         "           4-Nitroaniline         ND         0.500         "           4-Nitrophenol         ND         0.330         "           Acenaphthene         ND         0.330         "           Aniline         ND         0.330         "           Anitracene         ND         0.330         "           Bazo (a) anthracene         ND         0.330         "           Bazo (b) fluoranthene         ND         0.330         " <td>3 &amp; 4-Methylphenol</td> <td>ND</td> <td>0.330</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	3 & 4-Methylphenol	ND	0.330								
A,6-Dinitro-2-methylphenol       ND       0.500       "         4-Bromophenyl phenyl ether       ND       0.330       "         4-Chloro-3-methylphenol       ND       0.330       "         4-Chloro-3-methylphenol       ND       0.500       "         4-Chloroaniline       ND       0.500       "         4-Chlorophenyl phenyl ether       ND       0.330       "         4-Nitroaniline       ND       0.500       "         4-Nitrophenol       ND       0.500       "         4-Nitrophenol       ND       0.500       "         Acenaphthene       ND       0.500       "         Acenaphthene       ND       0.330       "         Anthracene       ND       0.330       "         Benzo (a) anthracene       ND       0.330       "         Benzo (a) pyrene       ND       0.330       "         Benzo (b) fluoranthene       ND       0.330       "	3,3 '-Dichlorobenzidine	ND	5.00	14							
4-Bromophenyl ether         ND         0.330         "           4-Chloro-3-methylphenol         ND         0.330         "           4-Chloroaniline         ND         0.500         "           4-Chlorophenyl phenyl ether         ND         0.330         "           4-Chlorophenyl phenyl ether         ND         0.330         "           4-Nitroaniline         ND         0.500         "           4-Nitrophenol         ND         0.500         "           4-Nitrophenol         ND         0.500         "           Acenaphthene         ND         0.330         "           Acenaphthylene         ND         0.330         "           Anthracene         ND         0.330         "           Benzo (a) anthracene         ND         0.330         "           Benzo (b) fluoranthene         ND         0.330         "	3-Nitroaniline	ND	0.500	n							
4-Chloro-3-methylphenol       ND       0.330       "         4-Chlorophenyl phenyl ether       ND       0.330       "         4-Chlorophenyl phenyl ether       ND       0.330       "         4-Nitroaniline       ND       0.500       "         4-Nitrophenol       ND       0.500       "         4-Nitrophenol       ND       0.500       "         Acenaphthene       ND       0.330       "         Acenaphthylene       ND       0.330       "         Anthracene       ND       0.330       "         Benzo (a) anthracene       ND       0.330       "         Benzo (b) fluoranthene       ND       0.330       "	4,6-Dinitro-2-methylphenol	ND	0.500	н							
A-Chloroaniline       ND       0.500       "         4-Chlorophenyl ether       ND       0.330       "         4-Nitroaniline       ND       0.500       "         4-Nitrophenol       ND       0.500       "         4-Nitrophenol       ND       0.500       "         Acenaphthene       ND       0.330       "         Acenaphtylene       ND       0.330       "         Aniline       ND       0.330       "         Anthracene       ND       0.330       "         Benzo (a) anthracene       ND       0.330       "         Benzo (b) fluoranthene       ND       0.330       "	4-Bromophenyl phenyl ether	ND	0.330	11							
4-Chlorophenyl phenyl ether       ND       0.330       "         4-Nitroaniline       ND       0.500       "         4-Nitrophenol       ND       0.500       "         Acenaphthene       ND       0.330       "         Acenaphthylene       ND       0.330       "         Acenaphthylene       ND       0.330       "         Anthracene       ND       0.330       "         Benzo (a) anthracene       ND       0.330       "         Benzo (b) fluoranthene       ND       0.330       "	4-Chloro-3-methylphenol	ND	0.330	0							
4-NitroanilineND0.500"4-NitrophenolND0.500"4-cenaphtheneND0.330"AcenaphthyleneND0.330"AnilineND0.330"AnthraceneND0.330"Benzo (a) anthraceneND0.330"Benzo (a) pyreneND0.330"Benzo (b) fluorantheneND0.330"	4-Chloroaniline	ND	0.500	U							
A-Nirophenol         ND         0.500         "           Acenaphthene         ND         0.330         "           Acenaphthylene         ND         0.330         "           Aniline         ND         0.330         "           Anthracene         ND         0.330         "           Benzo (a) anthracene         ND         0.330         "           Benzo (a) pyrene         ND         0.330         "           Benzo (b) fluoranthene         ND         0.330         "	4-Chlorophenyl phenyl ether	ND	0.330	"							
Accenaphthene         ND         0.330         "           Accenaphthylene         ND         0.330         "           Aniline         ND         0.330         "           Anthracene         ND         0.330         "           Benzo (a) anthracene         ND         0.330         "           Benzo (a) pyrene         ND         0.330         "           Benzo (b) fluoranthene         ND         0.330         "	4-Nitroaniline	ND	0.500	**							
AcenaphthyleneND0.330"AnilineND0.330"AnthraceneND0.330"Benzo (a) anthraceneND0.330"Benzo (a) pyreneND0.330"Benzo (b) fluorantheneND0.330"	4-Nitrophenol	ND	0.500	n							
AnilineND0.330"AnihraceneND0.330"Benzo (a) anthraceneND0.330"Benzo (a) pyreneND0.330"Benzo (b) fluorantheneND0.330"	Acenaphthene	ND	0.330	"							
AnthraceneND0.330"Benzo (a) anthraceneND0.330"Benzo (a) pyreneND0.330"Benzo (b) fluorantheneND0.330"	Acenaphthylene	ND	0.330	14							
Benzo (a) anthraceneND0.330Benzo (a) pyreneND0.330Benzo (b) fluorantheneND0.330	Aniline	ND	0.330	IT							
Benzo (a) anthraceneND0.330"Benzo (a) pyreneND0.330"Benzo (b) fluorantheneND0.330"	Anthracene	ND	0.330	μ							
Benzo (a) pyreneND0.330"Benzo (b) fluorantheneND0.330"	Benzo (a) anthracene			11							
Benzo (b) fluoranthene ND 0.330 "	Benzo (a) pyrene	ND		*1							
				Π							

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 MACTEC - Anchorage
 Project:
 EKWOK

 601 East 57th Place
 Project Number:
 55343.1.6

 Anchorage AK, 99518
 Project Manager:
 Donna Robertson

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

North Creek Analytical - Bothell

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F04005: Prepared 06/04/03	Using EP	A 3550B								
Blank (3F04005-BLK1)										- <b>n</b>
Benzo (k) fluoranthene	ND	0.330	mg/kg							
Benzoic Acid	ND	1.00	H							
Benzyl alcohol	ND	0.330	Ð							
Bis(2-chloroethoxy)methane	ND	0.330	U.							
Bis(2-chloroethyl)ether	ND	0.330	J†							
Bis(2-chloroisopropyl)ether	ND	0.330	"							
Bis(2-cthylhexyl)phthalate	ND	0.330	v							
Butyl benzyl phthalate	ND	0.330	**							
Carbazole	ND	0.330	"							
Chrysene	ND	0.330	м							
Di-n-butyl phthalate	ND	0.330								
Di-n-octyl phthalate	ND	0.330	"							
Dibenz (a,h) anthracene	ND	0.330	10							
Dibenzofuran	ND	0.330	ŧr							
Diethyl phthalate	ND	0.330	*							
Dimethyl phthalate	ND	0.330	11							
Fluoranthene	ND	0.330	0							
Fluorene	ND	0.330	n							
Hexachlorobenzene	ND	0.330	н							
Hexachlorobutadiene	ND	0.330	n							
Hexachlorocyclopentadiene	ND	0.500	"							
Hexachloroethane	ND	0.330	"							
Indeno (1,2,3-cd) pyrenc	ND	0.330	**							
Isophorone	ND	0.330	**							
N-Nitrosodi-n-propylamine	ND	0.330	**							
N-Nitrosodiphenylamine	ND	0.330	n							
Naphthalene	ND	0.330	14							
Nitrobenzene	ND	0.330	tr							
Pentachlorophenol	ND	0.500	**							
Phenanthrene	ND	0.330	*							
Phenol	ND	0.330	н							
Pyrene	ND	0.330	0							
Surrogale: 2-FP	1.64		"	1.67		98.2	26-137			
Surrogate: Phenol-d6	1.68		"	1.67		101	10-153			
Surrogate: 2,4,6-TBP	1.40		**	1.67		83.8	10-133			

North Creek Analytical - Bothell

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MACTEC - AnchorageProject:EKWOK601 East 57th PlaceProject Number:55343.1.6Reported:Anchorage AK, 99518Project Manager:Donna Robertson06/16/03 16:20

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

North Creek Analytical - Bothell

		Reporting	·	Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F04005: Ргерагеd 06/04/03	Using EF	PA 3550B								
Blank (3F04005-BLK1)							· <u> </u>			
Surrogale: Nitrobenzene-d5	1.61		mg/kg	1.67		96.4	48-127		· · ·	·
Surrogate: p-Terphenyl-d14	1.82		"	1,67		109	44-144			
Surrogate: 2-FBP	1.74		*	1.67		104	36-146			
LCS (3F04005-BS1)										
1,2,4-Trichlorobenzene	3.23	0.330	mg/kg	3.33		97.0	61-126			
1,4-Dichlorobenzenc	3.19	0.330		3.33		95.8	47-138			
2,4-Dinitrotoluene	3.12	0.500	**	3.33		93.7	71-133			
2-Chlorophenol	3.32	0.330	**	3.33		99.7	54-144			
4-Chloro-3-methylphenol	3.24	0.330	*	3.33		97.3	71-129			
4-Nitrophenol	2.90	0.500	"	3,33		87.1	46-135			
Acenaphthene	3.34	0.330	n	3.33		100	69-124			
N-Nitrosodi-n-propylamine	2.89	0.330	n	3.33		86.8	48-140			
Pentachlorophenol	3.05	0.500	n	3.33		91.6	57-128			
Phenol	3.24	0.330	I	3.33		97.3	51-142			
Ругепе	3.86	0.330	"	3.33		116	75-135			
Surrogate: 2-FP	1.58		"	I.67		94.6	26-137			
Surrogate: Phenal-d6	1.63	,	*	1.67		97.6	10-153			
Surrogate: 2,4,6-TBP	1.58		"	1.67		94.6	10-133			
Surrogate: Nitrobenzene-d5	1.57		*	1.67		94.0	48-127			
Surrogate: p-Terphenyl-d14	1.72		-	1.67		103	44-144			
Surrogate: 2-FBP	1.67		"	1.67		100	36-146			
LCS Dup (3F04005-BSD1)										
1,2,4-Trichlorobenzene	3.21	0.330	mg/kg	3.33		96.4	61-126	0.621	22	•••
1,4-Dichlorobenzene	3.28	0.330	H	3.33		98.5	47-138	2.78	26	
2,4-Dinitrotoluene	3.12	0.500	н	3.33		<b>93</b> .7	71-133	0.00	21	
2-Chlorophenol	3.58	0.330	"	3.33		108	54-144	7.54	22	
4-Chloro-3-methylphenol	3.38	0.330	0	3.33		102	71-129	4.23	19	
4-Nitrophenol	2.91	0.500	"	3.33		87.4	46-135	0.344	17	
Acenaphthene	3.31	0.330		3.33		99.4	69-124	0.902	24	
- N-Nitrosodi-n-propylaminc	3.15	0.330	*	3.33		94.6	48-140	8.61	23	
Pentachlorophenol	3.05	0.500	n	3.33		91.6	57-128	0.00	17	
Phenol	3.52	0.330	н	3.33		106	51-142	8.28	20	
Pyrene	3.82	0.330	м	3.33		115	75-135	1.04	17	
Surrogate: 2-FP	1.70			1.67		102	26-137			
				1.07		102	20-13/			

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 MACTEC - Anchorage
 Project:
 EKWOK

 601 East 57th Place
 Project Number:
 55343.1.6

 Anchorage AK, 99518
 Project Manager:
 Donna Robertson

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

		N	orth Cro	eek Analy	tical - E	Bothell					
Analyte		Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3F04005:	Prepared 06/04/03	Using EF	PA 3550B								
LCS Dup (3F04005-)											<u></u>
Surrogate: Phenol-do		1.77-		mg/kg	1.67		106	10-153	·		
Surragate: 2,4,6-TBP		1.61		"	1.67		96.4	10-133			
Surrogate: Nitrobenzene	-d5	1.72		n	1.67		103	48-127			
Surrogate: p-Terphenyl-		1.73		"	1.67		104	44-144			
Surrogate: 2-FBP		1.66		"	1.67		99.4	36-146			
Matrix Spike (3F040	05-MS1)					Source: H	33F0053-(	)2			
1,2,4-Trichlorobenzene		3.80	0.330	mg/kg dry	4.11	ND	92.5	34-126			
1,4-Dichlorobenzene		3.49	0.330		4.11	ND	84.9	31-126			
2,4-Dinitrotoluenc		3.91	0.500	*	4.11	ND	95.1	32-154			
2-Chlorophenol		4.28	0.330	**	4.11	ND	104	34-144			
4-Chloro-3-methylpheno	]	4.34	0.330	**	4.11	ND	106	32-156			
4-Nitrophenol		4.23	0.500		4.11	ND	103	10-171			
Acenaphthene		4.28	0.330	۲	4.11	ND	104	33-139			
N-Nitrosodi-n-propylami	пе	3.55	0.330		4.11	ND	86.4	23-140			
Pentachlorophenol		4.29	0.500		4.11	ND	104	10-165			
Phenol		4.20	0.330		4.11	ND	102	32-144			
Pyrene		4.92	0.330	н	4,11	ND	120	28-156			
Surrogate: 2-FP		1.95			2.06	·	94.7	26-137			
Surrogate: Phenol-d6		2.08		0	2.06		101	10-153			
Surrogate: 2,4,6-TBP		2.09		"	2.06		101	10-133			
Surrogate: Nitrobenzene	-d5	2.01		"	2.06		97.6	48-127			
Surrogate: p-Terphenyl-	d14	2.15		"	2.06		104	44-144			
Surrogate: 2-FBP		1.98		"	2.06		96.1	36-146			
Matrix Spike Dup (3	F04005-MSD1)					Source: H	33F0053-(	02			
1,2,4-Trichlorobenzene		3.73	0.330	mg/kg dry	4.14	ND	90, I	34-126	1.86	39	
1,4-Dichlorobenzene		3.64	0.330		4.14	ND	87.9	31-126	4.21	42	
2,4-Dinitrotoluene		3.65	0.500	n	4.14	ND	88.2	32-154	6.88	37	
2-Chlorophenol		4.23	0.330	U.	4,14	ND	102	34-144	1.18	39	
4-Chloro-3-methylphenol		3.99	0.330	и	4.14	ND	96.4	32-156	8.40	36	
4-Nitrophenol		3.82	0.500	)(	4,14	ND	92.3	10-171	10.2	36	
Acenaphthene		4.05	0.330	•	4.14	ND	97.8	33-139	5.52	35	
- N-Nitrosodi-n-propylami	ne	3.60	0.330	м	4.14	ND	87.0	23-140	1.40	39	
Pentachlorophenol		4,42	0.500		4.14	ND	107	10-165	2.99		
Phenol		4.08	0.330		7.17	110	107	10-103	2.77	39	

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### Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

	N	orth Cr	eek Analy	tical - F	Bothell					
		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F04005: Prepared 06/04/03	Using EP	A 3550B								
Matrix Spike Dup (3F04005-MSD1)					Source: I	33F0053-	02			
Pyrene	4.66	0.330	mg/kg dry	4.14	ND	113	28-156	5,43	35	
Surrogate: 2-FP	2.02		"	2.07		97.6	26-137			
Surrogate: Phenol-d6	2.02		~	2.07		97.6	10-153			
Surrogate: 2,4,6-TBP	1.99		*	2.07		96.1	10-133			
Surrogate: Nitrobenzene-d5	1.98		~	2.07		95.7	48-127			
Surrogate: p-Terphenyl-d14	2.04		-	2.07		98.6	44-144			
Surrogate: 2-FBP	1.90		Π	2,07		91.8	36-146			

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 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 541.383.9310 fax 541.382.7588

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 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119 907.563.9200 fax 907.563.9210

MACTEC - AnchorageProject:EKWOK601 Easr 57th PlaceProject Number:55343.1.6Reported:Anchorage AK, 99518Project Manager:Donna Robertson06/16/03 16:20

## Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

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		]	Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 3F06021:	Prepared 06/06/03	Using Dry	/ Weight							******	
Blank (3F06021-Bl	LK1)										
Dry Weight		- 99.8	1.00	%							

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## Project FKWOK

MACTEC - Anchorage	Project:	EKWOK	
601 East 57th Place	Project Number:	55343.1.6	Reported:
Anchorage AK, 99518	Project Manager:	Donna Robertson	06/16/03 16:20

#### **Notes and Definitions**

- D-09 Results in the diesel organics range are primarily due to overlap from a heavy oil range product.
- The spike recovery for this QC sample is outside of NCA established control limits due to sample matrix interference. Q-02
- The surrogate recovery for this sample is outside of established control limits. Review of associated QC indicates the recovery for S-03 this surrogate does not represent an out-of-control condition.
- Х See case narrative.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- Sample results reported on a dry weight basis dry
- RPD **Relative Percent Difference**

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Kortland Orr For Emanuel Hignutt, PM

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**PHOTOGRAPHS** 



North view of the historic dump site before digging test pits. The access road into the subdivision is on the left.



South view of the historic dump site before digging test pits. The access road into the subdivision is on the right.

MACTEC



Final test pit with visible waste.



Final test pit with digging not yet complete.

MACTEC



North view of the historic dump site after digging the test pits. The access road into the subdivision is off the left side of the photograph.



South view of the historic dump site after digging the test pits. The access road to the subdivision is visible on the right side of the photograph.