ecology and environment, inc.
111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415
International Specialists in the Environment

US EPA RECORDS CENTER REGION 5
532204

CRL Receipt Date ~~5/4~~ 4/21 FIT Receipt Date ~~4/~~ 5/4 Review Completed 5/16/88

TO: Cliff Fiorczak
FROM: ~~Loretta Guzdziol~~ Zena Gold-Kaufman
SUBJECT: Burns Cold Forge
PAN: 040624 (1 hour charged for review) Case # 9309

Sample Description

Organics (VOA, ABN, Pest/PCB)		Inorganics (Metals, Cyanide)	
#	Low Soil	# 5	Low Soil
	Low Water		Low Water
	Drinking Water		Drinking Water
	Other		Other

Project Data Status _____ Completed!!

_____ Incomplete, awaiting 5 organic soils

FIT Data Review Findings:

Inorganics detected in most samples.
mercury detected below CRDL

Check Data Sheets for Transcription Errors

✓ Compounds were detected in sample(s); see enclosed sheet.

Book No. 7 Page No. 296 Date Sampled 4/05

recycled paper

ecology and environment, inc.
CHICAGO, ILLINOIS

CHEMICAL EVALUATION FORM

SITE NAME: Burns Cold Forge PAN # OH0624 DATE: 5/16/88
CASE # 9309 UNITS - mg/Kg REVIEWER: EOK

COMPOUND	CRDL** RAS SOIL mg/Kg (ppm)	CRDL** RAS WATER ug/L (ppb)	CRDL** SAS DRINKING WATER ug/L (ppb)	MEW 811	MEW 812	MEW 813	MEW 814	MEW 815		
ALUMINUM *	40	200	100	6170P	2590	3310	5090	3980		
ANTIMONY J	2.4	60	5	JN [7.6]P	—	—	—	—		
ARSENIC J	2	10	5	6.0FJ	7.1 NJ	3.0JN	5.0J	6.5J		
BARIUM *	40	200	50	151	117	[34]	—	[37]		
BERYLLIUM	1	5	5	[0.3]	—	[0.5]	—	[0.2]		
CADMIUM	1	5	0.5	5.3	5.8	1.9	3.1	3.8		
CALCIUM *	1000	5000	1000	2600	[568]	2260	1370	8220		
CHROMIUM	2	10	10	8.1	5.0	7.2	17	14		
COBALT	10	50	10	[7.0]	[1.7]	16	[5.4]	[4.3]		
COPPER	5	25	10	14	11	49	28	17		
IRON *	20	100	100	21000	26400	7740	14900	16400		
LEAD	1	5	2	45	36	14	36	22		
MAGNESIUM *	1000	5000	1000	[1110]	[526]	1340	[829]	[791]		
MANGANESE *	3	15	10	1520	116	118	341	345		
MERCURY	0.008	0.2	0.2	[0.10]	[0.1]	—	[0.10]	0.10		
NICKEL	8	40	20	14	[2.1]	28	16	9.7		
POTASSIUM *	1000	5000	2000	[565]	[295]	[819]	[309]	[309]		
SELENIUM	1	5	2	—	—	—	—	—		
SILVER	2	10	5	—	—	—	—	—		
SODIUM *	1000	5000	1000	[7.5]	[98]	[236]	[315]	[117]		
THALLIUM	2	10	2	—	—	—	—	—		
VANADIUM	10	50	10	12	14	[8.0]	[12]	12		
ZINC * J	4	20	20	72EJ	32 J	61 EJ	521 EJ	86J		
CYANIDE	2	10	10	—	—	—	—	—		

* NOT GENERALLY USED FOR HRS SCORING
** SPECIFIC DETECTION LIMITS ARE HIGHLY MATRIX DEPENDENT. THE DETECTION LIMITS LISTED HEREIN ARE PROVIDED FOR GUIDANCE AND MAY NOT ALWAYS BE ACHIEVABLE.

ecology and environment, inc.
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International Specialists in the Environment

MEMORANDUM

DATE:

TO: File

FROM: ~~Loretta Guzdziol~~ Zena Gold-Kaufman

SUBJECT: Burns Cold Forge

PAN

Below is a list of elements whose spike recoveries were biased low:

Element	Spike Recovery
Sb	49.3%
As	51.4

The low recoveries rates biases the data low, thereby raising the detection limits and estimating any reported values. This means that in the worst case the true concentration is greater than the reported values and the data is an underestimation.

It is the opinion of this reviewer that the data is acceptable for HRS scoring.

45G:2

recycled paper

[illegible] BELOW. ADDITIONAL QA/QC IS PROVIDED IN THE ATTACHED DATA SHEETS.

I. REPORTING UNITS

A. Organics

1. Water Samples - ug/L or ppb (parts per billion)
2. Soils or Sediments - ug/kg or ppb (parts per billion)

B. Metals

1. Water Samples - ug/L or ppb (parts per billion)
2. Soils or Sediments - mg/kg or ppm (parts per million)

II. DEFINITION OF FOOTNOTES TO ANALYTICAL DATA

A. Organics

FOOTNOTE	DEFINITION	INTERPRETATION
U	Indicates compound was analyzed for but not detected.	Compound was not detected.
J	Indicates an estimated value.	Compound value may be semi-quantitative.
UJ	Quantitation limit is estimated due to a Quality Control (QC) protocol.	Compound was not detected.
C	This flag applies to pesticide results where the identification has been confirmed by GC/MS. Single component pesticides >10 ng/ul in the final extract shall be confirmed by GC/MS.	Compound was confirmed by mass spectroscop
B	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.	Compound value may be semi-quantitative if it is <5x the blank concentration (<10x the blank concentrations for common lab artifacts: phthalates, methylene chloride acetone, toluene, 2-butanone).
E	This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. This flag will not apply to pesticides/PCBs analyzed by GC/EC methods.	Compound value may be semi-quantitative.
D	This flag identifies all compounds identified in an analysis at a secondary dilution factor.	Alerts data user to a possible change in the CRQL.
A	This flag indicates that a TIC is a suspected aldol-condensation product.	Alerts data user of a lab artifact.
R	Results are unusable due to a major violation of QC protocol.	Compound value is not usable.

B. Metals

FOOTNOTE OLD	FOOTNOTE NEW	DEFINITION	INTERPRETATION
E	E	Estimated or not reported due to inteference. See laboratory narrative.	Compound or element was not detected or value may be semi-quantitative.
S	S	Analysis by Method of Standard Additions.	Value may be quantitative.
R	N	Spike recoveries outside QC protocols which indicates a possible matrix problem. Data may be biased high or low. See spike results and laboratory narrative.	Value may be quantitative or semi-quantitative.
*	*	Duplicate value outside QC protocols which indicates a possible matrix problem.	Value may be semi-quantitative.
+	+	Correlation coefficient for standard additions in less than 0.995. See review and laboratory narrative.	Data value may be biased.
[ ]	B	Value is real, but is above instrument DL and below CRDL.	Value may be quantitative or semi-quantitative.
UJ		DL is estimated because of a QC protocol. DL is possibly above or below CRDL.	Compound or element was not detected.
J		Value is above CRDL and is an estimated value because of a QC Protocol.	Value may be semi-quantitative.
U	U	Compound was analyzed for but not detected.	Compound was not detected.
	M	Duplicate injection precision not met.	Value may be semi-quantitative.
	W	Post digestion spike for furnance AA analysis is out of control limits (35-115%), while sample absorbance is <50% of spike absorbance.	Value may be semi-quantitative.

C. Other Symbols Used

NA Value not available due to insufficient data.
NR Value not calculated since chemical is not a carcinogen.
( ) Estimated value.

5/4/88

18 pages

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 4.27.88

SUBJECT: Review of Region V CLP Data
Received for Review on 4-21-88

FROM: Curtis Ross, Director (5SCRL)
Central Regional Laboratory

TO: Data User: FIT

We have reviewed the data for the following case(s).

SITE NAME: Burns Cold Forge SMO Case No. 9309

EPA Data Set No. 5023 No. of Samples: 5 D.U./Activity Numbers 1905/C72122

CRL No. 88FF17829 -833

SMO Traffic No. MEW 811 - 815

CLP Laboratory: NLE Hrs. Required for Review: 2 + 1/2

Following are our findings:
The laboratory's portion of case #9309 consisted of 5 soil samples analyzed for total metals and cyanide.

ICP Analysis: The matrix spike %R for Sb was (49.3%). Sample MEW811 is estimated (J) and the rest are estimated (UJ).
The serial dilution result for Zn was (25%). Zn is estimated (J) for interference.
GFAA Analysis: The matrix spike %R for As was (51.4%). As is estimated (J).
Hg and Cyanide Analysis QC data is within control limits.

4/26/88
Water/EST

( ) Data are acceptable for use.
(X) Data are acceptable for use with qualifications referenced above. See Data Qualifier sheets and Calibration Outlier forms for flags and additional comments.
( ) Data are preliminary - pending verification by Contractor Laboratory. See Case Summary above.
( ) Data are unacceptable.

cc: Carla Dempsey, CLP Quality Assurance Officer, Analytical Operations Branch
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

PA FORM 1320-6 (REV 3-76)

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

Date 4/20/88

COVER PAGE
INORGANIC ANALYSES DATA PACKAGE

Lab Name Northern Labs & Engineering Inc. Case No. 9309

SOW No. 785 Q.C. Report No. 79

Sample Numbers

EPA No.	Lab ID No.	EPA No.	Lab ID No.
MEW 811	Same		
MEW 812	Same		
MEW 813	Same		
MEW 814	Same		
MEW 815	Same		

Comments:

ICP interelement and background corrections applied? Yes ✓ No ____.

If yes, corrections applied before ✓ or after ____ generation of raw data.

Footnotes:

NR - Not required by contract at this time

Form I:

Value - If the result is a value greater than or equal to the instrument detecion limit but less than the contract-required detection limit, report the value in brackets (i.e., [10]). Indicate the analytical method used with P (for ICP), A (for Flame AA) or F (for Furnace AA).

U - Indicates element was analyzed for but not detected. Report with the instrument detection limit value (e.g., 10U).

E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.

s - Indicates value determined by Method of Standard Addition.

N - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

\+ - Indicates the correlation coefficient for method of standard addition is less than 0.995

M - Indicates duplicate injection results exceeded control limits.

Indicate method used: P for ICP; A for Flame AA and F for Furnace.

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEW 811

Date: 20-Apr-88

INORGANIC ANALYSIS DATA SHEET

LAB NAME: Northern Labs & Eng., Inc. CASE NO.: 9303

SOW NO. 795 Lab Receipt Date: 4-6-88

LAB SAMPLE ID. NO.: MEW 811 QC. REPORT NO. 79

Concentration: Low Matrix: Solid Units: mg/kg, dry weight

1.	Aluminum	6170 P	13.	Magnesium	[1110] P
2.	Antimony	[7.6] P N	14.	Manganese	1520 P
3.	Arsenic	6.0 F N	15.	Mercury	[0.10]
4.	Barium	151 P	16.	Nickel	14 P
5.	Beryllium	[0.3] P	17.	Potassium	[565] P
6.	Cadmium	5.3 P	18.	Selenium	1.1 U F
7.	Calcium	2600 P	19.	Silver	0.7 U P
8.	Chromium	8.1 P	20.	Sodium	[75] P
9.	Cobalt	[7.0] P	21.	Thallium	2.1 U F
10.	Copper	14 P	22.	Vanadium	12 P
11.	Iron	21000 P	23.	Zinc	72 P E
12.	Lead	45 P		Percent Solids (%)	83.4
	Cyanide	9.4 U			

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Brown, medium texture.

Lab Manager John P. Pwenger

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.

MEW 812

Date: 20-Apr-88

INORGANIC ANALYSIS DATA SHEET

LAB NAME: Northern Labs & Eng., Inc. CASE NO.: 9503

SOW NO. 785 Lab Receipt Date: 4-6-88

LAB SAMPLE ID. NO.: MEW 812 SC. REPORT NO. 79

Concentration: Low Matrix: Solid Units: mg/kg, dry weight

1.	Aluminum	2590 P	13.	Magnesium	[5267] P
2.	Antimony	4.0 U P N	14.	Manganese	116 P
3.	Arsenic	7.1 F N	15.	Mercury	[0.1]
4.	Barium	117 P	16.	Nickel	[2.1] P
5.	Beryllium	0.2 U P	17.	Potassium	[295] P
6.	Cadmium	5.8 P	18.	Selenium	1.2 U F
7.	Calcium	[568] P	19.	Silver	0.7 U P
8.	Chromium	5.0 P	20.	Sodium	[98] P
9.	Cobalt	[1.7] P	21.	Thallium	2.4 U F
10.	Copper	11 P	22.	Vanadium	14 P
11.	Iron	26400 P	23.	Zinc	32 P E
12.	Lead	36 P		Percent Solids (%)	85.0
	Cyanide	11 U			

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Brown, medium texture.

Lab Manager John D. Ruenger

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MCW 013

Date: 20-Apr-88

INORGANIC ANALYSIS DATA SHEET

LAB NAME: Northern Labs & Eng., Inc. CASE NO.: 0000

SOW NO. 705 Lab Receipt Date: 4-6-88

LAB SAMPLE ID. NO.: MEW 013 QC. REPORT NO. 73

Concentration: Low Matrix: Solid Units: mg/kg, dry weight

1.	Aluminum	3310 P	13.	Magnesium	1540 P
2.	Antimony	4.0 U P N	14.	Manganese	110 P
3.	Arsenic	3.0 F N	15.	Mercury	0.1 U
4.	Barium	[34] P	16.	Nickel	29 P
5.	Beryllium	[0.5] P	17.	Potassium	[819] P
6.	Cadmium	1.9 P	18.	Selenium	1.0 U F
7.	Calcium	2260 P	19.	Silver	0.6 U P
8.	Chromium	7.2 P	20.	Sodium	[236] P
9.	Cobalt	16 P	21.	Thallium	2.0 U F
10.	Copper	49 P	22.	Vanadium	[8.0] P
11.	Iron	7740 P	23.	Zinc	61 P E
12.	Lead	14 P		Percent Solids (%)	88.2
	Cyanide	11 U			

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Gray, coarse texture.

Lab Manager John D. Ruenger

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.

MEW 814

Date: 20-Apr-88

INORGANIC ANALYSIS DATA SHEET

LAB NAME: Northern Labs & Eng., Inc. CASE NO.: [illegible]

SDW NO. 705 Lab Receipt Date: 4-6-88

LAB SAMPLE ID. NO.: MEW 814 QC. REPORT NO. 70

Concentration: Low Matrix: Solid Units: mg/kg, dry weight

1.	Aluminum	5090 P	13.	Magnesium	[8290] P
2.	Antimony	5.7 U P N	14.	Manganese	341 P
3.	Arsenic	5.0 F N	15.	Mercury	[0.10]
4.	Barium	92 P	16.	Nickel	16 P
5.	Beryllium	0.3 U P	17.	Potassium	[309] P
6.	Cadmium	3.1 P	18.	Selenium	1.3 U F
7.	Calcium	1370 P	19.	Silver	0.8 U P
8.	Chromium	17 P	20.	Sodium	[315] P
9.	Cobalt	[5.4] P	21.	Thallium	2.5 U F
10.	Copper	28 P	22.	Vanadium	[12] P
11.	Iron	14900 P	23.	Zinc	521 P E
12.	Lead	36 P		Percent Solids (%)	73.9
	Cyanide	8.7 U			

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Brown, medium texture.

Lab Manager John D. Rawanger

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 9-557-2490

EPA Sample No.

MEW 815

Date: 20-Apr-88

INORGANIC ANALYSIS DATA SHEET

LAB NAME: Northern Labs & Eng., Inc. CASE NO.: 3303

SDW NO. 785 Lab Receipt Date: 4-6-88

LAB SAMPLE ID. NO.: MEW 815 GC. REPORT NO. 79

Concentration: Low Matrix: Solid Units: mg/kg, dry weight

1.	Aluminum	3980 P	13.	Magnesium	[791] P
2.	Antimony	4.3 U P N	14.	Manganese	345 P
3.	Arsenic	6.5 F N	15.	Mercury	0.10
4.	Barium	[37] P	16.	Nickel	9.7 P
5.	Beryllium	[0.2] P	17.	Potassium	[309] P
6.	Cadmium	3.8 P	18.	Selenium	0.3 U F
7.	Calcium	8220 P	19.	Silver	0.6 U P
8.	Chromium	14 P	20.	Sodium	[117] P
9.	Cobalt	[4.3] P	21.	Thallium	1.7 U F
10.	Copper	17 P	22.	Vanadium	12 P
11.	Iron	16400 P	23.	Zinc	88 P E
12.	Lead	22 P		Percent Solids (%)	90.9
	Cyanide	8.5 U			

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Brown, medium texture.

Lab Manager John F. Puenger

QC EXCEPTION SUMMARY REPORT

CASE # 9309
DATA SET # SF5023
LAB Q.C.# 79
DATE: 4/20/88

SITE Billing Cold Forge
LAB NLE
REVIEWED BY [illegible]

MATRIX: Soil
CONC. : low
MATRIX :
CONC. :

WATER SAMPLE SPK.
WATER SAMPLE DUP.
SOIL SAMPLE SPK.
SOIL SAMPLE DUP.

	OVERALL CASE QC									MATRIX SPECIFIC QC						SAMPLE SPECIFIC QC		FIELD QC			REGIONAL QC			OTHER COMMENTS
	Holding Time	Cal Blanks	Init Calver	Contin Calver	Prep Blk AQ	Prep Blk SOL	ICS %R	LCS % AQ	LCS % SOL	Sol Dup RPD	Sol Spk %R	AQ Dup RPD	AQ Spk %R	Ser Dilu AQ	Ser Dilu SOL	GFAA Dup	GFAA Spike	Blank	Dup RPD	Spike %R	Blind Blank	Blind Spike %R	Split Sample RPD	
Aluminum																								
Antimony											49.3													
Arsenic											51.6													
Barium																								
Beryllium																								
Cadmium																								
Calcium																								
Chromium																								
Cobalt																								
Copper																								
Iron																								
Lead																								
Magnesium																								
Manganese																								
Mercury																								
Nickel																								
Potassium																								
Selenium																								
Silver																								
Sodium																								
Thallium																								
Tin																								
Vanadium																								
Zinc															25									
Cyanide																								

Form III A

Q.C. Report No. 79

BLANKS

LAB NAME: Northern Labs & Eng., Inc. CASE NO. 9309

DATE: 13-Apr-88 UNITS ug/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank Matrix water 1	Matrix soil 2
Metals:							
1. Aluminum	22 U	22 U	22 U	22 U	22 U		4.4 U
2. Antimony	22 U	22 U	22 U	22 U	22 U		4.4 U
3. Arsenic							
4. Barium	2 U	2 U	2 U	2 U	2 U		0.4 U
5. Beryllium	1 U	1 U	1 U	1 U	1 U		0.2 U
6. Cadmium	3 U	3 U	3 U	3 U	3 U		0.6 U
7. Calcium	[10.6]	[19.2]	[28.3]	[32.4]	[40.6]		1.6 U
8. Chromium	7 U	7 U	7 U	7 U	7 U		1.4 U
9. Cobalt	4 U	4 U	4 U	4 U	4 U		0.8 U
10. Copper	3 U	[5.5]	3 U	3 U	3 U		0.6 U
11. Iron	13 U	13 U	[25.4]	13 U	13 U		2.6 U
12. Lead	20 U	20 U	20 U	20 U	20 U		4 U
13. Magnesium	21 U	21 U	21 U	21 U	[33.8]		[6.12]
14. Manganese	1 U	[2.0]	[1.8]	[1.5]	1 U		[0.52]
15. Mercury							
16. Nickel	5 U	5 U	5 U	5 U	5 U		1 U
17. Potassium	121 U	121 U	121 U	121 U	121 U		24.2 U
17. Selenium							
19. Silver	3 U	3 U	3 U	3 U	3 U		0.6 U
20. Sodium	[20.8]	16 U	16 U	[31.9]	[33.2]		3.2 U
21. Thallium							
22. Vanadium	3 U	3 U	3 U	3 U	3 U		0.6 U
23. Zinc	2 U	2 U	[7.7]	2 U	2 U		0.4 U
Other							
Cyanide							

1 Reporting Units: aqueous, ug/L; solid mg/kg

Form III B

Q. C. Report No. 79

BLANKS

LAB NAME Northern Labs

DATE 4/19/88

CASE NO. 9309

UNITS µg/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank Matrix: solid 1	Matrix: 2
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic	2.4 u	2.4 u				0.48 u	
4. Barium							
5. Beryllium							
6. Cadmium							
7. Calcium							
8. Chromium							
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury	0.1 u	0.1 u	0.1 u	[0.11]	[0.17]	[0.08]	
16. Nickel							
17. Potassium							
18. Selenium	2.6 u	2.6 u	2.6 u	2.6 u	2.6 u	0.52 u	
19. Silver							
20. Sodium							
21. Thallium	2.3 u	2.3 u	2.3 u	2.3 u	2.3 u	0.46 u	
22. Vanadium							
23. Zinc							
Other:							
Cyanide	10 u	10 u	10 u	10 u		1 u	

[1] Reporting Units: aqueous, ug/L; solid mg/kg

Form III C

Q. C. Report No. 79

BLANKS

LAB NAME Northern Labs

DATE 4/19/88

CASE NO. 9309

UNITS µg/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank Matrix: Solid 1	Matrix: 2
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic	2.4 u	2.4 u	2.4 u	2.4 u	2.4 u		
4. Barium							
5. Beryllium							
6. Cadmium							
7. Calcium							
8. Chromium							
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver							
20. Sodium							
21. Thallium	2.3 u	2.3 u					
22. Vanadium							
23. Zinc							
Other:							
Cyanide							

[1] Reporting Units: aqueous, ug/L; solid mg/kg

Form III D

Q. C. Report No. 79

BLANKS

LAB NAME Northern Labs

DATE 4/19/88

CASE NO. 9309

UNITS ug/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank Matrix: solid 1	Matrix: 2
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium							
5. Beryllium							
6. Cadmium							
7. Calcium							
8. Chromium							
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver							
20. Sodium							
21. Thallium	2.3u	2.3u	2.3u	2.3u	2.3u		
22. Vanadium							
23. Zinc							
Other:							
Cyanide							

[1] Reporting Units: aqueous, ug/L; solid mg/kg

Form III E

Q. C. Report No. 79

BLANKS

LAB NAME Northern Labs

DATE 4/19/88

CASE NO. 9309

UNITS ug/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank Matrix: Solid 1	Matrix: 2
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium							
5. Beryllium							
6. Cadmium							
7. Calcium							
8. Chromium							
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver							
20. Sodium							
21. Thallium		2.3u					
22. Vanadium							
23. Zinc							
Other:							
Cyanide							

[1] Reporting Units: aqueous, ug/L; solid mg/kg

Form VA

Q. C. Report No. 79

SPIKE SAMPLE RECOVERY

LAB NAME Northern Labs

DATE 4/19/88

CASE NO. 9309

EPA Sample No. MEW 811

Lab Sample ID No. Same

Units mg/kg, dry weight

Matrix solid

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	%R[1]
Metals:					
1. Aluminum	75-125				
2. Antimony	"				
3. Arsenic	"				
4. Barium	"				
5. Beryllium	"				
6. Cadmium	"				
7. Calcium	"				
8. Chromium	"				
9. Cobalt	"				
10. Copper	"				
11. Iron	"				
12. Lead	"				
13. Magnesium	"				
14. Manganese	"				
15. Mercury	"	0.65	[0.10]	0.54	102.0
16. Nickel	"				
17. Potassium	"				
18. Selenium	"				
19. Silver	"				
20. Sodium	"				
21. Thallium	"				
22. Vanadium	"				
23. Zinc	"				
Other:					
Cyanide	"	55.43	9.45 u	53.08	104.4

[1] %R = [(SSR - SR)/SA] x 100

"N" - out of control

"NR" - Not required

Comments:

Form VB

Q. C. Report No. 79

SPIKE SAMPLE RECOVERY

LAB NAME Northern Labs

DATE 4/20/88

CASE NO. 9309

EPA Sample No. MEW 812

Lab Sample ID No. same

Units mg/kg, dry weight

Matrix solid

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	%R[1]	
Metals:						
1. Aluminum	75-125	3090.98	2585.72	NR	NR	
2. Antimony	"	55.01	4.89 u	111.59	49.3	N
3. Arsenic	"	11.43	7.14	8.40	51.0	N
4. Barium	"	602.57	116.72	446.35	108.8	
5. Beryllium	"	11.34	0.22 u	11.16	101.6	
6. Cadmium	"	17.47	5.83	11.16	104.4	
7. Calcium	"	[557.27]	[568.3]	NR	NR	
8. Chromium	"	54.41	5.02	44.64	110.6	
9. Cobalt	"	126.36	[1.73]	111.59	111.7	
10. Copper	"	66.57	11.32	55.79	99.0	
11. Iron	"	26379.37	26390.83	NR	NR	
12. Lead	"	139.55	35.62	111.59	93.1	
13. Magnesium	"	[537.85]	[525.82]	NR	NR	
14. Manganese	"	234.56	115.77	111.59	106.5	
15. Mercury	"					
16. Nickel	"	121.79	[2.13]	111.59	107.2	
17. Potassium	"	[356.19]	[295.48]	NR	NR	
18. Selenium	"	1.62	1.17 u	2.10	77.0	
19. Silver	"	10.80	0.67 u	11.16	96.8	
20. Sodium	"	[87.93]	[98.34]	NR	NR	
21. Thallium	"	10.29	2.35 u	10.51	97.9	
22. Vanadium	"	134.91	13.52	111.59	108.8	
23. Zinc	"	142.68	32.33	111.59	98.9	
Other:						
Cyanide	"					

[1] %R = [(SSR - SR)/SA] x 100

"N" - out of control

"NR" - Not required

Comments:

Form VI A

Q. C. Report No. 79

DUPLICATES

LAB NAME Northern Labs & Engineering, Inc.

DATE 4/19/88

CASE NO. 9309

EPA Sample No. MEW 811

Lab Sample ID No. Same

Units mg/kg, dry weight

Matrix solid

Compound	Control Limit[1]	Sample(S)	Duplicate(D)	RPD[2]
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium				
5. Beryllium				
6. Cadmium				
7. Calcium				
8. Chromium				
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury		[0.10]	0.14	NC
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver				
20. Sodium				
21. Thallium				
22. Vanadium				
23. Zinc				
Other:				
Cyanide		9.45 u	10.48 u	NC

* Out of Control

[1] To be added at a later date.

[2] RPD = [|S - D|/((S + D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

Form VI B

Q. C. Report No. 79

DUPLICATES

LAB NAME Northern Labs & Engineering, Inc.

DATE 4/20/88

CASE NO. 9309

EPA Sample No. MEW 812

Lab Sample ID No. Same

Units mg/kg, dry weight

Matrix Solid

Compound	Control Limit[1]	Sample(S)	Duplicate(D)	RPD[2]
Metals:				
1. Aluminum		2585.72	2654.72	2.6
2. Antimony		4.89 u	[7.96]	NC
3. Arsenic	2.35	7.14	7.87	9.7
4. Barium	44.47	116.72	106.23	9.4
5. Beryllium		0.22 u	0.19 u	NC
6. Cadmium		5.83	6.45	10.1
7. Calcium		[568.3]	[611.1]	NC
8. Chromium	2.22	5.02	5.07	0.8
9. Cobalt		[1.73]	[2.80]	NC
10. Copper	5.56	11.32	13.25	15.8
11. Iron		26390.83	29667.03	11.7
12. Lead		35.62	29.50	18.8
13. Magnesium		[525.82]	[534.9]	NC
14. Manganese		115.77	118.27	2.1
15. Mercury				
16. Nickel		[2.13]	[3.03]	NC
17. Potassium		[295.48]	[298.37]	NC
18. Selenium		1.17 u	1.02 u	NC
19. Silver		0.67 u	0.57 u	NC
20. Sodium		[98.34]	[85.39]	NC
21. Thallium		2.35 u	2.05 u	NC
22. Vanadium	11.12	13.52	14.88	9.6
23. Zinc		32.33	35.91	10.5
Other:				
Cyanide				

* Out of Control

[1] To be added at a later date.

[2] RPD = [|S - D|/((S + D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

Form VII A

Q.C. Report No. 79

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME: Northern Labs CASE NO. 9309 DATE: 20-Apr-88

LCS NO. SP-0408-1 SF-408-1, SH-418-1 CN-408-1

Compound	Required Detection Limits (CRDL)-ug/L	Instrum. Detection Limits (IDL)-ug/L ICP ID# J/A 9000	Furnace AA-975 PE 5100	Lab Control Sample ug/L True	Found	%R
Metals:						
1. Aluminum	200	22		1980	2137	107.9%
2. Antimony	60	22		1010	1028	101.8%
3. Arsenic	10	48	2.4	23.5	24.1	102.6%
4. Barium	200	2		1980	2020	102.0%
5. Beryllium	5	1		481	474.7	98.7%
6. Cadmium	5	3		489	481.6	98.5%
7. Calcium	5000	8		49800	51230	102.9%
8. Chromium	10	7		506	516.5	102.1%
9. Cobalt	50	4		474	503.5	106.2%
10. Copper	25	3		542	516.9	95.4%
11. Iron	100	13		1990	1996	100.3%
12. Lead	5	20		4510	4616	102.4%
13. Magnesium	5000	21		25000	25740	103.0%
14. Manganese	15	1		513	507.9	99.0%
15. Mercury	0.2		0.1	5.2	5.223	100.4%
16. Nickel	40	5		496	491	99.0%
17. Potassium	5000	121		50200	54140	107.8%
17. Selenium	5	88	2.6	52	52.4	100.8%
19. Silver	10	3		509	358.4	70.4%
20. Sodium	5000	16		50700	50970	100.5%
21. Thallium	10	260	2.3	48.65	56.12	115.4%
22. Vanadium	50	3		511	516.3	101.0%
23. Zinc	20	2		3100	2956	95.4%
Other						
Cyanide	10	NR	NR	500	450	90.0%

NR - Not required