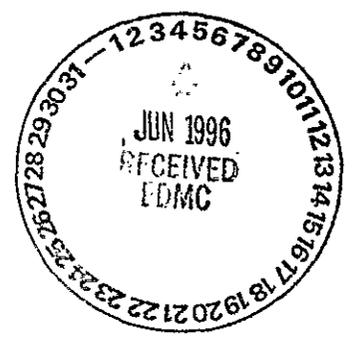


SDG Memo/Sample Summary

Client Name: WESTINGHOUSE HANFORD CO. Date: 26 Nov 1992
 Project Name: 92-321 Update No.:
 SDG No.: 3395 Work Order No.: 32359-51
 Project Manager: J. DEWALD
 Mail Date:

Client Samp No.	S-Cubed Samp No.	Date Rcvd	Date Samp	Matrix	ANIONS	CRVI	FURNCLP	HERBEXT	HGCLP	ICPCLP	NO2/NO3	OCPOLM	OPP8140	SVOAOLM	TRPH	VOAOLM
807GM9	3395-01	10-29-1992	10-20-1992	SOIL	X	X	X	X	X	X	X	X	X	X	X	X
807GM9MS	3395-01MS	10-29-1992	10-20-1992	SOIL	X	X	X	X	X	X	X	X	X	X	X	X
807GM9MSD	3395-01MSD	10-29-1992	10-20-1992	SOIL				X				X	X	X		X
807GM9REP	3395-01REP	10-29-1992	10-20-1992	SOIL	X	X	X		X	X	X				X	

(X) = Non-Billable Sample



19 from 12-2-94

Westinghouse Hanford Company		NONCONFORMANCE REPORT			1. Page <u>1</u> of <u>1</u>	2. Preprinted No. 051181	
3. P. O., W. O., or Job Control No. N/A		4. System/End Use N/A		5. Item/Material N/A		6. Dwg./Spec./Other No. N/A	
8. Program/Project/Other North Slope Expedited Response Action		9. Safety Class N/A		10. ASME Code Items <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If yes, notify authorized inspector)			
11. Supplier Name/Address Data Chem 960 West Levoy Drive Salt Lake City, UT 84123-2547				12. Notification of Potential Occurrence Required <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
13. Code: Lot/Heat/Serial N/A		14. Lot Size N/A	15. Sample N/A	16. Qty. Acc. N/A	17. Inspection Criteria <input type="checkbox"/> Dwg. <input type="checkbox"/> Spec. <input type="checkbox"/> Insp. Plan <input checked="" type="checkbox"/> Other <u>WHC-SD-EN-AP-099, Rev.</u>		
18. Item	19. Description of Nonconformance (list serial no. where applicable)			22. Disposition, Justification, and Instructions			
1.	North Slope Expedited Response Action Sampling Plan, WHC-SD-EN-AP-099, Rev. 1 specified the phosphorus pesticide analysis method to be SW-846/8190. The actual analytical method is SW-846/8140 which the analytical lab utilized in the phosphorus pesticide analysis.			Accept lab sample method from data chem. Error in WEG Sample Plan, WHC-SD-EN-AP-099 Rev. 1 laboratory method was not correct. Change table 2 page 7 line "Phosphorus pesticides" second column to SW-846/8140.			

20. Originator's Signature <i>C. S. Menley</i>		Date 12/8/92		23. Design Document Change Required? <input type="checkbox"/> Yes, Doc. No. _____ <input type="checkbox"/> No		
21. Cognizant QA Manager's Signature <i>[Signature]</i>		Date 12-22-92		24. Corrective Action Required? <input type="checkbox"/> Yes, No. _____ <input type="checkbox"/> No		
Disp. App.	25. Cognizant Engineer <i>C. S. Menley</i>	Date 12/8/92	26. Technical Rep.	Date	Signature/Org.	Date
	QA Engineer <i>[Signature]</i>	Date 12/8/92	Signature/Org.	Date	Signature/Org.	Date
Close	27. Accept <input checked="" type="checkbox"/> Reject _____ Follow on NCR _____		<i>[Signature]</i>		Date 12/22/92	
			QA/C Personnel		Date	

Westinghouse Hanford
Company

CHAIN OF CUSTODY

53 Lot #
3575

Custody Form Initiator J. G. LUCAS

Company Contact FRANK GUSTAFSON Telephone (509) 376-1736

Project Designation/Sampling Locations NORTH SLOPE Collection Date 10-20-92
PSN-04

Ice Chest No. RM#7 Field Logbook No. EFL-1031

Bill of Lading/Airbill No. 2521568500 Offsite Property No. W93-0-0002 #20

Method of Shipment EMERY

Shipped to S-CUBED

Possible Sample Hazards/Remarks N/A

Sample Identification

RO7GM9 (3) 120 ml AMBER GLASS, (1) 120 ml w/SEPTUM, (1) 1-LITER AMBER GLASS

Field Transfer of Custody CHAIN OF POSSESSION (Sign and Print Names)

Relinquished by: <u>J. G. Lucas</u> <u>Jonathan G. Lucas</u>	Received by: <u>ELAINE WALTERS</u> <u>Elaine Walters</u>	Date/Time: <u>10/29/92 10 30</u>
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method: _____ Disposed by: _____ Date/Time: _____

Comments: _____

NARRATIVE

November 27, 1992

Narrative Project: 92-321
Reference No.: 32359-51
Client: WHC
SDG No.: 3395

VOLATILES

The samples were analyzed according to the OLM01.8 Statement of Work. All samples were analyzed within method specified holding times. The sample contained levels of Acetone and Methylene Chloride comparable to those found in the lab blanks.

The quality control results were acceptable. Surrogate recoveries were within QC limits. The LCS recoveries were excellent, as were the recoveries and RPD's for B07GM9-MS/MSD. The lab blank was "clean" and all initial and continuing calibration data are compliant.

SEMIVOLATILES

The samples were analyzed according to the OLM01.8 Statement of Work. Surrogate recoveries were well within QC limits for all samples analyzed. LCS recoveries were exemplary, and MS/MSD results met the method specified QC requirements. The samples were extracted and analyzed within holding time constraints.

No target analytes were detected in the sample and no significant TIC's were identified. The lab blank was free of contamination and the initial calibration data was method compliant. The LCS sample was not analyzed within the 12-hour time limit.

ORGANOCHLORINE PESTICIDE/PCBs

The organochlorine pesticides analyses will be submitted shortly.

id
AW
12-2-94

NARRATIVE

HERBICIDES

The herbicide analyses will be submitted shortly.

ORGANOPHOSPHORUS PESTICIDES

The organophosphorus pesticides will be submitted shortly.

TRPH

The samples were analyzed according to EPA Method 418.1 for TRPH. Please note that these samples were batched with another group of samples. The quality control results were acceptable. MS and %RPD recoveries were within the control limits.

METALS

The samples were analyzed according to the ILM02.1 Statement of Work for the CLP metals list. Dilutions were required for analysis of As, Se, and Pb on GFAA. No MSA was required.

The quality control results were generally acceptable. MS recoveries are outside criteria for the GFAA analytes due to dilutions required and the presence of interferences in the sample. Sb and Ag also showed MS recoveries outside criteria. The RPD result was slightly high for Pb. Soil LCS recoveries were within advisory ranges.

ANIONS

The samples were analyzed according to EPA Method 300.0 for anions by ion chromatography. For soil, 40 gm of sample was leached into 200 ml of DI Type II water prior to IC analysis. The quality control results were generally acceptable. The RPD for O-PO₄ was 20.8. This RPD is slightly over the QC limit of 20 due to the soil matrix.

CHROME VI

The samples were analyzed according to EPA Method 7196 for colorimetric Chrome VI analysis. For soil, 40 gm of sample was leached into 200 ml of DI Type II water prior to analysis. The quality control results were acceptable.

12
12-9-04

NARRATIVE

NO2/NO3

The samples were analyzed according to EPA Method 353.3 for NO2/NO3. For soil, 20 gm of sample was leached into 100 ml of DI Type II water prior to analysis. The quality control results were acceptable.

John DeWald
Project Manager

enclosures

r:\narr\n3395

12 Apr 1994

FORM OF PAYMENT		SERVICES		UNIT PROVISIONS	
Check <input type="checkbox"/>	CC <input type="checkbox"/>	<input type="checkbox"/> Same Day (Extra Charges) <input checked="" type="checkbox"/> AM <input type="checkbox"/> Second Day		Express <input type="checkbox"/> Standard Plus <input type="checkbox"/> Preferred <input type="checkbox"/> Standard <input type="checkbox"/> Saturday Delivery <input type="checkbox"/>	
Bill to Shipper <input type="checkbox"/> <input checked="" type="checkbox"/> Bill to Consignee Third Party Billing <input type="checkbox"/>	FCCOD <input type="checkbox"/>	 		Date	Origin
Shipper's Account Number E 850281585				10-28-92	PSC
From:		To:		Tariff Dest.	Gateway
WESTINGHOUSE SHIPPING DEPT (509) 376-6669		JOHN DEWALD			
U.S. DEPARTMENT OF ENERGY C/O WESTINGHOUSE HANFORD		S-CUBED		\$	
BLDG 1163		3398 W CARMEL MT. ROAD		Hold for Pick Up <input type="checkbox"/>	EMERY WORLDWIDE will accept Consignee check with all bills being assumed by Shipper, including but not limited to non-payment, freight and interpackage charges.
2355 STEVENS DRIVE		3398 W CARMEL MT. ROAD		Canada <input type="checkbox"/>	
RICHLAND WA		SAN DIEGO CA		Canada <input type="checkbox"/>	
Customer's Reference Numbers		Consignee's Account Number			
W81300 PD42A W93-0-0002 #29		E 97352		92121	
Description		Pcs	Dimensions L W H	Total Pieces	Total Weight
1 ICENCHEST RM#7 SOIL SAMPLES B07GM9		1	11 16 11	1	24
Remarks		Zip Ship <input type="checkbox"/>		Mark if Emery Packaging is used	
OVERNIGHT DELIVERY SIGNATURE SECURITY SERVICE		For shipments within the 50 United States Shipper has the option to check this box and, by checking, agree that the Zip Ship conditions, described in the area to the right, apply.		Urgent Letter <input type="checkbox"/> 9X12 Urgent Pack <input type="checkbox"/> 12X15	
Shipper's Signature <i>X [Signature]</i>		Third Party Account Number		FOR INFORMATION ON RATES CALL 1-800-441-EMERY (1-800-443-6319)	
Commodity Code		E		2521568500	
Free Domicile <input type="checkbox"/>		International Customs Value			
Base Charge		International Insurance		Declared Value \$	
Total Transportation Charges		Other Charges/Advance of Origin		SAN-A	
		<input type="checkbox"/> OCAO \$		Terms and Conditions on Pack	

PULL FOR SHPT. NO. TAB

CONSIGNEE - PACKAGE COPY - 4

19-0-504

46

EMERY
WORLDWIDE



DATE: 10-28-92 SHIPMENT NO.: 262156850-0
 SHIPPER: WESTINGHOUSE SHIPPING DEPT (509) 376-6665
 REFERENCE NO.: W93-0-0002 #29

SIGNATURE AND TALLY RECORD

60029-46 (8/89) Lkho USA

SHIPPER NAME AND ADDRESS

WESTINGHOUSE SHIPPING DEPT (509) 376-6665
 G2-06 US DEPARTMENT OF ENERGY C/O
 WESTINGHOUSE HANFORD COMPANY
 2355 STEVENS DRIVE 1163 BUILDING
 PO BOX 1970
 RICHLAND WA 99352

CONSIGNEE NAME AND ADDRESS

JOHN DEWALD
 S-CUBED
 3398 CARMEL MT. ROAD
 SAN DIEGO CA 92121-1095

Pieces	Weight	Description/Marks	Emery Authorization No.
1	24 lbs	B07GM9 ICE CHEST RM#7 SOIL SAMPLES	

EACH PERSON HANDLING OR TAKING CUSTODY OF THIS SHIPMENT MUST SIGN AND COMPLETE THE INFORMATION BELOW

Name of Person/Company	Transship Point/Destination	Signature of Person Accepting Custody	Time/Date
1. [Handwritten]	[Handwritten]	[Handwritten]	[Handwritten]
2. [Handwritten]	[Handwritten]	[Handwritten]	[Handwritten]
3. Ted Vause	PSL	[Signature]	10/30/92
4. [Handwritten]	[Handwritten]	[Signature]	[Handwritten]
5. [Handwritten]	[Handwritten]	[Signature]	[Handwritten]
6. [Handwritten]	SD N	[Signature]	10/27/92
7. [Handwritten]	SHL	[Signature]	10/10/92
8. ARDOLFO A PEREZ	SD S-CUBED	[Signature]	10/29/92

SPECIAL HANDLING INSTRUCTIONS

Handwritten notes on the left margin.

Sample Number
B07 GM9

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT. of Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NO TIC'S FOUND.	VOA		
2.				
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07GM9

Lab Name: S-CUBED Contract: 32359-51
 Lab Code: S3 Case No.: 92-321 SAS No.: SDG No.: 3395
 Matrix: (soil/water) SOIL Lab Sample ID: 3395-01
 Sample wt/vol: 30 (g/ml) G Lab File ID: DN09111
 Level: (low/med) LOW Date Received: 10/29/92
 %Moisture: 13.80 decanted: (Y/N) N Date Extracted: 11/02/92
 Concentrated Extract Volume: 2000.00 (uL) Date Analyzed: 11/10/92
 Injection Volume: 1.00 (u/L) Dilution Factor: 1.00
 GPC Cleanup: (Y/N) Y pH: 7.91

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NO. COMPOUND Q

108-95-2	Phenol	760	U
111-44-4	bis(2-Chloroethyl)ether	760	U
95-57-8	2-Chlorophenol	760	U
541-73-1	1,3-Dichlorobenzene	760	U
106-46-7	1,4-Dichlorobenzene	760	U
95-50-1	1,2-Dichlorobenzene	760	U
95-48-7	2-Methylphenol	760	U
108-60-1	2,2'-oxybis(1-Chloropropane)	760	U
106-44-5	4-Methylphenol	760	U
621-64-7	N-Nitroso-di-n-propylamine	760	U
67-72-1	Hexachloroethane	760	U
98-95-3	Nitrobenzene	760	U
78-59-1	Isophorone	760	U
88-75-5	2-Nitrophenol	760	U
105-67-9	2,4-Dimethylphenol	760	U
111-91-1	bis(2-Chloroethoxy)methane	760	U
120-83-2	2,4-Dichlorophenol	760	U
120-82-1	1,2,4-Trichlorobenzene	760	U
91-20-3	Naphthalene	760	U
106-47-8	4-Chloroaniline	760	U
87-68-3	Hexachlorobutadiene	760	U
59-50-7	4-Chloro-3-methylphenol	760	U
91-57-6	2-Methylnaphthalene	760	U
77-47-4	Hexachlorocyclopentadiene	760	U
88-06-2	2,4,6-Trichlorophenol	760	U
95-95-4	2,4,5-Trichlorophenol	1800	U
91-58-7	2-Chloronaphthalene	760	U
88-74-4	2-Nitroaniline	1800	U
131-11-3	Dimethylphthalate	760	U
208-96-8	Acenaphthylene	760	U
606-20-2	2,6-Dinitrotoluene	760	U
99-09-2	3-Nitroaniline	1800	U
83-32-9	Acenaphthene	760	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO7GM9

Lab Name: S-CUBED Contract: 32359-51
 Lab Code: S3 Case No.: 92-321 SAS No.: SDG No.: 3395
 Matrix: (soil/water) SOIL Lab Sample ID: 3395-01
 Sample wt/vol: 30 (g/ml) G Lab File ID: DN09111
 Level: (low/med) LOW Date Received: 10/29/92
 %Moisture: 13.80 decanted: (Y/N) N Date Extracted: 11/02/92
 Concentrated Extract Volume: 2000.00 (uL) Date Analyzed: 11/10/92
 Injection Volume: 1.00 (u/L) Dilution Factor: 1.00
 GPC Cleanup: (Y/N) Y pH: 7.91

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NO. COMPOUND Q

51-28-5	2,4-Dinitrophenol	1800	U
100-02-7	4-Nitrophenol	1800	U
132-64-9	Dibenzofuran	760	U
121-14-2	2,4-Dinitrotoluene	760	U
84-66-2	Diethylphthalate	760	U
7005-72-3	4-Chlorophenyl-phenyl ether	760	U
86-73-7	Fluorene	760	U
100-01-6	4-Nitroaniline	1800	U
534-52-1	4,6-Dinitro-2-methylphenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	760	U
101-55-3	4-Bromophenyl-phenylether	760	U
118-74-1	Hexachlorobenzene	760	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	760	U
120-12-7	Anthracene	760	U
86-74-8	Carbazole	760	U
84-74-2	Di-n-butylphthalate	760	U
206-44-0	Fluoranthene	760	U
129-00-0	Pyrene	760	U
85-68-7	Butylbenzylphthalate	760	U
91-94-1	3,3'-Dichlorobenzidine	760	U
56-55-3	Benzo(a)anthracene	760	U
218-01-9	Chrysene	760	U
117-81-7	Bis(2-Ethylhexyl)phthalate	760	U
117-84-0	Di-n-octylphthalate	760	U
205-99-2	Benzo(b)fluoranthene	760	U
207-08-9	Benzo(k)fluoranthene	760	U
50-32-8	Benzo(a)pyrene	760	U
193-39-5	Indeno(1,2,3-cd)pyrene	760	U
53-70-3	Dibenz(a,h)anthracene	760	U
191-24-2	Benzo(g,h,i)perylene	760	U

Sample Number
 BC7619

Organics Analysis Data Sheet
 (Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan number	Estimated Concentration (ug/l or ug/kg)
1 00123-42-2	2-PENTANONE 4-HYDROXY-4-METH	BNA	53	12.0 mg/JEN/
2	CARNAUBA	"	1308	310 J
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30				

0010

SDG Memo/Sample Summary

Client Name: WESTINGHOUSE HANFORD CO. **Date:** 16 Dec 1992
Project Name: 92-321 **Update No.:**
SDG No.: 3395 **Work Order No.:** 32359-51
Project Manager: J. DEWALD
Mail Date: 12-11-1992

Client Samp No.	S-Cubed Samp No.	Date Rcvd	Date Samp	Matrix	ANIONS	CRVI	FURNCLP	HERBEXT	HGCLP	ICPCLP	NO2/NO3	OCPOLM	OPP8140	SVOAOLM	TRPH	VOAOLM
BO7GM9	3395-01	10-29-1992	10-20-1992	SOIL	X	X	X	X	X	X	X	X	X	X	X	X
BO7GM9MS	3395-01MS	10-29-1992	10-20-1992	SOIL	X	X	X	X	X	X	X	X	X	X	X	X
BO7GM9MSD	3395-01MSD	10-29-1992	10-20-1992	SOIL				X				X	X	X		X
BO7GM9REP	3395-01REP	10-29-1992	10-20-1992	SOIL	X	X	X		X	X	X				X	

(X) = Non-Billable Sample

ia Apr 12/29/94

NARRATIVE

December 16, 1992

Narrative Project: 92-321
Reference No.: 32359-51
Client: WHC
SDG No.: 3395

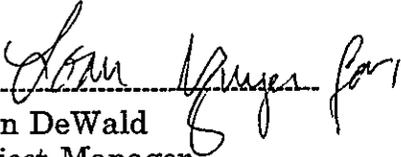
ORGANOPHOSPHORUS PESTICIDES

The samples were analyzed according to SW-846 Method 8140. There were no hits in this group of samples.

A 5 point calibration curve was run for individual component pesticides. A 3 point calibration curve was used for some of the problem compounds. Continuing calibration was high on most of the "A" mix compounds, the "B" mix compounds were generally acceptable.

The quality control results were generally acceptable. The surrogate recoveries were approximately 150% for all compounds. Ethion was the surrogate spike, calibrated from the "B" mix. The high bias is probably due to a standards prep error.

LCS, MS and %RPD recoveries were generally acceptable for several compounds. Problems occurred with M.parath, Merphos, Sulprophos, and Coumaphos which are typically problem compounds.


John DeWald
Project Manager

enclosures
r:\narr\n3395OPP

ib for 12-2-94

Analyte: TRPH
 Method: 418.1
 Technique: IR Spec.
 DATE: 11/04/92
 Analyst: CF
 Instr: P&E IR Spec.
 Case:
 Lot(s): 3392, 95, 97, 99

Smpl Aliquot: 0.020 (Kg) or L
 Final Volume: 0.1 L

Concs: p.p.m.
 Reagent #1 0
 #2 20
 #3 40
 #4 80
 #5 160
 #6 300

Standards
 Source: S-CUBED/EL4240
 Corr. Coef. 0.99978

Detection Limit 20mg/kg

Std.	Abs	Conc
Blank	0	0
#1	0.032	20
#2	0.064	40
#3	0.122	80
#4	0.238	160
#5	0.441	300
#6		

S-Cubed Sample ID	Client Sample ID	Abs.	Conc. (ug/ml)	Dil. Factor	Extract Conc.	Detection Limit	% Mois.	(mg/kg) Final CONC.
EBS1102B		0	0.0000	1	0.0000	20	0	0
LCSS1102B		0.233	156.4042	1	782.0210	20	0	782
3392-01	S1459180	0.11	73.8389	1	369.1945	20	17.29	446
3392-01REP	S1459180REP	0.064	42.9608	1	214.8041	20	17.29	260
3392-01MS	S1459180MS	0.29	194.6662	1	973.3309	20	17.29	1177
3392-02	S1459181	0	0.0000	1	0.0000	20	14.78	0
3392-03	S1459182	0	0.0000	1	0.0000	20	15.62	0
3392-04	S1459183	0	0.0000	1	0.0000	20	16.53	0
3395-01	BO7GM9	0	0.0000	1	0.0000	20	13.8	0
3395-01REP	BO7GM9REP	0	0.0000	1	0.0000	20	13.8	0
3395-01MS	BO7GM9MS	0.217	145.6640	1	728.3200	20	13.8	845
3397-01	S1454338	0	0.0000	1	0.0000	20	2.9	0
3397-02	S1454389	0	0.0000	1	0.0000	20	5.3	0
3397-03	S1454388	0	0.0000	1	0.0000	20	13.5	0
3397-05	S1454061	0.125	83.9078	5	2097.6959	100	5.6	2222
3399-01	22A10-1	0	0.0000	1	0.0000	20	13.2	0
3399-02	22A10-2	0	0.0000	1	0.0000	20	5.1	0
3399-03	22A10-3	0	0.0000	1	0.0000	20	13.9	0
3399-05	22A10-5	0	0.0000	1	0.0000	20	8	0
3399-06	22A10-6	0	0.0000	1	0.0000	20	3.9	0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

307GM9

3395-01

Lab Name: S_CUBED _____ Contract: 32359-51_____

Lab Code: S3 _____ Case No.: 92231 SAS No.: _____ SDG No.: 3395_____

Matrix (soil/water): SOIL_____ Lab Sample ID: 3395-01_____

Level (low/med): LOW_____ Date Received: 10/29/92

% Solids: _____86.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15400	—	—	P
7440-36-0	Antimony	13.9	U	N	P
7440-38-2	Arsenic	7.0	U	WN	F
7440-39-3	Barium	346	—	—	P
7440-41-7	Beryllium	1.2	—	—	P
7440-43-9	Cadmium	0.70	B	—	P
7440-70-2	Calcium	18300	—	—	P
7440-47-3	Chromium	15.5	—	—	P
7440-48-4	Cobalt	10.2	B	—	P
7440-50-8	Copper	20.9	—	—	P
7439-89-6	Iron	22000	—	—	P
7439-92-1	Lead	18.9	—	*	F
7439-95-4	Magnesium	7260	—	—	P
7439-96-5	Manganese	362	—	—	P
7439-97-6	Mercury	0.12	U	—	CV
7440-02-0	Nickel	14.8	—	—	P
7440-09-7	Potassium	1820	—	—	P
7782-49-2	Selenium	3.5	U	WN	F
7440-22-4	Silver	16.5	—	N	P
7440-23-5	Sodium	708	B	—	P
7440-28-0	Thallium	0.70	U	WN	F
7440-62-2	Vanadium	46.6	—	—	P
7440-66-6	Zinc	55.7	—	—	P

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

B07GM9

LABORATORY: S-CUBED
 CLIENT: WHC
 PROJECT: 92-231
 LOT #: 3395
 FILE #: ANI3395S
 DISK #: ANI0928
 METHOD NO.: 300.0
 UNIT: MG/KG

DATA REVIEWER: AN 11/10
 PROJECT REVIEWER:
 CHARGE #: 32359-51
 DATE SAMPLED: 10-20-92
 DATE RECEIVED: 10-29-92
 PREP DATE: 11/4-11/5/92
 DATE ANALYZED: 11/4-11/5/92
 SAMPLE TYPE: SOIL

LAB ID	F	Cl	NO2	Br	NO3	PO4	SO4
3395-01	4.62	32.6	0.400	1.89	18.7	0.823	851

All QC requirement were met. The soil sample was leached into DI type H₂O prior to IC analysis (40 gm was leached into 200 mL).

Golder Associates Inc.

4104-148th Avenue, NE
Redmond, WA 98052
Telephone (206) 883-0777
Fax (206) 882-5498



August 17, 1993

Our ref: 893-1458
WHC/O/396

Westinghouse Hanford Company
Hanford Analytical Services Management
345 Hills Street
Richland, Washington 99352

ATTENTION: Mr. Karl Pool

RE: TRANSMITTAL OF NORTH SLOPE ERA DATA VALIDATION SUMMARY REPORT,
TASK ORDER G93-58

Dear Karl:

As you requested, enclosed is one copy of the North Slope ERA Data Validation Summary Report. This report was prepared by Susan Winter of our Redmond, Washington office. If you have any questions regarding the enclosed, please contact us.

Sincerely,

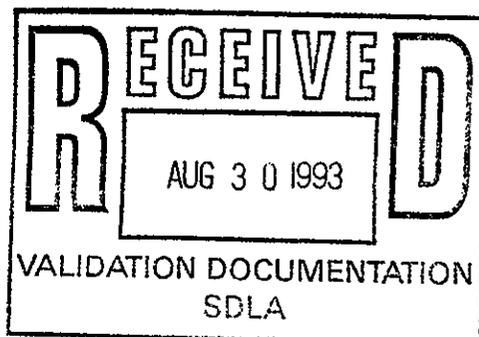
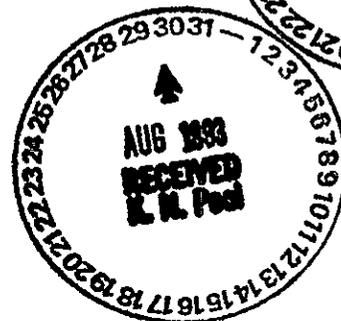
GOLDER ASSOCIATES INC.

Kent M. Angelos
Associate

for Donald M. Caldwell
Project Director

KMA/KMC/cg

Enclosures



FINAL DATA VALIDATION REPORT
NORTH SLOPE ERA PROJECT

Prepared for

Westinghouse Hanford Company
Richland, Washington

Prepared by

Golder Associates Inc.
Redmond, Washington



July 20, 1993

893-1458

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- G - GENERAL CHEMISTRY VALIDATED DATA SUMMARY

1.0 INTRODUCTION

This report presents a summary of data validation results on surface soil samples collected for the North Slope ERA Project.

The analyses performed consisted of:

- Volatile, Semivolatile, and Pesticide/PCB Organic Compounds
- Organophosphorus Herbicides
- Organochlorine Pesticides
- Metals
- General chemistry parameters (selected anions, hexavalent chromium, and total petroleum hydrocarbons)

The primary laboratory used for analysis was DataChem. Split samples were analyzed by the S-Cubed laboratory.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993) and validation procedures (Bechtold 1992) in which 100% of the sample results were verified for transcription errors against the raw data, then twenty percent (20%) of the samples were validated, and the remaining 80% in addition to being verified for transcription errors were assessed against all associated laboratory blanks and the results qualified accordingly. Table 1-1 provides a summary and explanation of all qualifiers applied to the validated results.

Nine sections, including this introduction, are included in this report. Sections 2.0 through 8.0 provide summaries of the validation of the volatile organics, semivolatile organics, organochlorine pesticide/PCBs, organochlorine herbicides, organophosphorus pesticides, metals, and general chemistry parameters, respectively. Section 9.0 provides a list of references used to prepare this report.

Appendices to this report include all the tabulated results.

1.1 OBJECTIVES AND SCOPE

The objectives of this project were to verify 100% and validate 20% of the samples against defined laboratory performance and data validation criteria to assure all data are acceptable for use in the North Slope project.

1.2 SAMPLES AND ANALYSES VALIDATED

Table 1-2 provides a cross-reference list of all samples validated and blank adjusted including data package tracking numbers and sample delivery group (SDG) numbers, HEIS sample numbers, sample dates, sample locations and purpose, sample type, and analyses performed.

Table 1-1. Glossary of Data Validation Qualifiers

- B** For inorganic analyses: indicates the compound or analyte was analyzed for and detected. The value reported is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). The data are usable for decision making purposes.
- For organic analyses: indicates the compound was analyzed for and detected also in the associated laboratory method blank at a concentration greater than 5 times (10 times for common laboratory contaminants) the concentration in the blank. The data are usable for decision making purposes.
- U** Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ** Indicates the compound or analyte was analyzed for and not detected. Due to an identified quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- J** Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable for decision making purposes.
- R** Indicates the compound or analyte was analyzed for and detected. Due to an identified quality control deficiency the data are unusable for decision making purposes.
- UR** Indicates the compound or analyte was analyzed for and not detected. Due to an identified quality control deficiency the data are unusable for decision making purposes.
- NJ** Indicates presumptive evidence of a compound at an estimated value. The data are usable for decision making purposes.
- N** Indicates presumptive evidence of a compound. The data are usable for decision making purposes.

2.0 VOLATILE ORGANIC ANALYSIS DATA VALIDATION SUMMARY

2.1 SUMMARY

This section presents the results of verification and validation of volatile organic analysis results contained in 14 sample delivery groups. Table 1-2 shows the sample delivery group and HEIS sample numbers validated.

2.1.1 Minor Deficiencies

Laboratory Blanks. Acetone, methylene chloride, toluene and 2-hexanone were reported at low concentrations in the laboratory blanks requiring qualification of associated sample results as undetected.

2.1.2 Major Deficiencies

No major deficiencies were identified which required qualification of data as unusable for decision making purposes.

2.1.3 Matrix Spike/Matrix Spike Duplicates

A MS/MSD analysis was not conducted for SDG 3410-SCU-080, however, no qualification was applied since other QC parameters were acceptable.

2.2 HOLDING TIMES

All validated samples were analyzed within the required holding time.

2.3 GC/MS TUNING AND CALIBRATION

Compliance with calibration requirements demonstrates the analytical instrument was capable of producing acceptable quantitative results prior to the analysis of samples. All GC/MS tuning and initial and continuing calibration requirements for the validated volatile organics analyses were met.

2.4 BLANKS

2.4.1 Laboratory Blanks

Laboratory method blanks were analyzed at the proper frequency and results were acceptable with the exception that low concentrations of target compounds were detected. These included:

Acetone and methylene chloride in SDGs 3395-SCU-078 and 3410-SCU-080.

Acetone in SDGs B07GP1-DAT-206, B07GP0-DAT-194, B07GM7-DAT-205, B07GM6-DAT-193, and B07GM1-DAT-204.

Methylene chloride and toluene in SDG B07KR5-DAT-236.

2-Hexanone in SDG B07GM0-DAT-189.

In accordance with the validation requirements, sample results associated with the detected blank compounds were qualified as undetected (U).

2.4.2 Field Blanks

Three equipment blanks were analyzed as part of this data set and all results were reported and verified as undetected except 4-methyl-2-pentanone in samples B07GN9 (3 J $\mu\text{g}/\text{kg}$) and B07GP4 (6 J $\mu\text{g}/\text{kg}$) and acetone in sample B07KR8 (12 $\mu\text{g}/\text{kg}$). Based on the five times rule, sample results for acetone in sample B07KR5 and B07KR7 have been qualified as undetected. No qualification was required for 4-methyl-2-pentanone.

2.5 ANALYTICAL ACCURACY

2.5.1 Matrix Spike and Matrix Spike Duplicate

The validated matrix spike and matrix spike duplicate percent recoveries were all within specified control limits. However, a matrix spike and matrix spike duplicate was not performed with SDG 3410-SCU-080, and therefore could not be evaluated, however, no qualification was applied for this deficiency.

2.5.2 Surrogates

The surrogate recoveries for all validated samples were within the specified control limits.

2.5.3 Internal Standards Performance

All internal standard retention times and areas were within the control limits for validated samples.

2.6 ANALYTICAL PRECISION

2.6.1 Matrix Spike/Matrix Spike Duplicate

The validated matrix spike and matrix spike duplicate relative percent differences were within the specified control limits. However, a matrix spike and matrix spike duplicate was not performed with SDG 3410-SCU-080, and therefore could not be evaluated, however, no qualification was applied for this deficiency.

2.7 COMPOUND IDENTIFICATION

The compound identification and confirmation were acceptable for all validated samples.

2.8 SAMPLE RESULT QUANTITATION, VERIFICATION, AND REPORTED DETECTION LIMITS

All sample results were verified and confirmed against the raw data and no corrections were required. Correct internal standards, quantitation ions and relative response factors were used for the quantitation of validated results. Sample quantitation limits were calculated properly to account for sample dilutions and dry weight factors and were consistent with method requirements.

2.9 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

System performance was assessed by a review of the raw data. No indications of poor performance were noted such as shifting RIC baselines or poor chromatographic performance.

Overall, all validated results were deemed acceptable for use which results in 100% completeness of the volatile organic analysis data set.

3.0 SEMIVOLATILE ORGANIC ANALYSIS DATA VALIDATION SUMMARY

3.1 SUMMARY

This section presents the results of verification and validation of semivolatile organic analysis results contained in 14 sample delivery groups. Table 1-2 shows sample delivery group and HEIS sample numbers validated.

3.1.1 Minor Deficiencies

Holding Times. Minor extraction holding time deficiencies were identified in six out of eight samples validated.

Laboratory Blanks. Di-n-butylphthalate and bis(2-ethylhexyl)phthalate and several tentatively identified compounds (hexanedioic acid, alkanes, cyclic hydrocarbons, alkenes and cyclohexane) were detected in the laboratory blanks requiring qualification of associated sample results as undetected.

Field Blanks. Diethylphthalate and an unknown oxygenated hydrocarbon were detected in one of the field blanks.

Matrix Spike/Matrix Spike Duplicates. MS/MSD analyses were acceptable and performed at proper frequencies with the exception of one sample delivery group in which an MS/MSD analysis was not performed.

3.1.2 Major Deficiencies

Major deficiencies that were identified consisted of tentatively identified compounds such as aldol condensation products, hydroxy ketones, squalene and hexadecanoic acid which were qualified as unusable since they are suspected laboratory contaminants.

3.2 HOLDING TIMES

The holding time requirements were met for all validated samples with the exception of the extraction holding time for the samples listed below.

SDG 3395-SCU-078. Sample B07GM9.

SDG B07GP1-DAT-206. Samples B07GP1, B07GP4, B07KP4, B07KP5, and B07KP8.

Therefore, the associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

3.3 GC/MS TUNING AND CALIBRATIONS

Compliance with calibration requirements demonstrates the analytical instrument was capable of producing acceptable quantitative results prior to the analysis of samples. All GC/MS tuning and initial and continuing calibration requirements for the validated semivolatile organics analyses were met.

3.4 BLANKS

3.4.1 Laboratory Blanks

Laboratory method blanks were analyzed at the proper frequency and results were acceptable with the exception that low concentrations of target and tentatively identified compounds were detected. Listed below are the compounds detected and their respective SDG identifiers.

SDG B07GP1-DAT-206. Di-n-butylphthalate and bis(2-ethylhexyl)phthalate.

SDG B07KQ4-DAT-233. Di-n-butylphthalate and the TIC hexanedioic acid.

SDG B07KQ1-DAT-220. Several tentatively identified compounds identified as an alkane, cyclic hydrocarbon, an alkene and cyclohexane were detected in the method blanks.

SDG B07KR5-DAT-236. Bis(2-ethylhexyl)phthalate.

SDG B07GM7-DAT-205. Bis(2-ethylhexyl)phthalate.

SDG B07GM0-DAT-189. Di-n-butylphthalate.

Based on the validation requirements, associated sample results less than five times the respective compound concentrations (10 times for the phthalate esters) have been qualified as undetected (U).

3.4.2 Field Blanks

Three equipment blanks were analyzed as part of this data set and all results were reported and verified as undetected except diethylphthlate was detected in sample B07GP4 at a concentration of 39 $\mu\text{g}/\text{Kg}$ as well as an unknown oxygenated hydrocarbon at a concentration of 130 $\mu\text{g}/\text{Kg}$. In accordance with validation requirements, sample results less than five times the field blank concentrations were qualified as undetected (U).

3.5 ANALYTICAL ACCURACY

3.5.1 Matrix Spike and Matrix Spike Duplicate

The matrix spike and matrix spike duplicate percent recoveries were within specified control limits for the validated samples. A matrix spike and matrix spike duplicate (MS/MSD) was not performed with SDG 3410-SCU-080 and could not be evaluated, however, no qualification was applied.

3.5.2 Surrogates

All surrogate recoveries in the validated SDGs were within the required control limits.

3.5.3 Internal Standards Performance

All internal standard retention times and areas were within the required control limits.

3.6 ANALYTICAL PRECISION

3.6.1 Matrix Spike/Matrix Spike Duplicate

The matrix spike and matrix spike duplicate relative percent differences were within the specified control limits. A matrix spike and matrix spike duplicate (MS/MSD) was not performed with SDG 3410-SCU-080 and therefore could not be evaluated for the reported sample, however, no qualification was applied for this deficiency.

3.7 COMPOUND IDENTIFICATION

The TICs identified as aldol condensation products, 4-hydroxy-4-methyl-2-pentanone, squalene, and hexadecanoic acid have been qualified as unusable (R) since they are suspected laboratory contaminants.

3.8 SAMPLE RESULT QUANTITATION, VERIFICATION, AND REPORTED DETECTION LIMITS

All sample results were verified and confirmed against the raw data and no corrections were required. Correct internal standards, quantitation ions and relative response factors were used for the quantitation of validated results. Sample quantitation limits were calculated properly to account for sample dilutions and dry weight factors and were consistent with method requirements.

3.9 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

System performance was assessed by a review of the raw data. No indications of poor performance were noted such as shifting RIC baselines or poor chromatographic performance.

Overall, all validated results were deemed acceptable for use which results in 100% completeness of the semivolatile organic analysis data set.

4.0 ORGANOCHLORINE PESTICIDE/PCB DATA VALIDATION SUMMARY

4.1 SUMMARY

This section presents the results of verification and validation of organochlorine pesticide/PCB analysis results contained in 14 sample delivery groups. Table 1-2 shows sample delivery group and HEIS sample numbers validated.

4.1.1 Minor Deficiencies

Holding Times. Minor holding time deficiencies were identified in six out of eight samples validated.

Initial Calibration. Endosulfan I, dieldrin, endrin, 4,4'-DDD, 4,4'-DDT, methoxychlor, and decafluorobiphenyl exceeded the required control limits in one data package.

Continuing Calibration. Several compounds exceeded the required control limits in one out of four packages validated.

Laboratory Blanks. Methoxychlor, endosulfan I, and endosulfan II were detected in the laboratory blanks requiring qualification of associated sample results as undetected.

Field Blanks. Methoxychlor and dieldrin were detected in two of the three field blanks.

Matrix Spike/Matrix Spike Duplicates. MS/MSD analyses were acceptable and performed at proper frequencies with the exception of one sample delivery group in which an MS/MSD analysis was not performed.

Surrogates. Surrogate recoveries were out of the control limits for two of the eight samples validated.

4.1.2 Major Deficiencies

No major deficiencies were identified which required qualification of data as unusable for decision making purposes.

4.2 HOLDING TIMES

The required holding times were met for the extraction and analysis of the validated samples with the exception of the samples included in the SDGs listed below:

SDG 3395-SCU-078. Extraction holding time was exceeded.

SDG B07GP1-DAT-206. Analysis holding time was exceeded.

Based on the validation requirements, the associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

4.3 INSTRUMENT PERFORMANCE AND CALIBRATIONS

4.3.1 Instrument Performance

Instrument performance indicators including chromatographic peak resolution, retention time windows, and DDT and endrin breakdowns were reviewed and no deficiencies were noted.

4.3.2 Initial Calibration

Initial calibration performance requirements were met in all SDGs validated with the exception of those listed below.

SDG B07GP1-DAT-206. The initial calibration verification relative percent difference for the performance evaluation mixture and the individual calibration mix compounds endosulfan I, dieldrin, endrin, 4,4'-DDD, 4,4'-DDT, methoxychlor, and decaflorobiphenyl exceeded the 25% control limit. No qualification was applied since the associated sample results had already been qualified due to the holding time exceedance.

4.3.3 Continuing Calibration

SDG B07GP1-DAT-206. The continuing calibration verification percent difference requirement of 25% was exceeded for several compounds which have been qualified by the laboratory with a "P" on the sample report forms. No qualification was applied since the associated sample results had already been qualified due to the holding time exceedance.

4.4 BLANKS

4.4.1 Laboratory Blanks

Laboratory method blank results were analyzed at the proper frequency and results were acceptable with the exception that low concentrations of target compounds were detected. These included:

SDG B07GP1-DAT-206. Methoxychlor.

SDG B07KQ4-DAT-233. Methoxychlor.

SDG B07KQ1-DAT-220. Methoxychlor and endosulfan I.

SDG B07KR5-DAT-236. Endosulfan II.

SDG B07GM7-DAT-205. Methoxychlor.

In accordance with the validation requirements, associated sample results less than five times the respective blank concentration have been qualified as undetected (U).

4.4.2 Equipment Blanks

All chlorinated pesticides and PCBs were verified as undetected in the equipment blank samples with the exception of dieldrin (0.061 µg/Kg) and methoxychlor (5.5 µg/Kg). Based on the five times rule, no sample results were qualified for dieldrin and results for B07KR5 and B07KR6 have been qualified as undetected for methoxychlor.

4.5 ANALYTICAL ACCURACY

4.5.1 Matrix Spike/Matrix Spike Duplicates

The validated matrix spike and matrix spike duplicate percent recoveries were within specified control limits. However, a laboratory control sample was performed for SDG 3410-SCU-080 in place of a matrix spike and matrix spike duplicate and all results were acceptable.

4.5.2 Surrogates

All validated sample surrogate recoveries were within the required control limits with the exception of the samples listed below:

SDG 3410-SCU-080. Laboratory method blank EBS1109 only

SDG B07GP1-DAT-206. Samples B07KP4 and B07KP8

Since the surrogate recoveries for the sample B07KP6 in SDG 3410-SCU-080 were within the control limits, no qualification was required. Also, the sample results for B07KP4 and B07KP8 in SDG B07GP1-DAT-206 were already qualified due to exceeded holding times, therefore, no further qualification was required.

4.6 ANALYTICAL PRECISION

4.6.1 Matrix Spike/Matrix Spike Duplicate

The matrix spike and matrix spike duplicate relative percent differences were within the specified control limits. However, the precision for the matrix spike and matrix spike duplicate associated with SDG 3410-SCU-080 could not be evaluated since only a laboratory control sample was analyzed.

4.7 COMPOUND IDENTIFICATION

Compound identification criteria was met for all validated samples with the exception of the compounds listed below.

SDG 3410-SCU-080. The compound 4,4'-DDD was detected in sample B07KP6, however, since the retention time shifted during sample analysis, the laboratory reported 4,4'-DDD as undetected. However, the presence of 4,4'-DDD was confirmed by GC/MS and therefore, the 4,4'-DDD sample result for B07KP6 was corrected.

SDG 3410-SCU-080. The compounds 4,4'-DDE and 4,4'-DDT for sample B07KP6 were analyzed at a dilution since the original concentrations exceeded the calibration range. However, the laboratory reported the results obtained from the original concentration sample run and therefore, the 4,4'-DDE and 4,4'-DDT results for sample B07KP6 were corrected to reflect the diluted sample concentrations. The difference between the original and diluted concentrations is small.

SDG B07GP1-DAT-206. The laboratory reported a "Y" qualifier which was used to flag results of single component target pesticides in samples found to contain arochlor 1254. The qualifier indicates that a dilution of the sample was not analyzed because the analysis would occur outside the analytical hold time, therefore the results have been qualified as estimated with J and JP qualifiers.

4.8 SAMPLE RESULT QUANTITATION, VERIFICATION, AND REPORTED DETECTION LIMITS

All sample results were verified as correct against the raw data with the exception of the results listed below.

SDG 3410-SCU-080. The reported detection limits for sample B07KP6 were multiplied by a factor of two since the laboratory performed a GPC cleanup on this sample, however, did not adjust the detection limits for this additional process.

SDG 3561-SCU-111. The laboratory detection limits reported for sample B07KR7 did not reflect the GPC extraction that was performed. Therefore, the detection limits were multiplied by a factor of two on the result form.

SDG B07GM0-DAT-189. The duplicate result for 4,4'-DDT was reported for sample B07GM0 since the original result was detected out of range on the instrument.

Since the detection limits associated with the samples in SDG 3410-SCU-080 and 3561-SCU-111 have been multiplied by a factor of two, no qualification was required. The 4,4'-DDT result for sample B07GM0 also did not require qualification.

4.9 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

System performance was assessed by a review of the raw data and the necessary corrections were reported as summarized above.

Overall, all validated results were deemed acceptable for use which results in 100% completeness of the organochlorine pesticide/PCB analysis data set.

5.0 ORGANOCHLORINE HERBICIDE DATA VALIDATION SUMMARY

5.1 SUMMARY

This section presents the results of verification and validation of organochlorine herbicide analysis results contained in 14 sample delivery groups. Table 1-2 shows sample delivery group and HEIS sample numbers validated.

5.1.1 Minor Deficiencies

Holding Times. Minor holding time deficiencies were identified in all eight samples validated.

Laboratory Blanks. 2,4-DB was detected in one of the laboratory blanks requiring qualification of associated sample results as undetected.

Matrix Spike/Matrix Spike Duplicates. MS/MSD analyses were acceptable with the exception of the relative percent difference of dichloroprop and 2,4-DB in one of the four data packages validated. Also, there was one sample delivery group in which an MS/MSD analysis was not performed.

Laboratory Control Samples. Laboratory control sample results were acceptable with the exception of dalapon in one of the data packages.

Surrogates. Surrogate recoveries exceeded the control limits for four of the eight samples validated.

Compound Identification. The percent differences between the quantitation and confirmation columns were within the control limits with the exception of 2,4-D and 2,4-DB in sample B07KR7 and 2,4-D and dichloroprop in sample B07GM9.

5.1.2 Major Deficiencies

No major deficiencies were identified which required qualification of data as unusable for decision making purposes.

5.2 HOLDING TIMES

The extraction holding time was exceeded for all samples included in the SDGs; 3561-SCU-111, 3410-SCU-080, 3395-SCU-078, and B07GP1-DAT-206.

In accordance with the validation requirements, all associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

5.3 CALIBRATIONS

All initial and continuing calibration requirements were met.

5.4 BLANKS

5.4.1 Laboratory Blanks

Laboratory method blanks were analyzed at the proper frequency and results were acceptable with the exception that a low concentration of 2,4-DB was detected in SDG 3561-SCU-111. Therefore, in accordance with the validation requirements, the associated sample result has been qualified as undetected (U).

5.4.2 Field Blanks

Of the three equipment blank samples analyzed as part of this data set, all sample results were reported and verified as undetected.

5.5 ANALYTICAL ACCURACY

5.5.1 Matrix Spike/Matrix Spike Duplicates

The matrix spike and matrix spike duplicate percent recoveries were within the specified control limits. However, a matrix spike and matrix spike duplicate was not performed with SDG 3410-SCU-080, however, a laboratory control sample was analyzed and reviewed for percent recovery with all results acceptable.

5.5.2 Laboratory Control Sample

The laboratory control sample percent recoveries were with control limits with the exception of dalapon reported in SDG 3395-SCU-078. Since the associated sample results have already been qualified due to exceeded holding times, no further qualification was required.

5.5.3 Surrogates

The surrogate recoveries were within the control limits with the exception of the following:

SDG 3410-SCU-080. Laboratory method blank.

SDG 3395-SCU-078. Sample B07GM9MS

SDG B07GP1-DAT-206. Samples B07GP1, B07GP4, B07KP5, and B07KP8.

Since the samples in SDGs 3410-SCU-080 and 3395-SCU-078 were a laboratory method blank and a matrix spike sample, respectively, no qualification was required since the surrogate recoveries for the associated field samples were within the control limits. Also, the associated samples in SDG B07GP1-DAT-206 were previously qualified as estimated (J/UJ) due to exceeded holding times and therefore no further qualification was required.

5.6 ANALYTICAL PRECISION

5.6.1 Matrix Spike/Matrix Spike Duplicate

The matrix spike and matrix spike duplicate relative percent differences were within the specified control limits with the exception of the relative percent difference for dichloroprop and 2,4-DB associated with SDG 3395-SCU-078, which exceeded the control limit of 35%. However, the associated sample results have already been qualified as estimated (J/UJ) due to exceeded holding times and therefore no further qualification was required. Also, the precision for the matrix spike and matrix spike duplicate associated with SDG 3410-SCU-080 could not be evaluated since only a laboratory control sample was analyzed.

5.7 COMPOUND IDENTIFICATION

The compound identification and confirmation were acceptable for all validated samples with the exception of the following:

SDG 3561-SCU-111. The percent difference between the quantitation and confirmation columns for sample B07KR7 exceeded the limit of 25% for the compounds 2,4-D and 2,4-DB.

SDG 3395-SCU-078. The percent difference between the quantitation and confirmation columns for sample B07GM9 exceeded the 25% control limit for the compounds 2,4-D and dichloroprop.

In accordance with the validation requirements the associated sample results were qualified as estimated (J for detects, UJ for non-detects).

5.8 SAMPLE RESULT QUANTITATION, VERIFICATION, AND REPORTED DETECTION LIMITS

All sample results were verified and confirmed against the raw data and no corrections were required. Correct calibration factors and area responses were used for the quantitation of validated results. Sample quantitation limits were calculated properly to account for sample dilutions and dry weight factors and were consistent with method detection limit requirements.

5.9 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

System performance was assessed by a review of the raw data. No indications of poor performance were noted such as shifting baselines or poor chromatographic performance with the exception of the quantitation and confirmation column percent differences as noted above in section 5.7.

Overall, all validated results were deemed acceptable for use which results in 100% completeness of the organochlorine herbicide analysis data set.

6.0 ORGANOPHOSPHORUS PESTICIDE DATA VALIDATION SUMMARY

6.1 SUMMARY

This section presents the results of verification and validation of organophosphorus pesticide analysis results contained in 14 sample delivery groups. Table 1-2 shows sample delivery group and HEIS sample numbers validated.

6.1.1 Minor Deficiencies

Holding Times. Minor holding time deficiencies were identified in six out of the eight samples validated requiring qualification of associated sample results as estimated.

Initial Calibration. Initial calibration requirements were exceeded in three of the four data packages validated requiring qualification of associated sample results as estimated.

Continuing Calibration. Continuing calibration requirements were exceeded in three of the four data packages validated requiring qualification of associated sample results as estimated.

Matrix Spike/Matrix Spike Duplicates. Several minor deficiencies were identified for the MS/MSD percent recoveries and relative percent differences requiring qualification of the associated results as estimated.

Surrogates. Surrogate recoveries exceeded the control limits for two of the eight samples validated.

6.1.2 Major Deficiencies

Matrix Spike/Matrix Spike Duplicates. One major deficiency was identified for the MS/MSD relative percent difference of merphos in one of the four data packages validated requiring qualification of the associated sample result as unusable.

Laboratory Control Sample. Merphos, coumaphos, and bolstar grossly exceeded the specified control limits for one of the four SDGs validated requiring qualification of the associated results as unusable.

6.2 HOLDING TIMES

All holding time requirements were met with the exception of the following:

SDG 3395-SCU-078. Extraction holding time was exceeded for the one sample reported.

SDG B07GP1-DAT-206. Extraction holding time was exceeded for all associated samples.

In accordance with the validation requirements, all associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

6.3 CALIBRATIONS

6.3.1 Initial Calibration

The initial calibration requirements were met with the exception of the deficiencies noted below.

SDG 3561-SCU-111. The initial calibration relative standard deviation control limit of 20% was exceeded for m-azinphos and coumaphos.

SDG 3395-SCU-078. The initial calibration relative standard deviation control limit of 20% was exceeded for coumaphos, mevinphos, and sulprofos.

SDG B07GP1-DAT-206. The correlation coefficients for phorate, methyl parathion, and triphenyl phosphate were less than the 0.995 control limit.

In accordance with the validation requirements, all associated sample results have been qualified as estimated (J for detects, UJ for non-detects) with the exception of the samples included in SDG B07GP1-DAT-206 which have already been qualified due to exceeding holding times and no further qualification was required.

6.3.2 Continuing Calibration

The continuing calibration requirements with the exception of the deficiencies noted below.

SDG 3395-SCU-078. The continuing calibration percent difference control limit of 25% was exceeded for the compounds fensulphothion, enthoprop, merphos, methyl parathion, phorate, ronnel, diazinon, coumaphos, dichlorvos, and azinophos.

SDG 3395-SCU-078. The continuing calibration elution time for fensulphothion was out of the established retention time window.

SDG 3410-SCU-080. The continuing calibration percent difference control limit of 25% was exceeded for all compounds in the individual mix A with the exception of sulprofos.

Based on the deficiencies noted above, all associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

6.4 BLANKS

6.4.1 Laboratory Blanks

Laboratory method blanks were analyzed at the proper frequency and results were reported as acceptable. Therefore, qualification for laboratory method blank contamination was not required.

6.4.2 Field Blanks

Equipment blank sample results were reported as undetected for all organophosphorus pesticide compounds.

6.5 ANALYTICAL ACCURACY

6.5.1 Matrix Spike/Matrix Spike Duplicates

Matrix spike and matrix spike duplicate percent recoveries (MS/MSD %R) were within the required control limits with the exception the results listed below.

SDG 3395-SCU-078. The MS/MSD %R for merphos were 0% and 3%, and were 2330% and 2680% for bolstar. Therefore, the associated results for sample B076M9 were qualified as unusable (UR).

SDG 3395-SCU-078. The MS/MSD %R were exceeded for phorate, methyl parathion, ronnel, methyl azinophos, coumaphos, and diazinon. Therefore, the associated results were qualified as estimated (UJ).

SDG 3410-SCU-080. The laboratory analyzed a laboratory control sample instead of a matrix spike and matrix spike duplicate, the laboratory control sample recoveries are summarized in section 6.5.2.

6.5.2 Laboratory Control Sample

Laboratory control sample percent recoveries (LCS %R) were within the required control limits with the exception of the following:

SDG 3410-SCU-080. Merphos LCS %R was low at 6.2%, and the coumaphos and bolstar LCS %R were high at 318% and 2192%, respectively.

Therefore, the associated results for sample B07KP6 were qualified as unusable (UR).

6.5.3 Surrogates

Surrogate recoveries were within the required control limits of 40% to 140% with the exception of the following:

SDG 3410-SCU-080. Sample B07KP6.

SDG 3395-SCU-078. Sample B07GM9.

In accordance with the validation requirements, all associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

6.6 ANALYTICAL PRECISION

6.6.1 Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate relative percent differences (RPD) were within the required control limits with the exception of the results listed below.

SDG 3395-SCU-078. Results for fensulfothion and merphos exceeded the RPD limits however, the associated sample result for fensulfothion has already been qualified as estimated (UJ), and the result for merphos has been qualified as unusable (UR). Therefore, no further qualification was required.

SDG 3410-SCU-080. Since the laboratory analyzed a laboratory control sample instead of a matrix spike and matrix spike duplicate, the relative percent difference values could not be evaluated.

6.7 COMPOUND IDENTIFICATION

The compound identification and confirmation were acceptable for all validated samples.

6.8 SAMPLE RESULT QUANTITATION, VERIFICATION, AND REPORTED DETECTION LIMITS

All sample results were verified and confirmed against the raw data and no corrections were required. Correct calibration factors and area responses were used for the quantitation of validated results. Sample quantitation limits were calculated properly to account for sample dilutions and dry weight factors and were consistent with method detection limit requirements.

6.9 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

System performance was assessed by a review of the raw data. No indications of poor performance were noted such as shifting baselines or poor chromatographic performance.

Overall, 8 samples were validated for organophosphorus pesticides with 188 results reported. Out of the 188 results reported, 5 results were determined to be unusable leaving 183 results which were deemed valid. This results in a completeness of 97% which meets the normal work plan QAPjP completeness objective of 90%.

7.0 METALS DATA VALIDATION SUMMARY

7.1 SUMMARY

This section presents the results of verification and validation of metals analysis results contained in 14 sample delivery groups. Table 1-2 shows sample delivery group and HEIS sample numbers validated.

7.1.1 Minor Deficiencies

Initial Calibration. Minor deficiencies were identified concerning the correlation coefficients of selenium and arsenic in one of the six data packages validated.

Laboratory Blanks. Several analytes were detected in the laboratory blanks requiring qualification of associated sample results as undetected.

Field Blanks. Several analytes were detected in the associated equipment blanks requiring qualification of associated sample results as undetected.

Spike Samples. Several analytes in four of the six data packages validated were qualified as estimated since the spike sample recoveries were out of the specified control limits.

Laboratory Control Sample. LCS percent recoveries for arsenic and selenium were out of the control limits in one of the six data packages validated requiring qualification of the associated sample results as estimated.

GFAA Analytical Spikes. GFAA analytical spike recovery control limits were exceeded in five of the ten samples validated.

Laboratory Duplicates. Duplicate analyses were acceptable and performed at acceptable frequencies with the exception of one sample delivery group in which a laboratory duplicate was not performed.

ICP Serial Dilution. ICP serial dilution percent differences were acceptable with the exception of sodium in one of the six SDGs validated requiring qualification of the associated sample results as estimated.

GFAA Duplicate Injections. Minor deficiencies were identified in two of the validated samples requiring qualification of the associated results as estimated.

Major Deficiencies

Spike Samples. Spike sample recoveries were less than the 30% control limit for four analytes in three of the validated data packages requiring qualification of the associated results as unusable.

7.2 HOLDING TIMES

Holding time requirements were met for the validated samples.

7.3 CALIBRATIONS

Initial and continuing calibration requirements were met with the exception of the calibration results listed below.

SDG 3395-SCU-078. The initial calibration correlation coefficients for selenium and arsenic were less than the 0.995 control limit. Therefore, the associated results for sample B07GM9 were qualified as estimated (J for detects, UJ for non-detects).

7.4 BLANKS

7.4.1 Laboratory Blanks

Laboratory method blanks were analyzed at the proper frequency and results were undetected with the exception that low concentrations of target analytes were detected. These included:

SDG 3561-SCU-111. Selenium and antimony.

SDG B07GP1-DAT-206. Beryllium and sodium.

SDG B07KQ4-DAT-233. Selenium.

SDG B07KQ1-DATA-220. Beryllium.

SDG B07GP0-SDG-194. Copper.

SDG B07KR5-DAT-236. Silver, selenium, beryllium, magnesium, potassium, calcium, sodium, lead, and barium.

SDG B07GM7-DAT-205. Selenium and sodium.

In accordance with the validation requirements, sample results associated with the detected blank analytes were qualified as undetected (U).

7.4.2 Equipment Blanks

Several analytes were detected in the equipment blanks associated with this data set. Aluminum, arsenic, barium, calcium, copper, iron, lead, magnesium and manganese were detected in the equipment blanks at concentrations ranging from 0.18 to 320 mg/Kg, however based on the five times rule, no qualification of associated sample results was necessary.

7.5 ANALYTICAL ACCURACY

7.5.1 Spike Samples

The validated spike sample percent recoveries were acceptable except for the spikes listed below which were less than the required 30% control limit.

SDG 3395-SCU-078. Selenium and thallium.

SDG 3561-SCU-111. Antimony.

SDG B07KR4-DAT-232. Copper.

The associated results for samples B07GM9, B07KR7, B07KR4, B07KR9, B07KS0, and B07KS1 contained in the above SDGs were qualified as unusable (R for detects, UR for non-detects).

The validated spike sample percent recoveries were acceptable with the exception of the following which were out of the 75% to 125% control limits, but greater than 30%:

SDG 3395-SCU-078. Antimony, arsenic, and silver.

SDG B07KR4-DAT-232. Beryllium, aluminum, barium, arsenic, selenium, and lead.

SDG 3561-SCU-111. Arsenic and thallium.

SDG B07GP1-DAT-206. Antimony and selenium.

The associated results for samples B07GM9, B07KR4, B07KR9, B07KS0, B07KS1, B07KR7, B07GP1, B07GP4, B07KP4, B07KP5, and B07KP8 contained in the above SDGs have been qualified as estimated (J for detects, UJ for non-detects).

A matrix spike sample was not performed with SDG 3410-SCU-080 and therefore could not be evaluated, however, no qualification was applied for this deficiency.

7.5.2 Laboratory Control Samples

The laboratory control sample percent recoveries were within the control limits of 80% to 120% with the exception of the following:

SDG B07KR4-DAT-232. Arsenic and selenium.

Therefore, the associated results for samples B07KR4, B07KR9, B07KS0, and B07KS1 were qualified as estimated (J for detects, UJ for non-detects).

7.5.3 GFAA Analytical Spikes

GFAA analytical spike recoveries were within the control limits of 85% to 115% with the exception of the analytes listed below.

SDG 3395-SCU-078. Selenium and arsenic, sample B07GM9.

SDG B07GP1-DAT-206. Selenium, samples B07GP1, B07KP4, B07KP5, B07KP8, and lead, sample B07GP4 only.

Therefore, the associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

7.6 ANALYTICAL PRECISION

7.6.1 Laboratory Duplicates

The laboratory duplicate relative percent differences were within the specified control limits. A laboratory duplicate was not performed with SDG 3410-SCU-080, and therefore could not be evaluated, however, no qualification was applied for this deficiency.

7.6.2 ICP Serial Dilution

The ICP serial dilution percent differences were less than 10% for the validated samples in which sample concentrations were greater than fifty times the instrument detection limit (IDL) with the exception of the following:

SDG B07GP1-DAT-206. Sodium ICP serial dilution %D results were exceeded, therefore samples B07GP1, B07GP4, B07KP4, B07KP5, and B07KP8 were qualified as estimated (J for detects, UJ for non-detects).

7.6.3 GFAA Duplicate Injections

The relative standard deviations (RSD) for the GFAA duplicate injections were acceptable for results greater than the IDL with the exception of the following:

SDG 3410-SCU-080. Selenium, sample B07KP6.

SDG B07GP1-DAT-206. Thallium, sample B07GP1.

Therefore, the associated sample results have been qualified as estimated (J).

7.7 SAMPLE RESULT QUANTITATION, VERIFICATION, AND REPORTED DETECTION LIMITS

All sample results were verified and confirmed against the raw data and no corrections were required. Validated results were calculated properly using the proper coefficients. Sample detection limits were calculated properly to account for sample dilutions and dry weight factors and were consistent with method detection limit requirements.

7.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

System performance was assessed by a review of the raw data. No indications of poor performance were noted.

Overall, 12 samples were validated for metals with 292 results reported. Out of the 292 results reported, 7 results were determined to be unusable leaving 285 results which were deemed valid. This results in a completeness of 98% which meets normal work plan QAPjP completeness objectives of 90%.

8.0 GENERAL CHEMISTRY DATA VALIDATION SUMMARY

8.1 SUMMARY

This section presents the results of verification and validation of general chemistry analysis results contained in 14 sample delivery groups. Table 1-2 shows sample delivery group and HEIS samples numbers validated.

8.1.1 Minor Deficiencies

Holding Times. Minor holding time deficiencies were identified in four out of eight samples validated.

Field Blanks. Chloride, sulfate and hexavalent chromium were detected at low concentrations in the associated field blanks requiring qualification of associated sample results as undetected.

Spike Samples. The matrix spike percent recovery for chloride was out of the control limits in one of the four data packages validated requiring qualification of the associated sample result as estimated.

Laboratory Duplicates. Chloride and total petroleum hydrocarbon duplicate percent differences were out of control limits in two of the four data packages validated requiring qualification of the associated results as estimated.

8.1.2 Major Deficiencies

No major deficiencies were identified which required qualification of data as unusable for decision making purposes.

8.2 HOLDING TIMES

All sample analyses were performed within the required holding times with the exception of the parameters listed below.

SDG 3395-SCU-078. Total petroleum hydrocarbon and hexavalent chromium in sample B07GM9

SDG B07KR4-DAT-232. Phosphate for sample B07KR4 only.

SDG 3561-SCU-111. Phosphate for sample B07KR7.

SDG 3410-SCU-080. Phosphate for sample B07KP6.

In accordance with the validation requirements, the associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

8.3 CALIBRATIONS

All initial and continuing calibration requirements were met.

8.4 BLANKS

8.4.1 Laboratory Blanks

Laboratory method blanks were analyzed at the proper frequency and results were reported and verified as undetected for all general chemistry parameters. Therefore, no blank adjustment was required.

8.4.2 Field Blanks

All general chemistry parameters were reported as undetected in the field blanks with the exception of chloride, sulfate and hexavalent chromium. Chloride was detected in samples B07GP4 (2 µg/Kg) and B07KR8 (7 µg/Kg). Sulfate was detected in samples B07GP4 (1 µg/Kg) and B07KR8 (5 µg/Kg). Hexavalent chromium was detected in sample B07KR8 (2 µg/Kg). Based on the 5 times rule the samples listed below were qualified as undetected.

Chloride. Samples associated with B07GP4: B07GM1, B07GM2, B07GM4, B07GM5, B07GN3, B07GN7, B07GN8, B07KP4, B07KP5, B07KP7, B07KP9, B07KQ1, B07KQ2 and B07KQ3. Samples associated with B07KR8: B07KQ4, B07KR4, B07KR5, B07KR6 and B07KR7.

Sulfate. Samples associated with sample B07GP4: none. Samples associated with sample B07KR8: B07KQ4, B07KR4, and B07KR7.

Hexavalent Chromium. Samples B07KR3, B07KR4, B07KR5, and B07KR6.

8.5 ANALYTICAL ACCURACY

8.5.1 Spike Samples

Spike sample percent recoveries were within the control limits of 75% to 125% with the exception of chloride in SDG 3410-SCU-080. Therefore, the chloride result for sample B07KP6 was qualified as estimated (J).

8.6 ANALYTICAL PRECISION

8.6.1 Laboratory Duplicates

Laboratory duplicate relative percent difference values were within the required control limits with the exception of the following:

SDG B07KR4-DAT-232. Chloride.

SDG B07GP1-DAT-206. Total petroleum hydrocarbon.

In accordance with the validation requirements, the associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

8.7 SAMPLE RESULT QUANTITATION, VERIFICATION, AND REPORTED DETECTION LIMITS

All sample results were verified and confirmed against the raw data and no corrections were required. Validated results were calculated properly using the proper calibration factors and curve coefficients. Sample detection limits were calculated properly to account for sample dilutions and dry weight factors and were consistent with method detection limit requirements.

8.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

System performance was assessed by a review of the raw data. No indications of poor performance were noted.

Overall, all validated results were deemed acceptable for use which results in 100% completeness of the general chemistry analysis data set.

9.0 REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Task Order G-93-01-58. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

APPENDIX A
VOLATILE ORGANIC VALIDATED DATA SUMMARY

North Slope ERA Data Validation Summary Report
Volatile Organic Analysis Results

Parameter	Samp#	B07GN9		B07GP4		B07KR8		B07GN2		B07GN3		B07GM7	
	Date	10-20-92		11-2-92		2-16-93		10-21-92		10-20-92		10-20-92	
Site	Eq Blank	---		---		---		H-04(E)		H-04(E)		H-04(W)	
Depth	(sand)	(sand)		(sand)		(sand)		7.00 - 9.00		8.00 - 10.00		8.00 - 9.00	
Type								A-1-1		A-1-2		A-1-3	
Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
CHLOROMETHANE	µg/Kg	10.000	U	10.000	U	10.000	U	3.600	U	11.000	U	11.000	U
BROMOMETHANE	µg/Kg	10.000	U	10.000	U	10.000	U	2.300	U	11.000	U	11.000	U
VINYL CHLORIDE	µg/Kg	10.000	U	10.000	U	10.000	U	3.000	U	11.000	U	11.000	U
CHLOROETHANE	µg/Kg	10.000	U	10.000	U	10.000	U	3.200	U	11.000	U	11.000	U
METHYLENE CHLORIDE	µg/Kg	10.000	U	10.000	U	10.000	U	3.600	U	11.000	U	11.000	U
ACETONE	µg/Kg	21.000	U	23.000	U	12.000	U	31.000	U	32.000	U	34.000	U
CARBON DISULFIDE	µg/Kg	10.000	U	10.000	U	10.000	U	1.900	U	11.000	U	11.000	U
TRICHLOROFLUOROMETHANE	µg/Kg	N/R		N/R		N/R		1.900	U	N/R		N/R	
1,1-DICHLOROETHENE	µg/Kg	10.000	U	10.000	U	10.000	U	1.700	U	11.000	U	11.000	U
1,1-DICHLOROETHANE	µg/Kg	10.000	U	10.000	U	10.000	U	1.700	U	11.000	U	11.000	U
1,2-DICHLOROETHENE (TOTAL)	µg/Kg	10.000	U	10.000	U	10.000	U	2.300	U	11.000	U	11.000	U
CHLOROFORM	µg/Kg	10.000	U	10.000	U	10.000	U	1.700	U	11.000	U	11.000	U
1,2-DICHLOROETHANE	µg/Kg	10.000	U	10.000	U	10.000	U	1.100	U	11.000	U	11.000	U
IODOMETHANE	µg/Kg	N/R		N/R		N/R		2.300	U	N/R		N/R	
ACROLEIN	µg/Kg	N/R		N/R		N/R		1.800	U	N/R		N/R	
ACRYLONITRILE	µg/Kg	N/R		N/R		N/R		1.800	U	N/R		N/R	
2-BUTANONE	µg/Kg	10.000	U	10.000	U	10.000	U	2.200	U	11.000	U	11.000	U
1,1,1-TRICHLOROETHANE	µg/Kg	10.000	U	10.000	U	10.000	U	1.200	U	11.000	U	11.000	U
CARBON TETRACHLORIDE	µg/Kg	10.000	U	10.000	U	10.000	U	1.200	U	11.000	U	11.000	U
VINYL ACETATE	µg/Kg	N/R		N/R		N/R		2.800	U	N/R		N/R	
BROMODICHLOROMETHANE	µg/Kg	10.000	U	10.000	U	10.000	U	1.500	U	11.000	U	11.000	U
1,2-DICHLOROPROPANE	µg/Kg	10.000	U	10.000	U	10.000	U	1.300	U	11.000	U	11.000	U
CIS-1,3-DICHLOROPROPENE	µg/Kg	10.000	U	10.000	U	10.000	U	1.900	U	11.000	U	11.000	U
TRICHLOROETHENE	µg/Kg	10.000	U	10.000	U	10.000	U	2.900	U	11.000	U	11.000	U
DIBROMOCHLOROMETHANE	µg/Kg	10.000	U	10.000	U	10.000	U	1.500	U	11.000	U	11.000	U
1,1,2-TRICHLOROETHANE	µg/Kg	10.000	U	10.000	U	10.000	U	2.100	U	11.000	U	11.000	U
BENZENE	µg/Kg	10.000	U	10.000	U	10.000	U	1.500	U	11.000	U	11.000	U
TRANS-1,3-DICHLOROPROPENE	µg/Kg	10.000	U	10.000	U	10.000	U	1.900	U	11.000	U	11.000	U
2-CHLOROETHYL VINYL ETHER	µg/Kg	N/R		N/R		N/R		1.800	U	N/R		N/R	
BROMOFORM	µg/Kg	10.000	U	10.000	U	10.000	U	1.100	U	11.000	U	11.000	U
1,2-DIBROMOETHANE	µg/Kg	N/R		N/R		N/R		1.500	U	N/R		N/R	
DIBROMOMETHANE	µg/Kg	N/R		N/R		N/R		0.900	U	N/R		N/R	
TRANS-1,4-DICHLORO-2-BUTENE	µg/Kg	N/R		N/R		N/R		1.500	U	N/R		N/R	
4-METHYL-2-PENTANONE	µg/Kg	3.000	J	6.000	J	10.000	U	2.700	U	11.000	U	11.000	U
2-HEXANONE	µg/Kg	10.000	U	10.000	U	10.000	U	1.900	U	11.000	U	11.000	U
TETRACHLOROETHENE	µg/Kg	10.000	U	10.000	U	10.000	U	1.500	U	11.000	U	11.000	U
1,1,2,2-TETRACHLOROETHANE	µg/Kg	10.000	U	10.000	U	10.000	U	1.400	U	11.000	U	11.000	U
TOLUENE	µg/Kg	10.000	U	10.000	U	10.000	U	1.500	U	11.000	U	11.000	U

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UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

I-A-1

WHC-SD-EN-TT-194, Rev. 0

North Slope ERA Data Validation Summary Report
 Volatile Organic Analysis Results

Parameter	Samp# Date Site Depth Type	B07GN9 10-20-92 Eq Blank --- (sand)		B07GP4 11-2-92 Eq Blank --- (sand)		B07KR8 2-16-93 Eq Blank --- (sand)		B07GN2 10-21-92 H-04(E) 7.00 - 9.00 A-1-1		B07GN3 10-20-92 H-04(E) 8.00 - 10.00 A-1-2		B07GM7 10-20-92 H-04(W) 8.00 - 9.00 A-1-3	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROBENZENE	µg/Kg	10.000	U	10.000	U	10.000	U	1.300	U	11.000	U	11.000	U
ETHYLBENZENE	µg/Kg	10.000	U	10.000	U	10.000	U	1.200	U	11.000	U	11.000	U
STYRENE	µg/Kg	10.000	U	10.000	U	10.000	U	2.300	U	11.000	U	11.000	U
XYLENES (TOTAL)	µg/Kg	10.000	U	10.000	U	10.000	U	1.000	U	11.000	U	11.000	U
1,2,3-TRICHLOROPROPANE	µg/Kg	N/R		N/R		N/R		1.500	U	N/R		N/R	
ETHYL METHACRYLATE	µg/Kg	N/R		N/R		N/R		1.200	U	N/R		N/R	

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North Slope ERA Data Validation Summary Report
 Volatile Organic Analysis Results

Parameter	Samp#	B07GH8		B07GM9		B07GN1		B07GN0		B07GM6		B07GP2	
	Date	10-20-92		10-20-92		10-21-92		10-21-92		10-21-92		10-30-92	
Site	H-04(W)	H-04(W)		H-04(W)		H-04(W)		H-04(W)		H-04(W)		H-06-H(E)	
Depth	8.00 - 9.00	8.00 - 9.00		8.00 - 9.00		7.00 - 9.00		7.50 - 9.50		9.00 - 11.00		9.00 - 11.00	
Type	A-1-3 dup	A-1-3 dup		A-1-3 spl		A-3-1		A-2-2		A-1-2		A-2-1	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	µg/Kg	12.000	U	12.000	U	3.700	U	3.700	U	3.500	U	3.500	U
BROMOMETHANE	µg/Kg	12.000	U	12.000	U	2.300	U	2.400	U	2.200	U	2.200	U
VINYL CHLORIDE	µg/Kg	12.000	U	12.000	U	3.100	U	3.200	U	3.000	U	3.000	U
CHLOROETHANE	µg/Kg	12.000	U	12.000	U	3.400	U	3.400	U	3.200	U	3.200	U
METHYLENE CHLORIDE	µg/Kg	12.000	U	28.000	U	1.300	J	3.700	U	3.500	U	3.500	U
ACETONE	µg/Kg	34.000	U	42.000	U	46.000	U	31.000	U	67.000	U	26.000	U
CARBON DISULFIDE	µg/Kg	12.000	U	12.000	U	2.000	U	2.000	U	1.900	U	1.900	U
TRICHLOROFLUOROMETHANE	µg/Kg	N/R		N/R		2.000	U	2.000	U	1.900	U	1.900	U
1,1-DICHLOROETHENE	µg/Kg	12.000	U	12.000	U	1.800	U	1.800	U	1.700	U	1.700	U
1,1-DICHLOROETHANE	µg/Kg	12.000	U	12.000	U	1.800	U	1.800	U	1.700	U	1.700	U
1,2-DICHLOROETHENE (TOTAL)	µg/Kg	12.000	U	12.000	U	2.300	U	2.400	U	2.200	U	2.200	U
CHLOROFORM	µg/Kg	12.000	U	12.000	U	1.800	U	1.800	U	1.700	U	1.700	U
1,2-DICHLOROETHANE	µg/Kg	12.000	U	12.000	U	1.100	U	1.100	U	1.100	U	1.100	U
IODOMETHANE	µg/Kg	N/R		N/R		2.300	U	2.400	U	2.200	U	2.200	U
ACROLEIN	µg/Kg	N/R		N/R		1.900	U	1.900	U	1.800	U	1.800	U
ACRYLONITRILE	µg/Kg	N/R		N/R		1.900	U	1.900	U	1.800	U	1.800	U
2-BUTANONE	µg/Kg	12.000	U	12.000	U	2.200	U	2.300	U	2.100	U	2.100	U
1,1,1-TRICHLOROETHANE	µg/Kg	12.000	U	12.000	U	1.200	U	1.200	U	1.200	U	1.200	U
CARBON TETRACHLORIDE	µg/Kg	12.000	U	12.000	U	1.200	U	1.200	U	1.200	U	1.200	U
VINYL ACETATE	µg/Kg	N/R		N/R		2.900	U	2.900	U	2.800	U	2.700	U
BROMODICHLOROMETHANE	µg/Kg	12.000	U	12.000	U	1.600	U	1.600	U	1.500	U	1.500	U
1,2-DICHLOROPROPANE	µg/Kg	12.000	U	12.000	U	1.300	U	1.400	U	1.300	U	1.300	U
CIS-1,3-DICHLOROPROPENE	µg/Kg	12.000	U	12.000	U	2.000	U	2.000	U	1.900	U	1.900	U
TRICHLOROETHENE	µg/Kg	12.000	U	12.000	U	3.000	U	3.100	U	2.900	U	2.800	U
DIBROMOCHLOROMETHANE	µg/Kg	12.000	U	12.000	U	1.600	U	1.600	U	1.500	U	1.500	U
1,1,2-TRICHLOROETHANE	µg/Kg	12.000	U	12.000	U	2.100	U	2.100	U	2.000	U	2.000	U
BENZENE	µg/Kg	12.000	U	12.000	U	1.600	U	1.600	U	1.500	U	1.500	U
TRANS-1,3-DICHLOROPROPENE	µg/Kg	12.000	U	12.000	U	2.000	U	2.000	U	1.900	U	1.900	U
2-CHLOROETHYL VINYL ETHER	µg/Kg	N/R		N/R		1.900	U	1.900	U	1.800	U	1.800	U
BROMOFORM	µg/Kg	12.000	U	12.000	U	1.100	U	1.100	U	1.100	U	1.100	U
1,2-DIBROMOETHANE	µg/Kg	N/R		N/R		1.600	U	1.600	U	1.500	U	1.500	U
DIBROMOMETHANE	µg/Kg	N/R		N/R		0.900	U	0.900	U	0.800	U	0.800	U
TRANS-1,4-DICHLORO-2-BUTENE	µg/Kg	N/R		N/R		1.600	U	1.600	U	1.500	U	1.500	U
4-METHYL-2-PENTANONE	µg/Kg	12.000	U	12.000	U	2.800	U	2.800	U	2.700	U	2.600	U
2-HEXANONE	µg/Kg	12.000	U	12.000	U	2.000	U	2.000	U	1.900	U	1.900	U
TETRACHLOROETHENE	µg/Kg	12.000	U	12.000	U	1.600	U	1.600	U	1.500	U	1.500	U
1,1,2,2-TETRACHLOROETHANE	µg/Kg	12.000	U	12.000	U	1.500	U	1.500	U	1.400	U	1.400	U
TOLUENE	µg/Kg	12.000	U	12.000	U	2.600	U	1.600	U	1.500	U	1.500	U

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North Slope ERA Data Validation Summary Report
 Volatile Organic Analysis Results

Parameter	Samp#	B07GM8		B07GM9		B07GM1		B07GN0		B07GM6		B07GP2	
	Date	10-20-92		10-20-92		10-21-92		10-21-92		10-21-92		10-30-92	
Site	H-04(W)		H-04(W)		H-04(W)		H-04(W)		H-04(W)		H-06-H(E)		
Depth	8.00 - 9.00		8.00 - 9.00		7.00 - 9.00		7.50 - 9.50		9.00 - 11.00		9.00 - 11.00		
Type	A-1-3 dup		A-1-3 spl		A-3-1		A-2-2		A-1-2		A-2-1		
Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
CHLOROBENZENE	µg/Kg	12.000	U	12.000	U	1.300	U	1.400	U	1.300	U	1.300	U
ETHYLBENZENE	µg/Kg	12.000	U	12.000	U	1.200	U	1.200	U	1.200	U	1.200	U
STYRENE	µg/Kg	12.000	U	12.000	U	2.300	U	2.400	U	2.200	U	2.200	U
XYLENES (TOTAL)	µg/Kg	12.000	U	12.000	U	1.000	U	1.100	U	1.000	U	1.000	U
1,2,3-TRICHLOROPROPANE	µg/Kg	N/R		N/R		1.600	U	1.600	U	1.500	U	1.500	U
ETHYL METHACRYLATE	µg/Kg	N/R		N/R		1.200	U	1.200	U	1.200	U	1.200	U

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North Slope ERA Data Validation Summary Report
 Volatile Organic Analysis Results

Parameter	Samp#	807GP3		807KP4		807KP5		807KP6		807KP7		807KP8	
	Date	11-2-92		11-2-92		11-2-92		11-2-92		11-2-92		11-2-92	
Site	Site	H-06-H(E)											
Depth	Depth	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
Type	Type	A-6-4		A-11-1		A-11-1dup		A-11-1spl		A-11-2		A-12-1	
	Units	Result	Q										
CHLOROMETHANE	µg/Kg	3.400	U	11.000	U	11.000	U	11.000	U	3.700	U	11.000	U
BROMOMETHANE	µg/Kg	2.200	U	11.000	U	11.000	U	11.000	U	2.300	U	11.000	U
VINYL CHLORIDE	µg/Kg	2.900	U	11.000	U	11.000	U	11.000	U	3.100	U	11.000	U
CHLOROETHANE	µg/Kg	3.100	U	11.000	U	11.000	U	11.000	U	3.300	U	11.000	U
METHYLENE CHLORIDE	µg/Kg	3.400	U	11.000	U	11.000	U	11.000	U	3.700	U	11.000	U
ACETONE	µg/Kg	22.000	U	25.000	U	73.000	U	11.000	U	12.000	U	40.000	U
CARBON DISULFIDE	µg/Kg	1.900	U	11.000	U	11.000	U	11.000	U	2.000	U	11.000	U
TRICHLOROFUOROMETHANE	µg/Kg	1.900	U	N/R		N/R		N/R		2.000	U	N/R	
1,1-DICHLOROETHENE	µg/Kg	1.700	U	11.000	U	11.000	U	11.000	U	1.800	U	11.000	U
1,1-DICHLOROETHANE	µg/Kg	1.700	U	11.000	U	11.000	U	11.000	U	1.800	U	11.000	U
1,2-DICHLOROETHENE (TOTAL)	µg/Kg	2.200	U	11.000	U	11.000	U	11.000	U	2.300	U	11.000	U
CHLOROFORM	µg/Kg	1.700	U	11.000	U	11.000	U	11.000	U	1.800	U	11.000	U
1,2-DICHLOROETHANE	µg/Kg	1.000	U	11.000	U	11.000	U	11.000	U	1.100	U	11.000	U
IODOMETHANE	µg/Kg	2.200	U	N/R		N/R		N/R		2.300	U	N/R	
ACROLEIN	µg/Kg	1.800	U	N/R		N/R		N/R		1.900	U	N/R	
ACRYLONITRILE	µg/Kg	1.800	U	N/R		N/R		N/R		1.900	U	N/R	
2-BUTANONE	µg/Kg	2.100	U	11.000	U	11.000	U	11.000	U	2.200	U	11.000	U
1,1,1-TRICHLOROETHANE	µg/Kg	1.100	U	11.000	U	11.000	U	11.000	U	1.200	U	11.000	U
CARBON TETRACHLORIDE	µg/Kg	1.100	U	11.000	U	11.000	U	11.000	U	1.200	U	11.000	U
VINYL ACETATE	µg/Kg	2.700	U	N/R		N/R		N/R		2.900	U	N/R	
BROMODICHLOROMETHANE	µg/Kg	1.500	U	11.000	U	11.000	U	11.000	U	1.500	U	11.000	U
1,2-DICHLOROPROPANE	µg/Kg	1.300	U	11.000	U	11.000	U	11.000	U	1.300	U	11.000	U
CIS-1,3-DICHLOROPROPENE	µg/Kg	1.900	U	11.000	U	11.000	U	11.000	U	2.000	U	11.000	U
TRICHLOROETHENE	µg/Kg	2.800	U	11.000	U	11.000	U	11.000	U	3.000	U	11.000	U
DIBROMOCHLOROMETHANE	µg/Kg	1.500	U	11.000	U	11.000	U	11.000	U	1.500	U	11.000	U
1,1,2-TRICHLOROETHANE	µg/Kg	2.000	U	11.000	U	11.000	U	11.000	U	2.100	U	11.000	U
BENZENE	µg/Kg	1.500	U	11.000	U	11.000	U	11.000	U	1.500	U	11.000	U
TRANS-1,3-DICHLOROPROPENE	µg/Kg	1.900	U	11.000	U	11.000	U	11.000	U	2.000	U	11.000	U
2-CHLOROETHYL VINYL ETHER	µg/Kg	1.800	U	N/R		N/R		N/R		1.900	U	N/R	
BROMOFORM	µg/Kg	1.000	U	11.000	U	11.000	U	11.000	U	1.100	U	11.000	U
1,2-DIBROMOETHANE	µg/Kg	1.500	U	N/R		N/R		N/R		1.500	U	N/R	
DIBROMOMETHANE	µg/Kg	0.800	U	N/R		N/R		N/R		0.900	U	N/R	
TRANS-1,4-DICHLORO-2-BUTENE	µg/Kg	1.500	U	N/R		N/R		N/R		1.500	U	N/R	
4-METHYL-2-PENTANONE	µg/Kg	2.600	U	11.000	U	11.000	U	11.000	U	2.800	U	11.000	U
2-HEXANONE	µg/Kg	1.900	U	11.000	U	11.000	U	11.000	U	2.000	U	11.000	U
TETRACHLOROETHENE	µg/Kg	1.500	U	11.000	U	11.000	U	11.000	U	1.500	U	11.000	U
1,1,2,2-TETRACHLOROETHANE	µg/Kg	1.400	U	11.000	U	11.000	U	11.000	U	1.400	U	11.000	U
TOLUENE	µg/Kg	1.500	U	11.000	U	11.000	U	11.000	U	1.500	U	11.000	U

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WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary Report
 Volatile Organic Analysis Results

Parameter	Samp#	B07GP3		B07KP4		B07KP5		B07KP6		B07KP7		B07KP8		
	Date	11-2-92		11-2-92		11-2-92		11-2-92		11-2-92		11-2-92		
Site	H-06-H(E)		H-06-H(E)											
Depth	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
Type	A-6-4		A-11-1		A-11-1dup		A-11-1spl		A-11-2		A-12-1			
	Units	Result	Q											
CHLOROBENZENE	µg/Kg	1.300	U	11.000	U	11.000	U	11.000	U	1.300	U	11.000	U	
ETHYLBENZENE	µg/Kg	1.100	U	11.000	U	11.000	U	11.000	U	1.200	U	11.000	U	
STYRENE	µg/Kg	2.200	U	11.000	U	11.000	U	11.000	U	2.300	U	11.000	U	
XYLENES (TOTAL)	µg/Kg	1.000	U	11.000	U	11.000	U	11.000	U	1.000	U	11.000	U	
1,2,3-TRICHLOROPROPANE	µg/Kg	1.500	U	N/R		N/R		N/R		1.500	U	N/R		
ETHYL METHACRYLATE	µg/Kg	1.100	U	N/R		N/R		N/R		1.200	U	N/R		

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 UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.
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North Slope ERA Data Validation Summary Report
 Volatile Organic Analysis Results

Parameter	Samp#	B07KP9		B07KQ0		B07GN4		B07GN5		B07GN6		B07GN7	
	Date	11-3-92		11-3-92		10-21-92		10-21-92		10-20-92		10-21-92	
Site	H-06-H(E)	H-06-H(E)		H-06-H(E)		H-06-H(W)		H-06-H(W)		H-06-H(W)		H-06-H(W)	
Depth	9.00 - 11.00	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
Type	A-12-2	A-12-2		A-7-1		A-2-2		A-5-2		A-5-5		A-7-1	
Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
CHLOROMETHANE	µg/Kg	3.500	U	3.600	U	3.400	U	3.400	U	11.000	U	3.600	U
BROMOMETHANE	µg/Kg	2.200	U	2.300	U	2.200	U	2.200	U	11.000	U	2.300	U
VINYL CHLORIDE	µg/Kg	3.000	U	3.000	U	2.900	U	2.900	U	11.000	U	3.000	U
CHLOROETHANE	µg/Kg	3.200	U	3.200	U	3.100	U	3.100	U	11.000	U	3.200	U
METHYLENE CHLORIDE	µg/Kg	3.500	U	3.600	U	3.400	U	3.400	U	11.000	U	3.600	U
ACETONE	µg/Kg	10.000	U	11.000	U	32.000	U	49.000	U	24.000	U	40.000	U
CARBON DISULFIDE	µg/Kg	1.900	U	1.900	U	1.900	U	1.900	U	11.000	U	1.900	U
TRICHLOROFLUOROMETHANE	µg/Kg	1.900	U	1.900	U	1.900	U	1.900	U	N/R		1.900	U
1,1-DICHLOROETHENE	µg/Kg	1.700	U	1.700	U	1.700	U	1.700	U	11.000	U	1.700	U
1,1-DICHLOROETHANE	µg/Kg	1.700	U	1.700	U	1.700	U	1.700	U	11.000	U	1.700	U
1,2-DICHLOROETHENE (TOTAL)	µg/Kg	2.200	U	2.300	U	2.200	U	2.200	U	11.000	U	2.300	U
CHLOROFORM	µg/Kg	1.700	U	1.700	U	1.700	U	1.700	U	11.000	U	1.700	U
1,2-DICHLOROETHANE	µg/Kg	1.100	U	1.100	U	1.000	U	1.000	U	11.000	U	1.100	U
IODOMETHANE	µg/Kg	2.200	U	2.300	U	2.200	U	2.200	U	N/R		2.300	U
ACROLEIN	µg/Kg	1.800	U	1.800	U	1.800	U	1.800	U	N/R		1.800	U
ACRYLONITRILE	µg/Kg	1.800	U	1.800	U	1.800	U	1.800	U	N/R		1.800	U
2-BUTANONE	µg/Kg	2.100	U	2.200	U	2.100	U	2.100	U	11.000	U	2.200	U
1,1,1-TRICHLOROETHANE	µg/Kg	1.200	U	1.200	U	1.100	U	1.100	U	11.000	U	1.200	U
CARBON TETRACHLORIDE	µg/Kg	1.200	U	1.200	U	1.100	U	1.100	U	11.000	U	1.200	U
VINYL ACETATE	µg/Kg	2.700	U	2.800	U	2.700	U	2.700	U	N/R		2.800	U
BROMODICHLOROMETHANE	µg/Kg	1.500	U	1.500	U	1.500	U	1.500	U	11.000	U	1.500	U
1,2-DICHLOROPROPANE	µg/Kg	1.300	U	1.300	U	1.200	U	1.200	U	11.000	U	1.300	U
CIS-1,3-DICHLOROPROPENE	µg/Kg	1.900	U	1.900	U	1.900	U	1.900	U	11.000	U	1.900	U
TRICHLOROETHENE	µg/Kg	2.800	U	2.900	U	2.800	U	2.800	U	11.000	U	2.900	U
DIBROMOCHLOROMETHANE	µg/Kg	1.500	U	1.500	U	1.500	U	1.500	U	11.000	U	1.500	U
1,1,2-TRICHLOROETHANE	µg/Kg	2.000	U	2.100	U	2.000	U	2.000	U	11.000	U	2.100	U
BENZENE	µg/Kg	1.500	U	1.500	U	1.500	U	1.500	U	11.000	U	1.500	U
TRANS-1,3-DICHLOROPROPENE	µg/Kg	1.900	U	1.900	U	1.900	U	1.900	U	11.000	U	1.900	U
2-CHLOROETHYL VINYL ETHER	µg/Kg	1.800	U	1.800	U	1.800	U	1.800	U	N/R		1.800	U
BROMOFORM	µg/Kg	1.100	U	1.100	U	1.000	U	1.000	U	11.000	U	1.100	U
1,2-DIBROMOETHANE	µg/Kg	1.500	U	1.500	U	1.500	U	1.500	U	N/R		1.500	U
DIBROMOMETHANE	µg/Kg	0.800	U	0.900	U	0.800	U	0.800	U	N/R		0.900	U
TRANS-1,4-DICHLORO-2-BUTENE	µg/Kg	1.500	U	1.500	U	1.500	U	1.500	U	N/R		1.500	U
4-METHYL-2-PENTANONE	µg/Kg	2.600	U	2.700	U	2.600	U	2.600	U	11.000	U	2.700	U
2-HEXANONE	µg/Kg	1.900	U	1.900	U	1.900	U	1.900	U	11.000	U	1.900	U
TETRACHLOROETHENE	µg/Kg	1.500	U	1.500	U	1.500	U	1.500	U	11.000	U	1.500	U
1,1,2,2-TETRACHLOROETHANE	µg/Kg	1.400	U	1.400	U	1.400	U	1.300	U	11.000	U	1.400	U
TOLUENE	µg/Kg	1.500	U	1.500	U	1.500	U	1.500	U	11.000	U	1.500	U

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N/R - Indicates not reported by the laboratory.

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WHCSD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary Report
 Volatile Organic Analysis Results

Parameter	Samp#	B07KP9		B07KQ0		B07GN4		B07GN5		B07GN6		B07GN7		
	Date	11-3-92		11-3-92		10-21-92		10-21-92		10-20-92		10-21-92		
Site	H-06-H(E)		H-06-H(E)		H-06-H(W)		H-06-H(W)		H-06-H(W)		H-06-H(W)		H-06-H(W)	
Depth	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
Type	A-12-2		A-7-1		A-2-2		A-5-2		A-5-2		A-5-5		A-7-1	
Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROBENZENE	µg/Kg	1.300	U	1.300	U	1.200	U	1.200	U	11.000	U	1.300	U	
ETHYLBENZENE	µg/Kg	1.200	U	1.200	U	1.100	U	1.100	U	11.000	U	1.200	U	
STYRENE	µg/Kg	2.200	U	2.300	U	2.200	U	2.200	U	11.000	U	2.300	U	
XYLENES (TOTAL)	µg/Kg	1.000	U	1.000	U	1.000	U	1.000	U	11.000	U	1.000	U	
1,2,3-TRICHLOROPROPANE	µg/Kg	1.500	U	1.500	U	1.500	U	1.500	U	N/R		1.500	U	
ETHYL METHACRYLATE	µg/Kg	1.200	U	1.200	U	1.100	U	1.100	U	N/R		1.200	U	

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North Slope ERA Data Validation Summary Report
 Volatile Organic Analysis Results

Parameter	Sampl# Date Site Depth Type	B07GN8 10-21-92 H-06-H(W) 9.00 - 11.00 A-16-1		B07GP0 10-30-92 H-06-H(W) 9.00 - 11.00 A-19-2		B07GP1 10-30-92 H-06-H(W) 9.00 - 11.00 A-19-3		B07KQ2 12-15-92 H-06-L 0.00 - 3.00 Drywell		B07KQ3 12-16-92 H-06-L 13.50 - 15.50 Rock Pit		B07KR5 2-16-93 H-07-H --- Drywell	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	µg/Kg	3.400	U	3.400	U	11.000	U	11.000	U	12.000	U	11.000	U
BROMOMETHANE	µg/Kg	2.200	U	2.200	U	11.000	U	11.000	U	12.000	U	11.000	U
VINYL CHLORIDE	µg/Kg	2.900	U	2.900	U	11.000	U	11.000	U	12.000	U	11.000	U
CHLOROETHANE	µg/Kg	3.100	U	3.100	U	11.000	U	11.000	U	12.000	U	11.000	U
METHYLENE CHLORIDE	µg/Kg	3.400	U	3.400	U	11.000	U	11.000	U	12.000	U	11.000	U
ACETONE	µg/Kg	33.000	U	22.000	U	21.000	U	11.000	U	12.000	U	11.000	U
CARBON DISULFIDE	µg/Kg	1.900	U	1.900	U	11.000	U	11.000	U	12.000	U	11.000	U
TRICHLOROFLUOROMETHANE	µg/Kg	1.900	U	1.900	U	N/R		N/R		N/R		N/R	
1,1-DICHLOROETHENE	µg/Kg	1.700	U	1.700	U	11.000	U	11.000	U	12.000	U	11.000	U
1,1-DICHLOROETHANE	µg/Kg	1.700	U	1.700	U	11.000	U	11.000	U	12.000	U	11.000	U
1,2-DICHLOROETHENE (TOTAL)	µg/Kg	2.200	U	2.200	U	11.000	U	11.000	U	12.000	U	11.000	U
CHLOROFORM	µg/Kg	1.700	U	1.700	U	11.000	U	11.000	U	12.000	U	11.000	U
1,2-DICHLOROETHANE	µg/Kg	1.000	U	1.000	U	11.000	U	11.000	U	12.000	U	11.000	U
IODOMETHANE	µg/Kg	2.200	U	2.200	U	N/R		N/R		N/R		N/R	
ACROLEIN	µg/Kg	1.800	U	1.800	U	N/R		N/R		N/R		N/R	
ACRYLONITRILE	µg/Kg	1.800	U	1.800	U	N/R		N/R		N/R		N/R	
2-BUTANONE	µg/Kg	2.100	U	2.100	U	11.000	U	11.000	U	12.000	U	11.000	U
1,1,1-TRICHLOROETHANE	µg/Kg	1.100	U	1.100	U	11.000	U	11.000	U	12.000	U	11.000	U
CARBON TETRACHLORIDE	µg/Kg	1.100	U	1.100	U	11.000	U	11.000	U	12.000	U	11.000	U
VINYL ACETATE	µg/Kg	2.700	U	2.700	U	N/R		N/R		N/R		N/R	
BROMODICHLOROMETHANE	µg/Kg	1.500	U	1.500	U	11.000	U	11.000	U	12.000	U	11.000	U
1,2-DICHLOROPROPANE	µg/Kg	1.300	U	1.300	U	11.000	U	11.000	U	12.000	U	11.000	U
CIS-1,3-DICHLOROPROPENE	µg/Kg	1.900	U	1.900	U	11.000	U	11.000	U	12.000	U	11.000	U
TRICHLOROETHENE	µg/Kg	2.800	U	2.800	U	11.000	U	11.000	U	12.000	U	11.000	U
DIBROMOCHLOROMETHANE	µg/Kg	1.500	U	1.500	U	11.000	U	11.000	U	12.000	U	11.000	U
1,1,2-TRICHLOROETHANE	µg/Kg	2.000	U	2.000	U	11.000	U	11.000	U	12.000	U	11.000	U
BENZENE	µg/Kg	1.500	U	1.500	U	11.000	U	11.000	U	12.000	U	11.000	U
TRANS-1,3-DICHLOROPROPENE	µg/Kg	1.900	U	1.900	U	11.000	U	11.000	U	12.000	U	11.000	U
2-CHLOROETHYL VINYL ETHER	µg/Kg	1.800	U	1.800	U	N/R		N/R		N/R		N/R	
BROMOFORM	µg/Kg	1.000	U	1.000	U	11.000	U	11.000	U	12.000	U	11.000	U
1,2-DIBROMOETHANE	µg/Kg	1.500	U	1.500	U	N/R		N/R		N/R		N/R	
DIBROMOMETHANE	µg/Kg	0.800	U	0.800	U	N/R		N/R		N/R		N/R	
TRANS-1,4-DICHLORO-2-BUTENE	µg/Kg	1.500	U	1.500	U	N/R		N/R		N/R		N/R	
4-METHYL-2-PENTANONE	µg/Kg	2.600	U	2.600	U	11.000	U	11.000	U	12.000	U	11.000	U
2-HEXANONE	µg/Kg	1.900	U	1.900	U	11.000	U	11.000	U	12.000	U	11.000	U
TETRACHLOROETHENE	µg/Kg	1.500	U	1.500	U	11.000	U	11.000	U	12.000	U	11.000	U
1,1,2,2-TETRACHLOROETHANE	µg/Kg	1.400	U	1.400	U	11.000	U	11.000	U	12.000	U	11.000	U
TOLUENE	µg/Kg	1.500	U	1.500	U	11.000	U	11.000	U	12.000	U	11.000	U

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North Slope ERA Data Validation Summary Report
 Volatile Organic Analysis Results

Parameter	Samp#	807GN8		807GP0		807GP1		807KQ2		807KQ3		807KR5	
	Date	10-21-92		10-30-92		10-30-92		12-15-92		12-16-92		2-16-93	
Site	H-06-H(W)		H-06-H(W)		H-06-H(W)		H-06-L		H-06-L		H-07-H		
Depth	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		0.00 - 3.00		13.50 - 15.50		---		
Type	A-16-1		A-19-2		A-19-3		Drywell		Rock Pit		Drywell		
Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
CHLOROBENZENE	µg/Kg	1.300	U	1.300	U	11.000	U	11.000	U	12.000	U	11.000	U
ETHYLBENZENE	µg/Kg	1.100	U	1.100	U	11.000	U	11.000	U	12.000	U	11.000	U
STYRENE	µg/Kg	2.200	U	2.200	U	11.000	U	11.000	U	12.000	U	11.000	U
XYLENES (TOTAL)	µg/Kg	1.000	U	1.000	U	11.000	U	11.000	U	12.000	U	11.000	U
1,2,3-TRICHLOROPROPANE	µg/Kg	1.500	U	1.500	U	N/R		N/R		N/R		N/R	
ETHYL METHACRYLATE	µg/Kg	1.100	U	1.100	U	N/R		N/R		N/R		N/R	

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 U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.
 UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.
 N/R - Indicates not reported by the laboratory.

North Slope ERA Data Validation Summary Report
 Volatile Organic Analysis Results

Parameter	Samp#	B07KR7		B07KR6		B07KQ1		B07GMO		B07GM1		B07GM2	
	Date	2-16-93		2-16-93		12-14-92		10-12-92		10-12-92		10-13-92	
Site	H-07-H		H-07-H		H-81-R		H-83-L		H-83-L		H-83-L		
Depth	---		16.00 - 16.00		4.00 - 6.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		
Type	Drywell-s		Drywell-d		Drywell		A-2-2		A-2-3		A-1-3		
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	µg/Kg	11.000	U	11.000	U	11.000	U	3.400	U	10.000	U	3.400	U
BROMOMETHANE	µg/Kg	11.000	U	11.000	U	11.000	U	2.100	U	10.000	U	2.200	U
VINYL CHLORIDE	µg/Kg	11.000	U	11.000	U	11.000	U	2.900	U	10.000	U	2.900	U
CHLOROETHANE	µg/Kg	11.000	U	11.000	U	11.000	U	3.100	U	10.000	U	3.100	U
METHYLENE CHLORIDE	µg/Kg	11.000	U	11.000	U	11.000	U	3.400	U	10.000	U	3.400	U
ACETONE	µg/Kg	11.000	U	11.000	U	11.000	U	2.900	U	10.000	U	3.800	U
CARBON DISULFIDE	µg/Kg	11.000	U	11.000	U	11.000	U	1.800	U	10.000	U	1.800	U
TRICHLOROFUOROMETHANE	µg/Kg	N/R		N/R		N/R		1.800	U	N/R		1.800	U
1,1-DICHLOROETHENE	µg/Kg	11.000	U	11.000	U	11.000	U	1.600	U	10.000	U	1.600	U
1,1-DICHLOROETHANE	µg/Kg	11.000	U	11.000	U	11.000	U	1.600	U	10.000	U	1.600	U
1,2-DICHLOROETHENE (TOTAL)	µg/Kg	11.000	U	11.000	U	11.000	U	2.100	U	10.000	U	2.200	U
CHLOROFORM	µg/Kg	11.000	U	11.000	U	11.000	U	1.600	U	10.000	U	1.600	U
1,2-DICHLOROETHANE	µg/Kg	11.000	U	11.000	U	11.000	U	1.000	U	10.000	U	1.000	U
IODOMETHANE	µg/Kg	N/R		N/R		N/R		2.100	U	N/R		2.200	U
ACROLEIN	µg/Kg	N/R		N/R		N/R		1.700	U	N/R		1.700	U
ACRYLONITRILE	µg/Kg	N/R		N/R		N/R		1.700	U	N/R		1.700	U
2-BUTANONE	µg/Kg	11.000	U	11.000	U	11.000	U	2.000	U	10.000	U	2.000	U
1,1,1-TRICHLOROETHANE	µg/Kg	11.000	U	11.000	U	11.000	U	1.100	U	10.000	U	1.100	U
CARBON TETRACHLORIDE	µg/Kg	11.000	U	11.000	U	11.000	U	1.100	U	10.000	U	1.100	U
VINYL ACETATE	µg/Kg	N/R		N/R		N/R		2.700	U	N/R		2.700	U
BROMODICHLOROMETHANE	µg/Kg	11.000	U	11.000	U	11.000	U	1.400	U	10.000	U	1.400	U
1,2-DICHLOROPROPANE	µg/Kg	11.000	U	11.000	U	11.000	U	1.200	U	10.000	U	1.200	U
CIS-1,3-DICHLOROPROPENE	µg/Kg	11.000	U	11.000	U	11.000	U	1.800	U	10.000	U	1.800	U
TRICHLOROETHENE	µg/Kg	11.000	U	11.000	U	11.000	U	2.800	U	10.000	U	2.800	U
DIBROMOCHLOROMETHANE	µg/Kg	11.000	U	11.000	U	11.000	U	1.400	U	10.000	U	1.400	U
1,1,2-TRICHLOROETHANE	µg/Kg	11.000	U	11.000	U	11.000	U	1.900	U	10.000	U	1.900	U
BENZENE	µg/Kg	11.000	U	11.000	U	11.000	U	1.400	U	10.000	U	1.400	U
TRANS-1,3-DICHLOROPROPENE	µg/Kg	11.000	U	11.000	U	11.000	U	1.800	U	10.000	U	1.800	U
2-CHLOROETHYL VINYL ETHER	µg/Kg	N/R		N/R		N/R		1.700	U	N/R		1.700	U
BROMOFORM	µg/Kg	11.000	U	11.000	U	11.000	U	1.000	U	10.000	U	1.000	U
1,2-DIBROMOETHANE	µg/Kg	N/R		N/R		N/R		1.400	U	N/R		1.400	U
DIBROMOMETHANE	µg/Kg	N/R		N/R		N/R		0.800	U	N/R		0.800	U
TRANS-1,4-DICHLORO-2-BUTENE	µg/Kg	N/R		N/R		N/R		1.400	U	N/R		1.400	U
4-METHYL-2-PENTANONE	µg/Kg	11.000	U	11.000	U	11.000	U	2.600	U	10.000	U	2.600	U
2-HEXANONE	µg/Kg	11.000	U	11.000	U	11.000	U	9.800	U	10.000	U	3.800	U
TETRACHLOROETHENE	µg/Kg	11.000	U	11.000	U	11.000	U	1.400	U	10.000	U	1.400	U
1,1,2,2-TETRACHLOROETHANE	µg/Kg	11.000	U	11.000	U	11.000	U	1.300	U	10.000	U	1.300	U
TOLUENE	µg/Kg	11.000	U	11.000	U	11.000	U	1.400	U	10.000	U	1.400	U

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 N/R - Indicates not reported by the laboratory.

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WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary Report
 Volatile Organic Analysis Results

Parameter	Samp#	B07KR7		B07KR6		B07KQ1		B07GM0		B07GM1		B07GM2	
	Date Site Depth Type	2-16-93 H-07-H --- Drywell-s		2-16-93 H-07-H 16.00 - 16.00 Drywell-d		12-14-92 H-81-R 4.00 - 6.00 Drywell		10-12-92 H-83-L 9.00 - 11.00 A-2-2		10-12-92 H-83-L 9.00 - 11.00 A-2-3		10-13-92 H-83-L 9.00 - 11.00 A-1-3	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROBENZENE	µg/Kg	11.000	U	11.000	U	11.000	U	1.200	U	10.000	U	1.200	U
ETHYLBENZENE	µg/Kg	11.000	U	11.000	U	11.000	U	1.100	U	10.000	U	1.100	U
STYRENE	µg/Kg	11.000	U	11.000	U	11.000	U	2.100	U	10.000	U	2.200	U
XYLENES (TOTAL)	µg/Kg	11.000	U	11.000	U	11.000	U	1.000	U	10.000	U	1.000	U
1,2,3-TRICHLOROPROPANE	µg/Kg	N/R		N/R		N/R		1.400	U	N/R		1.400	U
ETHYL METHACRYLATE	µg/Kg	N/R		N/R		N/R		1.100	U	N/R		1.100	U

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UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

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North Slope ERA Data Validation Summary Report
 Volatile Organic Analysis Results

Parameter	Samp#	807GM3		807GM4		807GM5	
	Date Site Depth Type	10-14-92 H-83-L 9.00 - 11.00 A-3-2		10-14-92 H-83-L 9.00 - 11.00 A-3-3		10-14-92 H-83-L 9.00 - 11.00 A-4-1	
	Units	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	µg/Kg	10.000	U	3.400	U	3.400	U
BROMOMETHANE	µg/Kg	10.000	U	2.100	U	2.200	U
VINYL CHLORIDE	µg/Kg	10.000	U	2.900	U	2.900	U
CHLOROETHANE	µg/Kg	10.000	U	3.100	U	3.100	U
METHYLENE CHLORIDE	µg/Kg	10.000	U	3.400	U	3.400	U
ACETONE	µg/Kg	10.000	U	4.300	U	5.800	U
CARBON DISULFIDE	µg/Kg	10.000	U	1.800	U	1.900	U
TRICHLOROFLUOROMETHANE	µg/Kg	N/R		1.800	U	1.900	U
1,1-DICHLOROETHENE	µg/Kg	10.000	U	1.600	U	1.700	U
1,1-DICHLOROETHANE	µg/Kg	10.000	U	1.600	U	1.700	U
1,2-DICHLOROETHENE (TOTAL)	µg/Kg	10.000	U	2.100	U	2.200	U
CHLOROFORM	µg/Kg	10.000	U	1.600	U	1.700	U
1,2-DICHLOROETHANE	µg/Kg	10.000	U	1.000	U	1.000	U
IODOMETHANE	µg/Kg	N/R		2.100	U	2.200	U
ACROLEIN	µg/Kg	N/R		1.700	U	1.800	U
ACRYLONITRILE	µg/Kg	N/R		1.700	U	1.800	U
2-BUTANONE	µg/Kg	10.000	U	2.000	U	2.100	U
1,1,1-TRICHLOROETHANE	µg/Kg	10.000	U	1.100	U	1.100	U
CARBON TETRACHLORIDE	µg/Kg	10.000	U	1.100	U	1.100	U
VINYL ACETATE	µg/Kg	N/R		2.700	U	2.700	U
BROMODICHLOROMETHANE	µg/Kg	10.000	U	1.400	U	1.400	U
1,2-DICHLOROPROPANE	µg/Kg	10.000	U	1.200	U	1.200	U
CIS-1,3-DICHLOROPROPENE	µg/Kg	10.000	U	1.800	U	1.900	U
TRICHLOROETHENE	µg/Kg	10.000	U	2.800	U	2.800	U
DIBROMOCHLOROMETHANE	µg/Kg	10.000	U	1.400	U	1.400	U
1,1,2-TRICHLOROETHANE	µg/Kg	10.000	U	1.900	U	2.000	U
BENZENE	µg/Kg	10.000	U	1.400	U	1.400	U
TRANS-1,3-DICHLOROPROPENE	µg/Kg	10.000	U	1.800	U	1.900	U
2-CHLOROETHYL VINYL ETHER	µg/Kg	N/R		1.700	U	1.800	U
BROMOFORM	µg/Kg	10.000	U	1.000	U	1.000	U
1,2-DIBROMOETHANE	µg/Kg	N/R		1.400	U	1.400	U
DIBROMOMETHANE	µg/Kg	N/R		0.800	U	0.800	U
TRANS-1,4-DICHLORO-2-BUTENE	µg/Kg	N/R		1.400	U	1.400	U
4-METHYL-2-PENTANONE	µg/Kg	10.000	U	2.600	U	2.600	U
2-HEXANONE	µg/Kg	10.000	U	1.800	U	1.900	U
TETRACHLOROETHENE	µg/Kg	10.000	U	1.400	U	1.400	U
1,1,2,2-TETRACHLOROETHANE	µg/Kg	10.000	U	1.300	U	1.300	U
TOLUENE	µg/Kg	10.000	U	1.400	U	1.400	U

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U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.

UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

North Slope ERA Data Validation Summary Report
 Volatile Organic Analysis Results

Parameter	Samp#	B07GM3		B07GM4		B07GM5	
	Date	10-14-92		10-14-92		10-14-92	
	Site	H-83-L		H-83-L		H-83-L	
	Depth	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
	Type	A-3-2		A-3-3		A-4-1	
	Units	Result	Q	Result	Q	Result	Q
CHLOROBENZENE	µg/Kg	10.000	U	1.200	U	1.200	U
ETHYLBENZENE	µg/Kg	10.000	U	1.100	U	1.100	U
STYRENE	µg/Kg	10.000	U	2.100	U	2.200	U
XYLENES (TOTAL)	µg/Kg	10.000	U	1.000	U	1.000	U
1,2,3-TRICHLOROPROPANE	µg/Kg	N/R		1.400	U	1.400	U
ETHYL METHACRYLATE	µg/Kg	N/R		1.100	U	1.100	U

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 U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.
 UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.
 N/R - Indicates not reported by the laboratory.

APPENDIX B

SEMIVOLATILE ORGANIC VALIDATED DATA SUMMARY

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07KQ5		B07KQ6		B07KQ7		B07GN9		B07GP4		B07KR8	
	Date Site Depth Type	2-16-93 2,4-D #8 13.00 - 15.00		2-10-93 2,4-D 4,3,2,1 13.00 - 15.00		2-16-93 2,4-D 7,6,5 --- 12'-14', 13'-15		10-20-92 Eq Blank ---		11-2-92 Eq Blank ---		2-16-93 Eq Blank ---	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PHENOL	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
BIS(2-CHLOROETHYL)ETHER	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
2-CHLOROPHENOL	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
1,3-DICHLOROBENZENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
1,4-DICHLOROBENZENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
1,2-DICHLOROBENZENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
2-METHYLPHENOL	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
BIS(2-CHLOROISOPROPYL)ETHER	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
4-METHYLPHENOL	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
N-NITROSO-DI-N-PROPYLAMINE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
HEXACHLOROETHANE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
NITROBENZENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
ISOPHORONE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
2-NITROPHENOL	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
2,4-DIMETHYLPHENOL	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
BIS(2-CHLOROETHOXY)METHANE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
2,4-DICHLOROPHENOL	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
1,2,4-TRICHLOROBENZENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
NAPHTHALENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
4-CHLOROANILINE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
HEXACHLOROBUTADIENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
4-CHLORO-3-METHYLPHENOL	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
2-METHYLNAPHTHALENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
HEXACHLOROCYCLOPENTADIENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
2,4,6-TRICHLOROPHENOL	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
2,4,5-TRICHLOROPHENOL	µg/Kg	820	U	800	U	830	U	800	U	810	UJ	800	U
2-CHLORONAPHTHALENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
2-NITROANILINE	µg/Kg	820	U	800	U	830	U	800	U	810	UJ	800	U
DIMETHYLPHTHALATE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
ACENAPHTHYLENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
2,6-DINITROTOLUENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
3-NITROANILINE	µg/Kg	820	U	800	U	830	U	800	U	810	UJ	800	U

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North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07KQ5		B07KQ6		B07KQ7		B07GN9		B07GP4		B07KR8	
	Date	2-16-93		2-10-93		2-16-93		10-20-92		11-2-92		2-16-93	
Site	2,4-D #8			2,4-D 4,3,2,1		2,4-D 7,6,5		Eq Blank		Eq Blank		Eq Blank	
Depth	13.00 - 15.00			13.00 - 15.00		---		---		---		---	
Type						12'-14', 13'-15							
Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
ACENAPHTHENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
2,4-DINITROPHENOL	µg/Kg	820	U	800	U	830	U	800	U	810	UJ	800	U
4-NITROPHENOL	µg/Kg	820	U	800	U	830	U	800	U	810	UJ	800	U
DIBENZOFURAN	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
2,4-DINITROTOLUENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
DIETHYLPHTHALATE	µg/Kg	340	U	330	U	340	U	330	U	39	J	330	U
4-CHLOROPHENYL-PHENYLETHER	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
FLUORENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
4-NITROANILINE	µg/Kg	820	U	800	U	830	U	800	U	810	UJ	800	U
4,6-DINITRO-2-METHYLPHENOL	µg/Kg	820	U	800	U	830	U	800	U	810	UJ	800	U
N-NITROSODIPHENYLAMINE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
4-BROMOPHENYL-PHENYLETHER	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
HEXACHLOROBENZENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
PENTACHLOROPHENOL	µg/Kg	820	U	800	U	830	U	800	U	810	UJ	800	U
PHENANTHRENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
ANTHRACENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
CARBAZOLE	µg/Kg	340	U	N/R		340	U	330	U	330	UJ	330	U
DI-N-BUTYLPHTHALATE	µg/Kg	340	U	330	U	340	U	330	U	350	U	330	U
FLUORANTHENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
PYRENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
BUTYLBENZYLPHTHALATE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
3,3'-DICHLOROBENZIDINE	µg/Kg	340	U	1000	U	340	U	330	U	330	UJ	330	U
BENZO(A)ANTHRACENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
CHRYSENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
BIS(2-ETHYLHEXYL)PHTHALATE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
DI-N-OCTYLPHTHALATE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
BENZO(B)FLUORANTHENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
BENZO(K)FLUORANTHENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
BENZO(A)PYRENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
INDENO(1,2,3-CD)PYRENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
DIBENZ(A,H)ANTHRACENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
BENZO(G,H,I)PERYLENE	µg/Kg	340	U	330	U	340	U	330	U	330	UJ	330	U
BENZYL ALCOHOL	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
N-NITROSO-PIPERIDINE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
2-PICOLINE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
A,A-DIMETHYLPHENETHYLAMINE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
1,2-DIPHENYLHYDRAZINE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
1-NAPHTHYLAMINE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
PRONAMIDE (PROPYZAMIDE)	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	

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B-2

WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Sampl#	B07K05		B07K06		B07K07		B07GN9		B07GP4		B07KR8	
	Date	2-16-93		2-10-93		2-16-93		10-20-92		11-2-92		2-16-93	
Site	Site	2,4-D #8		2,4-D 4,3,2,1		2,4-D 7,6,5		Eq Blank		Eq Blank		Eq Blank	
Depth	Depth	13.00 - 15.00		13.00 - 15.00		---		---		---		---	
Type	Type					12'-14', 13'-15							
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-METHYLCHLORANTHRENE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
7,12-DIMETHBENZ(A)ANTHRACENE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
2,3,4,6-TETRACHLOROPHENOL	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
P-DIMETHYLAMINOAZOBENZENE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
PENTACHLOROBENZENE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
PHENACETIN	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
ETHYL METHANESULFONATE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
ANILINE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
N-NITROSO-DIMETHYLAMINE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
BENZOIC ACID	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
METHYL METHANESULFONATE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
PENTACHLORONITROBENZENE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
2,6-DICHLOROPHENOL	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
1-CHLORONAPHTHALENE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
2-NAPHTHYLAMINE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
4-AMINOBIPHENYL	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
BENZIDINE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	
N-NITROSO-DI-N-BUTYLAMINE	µg/Kg	N/R		1000	U	N/R		N/R		N/R		N/R	

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North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07GN2		B07GN3		B07GM6		B07GM7		B07GM8		B07GM9	
	Date	10-21-92		10-20-92		10-21-92		10-20-92		10-20-92		10-20-92	
	Site	H-04(E)/A-1-1		H-04(E)/A-1-2		H-04(W)/A-1-2		H-04(W)/A-1-3		H-04(W)/A-1-3		H-04(W)/A-1-3	
	Depth	7.00 - 9.00		8.00 - 10.00		9.00 - 11.00		8.00 - 9.00		8.00 - 9.00		8.00 - 9.00	
	Type									duplicate		split	
	Units	Result	Q										
PHENOL	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
BIS(2-CHLOROETHYL)ETHER	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
2-CHLOROPHENOL	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
1,3-DICHLOROBENZENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
1,4-DICHLOROBENZENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
1,2-DICHLOROBENZENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
2-METHYLPHENOL	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
BIS(2-CHLOROISOPROPYL)ETHER	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
4-METHYLPHENOL	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
N-NITROSO-DI-N-PROPYLAMINE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
HEXACHLOROETHANE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
NITROBENZENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
ISOPHORONE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
2-NITROPHENOL	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
2,4-DIMETHYLPHENOL	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
BIS(2-CHLOROETHOXY)METHANE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
2,4-DICHLOROPHENOL	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
1,2,4-TRICHLOROBENZENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
NAPHTHALENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
4-CHLOROANILINE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
HEXACHLOROBUTADIENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
4-CHLORO-3-METHYLPHENOL	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
2-METHYLNAPHTHALENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
HEXACHLOROCYCLOPENTADIENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
2,4,6-TRICHLOROPHENOL	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
2,4,5-TRICHLOROPHENOL	µg/Kg	860	U	880	U	950	U	900	U	930	U	1800	UJ
2-CHLORONAPHTHALENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
2-NITROANILINE	µg/Kg	860	U	880	U	950	U	900	U	930	U	1800	UJ
DIMETHYLPHTHALATE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
ACENAPHTHYLENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
2,6-DINITROTOLUENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
3-NITROANILINE	µg/Kg	860	U	880	U	950	U	900	U	930	U	1800	UJ

J - Indicates the compound was analyzed for an detected. The value reported is an estimated value at a concentration less than the CRQL but greater than the IDL or due to an identified quality control deficiency.

U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.

UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

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WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07GN2		B07GN3		B07GM6		B07GM7		B07GM8		B07GM9	
	Date	10-21-92		10-20-92		10-21-92		10-20-92		10-20-92		10-20-92	
Site	Site	H-04(E)/A-1-1		H-04(E)/A-1-2		H-04(W)/A-1-2		H-04(W)/A-1-3		H-04(W)/A-1-3		H-04(W)/A-1-3	
Depth	Depth	7.00 - 9.00		8.00 - 10.00		9.00 - 11.00		8.00 - 9.00		8.00 - 9.00		8.00 - 9.00	
Type	Type							duplicate		duplicate		split	
	Units	Result	Q										
ACENAPHTHENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
2,4-DINITROPHENOL	µg/Kg	860	U	880	U	950	U	900	U	930	U	1800	UJ
4-NITROPHENOL	µg/Kg	860	U	880	U	950	U	900	U	930	U	1800	UJ
DIBENZOFURAN	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
2,4-DINITROTOLUENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
DIETHYLPHTHALATE	µg/Kg	970	U	360	U	390	U	370	U	380	U	760	UJ
4-CHLOROPHENYL-PHENYLETHER	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
FLUORENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
4-NITROANILINE	µg/Kg	860	U	880	U	950	U	900	U	930	U	1800	UJ
4,6-DINITRO-2-METHYLPHENOL	µg/Kg	860	U	880	U	950	U	900	U	930	U	1800	UJ
N-NITROSODIPHENYLAMINE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
4-BROMOPHENYL-PHENYLETHER	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
HEXACHLOROENZENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
PENTACHLOROPHENOL	µg/Kg	860	U	880	U	950	U	900	U	930	U	1800	UJ
PHENANTHRENE	µg/Kg	95	J	360	U	390	U	370	U	380	U	760	UJ
ANTHRACENE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
CARBAZOLE	µg/Kg	N/R		360	U	N/R		370	U	380	U	760	UJ
DI-N-BUTYLPHTHALATE	µg/Kg	350	U	360	U	390	U	370	U	130	J	760	UJ
FLUORANTHENE	µg/Kg	220	J	360	U	390	U	370	U	380	U	760	UJ
PYRENE	µg/Kg	240	J	360	U	390	U	370	U	380	U	760	UJ
BUTYLBENZYLPHTHALATE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
3,3'-DICHLOROENZENE	µg/Kg	1100	U	360	U	1200	U	370	U	380	U	760	UJ
BENZO(A)ANTHRACENE	µg/Kg	220	J	360	U	390	U	370	U	380	U	760	UJ
CHRYSENE	µg/Kg	310	J	360	U	390	U	370	U	380	U	760	UJ
BIS(2-ETHYLHEXYL)PHTHALATE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
DI-N-OCTYLPHTHALATE	µg/Kg	350	U	360	U	390	U	370	U	380	U	760	UJ
BENZO(B)FLUORANTHENE	µg/Kg	400	U	360	U	390	U	370	U	380	U	760	UJ
BENZO(K)FLUORANTHENE	µg/Kg	340	J	360	U	390	U	370	U	380	U	760	UJ
BENZO(A)PYRENE	µg/Kg	360	U	360	U	390	U	370	U	380	U	760	UJ
INDENO(1,2,3-CD)PYRENE	µg/Kg	390	U	360	U	390	U	370	U	380	U	760	UJ
DIBENZO(A,H)ANTHRACENE	µg/Kg	140	J	360	U	390	U	370	U	380	U	760	UJ
BENZO(G,H,I)PERYLENE	µg/Kg	450	U	360	U	390	U	370	U	380	U	760	UJ
BENZYL ALCOHOL	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
N-NITROSO-PIPERIDINE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
2-PICOLINE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
A,A-DIMETHYLPHENETHYLAMINE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
1,2-DIPHENYLHYDRAZINE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
1-NAPHTHYLAMINE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
PRONAMIDE (PROPYZAMIDE)	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	

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U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.

UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp# Date Site Depth Type	B07GN2 10-21-92 H-04(E)/A-1-1 7.00 - 9.00		B07GN3 10-20-92 H-04(E)/A-1-2 8.00 - 10.00		B07GM6 10-21-92 H-04(W)/A-1-2 9.00 - 11.00		B07GH7 10-20-92 H-04(W)/A-1-3 8.00 - 9.00		B07GM8 10-20-92 H-04(W)/A-1-3 8.00 - 9.00 duplicate		B07GM9 10-20-92 H-04(W)/A-1-3 8.00 - 9.00 split	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-METHYLCHLORANTHRENE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
7,12-DIMETHBENZ(A)ANTHRACENE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
2,3,4,6-TETRACHLOROPHENOL	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
P-DIMETHYLAMINOAZOBENZENE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
PENTACHLOROBENZENE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
PHENACETIN	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
ETHYL METHANESULFONATE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
ANILINE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
N-NITROSO-DIMETHYLAMINE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
BENZOIC ACID	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
METHYL METHANESULFONATE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
PENTACHLORONITROBENZENE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
2,6-DICHLOROPHENOL	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
1-CHLORONAPHTHALENE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
2-NAPHTHYLAMINE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
4-AMINOBIIPHENYL	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
BENZIDINE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	
N-NITROSO-DI-N-BUTYLAMINE	µg/Kg	1100	U	N/R		1200	U	N/R		N/R		N/R	

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North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp# Date Site Depth Type	B07GN0 10-21-92 H-04(W)/A-2-2 7.50 - 9.50		B07GN1 10-21-92 H-04(W)/A-3-1 7.00 - 9.00		B07KP4 11-2-92 H-06-H(E)/A-11 9.00 - 11.00		B07KP5 11-2-92 H-06-H(E)/A-11 9.00 - 11.00 duplicate		B07KP6 11-2-92 H-06-H(E)/A-11 9.00 - 11.00 split		B07KP7 11-2-92 H-06-H(E)/A-11 9.00 - 11.00	
		Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result
PHENOL	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
BIS(2-CHLOROETHYL)ETHER	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
2-CHLOROPHENOL	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
1,3-DICHLOROBENZENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
1,4-DICHLOROBENZENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
1,2-DICHLOROBENZENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
2-METHYLPHENOL	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
BIS(2-CHLOROISOPROPYL)ETHER	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
4-METHYLPHENOL	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
N-NITROSO-DI-N-PROPYLAMINE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
HEXACHLOROETHANE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
NITROBENZENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
ISOPHORONE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
2-NITROPHENOL	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
2,4-DIMETHYLPHENOL	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
BIS(2-CHLOROETHOXY)METHANE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
2,4-DICHLOROPHENOL	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
1,2,4-TRICHLOROBENZENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
NAPHTHALENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
4-CHLOROANILINE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
HEXACHLOROBUTADIENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
4-CHLORO-3-METHYLPHENOL	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
2-METHYLNAPHTHALENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
HEXACHLOROCYCLOPENTADIENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
2,4,6-TRICHLOROPHENOL	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
2,4,5-TRICHLOROPHENOL	µg/Kg	910	U	900	U	850	UJ	850	UJ	1700	U	890	U
2-CHLORONAPHTHALENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
2-NITROANILINE	µg/Kg	910	U	900	U	850	UJ	850	UJ	1700	U	890	U
DIMETHYLPHTHALATE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
ACENAPHTHYLENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
2,6-DINITROTOLUENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
3-NITROANILINE	µg/Kg	910	U	900	U	850	UJ	850	UJ	1700	U	890	U

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UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07GN0		B07GN1		B07KP4		B07KP5		B07KP6		B07KP7	
	Date	10-21-92		10-21-92		11-2-92		11-2-92		11-2-92		11-2-92	
Site	Depth	H-04(W)/A-2-2		H-04(W)/A-3-1		H-06-H(E)/A-11		H-06-H(E)/A-11		H-06-H(E)/A-11		H-06-H(E)/A-11	
Type	Type	7.50 - 9.50		7.00 - 9.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ACENAPHTHENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
2,4-DINITROPHENOL	µg/Kg	910	U	900	U	850	UJ	850	UJ	1700	U	890	U
4-NITROPHENOL	µg/Kg	910	U	900	U	850	UJ	850	UJ	1700	U	890	U
DIBENZOFURAN	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
2,4-DINITROTOLUENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
DIETHYLPHTHALATE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
4-CHLOROPHENYL-PHENYLETHER	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
FLUORENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
4-NITROANILINE	µg/Kg	910	U	900	U	850	UJ	850	UJ	1700	U	890	U
4,6-DINITRO-2-METHYLPHENOL	µg/Kg	910	U	900	U	850	UJ	850	UJ	1700	U	890	U
N-NITROSODIPHENYLAMINE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
4-BROMOPHENYL-PHENYLETHER	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
HEXACHLOROBENZENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
PENTACHLOROPHENOL	µg/Kg	910	U	900	U	850	UJ	850	UJ	1700	U	890	U
PHENANTHRENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
ANTHRACENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
CARBAZOLE	µg/Kg	N/R		N/R		350	UJ	350	UJ	700	U	N/R	
DI-N-BUTYLPHTHALATE	µg/Kg	380	U	54	J	350	U	350	U	260	J	370	U
FLUORANTHENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
PYRENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
BUTYLBENZYLPHTHALATE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
3,3'-DICHLOROBENZIDINE	µg/Kg	1100	U	1100	U	350	UJ	350	UJ	700	U	1100	U
BENZO(A)ANTHRACENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
CHRYSENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
BIS(2-ETHYLHEXYL)PHTHALATE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
DI-N-OCTYLPHTHALATE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
BENZO(B)FLUORANTHENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
BENZO(K)FLUORANTHENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
BENZO(A)PYRENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
INDENO(1,2,3-CD)PYRENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
DIBENZ(A,H)ANTHRACENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
BENZO(G,H,I)PERYLENE	µg/Kg	380	U	370	U	350	UJ	350	UJ	700	U	370	U
BENZYL ALCOHOL	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
N-NITROSO-PIPERIDINE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
2-PICOLINE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
A,A-DIMETHYLPHENETHYLAMINE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
1,2-DIPHENYLHYDRAZINE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
1-NAPHTHYLAMINE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
PRONAMIDE (PROPYZAMIDE)	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U

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WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07GN0		B07GN1		B07KP4		B07KP5		B07KP6		B07KP7	
	Date	10-21-92		10-21-92		11-2-92		11-2-92		11-2-92		11-2-92	
	Site	H-04(W)/A-2-2		H-04(W)/A-3-1		H-06-H(E)/A-11		H-06-H(E)/A-11		H-06-H(E)/A-11		H-06-H(E)/A-11	
	Depth	7.50 - 9.50		7.00 - 9.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
	Type							duplicate		split			
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-METHYLCHLORANTHRENE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
7,12-DIMETHBENZ(A)ANTHRACENE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
2,3,4,6-TETRACHLOROPHENOL	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
P-DIMETHYLAMINOAZOBENZENE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
PENTACHLOROBENZENE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
PHENACETIN	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
ETHYL METHANESULFONATE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
ANILINE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
N-NITROSO-DIMETHYLAMINE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
BENZOIC ACID	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
METHYL METHANESULFONATE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
PENTACHLORONITROBENZENE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
2,6-DICHLOROPHENOL	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
1-CHLORONAPHTHALENE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
2-NAPHTHYLAMINE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
4-AMINOBIIPHENYL	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
BENZIDINE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U
N-NITROSO-DI-N-BUTYLAMINE	µg/Kg	1100	U	1100	U	N/R		N/R		N/R		1100	U

J - Indicates the compound was analyzed for an detected. The value reported is an estimated value at a concentration less than the CRQL but greater than the IDL or due to an identified quality control deficiency.

U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.

UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

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WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07KP8		B07KP9		B07GP2		B07GP3		B07KQ0		B07GN8	
	Date	11-2-92		11-3-92		10-30-92		11-2-92		11-3-92		10-21-92	
Site	H-06-H(E)/A-12	H-06-H(E)/A-12		H-06-H(E)/A-12		H-06-H(E)/A-2-1		H-06-H(E)/A-6-1		H-06-H(E)/A-7-		H-06-H(W)/A-16	
Depth	9.00 - 11.00	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
Type													
Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
PHENOL	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
BIS(2-CHLOROETHYL)ETHER	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
2-CHLOROPHENOL	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
1,3-DICHLOROBENZENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
1,4-DICHLOROBENZENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
1,2-DICHLOROBENZENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
2-METHYLPHENOL	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
BIS(2-CHLOROISOPROPYL)ETHER	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
4-METHYLPHENOL	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
N-NITROSO-DI-N-PROPYLAMINE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
HEXACHLOROETHANE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
NITROBENZENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
ISOPHORONE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
2-NITROPHENOL	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
2,4-DIMETHYLPHENOL	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
BIS(2-CHLOROETHOXY)METHANE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
2,4-DICHLOROPHENOL	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
1,2,4-TRICHLOROBENZENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
NAPHTHALENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
4-CHLOROANILINE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
HEXACHLOROBUTADIENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
4-CHLORO-3-METHYLPHENOL	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
2-METHYLNAPHTHALENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
HEXACHLOROCYCLOPENTADIENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
2,4,6-TRICHLOROPHENOL	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
2,4,5-TRICHLOROPHENOL	µg/Kg	840	UJ	840	U	840	U	830	U	860	U	830	U
2-CHLORONAPHTHALENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
2-NITROANILINE	µg/Kg	840	UJ	840	U	840	U	830	U	860	U	830	U
DIMETHYLPHTHALATE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
ACENAPHTHYLENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
2,6-DINITROTOLUENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
3-NITROANILINE	µg/Kg	840	UJ	840	U	840	U	830	U	860	U	830	U

J - Indicates the compound was analyzed for an detected. The value reported is an estimated value at a concentration less than the CRQL but greater than the IDL or due to an identified quality control deficiency.

U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.

UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

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WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp# Date Site Depth Type	B07KP8 11-2-92 H-06-H(E)/A-12 9.00 - 11.00		B07KP9 11-3-92 H-06-H(E)/A-12 9.00 - 11.00		B07GP2 10-30-92 H-06-H(E)/A-2- 9.00 - 11.00		B07GP3 11-2-92 H-06-H(E)/A-6- 9.00 - 11.00		B07KQ0 11-3-92 H-06-H(E)/A-7- 9.00 - 11.00		B07GN8 10-21-92 H-06-H(W)/A-16 9.00 - 11.00	
		Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result
ACENAPHTHENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
2,4-DINITROPHENOL	µg/Kg	840	UJ	840	U	840	U	830	U	860	U	830	U
4-NITROPHENOL	µg/Kg	840	UJ	840	U	840	U	830	U	860	U	830	U
DIBENZOFURAN	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
2,4-DINITROTOLUENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
DIETHYLPHTHALATE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
4-CHLOROPHENYL-PHENYLETHER	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
FLUORENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
4-NITROANILINE	µg/Kg	840	UJ	840	U	840	U	830	U	860	U	830	U
4,6-DINITRO-2-METHYLPHENOL	µg/Kg	840	UJ	840	U	840	U	830	U	860	U	830	U
N-NITROSODIPHENYLAMINE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
4-BROMOPHENYL-PHENYLETHER	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
HEXACHLOROBENZENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
PENTACHLOROPHENOL	µg/Kg	840	UJ	840	U	840	U	830	U	860	U	830	U
PHENANTHRENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
ANTHRACENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
CARBAZOLE	µg/Kg	350	UJ	N/R		N/R		N/R		N/R		N/R	
DI-N-BUTYLPHTHALATE	µg/Kg	350	U	350	U	110	J	91	J	350	U	340	U
FLUORANTHENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
PYRENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
BUTYLBENZYLPHTHALATE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
3,3'-DICHLOROBENZIDINE	µg/Kg	350	UJ	1100	U	1100	U	1000	U	1100	U	1000	U
BENZO(A)ANTHRACENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
CHRYSENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
BIS(2-ETHYLHEXYL)PHTHALATE	µg/Kg	350	U	350	U	110	J	340	U	82	J	340	U
DI-N-OCTYLPHTHALATE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
BENZO(B)FLUORANTHENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
BENZO(K)FLUORANTHENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
BENZO(A)PYRENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
INDENO(1,2,3-CD)PYRENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
DIBENZ(A,H)ANTHRACENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
BENZO(G,H,I)PERYLENE	µg/Kg	350	UJ	350	U	350	U	340	U	350	U	340	U
BENZYL ALCOHOL	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
N-NITROSO-PIPERIDINE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
2-PICOLINE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
A,A-DIMETHYLPHENETHYLAMINE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
1,2-DIPHENYLHYDRAZINE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
1-NAPHTHYLAMINE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
PRONAMIDE (PROPYLAMIDE)	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U

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U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.

UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

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WHC-SD-EN-TL-194, Rev. 0

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07KP8		B07KP9		B07GP2		B07GP3		B07KQ0		B07GN8	
	Date	11-2-92		11-3-92		10-30-92		11-2-92		11-3-92		10-21-92	
Site	Depth	H-06-H(E)/A-12		H-06-H(E)/A-12		H-06-H(E)/A-2-		H-06-H(E)/A-6-		H-06-H(E)/A-7-		H-06-H(W)/A-16	
Type		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
	Units	Result	Q										
3-METHYLCHLORANTHRENE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
7,12-DIMETHBENZ(A)ANTHRACENE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
2,3,4,6-TETRACHLOROPHENOL	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
P-DIMETHYLAMINOAZOBENZENE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
PENTACHLOROBENZENE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
PHENACETIN	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
ETHYL METHANESULFONATE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
ANILINE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
N-NITROSO-DIMETHYLAMINE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
BENZOIC ACID	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
METHYL METHANESULFONATE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
PENTACHLORONITROBENZENE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
2,6-DICHLOROPHENOL	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
1-CHLORONAPHTHALENE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
2-NAPHTHYLAMINE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
4-AMINOBIPHENYL	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
BENZIDINE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U
N-NITROSO-DI-N-BUTYLAMINE	µg/Kg	N/R		1100	U	1100	U	1000	U	1100	U	1000	U

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N/R - Indicates not reported by the laboratory.

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WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07GP0		B07GP1		B07GN4		B07GN5		B07GN6		B07GN7	
	Date	10-30-92		10-30-92		10-21-92		10-21-92		10-20-92		10-21-92	
Site	Depth	H-06-H(W)/A-19		H-06-H(W)/A-19		H-06-H(W)/A-2-		H-06-H(W)/A-5-		H-06-H(W)/A-5-		H-06-H(W)/A-7-	
Type	Type	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
Units	Result	Q											
PHENOL	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
BIS(2-CHLOROETHYL)ETHER	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
2-CHLOROPHENOL	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
1,3-DICHLOROBENZENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
1,4-DICHLOROBENZENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
1,2-DICHLOROBENZENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
2-METHYLPHENOL	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
BIS(2-CHLOROISOPROPYL)ETHER	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
4-METHYLPHENOL	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
N-NITROSO-D1-N-PROPYLAMINE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
HEXACHLOROETHANE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
NITROBENZENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
ISOPHORONE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
2-NITROPHENOL	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
2,4-DIMETHYLPHENOL	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
BIS(2-CHLOROETHOXY)METHANE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
2,4-DICHLOROPHENOL	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
1,2,4-TRICHLOROBENZENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
NAPHTHALENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
4-CHLOROANILINE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
HEXACHLOROBUTADIENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
4-CHLORO-3-METHYLPHENOL	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
2-METHYLNAPHTHALENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
HEXACHLOROCYCLOPENTADIENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
2,4,6-TRICHLOROPHENOL	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
2,4,5-TRICHLOROPHENOL	µg/Kg	830	U	840	UJ	830	U	830	U	840	U	870	U
2-CHLORONAPHTHALENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
2-NITROANILINE	µg/Kg	830	U	840	UJ	830	U	830	U	840	U	870	U
DIMETHYLPHTHALATE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
ACENAPHTHYLENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
2,6-DINITROTOLUENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
3-NITROANILINE	µg/Kg	830	U	840	UJ	830	U	830	U	840	U	870	U

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UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp# Date Site Depth Type	B07GP0 10-30-92 H-06-H(W)/A-19 9.00 - 11.00		B07GP1 10-30-92 H-06-H(W)/A-19 9.00 - 11.00		B07GN4 10-21-92 H-06-H(W)/A-2- 9.00 - 11.00		B07GN5 10-21-92 H-06-H(W)/A-5- 9.00 - 11.00		B07GN6 10-20-92 H-06-H(W)/A-5- 9.00 - 11.00		B07GN7 10-21-92 H-06-H(W)/A-7- 9.00 - 11.00	
		Units	Result	Q	Result								
ACENAPHTHENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
2,4-DINITROPHENOL	µg/Kg	830	U	840	UJ	830	U	830	U	840	U	870	U
4-NITROPHENOL	µg/Kg	830	U	840	UJ	830	U	830	U	840	U	870	U
DIBENZOFURAN	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
2,4-DINITROTOLUENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
DIETHYLPHTHALATE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
4-CHLOROPHENYL-PHENYLETHER	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
FLUORENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
4-NITROANILINE	µg/Kg	830	U	840	UJ	830	U	830	U	840	U	870	U
4,6-DINITRO-2-METHYLPHENOL	µg/Kg	830	U	840	UJ	830	U	830	U	840	U	870	U
N-NITROSODIPHENYLAMINE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
4-BROMOPHENYL-PHENYLETHER	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
HEXACHLOROBENZENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
PENTACHLOROPHENOL	µg/Kg	830	U	840	UJ	830	U	830	U	840	U	870	U
PHENANTHRENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
ANTHRACENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
CARBAZOLE	µg/Kg	N/R		350	UJ	N/R		N/R		350	U	N/R	
DI-N-BUTYLPHTHALATE	µg/Kg	400	U	350	U	340	U	340	U	66	J	360	U
FLUORANTHENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
PYRENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
BUTYLBENZYLPHTHALATE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
3,3'-DICHLOROBENZIDINE	µg/Kg	1000	U	350	UJ	1000	U	1000	U	350	U	1100	U
BENZO(A)ANTHRACENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
CHRYSENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
BIS(2-ETHYLHEXYL)PHTHALATE	µg/Kg	340	U	350	U	340	U	340	U	350	U	360	U
DI-N-OCTYLPHTHALATE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
BENZO(B)FLUORANTHENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
BENZO(K)FLUORANTHENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
BENZO(A)PYRENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
INDENO(1,2,3-CD)PYRENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
DIBENZO(A,H)ANTHRACENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
BENZO(G,H,I)PERYLENE	µg/Kg	340	U	350	UJ	340	U	340	U	350	U	360	U
BENZYL ALCOHOL	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
N-NITROSO-PIPERIDINE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
2-PICOLINE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
A,A-DIMETHYLPHENETHYLAMINE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
1,2-DIPHENYLHYDRAZINE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
1-NAPHTHYLAMINE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
PRONAMIDE (PROPYZAMIDE)	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U

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North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07GP0		B07GP1		B07GN4		B07GN5		B07GN6		B07GN7	
	Date	10-30-92		10-30-92		10-21-92		10-21-92		10-20-92		10-21-92	
	Site	H-06-H(W)/A-19		H-06-H(W)/A-19		H-06-H(W)/A-2-		H-06-H(W)/A-5-		H-06-H(W)/A-5-		H-06-H(W)/A-7-	
	Depth	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
	Type												
	Units	Result	Q										
3-METHYLCHLORANTHRENE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
7,12-DIMETHBENZ(A)ANTHRACENE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
2,3,4,6-TETRACHLOROPHENOL	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
P-DIMETHYLAMINOAZOBENZENE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
PENTACHLOROBENZENE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
PHENACETIN	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
ETHYL METHANESULFONATE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
ANILINE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
N-NITROSO-DIMETHYLAMINE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
BENZOIC ACID	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
METHYL METHANESULFONATE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
PENTACHLORONITROBENZENE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
2,6-DICHLOROPHENOL	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
1-CHLORONAPHTHALENE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
2-NAPHTHYLAMINE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
4-AMINOBIIPHENYL	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
BENZIDINE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U
N-NITROSO-DI-N-BUTYLAMINE	µg/Kg	1000	U	N/R		1000	U	1000	U	N/R		1100	U

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North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp# Date Site Depth Type	B07KQ2 12-15-92 H-06-L Drywell 0.00 - 3.00		B07KQ3 12-16-92 H-06-L Rock Pit 13.50 - 15.50		B07KR5 2-16-93 H-07-H Drywell --- -16 ft		B07KR6 2-16-93 H-07-H Drywell --- -16 ft dupli.		B07KR7 2-16-93 H-07-H Drywell --- -16 ft split		B07KQ1 12-14-92 H-81-R Drywell 4.00 - 6.00	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PHENOL	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
BIS(2-CHLOROETHYL)ETHER	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
2-CHLOROPHENOL	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
1,3-DICHLOROBENZENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
1,4-DICHLOROBENZENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
1,2-DICHLOROBENZENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
2-METHYLPHENOL	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
BIS(2-CHLOROISOPROPYL)ETHER	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
4-METHYLPHENOL	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
N-NITROSO-DI-N-PROPYLAMINE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
HEXACHLOROETHANE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
NITROBENZENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
ISOPHORONE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
2-NITROPHENOL	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
2,4-DIMETHYLPHENOL	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
BIS(2-CHLOROETHOXY)METHANE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
2,4-DICHLOROPHENOL	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
1,2,4-TRICHLOROBENZENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
NAPHTHALENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
4-CHLOROANILINE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
HEXACHLOROBUTADIENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
4-CHLORO-3-METHYLPHENOL	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
2-METHYLNAPHTHALENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
HEXACHLOROCYCLOPENTADIENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
2,4,6-TRICHLOROPHENOL	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
2,4,5-TRICHLOROPHENOL	µg/Kg	910	U	1000	U	880	U	880	U	1800	U	870	U
2-CHLORONAPHTHALENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
2-NITROANILINE	µg/Kg	910	U	1000	U	880	U	880	U	1800	U	870	U
DIMETHYLPHTHALATE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
ACENAPHTHYLENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
2,6-DINITROTOLUENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
3-NITROANILINE	µg/Kg	910	U	1000	U	880	U	880	U	1800	U	870	U

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North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07KQ2		B07KQ3		B07KR5		B07KR6		B07KR7		B07KQ1	
	Date Site Depth Type	12-15-92 H-06-L Drywell 0.00 - 3.00		12-16-92 H-06-L Rock Pit 13.50 - 15.50		2-16-93 H-07-H Drywell --- -16 ft		2-16-93 H-07-H Drywell --- -16 ft dupli.		2-16-93 H-07-H Drywell --- -16 ft split		12-14-92 H-81-R Drywell 4.00 - 6.00	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ACENAPHTHENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
2,4-DINITROPHENOL	µg/Kg	910	U	1000	U	880	U	880	U	1800	U	870	U
4-NITROPHENOL	µg/Kg	910	U	1000	U	880	U	880	U	1800	U	870	U
DIBENZOFURAN	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
2,4-DINITROTOLUENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
DIETHYLPHTHALATE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
4-CHLOROPHENYL-PHENYLETHER	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
FLUORENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
4-NITROANILINE	µg/Kg	910	U	1000	U	880	U	880	U	1800	U	870	U
4,6-DINITRO-2-METHYLPHENOL	µg/Kg	910	U	1000	U	880	U	880	U	1800	U	870	U
N-NITROSODIPHENYLAMINE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
4-BROMOPHENYL-PHENYLETHER	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
HEXACHLOROBENZENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
PENTACHLOROPHENOL	µg/Kg	910	U	1000	U	880	U	880	U	1800	U	870	U
PHENANTHRENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
ANTHRACENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
CARBAZOLE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
DI-N-BUTYLPHTHALATE	µg/Kg	39	J	410	U	360	U	360	U	730	U	360	U
FLUORANTHENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
PYRENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
BUTYLBENZYLPHTHALATE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
3,3'-DICHLOROBENZIDINE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
BENZO(A)ANTHRACENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
CHRYSENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
BIS(2-ETHYLHEXYL)PHTHALATE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
DI-N-OCTYLPHTHALATE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
BENZO(B)FLUORANTHENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
BENZO(K)FLUORANTHENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
BENZO(A)PYRENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
INDENO(1,2,3-CD)PYRENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
DIBENZ(A,H)ANTHRACENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
BENZO(G,H,I)PERYLENE	µg/Kg	370	U	410	U	360	U	360	U	730	U	360	U
BENZYL ALCOHOL	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
N-NITROSO-PIPERIDINE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
2-PICOLINE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
A,A-DIMETHYLPHENETHYLAMINE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
1,2-DIPHENYLHYDRAZINE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
1-NAPHTHYLAMINE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
PRONAMIDE (PROPYZAMIDE)	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	

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North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07KQ2		B07KQ3		B07KR5		B07KR6		B07KR7		B07KQ1	
	Date Site Depth Type	12-15-92 H-06-L Drywell 0.00 - 3.00		12-16-92 H-06-L Rock Pit 13.50 - 15.50		2-16-93 H-07-H Drywell --- -16 ft		2-16-93 H-07-H Drywell --- -16 ft dupli.		2-16-93 H-07-H Drywell --- -16 ft split		12-14-92 H-81-R Drywell 4.00 - 6.00	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-METHYLCHLORANTHRENE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
7,12-DIMETHBENZ(A)ANTHRACENE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
2,3,4,6-TETRACHLOROPHENOL	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
P-DIMETHYLAMINOAZOBENZENE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
PENTACHLOROBENZENE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
PHENACETIN	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
ETHYL METHANESULFONATE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
ANILINE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
N-NITROSO-DIMETHYLAMINE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
BENZOIC ACID	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
METHYL METHANESULFONATE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
PENTACHLORONITROBENZENE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
2,6-DICHLOROPHENOL	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
1-CHLORONAPHTHALENE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
2-NAPHTHYLAMINE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
4-AMINOBIIPHENYL	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
BENZIDINE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
N-NITROSO-DI-N-BUTYLAMINE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	

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North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07GM2		B07GM0		B07GM1		B07GM3		B07GM4		B07GM5	
	Date	10-13-92		10-12-92		10-12-92		10-14-92		10-14-92		10-14-92	
Site	Site	H-83-L/A-1-3		H-83-L/A-2-2		H-83-L/A-2-3		H-83-L/A-3-2		H-83-L/A-3-3		H-83-L/A-4-1	
Depth	Depth	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
Type	Type												
	Units	Result	Q										
PHENOL	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
BIS(2-CHLOROETHYL)ETHER	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
2-CHLOROPHENOL	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
1,3-DICHLOROBENZENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
1,4-DICHLOROBENZENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
1,2-DICHLOROBENZENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
2-METHYLPHENOL	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
BIS(2-CHLOROISOPROPYL)ETHER	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
4-METHYLPHENOL	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
N-NITROSO-DI-N-PROPYLAMINE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
HEXACHLOROETHANE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
NITROBENZENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
ISOPHORONE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
2-NITROPHENOL	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
2,4-DIMETHYLPHENOL	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
BIS(2-CHLOROETHOXY)METHANE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
2,4-DICHLOROPHENOL	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
1,2,4-TRICHLOROBENZENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
NAPHTHALENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
4-CHLOROANILINE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
HEXACHLOROBUTADIENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
4-CHLORO-3-METHYLPHENOL	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
2-METHYLNAPHTHALENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
HEXACHLOROCYCLOPENTADIENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
2,4,6-TRICHLOROPHENOL	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
2,4,5-TRICHLOROPHENOL	µg/Kg	800	U	800	U	820	U	820	U	800	U	800	U
2-CHLORONAPHTHALENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
2-NITROANILINE	µg/Kg	800	U	800	U	820	U	820	U	800	U	800	U
DIMETHYLPHTHALATE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
ACENAPHTHYLENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
2,6-DINITROTOLUENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
3-NITROANILINE	µg/Kg	800	U	800	U	820	U	820	U	800	U	800	U

J - Indicates the compound was analyzed for an detected. The value reported is an estimated value at a concentration less than the CRQL but greater than the IDL or due to an identified quality control deficiency.

U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.

UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

B-19

WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07GM2		B07GM0		B07GM1		B07GM3		B07GM4		B07GM5	
	Date	10-13-92		10-12-92		10-12-92		10-14-92		10-14-92		10-14-92	
Site	H-83-L/A-1-3	H-83-L/A-1-3		H-83-L/A-2-2		H-83-L/A-2-3		H-83-L/A-3-2		H-83-L/A-3-3		H-83-L/A-4-1	
Depth	9.00 - 11.00	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
Type													
	Units	Result	Q										
ACENAPHTHENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
2,4-DINITROPHENOL	µg/Kg	800	U	800	U	820	U	820	U	800	U	800	U
4-NITROPHENOL	µg/Kg	800	U	800	U	820	U	820	U	800	U	800	U
DIBENZOFURAN	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
2,4-DINITROTOLUENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
DIETHYLPHTHALATE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
4-CHLOROPHENYL-PHENYLETHER	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
FLUORENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
4-NITROANILINE	µg/Kg	800	U	800	U	820	U	820	U	800	U	800	U
4,6-DINITRO-2-METHYLPHENOL	µg/Kg	800	U	800	U	820	U	820	U	800	U	800	U
N-NITROSODIPHENYLAMINE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
4-BROMOPHENYL-PHENYLETHER	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
HEXACHLOROBENZENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
PENTACHLOROPHENOL	µg/Kg	800	U	800	U	820	U	820	U	800	U	800	U
PHENANTHRENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
ANTHRACENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
CARBAZOLE	µg/Kg	N/R		N/R		340	U	340	U	N/R		N/R	
DI-N-BUTYLPHTHALATE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
FLUORANTHENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
PYRENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
BUTYLBENZYLPHTHALATE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
3,3'-DICHLOROBENZIDINE	µg/Kg	1000	U	1000	U	340	U	340	U	1000	U	1000	U
BENZO(A)ANTHRACENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
CHRYSENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
BIS(2-ETHYLHEXYL)PHTHALATE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
DI-N-OCTYLPHTHALATE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
BENZO(B)FLUORANTHENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
BENZO(K)FLUORANTHENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
BENZO(A)PYRENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
INDENO(1,2,3-CD)PYRENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
DIBENZ(A,H)ANTHRACENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
BENZO(G,H,I)PERYLENE	µg/Kg	330	U	330	U	340	U	340	U	330	U	330	U
BENZYL ALCOHOL	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
N-NITROSO-PIPERIDINE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
2-PICOLINE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
A,A-DIMETHYLPHENETHYLAMINE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
1,2-DIPHENYLHYDRAZINE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
1-NAPHTHYLAMINE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
PRONAMIDE (PROPYZAMIDE)	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U

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N/R - Indicates not reported by the laboratory.

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp# Date Site Depth Type	B07GM2 10-13-92 H-83-L/A-1-3 9.00 - 11.00		B07GM0 10-12-92 H-83-L/A-2-2 9.00 - 11.00		B07GM1 10-12-92 H-83-L/A-2-3 9.00 - 11.00		B07GM3 10-14-92 H-83-L/A-3-2 9.00 - 11.00		B07GM4 10-14-92 H-83-L/A-3-3 9.00 - 11.00		B07GM5 10-14-92 H-83-L/A-4-1 9.00 - 11.00	
	Units	Result	Q										
3-METHYLCHLORANTHRENE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
7,12-DIMETHBENZ(A)ANTHRACENE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
2,3,4,6-TETRACHLOROPHENOL	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
P-DIMETHYLAMINOAZOBENZENE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
PENTACHLOROBENZENE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
PHENACETIN	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
ETHYL METHANESULFONATE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
ANILINE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
N-NITROSO-DIMETHYLAMINE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
BENZOIC ACID	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
METHYL METHANESULFONATE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
PENTACHLORONITROBENZENE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
2,6-DICHLOROPHENOL	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
1-CHLORONAPHTHALENE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
2-NAPHTHYLAMINE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
4-AMINOSIPHENYL	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
BENZIDINE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U
N-NITROSO-DI-N-BUTYLAMINE	µg/Kg	1000	U	1000	U	N/R		N/R		1000	U	1000	U

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UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

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North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp#	B07KQ4	
	Date	2-10-93	
Depth	Site	Homestead Cist	
	Type	---	
	8in in sedim.		
	Units	Result	Q
PHENOL	µg/Kg	380	U
BIS(2-CHLOROETHYL)ETHER	µg/Kg	380	U
2-CHLOROPHENOL	µg/Kg	380	U
1,3-DICHLOROBENZENE	µg/Kg	380	U
1,4-DICHLOROBENZENE	µg/Kg	380	U
1,2-DICHLOROBENZENE	µg/Kg	380	U
2-METHYLPHENOL	µg/Kg	380	U
BIS(2-CHLOROISOPROPYL)ETHER	µg/Kg	380	U
4-METHYLPHENOL	µg/Kg	380	U
N-NITROSO-DI-N-PROPYLAMINE	µg/Kg	380	U
HEXACHLOROETHANE	µg/Kg	380	U
NITROBENZENE	µg/Kg	380	U
ISOPHORONE	µg/Kg	380	U
2-NITROPHENOL	µg/Kg	380	U
2,4-DIMETHYLPHENOL	µg/Kg	380	U
BIS(2-CHLOROETHOXY)METHANE	µg/Kg	380	U
2,4-DICHLOROPHENOL	µg/Kg	380	U
1,2,4-TRICHLOROBENZENE	µg/Kg	380	U
NAPHTHALENE	µg/Kg	380	U
4-CHLOROANILINE	µg/Kg	380	U
HEXACHLOROBUTADIENE	µg/Kg	380	U
4-CHLORO-3-METHYLPHENOL	µg/Kg	380	U
2-METHYLNAPHTHALENE	µg/Kg	380	U
HEXACHLOROCYCLOPENTADIENE	µg/Kg	380	U
2,4,6-TRICHLOROPHENOL	µg/Kg	380	U
2,4,5-TRICHLOROPHENOL	µg/Kg	930	U
2-CHLORONAPHTHALENE	µg/Kg	380	U
2-NITROANILINE	µg/Kg	930	U
DIMETHYLPHTHALATE	µg/Kg	380	U
ACENAPHTHYLENE	µg/Kg	380	U
2,6-DINITROTOLUENE	µg/Kg	380	U
3-NITROANILINE	µg/Kg	930	U

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UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp# Date Site Depth Type		
	Units	Result	Q
ACENAPHTHENE	µg/Kg	380	U
2,4-DINITROPHENOL	µg/Kg	930	U
4-NITROPHENOL	µg/Kg	930	U
DIBENZOFURAN	µg/Kg	380	U
2,4-DINITROTOLUENE	µg/Kg	380	U
DIETHYLPHTHALATE	µg/Kg	380	U
4-CHLOROPHENYL-PHENYLETHER	µg/Kg	380	U
FLUORENE	µg/Kg	380	U
4-NITROANILINE	µg/Kg	930	U
4,6-DINITRO-2-METHYLPHENOL	µg/Kg	930	U
N-NITROSODIPHENYLAMINE	µg/Kg	380	U
4-BROMOPHENYL-PHENYLETHER	µg/Kg	380	U
HEXACHLOROBENZENE	µg/Kg	380	U
PENTACHLOROPHENOL	µg/Kg	930	U
PHENANTHRENE	µg/Kg	380	U
ANTHRACENE	µg/Kg	380	U
CARBAZOLE	µg/Kg	380	U
DI-N-BUTYLPHTHALATE	µg/Kg	380	U
FLUORANTHENE	µg/Kg	380	U
PYRENE	µg/Kg	380	U
BUTYLBENZYLPHTHALATE	µg/Kg	380	U
3,3'-DICHLOROBENZIDINE	µg/Kg	380	U
BENZO(A)ANTHRACENE	µg/Kg	380	U
CHRYSENE	µg/Kg	380	U
BIS(2-ETHYLHEXYL)PHTHALATE	µg/Kg	380	U
DI-N-OCTYLPHTHALATE	µg/Kg	380	U
BENZO(B)FLUORANTHENE	µg/Kg	380	U
BENZO(K)FLUORANTHENE	µg/Kg	380	U
BENZO(A)PYRENE	µg/Kg	380	U
INDENO(1,2,3-CD)PYRENE	µg/Kg	380	U
DIBENZ(A,H)ANTHRACENE	µg/Kg	380	U
BENZO(G,H,1)PERYLENE	µg/Kg	380	U
BENZYL ALCOHOL	µg/Kg	N/R	
N-NITROSO-PIPERIDINE	µg/Kg	N/R	
2-PICOLINE	µg/Kg	N/R	
A,A-DIMETHYLPHENETHYLAMINE	µg/Kg	N/R	
1,2-DIPHENYLHYDRAZINE	µg/Kg	N/R	
1-NAPHTHYLAMINE	µg/Kg	N/R	
PRONAMIDE (PROPYZAMIDE)	µg/Kg	N/R	

J - Indicates the compound was analyzed for an detected. The value reported is an estimated value at a concentration less than the CRQL but greater than the IDL or due to an identified quality control deficiency.

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N/R - Indicates not reported by the laboratory.

North Slope ERA Data Validation Summary
Semivolatile Organic Analysis Results

Parameter	Samp# Date Site Depth Type	B07KQ4 2-10-93 Homestead Cist --- Bin in sedim.	
	Units	Result	Q
3-METHYLCHLORANTHRENE	µg/Kg	N/R	
7,12-DIMETHBENZ(A)ANTHRACENE	µg/Kg	N/R	
2,3,4,6-TETRACHLOROPHENOL	µg/Kg	N/R	
P-DIMETHYLAMINOAZOBENZENE	µg/Kg	N/R	
PENTACHLOROBENZENE	µg/Kg	N/R	
PHENACETIN	µg/Kg	N/R	
ETHYL METHANESULFONATE	µg/Kg	N/R	
ANILINE	µg/Kg	N/R	
N-NITROSO-DIMETHYLAMINE	µg/Kg	N/R	
BENZOIC ACID	µg/Kg	N/R	
METHYL METHANESULFONATE	µg/Kg	N/R	
PENTACHLORONITROBENZENE	µg/Kg	N/R	
2,6-DICHLOROPHENOL	µg/Kg	N/R	
1-CHLORONAPHTHALENE	µg/Kg	N/R	
2-NAPHTHYLAMINE	µg/Kg	N/R	
4-AMINOBIIPHENYL	µg/Kg	N/R	
BENZIDINE	µg/Kg	N/R	
N-NITROSO-DI-N-BUTYLAMINE	µg/Kg	N/R	

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U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.

UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

APPENDIX C

ORGANOCHLORINE PESTICIDE/PCB VALIDATED DATA SUMMARY

North Slope ERA Data Validation Summary Report
Organochlorine Pesticide and PCB Analysis Results

Parameter	Samp#	B07KQ7		B07KQ5		B07GN9		B07GP4		B07KR8		B07GN2	
	Date	2-16-93		2-16-93		10-20-92		11-2-92		2-16-93		10-21-92	
Site	Site	2,4-D		2,4-D		Eq Blank		Eq Blank		Eq Blank		H-04(E)	
Depth	Depth	---		13.00 - 15.00		---		---		---		7.00 - 9.00	
Type	Type	7,6,5		8		(sand)		(sand)		(sand)		A-1-1	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALPHA-BHC	µg/Kg	1.800	U	1.800	U	1.700	U	1.700	UJ	1.700	U	10.000	U
BETA-BHC	µg/Kg	1.800	U	1.800	U	1.700	U	1.700	UJ	1.700	U	10.000	U
DELTA-BHC	µg/Kg	1.800	U	1.800	U	1.700	U	1.700	UJ	1.700	U	20.000	U
GAMMA-BHC (LINDANE)	µg/Kg	1.800	U	1.800	U	1.700	U	1.700	UJ	1.700	U	10.000	U
HEPTACHLOR	µg/Kg	1.800	U	1.800	U	1.700	U	1.700	UJ	1.700	U	10.000	U
ALORIN	µg/Kg	1.800	U	1.800	U	1.700	U	1.700	UJ	1.700	U	10.000	U
HEPTACHLOR EPOXIDE	µg/Kg	1.800	U	1.800	U	1.700	U	1.700	UJ	1.700	U	60.000	U
ENDOSULFAN I	µg/Kg	1.800	U	1.800	U	1.700	U	1.700	UJ	1.700	U	10.000	U
DIELDRIN	µg/Kg	3.400	U	3.400	U	3.300	U	0.061	JP	3.300	U	10.000	U
4,4'-DDE	µg/Kg	3.400	U	3.400	U	3.300	U	3.300	UJ	3.300	U	10.000	U
ENDRIN	µg/Kg	3.400	U	3.400	U	3.300	U	3.300	UJ	3.300	U	10.000	U
ENDOSULFAN II	µg/Kg	3.400	U	3.400	U	3.300	U	3.300	UJ	3.300	U	10.000	U
4,4'-DDD	µg/Kg	3.400	U	3.400	U	3.300	U	3.300	UJ	3.300	U	20.000	U
ENDOSULFAN SULFATE	µg/Kg	3.400	U	0.079	JP	3.300	U	3.300	UJ	3.300	U	20.000	U
4,4'-DDT	µg/Kg	3.400	U	3.400	U	3.300	U	3.300	UJ	3.300	U	20.000	U
METHOXYCHLOR	µg/Kg	18.000	U	18.000	U	1.500	U	17.000	UJ	5.500	J	100.000	U
ENDRIN KETONE	µg/Kg	3.400	U	3.400	U	3.300	U	3.300	UJ	3.300	U	N/R	U
ENDRIN ALDEHYDE	µg/Kg	3.400	U	3.400	U	3.300	U	3.300	UJ	3.300	U	50.000	U
ALPHA-CHLORDANE	µg/Kg	1.800	U	1.800	U	1.700	U	1.700	UJ	1.700	U	N/R	U
GAMMA-CHLORDANE	µg/Kg	1.800	U	1.800	U	1.700	U	1.700	UJ	1.700	U	N/R	U
TOXAPHENE	µg/Kg	180.000	U	180.000	U	170.000	U	170.000	UJ	170.000	U	400.000	U
AROCLOR-1016	µg/Kg	34.000	U	34.000	U	33.000	U	33.000	UJ	33.000	U	100.000	U
AROCLOR-1221	µg/Kg	70.000	U	69.000	U	67.000	U	68.000	UJ	67.000	U	200.000	U
AROCLOR-1232	µg/Kg	34.000	U	34.000	U	33.000	U	33.000	UJ	33.000	U	200.000	U
AROCLOR-1242	µg/Kg	34.000	U	34.000	U	33.000	U	33.000	UJ	33.000	U	100.000	U
AROCLOR-1248	µg/Kg	34.000	U	34.000	U	33.000	U	33.000	UJ	33.000	U	100.000	U
AROCLOR-1254	µg/Kg	34.000	U	34.000	U	33.000	U	33.000	UJ	33.000	U	100.000	U
AROCLOR-1260	µg/Kg	34.000	U	34.000	U	33.000	U	33.000	UJ	33.000	U	100.000	U
CHLORDANE	µg/Kg	N/R		N/R		N/R		N/R		N/R		50.000	U

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North Slope ERA Data Validation Summary Report
Organochlorine Pesticide and PCB Analysis Results

Parameter	Samp#	B07GN3		B07GM7		B07GM8		B07GM9		B07GN1		B07GN0	
	Date Site Depth Type	10-20-92 H-04(E) 8.00 - 10.00 A-1-2		10-20-92 H-04(W) 8.00 - 9.00 A-1-3		10-20-92 H-04(W) 8.00 - 9.00 A-1-3 dup		10-20-92 H-04(W) 8.00 - 9.00 A-1-3 spl		10-21-92 H-04(W) 7.00 - 9.00 A-3-1		10-21-92 H-04(W) 7.50 - 9.50 A-2-2	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALPHA-BHC	µg/Kg	1.900	U	1.900	U	2.000	U	1.970	UJ	10.000	U	10.000	U
BETA-BHC	µg/Kg	1.900	U	1.900	U	2.000	U	1.970	UJ	10.000	U	10.000	U
DELTA-BHC	µg/Kg	1.900	U	1.900	U	2.000	U	1.970	UJ	20.000	U	20.000	U
GAMMA-BHC (LINDANE)	µg/Kg	1.900	U	1.900	U	2.000	U	1.970	UJ	10.000	U	10.000	U
HEPTACHLOR	µg/Kg	1.900	U	1.900	U	2.000	U	1.970	UJ	10.000	U	10.000	U
ALDRIN	µg/Kg	1.900	U	1.900	U	2.000	U	1.970	UJ	10.000	U	10.000	U
HEPTACHLOR EPOXIDE	µg/Kg	1.900	U	1.900	U	2.000	U	1.970	UJ	60.000	U	60.000	U
ENDOSULFAN I	µg/Kg	1.900	U	1.900	U	2.000	U	1.970	UJ	10.000	U	10.000	U
DIELDRIN	µg/Kg	3.600	U	3.700	U	3.800	U	3.830	UJ	10.000	U	10.000	U
4,4'-DDE	µg/Kg	6.200	U	78.000	U	140.000	U	70.900	J	44.000	U	10.000	U
ENDRIN	µg/Kg	3.600	U	0.570	JP	0.850	JP	3.830	UJ	10.000	U	10.000	U
ENDOSULFAN II	µg/Kg	3.600	U	3.700	U	3.800	U	3.830	UJ	10.000	U	10.000	U
4,4'-DDD	µg/Kg	3.600	U	1.300	JP	1.500	JP	3.830	UJ	20.000	U	20.000	U
ENDOSULFAN SULFATE	µg/Kg	3.600	U	3.700	U	3.800	U	3.830	UJ	20.000	U	20.000	U
4,4'-DDT	µg/Kg	3.000	J	24.000	U	46.000	U	18.400	J	65.000	U	20.000	U
METHOXYCHLOR	µg/Kg	3.000	U	390.000	B	3.000	U	19.700	UJ	100.000	U	100.000	U
ENDRIN KETONE	µg/Kg	3.600	U	3.700	U	3.800	U	3.830	UJ	N/R		N/R	
ENDRIN ALDEHYDE	µg/Kg	3.600	U	3.700	U	3.800	U	3.830	UJ	50.000	U	50.000	U
ALPHA-CHLORDANE	µg/Kg	1.900	U	1.900	U	2.000	U	1.970	UJ	N/R		N/R	
GAMMA-CHLORDANE	µg/Kg	1.900	U	1.900	U	2.000	U	1.970	UJ	N/R		N/R	
TOXAPHENE	µg/Kg	190.000	U	190.000	U	200.000	U	197.000	UJ	400.000	U	400.000	U
AROCLOR-1016	µg/Kg	36.000	U	37.000	U	38.000	U	38.300	UJ	100.000	U	100.000	U
AROCLOR-1221	µg/Kg	74.000	U	75.000	U	78.000	U	77.700	UJ	200.000	U	200.000	U
AROCLOR-1232	µg/Kg	36.000	U	37.000	U	38.000	U	38.300	UJ	200.000	U	200.000	U
AROCLOR-1242	µg/Kg	36.000	U	37.000	U	38.000	U	38.300	UJ	100.000	U	100.000	U
AROCLOR-1248	µg/Kg	36.000	U	37.000	U	38.000	U	38.300	UJ	100.000	U	100.000	U
AROCLOR-1254	µg/Kg	36.000	U	37.000	U	38.000	U	38.300	UJ	100.000	U	100.000	U
AROCLOR-1260	µg/Kg	36.000	U	37.000	U	38.000	U	38.300	UJ	100.000	U	100.000	U
CHLORDANE	µg/Kg	N/R		N/R		N/R		N/R		50.000	U	50.000	U

J - Indicates the compound was analyzed for and detected. The value reported is an estimated value at a concentration less than the CRQL but greater than the IDL or due to an identified quality control deficiency.

U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.

UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

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WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary Report
Organochlorine Pesticide and PCB Analysis Results

Parameter	Samp#	B07GM6		B07GP2		B07GP3		B07KP4		B07KP5		B07KP6	
	Date	10-21-92		10-30-92		11-2-92		11-2-92		11-2-92		11-2-92	
	Site	H-04(W)		H-06-H(E)		H-06-H(E)		H-06-H(E)		H-06-H(E)		H-06-H(E)	
	Depth	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
	Type	A-1-2		A-2-1		A-6-4		A-11-1		A-11-1dup		A-11-1spl	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALPHA-BHC	µg/Kg	10.000	U	10.000	U	10.000	U	1.800	UJ	1.800	UJ	3.600	U
BETA-BHC	µg/Kg	10.000	U	10.000	U	10.000	U	1.800	UJ	1.800	UJ	3.600	U
DELTA-BHC	µg/Kg	20.000	U	20.000	U	20.000	U	1.800	UJ	1.800	UJ	3.600	U
GAMMA-BHC (LINDANE)	µg/Kg	10.000	U	10.000	U	10.000	U	1.800	UJ	1.800	UJ	3.600	U
HEPTACHLOR	µg/Kg	10.000	U	10.000	U	10.000	U	1.800	UJ	1.800	UJ	3.600	U
ALDRIN	µg/Kg	10.000	U	10.000	U	10.000	U	1.800	UJ	1.800	UJ	3.600	U
HEPTACHLOR EPOXIDE	µg/Kg	60.000	U	60.000	U	60.000	U	1.800	UJ	1.800	UJ	3.600	U
ENDOSULFAN I	µg/Kg	10.000	U	10.000	U	10.000	U	1.800	UJ	1.800	UJ	3.600	U
DIELDRIN	µg/Kg	10.000	U	10.000	U	10.000	U	4.000	JP	7.500	J	7.000	U
4,4'-DDE	µg/Kg	10.000	U	10.000	U	10.000	U	150.000	JPY	170.000	JP	272.000	C
ENDRIN	µg/Kg	10.000	U	10.000	U	10.000	U	3.500	UJ	3.500	UJ	7.000	U
ENDOSULFAN II	µg/Kg	10.000	U	10.000	U	10.000	U	3.500	UJ	3.500	UJ	7.000	U
4,4'-DDD	µg/Kg	20.000	U	20.000	U	20.000	U	1.400	JP	2.200	JP	127.000	C
ENDOSULFAN SULFATE	µg/Kg	20.000	U	20.000	U	20.000	U	3.500	UJ	3.500	UJ	7.000	U
4,4'-DDT	µg/Kg	20.000	U	20.000	U	20.000	U	210.000	JPY	260.000	JP	342.000	C
METHOXYCHLOR	µg/Kg	100.000	U	100.000	U	100.000	U	18.000	UJ	18.000	UJ	36.000	U
ENDRIN KETONE	µg/Kg	N/R		N/R		N/R		3.500	UJ	3.500	UJ	7.000	U
ENDRIN ALDEHYDE	µg/Kg	50.000	U	50.000	U	50.000	U	3.500	UJ	3.500	UJ	7.000	U
ALPHA-CHLORDANE	µg/Kg	N/R		N/R		N/R		1.800	UJ	1.800	UJ	3.600	U
GAMMA-CHLORDANE	µg/Kg	N/R		N/R		N/R		1.800	UJ	1.800	UJ	3.600	U
TOXAPHENE	µg/Kg	400.000	U	400.000	U	400.000	U	180.000	UJ	180.000	UJ	360.000	U
AROCLOR-1016	µg/Kg	100.000	U	100.000	U	100.000	U	35.000	UJ	35.000	UJ	70.000	U
AROCLOR-1221	µg/Kg	200.000	U	200.000	U	200.000	U	71.000	UJ	71.000	UJ	142.000	U
AROCLOR-1232	µg/Kg	200.000	U	200.000	U	200.000	U	35.000	UJ	35.000	UJ	70.000	U
AROCLOR-1242	µg/Kg	100.000	U	100.000	U	100.000	U	35.000	UJ	35.000	UJ	70.000	U
AROCLOR-1248	µg/Kg	100.000	U	100.000	U	100.000	U	35.000	UJ	35.000	UJ	70.000	U
AROCLOR-1254	µg/Kg	100.000	U	100.000	U	100.000	U	35.000	UJ	35.000	UJ	70.000	U
AROCLOR-1260	µg/Kg	100.000	U	100.000	U	100.000	U	35.000	UJ	35.000	UJ	70.000	U
CHLORDANE	µg/Kg	50.000	U	50.000	U	50.000	U	N/R		N/R		N/R	

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North Slope ERA Data Validation Summary Report
Organochlorine Pesticide and PCB Analysis Results

Parameter	Samp# Date Site Depth Type	B07KP7 11-2-92 H-06-H(E) 9.00 - 11.00 A-11-2		B07KP8 11-2-92 H-06-H(E) 9.00 - 11.00 A-12-1		B07KP9 11-3-92 H-06-H(E) 9.00 - 11.00 A-12-2		B07KQ0 11-3-92 H-06-H(E) 9.00 - 11.00 A-7-1		B07GN4 10-21-92 H-06-H(W) 9.00 - 11.00 A-2-2		B07GN5 10-21-92 H-06-H(W) 9.00 - 11.00 A-5-2	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
	Units												
ALPHA-BHC	µg/Kg	10.000	U	1.800	UJ	10.000	U	10.000	U	10.000	U	10.000	U
BETA-BHC	µg/Kg	10.000	U	1.800	UJ	10.000	U	10.000	U	10.000	U	10.000	U
DELTA-BHC	µg/Kg	20.000	U	1.800	UJ	20.000	U	20.000	U	20.000	U	20.000	U
GAMMA-BHC (LINDANE)	µg/Kg	10.000	U	1.200	JP	10.000	U	10.000	U	10.000	U	10.000	U
HEPTACHLOR	µg/Kg	10.000	U	1.800	UJ	10.000	U	10.000	U	10.000	U	10.000	U
ALDRIN	µg/Kg	10.000	U	1.800	UJ	10.000	U	10.000	U	10.000	U	10.000	U
HEPTACHLOR EPOXIDE	µg/Kg	60.000	U	1.800	UJ	60.000	U	60.000	U	60.000	U	60.000	U
ENDOSULFAN I	µg/Kg	10.000	U	1.800	UJ	10.000	U	10.000	U	10.000	U	10.000	U
DIELDRIN	µg/Kg	10.000	U	10.000	JP	10.000	U	10.000	U	10.000	U	10.000	U
4,4'-DDE	µg/Kg	34.000	U	100.000	JPY	10.000	U	10.000	U	10.000	U	10.000	U
ENDRIN	µg/Kg	10.000	U	0.690	JP	10.000	U	10.000	U	10.000	U	10.000	U
ENDOSULFAN II	µg/Kg	10.000	U	3.500	UJ	10.000	U	10.000	U	10.000	U	10.000	U
4,4'-DDD	µg/Kg	20.000	U	2.100	JP	20.000	U	20.000	U	20.000	U	20.000	U
ENDOSULFAN SULFATE	µg/Kg	20.000	U	3.500	UJ	20.000	U	20.000	U	20.000	U	20.000	U
4,4'-DDT	µg/Kg	36.000	U	96.000	JPY	20.000	U	20.000	U	20.000	U	20.000	U
METHOXYCHLOR	µg/Kg	100.000	U	18.000	UJ	100.000	U	100.000	U	100.000	U	100.000	U
ENDRIN KETONE	µg/Kg	N/R		3.500	UJ	N/R		N/R		N/R		N/R	
ENDRIN ALDEHYDE	µg/Kg	50.000	U	3.500	UJ	50.000	U	50.000	U	50.000	U	50.000	U
ALPHA-CHLORDANE	µg/Kg	N/R		1.800	UJ	N/R		N/R		N/R		N/R	
GAMMA-CHLORDANE	µg/Kg	N/R		1.800	UJ	N/R		N/R		N/R		N/R	
TOXAPHENE	µg/Kg	400.000	U	180.000	UJ	400.000	U	400.000	U	400.000	U	400.000	U
AROCLOR-1016	µg/Kg	100.000	U	35.000	UJ	100.000	U	100.000	U	100.000	U	100.000	U
AROCLOR-1221	µg/Kg	200.000	U	71.000	UJ	200.000	U	200.000	U	200.000	U	200.000	U
AROCLOR-1232	µg/Kg	200.000	U	35.000	UJ	200.000	U	200.000	U	200.000	U	200.000	U
AROCLOR-1242	µg/Kg	100.000	U	35.000	UJ	100.000	U	100.000	U	100.000	U	100.000	U
AROCLOR-1248	µg/Kg	100.000	U	35.000	UJ	100.000	U	100.000	U	100.000	U	100.000	U
AROCLOR-1254	µg/Kg	100.000	U	35.000	UJ	100.000	U	100.000	U	100.000	U	100.000	U
AROCLOR-1260	µg/Kg	100.000	U	35.000	UJ	100.000	U	100.000	U	100.000	U	100.000	U
CHLORDANE	µg/Kg	50.000	U	N/R		50.000	U	50.000	U	50.000	U	50.000	U

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WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary Report
Organochlorine Pesticide and PCB Analysis Results

Parameter	Samp#	B07GN6	B07GN7	B07GN8	B07GP0	B07GP1	B07KQ2						
	Date	10-20-92	10-21-92	10-21-92	10-30-92	10-30-92	12-15-92						
Site	H-06-H(W)	H-06-H(W)	H-06-H(W)	H-06-H(W)	H-06-H(W)	H-06-H(W)	H-06-L						
Depth	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	0.00 - 3.00						
Type	A-5-5	A-7-1	A-16-1	A-19-2	A-19-3		Drywell						
Units	Result	Q	Result	Q	Result	Q	Result	Q					
ALPHA-BHC	µg/Kg	1.800	U	10.000	U	10.000	U	10.000	U	1.800	UJ	1.900	U
BETA-BHC	µg/Kg	1.800	U	10.000	U	10.000	U	10.000	U	1.800	UJ	1.900	U
DELTA-BHC	µg/Kg	1.800	U	20.000	U	20.000	U	20.000	U	1.800	UJ	1.900	U
GAMMA-BHC (LINDANE)	µg/Kg	1.800	U	10.000	U	10.000	U	10.000	U	1.800	UJ	1.900	U
HEPTACHLOR	µg/Kg	1.800	U	10.000	U	10.000	U	10.000	U	1.800	UJ	1.900	U
ALDRIN	µg/Kg	1.800	U	10.000	U	10.000	U	10.000	U	1.800	UJ	1.900	U
HEPTACHLOR EPOXIDE	µg/Kg	1.800	U	60.000	U	60.000	U	60.000	U	1.800	UJ	1.900	U
ENDOSULFAN I	µg/Kg	1.800	U	10.000	U	10.000	U	10.000	U	1.800	UJ	1.900	U
DIELDRIN	µg/Kg	3.500	U	10.000	U	10.000	U	10.000	U	2.300	JPX	3.800	U
4,4'-DDE	µg/Kg	3.300	J	10.000	U	10.000	U	10.000	U	11.000	J	2.200	J
ENDRIN	µg/Kg	3.500	U	10.000	U	10.000	U	10.000	U	10.000	JP	0.880	J
ENDOSULFAN II	µg/Kg	3.500	U	10.000	U	10.000	U	10.000	U	0.840	JPX	3.800	U
4,4'-DDD	µg/Kg	3.500	U	20.000	U	20.000	U	20.000	U	1.400	JPX	3.800	U
ENDOSULFAN SULFATE	µg/Kg	3.500	U	20.000	U	20.000	U	20.000	U	3.500	UJ	0.190	JP
4,4'-DDT	µg/Kg	2.900	J	20.000	U	20.000	U	20.000	U	3.500	UJ	4.900	U
METHOXYCHLOR	µg/Kg	5.700	U	100.000	U	100.000	U	100.000	U	18.000	UJ	19.000	U
ENDRIN KETONE	µg/Kg	3.500	U	N/R		N/R		N/R		3.500	UJ	3.800	U
ENDRIN ALDEHYDE	µg/Kg	3.500	U	50.000	U	50.000	U	50.000	U	3.500	UJ	3.800	U
ALPHA-CHLORDANE	µg/Kg	1.800	U	N/R		N/R		N/R		4.900	JP	1.900	U
GAMMA-CHLORDANE	µg/Kg	1.800	U	N/R		N/R		N/R		1.800	UJ	1.900	U
TOXAPHENE	µg/Kg	180.000	U	400.000	U	400.000	U	400.000	U	180.000	UJ	190.000	U
AROCLOR-1016	µg/Kg	35.000	U	100.000	U	100.000	U	100.000	U	35.000	UJ	38.000	U
AROCLOR-1221	µg/Kg	71.000	U	200.000	U	200.000	U	200.000	U	71.000	UJ	76.000	U
AROCLOR-1232	µg/Kg	35.000	U	200.000	U	200.000	U	200.000	U	35.000	UJ	38.000	U
AROCLOR-1242	µg/Kg	35.000	U	100.000	U	100.000	U	100.000	U	35.000	UJ	38.000	U
AROCLOR-1248	µg/Kg	35.000	U	100.000	U	100.000	U	100.000	U	35.000	UJ	38.000	U
AROCLOR-1254	µg/Kg	35.000	U	100.000	U	100.000	U	100.000	U	210.000	PJ	38.000	U
AROCLOR-1260	µg/Kg	35.000	U	100.000	U	100.000	U	100.000	U	35.000	UJ	38.000	U
CHLORDANE	µg/Kg	N/R		50.000	U	50.000	U	50.000	U	N/R		N/R	

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N/R - Indicates not reported by the laboratory.

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WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary Report
Organochlorine Pesticide and PCB Analysis Results

Parameter	Samp#	B07KQ3		B07KR5		B07KR7		B07KR6		B07KQ1		B07GMO	
	Date	12-16-92		2-16-93		2-16-93		2-16-93		12-14-92		10-12-92	
Site	Site	H-06-L		H-07-H		H-07-H		H-07-H		H-81-R		H-83-L	
Depth	Depth	13.50 - 15.50		---		---		16.00 - 16.00		4.00 - 6.00		9.00 - 11.00	
Type	Type	Rock Pit		Drywell		Drywell-s		Drywell-d		Drywell		A-2-2	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALPHA-BHC	µg/Kg	2.100	U	1.900	U	3.800	U	1.900	U	1.800	U	10.000	U
BETA-BHC	µg/Kg	2.100	U	1.900	U	3.800	U	1.900	U	1.900	P	10.000	U
DELTA-BHC	µg/Kg	2.100	U	1.900	U	3.800	U	1.900	U	1.800	U	20.000	U
GAMMA-BHC (LINDANE)	µg/Kg	2.100	U	1.900	U	3.800	U	1.900	U	1.800	U	10.000	U
HEPTACHLOR	µg/Kg	2.100	U	1.900	U	3.800	U	1.900	U	1.800	U	10.000	U
ALDRIN	µg/Kg	2.100	U	1.900	U	3.800	U	1.900	U	1.800	U	10.000	U
HEPTACHLOR EPOXIDE	µg/Kg	2.100	U	1.900	U	3.800	U	1.900	U	1.800	U	60.000	U
ENDOSULFAN I	µg/Kg	2.100	U	1.900	U	3.800	U	1.900	U	1.800	U	10.000	U
DIELDRIN	µg/Kg	4.200	U	1.600	J	7.300	U	1.600	JP	0.460	JP	10.000	U
4,4'-DDE	µg/Kg	4.200	U	0.550	JP	7.300	U	0.550	JP	3.600	U	10.000	U
ENDRIN	µg/Kg	4.200	U	3.600	U	7.300	U	3.600	U	3.600	U	10.000	U
ENDOSULFAN II	µg/Kg	4.200	U	3.600	U	7.300	U	0.570	U	3.600	U	10.000	U
4,4'-DDD	µg/Kg	4.200	U	1.100	P	7.300	U	1.200	P	3.600	U	20.000	U
ENDOSULFAN SULFATE	µg/Kg	0.210	JP	3.600	U	7.300	U	3.600	U	1.500	JP	20.000	U
4,4'-DDT	µg/Kg	4.200	U	3.200	JP	7.300	U	3.100	J	3.600	U	220.000	U
METHOXYCHLOR	µg/Kg	21.000	U	7.600	U	37.600	U	6.400	U	18.000	U	100.000	U
ENDRIN KETONE	µg/Kg	4.200	U	3.600	U	7.300	U	3.600	U	3.600	U	N/R	U
ENDRIN ALDEHYDE	µg/Kg	4.200	U	3.600	U	7.300	U	3.600	U	3.600	U	50.000	U
ALPHA-CHLORDANE	µg/Kg	2.100	U	1.900	U	3.800	U	1.900	U	0.350	JP	N/R	U
GAMMA-CHLORDANE	µg/Kg	2.100	U	1.900	U	3.800	U	1.900	U	1.800	U	N/R	U
TOXAPHENE	µg/Kg	210.000	U	190.000	U	376.000	U	190.000	U	180.000	U	400.000	U
AROCLOR-1016	µg/Kg	42.000	U	36.000	U	72.800	U	36.000	U	36.000	U	100.000	U
AROCLOR-1221	µg/Kg	83.000	U	74.000	U	148.000	U	74.000	U	72.000	U	200.000	U
AROCLOR-1232	µg/Kg	42.000	U	36.000	U	72.800	U	36.000	U	36.000	U	200.000	U
AROCLOR-1242	µg/Kg	42.000	U	36.000	U	72.800	U	36.000	U	36.000	U	100.000	U
AROCLOR-1248	µg/Kg	42.000	U	36.000	U	72.800	U	36.000	U	36.000	U	100.000	U
AROCLOR-1254	µg/Kg	42.000	U	36.000	U	72.800	U	36.000	U	36.000	U	100.000	U
AROCLOR-1260	µg/Kg	42.000	U	36.000	U	72.800	U	36.000	U	36.000	U	100.000	U
CHLORDANE	µg/Kg	N/R		N/R		N/R		N/R		N/R		50.000	U

J - Indicates the compound was analyzed for and detected. The value reported is an estimated value at a concentration less than the CRQL but greater than the IDL or due to an identified quality control deficiency.
 U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.
 UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.
 N/R - Indicates not reported by the laboratory.

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WHC-SD-EN-TT-194, Rev. 0

North Slope ERA Data Validation Summary Report
Organochlorine Pesticide and PCB Analysis Results

Parameter	Samp#	B07GM1		B07GM2		B07GM3		B07GM4		B07GM5		B07K04	
	Date	10-12-92		10-13-92		10-14-92		10-14-92		10-14-92		2-10-93	
Site		H-83-L		H-83-L		H-83-L		H-83-L		H-83-L		Homestead	
Depth		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		---	
Type		A-2-3		A-1-3		A-3-2		A-3-3		A-4-1		Cistern	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALPHA-BHC	µg/Kg	1.700	U	10.000	U	1.700	U	10.000	U	10.000	U	2.000	U
BETA-BHC	µg/Kg	1.700	U	10.000	U	1.700	U	10.000	U	10.000	U	2.000	U
DELTA-BHC	µg/Kg	1.700	U	20.000	U	1.700	U	20.000	U	20.000	U	2.000	U
GAMMA-BHC (LINDANE)	µg/Kg	1.700	U	10.000	U	1.700	U	10.000	U	10.000	U	2.000	U
HEPTACHLOR	µg/Kg	1.700	U	10.000	U	1.700	U	10.000	U	10.000	U	2.000	U
ALDRIN	µg/Kg	1.700	U	10.000	U	1.700	U	10.000	U	10.000	U	2.000	U
HEPTACHLOR EPOXIDE	µg/Kg	1.700	U	60.000	U	1.700	U	60.000	U	60.000	U	2.000	U
ENDOSULFAN I	µg/Kg	1.700	U	10.000	U	1.700	U	10.000	U	10.000	U	2.000	U
DIELDRIN	µg/Kg	0.550	JP	36.000	U	3.400	U	10.000	U	10.000	U	1.200	JP
4,4'-DDE	µg/Kg	2.500	JP	150.000	U	17.000	U	10.000	U	49.000	U	3.800	U
ENDRIN	µg/Kg	3.400	U	10.000	U	3.400	U	10.000	U	10.000	U	3.800	U
ENDOSULFAN II	µg/Kg	3.400	U	10.000	U	3.400	U	10.000	U	10.000	U	3.800	U
4,4'-DDD	µg/Kg	2.400	J	20.000	U	3.400	U	20.000	U	20.000	U	1.100	JP
ENDOSULFAN SULFATE	µg/Kg	3.400	U	20.000	U	3.400	U	20.000	U	20.000	U	3.800	U
4,4'-DDT	µg/Kg	7.100	U	35.000	U	5.300	P	20.000	U	59.000	U	4.500	U
METHOXYCHLOR	µg/Kg	19.000	B	100.000	U	49.000	B	100.000	U	100.000	U	20.000	U
ENDRIN KETONE	µg/Kg	3.400	U	N/R	U	3.400	U	N/R	U	N/R	U	0.470	JP
ENDRIN ALDEHYDE	µg/Kg	3.400	U	50.000	U	3.400	U	50.000	U	50.000	U	3.800	U
ALPHA-CHLORDANE	µg/Kg	1.700	U	N/R	U	1.700	U	N/R	U	N/R	U	2.000	U
GAMMA-CHLORDANE	µg/Kg	1.700	U	N/R	U	1.700	U	N/R	U	N/R	U	2.000	U
TOXAPHENE	µg/Kg	170.000	U	400.000	U	170.000	U	400.000	U	400.000	U	200.000	U
AROCLOR-1016	µg/Kg	34.000	U	100.000	U	34.000	U	100.000	U	100.000	U	38.000	U
AROCLOR-1221	µg/Kg	69.000	U	200.000	U	68.000	U	200.000	U	200.000	U	78.000	U
AROCLOR-1232	µg/Kg	34.000	U	200.000	U	34.000	U	200.000	U	200.000	U	38.000	U
AROCLOR-1242	µg/Kg	34.000	U	100.000	U	34.000	U	100.000	U	100.000	U	38.000	U
AROCLOR-1248	µg/Kg	34.000	U	100.000	U	34.000	U	100.000	U	100.000	U	38.000	U
AROCLOR-1254	µg/Kg	34.000	U	100.000	U	34.000	U	100.000	U	100.000	U	38.000	U
AROCLOR-1260	µg/Kg	34.000	U	100.000	U	34.000	U	100.000	U	100.000	U	38.000	U
CHLORDANE	µg/Kg	N/R	U	50.000	U	N/R	U	50.000	U	50.000	U	N/R	U

J - Indicates the compound was analyzed for and detected. The value reported is an estimated value at a concentration less than the CRQL but greater than the IDL or due to an identified quality control deficiency.

U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.

UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.

N/R - Indicates not reported by the laboratory.

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WHC-SD-EN-TI-194, Rev. 0

APPENDIX D

ORGANOCHLORINE HERBICIDE VALIDATED DATA SUMMARY

North Slope ERA Data Validation Summary Report
Chlorinated Herbicide Analysis Results

Parameter	Samp#	B07KQ7	B07KQ5	B07KQ6	B07GN9	B07GP4	B07KR8		
	Date	2-16-93	2-16-93	2-10-93	10-20-92	11-2-92	2-16-93		
Site		2,4-D	2,4-D	2,4-D	Eq Blank	Eq Blank	Eq Blank		
Depth		---	13.00 - 15.00	13.00 - 15.00	---	---	---		
Type		7,6,5	8	4,3,2,1	(sand)	(sand)	(sand)		
Units	Result	Q	Result	Q	Result	Q	Result	Q	
2,4-D	µg/Kg	100.000	U	100.000	U	100.000	U	100.000	U
2,4-DB	µg/Kg	500.000	U	500.000	U	500.000	U	500.000	U
2,4,5-T	µg/Kg	50.000	U	50.000	U	50.000	U	50.000	U
2,4,5-TP	µg/Kg	50.000	U	50.000	U	50.000	U	50.000	U
DALAPON	µg/Kg	200.000	U	200.000	U	200.000	U	200.000	U
DICAMBA	µg/Kg	50.000	U	50.000	U	50.000	U	50.000	U
DICHLORPROP	µg/Kg	100.000	U	100.000	U	100.000	U	100.000	U
DINOSEB	µg/Kg	100.000	U	100.000	U	100.000	U	100.000	U
MCPA	µg/Kg	25000.000	U	25000.000	U	25000.000	U	25000.000	U
MCPD	µg/Kg	25000.000	U	25000.000	U	25000.000	U	25000.000	U

Parameter	Samp#	B07GN2	B07GN3	B07GM7	B07GM8	B07GM9	B07GN1		
	Date	10-21-92	10-20-92	10-20-92	10-20-92	10-20-92	10-21-92		
Site		H-04(E)	H-04(E)	H-04(W)	H-04(W)	H-04(W)	H-04(W)		
Depth		7.00 - 9.00	8.00 - 10.00	8.00 - 9.00	8.00 - 9.00	8.00 - 9.00	7.00 - 9.00		
Type		A-1-1	A-1-2	A-1-3	A-1-3 dup	A-1-3 spl	A-3-1		
Units	Result	Q	Result	Q	Result	Q	Result	Q	
2,4-D	µg/Kg	20.000	U	20.000	U	20.000	U	20.000	U
2,4-DB	µg/Kg	100.000	U	100.000	U	100.000	U	100.000	U
2,4,5-T	µg/Kg	10.000	U	10.000	U	10.000	U	10.000	U
2,4,5-TP	µg/Kg	10.000	U	10.000	U	10.000	U	10.000	U
DALAPON	µg/Kg	100.000	U	100.000	U	100.000	U	100.000	U
DICAMBA	µg/Kg	10.000	U	10.000	U	10.000	U	10.000	U
DICHLORPROP	µg/Kg	20.000	U	20.000	U	20.000	U	20.000	U
DINOSEB	µg/Kg	20.000	U	20.000	U	20.000	U	20.000	U
MCPA	µg/Kg	5000.000	U	5000.000	U	5000.000	U	5000.000	U
MCPD	µg/Kg	5000.000	U	5000.000	U	5000.000	U	5000.000	U

J - Indicates the compound was analyzed for an detected. The value reported is an estimated value at a concentration less than the CRQL but greater than the IDL or due to an identified quality control deficiency.

U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.

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N/R - Indicates not reported by the laboratory.

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WHC-SD-EN-IT-194, Rev. 0

North Slope ERA Data Validation Summary Report
Chlorinated Herbicide Analysis Results

Parameter	Samp#	B07GN0		B07GM6		B07GP2		B07GP3		B07KP4		B07KP5	
	Date	10-21-92		10-21-92		10-30-92		11-2-92		11-2-92		11-2-92	
	Site	H-04(W)		H-04(W)		H-06-H(E)		H-06-H(E)		H-06-H(E)		H-06-H(E)	
	Depth	7.50 - 9.50		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
	Type	A-2-2		A-1-2		A-2-1		A-6-4		A-11-1		A-11-1dup	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2,4-D	µg/Kg	20.000	U	20.000	U	20.000	U	20.000	U	20.000	UJ	20.000	UJ
2,4-DB	µg/Kg	100.000	U	100.000	U	100.000	U	100.000	U	100.000	UJ	100.000	UJ
2,4,5-T	µg/Kg	10.000	U	10.000	U	10.000	U	10.000	U	10.000	UJ	10.000	UJ
2,4,5-TP	µg/Kg	10.000	U	10.000	U	10.000	U	10.000	U	10.000	UJ	10.000	UJ
DALAPON	µg/Kg	100.000	U	100.000	U	100.000	U	100.000	U	100.000	UJ	100.000	UJ
DICAMBA	µg/Kg	10.000	U	10.000	U	10.000	U	10.000	U	10.000	UJ	10.000	UJ
DICHLORPROP	µg/Kg	20.000	U	20.000	U	20.000	U	20.000	U	20.000	UJ	20.000	UJ
DINOSEB	µg/Kg	20.000	U	20.000	U	20.000	U	20.000	U	20.000	UJ	20.000	UJ
MCPA	µg/Kg	5000.000	U	5000.000	U	5000.000	U	5000.000	U	5000.000	UJ	5000.000	UJ
MCPA	µg/Kg	5000.000	U	5000.000	U	5000.000	U	5000.000	U	5000.000	UJ	5000.000	UJ

Parameter	Samp#	B07KP6		B07KP7		B07KP8		B07KP9		B07KQ0		B07GN4	
	Date	11-2-92		11-2-92		11-2-92		11-3-92		11-3-92		10-21-92	
	Site	H-06-H(E)		H-06-H(E)		H-06-H(E)		H-06-H(E)		H-06-H(E)		H-06-H(W)	
	Depth	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
	Type	A-11-1spl		A-11-2		A-12-1		A-12-2		A-7-1		A-2-2	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2,4-D	µg/Kg	105.000	UJ	20.000	U	20.000	UJ	20.000	U	20.000	U	20.000	U
2,4-DB	µg/Kg	52.600	UJ	100.000	U	100.000	UJ	100.000	U	100.000	U	100.000	U
2,4,5-T	µg/Kg	26.300	UJ	10.000	U	10.000	UJ	10.000	U	10.000	U	10.000	U
2,4,5-TP	µg/Kg	26.300	UJ	10.000	U	10.000	UJ	10.000	U	10.000	U	10.000	U
DALAPON	µg/Kg	52.600	UJ	100.000	U	100.000	UJ	100.000	U	100.000	U	100.000	U
DICAMBA	µg/Kg	52.600	UJ	10.000	U	10.000	UJ	10.000	U	10.000	U	10.000	U
DICHLORPROP	µg/Kg	105.000	UJ	20.000	U	20.000	UJ	20.000	U	20.000	U	20.000	U
DINOSEB	µg/Kg	26.300	UJ	20.000	U	20.000	UJ	20.000	U	20.000	U	20.000	U
MCPA	µg/Kg	26300.000	UJ	5000.000	U	5000.000	UJ	5000.000	U	5000.000	U	5000.000	U
MCPA	µg/Kg	26300.000	UJ	5000.000	U	5000.000	UJ	5000.000	U	5000.000	U	5000.000	U

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North Slope ERA Data Validation Summary Report
Chlorinated Herbicide Analysis Results

Parameter	Samp#	B07GN5		B07GN6		B07GN7		B07GN8		B07GP0		B07GP1	
	Date Site Depth Type	10-21-92 H-06-H(W) 9.00 - 11.00 A-5-2		10-20-92 H-06-H(W) 9.00 - 11.00 A-5-5		10-21-92 H-06-H(W) 9.00 - 11.00 A-7-1		10-21-92 H-06-H(W) 9.00 - 11.00 A-16-1		10-30-92 H-06-H(W) 9.00 - 11.00 A-19-2		10-30-92 H-06-H(W) 9.00 - 11.00 A-19-3	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2,4-D	µg/Kg	20.000	U	20.000	U	20.000	U	20.000	U	20.000	U	20.000	UJ
2,4-DB	µg/Kg	100.000	U	100.000	U	100.000	U	100.000	U	100.000	U	100.000	UJ
2,4,5-T	µg/Kg	10.000	U	10.000	U	10.000	U	10.000	U	10.000	U	10.000	UJ
2,4,5-TP	µg/Kg	10.000	U	10.000	U	10.000	U	10.000	U	10.000	U	10.000	UJ
DALAPON	µg/Kg	100.000	U	100.000	U	100.000	U	100.000	U	100.000	U	100.000	UJ
DICAMBA	µg/Kg	10.000	U	10.000	U	10.000	U	10.000	U	10.000	U	10.000	UJ
DICHLORPROP	µg/Kg	20.000	U	20.000	U	20.000	U	20.000	U	20.000	U	20.000	UJ
DINOSEB	µg/Kg	20.000	U	20.000	U	20.000	U	20.000	U	20.000	U	20.000	UJ
MCPA	µg/Kg	5000.000	U	5000.000	U	5000.000	U	5000.000	U	5000.000	U	5000.000	UJ
MCPD	µg/Kg	5000.000	U	5000.000	U	5000.000	U	5000.000	U	5000.000	U	5000.000	UJ

Parameter	Samp#	B07KQ2		B07KQ3		B07KR5		B07KR7		B07KR6		B07KQ1	
	Date Site Depth Type	12-15-92 H-06-L 0.00 - 3.00 Drywell		12-16-92 H-06-L 13.50 - 15.50 Rock Pit		2-16-93 H-07-H --- Drywell		2-16-93 H-07-H --- Drywell-s		2-16-93 H-07-H 16.00 - 16.00 Drywell-d		12-14-92 H-81-R 4.00 - 6.00 Drywell	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2,4-D	µg/Kg	100.000	U	100.000	U	100.000	U	245.000	J	100.000	U	100.000	U
2,4-DB	µg/Kg	500.000	U	500.000	U	500.000	U	1210.000	UJ	500.000	U	500.000	U
2,4,5-T	µg/Kg	50.000	U	50.000	U	50.000	U	27.500	UJ	50.000	U	50.000	U
2,4,5-TP	µg/Kg	50.000	U	50.000	U	50.000	U	27.500	UJ	50.000	U	50.000	U
DALAPON	µg/Kg	500.000	U	500.000	U	200.000	U	N/R		200.000	U	500.000	U
DICAMBA	µg/Kg	50.000	U	50.000	U	50.000	U	55.100	UJ	50.000	U	50.000	U
DICHLORPROP	µg/Kg	100.000	U	100.000	U	100.000	U	55.100	UJ	100.000	U	100.000	U
DINOSEB	µg/Kg	100.000	U	100.000	U	100.000	U	27.500	UJ	100.000	U	100.000	U
MCPA	µg/Kg	25000.000	U	25000.000	U	25000.000	U	N/R		25000.000	U	25000.000	U
MCPD	µg/Kg	25000.000	U	25000.000	U	25000.000	U	N/R		25000.000	U	25000.000	U

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 U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.
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 N/R - Indicates not reported by the laboratory.

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WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary Report
Chlorinated Herbicide Analysis Results

Parameter	Samp#	B07GM0		B07GM1		B07GM2		B07GM3		B07GM4		B07GM5	
	Date	10-12-92		10-12-92		10-13-92		10-14-92		10-14-92		10-14-92	
Site	H-83-L												
Depth	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		
Type	A-2-2		A-2-3		A-1-3		A-3-2		A-3-3		A-4-1		
	Units	Result	Q	Result	Q								
2,4-D	µg/Kg	10.000	U	10.000	U								
2,4-DB	µg/Kg	50.000	U	50.000	U								
2,4,5-T	µg/Kg	5.000	U	5.000	U								
2,4,5-TP	µg/Kg	5.000	U	5.000	U								
DALAPON	µg/Kg	50.000	U	50.000	U								
DICAMBA	µg/Kg	5.000	U	5.000	U								
DICHLORPROP	µg/Kg	10.000	U	10.000	U								
DINOSEB	µg/Kg	10.000	U	10.000	U								
MCPA	µg/Kg	2500.000	U	5000.000	U	2500.000	U	5000.000	U	2500.000	U	2500.000	U
MCPP	µg/Kg	2500.000	U	5000.000	U	2500.000	U	5000.000	U	2500.000	U	2500.000	U

Parameter	Samp#	B07KQ4	
	Date	2-10-93	
Site	Homestead		
Depth	---		
Type	Cistern		
	Units	Result	Q
2,4-D	µg/Kg	100.000	U
2,4-DB	µg/Kg	500.000	U
2,4,5-T	µg/Kg	50.000	U
2,4,5-TP	µg/Kg	50.000	U
DALAPON	µg/Kg	200.000	U
DICAMBA	µg/Kg	50.000	U
DICHLORPROP	µg/Kg	100.000	U
DINOSEB	µg/Kg	100.000	U
MCPA	µg/Kg	25000.000	U
MCPP	µg/Kg	25000.000	U

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 U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.
 UJ - Indicates the compound was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.
 N/R - Indicates not reported by the laboratory.

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APPENDIX E

ORGANOPHOSPHORUS PESTICIDE VALIDATED SUMMARY

North Slope ERA Data Validation Summary Report
Organophosphorus Pesticides Analysis Results

Parameter	Sampl#	B07KQ7		B07KQ5		B07KQ6		B07GN9		B07GP4		B07KR8	
	Date	2-16-93		2-16-93		2-10-93		10-20-92		11-2-92		2-16-93	
Site	2,4-D	2,4-D		2,4-D		2,4-D		Eq Blank		Eq Blank		Eq Blank	
Depth	---	---		13.00 - 15.00		13.00 - 15.00		---		---		---	
Type	7,6,5	7,6,5		8		4,3,2,1		(sand)		(sand)		(sand)	
Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
AZINPHOS METHYL	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
BOLSTAR(SULPROPHOS)	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
CHLORPYRIFOS	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
COUMAPHOS	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
DEMETON-S	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
DIAZINON	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
DICHLORVOS	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
DISULFOTON	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
ETHOPROP	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
FENSULFOTHION	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
FENTHION	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
MERPHOS	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
MEVINPHOS	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
NALED	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
PARATHION-METHYL	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
PHORATE	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
RONNEL	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
STIROPHOS(TETRACHLORVINPHOS)	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
DIMETHOATE	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
EPN	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
MALATHION	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
MONOCROTOPHOS	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
PARATHION	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
SULFOTEP	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
TEPP	µg/Kg	10.000	U	10.000	U	10.000	U	6.700	U	6.700	UJ	10.000	U
TRICHLORONATE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
TOKUTHION(PROTHIOFOS)	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
DEMATON-O	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
DEMATON-P	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	

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North Slope ERA Data Validation Summary Report
Organophosphorus Pesticides Analysis Results

Parameter	Samp#	807GN2		807GN3		807GM7		807GM8		807GM9		807GN1	
	Date Site Depth Type	10-21-92 H-04(E) 7.00 - 9.00 A-1-1		10-20-92 H-04(E) 8.00 - 10.00 A-1-2		10-20-92 H-04(W) 8.00 - 9.00 A-1-3		10-20-92 H-04(W) 8.00 - 9.00 A-1-3 dup		10-20-92 H-04(W) 8.00 - 9.00 A-1-3 spl		10-21-92 H-04(W) 7.00 - 9.00 A-3-1	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
AZINPHOS METHYL	µg/Kg	33.300	U	6.700	U	6.700	U	6.700	U	57.900	UJ	33.300	U
BOLSTAR(SULPROPHOS)	µg/Kg	16.600	U	6.700	U	6.700	U	6.700	U	11.600	R	16.600	U
CHLORPYRIFOS	µg/Kg	33.300	U	6.700	U	6.700	U	6.700	U	23.100	UJ	33.300	U
COUMAPHOS	µg/Kg	16.600	U	6.700	U	6.700	U	6.700	U	57.900	UJ	16.600	U
DEMETON-S	µg/Kg	33.300	U	6.700	U	6.700	U	6.700	U	N/R		33.300	U
DIAZINON	µg/Kg	16.600	U	6.700	U	6.700	U	6.700	U	23.100	UJ	16.600	U
DICHLORVOS	µg/Kg	16.600	U	6.700	U	6.700	U	6.700	U	11.600	UJ	16.600	U
DISULFOTON	µg/Kg	16.600	U	6.700	U	6.700	U	6.700	U	11.600	UJ	16.600	U
ETHOPROP	µg/Kg	33.300	U	6.700	U	6.700	U	6.700	U	23.100	UJ	33.300	U
FENSULFOTHION	µg/Kg	33.300	U	6.700	U	6.700	U	6.700	U	57.900	UJ	33.300	U
FENTHION	µg/Kg	33.300	U	6.700	U	6.700	U	6.700	U	11.600	UJ	33.300	U
MERPHOS	µg/Kg	33.300	U	6.700	U	6.700	U	6.700	U	23.100	R	33.300	U
MEVINPHOS	µg/Kg	66.600	U	6.700	U	6.700	U	6.700	U	46.300	UJ	66.600	U
NALED	µg/Kg	16.600	U	6.700	U	6.700	U	6.700	U	23.100	UJ	16.600	U
PARATHION-METHYL	µg/Kg	16.600	U	6.700	U	6.700	U	6.700	U	11.600	UJ	16.600	U
PHORATE	µg/Kg	66.600	U	6.700	U	6.700	U	6.700	U	11.600	UJ	66.600	U
RONNEL	µg/Kg	33.300	U	6.700	U	6.700	U	6.700	U	23.100	UJ	33.300	U
STIROPHOS(TETRACHLORVINPHOS)	µg/Kg	33.300	U	6.700	U	6.700	U	6.700	U	57.900	UJ	33.300	U
DIMETHOATE	µg/Kg	66.600	U	6.700	U	6.700	U	6.700	U	N/R		66.600	U
EPN	µg/Kg	66.600	U	6.700	U	6.700	U	6.700	U	N/R		66.600	U
MALATHION	µg/Kg	33.300	U	6.700	U	6.700	U	6.700	U	N/R		33.300	U
MONOCROTOPHOS	µg/Kg	166.000	U	6.700	U	6.700	U	6.700	U	N/R		166.000	U
PARATHION	µg/Kg	16.600	U	6.700	U	6.700	U	6.700	U	N/R		16.600	U
SULFOTEP	µg/Kg	16.600	U	6.700	U	6.700	U	6.700	U	N/R		16.600	U
TEPP	µg/Kg	16.600	U	6.700	U	6.700	U	6.700	U	N/R		16.600	U
TRICHLORONATE	µg/Kg	N/R		N/R		N/R		N/R		23.100	UJ	N/R	
TOKUTHION(PROTHIOFOS)	µg/Kg	N/R		N/R		N/R		N/R		11.600	UJ	N/R	
DEMATON-O	µg/Kg	N/R		N/R		N/R		N/R		46.300	UJ	N/R	
DEMATON-P	µg/Kg	N/R		N/R		N/R		N/R		46.300	UJ	N/R	

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North Slope ERA Data Validation Summary Report
Organophosphorus Pesticides Analysis Results

Parameter	Samp#	B07GND		B07GM6		B07GP2		B07GP3		B07KP4		B07KP5	
	Date Site Depth Type	10-21-92 H-04(W) 7.50 - 9.50 A-2-2		10-21-92 H-04(W) 9.00 - 11.00 A-1-2		10-30-92 H-06-H(E) 9.00 - 11.00 A-2-1		11-2-92 H-06-H(E) 9.00 - 11.00 A-6-4		11-2-92 H-06-H(E) 9.00 - 11.00 A-11-1		11-2-92 H-06-H(E) 9.00 - 11.00 A-11-1dup	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
AZINPHOS METHYL	µg/Kg	33.300	U	33.300	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
BOLSTAR(SULPROPHOS)	µg/Kg	16.600	U	16.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
CHLORPYRIFOS	µg/Kg	33.300	U	33.300	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
COUMAPHOS	µg/Kg	16.600	U	16.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
DEMETON-S	µg/Kg	33.300	U	33.300	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
DIAZINON	µg/Kg	16.600	U	16.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
DICHLORVOS	µg/Kg	16.600	U	16.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
DISULFOTON	µg/Kg	16.600	U	16.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
ETHOPROP	µg/Kg	33.300	U	33.300	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
FENSULFOTHION	µg/Kg	33.300	U	33.300	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
FENTHION	µg/Kg	33.300	U	33.300	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
MERPHOS	µg/Kg	33.300	U	33.300	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
MEVINPHOS	µg/Kg	66.600	U	66.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
NALED	µg/Kg	16.600	U	16.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
PARATHION-METHYL	µg/Kg	16.600	U	16.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
PHORATE	µg/Kg	66.600	U	66.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
RONNEL	µg/Kg	33.300	U	33.300	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
STIROPHOS(TETRACHLORVINPHOS)	µg/Kg	33.300	U	33.300	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
DIMETHOATE	µg/Kg	66.600	U	66.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
EPN	µg/Kg	66.600	U	66.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
MALATHION	µg/Kg	33.300	U	33.300	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
MONOCROTOPHOS	µg/Kg	166.000	U	166.000	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
PARATHION	µg/Kg	16.600	U	16.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
SULFOTEP	µg/Kg	16.600	U	16.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
TEPP	µg/Kg	16.600	U	16.600	U	6.700	U	6.700	U	6.700	UJ	6.700	UJ
TRICHLORONATE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
TOKUTHION(PROTHIOFOS)	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
DEMATON-O	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	
DEMATON-P	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R	

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North Slope ERA Data Validation Summary Report
Organophosphorus Pesticides Analysis Results

Parameter	Samp#	B07KP6		B07KP7		B07KP8		B07KP9		B07KQ0		B07GN4	
	Date	11-2-92		11-2-92		11-2-92		11-3-92		11-3-92		10-21-92	
Site		H-06-H(E)		H-06-H(E)		H-06-H(E)		H-06-H(E)		H-06-H(E)		H-06-H(W)	
Depth		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
Type		A-11-1spl		A-11-2		A-12-1		A-12-2		A-7-1		A-2-2	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
AZINPHOS METHYL	µg/Kg	53.000	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	33.300	U
BOLSTAR(SULPROPHOS)	µg/Kg	10.600	R	6.700	U	6.700	UJ	6.700	U	6.700	U	16.600	U
CHLORPYRIFOS	µg/Kg	21.200	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	33.300	U
COUMAPHOS	µg/Kg	53.000	R	6.700	U	6.700	UJ	6.700	U	6.700	U	16.600	U
DEMETON-S	µg/Kg	N/R		6.700	U	6.700	UJ	6.700	U	6.700	U	33.300	U
DIAZINON	µg/Kg	21.200	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	16.600	U
DICHLORVOS	µg/Kg	10.600	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	16.600	U
DISULFOTON	µg/Kg	10.600	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	16.600	U
ETHOPROP	µg/Kg	21.200	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	33.300	U
FENSULFOTHION	µg/Kg	53.000	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	33.300	U
FENTHION	µg/Kg	10.600	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	33.300	U
MERPHOS	µg/Kg	21.200	R	6.700	U	6.700	UJ	6.700	U	6.700	U	33.300	U
MEVINPHOS	µg/Kg	42.400	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	66.600	U
NALED	µg/Kg	21.200	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	16.600	U
PARATHION-METHYL	µg/Kg	10.600	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	16.600	U
PHORATE	µg/Kg	10.600	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	66.600	U
RONNEL	µg/Kg	21.200	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	33.300	U
STIROPHOS(TETRACHLORVINPHOS)	µg/Kg	53.000	UJ	6.700	U	6.700	UJ	6.700	U	6.700	U	33.300	U
DIMETHOATE	µg/Kg	N/R		6.700	U	6.700	UJ	6.700	U	6.700	U	66.600	U
EPN	µg/Kg	N/R		6.700	U	6.700	UJ	6.700	U	6.700	U	66.600	U
MALATHION	µg/Kg	N/R		6.700	U	6.700	UJ	6.700	U	6.700	U	33.300	U
MONOCROTOPHOS	µg/Kg	N/R		6.700	U	6.700	UJ	6.700	U	6.700	U	166.000	U
PARATHION	µg/Kg	N/R		6.700	U	6.700	UJ	6.700	U	6.700	U	16.600	U
SULFOTEP	µg/Kg	N/R		6.700	U	6.700	UJ	6.700	U	6.700	U	16.600	U
TEPP	µg/Kg	N/R		6.700	U	6.700	UJ	6.700	U	6.700	U	16.600	U
TRICHLORONATE	µg/Kg	21.200	UJ	N/R		N/R		N/R		N/R		N/R	
TOKUTHION(PROTHIOFOS)	µg/Kg	10.600	UJ	N/R		N/R		N/R		N/R		N/R	
DEMATON-O	µg/Kg	42.400	UJ	N/R		N/R		N/R		N/R		N/R	
DEMATON-P	µg/Kg	42.400	UJ	N/R		N/R		N/R		N/R		N/R	

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N/R - Indicates not reported by the laboratory.

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WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary Report
Organophosphorus Pesticides Analysis Results

Parameter	Samp#	B07GN5		B07GN6		B07GN7		B07GN8		B07GP0		B07GP1				
	Date Site Depth Type	10-21-92 H-06-H(W) 9.00 - 11.00 A-5-2	Result	Q	10-20-92 H-06-H(W) 9.00 - 11.00 A-5-5	Result	Q	10-21-92 H-06-H(W) 9.00 - 11.00 A-7-1	Result	Q	10-30-92 H-06-H(W) 9.00 - 11.00 A-19-2	Result	Q	10-30-92 H-06-H(W) 9.00 - 11.00 A-19-3	Result	Q
	Units															
Inorganics																
AZINPHOS METHYL	µg/Kg	33.300	U	6.700	U	33.300	U	33.300	U	6.700	U	6.700	UJ	6.700	UJ	
BOLSTAR(SULPROPHOS)	µg/Kg	16.600	U	6.700	U	16.600	U	16.600	U	6.700	U	6.700	UJ	6.700	UJ	
CHLORPYRIFOS	µg/Kg	33.300	U	6.700	U	33.300	U	33.300	U	6.700	U	6.700	UJ	6.700	UJ	
COUMAPHOS	µg/Kg	16.600	U	6.700	U	16.600	U	16.600	U	6.700	U	6.700	UJ	6.700	UJ	
DEMETON-S	µg/Kg	33.300	U	6.700	U	33.300	U	33.300	U	6.700	U	6.700	UJ	6.700	UJ	
DIAZINON	µg/Kg	16.600	U	6.700	U	16.600	U	16.600	U	6.700	U	6.700	UJ	6.700	UJ	
DICHLORVOS	µg/Kg	16.600	U	6.700	U	16.600	U	16.600	U	6.700	U	6.700	UJ	6.700	UJ	
DISULFOTON	µg/Kg	16.600	U	6.700	U	16.600	U	16.600	U	6.700	U	6.700	UJ	6.700	UJ	
ETHOPROP	µg/Kg	33.300	U	6.700	U	33.300	U	33.300	U	6.700	U	6.700	UJ	6.700	UJ	
FENSULFOTHION	µg/Kg	33.300	U	6.700	U	33.300	U	33.300	U	6.700	U	6.700	UJ	6.700	UJ	
FENTHION	µg/Kg	33.300	U	6.700	U	33.300	U	33.300	U	6.700	U	6.700	UJ	6.700	UJ	
MERPHOS	µg/Kg	33.300	U	6.700	U	33.300	U	33.300	U	6.700	U	6.700	UJ	6.700	UJ	
MEVINPHOS	µg/Kg	66.600	U	6.700	U	66.600	U	66.600	U	6.700	U	6.700	UJ	6.700	UJ	
NALED	µg/Kg	16.600	U	6.700	U	16.600	U	16.600	U	6.700	U	6.700	UJ	6.700	UJ	
PARATHION-METHYL	µg/Kg	16.600	U	6.700	U	16.600	U	16.600	U	6.700	U	6.700	UJ	6.700	UJ	
PHORATE	µg/Kg	66.600	U	6.700	U	66.600	U	66.600	U	6.700	U	6.700	UJ	6.700	UJ	
RONNEL	µg/Kg	33.300	U	6.700	U	33.300	U	33.300	U	6.700	U	6.700	UJ	6.700	UJ	
STIROPHOS(TETRACHLORVINPHOS)	µg/Kg	33.300	U	6.700	U	33.300	U	33.300	U	6.700	U	6.700	UJ	6.700	UJ	
DIMETHOATE	µg/Kg	66.600	U	6.700	U	66.600	U	66.600	U	6.700	U	6.700	UJ	6.700	UJ	
EPN	µg/Kg	66.600	U	6.700	U	66.600	U	66.600	U	6.700	U	6.700	UJ	6.700	UJ	
MALATHION	µg/Kg	33.300	U	6.700	U	33.300	U	33.300	U	6.700	U	6.700	UJ	6.700	UJ	
MONOCROTOPHOS	µg/Kg	166.000	U	6.700	U	166.000	U	166.000	U	6.700	U	6.700	UJ	6.700	UJ	
PARATHION	µg/Kg	16.600	U	6.700	U	16.600	U	16.600	U	6.700	U	6.700	UJ	6.700	UJ	
SULFOTEP	µg/Kg	16.600	U	6.700	U	16.600	U	16.600	U	6.700	U	6.700	UJ	6.700	UJ	
TEPP	µg/Kg	16.600	U	6.700	U	16.600	U	16.600	U	6.700	U	6.700	UJ	6.700	UJ	
TRICHLORONATE	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R		N/R		
TOKUTHION(PROTHIOFOS)	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R		N/R		
DEMATON-O	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R		N/R		
DEMATON-P	µg/Kg	N/R		N/R		N/R		N/R		N/R		N/R		N/R		

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N/R - Indicates not reported by the laboratory.

North Slope ERA Data Validation Summary Report
Organophosphorus Pesticides Analysis Results

Parameter	Samp#	B07KQ2		B07KQ3		B07KR5		B07KR7		B07KR6		B07KQ1	
	Date Site Depth Type	12-15-92 H-06-L 0.00 - 3.00 Drywell		12-16-92 H-06-L 13.50 - 15.50 Rock Pit		2-16-93 H-07-H --- Drywell		2-16-93 H-07-H --- Drywell-s		2-16-93 H-07-H 16.00 - 16.00 Drywell-d		12-14-92 H-81-R 4.00 - 6.00 Drywell	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Inorganics													
AZINPHOS METHYL	µg/Kg	67.000	U	67.000	U	10.000	U	114.000	UJ	10.000	U	67.000	U
BOLSTAR(SULPROPHOS)	µg/Kg	67.000	U	67.000	U	10.000	U	45.900	U	10.000	U	67.000	U
CHLORPYRIFOS	µg/Kg	33.000	U	33.000	U	10.000	U	18.400	U	10.000	U	33.000	U
COUMAPHOS	µg/Kg	167.000	U	167.000	U	10.000	U	45.900	UJ	10.000	U	167.000	U
DEMETON-S	µg/Kg	33.000	U	33.000	U	10.000	U	N/R		10.000	U	33.000	U
DIAZINON	µg/Kg	33.000	U	33.000	U	10.000	U	18.400	U	10.000	U	33.000	U
DICHLORVOS	µg/Kg	17.000	U	17.000	U	10.000	U	18.400	U	10.000	U	17.000	U
DISULFOTON	µg/Kg	17.000	U	17.000	U	10.000	U	18.400	U	10.000	U	17.000	U
ETHOPROP	µg/Kg	333.000	U	333.000	U	10.000	U	18.400	U	10.000	U	333.000	U
FENSULFOTHION	µg/Kg	167.000	U	167.000	U	10.000	U	91.700	U	10.000	U	167.000	U
FENTHION	µg/Kg	67.000	U	67.000	U	10.000	U	18.400	U	10.000	U	67.000	U
MERPHOS	µg/Kg	67.000	U	67.000	U	10.000	U	45.900	U	10.000	U	67.000	U
MEVINPHOS	µg/Kg	67.000	U	67.000	U	10.000	U	36.700	U	10.000	U	67.000	U
NALED	µg/Kg	33.000	U	33.000	U	10.000	U	91.700	U	10.000	U	33.000	U
PARATHION-METHYL	µg/Kg	17.000	U	17.000	U	10.000	U	45.900	U	10.000	U	17.000	U
PHORATE	µg/Kg	17.000	U	17.000	U	10.000	U	18.400	U	10.000	U	17.000	U
RONNEL	µg/Kg	33.000	U	33.000	U	10.000	U	18.400	U	10.000	U	33.000	U
STIROPHOS(TETRACHLORVINPHOS)	µg/Kg	33.000	U	33.000	U	10.000	U	36.700	U	10.000	U	33.000	U
DIMETHOATE	µg/Kg	167.000	U	167.000	U	10.000	U	N/R		10.000	U	167.000	U
EPN	µg/Kg	33.000	U	33.000	U	10.000	U	N/R		10.000	U	33.000	U
MALATHION	µg/Kg	67.000	U	67.000	U	10.000	U	N/R		10.000	U	67.000	U
MONOCROTOPHOS	µg/Kg	17.000	U	17.000	U	10.000	U	N/R		10.000	U	17.000	U
PARATHION	µg/Kg	17.000	U	17.000	U	10.000	U	N/R		10.000	U	17.000	U
SULFOTEP	µg/Kg	333.000	U	333.000	U	10.000	U	N/R		10.000	U	333.000	U
TEPP	µg/Kg	17.000	U	17.000	U	10.000	U	N/R		10.000	U	17.000	U
TRICHLORONATE	µg/Kg	N/R		N/R		N/R		36.700	U	N/R		N/R	
TOKUTHION(PROTHIOFOS)	µg/Kg	N/R		N/R		N/R		18.400	U	N/R		N/R	
DEMATON-O	µg/Kg	N/R		N/R		N/R		68.800	U	N/R		N/R	
DEMATON-P	µg/Kg	N/R		N/R		N/R		68.800	U	N/R		N/R	

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North Slope ERA Data Validation Summary Report
Organophosphorus Pesticides Analysis Results

Parameter	Samp#	B07GM0		B07GM1		B07GM2		B07GM3		B07GM4		B07GM5	
	Date	10-12-92		10-12-92		10-13-92		10-14-92		10-14-92		10-14-92	
Site	H-83-L	H-83-L		H-83-L									
Depth	9.00 - 11.00	9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00		9.00 - 11.00	
Type	A-2-2	A-2-2		A-2-3		A-1-3		A-3-2		A-3-3		A-4-1	
Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
Inorganics													
AZINPHOS METHYL	µg/Kg	30.000	U	6.700	U	30.000	U	6.700	U	30.000	U	30.000	U
BOLSTAR(SULPROPHOS)	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
CHLORPYRIFOS	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
COUMAPHOS	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
DEMETON-S	µg/Kg	30.000	U	6.700	U	30.000	U	6.700	U	30.000	U	30.000	U
DIAZINON	µg/Kg	30.000	U	6.700	U	30.000	U	6.700	U	30.000	U	30.000	U
DICHLORVOS	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
DISULFOTON	µg/Kg	30.000	U	6.700	U	30.000	U	6.700	U	30.000	U	30.000	U
ETHOPROP	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
FENSULFOTHION	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
FENTHION	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
MERPHOS	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
MEVINPHOS	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
NALED	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
PARATHION-METHYL	µg/Kg	30.000	U	6.700	U	30.000	U	6.700	U	30.000	U	30.000	U
PHORATE	µg/Kg	30.000	U	6.700	U	30.000	U	6.700	U	30.000	U	30.000	U
RONNEL	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
STIROPHOS(TETRACHLORVINPHOS)	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
DIMETHOATE	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
EPN	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
MALATHION	µg/Kg	30.000	U	6.700	U	30.000	U	6.700	U	30.000	U	30.000	U
MONOCROTOPHOS	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
PARATHION	µg/Kg	30.000	U	6.700	U	30.000	U	6.700	U	30.000	U	30.000	U
SULFOTEP	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
TEPP	µg/Kg	30.000	U	N/R		30.000	U	N/R		30.000	U	30.000	U
TRICHLORONATE	µg/Kg	N/R		N/R									
TOKUTHION(PROTHIOFOS)	µg/Kg	N/R		N/R									
DEMATON-O	µg/Kg	N/R		N/R									
DEMATON-P	µg/Kg	N/R		N/R									

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N/R - Indicates not reported by the laboratory.

North Slope ERA Data Validation Summary Report
Organophosphorus Pesticides Analysis Results

Parameter	Samp#	B07KQ4		
	Date	2-10-93		
Parameter	Site	Homestead		
	Depth	---		
Parameter	Type	Cistern		
	Units	Result	Q	
Inorganics				
AZINPHOS METHYL	µg/Kg	67.000	U	
BOLSTAR(SULPROPHOS)	µg/Kg	67.000	U	
CHLORPYRIFOS	µg/Kg	33.000	U	
COUMAPHOS	µg/Kg	167.000	U	
DEMETON-S	µg/Kg	33.000	U	
DIAZINON	µg/Kg	33.000	U	
DICHLORVOS	µg/Kg	17.000	U	
DISULFOTON	µg/Kg	17.000	U	
ETHOPROP	µg/Kg	333.000	U	
FENSULFOTHION	µg/Kg	167.000	U	
FENTHION	µg/Kg	67.000	U	
MERPHOS	µg/Kg	67.000	U	
MEVINPHOS	µg/Kg	67.000	U	
NALED	µg/Kg	67.000	U	
PARATHION-METHYL	µg/Kg	17.000	U	
PHORATE	µg/Kg	17.000	U	
RONNEL	µg/Kg	17.000	U	
STIROPPOS(TETRACHLORVINPHOS)	µg/Kg	33.000	U	
DIMETHOATE	µg/Kg	167.000	U	
EPN	µg/Kg	33.000	U	
MALATHION	µg/Kg	67.000	U	
MONOCROTOPHOS	µg/Kg	167.000	U	
PARATHION	µg/Kg	17.000	U	
SULFOTEP	µg/Kg	333.000	U	
TEPP	µg/Kg	17.000	U	
TRICHLORONATE	µg/Kg	N/R		
TOKUTHION(PROTHIOFOS)	µg/Kg	N/R		
DEMATON-O	µg/Kg	N/R		
DEMATON-P	µg/Kg	N/R		

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APPENDIX F
METALS VALIDATED DATA SUMMARY

North Slope ERA Data Validation Summary Report
Metals Analysis Results

Parameter	Samp#	B07GN9		B07GP4		B07KR8		B07GN2		B07GN3		B07GM7	
	Date	10-20-92		11-2-92		2-16-93		10-21-92		10-20-92		10-20-92	
Site	Eq Blank	Eq Blank		Eq Blank		Eq Blank		H-04(E)		H-04(E)		H-04(W)	
Depth	---	---		---		---		7.00 - 9.00		8.00 - 10.00		8.00 - 9.00	
Type	(sand)	(sand)		(sand)		(sand)		A-1-1		A-1-2		A-1-3	
Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
ALUMINUM	mg/Kg	131.000		138.000		43.600		9700.000		10500.000		14400.000	
ANTIMONY	mg/Kg	12.000	U	12.000	UJ	9.000	U	20.000	U	13.300	U	14.200	U
ARSENIC	mg/Kg	0.400	U	0.400	U	0.180	B	4.300		6.800		5.600	
BARIUM	mg/Kg	1.400	B	1.500	B	0.580	U	98.000		308.000		401.000	
BERYLLIUM	mg/Kg	0.400	U	0.400	U	0.200	U	1.000	U	0.780	B	0.920	B
CADMIUM	mg/Kg	1.000	U	1.000	U	0.600	U	1.000	U	1.100	U	1.200	U
CALCIUM	mg/Kg	29.900	B	26.900	B	16.300	U	14000.000		23900.000		17300.000	
CHROMIUM	mg/Kg	1.800	U	1.800	U	0.800	U	11.000		12.600		14.800	
COBALT	mg/Kg	2.200	U	2.200	U	1.200	U	9.000		8.800	B	8.200	B
COPPER	mg/Kg	1.400	U	1.400	U	1.500	B	15.000		16.300		29.500	
IRON	mg/Kg	170.000		185.000		320.000		22000.000		19200.000		19000.000	
LEAD	mg/Kg	0.650		0.320	BJ	0.180	U	6.700		11.400		15.700	
LITHIUM	mg/Kg	N/R		N/R		N/R		10.000		N/R		N/R	
MAGNESIUM	mg/Kg	20.800	B	12.800	U	6.100	U	5900.000		6180.000		7480.000	
MANGANESE	mg/Kg	3.900		4.300		0.200	U	350.000		341.000		299.000	
MOLYBDENUM	mg/Kg	N/R		N/R		N/R		5.000	U	N/R		N/R	
MERCURY	mg/Kg	0.050	U	0.050	U	0.100	U	0.050	U	0.060	U	0.060	U
NICKEL	mg/Kg	5.800	U	5.800	U	3.800	U	13.000		9.900		8.200	B
PHOSPHORUS	mg/Kg	N/R		N/R		N/R		730.000		N/R		N/R	
POTASSIUM	mg/Kg	206.000	U	206.000	U	171.000	U	1300.000		1250.000		1560.000	
SELENIUM	mg/Kg	0.230	U	0.200	UJ	0.270	U	0.500	U	0.220	U	0.240	U
SILVER	mg/Kg	0.800	U	0.800	U	0.770	U	1.000	U	0.890	U	0.950	U
SODIUM	mg/Kg	11.800	U	7.500	UJ	18.200	U	410.000		516.000	B	590.000	B
STRONTIUM	mg/Kg	N/R		N/R		N/R		59.000		N/R		N/R	
THALLIUM	mg/Kg	0.200	U	0.200	UJ	0.100	U	1.000	U	0.220	U	0.320	B
VANADIUM	mg/Kg	2.000	U	2.000	U	0.800	U	51.000		48.200		43.300	
ZINC	mg/Kg	1.800	U	1.800	U	1.200	U	46.000		38.500		41.900	

- U - Indicates the constituent was analyzed for but not detected. The value reported is the sample quantitation limit.
- UJ - Indicates the constituent was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.
- J - Indicates the constituent was analyzed for and detected. The value reported is considered an estimated value due to an identified quality control deficiency.
- B - Indicates a detected value less than the CRDL but greater than the IDL.
- BJ - Indicates an estimated detected value less than the CRDL but greater than the IDL.
- R - Indicates the constituent was analyzed for and detected. The value reported is considered unusable due to an identified quality control deficiency.
- UR - Indicates the constituent was analyzed for but not detected. The value reported is considered unusable due to an identified quality control deficiency.
- N/R - Indicates the constituent was not reported by the laboratory.

North Slope ERA Data Validation Summary Report
Metals Analysis Results

Parameter	Samp# Date Site Depth Type	B07GM8 10-20-92 H-04(W) 8.00 - 9.00 A-1-3 dup		B07GM9 10-20-92 H-04(W) 8.00 - 9.00 A-1-3 spl		B07GN1 10-21-92 H-04(W) 7.00 - 9.00 A-3-1		B07GN0 10-21-92 H-04(W) 7.50 - 9.50 A-2-2		B07GM6 10-21-92 H-04(W) 9.00 - 11.00 A-1-2		B07GP2 10-30-92 H-06-H(E) 9.00 - 11.00 A-2-1	
		Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result
ALUMINUM	mg/Kg	14400.000		15400.000		20000.000		17000.000		13000.000		19000.000	
ANTIMONY	mg/Kg	14.300	U	13.900	UJ	20.000	U	20.000	U	20.000	U	20.000	U
ARSENIC	mg/Kg	5.500		7.000	UJ	8.500		8.100		4.200		8.500	
BARIIUM	mg/Kg	431.000		346.000		130.000		260.000		110.000		130.000	
BERYLLIUM	mg/Kg	0.880	B	1.200		1.000	U	1.000	U	1.000		1.000	U
CADMIUM	mg/Kg	1.200	U	0.700	B	1.000	U	1.000	U	1.000	U	1.000	U
CALCIUM	mg/Kg	17600.000		18300.000		19000.000		21000.000		22000.000		17000.000	
CHROMIUM	mg/Kg	13.800		15.500		15.000		17.000		11.000		25.000	
COBALT	mg/Kg	9.000	B	10.200	B	11.000		9.000		9.000		10.000	
COPPER	mg/Kg	21.500		20.900		16.000		14.000		13.000		43.000	
IRON	mg/Kg	19100.000		22000.000		19000.000		20000.000		11000.000		26000.000	
LEAD	mg/Kg	15.000		18.900		14.000		5.600		7.100		13.000	
LITHIUM	mg/Kg	N/R		N/R		13.000		15.000		9.000		21.000	
MAGNESIUM	mg/Kg	7400.000		7260.000		9200.000		8300.000		5100.000		9100.000	
MANGANESE	mg/Kg	334.000		362.000		370.000		360.000		230.000		500.000	
MOLYBDENUM	mg/Kg	N/R		N/R		5.000	U	5.000	U	5.000	U	2.000	
MERCURY	mg/Kg	0.060	U	0.120	U	0.050	U	0.050	U	0.050	U	0.200	U
NICKEL	mg/Kg	13.600		14.800		15.000		16.000		11.000		22.000	
PHOSPHORUS	mg/Kg	N/R		N/R		500.000		450.000		130.000		590.000	
POTASSIUM	mg/Kg	1590.000		1820.000		2000.000		1300.000		1000.000		3000.000	
SELENIUM	mg/Kg	0.240	U	3.500	UR	0.500	U	0.500	U	0.500	U	0.500	U
SILVER	mg/Kg	0.950	U	16.500	J	1.000	U	1.000	U	1.000	U	2.000	U
SODIUM	mg/Kg	590.000	B	708.000	B	890.000		720.000		490.000		790.000	
STRONTIUM	mg/Kg	N/R		N/R		100.000		92.000		88.000		65.000	
THALLIUM	mg/Kg	0.240	U	0.700	UR	1.000	U	1.000	U	1.000	U	0.500	U
VANADIUM	mg/Kg	43.300		46.600		45.000		73.000		28.000		44.000	
ZINC	mg/Kg	45.600		55.700		71.000		41.000		25.000		62.000	

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- UR - Indicates the constituent was analyzed for but not detected. The value reported is considered unusable due to an identified quality control deficiency.
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North Slope ERA Data Validation Summary Report
Metals Analysis Results

Parameter	Samp# Date Site Depth Type	B07GP3 11-2-92 H-06-H(E) 9.00 - 11.00 A-6-4		B07KP4 11-2-92 H-06-H(E) 9.00 - 11.00 A-11-1		B07KP5 11-2-92 H-06-H(E) 9.00 - 11.00 A-11-1dup		B07KP6 11-2-92 H-06-H(E) 9.00 - 11.00 A-11-1spl		B07KP7 11-2-92 H-06-H(E) 9.00 - 11.00 A-11-2		B07KP8 11-2-92 H-06-H(E) 9.00 - 11.00 A-12-1	
		Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result
ALUMINUM	mg/Kg	20000.000		13300.000		13900.000		13400.000		19000.000		18100.000	
ANTIMONY	mg/Kg	20.000	U	12.800	UJ	13.900	J	12.700	U	20.000	U	12.600	UJ
ARSENIC	mg/Kg	9.200		7.300		6.300		10.600	B	5.100		9.300	
BARIUM	mg/Kg	130.000		163.000		187.000		157.000		150.000		148.000	
BERYLLIUM	mg/Kg	1.000	U	0.610	U	0.600	U	0.640	B	1.000	U	0.760	U
CADMIUM	mg/Kg	1.000	U	1.100	U	1.900		0.640	B	1.000	U	1.100	U
CALCIUM	mg/Kg	18000.000		15000.000		15100.000		16100.000		16000.000		17300.000	
CHROMIUM	mg/Kg	25.000		20.200		22.400		21.000		26.000		24.100	
COBALT	mg/Kg	10.000		10.500	B	11.400		14.600		10.000		11.500	
COPPER	mg/Kg	31.000		22.300		24.200		27.100		24.000		29.200	
IRON	mg/Kg	25000.000		24400.000		30300.000		27800.000		26000.000		27300.000	
LEAD	mg/Kg	11.000		190.000		26.500		29.900		21.000		22.700	
LITHIUM	mg/Kg	20.000		N/R		N/R		N/R		21.000		N/R	
MAGNESIUM	mg/Kg	8800.000		7580.000		7810.000		7700.000		9000.000		8960.000	
MANGANESE	mg/Kg	460.000		524.000		533.000		571.000		500.000		497.000	
MOLYBDENUM	mg/Kg	2.000	U	N/R		N/R		N/R		2.000	U	N/R	
MERCURY	mg/Kg	0.200	U	0.050	U	0.050	U	0.110	U	0.200	U	0.050	U
NICKEL	mg/Kg	21.000		20.800		19.600		20.800		23.000		20.300	
PHOSPHORUS	mg/Kg	600.000		N/R		N/R		N/R		580.000		N/R	
POTASSIUM	mg/Kg	3100.000		2170.000		2220.000		2330.000		2800.000		2830.000	
SELENIUM	mg/Kg	0.500	U	0.210	UJ	0.210	UJ	6.400	UJ	0.500	U	0.210	UJ
SILVER	mg/Kg	2.000	U	0.850	U	0.850	U	7.000		2.000	U	0.840	U
SODIUM	mg/Kg	560.000		367.000	J	373.000	J	539.000	U	600.000		578.000	J
STRONTIUM	mg/Kg	64.000		N/R		N/R		N/R		60.000		N/R	
THALLIUM	mg/Kg	0.500	U	0.240	B	0.210	U	6.400	U	0.500	U	0.210	U
VANADIUM	mg/Kg	43.000		45.500		47.300		52.200		44.000		46.100	
ZINC	mg/Kg	61.000		117.000		161.000		96.100		73.000		108.000	

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WHC-SD-EN-TI-194, Rev. 0

North Slope ERA Data Validation Summary Report
Metals Analysis Results

Parameter	Samp# Date Site Depth Type	B07KP9 11-3-92 H-06-H(E) 9.00 - 11.00 A-12-2		B07KQ0 11-3-92 H-06-H(E) 9.00 - 11.00 A-7-1		B07GN4 10-21-92 H-06-H(W) 9.00 - 11.00 A-2-2		B07GN5 10-21-92 H-06-H(W) 9.00 - 11.00 A-5-2		B07GN6 10-20-92 H-06-H(W) 9.00 - 11.00 A-5-5		B07GN7 10-21-92 H-06-H(W) 9.00 - 11.00 A-7-1	
		Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result
ALUMINUM	mg/Kg	20000.000		17000.000		13000.000		10000.000		13300.000		12000.000	
ANTIMONY	mg/Kg	20.000	U	20.000	U	20.000	U	20.000	U	12.600	U	20.000	U
ARSENIC	mg/Kg	8.800		8.500		5.300		4.600		8.100		5.500	
BARIUM	mg/Kg	150.000		200.000		130.000		110.000		114.000		110.000	
BERYLLIUM	mg/Kg	1.000	U	1.000	U	1.000	U	1.000	U	0.540	B	1.000	U
CADMIUM	mg/Kg	1.000	U	1.000	U	1.000	U	1.000	U	1.100	U	1.000	U
CALCIUM	mg/Kg	17000.000		16000.000		14000.000		9600.000		14600.000		13000.000	
CHROMIUM	mg/Kg	25.000		25.000		18.000		14.000		19.000		18.000	
COBALT	mg/Kg	11.000		10.000		10.000		9.000		10.800		10.000	
COPPER	mg/Kg	26.000	U	21.000	U	18.000		15.000		21.100		21.000	
IRON	mg/Kg	26000.000		24000.000		21000.000		20000.000		23400.000		21000.000	
LEAD	mg/Kg	14.000		11.000		8.200		7.800		15.000		47.000	
LITHIUM	mg/Kg	21.000		19.000		15.000		12.000		N/R		15.000	
MAGNESIUM	mg/Kg	9200.000		8500.000		7500.000		5900.000		7580.000		7100.000	
MANGANESE	mg/Kg	510.000		460.000		420.000		380.000		466.000		550.000	
MOLYBDENUM	mg/Kg	2.000	U	2.000	U	5.000	U	5.000	U	N/R		5.000	U
MERCURY	mg/Kg	0.200	U	0.200	U	0.050	U	0.050	U	0.050	U	0.050	U
NICKEL	mg/Kg	22.000		20.000		19.000		16.000		19.200		18.000	
PHOSPHORUS	mg/Kg	610.000		600.000		620.000		620.000		N/R		620.000	
POTASSIUM	mg/Kg	3000.000		2700.000		2100.000		1800.000		2130.000		2000.000	
SELENIUM	mg/Kg	0.500	U	0.500	U	0.500	U	0.500	U	0.210	U	0.500	U
SILVER	mg/Kg	2.000	U	2.000	U	1.000	U	1.000	U	0.840	U	1.000	U
SODIUM	mg/Kg	570.000		610.000		530.000		550.000		588.000	B	520.000	
STRONTIUM	mg/Kg	62.000		62.000		54.000		42.000		N/R		53.000	
THALLIUM	mg/Kg	0.500	U	0.500	U	1.000	U	1.000	U	0.210	U	1.000	U
VANADIUM	mg/Kg	43.000		43.000		38.000		40.000		44.200		36.000	
ZINC	mg/Kg	65.000		58.000		52.000		58.000		58.600		250.000	

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North Slope ERA Data Validation Summary Report
Metals Analysis Results

Parameter	Samp#	B07KR7		B07KR6		B07KR3		B07KR4		B07KQ1		B07GMO	
	Date	2-16-93		2-16-93		2-16-93		2-16-93		12-14-92		10-12-92	
	Site	H-07-H		H-07-H		H-12-L		H-12-L		H-81-R		H-83-L	
	Depth	---		16.00 - 16.00		---		---		4.00 - 6.00		9.00 - 11.00	
	Type	Drywell-s		Drywell-d		Acid Neut		Acid Neut		Drywell		A-2-2	
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	mg/Kg	11600.000		11900.000		7950.000		7100.000	J	7960.000		7300.000	
ANTIMONY	mg/Kg	5.400	UR	10.700	B	9.400	U	20.000	U	13.000	U	20.000	U
ARSENIC	mg/Kg	6.100		6.000		2.300		1.800	J	1.900		2.900	
BARIUM	mg/Kg	96.100		86.400		71.300		59.000	J	88.400		67.000	
BERYLLIUM	mg/Kg	0.690	B	0.560	U	0.390	B	1.000	UJ	0.470	U	1.000	U
CADMIUM	mg/Kg	1.800		1.000	B	0.630	U	1.000	U	1.100	U	1.000	U
CALCIUM	mg/Kg	12200.000		11000.000		4300.000		3200.000		10800.000		9800.000	
CHROMIUM	mg/Kg	17.100		18.400		11.400		11.000		10.400		12.000	
COBALT	mg/Kg	11.600		11.700		7.800	B	6.000		10.100	B	5.000	
COPPER	mg/Kg	28.800		24.400		17.300		10.000	R	21.700		9.000	
IRON	mg/Kg	22900.000		20600.000		16300.000		16000.000		29700.000		14000.000	
LEAD	mg/Kg	21.300		20.500		4.700		4.300	J	48.400		5.800	
LITHIUM	mg/Kg	N/R		N/R		N/R		8.000		N/R		10.000	
MAGNESIUM	mg/Kg	6970.000		6320.000		4120.000		4000.000		5930.000		5200.000	
MANGANESE	mg/Kg	369.000		303.000		267.000		250.000		475.000		270.000	
MOLYBDENUM	mg/Kg	N/R		N/R		N/R		5.000	U	N/R		5.000	U
MERCURY	mg/Kg	0.110	U	0.110	U	0.100	U	0.050	U	0.110	U	0.050	U
NICKEL	mg/Kg	16.900		13.400		6.700	B	10.000		13.100		11.000	
PHOSPHORUS	mg/Kg	N/R		N/R		N/R		530.000		N/R		400.000	
POTASSIUM	mg/Kg	2160.000		2130.000		1600.000		1300.000		1120.000		1400.000	
SELENIUM	mg/Kg	0.520	U	0.370	U	0.240	U	0.500	UJ	0.110	U	0.500	U
SILVER	mg/Kg	2.000	U	1.100	U	0.630	U	2.000	U	0.870	U	1.000	U
SODIUM	mg/Kg	181.000	B	412.000	B	411.000	B	220.000		189.000	B	170.000	
STRONTIUM	mg/Kg	N/R		N/R		N/R		19.000		N/R		37.000	
THALLIUM	mg/Kg	0.660	UJ	0.130	B	0.100	B	0.500	U	0.220	U	0.500	U
VANADIUM	mg/Kg	46.400		39.900		35.200		36.000		70.700		26.000	
ZINC	mg/Kg	103.000		88.200		33.600		34.000		65.800		35.000	

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North Slope ERA Data Validation Summary Report
Metals Analysis Results

Parameter	Samp#	B07GM1		B07GM2		B07GM3		B07GM4		B07GM5		B07KR9	
	Date Site Depth Type	10-12-92 H-83-L 9.00 - 11.00 A-2-3		10-13-92 H-83-L 9.00 - 11.00 A-1-3		10-14-92 H-83-L 9.00 - 11.00 A-3-2		10-14-92 H-83-L 9.00 - 11.00 A-3-3		10-14-92 H-83-L 9.00 - 11.00 A-4-1		2-17-93 H-90 --- Waste Drum	
	Units	Result	Q	Result	Q								
ALUMINUM	mg/Kg	7000.000		7700.000		6510.000		9600.000		8000.000		6500.000	J
ANTIMONY	mg/Kg	12.400	U	20.000	U	12.300	U	20.000	U	20.000	U	20.000	U
ARSENIC	mg/Kg	3.300		4.700		3.300		3.300		3.600		0.500	UJ
BARIUM	mg/Kg	70.200		77.000		119.000		100.000		88.000		90.000	J
BERYLLIUM	mg/Kg	0.410	U	1.000	U	0.410	U	1.000	U	1.000	U	1.000	UJ
CADMIUM	mg/Kg	1.000	U	1.000	U								
CALCIUM	mg/Kg	9000.000		9400.000		8670.000		11000.000		11000.000		10000.000	
CHROMIUM	mg/Kg	12.000		13.000		11.000		14.000		13.000		12.000	
COBALT	mg/Kg	5.200	B	7.000		5.100	B	8.000		7.000		6.000	
COPPER	mg/Kg	21.200		13.000		11.000		12.000		12.000		31.000	R
IRON	mg/Kg	14500.000		20000.000		14500.000		20000.000		18000.000		18000.000	
LEAD	mg/Kg	5.500		22.000		9.200		4.600		5.200		1200.000	J
LITHIUM	mg/Kg	N/R		10.000		N/R		12.000		11.000		6.000	
MAGNESIUM	mg/Kg	5060.000		5500.000		4690.000		6100.000		5700.000		3900.000	
MANGANESE	mg/Kg	273.000		350.000		283.000		370.000		340.000		240.000	
MOLYBDENUM	mg/Kg	N/R		5.000	U	N/R		5.000	U	5.000	U	5.000	U
MERCURY	mg/Kg	0.060	B	0.050	U	0.050	B	0.050	U	0.050	U	0.090	
NICKEL	mg/Kg	11.200		12.000		11.800		14.000		11.000		9.000	
PHOSPHORUS	mg/Kg	N/R		570.000		N/R		550.000		530.000		890.000	
POTASSIUM	mg/Kg	1330.000		1700.000		1420.000		1800.000		1700.000		1200.000	
SELENIUM	mg/Kg	0.210	U	0.500	U	0.200	U	0.500	U	0.500	U	0.500	UJ
SILVER	mg/Kg	0.830	U	1.000	U	0.820	U	1.000	U	1.000	U	2.000	U
SODIUM	mg/Kg	245.000	B	160.000		269.000	B	240.000		190.000		320.000	
STRONTIUM	mg/Kg	N/R		32.000		N/R		47.000		36.000		41.000	
THALLIUM	mg/Kg	0.210	U	0.500	U	0.200	U	0.500	U	0.500	U	0.500	U
VANADIUM	mg/Kg	26.500		32.000		26.200		43.000		35.000		46.000	
ZINC	mg/Kg	37.400		46.000		48.200		45.000		42.000		290.000	

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North Slope ERA Data Validation Summary Report
Metals Analysis Results

Parameter	Samp# Date Site Depth Type	B07KS0 2-17-93 H-90 --- Waste Drum		B07KS1 2-17-93 H-90 East --- Scraped Area		B07KS2 2-17-93 H-90 West --- Scraped Area		B07KQ4 2-10-93 Homestead --- Cistern	
		Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	mg/Kg	7700.000	J	7400.000	J	8450.000		7410.000	
ANTIMONY	mg/Kg	20.000	U	20.000	U	19.900		10.500	U
ARSENIC	mg/Kg	3.100	J	2.100	J	3.400		3.400	
BARIUM	mg/Kg	100.000	J	92.000	J	95.600		128.000	
BERYLLIUM	mg/Kg	1.000	UJ	1.000	UJ	0.520	U	0.230	U
CADMIUM	mg/Kg	1.000		1.000	U	0.630	U	0.700	U
CALCIUM	mg/Kg	9100.000		9200.000		11000.000		4100.000	
CHROMIUM	mg/Kg	14.000		13.000		10.200		16.800	
COBALT	mg/Kg	7.000		8.000		11.000		9.500	B
COPPER	mg/Kg	29.000	R	23.000	R	18.200		40.700	
IRON	mg/Kg	19000.000		28000.000		20000.000		39000.000	
LEAD	mg/Kg	760.000	J	120.000	J	68.500		216.000	
LITHIUM	mg/Kg	6.000		7.000		N/R		N/R	
MAGNESIUM	mg/Kg	4300.000		4200.000		4420.000		3690.000	
MANGANESE	mg/Kg	250.000		350.000		391.000		422.000	
MOLYBDENUM	mg/Kg	5.000	U	5.000	U	N/R		N/R	
MERCURY	mg/Kg	0.050	U	0.050	U	0.110	U	0.120	U
NICKEL	mg/Kg	11.000		11.000		8.800		23.400	
PHOSPHORUS	mg/Kg	860.000		760.000		N/R		N/R	
POTASSIUM	mg/Kg	1400.000		1400.000		1430.000		1550.000	
SELENIUM	mg/Kg	0.500	UJ	0.500	UJ	0.320	U	0.350	U
SILVER	mg/Kg	2.000	U	2.000	U	0.940	U	0.700	U
SODIUM	mg/Kg	440.000		270.000		610.000	B	175.000	B
STRONTIUM	mg/Kg	37.000		31.000		N/R		N/R	
THALLIUM	mg/Kg	0.500	U	0.500	U	0.140	B	0.180	B
VANADIUM	mg/Kg	46.000		52.000		51.500		45.300	
ZINC	mg/Kg	490.000		230.000		56.500		144.000	

U - Indicates the constituent was analyzed for but not detected. The value reported is the sample quantitation limit.
 UJ - Indicates the constituent was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.
 J - Indicates the constituent was analyzed for and detected. The value reported is considered an estimated value due to an identified quality control deficiency.
 B - Indicates a detected value less than the CRDL but greater than the IDL.
 BJ - Indicates an estimated detected value less than the CRDL but greater than the IDL.
 R - Indicates the constituent was analyzed for and detected. The value reported is considered unusable due to an identified quality control deficiency.
 UR - Indicates the constituent was analyzed for but not detected. The value reported is considered unusable due to an identified quality control deficiency.
 N/R - Indicates the constituent was not reported by the laboratory.

APPENDIX G
GENERAL CHEMISTRY VALIDATED DATA SUMMARY

North Slope ERA Data Validation Summary Report
 General Chemistry Analysis Results

Parameter	Samp#	B07GN9	B07GP4	B07KR8	B07GN2	B07GN3	B07GM7	
	Date	10-20-92	11-2-92	2-16-93	10-21-92	10-20-92	10-20-92	
	Site	Eq Blank	Eq Blank	Eq Blank	H-04(E)	H-04(E)	H-04(W)	
	Depth	---	---	---	7.00 - 9.00	8.00 - 10.00	8.00 - 9.00	
	Type	(sand)	(sand)	(sand)	A-1-1	A-1-2	A-1-3	
	Units	Result	Q	Result	Q	Result	Q	
FLUORIDE	mg/Kg	2.000	U	1.000	U	3.000		3.000
CHLORIDE	mg/Kg	2.000	U	2.000		2.000	U	27.000
SULFATE	mg/Kg	2.000	U	1.000		5.000		28.000
PHOSPHATE	mg/Kg	0.700	U	4.000	U	1.000	U	0.700
NITRATE+NITRITE (as N)	mg/Kg	1.000	U	1.000	U	1.000	U	2.000
CHROMIUM (Hexavalent)	mg/Kg	1.000	U	1.000	U	2.000	U	1.000
TOTAL PETROLEUM HYDROCARBONS	mg/Kg	10.000	U	10.000	UJ	10.000	U	10.000
NITRITE	mg/Kg	N/R		N/R		N/R		N/R
NITRATE	mg/Kg	N/R		N/R		N/R		N/R
BROMIDE	mg/Kg	N/R		N/R		N/R		N/R

Parameter	Samp#	B07GM8	B07GM9	B07GN1	B07GN0	B07GM6	B07GP2	
	Date	10-20-92	10-20-92	10-21-92	10-21-92	10-21-92	10-30-92	
	Site	H-04(W)	H-04(W)	H-04(W)	H-04(W)	H-04(W)	H-06-H(E)	
	Depth	8.00 - 9.00	8.00 - 9.00	7.00 - 9.00	7.50 - 9.50	9.00 - 11.00	9.00 - 11.00	
	Type	A-1-3 dup	A-1-3 spl	A-3-1	A-2-2	A-1-2	A-2-1	
	Units	Result	Q	Result	Q	Result	Q	
FLUORIDE	mg/Kg	3.000		4.620		7.000		3.000
CHLORIDE	mg/Kg	28.000		32.600		190.000		62.000
SULFATE	mg/Kg	770.000		851.000		3100.000		1300.000
PHOSPHATE	mg/Kg	0.700	U	0.823		0.700	U	0.700
NITRATE+NITRITE (as N)	mg/Kg	4.000		4.920		10.000		6.000
CHROMIUM (Hexavalent)	mg/Kg	1.000	U	0.078	J	1.000	U	1.000
TOTAL PETROLEUM HYDROCARBONS	mg/Kg	50.000		20.000	UJ	30.000		10.000
NITRITE	mg/Kg	N/R		0.400		N/R		N/R
NITRATE	mg/Kg	N/R		18.700		N/R		N/R
BROMIDE	mg/Kg	N/R		1.890		N/R		N/R

U - Indicates the constituent was analyzed for but not detected. The value reported is the sample quantitation limit.
 UJ - Indicates the constituent was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.
 J - Indicates the constituent was analyzed for and detected. The value reported is considered an estimated value due to an identified quality control deficiency.
 N/R - Indicates the constituent was not reported by the laboratory.

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North Slope ERA Data Validation Summary Report
General Chemistry Analysis Results

Parameter	Samp#	B07KP3	B07KP4	B07KP5	B07KP6	B07KP7	B07KP8
	Date	11-2-92	11-2-92	11-2-92	11-2-92	11-2-92	11-2-92
	Site	H-06-H(E)	H-06-H(E)	H-06-H(E)	H-06-H(E)	H-06-H(E)	H-06-H(E)
	Depth	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00
	Type	A-6-4	A-11-1	A-11-1dup	A-11-1spl	A-11-2	A-12-1
	Units	Result	Q	Result	Q	Result	Q
FLUORIDE	mg/Kg	3.000		2.000		1.000	
CHLORIDE	mg/Kg	78.000		7.000		7.000	
SULFATE	mg/Kg	120.000		830.000		550.000	
PHOSPHATE	mg/Kg	4.000	U	4.000	U	4.000	U
NITRATE+NITRITE (as N)	mg/Kg	2.000		2.000		2.000	
CHROMIUM (Hexavalent)	mg/Kg	1.000	U	1.000	U	1.000	U
TOTAL PETROLEUM HYDROCARBONS	mg/Kg	10.000	U	20.000	J	10.000	UJ
NITRITE	mg/Kg	N/R		N/R		N/R	
NITRATE	mg/Kg	N/R		N/R		13.000	
BROMIDE	mg/Kg	N/R		N/R		0.500	U

Parameter	Samp#	B07KP9	B07KQ0	B07GN4	B07GN5	B07GN6	B07GN7
	Date	11-3-92	11-3-92	10-21-92	10-21-92	10-20-92	10-21-92
	Site	H-06-H(E)	H-06-H(E)	H-06-H(W)	H-06-H(W)	H-06-H(W)	H-06-H(W)
	Depth	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00
	Type	A-12-2	A-7-1	A-2-2	A-5-2	A-5-5	A-7-1
	Units	Result	Q	Result	Q	Result	Q
FLUORIDE	mg/Kg	5.000		5.000		4.000	
CHLORIDE	mg/Kg	4.000		28.000		73.000	
SULFATE	mg/Kg	45.000		240.000		270.000	
PHOSPHATE	mg/Kg	4.000	U	4.000	U	0.700	U
NITRATE+NITRITE (as N)	mg/Kg	1.000	U	1.000		6.000	
CHROMIUM (Hexavalent)	mg/Kg	1.000	U	1.000	U	1.000	U
TOTAL PETROLEUM HYDROCARBONS	mg/Kg	10.000	U	10.000	U	10.000	U
NITRITE	mg/Kg	N/R		N/R		N/R	
NITRATE	mg/Kg	N/R		N/R		N/R	
BROMIDE	mg/Kg	N/R		N/R		N/R	

U - Indicates the constituent was analyzed for but not detected. The value reported is the sample quantitation limit.
 UJ - Indicates the constituent was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.
 J - Indicates the constituent was analyzed for and detected. The value reported is considered an estimated value due to an identified quality control deficiency.
 N/R - Indicates the constituent was not reported by the laboratory.

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North Slope ERA Data Validation Summary Report
General Chemistry Analysis Results

Parameter	Samp#	B07GN8	B07GP0	B07GP1	B07KQ2	B07KQ3	B07KR5
	Date	10-21-92	10-30-92	10-30-92	12-15-92	12-16-92	2-16-93
	Site	H-06-H(W)	H-06-H(W)	H-06-H(W)	H-06-L	H-06-L	H-07-H
	Depth	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	0.00 - 3.00	13.50 - 15.50	---
	Type	A-16-1	A-19-2	A-19-3	Drywell	Rock Pit	Drywell
	Units	Result	Q	Result	Q	Result	Q
FLUORIDE	mg/Kg	4.000		3.000		1.000	U
CHLORIDE	mg/Kg	3.000		140.000		6.000	
SULFATE	mg/Kg	200.000		140.000		28.000	
PHOSPHATE	mg/Kg	0.700	U	4.000	U	8.000	U
NITRATE+NITRITE (as N)	mg/Kg	1.000		16.000		77.000	
CHROMIUM (Hexavalent)	mg/Kg	1.000	U	1.000	U	21.000	U
TOTAL PETROLEUM HYDROCARBONS	mg/Kg	10.000	U	10.000	U	90.000	J
NITRITE	mg/Kg	N/R		N/R		N/R	
NITRATE	mg/Kg	N/R		N/R		N/R	
BROMIDE	mg/Kg	N/R		N/R		N/R	

Parameter	Samp#	B07KR7	B07KR6	B07KR3	B07KR4	B07KQ1	B07GM0
	Date	2-16-93	2-16-93	2-16-93	2-16-93	12-14-92	10-12-92
	Site	H-07-H	H-07-H	H-12-L	H-12-L	H-81-R	H-83-L
	Depth	---	16.00 - 16.00	---	---	4.00 - 6.00	9.00 - 11.00
	Type	Drywell-s	Drywell-d	Acid Neut	Acid Neut	Drywell	A-2-2
	Units	Result	Q	Result	Q	Result	Q
FLUORIDE	mg/Kg	1.420		1.000	U	15.000	
CHLORIDE	mg/Kg	6.350		10.000		1.000	U
SULFATE	mg/Kg	23.700		31.000		20.000	J
PHOSPHATE	mg/Kg	4.580	J	1.000	U	2.000	UJ
NITRATE+NITRITE (as N)	mg/Kg	27.900		14.000		1.000	
CHROMIUM (Hexavalent)	mg/Kg	2.740	U	2.000		2.000	
TOTAL PETROLEUM HYDROCARBONS	mg/Kg	72.000		60.000		N/R	
NITRITE	mg/Kg	0.200	U	N/R		N/R	
NITRATE	mg/Kg	63.200		N/R		N/R	
BROMIDE	mg/Kg	0.600	U	N/R		N/R	

U - Indicates the constituent was analyzed for but not detected. The value reported is the sample quantitation limit.
 UJ - Indicates the constituent was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.
 J - Indicates the constituent was analyzed for and detected. The value reported is considered an estimated value due to an identified quality control deficiency.
 N/R - Indicates the constituent was not reported by the laboratory.

North Slope ERA Data Validation Summary Report
General Chemistry Analysis Results

Parameter	Samp#	B07GM1	B07GM2	B07GM3	B07GM4	B07GM5	B07KR9
	Date	10-12-92	10-13-92	10-14-92	10-14-92	10-14-92	2-17-93
Site		H-83-L	H-83-L	H-83-L	H-83-L	H-83-L	H-90
Depth		9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	9.00 - 11.00	---
Type		A-2-3	A-1-3	A-3-2	A-3-3	A-4-1	Waste Drum
Units		Result Q	Result Q				
FLUORIDE	mg/Kg	1.000 U	2.000 U	1.000 U	2.000	2.000 U	N/R
CHLORIDE	mg/Kg	3.000	9.000	14.000	7.000	6.000	N/R
SULFATE	mg/Kg	8.000	14.000	46.000	11.000	18.000	N/R
PHOSPHATE	mg/Kg	4.000 U	2.000 U	4.000 U	2.000 U	2.000 U	N/R
NITRATE+NITRITE (as N)	mg/Kg	2.000	3.000	4.000	2.000	5.000	N/R
CHROMIUM (Hexavalent)	mg/Kg	1.000 U	N/R				
TOTAL PETROLEUM HYDROCARBONS	mg/Kg	10.000 U	20.000	10.000 U	10.000 U	10.000 U	60000.000
NITRITE	mg/Kg	N/R	N/R	N/R	N/R	N/R	N/R
NITRATE	mg/Kg	N/R	N/R	N/R	N/R	N/R	N/R
BROMIDE	mg/Kg	N/R	N/R	N/R	N/R	N/R	N/R

Parameter	Samp#	B07KS0	B07KS1	B07KS2	B07KQ4
	Date	2-17-93	2-17-93	2-17-93	2-10-93
Site		H-90	H-90 East	H-90 West	Homestead
Depth		---	---	---	---
Type		Waste Drum	Scraped Area	Scraped Area	Cistern
Units		Result Q	Result Q	Result Q	Result Q
FLUORIDE	mg/Kg	N/R	N/R	N/R	1.000 U
CHLORIDE	mg/Kg	N/R	N/R	N/R	12.000
SULFATE	mg/Kg	N/R	N/R	N/R	11.000
PHOSPHATE	mg/Kg	N/R	N/R	N/R	5.000
NITRATE+NITRITE (as N)	mg/Kg	N/R	N/R	N/R	2.000
CHROMIUM (Hexavalent)	mg/Kg	N/R	N/R	N/R	10.000 U
TOTAL PETROLEUM HYDROCARBONS	mg/Kg	65000.000	940.000	1700.000	10.000 U
NITRITE	mg/Kg	N/R	N/R	N/R	N/R
NITRATE	mg/Kg	N/R	N/R	N/R	N/R
BROMIDE	mg/Kg	N/R	N/R	N/R	N/R

U - Indicates the constituent was analyzed for but not detected. The value reported is the sample quantitation limit.
 UJ - Indicates the constituent was analyzed for but not detected. The value reported is an estimate of the sample quantitation limit.
 J - Indicates the constituent was analyzed for and detected. The value reported is considered an estimated value due to an identified quality control deficiency.
 N/R - Indicates the constituent was not reported by the laboratory.

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WHC-SD-EN-TI-194, Rev. 0

Golder Associates Inc.

4104-148th Avenue, NE
Redmond, WA 98052
Telephone (206) 883-0777
Fax (206) 882-5498



June 9, 1993

Our ref: 893-1458
WHC/O/377

Westinghouse Hanford Company
Hanford Analytical Services Management
345 Hills, MSIN H4-29
Richland, Washington 99352

ATTENTION: Ms. Brianna Colley

RE: NORTH SLOPE ERA DATA VALIDATION, TASK ORDER G93-58, TRANSMITTAL OF
DATA VALIDATION PACKAGES

Dear Ms. Colley:

Enclosed are two analytical data packages including associated data validation documentation for North Slope ERA samples analyzed by the S-Cubed laboratory for volatile, semivolatile, chlorinated pesticide/PCB, chlorinated herbicide and phosphate pesticide organic compounds, metals, anions, and total petroleum hydrocarbons.

The data packages included in this shipment are 3561-SCU-111 and 3395-SCU-078. The validation documentation is located at the front of the data package folder.

Please call if you have any questions.

Sincerely,

GOLDER ASSOCIATES INC.

A handwritten signature in cursive script, appearing to read 'Kent M. Angelos'.

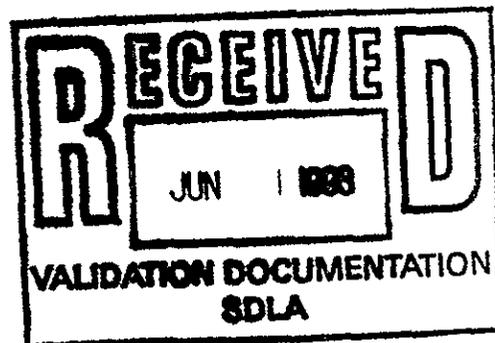
Kent M. Angelos
Project Manager

A handwritten signature in cursive script, appearing to read 'Donald M. Caldwell'.

Donald M. Caldwell
Project Director

Enclosures

cc: Bob Henckel, WHC



MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. *McLaffer*

RE: Volatile Organic Analysis Data Validation Summary for 3395-SCU-078

INTRODUCTION

This memo presents the results of data validation on data package 3395-SCU-078 consisting of one soil samples submitted for volatile organic analysis. The sample was analyzed by the S-Cubed laboratory using CLP protocols. The sample identification number, collection date and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07GM9	10/20/92	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data set with a total of 33 determinations reported. Out of the 33 determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

There were no major deficiencies identified requiring rejection of the data.

MINOR DEFICIENCIES

Blanks

Acetone and methylene chloride were detected in the method blank at 12 and 14 ug/kg, respectively. The associated positive sample results with concentrations less than ten times the blank concentrations have been qualified as undetected (U).

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- B - Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.
- U - Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ - Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.
- UR - Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R - Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.
- NJ - Indicates presumptive evidence of a compound at an estimated value.
- N - Indicates presumptive evidence of a compound.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

ATTACHMENT 4
DATA VALIDATION SUPPORTING DOCUMENTATION

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: <i>North Slope, EPA</i>	REVIEWER: <i>oj</i>	DATE: <i>5/20/98</i>
LABORATORY: <i>S-cubed</i>	CASE: <i>92-321</i>	SDG: <i>3395</i>
SAMPLES/MATRIX: <i>Soil B07GM9</i>		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

<u>Data Package Item</u>	Present?:	Yes	No	N/A
Case Narrative		<input checked="" type="checkbox"/>		
Data Summary			<input checked="" type="checkbox"/>	
Chain-of-Custody		<input checked="" type="checkbox"/>		
QC Summary				
Surrogate report		<input checked="" type="checkbox"/>		
MS/MSD report		<input checked="" type="checkbox"/>		
Blank summary report		<input checked="" type="checkbox"/>		
GC/MS tuning report		<input checked="" type="checkbox"/>		
Internal standard summary report		<input checked="" type="checkbox"/>		
Sample Data				
Sample reports		<input checked="" type="checkbox"/>		
TIC reports for each sample		<input checked="" type="checkbox"/>		
RIC reports for all samples		<input checked="" type="checkbox"/>		
Raw and corrected spectra for all detected results		<input checked="" type="checkbox"/>		
Raw and corrected library search data for all reported TIC				<input checked="" type="checkbox"/>
Quantitation and calculation data for all TIC				<input checked="" type="checkbox"/>
Standards Data				
Initial calibration report		<input checked="" type="checkbox"/>		
RIC and quantitation reports for initial calibration		<input checked="" type="checkbox"/>		
Continuing calibration reports		<input checked="" type="checkbox"/>		
RIC and quantitation reports for cont. calibrations		<input checked="" type="checkbox"/>		
Internal standard summary report		<input checked="" type="checkbox"/>		
Raw QC Data				
Tuning report, spectra and mass lists			<input checked="" type="checkbox"/>	
Blank analysis reports		<input checked="" type="checkbox"/>		
TIC reports for all blanks		<input checked="" type="checkbox"/>		
RIC and quantitation reports for blanks		<input checked="" type="checkbox"/>		
Raw and corrected spectra for all detected results in blanks		<input checked="" type="checkbox"/>		
Raw and corrected library search data for all reported TIC				<input checked="" type="checkbox"/>

mass list and spectra missing

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Quantitation and calculation data for all TIC MS/MSD report forms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
RIC and quantitation reports for MS/MSD		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Additional Data				
Moisture/% solids data sheets		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Reduction formulae		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Instrument time logs		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Chemist notebook pages		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample preparation sheets		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time? Yes No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? Yes No N/A

Do all tunes on all instruments meet the tuning criteria? Yes No N/A

Do all tunes on all instruments meet the expanded criteria? Yes No N/A

Has the laboratory made any calculation or transcription errors? Yes No N/A

Have the proper significant figures been reported? Yes No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? Yes No N/A

Are all RSD values $\leq 30\%$ (2/88 SOW)? Yes No N/A

Are all RRF values ≥ 0.05 (2/88 SOW)? Yes No N/A

- | | | | |
|---|--------------------------------------|----|-----|
| Are all applicable RSD values $\leq 20.5\%$ (3/90 SOW)? | <input checked="" type="radio"/> Yes | No | N/A |
| Are all applicable RSD values $\leq 40\%$ (3/90 SOW)? | <input checked="" type="radio"/> Yes | No | N/A |
| Are all applicable RRF values within SOW limits (3/90 SOW)? | <input checked="" type="radio"/> Yes | No | N/A |
| Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)? | <input checked="" type="radio"/> Yes | No | N/A |

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

- | | | | |
|--|--------------------------------------|----|--------------------------------------|
| Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed? | <input checked="" type="radio"/> Yes | No | N/A |
| Are all RRF values ≥ 0.05 (2/88 SOW)? | Yes | No | <input checked="" type="radio"/> N/A |
| Are all %D values $\leq 25\%$ (2/88 or 3/90 SOW)? | <input checked="" type="radio"/> Yes | No | N/A |
| Are all %D values $\leq 40\%$ (3/90 SOW)? | <input checked="" type="radio"/> Yes | No | N/A |
| Are all RRF values within SOW limits (3/90 SOW)? | <input checked="" type="radio"/> Yes | No | N/A |
| Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)? | <input checked="" type="radio"/> Yes | No | N/A |

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

- | | | | |
|---|--------------------------------------|----|-----|
| Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed? | <input checked="" type="radio"/> Yes | No | N/A |
| Are TCL compounds present in the laboratory blanks? | <input checked="" type="radio"/> Yes | No | N/A |

ACTION: Qualify all sample results ≤ 10 times the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is $< CRQL$. Qualify all remaining sample results ≤ 5 times the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks? Yes No N/A

ACTION: Qualify all detected sample results ≤ 5 times the amount in any valid field blank as nondetects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Are any surrogate recoveries $< 10\%$? Yes No N/A

Are any method blank surrogate recoveries out of specification? Yes No N/A

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for nondetects) for surrogates out of specification but $> 10\%$. Qualify all associated positive sample results as estimated (J) and all nondetect results as unusable (R) for all surrogates below 10%. If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? Yes No N/A

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit sample in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are >5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes No N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes No N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for nondetects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ± 0.06 relative retention time units of the associated calibration standard?	Yes	No	<i>See comment 1</i> <u>N/A</u>
Are all ions at a relative intensity of $\geq 10\%$ in the standard spectra present in the sample spectra?	Yes	No	<u>N/A</u>
Do the relative intensities between the standard and sample spectra agree within 20%?	Yes	No	<u>N/A</u>
Have all ions $> 10\%$ in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?	<u>Yes</u>	No	N/A
Are molecular ions present in the reference spectrum present in the sample spectrum?	Yes	No	<u>N/A</u>

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation?	<u>Yes</u>	No	N/A
Are results and quantitation limits calculated properly?	<u>Yes</u>	No	N/A
Has the laboratory reported the sample quantitation limits within $5 \times CRQL$ values?	<u>Yes</u>	No	N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?	<u>Yes</u>	No	<i>See comment 2</i> N/A
Has the laboratory properly identified and coded all TIC?	Yes	No	<u>N/A</u>

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

Yes No N/A

Were project specific data quality objectives met for this analysis?

Yes No N/A

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

- ① There were no target compounds identified.
- ② There were no TICs identified.

HOLDING TIME SUMMARY - FORM B-1

SDG: 3345	REVIEWER: Cjensen	DATE: 5/20/92	PAGE 1 OF 1				
COMMENTS: Volatiles							
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
P1076149	VCA	10/20/92	NA	11/3/92	NA	14	None
P076149MS	↓	↓	↓	↓	↓	↓	↓
P076149MSA	↓	↓	↓	↓	↓	↓	↓
P076149Rep	↓	↓	↓	↓	↓	↓	↓

B-1

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. 

RE: Semivolatile Organic Analysis Data Validation Summary for 3395-SCU-078

INTRODUCTION

This memo presents the results of data validation on data package 3395-SCU-078 consisting of one soil sample submitted for semivolatile organics analysis. The sample was analyzed by the S-Cubed laboratory using CLP protocols. The sample identification number, collection date and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07GM9	10/20/92	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data set with a total of 64 determinations reported. Out of the 64 determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

Aldol condensation product 4-hydroxy-4-methyl-2-pentanone was identified in sample B07GM9 at 12000 ug/kg. This compound is an aldol condensation product and was qualified as unusable (R).

MINOR DEFICIENCIES

Blanks

Bis(2-ethylhexyl)phthalate was detected in the method blank at 170 J ug/kg. Bis(2-ethylhexyl)phthalate was not detected in the sample, therefore, no qualification of the data was necessary.

Holding Times

The extraction holding time of 7 days from sample collection to extraction was exceeded by four days. Sample results were qualified as estimated (J for detects, UJ for non-detects).

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- B - Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.
- U - Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ - Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.
- UR - Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R - Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.
- NJ - Indicates presumptive evidence of a compound at an estimated value.
- N - Indicates presumptive evidence of a compound.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO7GM9

Lab Name: S-CUBED Contract: 32359-51
 Lab Code: S3 Case No.: 92-321 SAS No.: SDG No.: 3395
 Matrix: (soil/water) SOIL Lab Sample ID: 3395-01
 Sample wt/vol: 30 (g/ml) G Lab File ID: DN09111
 Level: (low/med) LOW Date Received: 10/29/92
 %Moisture: 13.80 decanted: (Y/N) N Date Extracted: 11/02/92
 Concentrated Extract Volume: 2000.00 (uL) Date Analyzed: 11/10/92
 Injection Volume: 1.00 (uL) Dilution Factor: 1.00
 GPC Cleanup: (Y/N) Y pH: 7.91

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg Q

51-28-5	2,4-Dinitrophenol	1800	+
100-02-7	4-Nitrophenol	1800	+
132-64-9	Dibenzofuran	760	+
121-14-2	2,4-Dinitrotoluene	760	+
84-66-2	Diethylphthalate	760	+
7005-72-3	4-Chlorophenyl-phenyl ether	760	+
86-73-7	Fluorene	760	+
100-01-6	4-Nitroaniline	1800	+
534-52-1	4,6-Dinitro-2-methylphenol	1800	+
86-30-6	N-Nitrosodiphenylamine (1)	760	+
101-55-3	4-Bromophenyl-phenylether	760	+
118-74-1	Hexachlorobenzene	760	+
87-86-5	Pentachlorophenol	1800	+
85-01-8	Phenanthrene	760	+
120-12-7	Anthracene	760	+
86-74-8	Carbazole	760	+
84-74-2	Di-n-butylphthalate	760	+
206-44-0	Fluoranthene	760	+
129-00-0	Pyrene	760	+
85-68-7	Butylbenzylphthalate	760	+
91-94-1	3,3'-Dichlorobenzidine	760	+
56-55-3	Benzo(a)anthracene	760	+
218-01-9	Chrysene	760	+
117-81-7	Bis(2-Ethylhexyl)phthalate	760	+
117-84-0	Di-n-octylphthalate	760	+
205-99-2	Benzo(b)fluoranthene	760	+
207-08-9	Benzo(k)fluoranthene	760	+
50-32-8	Benzo(a)pyrene	760	+
193-39-5	Indeno(1,2,3-cd)pyrene	760	+
53-70-3	Dibenz(a,h)anthracene	760	+
191-24-2	Benzo(g,h,i)perylene	760	+

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05/20/98

CC9

Sample Number
 B07619

Organics Analysis Data Sheet
 (Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1 00123-42-2	2-PENTANONE 4-HYDROXY-4-METHYL	BNA	53	12.07584
2	CARBAZOLE	"	1308	3.10 J
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9/5/2015

0100

ATTACHMENT 4
DATA VALIDATION SUPPORTING DOCUMENTATION

SEMI-VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-2

PROJECT: <i>North Slope FRA</i>	REVIEWER: <i>CJ</i>	DATE: <i>5/20/93</i>
LABORATORY: <i>S-Cubed</i>	CASE: <i>92-321</i>	SDG: <i>3395</i>
SAMPLES/MATRIX: <i>Soil B076W19</i>		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

<u>Data Package Item</u>	Present?:	Yes	No	N/A
Case Narrative		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chain-of-Custody		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surrogate report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blank summary report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GC/MS tuning report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal standard summary report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample reports		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TIC reports for each sample		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RIC reports for all samples		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw and corrected spectra for all detected results		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw and corrected library search data for all reported TIC		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Quantitation and calculation data for all TIC		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Standards Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Initial calibration report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RIC and quantitation reports for initial calibration		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Continuing calibration reports		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RIC and quantitation reports for cont. calibrations		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Internal standard summary report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw QC Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tuning report, spectra and mass lists		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blank analysis reports		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TIC reports for all blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RIC and quantitation reports for blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw and corrected spectra for all detected results in blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw and corrected library search data for all reported TIC		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation and calculation data for all TIC		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
MS/MSD report forms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

mass lists & spectra not included

<u>Data Package Item</u>	Present?:	Yes	No	N/A
RIC and quantitation reports for MS/MSD		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Additional Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moisture/% solids data sheets		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Reduction formulae		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Instrument time logs		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chemist notebook pages		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preparation sheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. HOLDING TIMES

Were all samples extracted within holding time?	Yes	<input checked="" type="checkbox"/> No	N/A
Were all samples analyzed within holding time?	<input checked="" type="checkbox"/> Yes	No	N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a DFTPP tune report present for each applicable 12h period?	<input checked="" type="checkbox"/> Yes	No	N/A
Do all tunes on all instruments meet the tuning criteria?	<input checked="" type="checkbox"/> Yes	No	N/A
Do all tunes on all instruments meet the expanded criteria?	Yes	No	<input checked="" type="checkbox"/> N/A
Has the laboratory made any calculation or transcription errors?	Yes	<input checked="" type="checkbox"/> No	N/A
Have the proper significant figures been reported?	<input checked="" type="checkbox"/> Yes	No	N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects and UJ for nondetects). If all tuning criteria are not met, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments?	<input checked="" type="checkbox"/> Yes	No	N/A
Are all RSD values $\leq 30\%$ (2/88 SOW)?	Yes	No	<input checked="" type="checkbox"/> N/A
Are all RRF values ≥ 0.05 (2/88 SOW)?	Yes	No	<input checked="" type="checkbox"/> N/A
Are all applicable RSD values $\leq 20.5\%$ (3/90 SOW)?	Yes	<input checked="" type="checkbox"/> No	N/A
Are all applicable RSD values $\leq 40\%$ (3/90 SOW)?	<input checked="" type="checkbox"/> Yes	No	N/A

Are all applicable RRF values within SOW limits (3/90 SOW)? Yes No N/A

Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)? Yes No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed? Yes No N/A *See comment 1*

Are all RRF values ≥ 0.05 (2/88 SOW)? Yes No N/A

Are all %D values $\leq 25\%$ (2/88 or 3/90 SOW)? Yes No N/A

Are all %D values $\leq 40\%$ (3/90 SOW)? Yes No N/A

Are all RRF values within SOW limits (3/90 SOW)? Yes No N/A

Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)? Yes No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every extraction batch? Yes No N/A

Are compounds reported in the laboratory blanks? Yes No N/A *See comment 2*

ACTION: Qualify all sample results < 10 times the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is $< CRQL$. Qualify all remaining sample results < 5 times the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are compounds reported in the field blanks? Yes No N/A

ACTION: Qualify all detected sample results ≤ 5 times the amount in any valid field blank as nondetects (U) and note the results of the field blanks in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Are any surrogate recoveries < 10%? Yes No N/A

Are any method blank surrogate recoveries out of specification? Yes No N/A

ACTION: Qualify all associated data as estimated (J for detects and UJ for nondetects) if at least two semivolatile surrogates are out of specification. If any surrogate is below 10% recovery qualify associated detected results as estimated (J) and associated nondetect results as unusable (R). If method blank surrogates are out of specification and associated sample surrogates are acceptable no qualification is required, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? Yes No N/A

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the results for the performance audit samples within the acceptance limits?

Yes No N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are all RPD values within specification?

Yes No N/A

Are there any calculation errors?

Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are > 5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable?

Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable?

Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits?

Yes No N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check?

Yes No N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects and UJ for nondetects. If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ± 0.06 relative retention time units of the associated calibration standard?

Yes No

see comment 3
 N/A

Are all ions at a relative intensity of $\geq 10\%$ in the standard spectra present in the sample spectra?

Yes No

N/A

Do the relative intensities between the standard and sample spectra agree within 20%?

Yes No

N/A

Have all ions $> 10\%$ in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?

Yes No

N/A

Are molecular ions in the reference spectrum present in the sample spectrum?

Yes No

N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R).

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standards for quantitation?

Yes

No

N/A

Are results and quantitation limits calculated properly?

Yes

No

N/A

Has the laboratory reported the sample quantitation limits within 5xCRQL values?

Yes

No

N/A

ACTION: If the quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?

Yes

No

N/A

Has the laboratory properly identified and coded all TIC?

Yes

No

N/A

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

Yes No N/A

Were project specific data quality objectives met for this analysis?

Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

① A continuing calibration was not submitted with the data package. The initial calibration RRF will be used to calculate results.

② f-HP detected in blank at 170 J however, not detected in the sample. No qualification of the sample data is necessary.

③ There were no ^{UV} compounds identified. TIC 4-hydroxy-4-methyl-2-pentanone was detected and qualified as unusable for B076M9.

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. 

RE: Total Recoverable Petroleum Hydrocarbon Analysis Data Validation Summary for 3395-SCU-078

INTRODUCTION

This memo presents the results of data validation on data package 3395-SCU-078 consisting of one soil sample submitted for total recoverable petroleum hydrocarbon (TRPH) analysis. The sample was analyzed by the S-Cubed laboratory using EPA method 418.1. The sample identification number, collection date, and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07GM9	10/20/92	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data set with a total of one determination reported. Out of the one determination reported, it was deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

There were no major deficiencies identified requiring rejection of the data.

MINOR DEFICIENCIES

Holding Times

The extraction holding time was exceeded for sample B07GM9, therefore all sample results were qualified as estimated (J for detects, UJ for non-detects).

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- B - Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.
- U - Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ - Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.
- UR - Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R - Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.
- NJ - Indicates presumptive evidence of a compound at an estimated value.
- N - Indicates presumptive evidence of a compound.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

Analyte: TRPH
 Method: 418.1
 Technique: IR Spec.
 DATE: 11/04/92
 Analyst: CF
 Instr: P&E IR Spec.
 Case:
 Lot(s): 3392, 95, 97, 99

Smpl Aliquot: 0.020 Kg or L
 Final Volume: 0.1 L
 Concs: p.p.m.
 Reagent #1 0
 #2 20
 #3 40
 #4 80
 #5 160
 #6 300

Standards
 Source: S-CUBED/EL4240
 Corr. Coef. 0.99978

Detection Limit 20mg/kg

Std.	Abs	Conc
Blank	0	0
#1	0.032	20
#2	0.064	40
#3	0.122	80
#4	0.238	160
#5	0.441	300
#6		

S-Cubed Sample ID	Client Sample ID	Abs.	Conc. (ug/ml)	Dil. Factor	Extract Conc.	Detection Limit	% Mois.	(mg kg) Final CONC.
EBS1102B		0	0.0000	1	0.0000	20	0	0
LCSS1102B		0.233	156.4042	1	782.0210	20	0	782
3392-01	S1459180	0.11	73.8389	1	369.1945	20	17.29	446
3392-01REP	S1459180REP	0.064	42.9608	1	214.8041	20	17.29	260
3392-01MS	S1459180MS	0.29	194.6662	1	973.3309	20	17.29	1177
3392-02	S1459181	0	0.0000	1	0.0000	20	14.78	0
3392-03	S1459182	0	0.0000	1	0.0000	20	15.62	0
3392-04	S1459183	0	0.0000	1	0.0000	20	16.55	0
3395-01	BO7GM9	0	0.0000	1	0.0000	20	13.8	0
3395-01REP	BO7GM9REP	0	0.0000	1	0.0000	20	13.8	0
3395-01MS	BO7GM9MS	0.217	145.6640	1	728.3200	20	13.8	245
3397-01	S1454338	0	0.0000	1	0.0000	20	2.9	0
3397-02	S1454389	0	0.0000	1	0.0000	20	5.3	0
3397-03	S1454388	0	0.0000	1	0.0000	20	13.5	0
3397-05	S1454061	0.125	83.9078	5	2097.6959	100	5.6	2222
3399-01	22A10-1	0	0.0000	1	0.0000	20	13.2	0
3399-02	22A10-2	0	0.0000	1	0.0000	20	5.1	0
3399-03	22A10-3	0	0.0000	1	0.0000	20	13.9	0
3399-05	22A10-5	0	0.0000	1	0.0000	20	8	0
3399-06	22A10-6	0	0.0000	1	0.0000	20	3.9	0

Q

4J
4J
4J

Cj 10/2/92

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

TRPH

6/2/93

~~VOLATILE~~ ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: North Slope ERA	REVIEWER: G	DATE: 6/2/93
LABORATORY: S-Cubed	CASE: 92-321	SDG: 3395
SAMPLES/MATRIX: Soil (3395-01) B0767M9		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		✓		
Data Summary			✓	
Chain-of-Custody			✓	
QC Summary				
LCS Surrogate report		✓		
MS/MSD report		✓		
Blank summary report		✓		
GC/MS tuning report				✓
Internal standard summary report				✓
Sample Data				
Sample reports		✓		
TIC reports for each sample				✓
RIC reports for all samples				✓
Raw and corrected spectra for all detected results		✓		6/2/93
Raw and corrected library search data for all reported TIC				✓
Quantitation and calculation data for all TIC				✓
Standards Data				
Initial calibration report				✓
RIC and quantitation reports for initial calibration				✓
Continuing calibration reports				✓
RIC and quantitation reports for cont. calibrations				✓
Internal standard summary report				✓
Raw QC Data				
Tuning report, spectra and mass lists				✓
Blank analysis reports				✓
TIC reports for all blanks				✓
RIC and quantitation reports for blanks				✓
Raw and corrected spectra for all detected results in blanks				✓
Raw and corrected library search data for all reported TIC				✓

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Quantitation and calculation data for all TIC		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD report forms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RIC and quantitation reports for MS/MSD		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Additional Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moisture/% solids data sheets		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Reduction formulae		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instrument time logs		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chemist notebook pages		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample preparation sheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time? Yes No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period?	Yes	No	<input checked="" type="radio"/> N/A
Do all tunes on all instruments meet the tuning criteria?	Yes	No	<input checked="" type="radio"/> N/A
Do all tunes on all instruments meet the expanded criteria?	Yes	No	<input checked="" type="radio"/> N/A
Has the laboratory made any calculation or transcription errors?	Yes	No	<input checked="" type="radio"/> N/A
Have the proper significant figures been reported?	Yes	No	<input checked="" type="radio"/> N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments?	<input checked="" type="radio"/> Yes	No	<input type="radio"/> N/A
Are all RSD values $\leq 30\%$ (2/88 SOW)?	Yes	No	<input checked="" type="radio"/> N/A
Are all RRF values ≥ 0.05 (2/88 SOW)?	Yes	No	<input checked="" type="radio"/> N/A

Are all applicable RSD values $\leq 20.5\%$ (3/90 SOW)?	Yes	No	(N/A)
Are all applicable RSD values $\leq 40\%$ (3/90 SOW)?	Yes	No	(N/A)
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	(N/A)
Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)?	Yes	No	(N/A)

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed?	(Yes)	No	N/A
Are all RRF values ≥ 0.05 (2/88 SOW)?	Yes	No	(N/A)
Are all %D values $\leq 25\%$ (2/88 or 3/90 SOW)?	Yes	No	(N/A)
Are all %D values $\leq 40\%$ (3/90 SOW)?	Yes	No	(N/A)
Are all RRF values within SOW limits (3/90 SOW)?	Yes	No	(N/A)
Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)?	Yes	No	(N/A)

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	(Yes)	No	N/A
Are TCL compounds present in the laboratory blanks?	Yes	(No)	N/A

ACTION: Qualify all sample results ≤ 10 times the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is $< CRQL$. Qualify all remaining sample results ≤ 5 times the blank concentration in similar fashion.

5.3 PERFORMANCE AUDIT SAMPLES

Are the performance audit sample results within the acceptance limits?

Yes No

N/A

ACTION: Note the results of the performance audit sample in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification?

Yes No

N/A

Are there any calculation errors?

Yes No

N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are > 5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable?

Yes No

N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable?

Yes No

N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits?

Yes No

N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check?

Yes No

N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for nondetects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ± 0.06 relative retention time units of the associated calibration standard? Yes No (N/A)

Are all ions at a relative intensity of $\geq 10\%$ in the standard spectra present in the sample spectra? Yes No (N/A)

Do the relative intensities between the standard and sample spectra agree within 20%? Yes No (N/A)

Have all ions $> 10\%$ in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination? Yes No (N/A)

Are molecular ions present in the reference spectrum present in the sample spectrum? Yes No (N/A)

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation? Yes No (N/A)

Are results and quantitation limits calculated properly? Yes No (N/A)

Has the laboratory reported the sample quantitation limits within $5 \times CRQL$ values? Yes No (N/A)

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW? Yes No (N/A)

Has the laboratory properly identified and coded all TIC? Yes No (N/A)

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

Yes No N/A

Were project specific data quality objectives met for this analysis?

Yes No N/A

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10.0 of the data validation requirements.

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. 

RE: Organochlorine Pesticide/PCB Data Validation Summary for 3395-SCU-078

INTRODUCTION

This memo presents the results of data validation on data package 3395-SCU-078 consisting of one soil sample submitted for organochlorine pesticide/PCB analysis. The sample was analyzed by the S-Cubed laboratory using CLP protocols. The sample identification number, collection date and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07GM9	10/20/92	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data set with a total of 28 determinations reported. Out of the 28 determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

There were no major deficiencies identified requiring rejection of the data.

MINOR DEFICIENCIES

Holding Times

The extraction holding time was exceeded for sample B07GM9, therefore all sample results were qualified as estimated (J for detects, UJ for non-detects).

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- B - Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.
- U - Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ - Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.
- UR - Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R - Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.
- NJ - Indicates presumptive evidence of a compound at an estimated value.
- N - Indicates presumptive evidence of a compound.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

ATTACHMENT 4
DATA VALIDATION SUPPORTING DOCUMENTATION

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: <i>North Slope</i>	REVIEWER: <i>C Jensen</i>	DATE: <i>5/20/93</i>
LABORATORY: <i>S-Cubed</i>	CASE: <i>92-321</i>	SDG: <i>3395</i>
SAMPLES/MATRIX: <i>0076419 Soil</i>		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for resubmittal.

<u>Data Package Item</u>	Present?:	Yes	No	N/A
Case Narrative		<input checked="" type="checkbox"/>		
Data Summary			<input checked="" type="checkbox"/>	
Chain-of-Custody		<input checked="" type="checkbox"/>		
QC Summary		<input checked="" type="checkbox"/>		
Surrogate report		<input checked="" type="checkbox"/>		
MS/MSD report		<input checked="" type="checkbox"/>		
Blank summary report		<input checked="" type="checkbox"/>		
Sample Data				
Sample reports		<input checked="" type="checkbox"/>		
Chromatograms		<input checked="" type="checkbox"/>		
GC integration reports				<input checked="" type="checkbox"/>
Worksheets			<input checked="" type="checkbox"/>	
UV traces from GPC			<input checked="" type="checkbox"/>	
GC/MS confirmation spectra	<i>5/20/93</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Standards Data				
Pesticides Evaluation Standards Summary		<input checked="" type="checkbox"/>		
Pesticides/PCB Standards Summary		<input checked="" type="checkbox"/>		
Pesticides/PCB identification		<input checked="" type="checkbox"/>		
Pesticides standard chromatograms		<input checked="" type="checkbox"/>		
Raw QC Data				
Blank analysis report forms and chromatograms		<input checked="" type="checkbox"/>		
MS/MSD report forms and chromatograms		<input checked="" type="checkbox"/>		

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Additional Data				
Moisture/% solids data sheets		—	✓	—
Reduction formulae		—	✓	—
Instrument time logs		—	✓	—
Chemist notebook pages		—	✓	—
Sample preparation sheets	✓	—	—	—

2. HOLDING TIMES

Were all samples extracted within holding time? Yes No N/A

Were all samples analyzed within holding time? Yes No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

3.1 INSTRUMENT PERFORMANCE (2/88 SOW)

Are DDT retention times greater than 12 minutes? Yes No N/A

ACTION: If DDT retention time is ≤ 12 minutes and resolution is $< 25\%$ qualify associated data as unusable (R).

Is resolution between DDT peaks acceptable? Yes No N/A

ACTION: If resolution between DDT peaks is unacceptable qualify associated data as unusable (R).

Do all pesticide standards elute within the established retention time windows? Yes No N/A

ACTION: If the standards do not meet the retention time criteria and peaks are not present near or within the retention time windows no sample qualification is necessary. If peaks are near or within the retention time windows and the standards and matrix spikes do not fall within the expanded retention time windows calculated according to the validation requirements, qualify all associated sample results from the last in-control point as unusable (R).

Are DDT breakdowns $\leq 20\%$? Yes No N/A

ACTION: If the DDT percent breakdown exceeds 20%, qualify all detected results for DDT as estimated (J) and all nondetects as unusable (R) if DDD and DDE are detected. In addition qualify all results for DDD or DDE as presumptive and estimated (NJ).

Are endrin breakdowns $\leq 20\%$? Yes No N/A

ACTION: If the endrin breakdown exceeds 20%, qualify all detected results for endrin as estimated (J) and all nondetects as unusable (R) if endrin aldehyde or endrin ketone are detected. In addition, qualify all results for endrin ketone as presumptive and estimated (NJ).

Are DBC retention time differences within specification? Yes No **N/A**

ACTION: If DBC %D values are outside the limits and the shift is occurring repeatedly in samples and standards, qualify affected sample results as unusable (R).

3.2 CALIBRATIONS (2/88 SOW)

Are RSD values for aldrin, endrin, DDT and DBC $\leq 10\%$? Yes No **N/A**

Have all standards been analyzed within 72 h of any sample? Yes No **N/A**

Has a 3-point calibration been conducted for DDT or toxaphene? Yes No **N/A**

Have all standards been analyzed at the start of each 72-h sequence? Yes No **N/A**

Have evaluation standards A, B, and C been analyzed within 72 h of any sample? Yes No **N/A**

Has the confirmation standard mix been analyzed after every five samples? Yes No **N/A**

Has evaluation standard B analyzed every 10 samples? Yes No **N/A**

Are %D values for initial and subsequent standards $\leq 15\%$ for quantitation standards and $\leq 20\%$ for confirmation standards? Yes No **N/A**

ACTION: If the RSD criteria were exceeded or three point calibrations not conducted qualify associated detects as estimated (J). If all standards were not analyzed at the beginning of each 72-h sequence qualify associated data as unusable (R). If the confirmation standards were not analyzed properly qualify associated detects as estimated (J). If the continuing calibration criteria were not met qualify associated quantitation data as estimated (J).

3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Is peak resolution acceptable? Yes No N/A

ACTION: If the resolution criteria are not met, reject positive sample results generated after initial calibration (R).

Are DDT and endrin breakdowns $\leq 20.0\%$ Yes No N/A

ACTION: If the breakdown criteria are not met qualify sample results as described in Section 5.3.1 of the validation requirements.

Are single component target compounds in the PEMs, INDA, INDB and the calibration standards within the retention time windows? Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples within two times the retention time windows (± 0.04 , ± 0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the retention time window a review is made of the raw data to determine expanded retention time windows (see Section 5.3.1 of the validation requirements). If all standards and matrix spikes fall within the expanded windows then no qualification of sample results is necessary. If all standards and matrix spikes do not fall within the expanded windows then all affected sample results are qualified as unusable (R).

Are the RPDs acceptable for the PEMs? Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are the RSDs for the calibration factors $< 10.0\%$ ($< 15.0\%$ for the BHC series, DDT, endrin, and methoxychlor)? Yes No N/A

ACTION: If the RSD criteria are not met qualify associated positive sample results as estimated (J).

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Have the analytical sequence requirements been met for the analysis of instrument blanks, PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the analytical sequence requirements are not followed and any of the resolution or retention time criteria listed below are exceeded, reject associated positive results (R).

Is peak resolution acceptable for PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the resolution criteria are not met reject positive sample results generated after a noncompliant standard analysis (R).

Are single component target compounds in the PEMs, INDA and INDB mixes within the retention time windows? Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples analyzed after the noncompliant standard within two times the retention time windows (± 0.04 , ± 0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the expanded windows rejected associated positive and nondetect results (R).

Are RPDs between the calculated and true amounts in the PEMs, INDA and INDB mixes $\leq 25.0\%$?

Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are DDT and endrin breakdowns in the PEMs $\leq 20.0\%$ ($\leq 30.0\%$ total combined)?

Yes No N/A

ACTION: If the breakdown criteria are not met qualify associated positive sample results in accordance with the criteria specified in Section 5.3.1.

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed the method blanks at the required frequency?

Yes No N/A

Has the laboratory analyzed a sulfur clean-up blank if required?

Yes No N/A

Has the laboratory analyzed instrument blanks at the required frequency?

Yes No N/A

Are target compounds present in the blanks?

Yes No N/A

ACTION: Qualify all associated positive results as nondetects (U) that are < 5 times the highest concentration in any acceptable blank.

4.2 FIELD BLANKS

Are target compounds present in the field blanks?

Yes No N/A

ACTION: If target compounds are present in the field blanks qualify all positive sample results < 5 times the highest valid field blank concentrations as nondetects (U) and note the results in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATE SAMPLES

Are the RPD values within specification? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are > 5xCRQL qualify positive results as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Do positive results meet the retention time window criteria? Yes No N/A

Were positive results analyzed on dissimilar columns? Yes No N/A

If dieldrin and DDE were reported was a 3% OV-1 column used for confirmation (2/88 SOW data only)? Yes No N/A

Do retention times and relative peak height ratios match the expected patterns for multiplex compounds (PCB, toxaphene or chlordane)? Yes No N/A

Has GC/MS confirmation been conducted on sample extract concentrations > 10 ppm? Yes No N/A

ACTION: If positive results do not meet the retention time criteria qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no interferences are noted report the CRQL and if the misidentified peak interferes with a target peak then the report value is qualified as estimated and nondetected (UJ). If positive results were not confirmed on dissimilar columns, reject affected results (R). If a 3% OV-1 was used to confirm dieldrin and DDE, reject the affected data (R). If PCB, chlordane or toxaphene identification is questionable qualify the results as presumptive and estimated (NJ). If GC/MS confirmation was not conducted contact the laboratory for explanation and note in the validation narrative.

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

Are results and quantitation limits calculated properly? Yes No N/A

Has the laboratory reported the sample quantitation limits within 5xCRQL values? Yes No N/A

ACTION: If results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? Yes No N/A

Were project specific data quality objectives met for this analysis? Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. 

RE: Organochlorine Herbicide Analysis Data Validation Summary for 3395-SCU-078

INTRODUCTION

This memo presents the results of data validation on data package 3395-SCU-078 consisting of one soil sample submitted for organochlorine herbicide analysis. The sample was analyzed by the S-Cubed laboratory using EPA method 8150. The sample identification number, collection date, and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07GM9	10/20/92	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met with the exception of the matrix spike/matrix spike duplicate relative percent differences for dichloroprop and 2,4-DB as noted under "Minor Deficiencies".

Accuracy. Goals for accuracy were met with the exception of a surrogate recovery for sample B07GM9 as noted under "Minor Deficiencies".

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data set with a total of 10 determinations reported. Out of the 10 determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

There were no major deficiencies identified requiring rejection of the data.

MINOR DEFICIENCIES

Blanks

MCPA was identified in the blank at 271,000 ug/kg, however, was not identified in sample B07GM9, therefore, no qualification of the data was necessary.

Holding Times

The extraction holding time was exceeded for sample B07GM9, therefore all sample results were qualified as estimated (J for detects, UJ for non-detects).

Precision

The relative percent difference (RPD) for dichloroprop and 2,4-DB in the MS/MSD were outside the control limits of 35%. No qualification of the data was necessary since all results were qualified as estimated due to exceedance of holding times.

Accuracy

The surrogate recovery exceeded the control limits for sample B07GM9MS. Since this is a spike sample, no qualification of the data was necessary.

The laboratory analyzed a laboratory control sample (LCS) in which the dalapon recovery was 18.4%, which is below the control limits of 25 to 150%. Since sample B07GM9 was previously qualified as UJ because of an extraction holding time exceedance, no further qualification is necessary.

Compound Identification

The percent difference (%D) between the quantitation and confirmation columns exceeded the limit of 25% for compounds 2,4-D and dichloroprop. Therefore, sample results were qualified as estimated (J for detects, UJ for non-detects).

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- B -** Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.
- U -** Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ -** Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- J -** Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.
- UR -** Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R -** Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.
- NJ -** Indicates presumptive evidence of a compound at an estimated value.
- N -** Indicates presumptive evidence of a compound.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

ATTACHMENT 4
DATA VALIDATION SUPPORTING DOCUMENTATION

HERBICIDE DATA VALIDATION CHECKLIST - FORM A-4

PROJECT: <i>North Slope ERA</i>	REVIEWER: <i>CJ</i>	DATE: <i>5/24/98</i>
LABORATORY: <i>S-Cubed</i>	CASE: <i>92-321</i>	SDG: <i>3395</i>
SAMPLES/MATRIX: <i>soil : BotGM9</i>		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data Summary		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chain of Custody Forms	<i>CJ 5/24/98</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample Analysis Request		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surrogate Recovery		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD Recovery		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Method Blank Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Results		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms for all samples/extracts		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation sheets for all samples/extracts		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extraction data sheets for all samples/extracts		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instrument time/run logs for all samples/extracts		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standards Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Initial Calibration standard concentrations		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Initial Calibration summary of RRF/RSD data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms for all initial cal. standards		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation sheets for all initial cal. standards		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instrument time/run logs for all samples/extracts		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration standard traceability data		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>5/24/98</i>
Raw QC Data		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Blank results		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms for all laboratory blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation reports for all laboratory blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Matrix Spike/Matrix Spike Duplicates		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD Results		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation reports		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Data Package Item</u>	Present?:	Yes	No	N/A
Additional Data				
Moisture/% Solids data sheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calculation formulae		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Instrument Run/Time Logs		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chemist notebook pages		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample preparation sheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. HOLDING TIMES

Were all samples extracted within holding times? Yes No N/A

Were all samples analyzed within holding times? Yes No N/A

ACTION: If the extraction or analytical holding times were exceeded, but not by a factor of two, qualify all affected results as estimated (J for detects and UJ for nondetects). Otherwise, reject all nondetects (R) and qualify all detects as estimated (J).

3. INSTRUMENT CALIBRATION

3.1 INITIAL CALIBRATION

Was an initial calibration conducted prior to sample analysis? Yes No N/A

Are all RSD values <20%? Yes No N/A

ACTION: If the RSD criteria were not met, qualify all results as estimated (J for detects and UJ for nondetects).

3.2 CONTINUING CALIBRATION

Have continuing calibrations been conducted at the proper frequency? Yes No N/A

give RPDs <15% for individual runs?
 Are the RRFs within $\pm 15\%$ of the initial calibration average RF? Yes No N/A

Are the RT values for the calibration compounds within the retention time windows? Yes No N/A

ACTION: If the percent difference criteria or retention time windows are not met, qualify all associated data as estimated (J for detects, UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed at least one method blank per matrix in the sample batch? Yes No N/A

See comment 1

Are target compounds present in the laboratory blanks?

Yes No N/A

ACTION: Qualify all detected results in the samples that are < 5 times the amount in any laboratory blank as nondetects (U).

4.2 FIELD BLANKS

Are target compounds present in the field blanks?

Yes No N/A

ACTION: Qualify all detected results in the samples that are < 5 times the amount in any valid field blank as nondetects (U).

5. ACCURACY

5.1 SURROGATE RECOVERY

See comment 2

Are any surrogate recoveries out of specification?

Yes No N/A

Are any surrogates nondetected?

Yes No N/A

ACTION: Surrogate recoveries out of specification will require qualification of all associated data as estimated (J for detects and UJ for nondetects). Surrogate recoveries that are 0% will require qualification of all detects as estimated (J) and the rejection of all nondetects (R).

5.2 MATRIX SPIKE RECOVERY

Has the laboratory conducted a MS/MSD analysis per matrix for the sample group?

Yes No N/A

Are there calculation or transcription errors?

Yes No N/A

Are MS recoveries within specification?

Yes No N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify positive results as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by the low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are there any calculation or transcription errors? Yes No N/A
 Are the RPD values within specification? Yes No N/A
See comment 3

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and not the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are > 5xCRQL qualify positive results as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATES

Are the field duplicate RPDs acceptable? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are the field split RPDs acceptable? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Are positive results within the retention time windows? Yes No N/A

Are positive results unaffected by interfering peaks? Yes No N/A

ACTION: If positive results are not within the retention time windows qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no potential interferences are present, report the CRQL and if the misidentified peak interferes with the potential detection of a target peak then the reported value is the quantitation limit and the result is qualified as estimated (UJ).

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory reported sample quantitation limits within 5xCRQL levels?

Yes No N/A

Are there any calculation or transcription errors?

Yes No N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and discuss in the validation narrative.

8. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

Yes No N/A

Were project specific data quality objectives met for this analysis?

Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

1. MCPA was identified in the blank at 271000 ug/kg however this was not identified in the sample. No qualification was necessary.

2. Surrogate recovery out for BOTANIN MS. No qualification of data is necessary.

3. The RPDs for dichloroprop and 2,4-DB were outside control limits. No sample qualification was necessary since this is a spike sample.

The laboratory analyzed an LCS in which the dalapon recovery was 18.4% and the control limits are 25 to 150%. The sample was previously qualified as US because of the extraction holding time being exceeded. Therefore no further qualification is necessary.

10A
 HERBICIDE IDENTIFICATION SUMMARY
 FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.

BO7GM9

Lab Name: S-CUBED Contract: 32359-51
 Lab Code: S3 Case No.: 92-321 SAS No.: SDG No.: 3395
 Lab Sample ID: 3395-01 Date(s) Analyzed: 11/25/92 11/25/92
 Instrument ID (1): 4 Instrument ID (2): 4
 GC Column(1): DB1701 ID: 0.53 (mm) GC Column(2): DB608 ID: 0.53 (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
2,4-DB	1	20.70	20.67	20.79	182	35.8
	2	20.83	20.73	20.85	134	
2,4,5-T	1	20.02	19.92	20.04	68.4	15.3
	2	20.07	20.06	20.18	59.3	
Dichlorprop	1	17.38	17.36	17.48	152	893
	2	17.43	17.43	17.55	1510	

g/b/1478

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. 

RE: Organophosphorus Pesticide Analysis Data Validation Summary for 3395-SCU-078

INTRODUCTION

This memo presents the results of data validation on data package 3395-SCU-078 consisting of one soil sample submitted for organophosphorus pesticide analysis. The sample was analyzed by the S-Cubed laboratory using EPA method 8140. The sample identification number, collection date, and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07GM9	10/20/92	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met with the exception of fensulfothion and merphos for the matrix spike (MS) and matrix spike duplicate (MSD) relative percent difference (RPD) as noted in "Minor Deficiencies".

Accuracy. Goals for accuracy were met with the exception of surrogate recoveries and spike recoveries as noted in "Minor Deficiencies".

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data set with a total of 21 determinations reported. Out of the 21 determinations reported, a total of 19 determinations were deemed valid which results in a completeness of 90 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

The MS/MSD spike recoveries were low for merphos and high for bolstar, 0 and 3% for merphos and 2330 and 2680% for bolstar. Therefore, sample results were qualified as unusable (R for detects, UR for non-detects).

MINOR DEFICIENCIES

Holding Times

The extraction holding time of 7 days was exceeded for sample B07GM9. Therefore, all results were qualified as estimated (J for detect, UJ for non-detects).

Calibrations

The initial calibration relative standard deviation (%RSD) of 20% was exceeded for conmaphos, mevinphos and sulprofos. Therefore, results for sample B07GM9 were qualified as estimated (J for detects, UJ for non-detects).

The continuing calibration relative percent difference (%RPD) of 20% was exceeded for fensulphothion, ethoprop, merphos, methyl parathion, phorate, ronnel, diazinon, coumaphos, dichlorvos and azinophos. Therefore, results for sample B07GM9 were qualified as estimated (J for detects, UJ for non-detects).

The continuing calibration elution time for fensulphothion was out of the established retention time window, therefore the associated compound in sample B07GM9 was qualified as estimated (J for detects, UJ for non-detects).

Surrogates

The surrogate control limit of 40 - 140% was exceeded for all samples. Therefore, the results have been qualified as estimated (J for detects, UJ for non-detects).

Matrix Spike/Matrix Spike Duplicates

The matrix spike (MS) and matrix spike duplicate (MSD) recoveries were exceeded for phorate, methyl parathion, ronnel, methyl azinophos, coumaphos and diazinon. Therefore sample results were qualified as estimated (J for detects, UJ for non-detects).

The RPDs for fensulphothion and merphos for sample B07GM9 exceeded the control limits. However, since these compounds have been previously qualified as estimated due to deficiencies in the continuing calibration, no further qualification was done.

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- B -** Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.
- U -** Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ -** Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- J -** Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.
- UR -** Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R -** Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.
- NJ -** Indicates presumptive evidence of a compound at an estimated value.
- N -** Indicates presumptive evidence of a compound.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 3395	REVIEWER: gj	DATE: 5/24/93	PAGE 1 OF 1
COMMENTS: Orthophosphorus Pesticides			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
all	J or UT	all	holding time
methyl parathion	J or UT	all	exceeded (extr. (ion))
Conmaphos	J or UT	↓	RPD 1CAC
merphos	↓	↓	exceeded
sulprofos	↓	↓	20%
Fenulfosfation	J or UT	all	1CAC RPD
Gtho prop	↓	↓	exceeded 25%
mer phos	↓	↓	
methyl parathion	↓	↓	
phorate	↓	↓	
Rounel	↓	↓	
Diazinon	↓	↓	
Cumprphos	↓	↓	
Diclorvos	↓	↓	
Azinophos	↓	↓	
Fenulfosfation	J or UT	all	out of window
all	J or UT	all	surrogate 157%
phorate	J or UT	↓	MS/MSD 2R
methyl parathion	↓	↓	out
Rounel	↓	↓	
methyl Azinophos	↓	↓	
Cumprphos	↓	↓	
Diazinon	↓	↓	
merphos	R	↓	MS/MSD extremely
Brolatan (sulprofos)	R	↓	out

Fenulfosfation J or UT all RPD on MS/MSD out
 merphos J or UT all RPD on MS/MSD out

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

ATTACHMENT 4
DATA VALIDATION SUPPORTING DOCUMENTATION

ORTHOPHTHALIC ACID PESTICIDES

HERBICIDE DATA VALIDATION CHECKLIST - FORM A-4

PROJECT: <i>North Slope ERA</i>	REVIEWER: <i>G</i>	DATE: <i>5/24/93</i>
LABORATORY: <i>S-Cubed</i>	CASE: <i>92-321</i>	SDG: <i>3395</i>
SAMPLES/MATRIX: <i>Soil 6076M9</i>		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Case Narrative		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chain of Custody Forms		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample Analysis Request		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC Summary		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surrogate Recovery		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD Recovery		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Method Blank Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Data		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Results		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms for all samples/extracts		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation sheets for all samples/extracts		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extraction data sheets for all samples/extracts		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instrument time/run logs for all samples/extracts		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standards Data		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Initial Calibration standard concentrations		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Initial Calibration summary of RRF/RSD data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms for all initial cal. standards		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation sheets for all initial cal. standards		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Instrument time/run logs for all samples/extracts		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration standard traceability data		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Raw QC Data		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blanks		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Blank results		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms for all laboratory blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation reports for all laboratory blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Matrix Spike/Matrix Spike Duplicates		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD Results		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation reports		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Data Package Item</u>	Present?:	Yes	No	N/A
Additional Data				
Moisture/% Solids data sheets		—	✓	—
Calculation formulae		—	✓	—
Instrument Run/Time Logs		—	✓	—
Chemist notebook pages		—	✓	—
Sample preparation sheets		✓	—	—

2. HOLDING TIMES

Were all samples extracted within holding times? Yes No N/A

Were all samples analyzed within holding times? Yes No N/A

ACTION: If the extraction or analytical holding times were exceeded, but not by a factor of two, qualify all affected results as estimated (J for detects and UJ for nondetects). Otherwise, reject all nondetects (R) and qualify all detects as estimated (J).

3. INSTRUMENT CALIBRATION

3.1 INITIAL CALIBRATION

Was an initial calibration conducted prior to sample analysis? Yes No N/A

Are all RSD values < 20%? Yes No N/A

ACTION: If the RSD criteria were not met, qualify all results as estimated (J for detects and UJ for nondetects).

3.2 CONTINUING CALIBRATION

Have continuing calibrations been conducted at the proper frequency? Yes No N/A

calibration verification summary ≤ 25%?
~~Are the RRFs within ± 15% of the initial calibration average RRF?~~ Yes No N/A

Are the RT values for the calibration compounds within the retention time windows? Yes No N/A

ACTION: If the percent difference criteria or retention time windows are not met, qualify all associated data as estimated (J for detects, UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed at least one method blank per matrix in the sample batch? Yes No N/A

Are target compounds present in the laboratory blanks? Yes No N/A

ACTION: Qualify all detected results in the samples that are <5 times the amount in any laboratory blank as nondetects (U).

4.2 FIELD BLANKS

Are target compounds present in the field blanks? Yes No N/A

ACTION: Qualify all detected results in the samples that are <5 times the amount in any valid field blank as nondetects (U).

5. ACCURACY

5.1 SURROGATE RECOVERY

Are any surrogate recoveries out of specification? *See comment 1*
 Yes No N/A

Are any surrogates nondetected? Yes No N/A

ACTION: Surrogate recoveries out of specification will require qualification of all associated data as estimated (J for detects and UJ for nondetects). Surrogate recoveries that are 0% will require qualification of all detects as estimated (J) and the rejection of all nondetects (R).

5.2 MATRIX SPIKE RECOVERY

Has the laboratory conducted a MS/MSD analysis per matrix for the sample group? Yes No N/A

Are there calculation or transcription errors? *9/5/24/13* Yes No N/A

Are MS recoveries within specification? Yes No N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is >5 times the spike concentration, no qualification is required, otherwise qualify positive results as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by the low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are performance audit sample results within the acceptance limits?

Yes No

N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are there any calculation or transcription errors?

Yes

No

N/A

Are the RPD values within specification?

Yes

No

N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and not the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are > 5xCRQL qualify positive results as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATES

Are the field duplicate RPDs acceptable?

Yes

No

N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are the field split RPDs acceptable?

Yes

No

N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Are positive results within the retention time windows?

Yes

No

N/A

Are positive results unaffected by interfering peaks?

Yes

No

N/A

no hits

ACTION: If positive results are not within the retention time windows qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no potential interferences are present, report the CRQL and if the misidentified peak interferes with the potential detection of a target peak then the reported value is the quantitation limit and the result is qualified as estimated (UJ).

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory reported sample quantitation limits within 5xCRQL levels?

Yes No N/A

Are there any calculation or transcription errors?

Yes No N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and discuss in the validation narrative.

8. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

Yes No N/A

Were project specific data quality objectives met for this analysis?

Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

① As noted in the case narrative, the surrogate recoveries were approx. 15D% for all analytes. High bias is probably due to a standards prep error.

② Spike recoveries were extremely low 0+3% for morphos and extremely high for Bolstar ^(25% to 268%) sample anal. as unusable for these two compounds.

CALIBRATION DATA SUMMARY - FORM B-2

SDG: 3395	REVIEWER: C. Jensen	DATE: 5/24/92	PAGE 1 OF 1		
COMMENTS:					
CALIB. TYPE:		INITIAL	CONTINUING	INSTRUMENT:	
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
11/24, 11/25/92	methyl parathion		(2SD > 20%) 20.9	all	J or UT
	Commaphos		34.2	↓	
	Mevinphos		25.0		
	Sulprofos		27.8		
11/25/92	Fen sulfotision		(RPD > 25%) 85.61		all
	Ethoprop		28.47	↓	
	Murphos		37.02		
	methyl parathion		32.78		
	Phorate		33.29		
	Ronnel		31.93		
	Diazinon		35.88		
	Commaphos		67.70		
	Dichlorvos		27.10		
	Azinophos		35.16		
	Fen sulfotision		(RT window out)		all

B-2

ACCURACY DATA SUMMARY - FORM B-4

SDG: 3395	REVIEWER: <i>aj</i>	DATE: 5/24/97	PAGE 1 OF 1	
COMMENTS: <i>Orthophosphorus Pesticides</i>				
SAMPLE ID	COMPOUND	% RECOVERY <small>(% with)</small>	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
<i>B076M9</i>	<i>ethion surrogate</i>	<i>154 (40-140)</i>	<i>B076M9</i>	<i>J or UJ</i>
<i>B076M9 spikes</i>	<i>Ethoprop</i>	<i>141, 149</i>	<i>B076M9</i>	<i>J or UJ</i>
	<i>phorate</i>	<i>143</i>		<i>J or UJ</i>
	<i>methyl parathion</i>	<i>316, 354</i>		<i>↓</i>
	<i>Roundup</i>	<i>152, 159</i>		<i>↓</i>
	<i>terbufos</i>	<i>0, 3</i>		<i>R</i>
	<i>Bolstar (sulphos)</i>	<i>2330, 2680</i>		<i>R</i>
	<i>methyl Azinphos</i>	<i>171, 187</i>		<i>J or UJ</i>
	<i>Coliuphos</i>	<i>523, 563</i>		<i>↓</i>
	<i>Diazinon</i>	<i>145</i>		<i>↓</i>

B-4

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. 

RE: General Chemistry Analysis Data Validation Summary for 3395-SCU-078

INTRODUCTION

This memo presents the results of data validation on data package 3395-SCU-078 consisting of one soil sample submitted for anions, hexavalent chromium and nitrate+nitrite as N. The sample was analyzed by the S-Cubed laboratory using routine laboratory protocols. The sample identification number, collection date and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07GM9	10/20/92	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1993) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met for all analyses.

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data set with a total of 9 determinations reported. Out of the 9 determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

There were no major deficiencies identified during validation.

MINOR DEFICIENCIES

The holding time of 24 hours was exceeded for hexavalent chromium, therefore, the sample result was qualified as estimated (J).

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

- B -** Indicates the analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). The data are usable for decision making purposes.
- U -** Indicates the analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ -** Indicates the analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- BJ -** Indicates the analyte was analyzed for and detected at a concentration greater than the IDL but less than the CRQL. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.
- J -** Indicates the analyte was analyzed for and detected at a concentration greater than the CRQL. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.
- UR -** Indicates the analyte was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R -** Indicates the analyte was analyzed and detected; however, due to an identified quality control deficiency the data are unusable.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

LABORATORY: S-CUBED
 CLIENT: WFC
 PROJECT: 92-231
 LOT #: 3395
 FILE #: ANI3395S
 DISK #: ANI0928
 METHOD NO.: 300.0
 UNIT: MG/KG

DATA REVIEWER: *an 11/10*
 PROJECT REVIEWER:
 CHARGE #: 32359-51
 DATE SAMPLED: 10-20-92
 DATE RECEIVED: 10-29-92
 PREP DATE: 11/4-11/5/92
 DATE ANALYZED: 11/4-11/5/92
 SAMPLE TYPE: SOIL

LAB ID	F	Cl	NO2	Br	NO3	PO4	SO4		
3395-01	4.62	32.6	0.400	1.89	18.7	0.823	851		

All QC requirements were met. The soil sample was leached into DI type H₂O prior to IC analysis (40 gm was leached into 200 mL).

aj 5/21/93

ATTACHMENT 4
DATA VALIDATION SUPPORTING DOCUMENTATION

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: <i>North Slope EIA</i>	REVIEWER: <i>CJ</i>	DATE: <i>5/21/93</i>
LABORATORY: <i>S-Cubed</i>	CASE: <i>92-321</i>	SDG: <i>3395</i>
SAMPLES/MATRIX: <i>soil - B076M9</i>		
<i>ANIONS, CRVI, NO₃/NO₂-N</i>		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cover Page		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Traffic Reports/Chain-of-Custody		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Analysis Data Report Forms		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Standards Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blanks Summary Report Forms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery Report Forms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Duplicate Sample Analysis Report Forms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample Report Forms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ion Chromatograph Chromatograms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TOC and TOX Instrument Printouts		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Laboratory Bench Sheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Additional Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Sample Preparation Logs		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instrument Run Logs		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Laboratory Chain-of-Custody		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Percent Solids Analysis Records		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>g/stub</i>
Reduction Formulae		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chemist Notebook Pages		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2. HOLDING TIMES

Were all samples analyzed within holding times? Yes No N/A

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? Yes No N/A

Are the correlation coefficients ≥ 0.995 ? Yes No N/A

Was a balance check conducted prior to the TDS analysis? Yes No N/A

Was the titrant normality checked? Yes No N/A

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Have ICV and CCV been analyzed at the proper frequency? Yes No N/A

Are ICV and CCV percent recoveries within control? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify all affected data in accordance with the validation requirements.

5. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? Yes No N/A

ACTION: Qualify all associated sample results for any analyte < 5 times the amount in any laboratory blank as nondetected (U) and list the affected samples and analytes below.

6. FIELD BLANKS

Are target analytes present in the field blanks? Yes No N/A

ACTION: Qualify all sample results for any analyte < 5 times the amount in any valid field blank as nondetected (U).

7. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the acceptance limits? Yes No N/A

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are > CRQL, qualify the data as estimated (J). If the spike recovery is < 30% and the sample results are less than the IDL qualify the data as unusable (R).

8. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A
Are there calculation errors? Yes No N/A

ACTION: Qualify the affected results according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or > 120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R < 50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS %R is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

9. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? Yes No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

12. FIELD SPLIT SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	<input checked="" type="radio"/> Yes	No	N/A
Are instrument detection limits below the CRDL?	<input checked="" type="radio"/> Yes	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

14. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	<input checked="" type="radio"/> Yes	No	N/A
Were project specific data quality objectives met for this analysis?	<input checked="" type="radio"/> Yes	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. *M. Jensen*

RE: Inorganic Analysis Data Validation Summary for 3395-SCU-078

INTRODUCTION

This memo presents the results of data validation on data package 3395-SCU-078 consisting of one soil sample submitted for inorganics analysis. The sample was analyzed by the S-Cubed laboratory using CLP protocols. The sample identification, collection date and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07GM9	10/20/92	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1993) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met with the exception of antimony, arsenic, selenium, silver and thallium spike recoveries and arsenic, selenium and thallium GFAA analytical spike recoveries as summarized in the major and minor deficiency sections.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met for all analyses.

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data set with a total of 23 determinations reported. Out of the 23 determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

The spike recoveries for selenium and thallium were 0% and 19.3%, respectively. Therefore, sample B07GM9 was qualified as unusable (UR for the nondetected result).

MINOR DEFICIENCIES

Blanks

Selenium was detected in the laboratory blank, however not in the sample, therefore, no qualification was necessary.

Matrix Spike

Antimony, arsenic and silver spike results exceeded the QC limits of 75% to 125% with results qualified as estimated (J for detects, UJ for nondetects).

Calibrations

The correlation coefficients for selenium and arsenic were <0.995. Therefore, sample B07GM9 was qualified as estimated (J for detects, UJ for non-detects).

GFAA Analytical Spikes

The analytical spike percent recoveries exceeded the QC limits of 85% to 115% for the following samples and analytes and the associated sample results have been qualified as estimated (J for detects, UJ for nondetects):

<u>Sample</u>	<u>Analyte</u>
B07GM9	Selenium
B07GM9	Arsenic

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

- B - Indicates the analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). The data are usable for decision making purposes.
- U - Indicates the analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ - Indicates the analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- BJ - Indicates the analyte was analyzed for and detected at a concentration greater than the IDL but less than the CRQL. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.
- J - Indicates the analyte was analyzed for and detected at a concentration greater than the CRQL. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.
- UR - Indicates the analyte was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R - Indicates the analyte was analyzed and detected; however, due to an identified quality control deficiency the data are unusable.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
5076M9

3395-01

Lab Name: S_CUBED _____ Contract: 32359-51 _____

Lab Code: S3 _____ Case No.: 92231 SAS No.: _____ SDG No.: 3395 _____

Matrix (soil/water): SOIL _____ Lab Sample ID: 3395-01 _____

Level (low/med): LOW _____ Date Received: 10/29/92

% Solids: 86.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15400			P
7440-36-0	Antimony	13.9	U	N	P
7440-38-2	Arsenic	7.0	U	WN	F
7440-39-3	Barium	346			P
7440-41-7	Beryllium	1.2			P
7440-43-9	Cadmium	0.70	B		P
7440-70-2	Calcium	18300			P
7440-47-3	Chromium	15.5			P
7440-48-4	Cobalt	10.2	B		P
7440-50-8	Copper	20.9			P
7439-89-6	Iron	22000			P
7439-92-1	Lead	18.9		*	F
7439-95-4	Magnesium	7260			P
7439-96-5	Manganese	362			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	14.8			P
7440-09-7	Potassium	1820			P
7782-49-2	Selenium	3.5	U	WN	F
7440-22-4	Silver	16.5		N	P
7440-23-5	Sodium	708	B		P
7440-28-0	Thallium	0.70	U	WN	F
7440-62-2	Vanadium	46.6			P
7440-66-6	Zinc	55.7			P

Q
UJ
UJ
UJ U
UJ UR
J
UR
4/8/93

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
B07GM9

05/21/93

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: <i>North Slope ERA</i>	REVIEWER: <i>Cj</i>	DATE: <i>5/21/93</i>
LABORATORY: <i>S-Cube</i>	CASE: <i>92-321</i>	SDG: <i>3395</i>
SAMPLES/MATRIX: <i>soil B076M9</i>		

1. COMPLETENESS AND CONTRACT COMPLIANCE

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Case Narrative		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cover Page		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Traffic Reports		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inorganic Analysis Data Sheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standards Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Initial and Continuing Calibration Verification		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRDL Standard for AA and ICP		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICP Interference Check Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Post-Digestion Spike Sample Recovery		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Duplicate		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standard Addition Results		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP Serial Dilutions		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instrument Detection Limits		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICP Interelement Correction Factors		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICP Linear Ranges		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Preparation Log		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICP Raw Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Furnace AA Raw Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mercury Raw Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cyanide Raw Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Additional Data		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Internal laboratory chain-of-custody		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Laboratory Sample Preparation Records		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Data Package Item	Present?:	Yes	No	N/A
Percent Solids Analysis Records		—	✓	—
Reduction Formulae		—	✓	—
Instrument Run Logs		✓	—	—
Chemist Notebook Pages		—	✓	—

2. HOLDING TIMES

Have all samples been analyzed within holding times? Yes No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used?

Yes No N/A

Are the correlation coefficients ≥ 0.995 ?

Yes No N/A

Was a midrange cyanide standard distilled?

Yes No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results $> IDL$ as estimated (J) and results $< IDL$ as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control?

Yes No N/A

Are there calculation errors?

Yes No N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency?

Yes No N/A

Are the AB solution %R values within control?

Yes No N/A

Are there calculation errors?

Yes No N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks?

SEE comment 4
 Yes No N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are > CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations < 10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

Are target analytes present in the field blanks?

Yes No N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits?

Yes No N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is > 125% and sample results are < IDL no qualification is required. If spike recovery is > 125% or < 75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is < 30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits?

Yes No N/A

Are there calculation errors?

Yes No N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results > IDL, for which the LCS %R falls within the range 50-79% or > 120%. Qualify as estimated (UJ), all sample results < IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R < 50%.

SOLID LCS - Qualify as estimated (J), all sample results > IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results < IDL for which the LCS %R are lower than the established control limits.

10. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits?

Yes No N/A

ACTION: Note the results of the performance audit sample analyses in the data validation narrative.

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable?

Yes No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable?

Yes No N/A

Is there evidence of negative interference?

Yes No N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits?

Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits?

Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections?

Yes No N/A

Are applicable duplicate injection RSD values within control?

Yes No N/A

If no, were samples rerun once as required?

Yes No N/A

Does the RSD for the rerun fall within the control limits?

Yes No N/A

Were analytical spike recoveries within the control limits?

Yes No N/A

If no, were MSA analyses performed when required?	Yes	No	N/A
Are MSA correlation coefficients ≥ 0.995 ?	Yes	No	N/A
If no, was a second MSA analysis performed?	Yes	No	N/A

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UI for nondetects). If the analytical spike recovery is $< 40\%$ qualify detects as estimated (J). If the analytical spike recovery is $\geq 10\%$ but $< 40\%$, qualify all nondetects as estimated (UI) and if the analytical spike recovery is $< 10\%$, reject all nondetects (R). If the sample absorbance is $< 50\%$ of the analytical spike absorbance and the analytical spike recovery is $< 85\%$ or $> 115\%$, qualify all results as estimated (J for detects and UI for nondetects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correlation coefficient was < 0.995 , qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	Yes	No	N/A
Are results within the calibrated range of the instruments and within the linear range of the ICP?	Yes	No	N/A
Are all detection limits below the CRQL?	Yes	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

18. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

(1) Selenium $n = 298675$, sample results qualified as I or UJ for all samples.

(2) There is no paperwork to support a mid-range standard was distilled, results qualified as I or UJ. 6/10/93

(3) The Hg CV was 38%, results qualified as I or UJ. 6/18/93

(4) Selenium is present in the blank at 1044 $\mu\text{g}/\text{kg}$, $\times 5 = 3.22 \text{ mg}/\text{kg}$, results listed as "if detected however" there were no detects.

ACCURACY DATA SUMMARY - FORM B-4

SDG: 3395		REVIEWER: P. Jensen	DATE: 5/21/93	PAGE 1 OF	
COMMENTS: Inorganic - metal					
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED	
Ant 3395-015 Ant 3395-015	Antimony	33.8	P076M9	J or UJ	
	Arsenic	137.5	P076M9	<IDL none, >IDL J	
	Selenium	0	P076M9	<IDL R, >IDL J	
	Silver	318	P076M9	<IDL none, >IDL J	
	Thallium	19.3	P076M9	<IDL R, >IDL J	
GFAA spike	Lead	5/21/93			
GFAA spike 3395-01	Arsenic	120%	P076M9	J or UJ	
GFAA spike 3395-01	Selenium	49.9	P076M9	J or UJ	
GFAA spike 3395-01	Thallium	77.5	P076M9	J or UJ	

B-4

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