SDMS US EPA REGION V -1

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REF 15b

159430

INORGANIC DATA VALIDATION REPORT

1.0 INTRODUCTION

Site:	Sauget Area 1
Laboratory:	Ecology and Environment, Inc.
Validation:	PRC Environmental Management, Inc.
Review Date:	May 1993
Case Numbers:	U-4432 and U-4442
Sample Numbers:	DC-SD-13 through DC-SD-29
	DC-SD-31 through DC-SD-36
Analyses:	Target Analyte List (TAL) Metals and Cyanide
Collection Dates:	November 5 and November 6, 1986

The data for these 23 samples were reviewed according to the EPA document "Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses" (July 1988). Data sheets (Form I) with appropriate data validation qualifiers are provided in Appendix A. The justifications for qualification of sample results are discussed in the following section.

2.0 DATA REVIEW REQUIREMENTS

The quality control (QC) criteria reviewed include data completeness, holding times, calibrations, blanks, interference check sample (ICS) results, laboratory control sample (LCS) results, duplicate sample results, matrix spike sample results, furnace QC, and sample results verification. The criteria are discussed below.

2.1 DATA COMPLETENESS

The laboratory failed to complete the appropriate report form for the analysis of the ICS; however, the raw data were reviewed, and the results are within acceptable QC limits.

The cyanide initial calibration curve was not found in the data package. Therefore, all positive cyanide results are considered estimated and qualified "J," since the results cannot be verified. The undetected data are acceptable.

The reanalyses of mercury for samples DC-SD-32 and DC-SD-34, and arsenic for sample DC-SD-34 were not found in the raw data. Therefore, these sample results cannot be verified and are qualified "UJ" if undetected and "J" if positive.

2.2 HOLDING TIMES

All holding time requirements were met.

2.3 CALIBRATIONS

The third calibration check percent recovery (%R) for barium is greater than the upper acceptable limits or 110 %R; however, no samples are associated with the check. Therefore, the data are unaffected. All other calibrations are acceptable and meet QC requirements for initial and continuing calibration checks.

2.4 BLANKS

All blank sample results are less than the contract required detection limit (CRDL) and therefore do not indicate any presence of contamination.

2.5 INTERFERENCE CHECK SAMPLES

The ICSs analyzed by inductively coupled plasma (ICP) generally meet the QC requirements. The laboratory failed to report the results on the appropriate form; however, the raw data were reviewed and the results are within acceptable limits.

2.6 LABORATORY CONTROL SAMPLES

The LCSs prepared and analyzed with the sample batch are within acceptable QC limits.

2.7 DUPLICATE SAMPLE ANALYSIS

The copper and nickel laboratory duplicate sample results are above the acceptable QC limit for precision. All positive copper and nickel results for all samples in this case are considered estimated and qualified "J." A bias cannot be determined.

2.8 MATRIX SPIKE SAMPLE ANALYSIS

The matrix spike %R for antimony (67 %R) and arsenic (50 %R) are below the lower QC limit of 75 %R. All antimony and arsenic sample results for all samples in this case are considered estimated and qualified "UJ" if the result is less than the CRDL and "J" if the result is positive. These results are possibly biased low due to the low spike recoveries.

The matrix spike %R for nickel (151 %R) is above the upper control limit of 125 %R. All positive nickel results are considered estimated and qualified "J." These results are biased high. All undetected results are acceptable.

2.9 FURNACE ATOMIC ABSORPTION QC

To determine the extent of matrix interference in graphite furnace analyses, a post-digestion spike (PDS) is analyzed for each sample. Initially, the sample digest is analyzed, followed by a second analysis to which a known amount of analyte has been added. The %R of the spike indicates the extent of matrix interference and bias. The following samples have PDS recoveries less than the lower QC limit of 85 %R.

Analyte	Samples
Selenium	DC-SD-16, DC-SD-22, DC-SD-23, DC-SD-26, DC-SD-31, DC-SD-32, and DC-SD-36
Thallium	DC-SD-16 and DC-SD-31
Tin	DC-SD-18

The results for the analytes and sample numbers listed above are considered estimated and qualified "UJ." These sample results are biased low.

2.10 SAMPLE RESULT VERIFICATION

In an attempt to reduce the matrix effect, the laboratory performed dilutions on numerous graphite furnace sample analyses. The quantitation limits for undetected results are increased by the dilution factor. Unless the result is qualified on the basis of PDS (see Section 2.9), the results are acceptable at the higher quantitation limit.

The laboratory incorrectly reported the arsenic results for sample DC-SD-14 as 20 milligrams per kilograms (mg/kg); the correct value should be 200 mg/kg.

3.0 OVERALL ASSESSMENT

Generally, the data are acceptable Level IV data with the exceptions noted in Section 2.0. The data are qualified due to matrix interference, possibly caused by high organic content. This matrix interference may contribute to biased data. The qualified data are biased low (except for nickel, which is biased high) and may be used for scoring.

APPENDIX A

CORRECTED FORMS I

CASE NUMBERS U-4432 AND U-4442

Form I

Sample No.
DC-SD-13

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9651 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	4800			P	13.	Magnesium	NR			
2.	Antimony	✓ 22	R	U	P UJ	14.	Manganese	197			P
3.	Arsenic	✓ 14	R		F J	15.	Mercury	0.73			CV
4.	Barium	410			P	16.	Nickel	56	R *		P J
5.	Beryllium	1.9		U	P	17.	Potassium	NR			
6.	Cadmium	✓ 22			P	18.	Selenium	3.3			F
7.	Calcium	NR				19.	Silver	10			P
8.	Chromium	62			P	20.	Sodium	NR			
9.	Cobalt	6.6			P	21.	Thallium	3.6		U	F
10.	Copper	8740	*		P J	22.	Tin	32			F
11.	Iron	16400			P	23.	Vanadium	23			P
12.	Lead	853			P	24.	Zinc	✓ 3310			P
	Cyanide	1.9		U			Percent Solids (%)	52			

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-14

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9652 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	6380		P	13.	Magnesium	NR		
2.	Antimony	31	R U	P UJ	14.	Manganese	153		P
3.	Arsenic	200	R	F J	15.	Mercury	1.3		CV
4.	Barium	1110		P	16.	Nickel	502	R*	P J
5.	Beryllium	2.6	U	P	17.	Potassium	NR		
6.	Cadmium	36		P	18.	Selenium	4.1		F
7.	Calcium	NR			19.	Silver	11		P
8.	Chromium	153		P	20.	Sodium	NR		
9.	Cobalt	9.2		P	21.	Thallium	5.3	U	F
10.	Copper	6700	*	P J	22.	Tin	28		F
11.	Iron	19500		P	23.	Vanadium	27		P
12.	Lead	931		P	24.	Zinc	6650		P

Cyanide 3.8 J Percent Solids (%) 37

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-15

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9653 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	6560		P	13.	Magnesium	NR		
2.	Antimony	18	R U	P UJ	14.	Manganese	100		P
3.	Arsenic ✓	3.6	R	F J	15.	Mercury	0.13		CV
4.	Barium	156		P	16.	Nickel	356	R*	P J
5.	Beryllium	1.5	U	P	17.	Potassium	NR		
6.	Cadmium	1.5		P	18.	Selenium	1.5	U	F
7.	Calcium	NR			19.	Silver	3.0	U	P
8.	Chromium	15		P	20.	Sodium	NR		
9.	Cobalt ✓	7.7		P	21.	Thallium	3.0	U	F
10.	Copper	167	*	P J	22.	Tin	12	U	F
11.	Iron	11100		P	23.	Vanadium	19		P
12.	Lead	26		F	24.	Zinc	868		P
Cyanide		1.5		U	Percent Solids (%)		66		

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: NR = NOT REQUESTED

Lab Manager Bruce H Robichaud

Form I

Sample No.
DC-SD-16

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9654 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	2430		P		13.	Magnesium	NR			
2.	Antimony	21	R	U	P UJ	14.	Manganese	97		P	
3.	Arsenic	12	R		F J	15.	Mercury	0.56		CV	
4.	Barium	131		P		16.	Nickel	258	R*	P	J
5.	Beryllium	1.7		U	P	17.	Potassium	NR			
6.	Cadmium	11			P	18.	Selenium	1.6	U	F	UJ
7.	Calcium	NR				19.	Silver	3.5	U	P	
8.	Chromium	37			P	20.	Sodium	NR			
9.	Cobalt	7.2			P	21.	Thallium	3.3	U	F	UJ
10.	Copper	1270	*		P J	22.	Tin	23		F	
11.	Iron	26000			P	23.	Vanadium	17	U	P	
12.	Lead	65			P	24.	Zinc	872		P	
	Cyanide	1.7		U			Percent Solids (%)	58			

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-17

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9655 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	7510		P	13.	Magnesium	NR		
2.	Antimony	19	R U	P UJ	14.	Manganese	139		P
3.	Arsenic	16	R	F J	15.	Mercury	~~0.14~~ 0.16	UCV	
4.	Barium	196		P	16.	Nickel	309	R*	P J
5.	Beryllium	1.6	U	P	17.	Potassium	NR		
6.	Cadmium	7.8		P	18.	Selenium	1.5	U	F
7.	Calcium	NR			19.	Silver	3.1	U	P
8.	Chromium	53		P	20.	Sodium	NR		
9.	Cobalt	5.0		P	21.	Thallium	2.9	U	F
10.	Copper	1780	*	P J	22.	Tin	12	U	F
11.	Iron	14400		P	23.	Vanadium	19		P
12.	Lead	71		P	24.	Zinc	1010		P
	Cyanide	1.6	U			Percent Solids (%)	63		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rehrbach

Form I

Sample No.
DC-SD-18

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9656 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	5380		P		13.	Magnesium	NR		
2.	Antimony	23	R U	P	UJ	14.	Manganese	218		P
3.	Arsenic	16	R	F	J	15.	Mercury	0.90		CV
4.	Barium	467		P		16.	Nickel	82	R*	P J
5.	Beryllium	1.9	U	P		17.	Potassium	NR		
6.	Cadmium	24		P		18.	Selenium	4.4		F
7.	Calcium	NR				19.	Silver	14		P
8.	Chromium	79		P		20.	Sodium	NR		
9.	Cobalt	6.3		P		21.	Thallium	3.7	U	F
10.	Copper	8640	*	P	J	22.	Tin	15	U	F UJ
11.	Iron	16300		P		23.	Vanadium	24		P
12.	Lead	983		P		24.	Zinc	3440		P
Cyanide		2.0	U			Percent Solids (%)		49		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rokstad

Form I

Sample No.
DC-SD-19

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9657 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	9750		P	13.	Magnesium	NR		
2.	Antimony	24	R U	P UJ	14.	Manganese	82		P
3.	Arsenic	21	R	F J	15.	Mercury	1.68		CV
4.	Barium	17300		P	16.	Nickel	1520	R*	P J
5.	Beryllium	2.0	U	P	17.	Potassium	NR		
6.	Cadmium	30		P	18.	Selenium	2.0		F
7.	Calcium	NR			19.	Silver	15		P
8.	Chromium	118		P	20.	Sodium	NR		
9.	Cobalt	11		P	21.	Thallium	4.0		F
10.	Copper	15300	*	P J	22.	Tin	16		F
11.	Iron	58200		P	23.	Vanadium	48		P
12.	Lead	1460		P	24.	Zinc	11900		P
Cyanide		2.1	U		Percent Solids (%)		47		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rotebach

Form I

Sample No.
DC-SD-20

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9658 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	12900		P	13.	Magnesium	NR		
2.	Antimony	20	R U	P UJ	14.	Manganese	70		P
3.	Arsenic	13	R	F J	15.	Mercury	0.89		CV
4.	Barium	3120		P	16.	Nickel	867	R*	P J
5.	Beryllium	1.7	U	P	17.	Potassium	NR		
6.	Cadmium	8.2		P	18.	Selenium	1.6	U	F
7.	Calcium	NR			19.	Silver	3.4	U	P
8.	Chromium	113		P	20.	Sodium	NR		
9.	Cobalt	6.9		P	21.	Thallium	3.3	U	F
10.	Copper	2610	*	P J	22.	Tin	13	U	F
11.	Iron	21300		P	23.	Vanadium	25		P
12.	Lead	330		P	24.	Zinc	6610		P
	Cyanide	1.7	U			Percent Solids (%)	58		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-21

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9659 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	12600		P	13.	Magnesium	NR		
2.	Antimony	27	R U	P UJ	14.	Manganese	177		P
3.	Arsenic	5.1	R	F J	15.	Mercury	0.71		CV
4.	Barium	376		P	16.	Nickel	116	R *	P J
5.	Beryllium	2.3	U	P	17.	Potassium	NR		
6.	Cadmium	17		P	18.	Selenium	2.1	U	F
7.	Calcium	NR			19.	Silver	4.5	U	P
8.	Chromium	41		P	20.	Sodium	NR		
9.	Cobalt	7.5		P	21.	Thallium	4.3	U	F
10.	Copper	580	*	P J	22.	Tin	17	U	F
11.	Iron	18400		P	23.	Vanadium	32		P
12.	Lead	467		P	24.	Zinc	1370		P
	Cyanide	2.3	U			Percent Solids (%)	43		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-22

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9660 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	7530		P	13.	Magnesium	NR		
2.	Antimony	✓ 26	R U	P UJ	14.	Manganese	98		P
3.	Arsenic	9.0	R	F J	15.	Mercury	0.95		CV
4.	Barium	570		P	16.	Nickel	838	R*	P J
5.	Beryllium	2.2	U	P	17.	Potassium	NR		
6.	Cadmium	34		P	18.	Selenium ✓	2.1	U	F UJ
7.	Calcium	NR			19.	Silver ✓	4.3	U	P
8.	Chromium	60		P	20.	Sodium	NR		
9.	Cobalt	10		P	21.	Thallium	42	U	F
10.	Copper	5910	*	P J	22.	Tin	17	U	F
11.	Iron	18000		P	23.	Vanadium	22		P
12.	Lead	593		P	24.	Zinc ✓	15600		P
	Cyanide	2.2	U			Percent Solids (%)	45		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-23

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9661 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	8450		P		13.	Magnesium	NR		
2.	Antimony	30	R	U P	UJ	14.	Manganese	161		P
3.	Arsenic	33	R	F	J	15.	Mercury	1.64		CV
4.	Barium	1700		P		16.	Nickel	1290	R*	P J
5.	Beryllium	2.5		U P		17.	Potassium	NR		
6.	Cadmium	27		P		18.	Selenium	2.7		U F UJ
7.	Calcium	NR				19.	Silver	5.0		U P
8.	Chromium	54		P		20.	Sodium	NR		
9.	Cobalt	6.6		P		21.	Thallium	5.3		U F
10.	Copper	6640	*	P	J	22.	Tin	21		U F
11.	Iron	35800		P		23.	Vanadium	27		P
12.	Lead	975		P		24.	Zinc	6880		P
Cyanide		2.7		U		Percent Solids (%)		37		

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: NR = NOT REQUESTED

Lab Manager Barrett Rohrbach

Form I

Sample No.
DC-SD-24

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9662 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	12600		P	13.	Magnesium	NR		
2.	Antimony	19	R U	P UJ	14.	Manganese	151		P
3.	Arsenic	30	R	F J	15.	Mercury	2.81		CV
4.	Barium	1010		P	16.	Nickel	748	R*	P J
5.	Beryllium	1.6	U	P	17.	Potassium	NR		
6.	Cadmium	42		P	18.	Selenium	2.5		F
7.	Calcium	NR			19.	Silver	3.1	U	P
8.	Chromium	68		P	20.	Sodium	NR		
9.	Cobalt	7.2		P	21.	Thallium	3.2	U	F
10.	Copper	2440	*	P J	22.	Tin	13	U	F
11.	Iron	50900		P	23.	Vanadium	36		P
12.	Lead	661		P	24.	Zinc	6430		P
	Cyanide	1.6	U			Percent Solids (%)	61		

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: NR = NOT REQUESTED

Lab Manager Bruce H. Cahoskal

Form I

Sample No.
DC-SD-25

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9663 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	11250		P	13.	Magnesium	NR		
2.	Antimony	24	R U	P UJ	14.	Manganese	190		P
3.	Arsenic	3.2	R	F J	15.	Mercury	0.79		CV
4.	Barium	239		P	16.	Nickel	174	R*	P J
5.	Beryllium	2.0	U	P	17.	Potassium	NR		
6.	Cadmium	12		P	18.	Selenium	2.0	U	F
7.	Calcium	NR			19.	Silver	4.1	U	P
8.	Chromium	33		P	20.	Sodium	NR		
9.	Cobalt	5.2		P	21.	Thallium	4.1	U	F
10.	Copper	379	*	P J	22.	Tin	16	U	F
11.	Iron	22800		P	23.	Vanadium	37		P
12.	Lead	146		P	24.	Zinc	1010		P
	Cyanide	2.1	U			Percent Solids (%)	48		

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: NR = NOT REQUESTED

Lab Manager Bruce H Robichaud

Form I

Sample No.
DC-SD-26

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9664 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	12500		P	13.	Magnesium	NR		
2.	Antimony	18	R U	P UJ	14.	Manganese	273		P
3.	Arsenic	7.8	R	F J	15.	Mercury	0.89		CV
4.	Barium	622		P	16.	Nickel	665	R*	P J
5.	Beryllium	1.5	U	P	17.	Potassium	NR		
6.	Cadmium	42		P	18.	Selenium	1.5	U	F UJ
7.	Calcium	NR			19.	Silver	3.0	U	P
8.	Chromium	48		P	20.	Sodium	NR		
9.	Cobalt	12		P	21.	Thallium	3.0	U	F
10.	Copper	1630	*	P J	22.	Tin	12	U	F
11.	Iron	40200		P	23.	Vanadium	32		P
12.	Lead	480		P	24.	Zinc	6590		P
Cyanide		1.6	U		Percent Solids (%)		64		

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: NR = NOT REQUESTED

Lab Manager Bennett Rabinowitz

Form I

Sample No.
DC-SD-27

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9665 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	6400		P	13.	Magnesium	NR		
2.	Antimony	44	R U	P UJ	14.	Manganese	178		P
3.	Arsenic	4.7	R	F J	15.	Mercury	0.34		CV
4.	Barium	214		P	16.	Nickel	537	R*	P J
5.	Beryllium	3.6	U	P	17.	Potassium	NR		
6.	Cadmium	23		P	18.	Selenium	3.6	U	F
7.	Calcium	NR			19.	Silver	7.3	U	P
8.	Chromium	34		P	20.	Sodium	NR		
9.	Cobalt	7.3	U	P	21.	Thallium	7.2	U	F
10.	Copper	1320	*	P J	22.	Tin	29	U	F
11.	Iron	31300		P	23.	Vanadium	36	U	P
12.	Lead	309		P	24.	Zinc	2380		P
	Cyanide	3.8	U			Percent Solids (%)	26		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-28

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9666 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	5870		P	13.	Magnesium	NR			
2.	Antimony	18	R U	P UJ	14.	Manganese	191		P	
3.	Arsenic	5.1	R	F J	15.	Mercury	0.18		CV	
4.	Barium	199		P	16.	Nickel	236	R*	P J	
5.	Beryllium	1.5	U	P	17.	Potassium	NR			
6.	Cadmium	5.6		P	18.	Selenium	1.5	U	F	
7.	Calcium	NR			19.	Silver	3.0	U	P	
8.	Chromium	13		P	20.	Sodium	NR			
9.	Cobalt	6.4		P	21.	Thallium	2.9	U	F	
10.	Copper	247	*	P J	22.	Tin	12	U	F	
11.	Iron	15000			23.	Vanadium	17		P	
12.	Lead	44		P	24.	Zinc	917		P	
Cyanide		1.5	U		Percent Solids (%)		67			

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: NR = NOT REQUESTED

Lab Manager Burnett Rohrbach

Form I

Sample No.
DC-SD-29

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9667 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	11800		P	13.	Magnesium	NR		
2.	Antimony	15	R U	P UJ	14.	Manganese ✓	412		P
3.	Arsenic	5.6	R	F J	15.	Mercury	0.07	U	CV
4.	Barium	362		P	16.	Nickel	18	R*	P J
5.	Beryllium	1.2	U	P	17.	Potassium	NR		
6.	Cadmium	2.5		P	18.	Selenium	1.2	U	F
7.	Calcium	NR			19.	Silver	2.5	U	P
8.	Chromium	15		P	20.	Sodium	NR		
9.	Cobalt	5.8		P	21.	Thallium ✓	2.3	U	F
10.	Copper	35	*	P J	22.	Tin	9.3	U	F
11.	Iron	16600		P	23.	Vanadium	27		P
12.	Lead	47		P	24.	Zinc	197		P
	Cyanide	1.3	U			Percent Solids (%)	79		

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: NR = NOT REQUESTED

Lab Manager Bennett Peterson

Form I

Sample No.
DC-SD-31

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9683 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	10500		P	13.	Magnesium	NR		
2.	Antimony	14	R U	P UJ	14.	Manganese	384		P
3.	Arsenic	5.2	R	F J	15.	Mercury	0.08	U	CV
4.	Barium	277		P	16.	Nickel	19	R*	P J
5.	Beryllium	1.2	U	P	17.	Potassium	NR		
6.	Cadmium	2.1		P	18.	Selenium	1.1	U	F UJ
7.	Calcium	NR			19.	Silver	2.4	U	P
8.	Chromium	13		P	20.	Sodium	NR		
9.	Cobalt	5.4		P	21.	Thallium ✓	2.3	U	F UJ
10.	Copper	31	*	P J	22.	Tin	9.1	U	F
11.	Iron	15700		P	23.	Vanadium	24		P
12.	Lead	30		P	24.	Zinc ✓	172		P
Cyanide		1.3	U		Percent Solids (%)		80		

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: NR = NOT REQUESTED

Lab Manager Burnett Patchael

Form I

Sample No.
DC-SD-32

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9684 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	8570		P	13.	Magnesium	NR		
2.	Antimony	16	R U	P UJ	14.	Manganese	123		P
3.	Arsenic	18	R	F J	15.	Mercury	2.81		CV J
4.	Barium	430		P	16.	Nickel	765	R*	P J
5.	Beryllium	1.3	U	P	17.	Potassium	NR		
6.	Cadmium	18		P	18.	Selenium	1.4	U	F UJ
7.	Calcium	NR			19.	Silver	6.0		P
8.	Chromium	34		P	20.	Sodium	NR		
9.	Cobalt	8.9		P	21.	Thallium	2.8	U	F
10.	Copper	2620	*	P J	22.	Tin	14		F
11.	Iron	25000		P	23.	Vanadium	24		P
12.	Lead	225		P	24.	Zinc	1590		P
Cyanide		1.4	U		Percent Solids (%)		71		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rotstein

Form I

Sample No.
DC-SD-33

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9685 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	6720		P	13.	Magnesium	NR		
2.	Antimony	19	R U	P UJ	14.	Manganese	69		P
3.	Arsenic	30	R	F J	15.	Mercury	✓ 4.06		CV
4.	Barium	287		P	16.	Nickel	310	R*	P J
5.	Beryllium	1.6	U	P	17.	Potassium	NR		
6.	Cadmium	25		P	18.	Selenium	3.3		F
7.	Calcium	NR			19.	Silver	26		P
8.	Chromium	102		P	20.	Sodium	NR		
9.	Cobalt	✓ 3.2		P	21.	Thallium	✓ 3.0	U	F
10.	Copper	4630	*	P J	22.	Tin	76		F
11.	Iron	37400		P	23.	Vanadium	20		P
12.	Lead	1900		P	24.	Zinc	1510		P
	Cyanide	1.6	U			Percent Solids (%)	63		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rotobach

Form I

Sample No.
DC-SD-34

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9686 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	8310		P	13.	Magnesium	NR		
2.	Antimony	18	R U	P UJ	14.	Manganese	66		P
3.	Arsenic	76	R	F J	15.	Mercury	5.62		CV J
4.	Barium	287		P	16.	Nickel	255	R*	P J
5.	Beryllium	1.5	U	P	17.	Potassium	NR		
6.	Cadmium	22		P	18.	Selenium	7.5	U	F
7.	Calcium	NR			19.	Silver	23		P
8.	Chromium	121		P	20.	Sodium	NR		
9.	Cobalt	3.0	U	P	21.	Thallium	3.0	U	F
10.	Copper	3130	*	P J	22.	Tin	412		F
11.	Iron	36100		P	23.	Vanadium	23		P
12.	Lead	2030		P	24.	Zinc	1230		P
Cyanide		1.5	U		Percent Solids (%)		66		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rotstein

Form I

Sample No.
DC-SD-35

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9687 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	7210		P	13.	Magnesium	NR		
2.	Antimony	21	R U	P UJ	14.	Manganese	296		P
3.	Arsenic	21	R	F J	15.	Mercury	3.00		CV
4.	Barium	732		P	16.	Nickel	559	R*	P J
5.	Beryllium	1.7	U	P	17.	Potassium	NR		
6.	Cadmium	31		P	18.	Selenium	3.0		F
7.	Calcium	NR			19.	Silver	33		P
8.	Chromium	206		P	20.	Sodium	NR		
9.	Cobalt	27		P	21.	Thallium	3.3	U	F
10.	Copper	11400	*	P J	22.	Tin	57		F
11.	Iron	36600		P	23.	Vanadium	25		P
12.	Lead	1600		P	24.	Zinc	3420		P
Cyanide		1.8	U		Percent Solids (%)		55		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-36

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9688 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	9180		P		13.	Magnesium	NR		
2.	Antimony	19	R U	P	UJ	14.	Manganese	153		P
3.	Arsenic	12	R	F	J	15.	Mercury	1.18		CV
4.	Barium	328		P		16.	Nickel	307	R*	P J
5.	Beryllium	1.6	U	P		17.	Potassium	NR		
6.	Cadmium	17		P		18.	Selenium	1.5	U	F UJ
7.	Calcium	NR				19.	Silver	13		P
8.	Chromium	75		P		20.	Sodium	NR		
9.	Cobalt	11		P		21.	Thallium	3.0	U	F
10.	Copper	10300	*	P	J	22.	Tin	12	U	F
11.	Iron	21900		P		23.	Vanadium	22		P
12.	Lead	910		P		24.	Zinc	2740		P
Cyanide		1.6	U			Percent Solids (%)		64		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rotobaul

ATTACHMENT A

FORMS I

CASE NUMBERS U-4432 AND U-4442

SEDIMENT INORGANICS

Date 1-7-87

COVER PAGE
INORGANIC ANALYSES DATA PACKAGE

Lab Name Ecology & Environment Inc. Case No. U-4432/U-4442

SOW No. 784 Q.C. Report No. _____

Sample Numbers

	Lab ID No.		Lab ID No.
DC-SD-13	9651	DC-SD-22	9660
DC-SD-14	9652	DC-SD-23	9661
DC-SD-15	9653	DC-SD-24	9662
DC-SD-16	9654	DC-SD-25	9663
DC-SD-17	9655	DC-SD-26	9664
DC-SD-18	9656	DC-SD-27	9665
DC-SD-19	9657	DC-SD-28	9666
DC-SD-20	9658	DC-SD-29	9667
DC-SD-21	9659	DC-SD-31	9683

Comments: _____

ICP Interelement and background corrections applied? Yes X No ____.

If yes, corrections applied before X 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 detection 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/Flame AA) or F (for furnace).

U - Indicates element was analyzed for but not detected. Report with the 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.

R - 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

Date 1-7-87

COVER PAGE
INORGANIC ANALYSES DATA PACKAGE

Lab Name Ecology & Environment Inc. Case No. U-4432/U-4442

SOW No. 784 Q.C. Report No. _____

Sample Numbers

	Lab ID No.			Lab ID No.
DC-SD-32	9684			
DC-SD-33	9685			
DC-SD-34	9686			
DC-SD-35	9687			
DC-SD-36	9688			

Comments: _____

ICP Interelement and background corrections applied? Yes X No ____.

If yes, corrections applied before X 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 detection 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/Flame AA) or F (for furnace).

U - Indicates element was analyzed for but not detected. Report with the 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.

R - 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

ecology and environment, inc.
ANALYTICAL SERVICES CENTER, P.O. BOX D, BUFFALO, NEW YORK 14225, TEL. 716-631-0360
International Specialists in the Environmental Sciences

January 8, 1987

Job # U-4432
U-4442

Sample # DC-SD-13 through DC-SD-29
DC-SD-31 through DC-SD-36

CASE NARRATIVE

Enclosed are the inorganic analytical results for sediment samples received on November 6 and November 7, 1986. All samples were received in good condition.

Interference Check Sample (ICS) information has not been reported as sequential ICP was used.

Information on furnace AA strip chart recordings and ICP printouts is identified by laboratory sample numbers. The cover page contains the necessary cross reference information.

Mercury analysis was performed on November 21, 1986. Cyanide analysis was performed on November 17 and November 18, 1986.

A calibration verification standard and blank for mercury were not performed at the required frequency. This problem was not noted until hold times had expired. The data are believed to be valid because spiked samples were run late in the analytical sequence with excellent recovery.

Approximately one gram of sample was digested and brought to a final volume of 200 mL in preparation for ICP/furnace AA analysis.

Spike recoveries for copper, lead, and zinc were not reported as the sample results for these elements exceeded the spike concentration by four times.

All samples have been flagged "*" for nickel and copper since the relative percent difference determined in the duplicate analysis exceeded the 20% limit. A comparison between the spike sample and duplicate results for these elements indicates that the variability in results may be due to the hetrogeneity of the samples.

If you have any questions, please contact me at 716/631-0360.

Gary Hahn, Manager
Analytical Services Center

3

recycled paper

ecology and environment, inc.
195 SUGG ROAD, P.O. BOX D, BUFFALO, N.Y., 14225, TEL. 716-632-4491
International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project No.:	Project Name:	Project Manager:
IL3140	DEAD CREEK	M. Miller

Samplers: (Signatures)	Field Team Leader:
Ronald E Bock	Dan Sewall

STATION NUMBER	DATE	TIME	SAMPLE TYPE: COMP	SAMPLE TYPE: GRAB	SAMPLE TYPE: AIR	SAMPLE INFORMATION: EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	1-8 oz. organics	1-8 oz. cyanide metals	2-120 ml VOA				REMARKS
DC-SD13	11-5-86	0955		X		Unknown	DC-SD-13	4	1	1	2				
DC-SD14	↓	1005		X		↓	DC-SD-14	4	1	1	2				
DC-SD15	↓	1145		X		↓	DC-SD-15	4	1	1	2				
DC-SD16	↓	1155		X		↓	DC-SD-16	4	1	1	2				
DC-SD17	↓	1210		X		↓	DC-SD-17	4	1	1	2				
DC-SD18	↓	1310		X		↓	DC-SD-18	4	1	1	2				
DC-SD19	↓	1450		X		↓	DC-SD-19	4	1	1	2				
DC-SD20	↓	1455		X		↓	DC-SD-20	4	1	1	2				

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Ship Via:
Ronald E Bock	11-5-86 2000	Fed Exp				Federal Express
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	BL Airbill Number: 221 974 8274
Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Date: 11-5-86
Fed Exp	11-6-86 1800	Joe Chatelle				

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

*See CONCENTRATION RANGE on back of form.

23405

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195 SUGG ROAD, P.O. BOX D, BUFFALO, N.Y., 14225, TEL. 716-632-4491
International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project No.:	Project Name:	Project Manager:
IL3140	DEAD CREEK	M. Miller

Samplers: (Signatures)	Field Team Leader:
Ronald E Bock	Dan Sewell

STATION NUMBER	DATE	TIME	SAMPLE TYPE: COMP	SAMPLE TYPE: GRAB	SAMPLE TYPE: AIR	SAMPLE INFORMATION: EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	1-8oz organic	1-8oz cyanide + metals	2-120 ml VOA				REMARKS
DC-SD21	11-5-86	1620		X		Unknown	DC-SD-21	4	1	1	2				Metals Preserved with HNO_3 Cyanide Preserved with NaO
DC-SD22		1635		X			DC-SD-22	4	1	1	2				
DC-SD23		1652		X			DC-SD-23	4	1	1	2				
DC-SD24		1655		X			DC-SD-24	4	1	1	2				
DC-SD25		1725		X			DC-SD-25	4	1	1	2				
DC-SD26		1740		X			DC-SD-26	4	1	1	2				
DC-SD27		1750		X			DC-SD-27	4	1	1	2				
DC-SD28		1810		X			DC-SD-28	4	1	1	2				
DC-SD29		1855		X			DC-SD-29	4	1	1	2				

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Ronald E Bock	11-5-86/2000	Fed EXP			
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)
Fed EXP		Joe Chatelle			

Ship Via: Federal Express

BL/Airbill Number	Date
2219748274	11-5-86

Distribution: Original Accompanies Shipment, Copy to Coordinator Field Files
*See CONCENTRATION RANGE on back of form.

23405

5

ecology and environment, inc.
195 SUGG ROAD, P.O. BOX D, BUFFALO, N.Y., 14225, TEL. 716-632-4491
International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

Page ___ of ___

Project No.: IL3140
Project Name: DEAD CREEK
Project Manager: M. Miller
Samplers: (Signatures) Ronald E Bock
Field Team Leader: Dan Sewell

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	1-5oz organics	1-8oz metals, cyanide	2-120 ml VOA				REMARKS
DC-SD-31	11-6-86	0955		X			DC-SD-31	4	1	1	2				
DC-SD-32		1245		X			DC-SD-32	4	1	1	2				
DC-SD-33		1230		X			DC-SD-33	4	1	1	2				
DC-SD-34		1235		X			DC-SD-34	4	1	1	2				
DC-SD-35		1320		X			DC-SD-35	4	1	1	2				
DC-SD-36		1330		X			DC-SD-36	4	1	1	2				

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Ronald E Bock	11/6/86 1600	FEDERAL EXPRESS			
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)
Fed Express	11-7-86/0930	William H Hamm			

Ship Via: FEDERAL EXPRESS
BL/Airbill Number: 2219748424
Date: 11/6/86

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files
*See CONCENTRATION RANGE on back of form.

234

Form I

Sample No.
DC-SD-13

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9651 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	4800			P	13.	Magnesium	NR			
2.	Antimony	22	R	U	P	14.	Manganese	197			P
3.	Arsenic	14	R		F	15.	Mercury	0.73			CV
4.	Barium	410			P	16.	Nickel	56	R*		P
5.	Beryllium	1.9		U	P	17.	Potassium	NR			
6.	Cadmium	22			P	18.	Selenium	3.3			F
7.	Calcium	NR				19.	Silver	10			P
8.	Chromium	62			P	20.	Sodium	NR			
9.	Cobalt	6.6			P	21.	Thallium	3.6		U	F
10.	Copper	8740	*		P	22.	Tin	32			F
11.	Iron	16400			P	23.	Vanadium	23			P
12.	Lead	853			P	24.	Zinc	3310			P
Cyanide		1.9		U		Percent Solids (%)		52			

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: NR = NOT REQUESTED

Lab Manager Brian H Rohrbach

Form I

Sample No.
DC-SD-14

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9652 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	6380		P	13.	Magnesium	NR		
2.	Antimony	31	R U	P	14.	Manganese	153		P
3.	Arsenic	200	R	F	15.	Mercury	1.3		CV
4.	Barium	1110		P	16.	Nickel	502	R*	P
5.	Beryllium	2.6	U	P	17.	Potassium	NR		
6.	Cadmium	36		P	18.	Selenium	4.1		F
7.	Calcium	NR			19.	Silver	11		P
8.	Chromium	153		P	20.	Sodium	NR		
9.	Cobalt	9.2		P	21.	Thallium	5.3	U	F
10.	Copper	6700	*	P	22.	Tin	28		F
11.	Iron	19500		P	23.	Vanadium	27		P
12.	Lead	931		P	24.	Zinc	6650		P

Cyanide 3.8 Percent Solids (%) 37

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohstart

Form I

Sample No.
DC-SD-15

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9653 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	6560		P	13.	Magnesium	NR		
2.	Antimony	18	R U	P	14.	Manganese	100		P
3.	Arsenic	3.6	R	F	15.	Mercury	0.13		CV
4.	Barium	156		P	16.	Nickel	356	R*	P
5.	Beryllium	1.5	U	P	17.	Potassium	NR		
6.	Cadmium	1.5		P	18.	Selenium	1.5	U	F
7.	Calcium	NR			19.	Silver	3.0	U	P
8.	Chromium	15		P	20.	Sodium	NR		
9.	Cobalt	7.7		P	21.	Thallium	3.0	U	F
10.	Copper	167	*	P	22.	Tin	12	U	F
11.	Iron	11100		P	23.	Vanadium	19		P
12.	Lead	26		F	24.	Zinc	868		P
Cyanide		1.5	U		Percent Solids (%)		66		

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: NR = NOT REQUESTED

Lab Manager Burnett Robertson

Form I

Sample No.
DC-SD-16

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9654 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	2430		P	13.	Magnesium	NR		
2.	Antimony	21	R U	P	14.	Manganese	97		P
3.	Arsenic	12	R	F	15.	Mercury	0.56		CV
4.	Barium	131		P	16.	Nickel	258	R*	P
5.	Beryllium	1.7	U	P	17.	Potassium	NR		
6.	Cadmium	11		P	18.	Selenium	1.6	U	F
7.	Calcium	NR			19.	Silver	3.5	U	P
8.	Chromium	37		P	20.	Sodium	NR		
9.	Cobalt	7.2		P	21.	Thallium	3.3	U	F
10.	Copper	1270	*	P	22.	Tin	23		F
11.	Iron	26000		P	23.	Vanadium	17	U	P
12.	Lead	65		P	24.	Zinc	872		P
	Cyanide	1.7	U			Percent Solids (%)	58		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-17

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9655 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	7510		P	13.	Magnesium	NR		
2.	Antimony	19	R U	P	14.	Manganese	139		P
3.	Arsenic	16	R	F	15.	Mercury	~~0.14~~ 0.16U	CV	
4.	Barium	196		P	16.	Nickel	309	R*	P
5.	Beryllium	1.6	U	P	17.	Potassium	NR		
6.	Cadmium	7.8		P	18.	Selenium	1.5	U	F
7.	Calcium	NR			19.	Silver	3.1	U	P
8.	Chromium	53		P	20.	Sodium	NR		
9.	Cobalt	5.0		P	21.	Thallium	2.9	U	F
10.	Copper	1780	*	P	22.	Tin	12	U	F
11.	Iron	14400		P	23.	Vanadium	19		P
12.	Lead	71		P	24.	Zinc	1010		P
	Cyanide	1.6	U			Percent Solids (%)	63		

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: NR = NOT REQUESTED

Lab Manager Bruce H. Rohrbach

Form I

Sample No.
DC-SD-18

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9656 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	5380		P	13.	Magnesium	NR		
2.	Antimony	23	R U	P	14.	Manganese	218		P
3.	Arsenic	16	R	F	15.	Mercury	0.90		CV
4.	Barium	467		P	16.	Nickel	82	R*	P
5.	Beryllium	1.9	U	P	17.	Potassium	NR		
6.	Cadmium	24		P	18.	Selenium	4.4		F
7.	Calcium	NR			19.	Silver	14		P
8.	Chromium	79		P	20.	Sodium	NR		
9.	Cobalt	6.3		P	21.	Thallium	3.7	U	F
10.	Copper	8640	*	P	22.	Tin	15	U	F
11.	Iron	16300		P	23.	Vanadium	24		P
12.	Lead	983		P	24.	Zinc	3440		P
Cyanide		2.0	U		Percent Solids (%)		49		

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: NR = NOT REQUESTED

Lab Manager Bruce H. Rohrbach

Form I

Sample No.
DC-SD-19

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9657 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	9750		P	13.	Magnesium	NR		
2.	Antimony	24	RU	P	14.	Manganese	82		P
3.	Arsenic	21	R	F	15.	Mercury	1.68		CV
4.	Barium	17300		P	16.	Nickel	1520	R*	P
5.	Beryllium	2.0	U	P	17.	Potassium	NR		
6.	Cadmium	30		P	18.	Selenium	2.0		F
7.	Calcium	NR			19.	Silver	15		P
8.	Chromium	118		P	20.	Sodium	NR		
9.	Cobalt	11		P	21.	Thallium	4.0		F
10.	Copper	15300	*	P	22.	Tin	16		F
11.	Iron	58200		P	23.	Vanadium	48		P
12.	Lead	1460		P	24.	Zinc	11900		P
Cyanide		2.1	U		Percent Solids (%)		47		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rakebrand

Form I

Sample No.
DC-SD-20

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9658 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	12900	P	13.	Magnesium	NR	
2.	Antimony	20 R U	P	14.	Manganese	70	P
3.	Arsenic	13 R	F	15.	Mercury	0.89	CV
4.	Barium	3120	P	16.	Nickel	867 R*	P
5.	Beryllium	1.7 U	P	17.	Potassium	NR	
6.	Cadmium	8.2	P	18.	Selenium	1.6 U	F
7.	Calcium	NR		19.	Silver	3.4 U	P
8.	Chromium	113	P	20.	Sodium	NR	
9.	Cobalt	6.9	P	21.	Thallium	3.3 U	F
10.	Copper	2610 *	P	22.	Tin	13 U	F
11.	Iron	21300	P	23.	Vanadium	25	P
12.	Lead	330	P	24.	Zinc	6610	P
	Cyanide	1.7 U			Percent Solids (%)	58	

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohsbach

Form I

Sample No.
DC-SD-21

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9659 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	12600		P	13.	Magnesium	NR		
2.	Antimony	27	R U	P	14.	Manganese	177		P
3.	Arsenic	5.1	R	F	15.	Mercury	0.71		CV
4.	Barium	376		P	16.	Nickel	116	R*	P
5.	Beryllium	2.3	U	P	17.	Potassium	NR		
6.	Cadmium	17		P	18.	Selenium	2.1	U	F
7.	Calcium	NR			19.	Silver	4.5	U	P
8.	Chromium	41		P	20.	Sodium	NR		
9.	Cobalt	7.5		P	21.	Thallium	4.3	U	F
10.	Copper	580	*	P	22.	Tin	17	U	F
11.	Iron	18400		P	23.	Vanadium	32		P
12.	Lead	467		P	24.	Zinc	1370		P
	Cyanide	2.3	U			Percent Solids (%)	43		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-22

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9660 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	7530			P	13.	Magnesium	NR		
2.	Antimony	26	R	U	P	14.	Manganese	98		P
3.	Arsenic	9.0	R		F	15.	Mercury	0.95		CV
4.	Barium	570			P	16.	Nickel	838	R*	P
5.	Beryllium	2.2		U	P	17.	Potassium	NR		
6.	Cadmium	34			P	18.	Selenium	2.1	U	F
7.	Calcium	NR				19.	Silver	4.3	U	P
8.	Chromium	60			P	20.	Sodium	NR		
9.	Cobalt	10			P	21.	Thallium	42	U	F
10.	Copper	5910	*		P	22.	Tin	17	U	F
11.	Iron	18000			P	23.	Vanadium	22		P
12.	Lead	593			P	24.	Zinc	15600		P
Cyanide		2.2		U		Percent Solids (%)		45		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rotstein

Form I

Sample No.
DC-SD-23

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9661 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	8450		P	13.	Magnesium	NR		
2.	Antimony	30	R U	P	14.	Manganese	161		P
3.	Arsenic	33	R	F	15.	Mercury	1.64		CV
4.	Barium	1700		P	16.	Nickel	1290	R*	P
5.	Beryllium	2.5	U	P	17.	Potassium	NR		
6.	Cadmium	27		P	18.	Selenium	2.7	U	F
7.	Calcium	NR			19.	Silver	5.0	U	P
8.	Chromium	54		P	20.	Sodium	NR		
9.	Cobalt	6.6		P	21.	Thallium	5.3	U	F
10.	Copper	6640	*	P	22.	Tin	21	U	F
11.	Iron	35800		P	23.	Vanadium	27		P
12.	Lead	975		P	24.	Zinc	6880		P
Cyanide		2.7	U		Percent Solids (%)		37		

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: NR = NOT REQUESTED

Lab Manager Barrett Rohrbach

Form I

Sample No.
DC-SD-24

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9662 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	12600		P	13.	Magnesium	NR		
2.	Antimony	19	R U	P	14.	Manganese	151		P
3.	Arsenic	30	R	F	15.	Mercury	2.81		CV
4.	Barium	1010		P	16.	Nickel	748	R*	P
5.	Beryllium	1.6	U	P	17.	Potassium	NR		
6.	Cadmium	42		P	18.	Selenium	2.5		F
7.	Calcium	NR			19.	Silver	3.1	U	P
8.	Chromium	68		P	20.	Sodium	NR		
9.	Cobalt	7.2		P	21.	Thallium	3.2	U	F
10.	Copper	2440	*	P	22.	Tin	13	U	F
11.	Iron	50900		P	23.	Vanadium	36		P
12.	Lead	661		P	24.	Zinc	6430		P
Cyanide		1.6	U		Percent Solids (%)		61		

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: NR = NOT REQUESTED

Lab Manager Burnett Patterson

Form I

Sample No.
DC-SD-25

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9663 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	11250		P	13.	Magnesium	NR		
2.	Antimony	24	R U	P	14.	Manganese	190		P
3.	Arsenic	3.2	R	F	15.	Mercury	0.79		CV
4.	Barium	239		P	16.	Nickel	174	R*	P
5.	Beryllium	2.0	U	P	17.	Potassium	NR		
6.	Cadmium	12		P	18.	Selenium	2.0	U	F
7.	Calcium	NR			19.	Silver	4.1	U	P
8.	Chromium	33		P	20.	Sodium	NR		
9.	Cobalt	5.2		P	21.	Thallium	4.1	U	F
10.	Copper	379	*	P	22.	Tin	16	U	F
11.	Iron	22800		P	23.	Vanadium	37		P
12.	Lead	146		P	24.	Zinc	1010		P
Cyanide		2.1	U		Percent Solids (%)		48		

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: NR = NOT REQUESTED

Lab Manager Bruce H Robertson

Form I

Sample No.
DC-SD-26

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9664 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	12500			P	13.	Magnesium	NR	
2.	Antimony	18	R	U	P	14.	Manganese	273	P
3.	Arsenic	7.8	R		F	15.	Mercury	0.89	CV
4.	Barium	622			P	16.	Nickel	665	R* P
5.	Beryllium	1.5		U	P	17.	Potassium	NR	
6.	Cadmium	42			P	18.	Selenium	1.5	U F
7.	Calcium	NR				19.	Silver	3.0	U P
8.	Chromium	48			P	20.	Sodium	NR	
9.	Cobalt	12			P	21.	Thallium	3.0	U F
10.	Copper	1630	*		P	22.	Tin	12	U F
11.	Iron	40200			P	23.	Vanadium	32	P
12.	Lead	480			P	24.	Zinc	6590	P
Cyanide		1.6		U		Percent Solids (%)		64	

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: NR = NOT REQUESTED

Lab Manager Bennett Rabehael

Form I

Sample No.
DC-SD-27

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9665 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	6400		P	13.	Magnesium	NR		
2.	Antimony	44	R U	P	14.	Manganese	178		P
3.	Arsenic	4.7	R	F	15.	Mercury	0.34		CV
4.	Barium	214		P	16.	Nickel	537	R*	P
5.	Beryllium	3.6	U	P	17.	Potassium	NR		
6.	Cadmium	23		P	18.	Selenium	3.6	U	F
7.	Calcium	NR			19.	Silver	7.3	U	P
8.	Chromium	34		P	20.	Sodium	NR		
9.	Cobalt	7.3	U	P	21.	Thallium	7.2	U	F
10.	Copper	1320	*	P	22.	Tin	29	U	F
11.	Iron	31300		P	23.	Vanadium	36	U	P
12.	Lead	309		P	24.	Zinc	2380		P
	Cyanide	3.8	U			Percent Solids (%)	26		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-28

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9666 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	5870		P	13.	Magnesium	NR		
2.	Antimony	18	R U	P	14.	Manganese	191		P
3.	Arsenic	5.1	R	F	15.	Mercury	0.18		CV
4.	Barium	199		P	16.	Nickel	236	R*	P
5.	Beryllium	1.5	U	P	17.	Potassium	NR		
6.	Cadmium	5.6		P	18.	Selenium	1.5	U	F
7.	Calcium	NR			19.	Silver	3.0	U	P
8.	Chromium	13		P	20.	Sodium	NR		
9.	Cobalt	6.4		P	21.	Thallium	2.9	U	F
10.	Copper	247	*	P	22.	Tin	12	U	F
11.	Iron	15000			23.	Vanadium	17		P
12.	Lead	44		P	24.	Zinc	917		P
Cyanide		1.5	U		Percent Solids (%)		67		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rokebach

Form I

Sample No.
DC-SD-29

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9667 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	11800		P	13.	Magnesium	NR		
2.	Antimony	15	R U	P	14.	Manganese	412		P
3.	Arsenic	5.6	R	F	15.	Mercury	0.07	U	CV
4.	Barium	362		P	16.	Nickel	18	R*	P
5.	Beryllium	1.2	U	P	17.	Potassium	NR		
6.	Cadmium	2.5		P	18.	Selenium	1.2	U	F
7.	Calcium	NR			19.	Silver	2.5	U	P
8.	Chromium	15		P	20.	Sodium	NR		
9.	Cobalt	5.8		P	21.	Thallium	2.3	U	F
10.	Copper	35	*	P	22.	Tin	9.3	U	F
11.	Iron	16600		P	23.	Vanadium	27		P
12.	Lead	47		P	24.	Zinc	197		P
	Cyanide	1.3	U			Percent Solids (%)	79		

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: NR = NOT REQUESTED

Lab Manager [signature]

Form I

Sample No.
DC-SD-31

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9683 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	10500		P	13.	Magnesium	NR		
2.	Antimony	14	R U	P	14.	Manganese	384		P
3.	Arsenic	5.2	R	F	15.	Mercury	0.08	U	CV
4.	Barium	277		P	16.	Nickel	19	R*	P
5.	Beryllium	1.2	U	P	17.	Potassium	NR		
6.	Cadmium	2.1		P	18.	Selenium	1.1	U	F
7.	Calcium	NR			19.	Silver	2.4	U	P
8.	Chromium	13		P	20.	Sodium	NR		
9.	Cobalt	5.4		P	21.	Thallium	2.3	U	F
10.	Copper	31	*	P	22.	Tin	9.1	U	F
11.	Iron	15700		P	23.	Vanadium	24		P
12.	Lead	30		P	24.	Zinc	172		P
	Cyanide	1.3	U			Percent Solids (%)	80		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-32

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9684 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	8570		P	13.	Magnesium	NR		
2.	Antimony	16	R U	P	14.	Manganese	123		P
3.	Arsenic	18	R	F	15.	Mercury	2.81		CV
4.	Barium	430		P	16.	Nickel	765	R*	P
5.	Beryllium	1.3	U	P	17.	Potassium	NR		
6.	Cadmium	18		P	18.	Selenium	1.4	U	F
7.	Calcium	NR			19.	Silver	6.0		P
8.	Chromium	34		P	20.	Sodium	NR		
9.	Cobalt	8.9		P	21.	Thallium	2.8	U	F
10.	Copper	2620	*	P	22.	Tin	14		F
11.	Iron	25000		P	23.	Vanadium	24		P
12.	Lead	225		P	24.	Zinc	1590		P
	Cyanide	1.4	U			Percent Solids (%)	71		

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: NR = NOT REQUESTED

Lab Manager [signature]

Form I

Sample No.
DC-SD-33

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9685 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	6720		P	13.	Magnesium	NR		
2.	Antimony	19	R U	P	14.	Manganese	69		P
3.	Arsenic	30	R	F	15.	Mercury	4.06		CV
4.	Barium	287		P	16.	Nickel	310	R*	P
5.	Beryllium	1.6	U	P	17.	Potassium	NR		
6.	Cadmium	25		P	18.	Selenium	3.3		F
7.	Calcium	NR			19.	Silver	26		P
8.	Chromium	102		P	20.	Sodium	NR		
9.	Cobalt	3.2		P	21.	Thallium	3.0	U	F
10.	Copper	4630	*	P	22.	Tin	76		F
11.	Iron	37400		P	23.	Vanadium	20		P
12.	Lead	1900		P	24.	Zinc	1510		P
	Cyanide	1.6	U			Percent Solids (%)	63		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-34

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9686 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	8310		P	13.	Magnesium	NR		
2.	Antimony	18	R U	P	14.	Manganese	66		P
3.	Arsenic	76	R	F	15.	Mercury	5.62		CV
4.	Barium	287		P	16.	Nickel	255	R*	P
5.	Beryllium	1.5	U	P	17.	Potassium	NR		
6.	Cadmium	22		P	18.	Selenium	7.5	U	F
7.	Calcium	NR			19.	Silver	23		P
8.	Chromium	121		P	20.	Sodium	NR		
9.	Cobalt	3.0	U	P	21.	Thallium	3.0	U	F
10.	Copper	3130	*	P	22.	Tin	412		F
11.	Iron	36100		P	23.	Vanadium	23		P
12.	Lead	2030		P	24.	Zinc	1230		P
Cyanide		1.5	U		Percent Solids (%)		66		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rotstein

Form I

Sample No.
DC-SD-35

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9687 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	7210		P	13.	Magnesium	NR		
2.	Antimony	21	R U	P	14.	Manganese	296		P
3.	Arsenic	21	R	F	15.	Mercury	3.00		CV
4.	Barium	732		P	16.	Nickel	559	R*	P
5.	Beryllium	1.7	U	P	17.	Potassium	NR		
6.	Cadmium	31		P	18.	Selenium	3.0		F
7.	Calcium	NR			19.	Silver	33		P
8.	Chromium	206		P	20.	Sodium	NR		
9.	Cobalt	27		P	21.	Thallium	3.3	U	F
10.	Copper	11400	*	P	22.	Tin	57		F
11.	Iron	36600		P	23.	Vanadium	25		P
12.	Lead	1600		P	24.	Zinc	3420		P
Cyanide		1.8	U		Percent Solids (%)		55		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form I

Sample No.
DC-SD-36

Date 1-7-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

LAB SAMPLE ID. NO. 9688 QC REPORT NO. _____

Elements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	9180		P	13.	Magnesium	NR		
2.	Antimony	19	R U	P	14.	Manganese	153		P
3.	Arsenic	12	R	F	15.	Mercury	1.18		CV
4.	Barium	328		P	16.	Nickel	307	R*	P
5.	Beryllium	1.6	U	P	17.	Potassium	NR		
6.	Cadmium	17		P	18.	Selenium	1.5	U	F
7.	Calcium	NR			19.	Silver	13		P
8.	Chromium	75		P	20.	Sodium	NR		
9.	Cobalt	11		P	21.	Thallium	3.0	U	F
10.	Copper	10300	*	P	22.	Tin	12	U	F
11.	Iron	21900		P	23.	Vanadium	22		P
12.	Lead	910		P	24.	Zinc	2740		P
	Cyanide	1.6	U			Percent Solids (%)	64		

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: NR = NOT REQUESTED

Lab Manager Bruce H Rohrbach

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

SOW NO. 784

DATE 11-19-86 (CN - 11/17/86) UNITS ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum	500	492	98	500	520	104	499	100	P
2. Antimony	500	475	95	500	499	100	542	108	P
3. Arsenic									
4. Barium	500	486	97	500	527	105	550	110	P
5. Beryllium	500	491	98	500	492	98	508	102	P
6. Cadmium	500	505	101	500	525	105	541	108	P
7. Calcium									
8. Chromium	500	492	98	500	498	100	496	99	P
9. Cobalt	500	488	98	500	498	100	532	106	P
10. Copper	500	488	98	500	498	100	524	105	P
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese	500	492	98	500	499	100	522	104	P
15. Mercury									
16. Nickel	500	481	96	500	499	100	515	103	P
17. Potassium									
18. Selenium									
19. Silver	500	490	98	500	507	101	520	104	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium	500	500	100	500	511	102	530	106	P
24. Zinc	500	507	101	500	519	104	533	107	P
Other:									
Cyanide				48	45	94			

Initial Calibration Source VHG.1 [2] Continuing Calibration Source VHG.2

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME Ecology & Environment Inc.

CASE NO. U-4432 / U-4442

SOW NO. 784

DATE 11-19-86 (CN - 11/17/86)

UNITS ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum				500	521	104			P
2. Antimony				500	542	108			P
3. Arsenic									
4. Barium				500	565	113			P
5. Beryllium				500	509	102			P
6. Cadmium				500	546	109			P
7. Calcium									
8. Chromium				500	502	100			P
9. Cobalt				500	529	106			P
10. Copper				500	521	104			P
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese				500	525	105			P
15. Mercury									
16. Nickel				500	515	103			P
17. Potassium									
18. Selenium									
19. Silver				500	516	103			P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium				500	540	108			P
24. Zinc				500	536	107			P
Other:									
Cyanide				48	45	94			

Initial Calibration Source VHG.1 [2] Continuing Calibration Source VHG.2

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME Ecology & Environment Inc. CASE NO. U-4432 / U-4442

SOW NO. 784

DATE 11-21-86 (CN - 11/18/86) UNITS ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	500	526	105	500	537	107			P
5. Beryllium									
6. Cadmium									
7. Calcium									
8. Chromium									
9. Cobalt									
10. Copper									
11. Iron	500	513	103	500	521	104			P
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel	500	514	103	500	526	105			P
17. Potassium									
18. Selenium									
19. Silver									
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide				48	45	94			

[1] Initial Calibration Source VHG.1 [2] Continuing Calibration Source VHG.2

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME Ecology & Environment Inc.

CASE NO. U-4432 / U-4442

SOW NO. 784

DATE 11-26-86

UNITS µg/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	500	504	101	500	530	106	532	106	P
5. Beryllium									
6. Cadmium									
7. Calcium									
8. Chromium									
9. Cobalt									
10. Copper									
11. Iron	500	517	103	500	527	105	532	106	P
12. Lead									
13. Magnesium									
14. Manganese	500	510	102	500	523	105			P
15. Mercury									
16. Nickel	500	514	103	500	521	104	535	107	P
17. Potassium									
18. Selenium									
19. Silver									
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc	500	502	100	500	525	105	528	106	P
Other:									
Cyanide									

Initial Calibration Source VHG.1 [2] Continuing Calibration Source VHG.2

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME Ecology & Environment Inc.

CASE NO. U-4432 / U-4442

SOW NO. 784

DATE 11-26-86

UNITS ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium				500	528	106			P
5. Beryllium									
6. Cadmium									
7. Calcium									
8. Chromium									
9. Cobalt									
10. Copper									
11. Iron				500	525	105			P
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel				500	528	106			P
17. Potassium									
18. Selenium									
19. Silver									
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

Initial Calibration Source VHG.1 [2] Continuing Calibration Source VHG.2

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME Ecology & Environment Inc.

CASE NO. U-4432 / U-4442

SOW NO. 784

DATE 12-12-86

UNITS ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium									
5. Beryllium									
6. Cadmium									
7. Calcium									
8. Chromium									
9. Cobalt									
10. Copper									
11. Iron									
12. Lead	500	506	101	500	506	101	493	99	P
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver									
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
LEAD	500	506	101	500	510	102			P
Cyanide									

Initial Calibration Source VHG.1 [2] Continuing Calibration Source VHG.2

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME Ecology & Environment Inc.

CASE NO. U-4432/U-4442

SOW NO. 784

DATE 12-16-86

UNITS ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum									
2. Antimony									
3. Arsenic	50	49	98	50	48	96	49	98	F
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									
22. Tin									
23. Vanadium									
24. Zinc									
Other: Arsenic				50	55	110	53	106	F
Arsenic				50	52	104			F
Cyanide									

[1] Initial Calibration Source VHG. 1 [2] Continuing Calibration Source VHG. 2

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME Ecology & Environment Inc. CASE NO. V-4432 / V-4442

DATE Sn, Tl - 12/19/86. As - 12/23/86 Se - 12/22/86 SOW NO. 784

UNITS ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum									
2. Antimony									
3. Arsenic	50	53	106	50	45	90	45	90	F
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	25	26	104	25	24	96	24	96	F
19. Silver									
20. Sodium									
21. Thallium	50	50	100	50	52	104	48	96	F
22. Tin	100	96	96	100	98	98	102	102	F
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

[1] Initial Calibration Source VHG. 1 [2] Continuing Calibration Source VHG. 2

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

Se - 12/22/86 SOW NO. 784

DATE Sn, Tl - 12/19/86 UNITS µg/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
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				25	27	108	25	100	F
19. Silver									
20. Sodium									
21. Thallium				50	49	98			F
22. Tin				100	101	101	105	105	F
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

[1] Initial Calibration Source VHG. 1 [2] Continuing Calibration Source VHG. 2

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME Ecology & Environment Inc. CASE NO. U-4432 / U-4442

12.21-86 — Hg SOW NO. 784

DATE 12-30-86 UNITS ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium									
5. Beryllium									
6. Cadmium									
7. Calcium									
8. Chromium									
9. Cobalt									
10. Copper									
11. Iron	500	522	104	500	506	101			P
12. Lead									
13. Magnesium									
14. Manganese	500	530	106	500	496	99			P
15. Mercury	2.0	2.0	100						CV
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver									
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

[1] Initial Calibration Source VHG.1 [2] Continuing Calibration Source VHG.2

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME Ecology & Environment Inc.

CASE NO. U-4432 / U-4442

SOW NO. 784

DATE 1-5-87

UNITS µg/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium									
5. Beryllium									
6. Cadmium									
7. Calcium									
8. Chromium									
9. Cobalt									
10. Copper									
11. Iron									
12. Lead	50	52	104	50	49	98	52	104	F
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver									
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

Initial Calibration Source VHG. 1 [2] Continuing Calibration Source VHG. 2

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form III

Q. C. Report No. _____

BLANKS

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

DATE 11-19-86 UNITS ug/L

CN - 11/17/86 Matrix WATER

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank 1	2
Metals:							
1. Aluminum	200 U	200 U	200 U	200 U		200 U	
2. Antimony	60 U	60 U	60 U	60 U		60 U	
3. Arsenic							
4. Barium	200 U	200 U	200 U	200 U		200 U	
5. Beryllium	5 U	5 U	5 U	5 U		5 U	
6. Cadmium	5 U	5 U	5 U	5 U		5 U	
7. Calcium							
8. Chromium							
9. Cobalt	50 U	50 U	50 U	50 U		50 U	
10. Copper	25 U	25 U	25 U	25 U		25 U	
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese	15 U	15 U	15 U	15 U		15 U	
15. Mercury							
16. Nickel	40 U	40 U	40 U	40 U		40 U	
17. Potassium							
18. Selenium							
19. Silver	10 U	10 U	10 U	10 U		10 U	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium	50 U	50 U	50 U	50 U		50 U	
24. Zinc	20 U	20 U	20 U	20 U		20 U	
Other:							
Cyanide	10 U					10 U	10 U

Form III

Q. C. Report No. _____

BLANKS

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

DATE 11-21-86 UNITS ug/L

Matrix WATER

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank 1	2
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	200 U	200 U					
5. Beryllium							
6. Cadmium							
7. Calcium							
8. Chromium							
9. Cobalt							
10. Copper							
11. Iron	100 U	100 U					
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel	40 U	40 U					
17. Potassium							
18. Selenium							
19. Silver							
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

Form III

Q. C. Report No. _____

BLANKS

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

DATE 12-12-86 UNITS ug/L

CN - 11/18/86 Matrix WATER

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank 1	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	50 U	50 U	50 U	50 U		50 U	
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver							
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide	10 U					10 U	

Form III

Q. C. Report No. _____

BLANKS

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

DATE 12-26-86 UNITS ug/L

Matrix WATER

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank 1	2
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	200 U	200 U	200 U			200 U	
5. Beryllium							
6. Cadmium							
7. Calcium							
8. Chromium							
9. Cobalt							
10. Copper							
11. Iron	100 U	100 U	100 U	100 U		100 U	
12. Lead							
13. Magnesium							
14. Manganese	15 U	15 U				15 U	
15. Mercury							
16. Nickel	40 U	40 U	40 U	40 U		40 U	
17. Potassium							
18. Selenium							
19. Silver							
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc	20 U	20 U	20 U			20 U	
Other:							
Cyanide							

Form III

Q. C. Report No. _____

BLANKS

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

DATE 12-16-86 UNITS ug/L

Matrix WATER

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank 1	2
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic	10 U	10 U	10 U	10 U	10 U	10 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							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Arsenic		10 U					
Cyanide							

Form III

Q. C. Report No. _____

BLANKS

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

DATE Sn, Tl - 12/19/86 UNITS ug/L

Se - 12/22/86

As - 12/23/86 Matrix WATER

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank 1	2
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic	10 U	10 U	10 U	10 U	10 U	10 U	10 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	5 U	5 U	5 U	5 U	5 U	5 U	5 U
19. Silver							
20. Sodium							
21. Thallium	10 U	10 U	10 U	10 U		10 U	10 U
22. Tin	40 U	40 U	40 U	40 U	40 U	40 U	40 U
23. Vanadium							
24. Zinc							
Other:							
Arsenic		10 U					
Cyanide							

Form III

Q. C. Report No. _____

BLANKS

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

DATE 12-30-86 UNITS ug/L

Hg - 12/21/86 Matrix WATER

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank 1	2
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium							
5. Beryllium							
6. Cadmium							
7. Calcium							
8. Chromium							
9. Cobalt							
10. Copper							
11. Iron	100 U	100 U				100 U	
12. Lead							
13. Magnesium							
14. Manganese	15 U	15 U				15 U	
15. Mercury	0.2 U					0.2 U	
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver							
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

Form III

Q. C. Report No. _____

BLANKS

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

DATE 1-5-87 UNITS µg/L

Matrix WATER

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank 1	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	5 U	5 U	5 U			5 U	
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver							
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

Form V

Q. C. Report No. _____

SPIKE SAMPLE RECOVERY

LAB NAME Ecology & Environment Inc.

DATE 1-7-87

CASE NO. U-4432/U-4442

Sample No. DC-SD-36

Lab Sample ID No. 9688

Units mg/kg dry weight

Matrix SOIL

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	%R[1]
Metals:					
1. Aluminum	75-125				
2. Antimony	"	97	19 U	144	67 R
3. Arsenic	"	18	12	12	50 R
4. Barium	"	877	328	577	95
5. Beryllium	"	15	1.6 U	14	107
6. Cadmium	"	33	17	14	114
7. Calcium	"				
8. Chromium	"	136	75	58	105
9. Cobalt	"	156	11	144	101
10. Copper	"	11100	10300	72	—
11. Iron	"				
12. Lead	"	802	910	166	—
13. Magnesium	"				
14. Manganese	"	313	153	144	111
15. Mercury	"				
16. Nickel	"	525	307	144	151 R
17. Potassium	"				
18. Selenium	"	3.9	1.5 U	3.1	126
19. Silver	"	28	13	14	107
20. Sodium	"				
21. Thallium	"	16	3.0 U	15	107
22. Tin	"				
23. Vanadium	"	169	22	144	102
24. Zinc	"	3060	2740	144	—
Other:					
Cyanide	"	11	1.6 U	10	91

1 %R = [(SSR - SR)/SA] x 100 "R"- out of control

Form V

Q. C. Report No. _____

SPIKE SAMPLE RECOVERY

LAB NAME Ecology & Environment Inc.

DATE 1-7-87

CASE NO. U-4432/U-4442

Sample No. DC-SD-31

Lab Sample ID No. 9683

Units mg/kg dry weight

Matrix SOIL

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	"	0.43	0.08 U	0.40	108
16. Nickel	"				
17. Potassium	"				
18. Selenium	"				
19. Silver	"				
20. Sodium	"				
21. Thallium	"				
22. Tin	"				
23. Vanadium	"				
24. Zinc	"				
Other:					
Cyanide	"				

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

"R"- out of control

Form VI

Q. C. Report No. _____

DUPLICATES

LAB NAME Ecology & Environment Inc.

DATE 1-7-87

CASE NO. V-4432/V-4442

Sample No. DC-SD-36

Lab Sample ID No. 9688

Units mg/kg dry weight

Matrix SOIL

Compound	Control Limit[1]	Sample(S)	Duplicate(D)	RPD[2]
Metals:				
1. Aluminum		9180	10200	10
2. Antimony		19 U	18 U	NC
3. Arsenic		12	12	0
4. Barium		328	365	11
5. Beryllium		1.6 U	1.5 U	NC
6. Cadmium		17	19	11
7. Calcium				
8. Chromium		75	84	11
9. Cobalt		11	12	8.7
10. Copper		10300	26000	86 *
11. Iron		21900	25400	15
12. Lead		910	955	4.8
13. Magnesium				
14. Manganese		153	165	7.5
15. Mercury				
16. Nickel		307	418	31 *
17. Potassium				
18. Selenium		1.5 U	1.5 U	NC
19. Silver		13	13	0
20. Sodium				
21. Thallium		3.0 U	2.9 U	NC
22. Tin		12 U	12	NC
23. Vanadium		22	24	8.7
24. Zinc		2740	3160	14
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 VI

Q. C. Report No. _____

DUPLICATES

LAB NAME Ecology & Environment Inc.

DATE 1-7-87

CASE NO. U-4432/U-4442
Sample No. 9683
Lab Sample ID No. DC-SD-31
Units mg/kg dry weight

Matrix SOIL

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		0.08 U	0.08 U	NC
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver				
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide		1.5 U	1.5 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

CN DUPLICATE : DC-SD-28 (E&E # 9666)

Form VII

Q.C. Report No. _____

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

DATE 11-19-86 LCS UNITS ug/L mg/kg

(Circle One)

Compound	Required Detection Limits (CRDL)-ug/l	Instrument Detection Limits (IDL)-ug/l		Lab Control Sample		
Metals:		ICP/AA	Furnace	True	Found	%R
1. Aluminum	200	100		970	1070	110
2. Antimony	60	60	5	990	978	99
3. Arsenic	10		5			
4. Barium	200	10		970	1050	108
5. Beryllium	5	5		960	911	95
6. Cadmium	5	5	1	940	895	95
7. Calcium	5000	1000				
8. Chromium	10	10	5	1030	971	94
9. Cobalt	50	10		1000	944	94
10. Copper	25	10		1030	932	90
11. Iron	100	25				
12. Lead	5	50	5			
13. Magnesium	5000	1000				
14. Manganese	15	5		1020	945	93
15. Mercury	0.2	0.2				
16. Nickel	40	15		1020	937	92
17. Potassium	5000	1000				
18. Selenium	5		5			
19. Silver	10	10	5	120	113	94
20. Sodium	5000	1000				
21. Thallium	10		5			
22. Tin	40		5			
23. Vanadium	50	10		1010	949	94
24. Zinc	20	10		1010	978	97
Other:						
Cyanide	10	10				

Form VII

Q.C. Report No. _____

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME ECOLOGY & ENVIRONMENT CASE NO. V-4432/V-4442

DATE 11-26-86 LCS UNITS ug/L mg/kg

(Circle One)

Compound	Required Detection Limits (CRDL)-ug/l	Instrument Detection Limits (IDL)-ug/l		Lab Control Sample		
Metals:		ICP/AA	Furnace	True	Found	%R
1. Aluminum	200	100				
2. Antimony	60	60	5			
3. Arsenic	10		5			
4. Barium	200	10		970	956	98
5. Beryllium	5	5				
6. Cadmium	5	5	1			
7. Calcium	5000	1000				
8. Chromium	10	10	5			
9. Cobalt	50	10				
10. Copper	25	10				
11. Iron	100	25		1020	995	98
12. Lead	5	50	5			
13. Magnesium	5000	1000				
14. Manganese	15	5		1020	984	96
15. Mercury	0.2	0.2				
16. Nickel	40	15		1020	989	97
17. Potassium	5000	1000				
18. Selenium	5		5			
19. Silver	10	10	5			
20. Sodium	5000	1000				
21. Thallium	10		5			
22. Tin	40		5			
23. Vanadium	50	10				
24. Zinc	20	10		1010	998	99
Other:						
Cyanide	10	10				

Form VII

Q.C. Report No. _____

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

DATE 12-30-86 12-21-86(Hg) LCS UNITS ug/L mg/kg

12-12-86 (Pb) (Circle One)

Compound	Required Detection Limits (CRDL)-ug/l	Instrument Detection Limits (IDL)-ug/l		Lab Control Sample		
Metals:		ICP/AA	Furnace	True	Found	%R
1. Aluminum	200	100				
2. Antimony	60	60	5			
3. Arsenic	10		5			
4. Barium	200	10				
5. Beryllium	5	5				
6. Cadmium	5	5	1			
7. Calcium	5000	1000				
8. Chromium	10	10	5			
9. Cobalt	50	10				
10. Copper	25	10				
11. Iron	100	25		1020	973	95
12. Lead	5	50	5	1010	933	92
13. Magnesium	5000	1000				
14. Manganese	15	~~[illegible]~~ 5		1020	961	94
15. Mercury	0.2	0.2		4.4	4.45	101
16. Nickel	40	15				
17. Potassium	5000	1000				
18. Selenium	5		5			
19. Silver	10	10	5			
20. Sodium	5000	1000				
21. Thallium	10		5			
22. Tin	40		5			
23. Vanadium	50	10				
24. Zinc	20	10				
Other:						
Cyanide	10	10				

Form VII

Q.C. Report No. _____

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

DATE As - 12/16/86 Tl - 12/19/86 LCS UNITS (ug/L) mg/kg

12/23/86 Se - 12/22/86 (Circle One)

Compound	Required Detection Limits (CRDL)-ug/l	Instrument Detection Limits (IDL)-ug/l		Lab Control Sample		
Metals:		ICP/AA	Furnace	True	Found	%R
1. Aluminum	200	100				
2. Antimony	60	60	5			
3. Arsenic	10		5	20	18	90
4. Barium	200	10				
5. Beryllium	5	5				
6. Cadmium	5	5	1			
7. Calcium	5000	1000				
8. Chromium	10	10	5			
9. Cobalt	50	10				
10. Copper	25	10				
11. Iron	100	25				
12. Lead	5	50	5			
13. Magnesium	5000	1000				
14. Manganese	15	5				
15. Mercury	0.2	0.2				
16. Nickel	40	15				
17. Potassium	5000	1000				
18. Selenium	5		5	7.9	8.6	109
19. Silver	10	10	5			
20. Sodium	5000	1000				
21. Thallium	10		5	25	25	100
22. Tin	40		5			
23. Vanadium	50	10				
24. Zinc	20	10				
Other:						
Arsenic		10		20	21	105
Cyanide	10	10				

Form VII

Q.C. Report No. _____

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME Ecology & Environment Inc. CASE NO. U-4432/U-4442

DATE 1-5-87 LCS UNITS ug/L mg/kg (Circle One)

Compound	Required Detection Limits (CRDL)-ug/l	Instrument Detection Limits (IDL)-ug/l		Lab Control Sample		
Metals:		ICP/AA	Furnace	True	Found	%R
1. Aluminum	200					
2. Antimony	60					
3. Arsenic	10					
4. Barium	200					
5. Beryllium	5					
6. Cadmium	5					
7. Calcium	5000					
8. Chromium	10					
9. Cobalt	50					
10. Copper	25					
11. Iron	100					
12. Lead	5			17	16	94
13. Magnesium	5000					
14. Manganese	15					
15. Mercury	0.2					
16. Nickel	40					
17. Potassium	5000					
18. Selenium	5					
19. Silver	10					
20. Sodium	5000					
21. Thallium	10					
22. Tin	40					
23. Vanadium	50					
24. Zinc	20					
Other:						
Cyanide	10					

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Job #4432 (Soils)

Ag, Al, Ba, Be, Cd, Co, Cu, Fe, Mn, Ni, Sb, V, Zn

86/11/19
16:23

Result Name: 8611190834

blank	4432 9652.0401	4432 9659.0401	500 PPB
standard	50 PPM	4432 9660.0401	500 PPB
standard	4432 9653.0401	4432 9661.0401	4442 9683.0401
500 PPB	4432 9654.0401	4432 9662.0401	4442 9684.0401
500 PPB	9654. 1/10	9662. 1/10	9684. 1/10
500 PPB	4432 9655.0401	4432 9663.0401	4442 9685.0401
ICAP-19	4432 9656.0401	4432 9664.0401	9685. 0.1/10
ICAP-7	4432 9657.0401	9664. 1/10	4442 9686.0401
ICAP-7	9657. 1/10	4432 9665.0401	9686. 1/10
EPA 283#2 1/50	CAL BLK	4432 9666.0401	Sample 001
500 PPM ICS	500 PPB	4432 9667.0401	9687. 1/10
CAL BLK	500 PPB	CAL BLK	4442 9688.0401
BLK #911	500 PPB	500 PPB	9688.0401 R1
4432 9651.0401	4432 9658.0401	500 PPB	1/10 9688.0401

Command?

86/11/19

16:24

Result Name: 8611190834

9688.0401 RS	BLK #918
500 PPM ICS	CAL BLK
CAL BLK	BLK #918
500 PPB	CAL BLK
500 PPB	500 PPB
500 PPB	
4422 9614.0201	
4425 9617 0306	
4425 9617 0801	
9617.0801 R	
9617.0801 RS	
4425 9618.0801	
4425 9619.0801	
4425 9620.0801	

Command?

Conc. As Recd. Basis

b_VHG_2

blank	52.44	intensity		68.83	cv		
standard	1589.00	intensity		1.52	cv		
500 PPB	475.10	ug/L		12.54	cv		
ICAP-19	977.70	ug/L		5.97	cv 91		
500 PPM ICS	1002.90	ug/L		0.88	cv		
CAL BLK	-3.51	ug/L		-20.57	cv		
BLK #911	-23.91	ug/L	<60.0	-31.61	cv		
4432 9651.0401	18.47	ug/L	<60.0	128.51	cv		✓ < 11.8 mg/kg
4432 9652.0401	25.56	ug/L		147.64	cv		< 11.5
4432 9653.0401	17.49	ug/L		130.10	cv	window edge	< 11.8
4432 9654.0401	-20.21	ug/L		-50.14	cv	window edge	< 12.0
4432 9655.0401	17.68	ug/L		18.70	cv		< 11.8
4432 9656.0401	8.57	ug/L		192.20	cv		< 11.2
4432 9657.0401	-7.92	ug/L		-80.46	cv		< 11.0
CAL BLK	41.61	ug/L		148.83	cv		
500 PPB	499.00	ug/L		7.64	cv		
4432 9658.0401	42.66	ug/L	<60.0	107.44	cv		< 11.9 mg/kg
4432 9659.0401	-14.33	ug/L		-104.9	cv	window edge	< 11.7
4432 9660.0401	3.31	ug/L		1190.9	cv		< 11.8 ✓
4432 9661.0401	11.70	ug/L		268.21	cv		< 11.1
4432 9662.0401	37.54	ug/L		64.30	cv		< 11.5
4432 9663.0401	3.42	ug/L		1519.3	cv		< 11.7
4432 9664.0401	2.37	ug/L		2378.0	cv	window edge	< 11.4
4432 9665.0401	37.35	ug/L		118 97	cv	window edge	< 11.1
4432 9666.0401	-11.02	ug/L		-347.4	cv		< 11.9
4432 9667.0401	2.57	ug/L		2265.3	cv	window edge	< 11.5
CAL BLK	-0.79	ug/L		-6011.	cv		
500 PPB	429.30	ug/L		1.05	cv		
500 PPB	542.40	ug/L		15.72	cv		
500 PPM ICS	1014.70	ug/L		9.10	cv 101		
CAL BLK	-51.01	ug/L	<60.	-115.1	cv	window edge	
500 PPB	542.10	ug/L		7.91	cv		

Zn_VHG

blank	28.32	intensity		0.59	cv		
standard	8288.00	intensity		0.72	cv		
500 PPB	507.45	ug/L		1.96	cv		
ICAP-19	977.75	ug/L		0.32	cv		
500 PPM ICS	976.60	ug/L		0.96	cv 98		
CAL BLK	-0.11	ug/L	<20.0	-629.9	cv		
BLK #911	6.42	ug/L	⊥	2.10	cv		
4432 9651.0401	8879.00	ug/L	✓	0.88	cv		1741.0 ✓ mg/kg
4432 9652.0401	12760.00	ug/L		0.33	cv		2454.0 ⊥
50 PPM	47800.00	ug/L		1.06	cv		
4432 9653.0401	2918.00	ug/L		0.94	cv		572. mg/kg
4432 9654.0401	2508.50	ug/L		1.21	cv		502.
4432 9655.0401	3261.50	ug/L		0.10	cv		640.
4432 9656.0401	8947.50	ug/L		0.02	cv		1672.
4432 9657.0401	30265.00	ug/L		0.53	cv		5553.
CAL BLK	-0.27	ug/L	<20.0	-15.66	cv		
500 PPB	519.05	ug/L		1.53	cv		
~~4432 9658.0401~~	~~21905.00~~	~~ug/L~~		0.75	cv	see attached (beyond cal. curve)	~~44961. mg/kg~~
4432 9659.0401	3032.50	ug/L		0.56	cv		589.
4432 9660.0401	36190.00	ug/L		0.37	cv		7096. ✓
4432 9661.0401	13760.00	ug/L		0.40	cv		2548.
4432 9662.0401	20425.00	ug/L		0.74	cv		3928.
4432 9663.0401	3480.50	ug/L		1.00	cv		482.

60

4432 9664.0402	2235.00	ug/L		0.81	cv		4235. mg/kg
4432 9665.0401	3277.50	ug/L		0.47	cv		607.
4432 9666.0401	3100.50	ug/L		0.07	cv		614.
4432 9667.0401	803.95	ug/L		0.18	cv		155
CAL BLK	-2.69	ug/L	<20.0	-115.1	cv	window edge	
500 PPB	532.80	ug/L		1.57	cv		
500 PPM ICS	1321.50	ug/L		1.00	cv	102	
CAL BLK	-3.61	ug/L	<20.0	-17.03	cv		
500 PPB	536.25	ug/L		1.21	cv		

Cd_VHG

blank	26.11	intensity		3.92	cv		
standard	5934.50	intensity		1.64	cv		
500 PPB	505.30	ug/L		1.82	cv	384	
ICAP-19	894.90	ug/L		0.04	cv		
500 PPM ICS	931.70	ug/L		1.91	cv	73	
CAL BLK	-0.78	ug/L	<5.00	-107.4	cv		
BLK #911	-1.34	ug/L		-228.7	cv	window edge	
4432 9651.0401	57.51	ug/L		1.12	cv		11.3 mg/kg
4432 9652.0401	68.38	ug/L		0.65	cv		13.2
4432 9653.0401	5.06	ug/L		40.79	cv	<1.00	0.992
4432 9654.0401	32.43	ug/L		2.09	cv		6.49
4432 9655.0401	25.03	ug/L		2.60	cv		4.91
4432 9656.0401	63.40	ug/L		0.27	cv		11.9
4432 9657.0401	76.72	ug/L		1.33	cv		14.1
CAL BLK	-2.92	ug/L	<5.00	-73.46	cv	window edge	
500 PPB	525.10	ug/L		1.42	cv		
4432 9658.0401	24.08	ug/L		0.34	cv		4.77 mg/kg
4432 9659.0401	38.41	ug/L		1.52	cv		7.46
4432 9660.0401	78.61	ug/L		0.05	cv		15.4
4432 9661.0401	53.18	ug/L		4.48	cv		9.85
4432 9662.0401	133.45	ug/L		1.23	cv	450	25.7
4432 9663.0401	29.38	ug/L		0.03	cv		5.70
4432 9664.0401	141.30	ug/L		1.00	cv		26.9
4432 9665.0401	31.51	ug/L		3.87	cv		5.84
4432 9666.0401	18.85	ug/L		19.35	cv		3.73
4432 9667.0401	10.21	ug/L		15.49	cv		1.96
CAL BLK	-2.90	ug/L	<5.00	-96.22	cv	window edge	
500 PPB	541.10	ug/L		2.64	cv		
500 PPM ICS	992.70	ug/L		0.62	cv	77	
CAL BLK	-1.82	ug/L		-130.7	cv	window edge	
500 PPB	546.45	ug/L		0.19	cv		

Co_VHG

blank	13.36	intensity		85.87	cv		
standard	1714.50	intensity		0.04	cv		
500 PPB	487.80	ug/L		1.94	cv		
ICAP-19	943.55	ug/L		1.30	cv	94	
500 PPM ICS	871.75	ug/L		1.58	cv		
CAL BLK	-2.45	ug/L	<~~50.0~~ 10.0	-3.28	cv		
BLK #911	-4.08	ug/L		-68.69	cv		
4432 9651.0401	17.75	ug/L		11.69	cv	9.8W	<10.0 mg/kg
4432 9652.0401	17.75	ug/L		9.54	cv		
4432 9653.0401	25.76	ug/L		8.06	cv		
4432 9654.0401	20.64	ug/L		36.04	cv		
4432 9655.0401	16.18	ug/L		9.21	cv		
4432 9656.0401	16.46	ug/L		5.85	cv		
4432 9657.0401	26.89	ug/L		32.92	cv		
CAL BLK	-2.47	ug/L		-302.7	cv		

[7.7] 14.8

61

500 PPB	492.15	ug/L		1.69	cv
4432 9658.0401	50.25	ug/L	~~<50.0~~	28.76	cv
4432 9659.0401	16.71	ug/L		21.95	cv
4432 9660.0401	23.17	ug/L		18.30	cv — 9.8
4432 9661.0401	13.10	ug/L		14.34	cv
4432 9662.0401	23.89	ug/L		8.21	cv
4432 9663.0401	12.92	ug/L		3.58	cv
4432 9664.0401	40.36	ug/L		4.57	cv
4432 9665.0401	2.95	ug/L	< 10.0	33.98	cv
4432 9666.0401	21.51	ug/L		5.51	cv
4432 9667.0401	23.94	ug/L		4.77	cv
CAL BLK	-1.09	ug/L	< 10.0	-304.8	cv
500 PPB	532.10	ug/L		3.05	cv
500 PPM ICS	949.10	ug/L		2.13	cv
CAL BLK	-1.25	ug/L		-153.9	cv
500 PPB	529.40	ug/L		1.64	cv

< 10.0 mg/Kg

Ni_VHG

blank	94.42	intensity		9.69	cv
standard	9653.00	intensity		0.11	cv
500 PPB	491.00	ug/L		1.80	cv
ICAP-19	937.00	ug/L		1.46	cv
500 PPM ICS	845.40	ug/L		0.37	cv
CAL BLK	2.41	ug/L	< 40.0	102.23	cv
BLK #911	3.23	ug/L		4.06	cv
4432 9651.0401	150.70	~~ug/L~~	29.5 mg/Kg	7.62	cv
4432 9652.0401	963.05	~~ug/L~~	185	0.91	cv
HR ~~4432 9653.0401~~	~~1234.50~~	~~ug/L~~	~~242~~	0.30	cv
4432 9654.0401	741.15	~~ug/L~~	148	0.27	cv
HR ~~4432 9655.0401~~	~~1040.50~~	~~ug/L~~	~~204~~	1.37	cv
4432 9656.0401	214.85	~~ug/L~~	40.2	5.77	cv
HR ~~4432 9657.0401~~	~~1634.30~~	~~ug/L~~	~~338~~	0.33	cv
CAL BLK	1.18	ug/L	< 40.0	22.58	cv
500 PPB	498.70	ug/L		0.09	cv
HR ~~4432 9658.0401~~	~~2682.30~~	~~ug/L~~	~~530 mg/Kg~~	0.53	cv
4432 9659.0401	256.85	~~ug/L~~	49.9	0.74	cv
HR ~~4432 9660.0401~~	~~2057.50~~	~~ug/L~~	~~400~~	0.26	cv
HR ~~4432 9661.0401~~	~~2702.50~~	~~ug/L~~	~~501~~	0.61	cv
HR ~~4432 9662.0401~~	~~2531.50~~	~~ug/L~~	~~488~~	1.36	cv
4432 9663.0401	427.70	~~ug/L~~	83.0	0.66	cv
HR ~~4432 9664.0401~~	~~2480.50~~	~~ug/L~~	~~461~~	0.72	cv
4432 9665.0401	738.20	~~ug/L~~	137	0.98	cv
4432 9666.0401	796.65	~~ug/L~~	158	1.75	cv
4432 9667.0401	72.08	~~ug/L~~	13.9	21.01	cv
CAL BLK	-2.11	ug/L	< 40.0	-174.8	cv
500 PPB	515.05	ug/L		1.81	cv
500 PPM ICS	937.65	ug/L		1.39	cv
CAL BLK	2.74	ug/L	< 40.0	218.22	cv
500 PPB	515.30	ug/L		5.30	cv

Beyond highest calib std.

Mn_VHG

blank	2.93	intensity		18.40	cv
standard	5943.00	intensity		0.10	cv
500 PPB	492.10	ug/L		0.07	cv
ICAP-19	944.95	ug/L		0.42	cv
500 PPM ICS	884.40	ug/L		0.38	cv
CAL BLK	0.10	ug/L		1115.0	cv
BLK #911	0.24	ug/L	< 15.0	122.99	cv
4432 9651.0401	528.10	~~ug/L~~	104 mg/Kg	0.43	cv

4432 9652.0401	324.10	ug/L	56.6 mg/Kg	0.34	cv	
4432 9653.0401	336.75	ug/L	66.0	0.24	cv	
4432 9654.0401	278.50	ug/L	55.7	0.24	cv	
4432 9655.0401	449.20	ug/L	88.1	0.63	cv	
4432 9656.0401	570.40	ug/L	107	0.21	cv	
4432 9657.0401	209.35	ug/L	38.4	0.79	cv	
CAL BLK	-0.12	ug/L	<15.0	-458.3	cv	
500 PPB	498.90	ug/L		0.40	cv	
4432 9658.0401	206.25	ug/L	40.8 mg/Kg	0.26	cv	
4432 9659.0401	392.30	ug/L	76.2	0.32	cv	
4432 9660.0401	227.40	ug/L	44.6	1.37	cv	
4432 9661.0401	322.50	ug/L	59.7	0.65	cv	
4432 9662.0401	480.20	ug/L	92.3	0.74	cv	
4432 9663.0401	469.10	ug/L	91.1	0.24	cv	
4432 9664.0401	919.80	ug/L	175	0.28	cv	
4432 9665.0401	245.30	ug/L	45.4	0.53	cv	
4432 9666.0401	646.90	ug/L	128	1.33	cv	
HR ~~4432 9667.0401~~	~~814.90~~	~~ug/L~~	~~outlier~~	1.14	cv	
CAL BLK	0.10	ug/L	<15.0	415.64	cv	window edge
500 PPB	522.25	ug/L		0.42	cv	
500 PPM ICS	971.45	ug/L		0.29	cv	
CAL BLK	-1.40	ug/L	<15.0	-81.43	cv	
500 PPB	524.65	ug/L		0.83	cv	

Fe_VHG

blank	57.14	intensity		14.85	cv	
standard	5326.00	intensity		1.33	cv	
500 PPB	494.25	ug/L		0.78	cv	
ICAP-19	935.05	ug/L		1.19	cv	
500 PPM ICS	197050.0	ug/L		0.04	cv	
CAL BLK	4.65	ug/L	<100.0	69.78	cv	
BLK #911	2.44	ug/L	⊥	50.92	cv	
~~4432 9651.0401~~	~~9410.00~~	~~ug/L~~	~~outlier~~	2.22	cv	
~~4432 9652.0401~~	~~3660.00~~	~~ug/L~~		0.77	cv	
50 PPM	95710.00	ug/L		1.35	cv	
~~4432 9653.0401~~	~~23850.00~~	~~ug/L~~		0.79	cv	
~~4432 9654.0401~~	~~15260.00~~	~~ug/L~~		0.24	cv	
9654. 1/10	7784.50	ug/L		0.96	cv	
~~4432 9655.0401~~	~~46825.00~~	~~ug/L~~		0.30	cv	
~~4432 9656.0401~~	~~39085.00~~	~~ug/L~~		0.31	cv	
~~4432 9657.0401~~	~~42550.0~~	~~ug/L~~		0.72	cv	5350 ?
9657. 1/10	13620.00	ug/L		1.02	cv	
CAL BLK	3.29	ug/L	<100.0	59.69	cv	
500 PPB	491.70	ug/L		1.02	cv	
~~4432 9658.0401~~	~~61880.00~~	~~ug/L~~		0.30	cv	
~~4432 9659.0401~~	~~11780.00~~	~~ug/L~~		0.10	cv	
~~4432 9660.0401~~	~~12145.00~~	~~ug/L~~		0.69	cv	
~~4432 9661.0401~~	~~11680.00~~	~~ug/L~~		0.67	cv	
~~4432 9662.0401~~	~~62100.0~~	~~ug/L~~		0.92	cv	
9662. 1/10	15955.00	ug/L		0.63	cv	
~~4432 9663.0401~~	~~4295.00~~	~~ug/L~~		0.06	cv	
~~4432 9664.0401~~	~~30850.0~~	~~ug/L~~		0.79	cv	
9664. 1/10	12550.00	ug/L		0.70	cv	
~~4432 9665.0401~~	~~11935.00~~	~~ug/L~~		0.61	cv	
~~4432 9666.0401~~	~~15355.00~~	~~ug/L~~	9294 mg/Kg	0.41	cv	
~~4432 9667.0401~~	~~69945.00~~	~~ug/L~~	⊥	0.86	cv	
CAL BLK	4.18	ug/L	<100.0	15.55	cv	
500 PPB	505.60	ug/L		3.28	cv	
500 PPM ICS	196700.0	ug/L		0.00	cv	

CAL BLK	-5.20	ug/L	<100.0	-30.34	cv	
500 PPB	514.95	ug/L		1.53	cv	

'HG

wt wt.

blank	7.24	intensity		588.12	cv	window edge
standard	5663.50	intensity		1.22	cv	
500 PPB	499.75	ug/L		0.61	cv	
ICAP-19	948.70	ug/L		0.61	cv	
500 PPM ICS	900.70	ug/L		0.16	cv	
CAL BLK	0.97	ug/L	<50.0	1.76	cv	
BLK #911	1.79	ug/L		102.05	cv	
4432 9651.0401	61.64	ug/L	12.1mg/Kg	2.16	cv	
4432 9652.0401	52.39	ug/L	10.1	0.10	cv	
4432 9653.0401	62.93	ug/L	12.3	0.85	cv	
4432 9654.0401	20.50	ug/L	<50.0	21.02	cv	<10.0 mg/Kg
4432 9655.0401	60.82	ug/L	11.9mg/Kg	5.52	cv	
4432 9656.0401	64.27	ug/L	12.0	0.60	cv	
4432 9657.0401	122.45	ug/L	22.5	1.25	cv	
CAL BLK	3.38	ug/L	<50.0	44.29	cv	
500 PPB	510.60	ug/L		0.84	cv	
4432 9658.0401	73.07	ug/L	14.5mg/Kg	2.38	cv	
4432 9659.0401	72.10	ug/L	14.0	1.09	cv	
4432 9660.0401	51.04	ug/L	10.0	2.86	cv	
4432 9661.0401	53.85	ug/L	<10.0	2.60	cv	
4432 9662.0401	115.30	ug/L	22.2	1.31	cv	
4432 9663.0401	90.67	ug/L	17.6	7.96	cv	
4432 9664.0401	108.65	ug/L	20.7	5.02	cv	
4432 9665.0401	41.36	ug/L	<50.0	4.64	cv	<10.0mg/Kg
4432 9666.0401	58.84	ug/L	11.7mg/Kg	11.36	cv	
4432 9667.0401	109.15	ug/L	21.0	1.71	cv	
CAL BLK	0.74	ug/L	<50.0	357.72	cv	
500 PPB	530.55	ug/L		2.68	cv	
500 PPM ICS	981.00	ug/L		0.20	cv	
CAL BLK	4.59	ug/L	<50.0	106.42	cv	
500 PPB	540.40	ug/L		1.74	cv	

Be_VHG

blank	6.87	intensity		15.04	cv	window edge
standard	7169.00	intensity		0.43	cv	
500 PPB	490.65	ug/L		0.81	cv	
ICAP-19	911.45	ug/L		0.41	cv	
500 PPM ICS	923.10	ug/L		0.07	cv	
CAL BLK	-0.31	ug/L	<5.00	-83.19	cv	<1.00 mg/Kg
BLK #911	-0.66	ug/L		-15.46	cv	
4432 9651.0401	2.15	ug/L	0.98	6.12	cv	
4432 9652.0401	1.50	ug/L		50.18	cv	
4432 9653.0401	1.60	ug/L		6.06	cv	
4432 9654.0401	0.52	ug/L		54.20	cv	
4432 9655.0401	1.11	ug/L		39.94	cv	
4432 9656.0401	2.79	ug/L		3.89	cv	
4432 9657.0401	1.05	ug/L		5.81	cv	
CAL BLK	-0.46	ug/L		-33.67	cv	
500 PPB	491.80	ug/L		1.38	cv	
4432 9658.0401	1.56	ug/L	<5.00	53.92	cv	<1.00 mg/Kg
4432 9659.0401	0.74	ug/L	0.98	35.69	cv	
4432 9660.0401	0.38	ug/L		79.34	cv	
4432 9661.0401	0.80	ug/L		22.06	cv	
4432 9662.0401	1.42	ug/L		20.27	cv	
4432 9663.0401	1.72	ug/L		58.38	cv	

4432 9664.0401	1.72	ug/L	<5.00	4.23	cv	
4432 9665.0401	3.45	ug/L		241.63	cv	
4432 9666.0401	1.53	ug/L		64.97	cv	
4432 9667.0401	1.64	ug/L		15.67	cv	
CAL BLK	-3.71	ug/L		-88.96	cv	window edge
500 PPB	507.55	ug/L		1.16	cv	
500 PPM ICS	926.95	ug/L		0.37	cv	
CAL BLK	-0.90	ug/L	<5.00	-49.27	cv	window edge
500 PPB	509.45	ug/L		0.21	cv	

Cu_VHG

blank	49.85	intensity		49.91	cv	
standard	8643.50	intensity		0.60	cv	
500 PPB	487.90	ug/L		0.01	cv	
ICAP-19	922.40	ug/L		0.42	cv	
500 PPM ICS	923.10	ug/L		1.19	cv	
CAL BLK	0.55	ug/L	<25.0	94.27	cv	
BLK #911	2.33	ug/L		42.86	cv	
4432 9651.0402	3425.00	~~ug/L~~	4593 mg/Kg	0.37	cv	
4432 9652.0401	2860.00	~~ug/L~~	2473	1.83	cv	
50 PPM	47670.00	ug/L		0.23	cv	
4432 9653.0401	562.60	~~ug/L~~	113 mg/Kg	0.20	cv	
4432 9654.0401	3650.50	~~ug/L~~	730	0.68	cv	
4432 9655.0401	5749.50	~~ug/L~~	1127	0.35	cv	
4432 9656.0402	2650.00	~~ug/L~~	4234	0.25	cv	
4432 9657.0403	8970.00	~~ug/L~~	7150	0.28	cv	
CAL BLK	-1.28	ug/L	<25.0	-20.85	cv	
500 PPB	498.20	ug/L		1.65	cv	
4432 9658.0401	7625.00	~~ug/L~~	1510 mg/Kg	0.56	cv	
4432 9659.0401	1288.50	~~ug/L~~	250	0.61	cv	
4432 9660.0401	13685.00	~~ug/L~~	2683	0.50	cv	
4432 9661.0401	13285.00	~~ug/L~~	2460	1.16	cv	
4432 9662.0401	7740.50	~~ug/L~~	1489	1.36	cv	
4432 9663.0401	934.85	~~ug/L~~	182	0.88	cv	
4432 9664.0401	5486.50	~~ug/L~~	1045	0.20	cv	
4432 9665.0401	1817.50	~~ug/L~~	337	0.44	cv	
4432 9666.0401	834.10	~~ug/L~~	165	1.26	cv	
4432 9667.0401	143.30	~~ug/L~~	27.6	0.30	cv	
CAL BLK	3.03	ug/L	<25.0	56.60	cv	
500 PPB	523.90	ug/L		0.00	cv	
500 PPM ICS	996.75	ug/L		0.57	cv	
CAL BLK	2.08	ug/L	<25.0	24.54	cv	
500 PPB	520.75	ug/L		0.09	cv	

Ag_VHG

blank	77.82	intensity		13.13	cv	
standard	17860.00	intensity		0.45	cv	
500 PPB	490.10	ug/L		0.30	cv	
EPA 283#2 1/50	113.15	ug/L		3.34	cv	
500 PPM ICS	959.20	ug/L		0.34	cv	
CAL BLK	-1.91	ug/L	<10.0	-154.9	cv	window edge
BLK #911	-2.15	ug/L		-11.93	cv	
4432 9651.0401	27.87	~~ug/L~~	5.46 mg/Kg	6.86	cv	
4432 9652.0401	21.35	~~ug/L~~	4.20	19.44	cv	
4432 9653.0401	-2.47	ug/L	<10.0	-128.9	cv	<2.00 mg/Kg
4432 9654.0401	1.75	ug/L		62.30	cv	
4432 9655.0401	1.58	ug/L		207.98	cv	
4432 9656.0401	35.79	~~ug/L~~	7.02 mg/Kg	6.92	cv	
4432 9657.0401	29.24	~~ug/L~~	7.20	2.25	cv	

CAL BLK	-4.59	ug/L	<10.0	-37.04	cv	
500 PPB	507.00	ug/L		0.90	cv	
4432 9658.0401	5.16	ug/L	<10.0	63.60	cv	<2.00 mg/Kg
4432 9659.0401	-1.77	ug/L		117.2	cv	
4432 9660.0401	9.47	ug/L	1.96 ug	1.23	cv	
4432 9661.0401	6.97	ug/L		69.72	cv	
4432 9662.0401	4.34	ug/L		30.70	cv	
4432 9663.0401	0.27	ug/L		0.12	cv	
4432 9664.0401	5.61	ug/L		0.61	cv	
4432 9665.0401	-1.73	ug/L		-147.2	cv	window edge
4432 9666.0401	-2.46	ug/L		-25.61	cv	window edge
4432 9667.0401	0.46	ug/L		1213.3	cv	
CAL BLK	-3.39	ug/L		-187.8	cv	window edge
500 PPB	520.55	ug/L		2.35	cv	
500 PPM ICS	1042.50	ug/L		0.52	cv	
CAL BLK	-0.60	ug/L	<10.0	-84.05	cv	window edge
500 PPB	516.20	ug/L		0.09	cv	

AI_VHG

blank	188.51	intensity		170.44	cv	
standard	9852.00	intensity		0.80	cv	
500 PPB	492.50	ug/L		4.42	cv	
ICAP-7	1059.00	ug/L		2.81	cv	
ICAP-7	1071.50	ug/L		1.92	cv	
500 PPM ICS	97940.00	ug/L		0.55	cv	
CAL BLK	8.46	ug/L	<200.0	54.33	cv	
BLK #911	22.28	ug/L		0.19	cv	
4432 9651.0401	12865.00	~~ug/L~~	2523 mg/Kg	1.06	cv	
4432 9652.0401	12240.00	~~ug/L~~	2357	0.46	cv	
50 PPM	50740.00	ug/L		2.29	cv	
4432 9653.0401	22040.00	~~ug/L~~	4322 mg/Kg	0.04	cv	
4432 9654.0401	6974.00	~~ug/L~~	1395	0.27	cv	
4432 9655.0401	14215.00	~~ug/L~~	4748	0.26	cv	
4432 9656.0401	14085.00	~~ug/L~~	2633	0.05	cv	
4432 9657.0401	14825.00	~~ug/L~~	4555	0.03	cv	
CAL BLK	5.30	ug/L	<200.0	291.08	cv	
500 PPB	520.40	ug/L		0.88	cv	
4432 9658.0401	17625.00	~~ug/L~~	7450 mg/Kg	0.05	cv	
4432 9659.0401	18045.00	~~ug/L~~	5446	0.28	cv	
4432 9660.0401	17440.00	~~ug/L~~	3420	0.46	cv	
4432 9661.0401	16895.00	~~ug/L~~	3189	0.28	cv	
4432 9662.0401	10190.00	~~ug/L~~	7729	0.98	cv	
4432 9663.0401	27735.00	~~ug/L~~	5385	0.24	cv	
4432 9664.0401	42130.00	~~ug/L~~	8025	0.24	cv	
4432 9665.0401	18796.50	~~ug/L~~	1629	0.07	cv	
4432 9666.0401	19845.00	~~ug/L~~	3930	0.87	cv	
4432 9667.0401	18430.00	~~ug/L~~	4313	0.58	cv	
CAL BLK	4.59	ug/L	<200.0	367.42	cv	
500 PPB	498.90	ug/L		5.62	cv	
500 PPM ICS	101150.0	ug/L		0.08	cv	
CAL BLK	-2.31	ug/L	<200.0	-1341.	cv	window edge
500 PPB	521.05	ug/L		0.61	cv	

_VHG

blank	9.44	intensity		47.45	cv	
standard	12895.00	intensity		0.55	cv	
500 PPB	486.00	ug/L		0.35	cv	
ICAP-7	1048.00	ug/L		0.65	cv	
500 PPM ICS	960.45	ug/L		0.19	cv	

	CAL BLK	0.16	ug/L	<200.0	0.60	cv	
	BLK #911	0.09	ug/L	⊥	353.51	cv	
.0	~~4432 9651 0401~~	~~[illegible]~~	~~ug/L~~	see reruns	1.57	cv	
	~~4432 9652 0401~~	~~[illegible]~~	~~ug/L~~	⊥	0.31	cv	
	50 PPM	53355.00	ug/L		0.25	cv	
	4432 9653 0401	522.[illegible]	~~ug/L~~	102mg/Kg	0.39	cv	
	4432 9654 0401	777.40	~~ug/L~~	755 ⊥	0.39	cv	
	4432 9655.0401	630.65	~~ug/L~~	124 ⊥	0.91	cv	
HR	~~4432 9656.0401~~	~~[illegible]~~	~~ug/L~~		0.19	cv	
"	~~4432 9657 0401~~	~~[illegible]~~	~~ug/L~~		0.11	cv	
	CAL BLK	0.69	ug/L	<200.0	49.58	cv	
	500 PPB	527.40	ug/L		0.35	cv	
HP	~~4432 9658 0401~~	~~[illegible]~~	~~ug/L~~		0.03	cv	
	4432 9659.0401	835.75	~~ug/L~~	162mg/Kg	1.37	cv	
HR	~~4432 9660 0401~~	~~[illegible]~~	~~ug/L~~		0.44	cv	
HR	~~4432 9661 0401~~	~~[illegible]~~	~~ug/L~~		0.16	cv	
"	~~4432 9662 0401~~	~~[illegible]~~	~~ug/L~~		1.45	cv	
	4432 9663.0401	590.00	~~ug/L~~	115mg/Kg	0.15	cv	
HR	~~4432 9664 0401~~	~~[illegible]~~	~~ug/L~~		0.38	cv	
	4432 9665.0401	294.20	~~ug/L~~	54.4mg/Kg	0.45	cv	
	4432 9666 0401	673.00	~~ug/L~~	133 ⊥	0.11	cv	
HR	~~4432 9667.0401~~	~~[illegible]~~	~~ug/L~~		0.02	cv	
	CAL BLK	0.06	ug/L	<200.0	241.53	cv	
	500 PPB	550.10	ug/L		0.72	cv	
	500 PPM ICS	1101.00	ug/L		0.11	cv	
	CAL BLK	-0.01	ug/L	<200.0	-4763.	cv	← ok
	500 PPB	565.35	ug/L		0.11	cv	

beyond Calibration Std. See attached reruns

Job #4432
Cr

Dead Creek

86/11/19

16:45

Result Name: 8611191501

standard	4432 9657.0401	500 PPB	4425 9619.0306
standard	CAL BLK	4432 9683.0401	4425 9620.0306
blank	500 PPB	4442 9684.0401	9620.0306 R
CAL BLK	4432 9658.0401	4442 9685.0401	BLK #905
500 PPB	4432 9659.0401	4442 9686.0401	4345 9166.0506
ICAP-19	4432 9660.0401	4442 9687.0401	4345 9167.0506
500 PPM ICS	4432 9661.0401	4442 9688.0401	4345 9168.0506
BLK #911	4432 9662.0401	9688.0401 R	4345 9169.0506
4432 9651.0401	4432 9663.0401	9688.0401 RS	4345 9170.0506
4432 9652.0401	4432 9664.0401	500 PPM ICS	BLK #871
4432 9653.0401	4432 9665.0401	CAL BLK	4345 9166.1001
4432 9654.0401	4432 9666.0401	500 PPB	4345 9167.1001
4432 9655.0401	4432 9667.0401	4425 9617.0306	4345 9168.1001
4432 9656.0401	CAL BLK	4425 9618.0306	4345 9169.1001

Command?

r_VIG

standard	11040.00	intensity	1.54	cv	
standard	11110.00	intensity	0.40	cv	
blank	00.51	intensity	82.41	cv	
CAL BLK	1.61	ug/L	327.43	cv	
500 PPB	492.15	ug/L	1.85	cv	
ICAP-19	971.25	ug/L	0.19	cv	
500 PPM ICS	883.05	ug/L	0.15	cv	
BLK #911	-0.20	ug/L 10.0	-737.8	cv	window edge
4432 9651.0401	165.30	~~ug/L~~ 32.4 mg/kg	0.53	cv	
4432 9652.0401	293.10	~~ug/L~~ 56.4	2.59	cv	
4432 9653.0401	49.43	~~ug/L~~ 9.69	14.25	cv	
4432 9654.0401	106.70	~~ug/L~~ 21.3	0.15	cv	
4432 9655.0401	171.75	~~ug/L~~ 33.7	4.11	cv	
4432 9656.0401	207.95	~~ug/L~~ 38.9	1.53	cv	
4432 9657.0401	300.30	~~ug/L~~ 65.2	1.12	cv	
CAL BLK	-0.44	ug/L	-161.5	cv	
500 PPB	497.65	ug/L	0.51	cv	
4432 9658.0401	330.80	~~ug/L~~ 65.5 mg/kg	1.20	cv	
4432 9659.0401	90.78	~~ug/L~~ 17.6	0.22	cv	
4432 9660.0401	139.70	~~ug/L~~ 27.4 ✓	3.52	cv	
4432 9661.0401	107.10	~~ug/L~~ 19.8	4.51	cv	
4432 9662.0401	215.65	~~ug/L~~ 41.6	2.46	cv	
4432 9663.0401	80.32	~~ug/L~~ 15.6	1.17	cv	
4432 9664.0401	162.40	~~ug/L~~ 30.9	3.21	cv	
4432 9665.0401	47.17	~~ug/L~~ 8.74	1.38	cv	
4432 9666.0401	44.40	~~ug/L~~ 8.29	3.47	cv	
4432 9667.0401	60.62	~~ug/L~~ 11.7	3.81	cv	
CAL BLK	1.51	ug/L	88.20	cv	
500 PPB	496.25	ug/L	0.60	cv	
500 PPM ICS	878.95	ug/L	0.37	cv	
CAL BLK	2.16	ug/L	48.76	cv	
500 PPB	501.70	ug/L	1.65	cv	

Job #4442 Soils

Ag, Al, Ba, Be, Cd, Cr, Cu, Fe, Mn, Ni, Sb, V, Zn

86/11/19
16:32

Result Name: 8611190834

blank	4432 9652.0401	4432 9659.0401	500 PPB
standard	50 PPM	4432 9660.0401	500 PPB
standard	4432 9653.0401	4432 9661.0401	4442 9683.0401
500 PPB	4432 9654.0401	4432 9662.0401	4442 9684.0401
500 PPB	9654. 1/10	9662. 1/10	9684. 1/10
500 PPB	4432 9655.0401	4432 9663.0401	4442 9685.0401
ICAP-19	4432 9656.0401	4432 9664.0401	9685. 0.1/10
ICAP-7	4432 9657.0401	9664. 1/10	4442 9686.0401
ICAP-7	9657. 1/10	4432 9665.0401	9686. 1/10
EPA 283#2 1/50	CAL BLK	4432 9666.0401	Sample 001
500 PPM ICS	500 PPB	4432 9667.0401	9687. 1/10
CAL BLK	500 PPB	CAL BLK	4442 9688.0401
BLK #911	500 PPB	500 PPB	9688.0401 R1
4432 9651.0401	4432 9658.0401	500 PPB	1/10 9688.0401

Command?

86/11/19

16:32

Result Name: 8611190834

9688.0401 RS	BLK #918
500 PPM ICS	CAL BLK
CAL BLK	BLK #918
500 PPB	CAL BLK
500 PPB	500 PPB
500 PPB	
4422 9614.0301	
4425 9617.0306	
4425 9617.0801	
9617.0801 R	
9617.0801 RS	
4425 9618.0801	
4425 9619.0801	
4425 9620 0801	

Command?

Sb_VHG_2

blank	53.44	intensity		68.83	cv
standard	1589.00	intensity		1.52	cv
500 PPB	475.10	ug/L		12.54	cv
ICAP-19	977.70	ug/L		5.97	cv
500 PPM ICS	1002.90	ug/L		0.88	cv
CAL BLK	-3.51	ug/L		-20.57	cv
BLK #911	-23.91	ug/L	<60.0	-31.61	cv
4442 9683.0401	-22.52	ug/L		-301.0	cv window edge
4442 9684.0401	14.82	ug/L		207.00	cv window edge
4442 9685.0401	46.06	ug/L		12.34	cv
4442 9686.0401	36.49	ug/L		41.14	cv
9686. 1/10	4.91	ug/L		1289.7	cv
87.0401 ~~Sample 001~~	32.27	ug/L	11.40	5.39	cv
4442 9688.0401	49.76	ug/L		36.07	cv
9688 0401 R1	48.33	ug/L		34.16	cv
1/10 9688.0401	-25.56	ug/L		-130.8	cv
9688.0401 RS	335.95	ug/L		5.96	cv
500 PPM ICS	1014.70	ug/L		9.10	cv
CAL BLK	-51.01	ug/L		-115.1	cv window edge
500 PPB	542.10	ug/L		7.91	cv

Zn_VHG

blank	28.32	intensity		0.59	cv
standard	8288.00	intensity		0.72	cv
500 PPB	507.45	ug/L		1.96	cv
ICAP-19	977.75	ug/L		0.32	cv
500 PPM ICS	976.60	ug/L		0.96	cv
CAL BLK	-0.11	ug/L		-629.9	cv
BLK #911	6.42	ug/L	<10.0	2.10	cv
50 PPM	47800.00	ug/L		1.06	cv
4442 9683.0401	730.00	ug/L		0.42	cv
4442 9684.0401	5994.50	ug/L		0.39	cv
4442 9685.0401	4858.50	ug/L		0.17	cv
4442 9686.0401	4073.00	ug/L		0.60	cv
9686. 1/10	446.20	ug/L		0.41	cv
.0401 ~~Sample 001~~	9888.50	ug/L-	1883	0.21	cv
4442 9688.0401	8810.50	ug/L		0.07	cv
9688.0401 R1	10365.00	ug/L		1.13	cv
1/10 9688.0401	1131.00	ug/L		5.02	cv
9688.0401 RS	10620.00	ug/L		1.29	cv
500 PPM ICS	1021.50	ug/L		1.00	cv
CAL BLK	-3.61	ug/L		-17.03	cv
500 PPB	536.25	ug/L		1.21	cv

Cd_VHG

blank	26.11	intensity		3.92	cv
standard	5934.50	intensity		1.64	cv
500 PPB	505.30	ug/L		1.82	cv
ICAP-19	894.90	ug/L		0.04	cv
500 PPM ICS	931.70	ug/L		1.91	cv
CAL BLK	-0.78	ug/L		-107.4	cv
BLK #911	-1.34	ug/L	<5.00	-228.7	cv window edge
4442 9683 0401	9.00	ug/L		17.97	cv
4442 9684 0401	67.39	ug/L		0.46	cv
4442 9685 0401	81.39	ug/L		4.73	cv
4442 9686 0401	74.55	ug/L		1.07	cv
7.0401 ~~Sample 001~~	86.37	ug/L	16.9	0.31	cv

4442 9688.0401	53.50	ug/L		8.28	cv
9688.0401 R1	63.0[illegible]	ug/L		7.46	cv
1/10 9688.0401	4.85	ug/L		52.71	cv
9688.0401 RS	115.25	ug/L		4.60	cv
500 PPM ICS	992.70	ug/L		0.62	cv
CAL BLK	-1.82	ug/L		-130.7	cv	window edge
500 PPB	546.45	ug/L		0.19	cv

Co_VHG

blank	13.36	intensity		85.37	cv
standard	1714.50	intensity		0.04	cv
500 PPB	487.80	ug/L		1.94	cv
ICAP-19	943.55	ug/L		1.30	cv
500 PPM ICS	871.75	ug/L		1.58	cv
CAL BLK	-2.45	ug/L		-3.28	cv
BLK #911	-4.08	ug/L	<10.0	-68.69	cv
4442 9683.0401	22.93	ug/L		1.94	cv
4442 9684.0401	33.44	ug/L		22.84	cv
4442 9685.0401	10.42	ug/L		78.45	cv
4442 9686.0401	6.13	ug/L	<10.0	117.53	cv
7.0401 ~~Sample 001~~	76.94	ug/L	9.5	1.24	cv
4442 9688.0401	34.52	ug/L		1.23	cv
9688.0401 R1	38.58	ug/L		6.76	cv
1/10 9688.0401	-4.12	ug/L	<10.0	-57.13	cv
9688.0401 RS	542.30	ug/L		1.85	cv
500 PPM ICS	949.10	ug/L		2.13	cv
CAL BLK	-1.25	ug/L		-153.9	cv
500 PPB	529.40	ug/L		1.64	cv

Ni_VHG

blank	94.42	intensity		9.69	cv	
standard	8653.00	intensity		0.11	cv	
500 PPB	481.00	ug/L		1.80	cv	
ICAP-19	937.00	ug/L		1.46	cv	
500 PPM ICS	845.40	ug/L		0.37	cv	
CAL BLK	2.41	ug/L		102.23	cv	
BLK #911	3.23	ug/L	<40.0	4.06	cv	
4442 9683.0401	81.79	ug/L		17.14	cv	
~~4442 9684.0401~~	~~[illegible]~~	~~ug/L~~		~~0.26~~	~~cv~~	BHR See Attached
4442 9685.0401	995.65	ug/L		0.06	cv	
4442 9686.0401	845.15	ug/L		0.60	cv	
9686. 1/10	77.96	ug/L		13.71	cv	
7.0401 ~~Sample 001~~	1616.50	ug/L	308	0.20	cv	
~~4442 9688.0401~~	~~1162.00~~	~~ug/L~~		~~0.72~~	~~cv~~	BHR See Attached
~~9688.0401 R1~~	~~1315.00~~	~~ug/L~~		0.10	cv	⊥
1/10 9688.0401	136.85	ug/L		0.97	cv	
9688.0401 RS	1820.00	ug/L		0.31	cv	
500 PPM ICS	937.65	ug/L		1.39	cv	
CAL BLK	2.74	ug/L		218.22	cv	
500 PPB	515.30	ug/L		5.30	cv	

Mn_VHG

blank	2.93	intensity		18.40	cv
standard	5943.00	intensity		0.10	cv
500 PPB	492.10	ug/L		0.07	cv
ICAP-19	944.95	ug/L		0.42	cv
500 PPM ICS	884.40	ug/L		0.38	cv
CAL BLK	0.10	ug/L		1115.0	cv
BLK #911	0.24	ug/L	<15.0	122.99	cv

	~~4442 9683.0401~~	~~[illegible]~~	~~ug/L~~	BR	0.31	cv
	4442 9684.0401	464.15	ug/L		0.29	cv
	4442 9685.0401	321.65	ug/L		0.16	cv
	4442 9686.0401	219.30	ug/L		0.61	cv
7.0401	~~Sample 001~~	954.10	ug/L	183	1.16	cv
	4442 9688.0401	490.55	ug/L		0.50	cv
	9688.0401 R1	541.40	ug/L		1.39	cv
	1/10 9688.0401	58.86	ug/L		5.23	cv
	9688.0401 RS	1084.50	ug/L		0.73	cv
	500 PPM ICS	971.45	ug/L		0.29	cv
	CAL BLK	-1.40	ug/L		-81.43	cv
	500 PPB	524.65	ug/L		0.83	cv

See Attached

Fe_VHG

blank	57.14	intensity		14.85	cv
standard	5326.00	intensity		1.33	cv
500 PPB	494.25	ug/L		0.78	cv
ICAP-19	935.05	ug/L		1.19	cv
500 PPM ICS	197050.0	ug/L		0.04	cv
CAL BLK	4.65	ug/L		69.78	cv
BLK #911	2.44	ug/L		50.92	cv
50 PPM	45710.00	ug/L		1.35	cv
~~4442 9683.0401~~	~~67575.00~~	~~ug/L~~		~~0.95~~	~~cv~~
~~4442 9684.0401~~	~~9225.00~~	~~ug/L~~		~~0.96~~	~~cv~~
~~9684. 1/10~~	~~2945.00~~	~~ug/L~~		~~0.07~~	~~cv~~
~~4442 9685.0401~~	~~129750.0~~	~~ug/L~~		~~0.58~~	~~cv~~
~~9685. 0.1/10~~	~~12875.00~~	~~ug/L~~		~~0.07~~	~~cv~~
~~4442 9686.0401~~	~~139200.0~~	~~ug/L~~		~~1.61~~	~~cv~~
~~9686. 1/10~~	~~12510.00~~	~~ug/L~~		~~1.94~~	~~cv~~
7.0401 ~~Sample 001~~	~~112100.0~~	~~ug/L~~		~~0.62~~	~~cv~~
~~9687. 1/10~~	~~11125.00~~	~~ug/L~~		~~1.19~~	~~cv~~
~~4442 9688.0401~~	~~73805.00~~	~~ug/L~~		~~1.00~~	~~cv~~
~~9688.0401 R1~~	~~90160.00~~	~~ug/L~~		~~1.19~~	~~cv~~
~~1/10 9688.0401~~	~~9621.50~~	~~ug/L~~		~~2.11~~	~~cv~~
~~9688.0401 RS~~	~~91075.00~~	~~ug/L~~		~~0.53~~	~~cv~~
500 PPM ICS	196700.0	ug/L		0.00	cv
CAL BLK	-5.20	ug/L		-30.34	cv
500 PPB	514.95	ug/L		1.53	cv

B.R. See Attached

V_VHG

blank	7.24	intensity		588.12	cv	window edge
standard	5663.50	intensity		1.22	cv	
500 PPB	499.75	ug/L		0.61	cv	
ICAP-19	948.70	ug/L		0.61	cv	
500 PPM ICS	900.70	ug/L		0.16	cv	
CAL BLK	0.97	ug/L		1.76	cv	
BLK #911	1.79	ug/L	<5.0.	102.05	cv	
4442 9683.0401	100.64	ug/L		5.60	cv	
4442 9684.0401	90.68	ug/L		3.16	cv	
4442 9685.0401	64.29	ug/L		6.67	cv	
4442 9686.0401	75.28	ug/L		1.21	cv	
9686. 1/10	4.69	ug/L	<50.0	2.20	cv	
7.0401 ~~Sample 001~~	72.91	ug/L	69	0.43	cv	
4442 9688.0401	70.28	ug/L		1.66	cv	
9688.0401 R1	79.58	ug/L		0.17	cv	
1/10 9688.0401	9.44	ug/L	<50.0	10.03	cv	
9688.0401 RS	584.70	ug/L		0.87	cv	
500 PPM ICS	981.00	ug/L		0.20	cv	
CAL BLK	4.59	ug/L		106.42	cv	

500 PPB	540.40	ug/L		1.74	cv	

P_VHG

blank	6.27	intensity		15.04	cv	window edge
standard	7169.00	intensity		0.43	cv	
500 PPB	490.65	ug/L		0.81	cv	
ICAP-19	911.45	ug/L		0.41	cv	
500 PPM ICS	923.10	ug/L		0.07	cv	
CAL BLK	-0.31	ug/L		-83.19	cv	
BLK #911	-0.66	ug/L	<5.00	-15.46	cv	
4442 9683.0401	1.96	ug/L		55.98	cv	
4442 9684.0401	2.25	ug/L		26.05	cv	
4442 9685.0401	3.93	ug/L		12.07	cv	
4442 9686.0401	1.71	ug/L	0.95	72.59	cv	
7.0401 ~~Sample 001~~	2.79	ug/L		13.63	cv	
4442 9688.0401	3.09	ug/L		34.16	cv	
9688.0401 R1	2.86	ug/L		6.88	cv	
1/10 9688.0401	-0.46	ug/L		-26.96	cv	
9688.0401 RS	52.11	ug/L		3.04	cv	
500 PPM ICS	978.95	ug/L		0.37	cv	
CAL BLK	-0.90	ug/L		-49.27	cv	window edge
500 PPB	509.45	ug/L		0.21	cv	

Cu_VHG

blank	49.85	intensity		49.91	cv	
standard	8643.50	intensity		0.60	cv	
500 PPB	487.90	ug/L		0.01	cv	
ICAP-19	932.40	ug/L		0.42	cv	
500 PPM ICS	923.10	ug/L		1.19	cv	
CAL BLK	0.55	ug/L		94.27	cv	
BLK #911	2.33	ug/L	<25.0	42.86	cv	
50 PPM	47670.00	ug/L		0.23	cv	
4442 9683.0401	132.90	ug/L		1.79	cv	
4442 9684.0401	9884.00	ug/L		1.02	cv	
4442 9685.0401	14870.00	ug/L		0.45	cv	
4442 9686.0401	10385.00	ug/L		0.39	cv	
7.0401 ~~Sample 001~~	32935.00	ug/L	6273	0.97	cv	
9687. 1/10	3284.50	ug/L		1.30	cv	
4442 9688.0401	32995.00	ug/L		1.51	cv	
9688.0401 R1	85025.00	ug/L		1.57	cv	
1/10 9688.0401	3890.50	ug/L		2.12	cv	
9688.0401 RS	38555.00	ug/L		1.13	cv	
500 PPM ICS	996.75	ug/L		0.57	cv	
CAL BLK	2.08	ug/L		24.54	cv	
500 PPB	520.75	ug/L		0.09	cv	

Ag_VHG

blank	77.82	intensity		13.13	cv	
standard	17860.00	intensity		0.45	cv	
500 PPB	490.10	ug/L		0.30	cv	
EPA 283#2 1/50	113.15	ug/L		3.34	cv	
500 PPM ICS	959.20	ug/L		0.34	cv	
CAL BLK	-1.91	ug/L		-154.9	cv	window edge
BLK #911	-2.15	ug/L	<10.0	-11.93	cv	
4442 9683.0401	-3.26	ug/L		-76.93	cv	window edge
4442 9684.0401	22.53	ug/L		1.70	cv	
4442 9685.0401	83.12	ug/L		4.56	cv	
4442 9686.0401	75.16	ug/L		0.68	cv	
7.0401 ~~Sample 001~~	95.72	ug/L	18.2	2.80	cv	

4442 9688.0401	12.93	ug/L		5.52	cv
9688.0401 R1	13.58	ug/L		3.34	cv
1/10 9688.0401	3.15	ug/L	<10.0	148.46	cv
9688.0401 RS	96.58	ug/L		1.55	cv
500 PPM ICS	1042.50	ug/L		0.52	cv
CAL BLK	-0.60	ug/L		-84.05	cv
500 PPB	516.20	ug/L		0.08	cv

window edge

Al_VHG

blank	188.51	intensity		170.44	cv
standard	9852.00	intensity		0.80	cv
500 PPB	492.50	ug/L		4.42	cv
ICAP-7	1099.00	ug/L		2.81	cv
ICAP-7	1071.50	ug/L		1.92	cv
500 PPM ICS	97840.00	ug/L		0.55	cv
CAL BLK	8.46	ug/L		54.33	cv
BLK #911	22.28	ug/L		0.19	cv
50 PPM	50740.00	ug/L		2.29	cv
4442 9683.0401	44850.00	ug/L		0.67	cv
4442 9684.0401	32300.00	ug/L		0.45	cv
4442 9685.0401	11585.00	ug/L		1.69	cv
4442 9686.0401	27590.00	ug/L		0.00	cv
9686. 1/10	2910.00	ug/L		2.53	cv
17.0401 ~~Sample 001~~	20840.00	ug/L	3969	0.67	cv
9687. 1/10	2237.50	ug/L		0.60	cv
4442 9688.0401	29455.00	ug/L		1.21	cv
9688.0401 R1	33555.00	ug/L		0.19	cv
1/10 9688.0401	3535.00	ug/L		0.45	cv
9688.0401 RS	37270.00	ug/L		0.45	cv
500 PPM ICS	101150.0	ug/L		0.08	cv
CAL BLK	-2.31	ug/L		-1341.	cv
500 PPB	521.05	ug/L		0.61	cv

window edge

Ba_VHG

blank	9.44	intensity		47.45	cv
standard	12895.00	intensity		0.55	cv
500 PPB	486.00	ug/L		0.35	cv
ICAP-7	1048.00	ug/L		0.65	cv
500 PPM ICS	960.45	ug/L		0.19	cv
CAL BLK	0.16	ug/L		0.60	cv
BLK #911	0.09	ug/L		353.51	cv
50 PPM	53355.00	ug/L		0.25	cv
~~4442 9683.0401~~	~~1348.00~~	~~ug/L~~		~~0.21~~	~~cv~~
~~4442 9684.0401~~	~~1529.50~~	~~ug/L~~		0.74	cv
~~4442 9685.0401~~	~~1073.00~~	~~ug/L~~		1.19	cv
~~4442 9686.0401~~	~~1097.50~~	~~ug/L~~		0.29	cv
17.0401 ~~Sample 001~~	~~2439.50~~	~~ug/L~~		0.44	cv
~~4442 9688.0401~~	~~1135.50~~	~~ug/L~~		0.55	cv
~~9688.0401 R1~~	~~1404.00~~	~~ug/L~~		1.41	cv
~~1/10 9688.0401~~	~~147.25~~	~~ug/L~~		0.25	cv
~~9688.0401 RS~~	~~3598.50~~	~~ug/L~~		0.21	cv
500 PPM ICS	1101.00	ug/L		0.11	cv
CAL BLK	-0.01	ug/L		-4763.	cv
500 PPB	565.35	ug/L		0.11	cv

BHR See attached

Job # 4442
Cr

86/11/19

16:47

Result Name 8611191501

standard	4432 9657.0401	500 PPB	4425 9619.0306
standard	CAL BLK	4432 9683.0401	4425 9620.0306
blank	500 PPB	4442 9684.0401	9620.0306 R
CAL BLK	4432 9658.0401	4442 9685.0401	BLK #905
500 PPB	4432 9659.0401	4442 9686.0401	4345 9166.0506
ICAP-19	4432 9660.0401	4442 9687.0401	4345 9167.0506
500 PPM ICS	4432 9661.0401	4442 9688.0401	4345 9168.0506
BLK #911	4432 9662.0401	9688.0401 R	4345 9169.0506
4432 9651.0401	4432 9663.0401	9688.0401 RS	4345 9170.0506
4432 9652.0401	4432 9664.0401	500 PPM ICS	BLK #871
4432 9653.0401	4432 9665.0401	CAL BLK	4345 9166.1001
4432 9654.0401	4432 9666.0401	500 PPB	4345 9167.1001
4432 9655.0401	4432 9667.0401	4425 9617.0306	4345 9168.1001
4432 9656.0401	CAL BLK	4425 9618.0306	4345 9169.1001

Command?

.1_VHC

standard	11040.00	intensity	1.54	cv	
standard	11110.00	intensity	0.40	cv	
blank	20.51	intensity	82.41	cv	
CAL BLK	1.61	ug/L	327.43	cv	
500 PPB	492.15	ug/L	1.85	cv	
ICAP-19	971.25	ug/L	0.19	cv	
500 PPM ICS	883.05	ug/L	0.15	cv	
BLK #911	-0.70	ug/L <10.0	-737.8	cv	window edge
4442 9683.0401	56.09	ug/L	7.33	cv	
4442 9684.0401	127.80	ug/L	0.86	cv	
4442 9685.0401	326.85	ug/L	0.19	cv	
4442 9686.0401	400.65	ug/L	0.44	cv	
4442 9687.0401	593.80	ug/L 113	0.05	cv	
4442 9688.0401	340.85	ug/L	1.72	cv	
9688.0401 R	282.05	ug/L	2.83	cv	
9688.0401 RS	471.45	ug/L	0.31	cv	
500 PPM ICS	878.95	ug/L	0.37	cv	
CAL BLK	2.16	ug/L	48.76	cv	
500 PPB	501.70	ug/L	1.65	cv	

Job # 4442 Lerens
Ni, Fe, Ba

86/11/21
16:21

Result Name: 8611211050

blank	4441 9681.0601	4455 9707.0301	4456 9714.0101
standard	4441 9682.0601	4455 9708.0301	4456 9715.0101
standard	BLK #922	4455 9709.0301	4456 9716.0101
standard	10000 PPB	4455 9710.0301	BLK #920
ICAP-19	500 PPM ICS	4455 9711.0301	10000 PPB
ICAP-7	CAL BLK	BLK #924	CAL BLK
EPA 282#2 1/50	500 PPB	4456 9712.0101	500 PPB
500 PPB	500 PPM ICS	4456 9713.0101	500 PPB
500 PPB	CAL BLK	CAL BLK	500 PPB
500 PPB	500 PPB	500 PPB	50 PPM
500 PPM ICS	500 PPB	500 PPB	4431 9644.0601
4441 9680.0601	500 PPB	500 PPB	4431 9646.0601
9680.0601 R	4452 9703.0101	9713.0101 R	9646. 1/2
9680.0601 RS	4455 9706.0301	9713.0101 RS	4431 9648.0601

Command?

Result Name: 8611211050

4431 9649.0601	9686 1/10
4431 9650.0601	4442 9687.0401
9650.0601 R	9687. 1/10
9650.0601 RS	4442 9688.0401
BLK #908	9688 1/10
CAL BLK	9688.0401 R
500 PPB	9688 R 1/10
4442 9683.0401	9688.0401 RS
9683. 1/2	9688.RS 1/10
4442 9684.0401	BLK #911
9684. 1/10	500 PPM ICS
4442 9685.0401	CAL BLK
9685. 1/10	500 PPB
4442 9686.0401	

Command?

Ni_VHC

blank	131.73	intensity	92.39	cv
standard	10125.00	intensity	2.73	cv
standard	9911.50	intensity	1.86	cv
ICAP-19	986.00	ug/L	0.30	cv
500 PPB	513.85	ug/L	0.10	cv
500 PPM ICS	876.15	ug/L	2.01	cv
10000 PPB	9836.00	ug/L	0.99	cv
~~50 PPM~~	~~53337.00~~	~~ug/L~~	~~1.10~~	~~cv~~
4442 9684.0401	1882.50	ug/L → 544mg/Kg	0.30	cv
4442 9688.0401	985.50	ug/L → 197 ⊥	2.07	cv
BLK #911	-4.99	ug/L <40.0	-14.62	cv
500 PPM ICS	841.30	ug/L	3.23	cv
CAL BLK	-1.77	ug/L	-184.1	cv
500 PPB	525.95	ug/L	0.67	cv

See Raw Data

CAL BLK → -8.75 ug/L 11.4c
B4R 500ppb → 519.40 ug/L 2.15c

Fe_VHC

blank	25.28	intensity	31.08	cv
standard	5934.00	intensity	0.81	cv
standard	5868.00	intensity	0.05	cv
ICAP-19	987.80	ug/L	0.06	cv
500 PPB	513.10	ug/L	1.16	cv
500 PPM ICS	177800.0	ug/L	0.00	cv
10000 PPB	9764.50	ug/L	0.70	cv
50 PPM	51350.00	ug/L	0.19	cv
4442 9683.04011570.00		ug/L	1.82	cv
9683. 1/2	33435.00	ug/L → 12617mg/Kg	0.63	cv
4442 9684.04015490.00		ug/L	1.31	cv
9684. 1/10	9407.50	ug/L → 17750	1.84	cv
4442 9685.040123150.0		ug/L	1.78	cv
9685. 1/10	11990.00	ug/L → 23570	0.36	cv
4442 9686.040122300.0		ug/L	1.24	cv
9686. 1/10	11985.00	ug/L → 23733	0.30	cv
4442 9687.040107950.0		ug/L	0.31	cv
9687. 1/10	10575.00	ug/L → 20143 ✓	0.78	cv
4442 9688.04017035.00		ug/L	0.74	cv
9688 1/10	7017.50	ug/L → 14033	0.27	cv
9688.0401 R	81740.00	ug/L	0.35	cv
9688.R 1/10	8307.50	ug/L → 15976 ⊥	0.20	cv
9688.0401 RS	82935.00	ug/L	0.19	cv
9688.RS 1/10	8438.50	ug/L → NR	0.09	cv
BLK #911	0.41	ug/L <100	770.62	cv
500 PPM ICS	177600.0	ug/L	0.02	cv
CAL BLK	9.72	ug/L	48.47	cv
500 PPB	521.05	ug/L	0.89	cv

CAL BLK = 0.31 ug/L 20.01 cv
500 ppb 532.09 ug/L 1.76 cv

Ba_VHC

blank	15.60	intensity	12.38	cv
standard	16310.00	intensity	0.76	cv
standard	15955.00	intensity	0.90	cv
ICAP-7	958.30	ug/L	0.55	cv
500 PPB	526.00	ug/L	0.99	cv
500 PPM ICS	974.75	ug/L	0.02	cv
10000 PPB	10235.00	ug/L	1.23	cv
50 PPM	59150.00	ug/L	0.19	cv
4442 9683.0401	1122.50	ug/L → 223mg/Kg	0.41	cv
4442 9684.0401	1632.00	ug/L → 306	0.34	cv
4442 9685.0401	921.20	ug/L → 181 ⊥	0.05	cv

CAL BLK - 0.24 ug/L 112.96 cv
500 ppb 539.43 ⊥ 0.08 ⊥

4442	9686	0101	253.00	ug/L	189mg/Kg	0.07	cv
4442	9687	0401	2114.50	ug/L	403	0.30	cv
4442	9688	0401	1051.50	ug/L	210	0.73	cv
9688.0401		F	1194.00	ug/L	230	1.31	cv
9688.0401		FS	3038.00	ug/L	-99% rec	0.37	cv
BLK #911			-0.15	ug/L	<200	-95.77	cv
500 PPM ICS			978.20	ug/L		0.97	cv
CAL BLK			-0.58	ug/L		-6.33	cv
500 PPB			536.75	ug/L		1.36	cv

Job # 4432 Rerun
Ba, Fe, Mn, Ni, Zn

86/11/2[illegible]

13.06

Result Name: 8611261003

standard	4460 9738.0109	4432 9652.0401	4432 9661.0401
standard	9738 + 1PPM	4432 9653.0401	9661. 1/2
blank	9738 + 2PPM	CAL BLK	4432 9662.0401
CAL BLK	9738 + 3PPM	500 PPB	9662. 1/10
500 PPB	9738 [illegible]	4432 9654.0401	4432 9663.0401
ICAP-19	9738 B + 1PPM	9654. 1/2	9663. 1/2
ICAP-7	9738 B + 2PPM	4432 9655.0401	CAL BLK
500 PPM ICS	9738 B + 3PPM	4432 9656.0401	500 PPB
10000 PPB	BLK #931	4432 9657.0401	4432 9664.0401
50 PPM	BLK + 1PPM	9657. 1/10	9664. 1/10
4460 9737.0109	BLK + 2PPM	4432 9658.0401	4432 9665.0401
9737 + 1PPM	BLK + 3PPM	9658. 1/2	4432 9667.0401
9737 + 2PPM	BLK #911	4432 9659.0401	9667. 1/2
9737 + 3PPM	4432 9651.0401	4432 9660.0401	500 PPM ICS

Command?

Zn_VHG

standard	9670.00	intensity	6.61	cv	
standard	7738.00	intensity	0.64	cv	
blank	17.54	intensity	18.93	cv	
CAL BLK	-0.37	ug/L	-43.27	cv	
500 PPB	502.20	ug/L	0.62	cv	
ICAP-19	998.05	ug/L	1.70	cv	
500 PPM ICS	901.25	ug/L	1.86	cv	
10000 PPB	9715.50	ug/L	1.17	cv	
50 PPM	51815.00	ug/L	0.21	cv	
BLK #911	7.86	ug/L <20.0	35.51	cv	
4432 9658.0401	12345.00	ug/L → 3831 mg/Kg	2.08	cv	
CAL BLK	0.44	ug/L	5.92	cv	
500 PPB	525.25	ug/L	0.85	cv	
500 PPM ICS	925.55	ug/L	1.51	cv	
CAL BLK	-0.91	ug/L	-9.22	cv	
500 PPB	527.55	ug/L	0.33	cv	

Ni_VHG

standard	10995.00	intensity	5.30	cv	
standard	10155.00	intensity	0.67	cv	
blank	4.74	intensity	498.66	cv	
CAL BLK	5.49	ug/L	19.63	cv	
500 PPB	513.65	ug/L	0.05	cv	
ICAP-19	988.90	ug/L	0.46	cv	
500 PPM ICS	848.35	ug/L	2.84	cv	
10000 PPB	9579.00	ug/L	0.86	cv	
50 PPM	51160.00	ug/L	0.13	cv	
BLK #911	5.02	ug/L <40.0	131.64	cv	window edge
4432 9653.0401	7195.50	ug/L → 234 mg/Kg	1.22	cv	
CAL BLK	0.77	ug/L	250.81	cv	window edge
500 PPB	521.30	ug/L	0.07	cv	
4432 9655.0401	995.75	ug/L → 195	0.48	cv	
4432 9657.0401	3863.50	ug/L → 709	0.82	cv	
4432 9658.0401	7536.00	ug/L → 502	1.35	cv	
4432 9660.0401	1940.00	ug/L → 380	0.43	cv	
4432 9661.0401	3586.50	ug/L → 479	0.25	cv	
4432 9662.0401	2374.00	ug/L → 457	0.99	cv	
CAL BLK	0.39	ug/L	1210.3	cv	
500 PPB	535.20	ug/L	0.93	cv	
4432 9664.0401	7244.50	ug/L → 428 ⊥	0.44	cv	
500 PPM ICS	870.35	ug/L	0.23	cv	
CAL BLK	0.24	ug/L	411.55	cv	window edge
500 PPB	528.45	ug/L	2.55	cv	

n_VHG

standard	7451.00	intensity	3.76	cv	
standard	7029.50	intensity	0.10	cv	
blank	4.84	intensity	25.54	cv	window edge
CAL BLK	0.30	ug/L	64.11	cv	
500 PPB	509.50	ug/L	0.59	cv	
ICAP-19	983.95	ug/L	0.92	cv	
500 PPM ICS	886.55	ug/L	1.12	cv	
10000 PPB	9657.00	ug/L	0.39	cv	
50 PPM	50985.00	ug/L	0.05	cv	
BLK #911	-0.89	ug/L <15.0	-90.29	cv	
4432 9667.0401	1637.00	ug/L → 324 mg/Kg	0.58	cv	
500 PPM ICS	916.35	ug/L	1.13	cv	

CAL BLK	[illegible]	ug/L	-[illegible]	cv
500 PPB	[illegible]	ug/L	2.11	cv

Ag_VHG

standard	[illegible]	intensity	2.76	cv
standard	[illegible]	intensity	0.22	cv
blank	[illegible]	intensity	53.95	cv
CAL BLK	0.36	ug/L	-396.8	cv
500 PPB	[illegible]	ug/L	0.46	cv
ICAP-19	[illegible]	ug/L	0.69	cv
500 PPM ICS	174000.0	ug/L	0.02	cv
10000 PPB	[illegible]	ug/L	0.51	cv
50 PPM	50060.00	ug/L	0.14	cv
BLK #911	[illegible]	ug/L <100	15.23	cv
4432 9651.04[illegible]	[illegible]	→ 8599 mg/Kg	0.51	cv
4432 9652.04[illegible]	[illegible]	→ 7188.	0.43	cv
4432 9653.04[illegible]	[illegible]	→ 7343.	0.15	cv
CAL BLK	[illegible]	ug/L	85.75	cv
500 PPB	[illegible]	ug/L	1.36	cv
4432 9654 04012580.00		ug/L	0.10	cv
9654. 1/2	[illegible]	→ 14,964.	0.08	cv
4432 9655.04[illegible]	[illegible]	→ 9094.	0.13	cv
4432 9656.04[illegible]	[illegible]	→ 8374.	0.25	cv
4432 9657 [illegible]		ug/L	0.47	cv
9657 1/10	[illegible]	→ 27,183.	2.40	cv
4432 9658.04010[illegible]		ug/L	0.41	cv
9658 1/2	[illegible]	→ 12,817.	0.71	cv
4432 9659.04[illegible]	[illegible]	→ 7943.	0.15	cv
4432 9660.04[illegible]	[illegible]	→ 8171.	0.24	cv
4432 9661 04012210.00		ug/L	0.94	cv
9661. 1/2	[illegible]	→ 13,265.	0.14	cv
4432 9662.04015[illegible]		ug/L	0.48	cv
9662. 1/10	[illegible]	→ 31,087.	0.28	cv
4432 9663 04011[illegible]		ug/L	0.07	cv
9663 1/2	[illegible]	→ 19,891.	0.54	cv
CAL BLK	[illegible]	ug/L	-37.55	cv
500 PPB	531.75	ug/L	0.85	cv
4432 9664 04012[illegible]		ug/L	0.08	cv
9664. 1/10	[illegible]	→ 25,889.	1.31	cv
4432 9665.04[illegible]	[illegible]	→ 7981.	0.66	cv
4432 9667.04[illegible]		ug/L	0.81	cv
9667. 1/2	[illegible]	→ 13,077	0.55	cv
500 PPM ICS	174000.0	ug/L	0.01	cv
CAL BLK	5.65	ug/L	39.15	cv
500 PPB	525.25	ug/L	0.15	cv

Ba_VHG

standard	18165.00	intensity	1.97	cv
standard	17105.00	intensity	0.12	cv
blank	[illegible]	intensity	73.35	cv
CAL BLK	-0.50	ug/L	-131.9	cv
500 PPB	504.30	ug/L	0.07	cv
ICAP-7	956.50	ug/L	0.10	cv
500 PPM ICS	[illegible]	ug/L	0.84	cv
10000 PPB	10011.00	ug/L	0.70	cv
50 PPM	55980.00	ug/L	0.14	cv
BLK #911	[illegible]	ug/L <200	156.51	cv
4432 9651.040[illegible]	[illegible]	→ 215 mg/Kg	0.01	cv
4432 9652 040[illegible]	[illegible]	→ 410	[illegible]	cv

CAL BLK	-0.63	ug/L	-107.1	cv	
500 PPB	529.55	ug/L	0.04	cv	
4432 9656 0401	1224.50	ug/L → 240mg/Kg	0.32	cv	
4432 9657 0401	3455.00	ug/L	0.84	cv	
9657 1/10	4414.00	ug/L → 8099	1.07	cv	
4432 9658 0401	1112.50	ug/L → 1804	0.29	cv	
4432 9660 0401	1317.50	ug/L → 259 ✓	0.31	cv	
4432 9661 0401	3407.50	ug/L → 631	0.47	cv	
4432 9662 0401	3208.50	ug/L → 617	0.23	cv	
CAL BLK	-0.30	ug/L	-87.75	cv	
500 PPB	532.25	ug/L	0.22	cv	
4432 9664 0401	1100.50	ug/L → 400	0.16	cv	1.05
4432 9665 0401	262.00	ug/L → 48.9	0.57	cv	
4432 9667 0401	1480.00	ug/L → 285	0.79	cv	1.08
500 PPM ICS	997.00	ug/L	0.71	cv	1.04
CAL BLK	-0.32	ug/L	-87.33	cv	
500 PPB	528.10	ug/L	0.46	cv	

Job # 4432
PB

Dead Creek

:FORT > SELECT RESULT

'YZE > MANUAL MODE

86/12/12

16:50

Result Name 8612120939

blank	4432 9651.0401	4432 9660.0401	4442 9687.0401
standard	4432 9652.0401	4432 9661.0401	4442 9688.0402
standard	4432 9653.0401	4432 9662.0401	9688.0402 R
standard	4432 9654.0401	4432 9663.0401	9688.0402 RS
500 PPB	4432 9655.0401	4432 9664.0401	500 PPM ICS
500 PPB	4432 9656.0401	4432 9665.0401	CAL BLK
500 PPB	4432 9657.0401	4432 9666.0401	500 PPB
EPA 283#2 1/50	CAL BLK	4432 9667.0401	500 PPB
ICAP-19	500 PPB	CAL BLK	4475 9814.0101
ICAP-7	500 PPB	500 PPB	4475 9815.0101
EPA 283#2 1/50	500 PPB	4442 9683.0401	4475 9816.0101
500 PPM ICS	500 PPB	4442 9684.0401	4475 9817.0101
10000 PPB	4432 9658.0401	4442 9685.0401	4475 9813.0101
BLK #911	4432 9659.0401	4442 9686.0401	9813.0101 R

Comment:

07

S_VHC

Blank	[illegible]	intensity	[illegible]	cv	
standard	5246.50	intensity	5.11	cv	
standard	5054.00	intensity	3.35	cv	
500 PPB	439.95	ug/L	6.77	cv	
500 PPB	535.65	ug/L	3.71	cv	
EPA 2030 1/50	81.65	ug/L	0.00	cv	
ICAP-19	932.65	ug/L	9.32	cv	
500 PPM ICS	1073.00	ug/L	2.46	cv	
10000 PPB	10275.00	ug/L	[illegible]	cv	
BLK #711	-29.29	ug/L	-3.06	cv	window edge
4402 9651.0401	2286.50	ug/L	1.89	cv	
4402 9652.0401	2737.00	ug/L	0.38	cv	
4402 9653.0401	-40.22	ug/L	-233.9	cv	
4402 9654.0401	186.20	ug/L	29.48	cv	
4402 9655.0401	229.55	ug/L	32.19	cv	
4402 9656.0401	375.00	ug/L	2.59	cv	
4402 9657.0401	729.00	ug/L	1.98	cv	
CAL BLK	-101.92	ug/L	-11.80	cv	window edge
500 PPB	505.55	ug/L	9.38	cv	
4402 9658.0401	964.70	ug/L	9.43	cv	
4402 9659.0401	1036.00	ug/L	1.65	cv	
4402 9660.0401	1373.00	ug/L	1.13	cv	
4402 9661.0401	1950.50	ug/L	2.19	cv	
4402 9662.0401	2398.50	ug/L	5.49	cv	
4402 9663.0401	156.00	ug/L	14.03	cv	
4402 9664.0401	617.00	ug/L	4.46	cv	
4402 9665.0401	420.30	ug/L	5.48	cv	
4402 9666.0401	148.10	ug/L	3.31	cv	
4402 9667.0401	193.15	ug/L	36.52	cv	
CAL BLK	-33.66	ug/L	-212.6	cv	
500 PPB	192.70	ug/L	14.61	cv	
500 PPM ICS	1119.00	ug/L	3.79	cv	
CAL BLK	-97.47	ug/L	-32.87	cv	
100 PPB	109.95	ug/L	7.42	cv	

JK #8

wt weight

<50.0

432 ug/kg

350

→ TO BERIN HGA

35.1 ug/kg

42.1

472

691

184

190

264

386.

416

69.7

811

77.1

29.0

55.3

t_VHC

blank	404.90	intensity	80.64	cv	
standard	5244.50	intensity	5.11	cv	
standard	7054.50	intensity	5.35	cv	
500 PPB	439.95	ug/L	6.77	cv	
500 PPB	505.65	ug/L	3.71	cv	
DFA 280#2 1/50	81.65	ug/L	0.00	cv	
ICAP-19	932.65	ug/L	9.32	cv	
500 PPM ICS	1073.00	ug/L	2.46	cv	
10000 PPB	10275.00	ug/L	0.72	cv	
BLK #211	-29.29	ug/L<50.0	-3.06	cv	window edge
4442 9683.0401	129.55	→ 24.4 mg/kg	2.19	cv	
4442 9684.0401	844.70	→ 160	9.33	cv	
4442 9685.0401	6111.50	→ 1198	0.47	cv	
4442 9686.0401	6737.00	→ 1334	1.24	cv	
4442 9687.0401	4322.50	→ 880	0.68	cv	
4442 9688.0401	3920.00	→ 684	3.10	cv	
9688.0402 R	3191.50	→ 614	1.67	cv	
9688.0402 RS	2779.00	ug/L — NA	1.44	cv	
500 PPM ICS	1110.00	ug/L	3.59	cv	
CAL BLK	-97.47	ug/L	-32.87	cv	
500 PPB	509.95	ug/L	7.42	cv	

Head Creek

EPORT > SELECT RESULT

YZE > MANUAL MODE

Job #4432
Fe

96/12/30

[illegible]

Result Name. 3612[illegible]

blank	10000 PPB	10616.0401	10462. 1/10
standard	JCE#4618 E-990	10617.0401	10463. 1/10
standard	10462.0401	10618.0401	10464. 1/10
standard	50 PPM	10619.0401	10465. 1/10
standard	10463.0401	10620.0401	10465 R 1/10
500 PPB	10464.0401	10621.0401	10614. 1/10
500 PPB	10465.0401	10622.0401	10615. 1/10
[illegible]	10465.0401 R	10623.0401	10616. 1/10
[illegible]	10614.0401	10624.0401	10617. 1/10
[illegible]	[illegible]	10624.0401E	[illegible] 1/10
[illegible]	CAL ELK	500 PPM [illegible]	CAL ELK
[illegible]	500 PPB	CAL ELK	500 PPB
10000 PPB	500 PPB	500 PPB	10621. 1/10
CAL ELK	50 PPM	500 PPB	10622. 1/10

PORT > SELECT RESULT [illegible]

VIE > MANUAL MODE [illegible]

Result Name: [illegible]

[illegible]	BLK #912
[illegible]	CAL BLK
[illegible]	500 PPE
[illegible]	
[illegible]	
[illegible]	
CAL BLK	
500 PPE	
[illegible]	
[illegible]	
[illegible]	
[illegible]	
[illegible]	
[illegible]	

[illegible]	[illegible]	Intensity	[illegible]	[illegible]
[illegible]	[illegible]	Intensity	[illegible]	cv
500 PPB	522.30	ug/L	1.29	cv
ICAP-11	972.50	ug/L	0.36	cv
500 QPM ICS	107700.0	ug/L	0.00	cv
CAL BLK	7.03	ug/L	26.10	cv
10000 PPB	9601.50	ug/L	1.03	cv
9666.0401	49580.00	ug/L	0.19	cv
9666.1710	5073.00	ug/L	0.97	cv
BLK #911	11.96	ug/L <100	0.73	cv
CAL BLK	20.30	ug/L	10.75	cv
500 PPB	50[illegible].25	ug/L	0.11	cv

Head Creek

Job # 4442
Mn

PORT > SELECT RESULT

YZE > MANUAL MODE

Result Name [illegible]

blank	10000 PPB	10611.0401	10612. 1/10
standard	[illegible]	10617.0401	10618. 1/10
standard	10462.0401	10610.0401	10464. 1/10
standard	50 PPM	10619.0401	10465. 1/10
standard	10463.0401	10620.0401	10463.R 1/10
500 PPB	10464.0401	10621.0401	10614. 1/10
500 PPB	10465.0401	10622.0401	10615. 1/10
ICAP-[illegible]	10467.0401 R	10623.0401	10616. 1/10
ICAP-[illegible]	10614.0401	10624.0401	10617. 1/10
ICAP-[illegible]	10615.0401	10625.0401S	10620. 1/10
[illegible]	CAL BLK	500 PPM ICS	CAL BLK
500 PPM ICS	500 PPB	CAL BLK	500 PPB
10000 PPB	500 PPB	500 PPB	10621. 1/10
CAL BLK	50 PPM	500 PPB	10622. 1/10

Displaying page 1 of 2.

Command:

REPORT > SELECT RESULT

ANALYZE > MANUAL MODE

Result Name: 9612300[illegible]

10622. 0.1/10	BLK #912
10623. 1/10	CAL BLK
10623. 0.1/10	500 PPB
10624. 1/10	
10624.S 1/10	
500 PPM ICE	
CAL BLK	
500 PPB	
9666.0001	
[illegible] 1/10	
BLK #911	
CAL BLK	
500 PPB	
[illegible]	

[illegible]

[illegible]					
Blank	-2.16	Intensity	-[illegible]	cv	
Standard	[illegible]	Intensity	[illegible]	cv	
500 PPB	530.25	ug/L	[illegible]	[illegible]	
ICAP-1[illegible]	[illegible]	ug/L	[illegible]	cv	
500 PPM ICB	876.70	ug/L	0.73	cv	
CAL BLK	0.73	ug/L	53.97	cv	
10000 PPB	[illegible]	ug/L	[illegible]	cv	
[illegible]	[illegible]	ug/L	[illegible]	cv	
BLK #[illegible]	2.34	ug/L <15.0	5.7[illegible]	cv	
CAL BLK	0.31	ug/L	266.4[illegible]	cv	window edge
500 PPB	495.50	ug/L	0.15	cv	

...rmed: [illegible]
...ived: 12/16/86
...formed By: J. [illegible]

[illegible] 1987 | [illegible] | See Standard Log # 038 pg 86
Energy 39 | [illegible]
Time [illegible] | [illegible]

ID No.	Custody Seal Intact Yes No	Secure Storage Area Received From N	C	ppb Burn 1	ppb Burn 2	ppb Av	CV	20 ppb Spike	% Rec	DF	Samp Wgt	Units	Final Conc.
WS 378 #3				18.0				40.[illegible]	112			µg/l	18.0
Cal Blk				0.3				21.9	110				<10.0
50.0 ppb				48.6				69.9	107				48.6
9641.0603				-0.0	0.1	0.1	-	19.9	100				<10.0
9642.0603				2.9	3.4	3.1	-	18.2	91				<10.0
9643.0603				2.6	2.7	2.7	-	20.5	103				<10.0
9644.0603				6.0	5.9	5.9	1.19	21.[illegible]	106				<10.0
9645.0603				3.5	3.9	3.7	7.69	17.8	89				<10.0
9646.0603				24.5	26.8	25.6	6.54	[illegible]	/				/
9647.0603				5.5	4.8	5.1	9.61	19.6	98				<10.0
9648.0603				6.8	5.7	6.2	12.45	32.8	164				<10.0
9649.0603				5.4	5.3	5.3	1.32	20.4	102				<10.0
9650.0603				1.7	2.4	2.1	-	19.0	95				<10.0
Cal Blk				-0.7				22.0	110				<10.0
50.0 ppb				48.4				91.0	—				48.4
9650.R1				2.1	2.2	2.2	-	19.2	96				<10.0
9650.R1S1				18.3	18.3	18.3	0.00	37.7	97				92% Rec
Blk 909				-0.2	0.7	0.2	-	15.9	80		µg/l	µg/l	<10.0
9651.0402				37.1	35.5	36.3	3.12	49.3	/		1.06	mg/kg	/
9652.0402				37.1	35.2	37.6	2.07	79.1	/	1→10	1.02		/
9653.0402				11.5	11.2	11.4	1.87	20.8	/		1.00		/
9654.0402				35.6	36.7	36.2	2.15	45.4	/		1.06		/
9655.0402				59.6	58.0	58.8	1.92	98.1	/		1.09		/
9656.0402				42.4	44.8	43.6	3.89	42.4	/		1.09		/
9657.0402				61.7	61.6	61.6	0.12	61.1	/		1.08	mg/kg	/
Cal Blk				0.6	-0.1	0.2	-	20.9	105			µg/l	<10.0
50.0 ppb				51.2	47.5	49.3	5.30	9.0	—			µg/l	49.3
9658.0402				39.5	35.7	37.6	7.15	78.1	/		1.05	mg/kg	/
59.0402				12.1	11.2	11.1	5.46	[illegible]	/		1.09		/
9660.0402				22.1	21.4	21.7	2.28	[illegible]	/		1.04	mg/kg	/

To Page No. 3

[illegible]

...19

...ed: — As (cont'd)

...d: 12/16/86

By: [illegible]

ID No.	Custody Seal Intact Yes No	Secure Storage Area Received From N	C	ppb Burn 1	ppb Burn 2	ppb Av	CV	20ppb Spike	% Rec	DF	Wet Samp Wgt	Units	Dry Wt. Final Conc.
661.0402				63.9	61.5	62.7	2.71	130.0	/		1.01	mg/kg	/
1662.0402				18.3	19.1	18.7	3.05	36.0	87	2→10	1.01		30.3 mg/kg
663.0402				7.7	8.0	7.9	2.70	21.9	110		1.03		3.2
664.0402				26.9	25.3	26.1	4.34	49.0	115		1.04		7.8
665.0402				6.3	6.8	6.6	5.40	21.4	107		1.09		4.7
1666.0402				16.0	16.7	16.3	3.03	28.5	/		1.02		/
667.0402				24.2	22.9	23.5	3.90	31.0	/		1.09	mg/kg	/
Cal Blk				-0.1				19.1	96			µg/l	<10.0
50.0ppb				54.7				69.8	76				54.7
31K 92.3				-0.9	-1.6	-1.3		16.2	81				<10.0
680.0603				-1.2	-0.4	-0.8		14.8	74				<10.0
680.R1				-0.0	-0.3	-0.7		20.6	103				<10.0
680.R1S1				19.8	19.7	19.8	0.36	29.7	/				99% Rec
681.0603				471.3	549.9	507.3	10.9	151.7	/				/
682.0603				4.2	4.3	4.2	1.66	27.7	139			µg/l	<10.0
683.0402				27.2	25.6	26.4	4.29	30.2	/		1.09	mg/kg	/
684.0402				81.8	79.9	80.9	1.66	73.4	/		1.00		/
685.0402				27.1	27.4	27.2	0.78	35.5	/	2→10	1.05		/
686.0402				30.4	30.4	30.4		37.8	/	1→10	1.02	mg/kg	/
Cal Blk				-0.7				20.5	103			µg/l	<10.0
50.0ppb				53.0				71.4	90			µg/l	53.0
687.0402				12.3	12.9	12.6	3.37	30.6	90	2→10	1.09	mg/kg	21.0 mg/kg
688.0402				44.8	44.1	44.4	1.11	43.6	/		1.03		/
688.R1				44.5	42.2	43.3	3.75	40.7	/		1.06		/
688.R1S1				72.4	72.7	72.5	0.29	64.8	/		1.01	mg/kg	72% Rec
31K 912				-0.4	-0.2	-0.3		17.0	85			µg/l	<10.0
Cal Blk				-0.1				[illegible]	[illegible]				<10.0
[illegible] 0ppb				51.8				70.0	124			µg/l	51.8

[illegible] 27

[illegible] 12/ [illegible] 12/16/86

97

ge No.__

rmed: As

t: December 23, 1986

...ned By: [signature]

Pg. 12

ID No.	Custody Seal Intact Yes No	Secure Storage Area Received From No	C	ppb Burn 1	ppb Burn 2	ppb Avg.	C.V.	20.0 ppb Spike	% Rec.	D.F.	Amt. of Sample	Amt. of Sample ~~Units~~	Final Conc.
WS 378#3				21.1				41.7	103		µg/L		21.1
Cal Blank				-0.7				22.4	112		µg/L		<10.0
50.0 ppb				52.6				70.5	90		µg/L		52.6
9651.0402				38.6	37.7	38.1	1.67	56.3	91		mg/Kg		
9652.0402				37.3	38.2	37.7	1.69	56.7	95	1→10			
9653.0402				12.1	11.7	11.9	2.38	33.2	107				
9654.0402				36.4	37.1	36.8	1.35	57.6	104				
9655.0402				55.7	57.2	56.4	1.88	74.9	93				
9656.0402				41.4	41.6	41.5	0.34	58.7	86				
9657.0402				52.5	52.7	52.6	0.27	74.1	108				
9658.0402				39.7	38.8	39.2	1.62	61.0	109				
9659.0402				12.1	11.9	12.0	1.18	33.5	108				
9660.0402				21.3	21.4	21.3	0.33	43.6	112		mg/Kg		
Cal Blank				-0.8	-0.5	-0.7	/	25.2	/		µg/L		<10.0
50.0 ppb				45.2	45.3	45.2	0.16	73.2	[illegible]		µg/L		45.2
9661.0402				63.0	60.3	61.6	3.10	83.7	111		mg/Kg		
9666.0402				17.9	17.0	17.4	3.65	36.7	97				
9667.0402				24.2	24.0	24.1	0.59	43.7	98				
9683.0402				22.6	22.5	22.6	0.31	41.7	96				
9684.0402				64.3	65.0	64.6	0.77	86.8	111				
9685.0402				99.8	99.1	99.4	0.50	116.9	88				
9686.0402				186.2	181.7	184.0	/	/	/	/	/	/	/
9688.0402				37.7	38.4	38.0	1.30	58.6	103				
9688.R1				39.8	40.6	40.2	1.41	61.6	107				
9688.R1S1				59.7	59.6	59.7	0.12	78.0	92		mg/Kg		
Cal Blank				0.3	1.1	0.7	/	21.0	105		µg/L		
50.0 ppb				44.6	45.7	45.2	1.72	63.3	91		µg/L		
9686.0402				25.2	26.0	25.6	2.21	46.3	104	1→10	mg/Kg		

To Page No.__

...ssed & Understood by ... [signature] | Date 12/24/86 | Invented by [signature] | Date 12/23/86 | 28

HGA FORM #1

ELEMENT: As, DATE: 12/[illegible]/86.

S_1 = [illegible] PPB., S_2 = [illegible] PPB.

S_3 = 100 PPB, BOOK NO. 266 pp 12-15

JOB #:

S01	[illegible]		
X02	Cal Blk		
X03	50 Cpds		
X04	[illegible]		
X05	[illegible]		
X06	[illegible]		
X07	[illegible]		
X08	[illegible]		
X09	[illegible]		
X10	[illegible]		
X11	[illegible]		
X12	[illegible]		
X13	[illegible]		
X14	Cal Blk		
X15	50 Cpds		
X16	[illegible]		
X17	[illegible]	S_2	
X18	[illegible]		
X19	[illegible]		
X20	[illegible]		
X21	[illegible]		
X22	[illegible]		
X23	[illegible]		
X24	[illegible]		
X25	[illegible]		
X26	Cal Blk		
X27	50 Cpds		
X28	[illegible]		
X29	[illegible]		
X30	[illegible]		
X31	[illegible]		
X32	[illegible] (2→10)		
X33	[illegible]		
X34	[illegible]		
X35	[illegible]	S_3	

	-0.114	
	0.000	AZ
	0.125	
	25.0	S1
	44.7	C
	50.0	S2
	96.5	C
	100.0	S3
501	18.0	
502	0.3	
503	48.6	
	-0.0	
	0.1	
504	0.1	AV
	00	ER
	2.9	
	3.4	
505	3.1	AV
	11.22	CV
	2.6	
	2.7	
506	2.7	AV
	2.87	CV
	6.0	
	5.9	
507	5.9	AV
	1.19	CV
	3.5	
	3.9	
508	3.7	AV
	7.64	CV
	24.5	
	26.8	
509	25.6	AV
	6.34	CV
	5.5	
	4.8	
510	5.1	AV
	9.61	CV
	6.8	
	5.7	
511	6.2	AV
	12.45	CV
	5.4	
	5.3	
512	5.3	AV
	1.32	CV
	1.7	
	2.4	
513	2.1	AV
	24.15	CV
514	-0.7	
515	48.4	
	2.1	
	2.2	
516	2.2	AV
	3.29	CV
	15.3	
	18.3	
517	18.3	AV

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Arsenic - 12/16/86

	-0.035	
	0.030	A2
	0.093	
	25.0	S1
	44.7	C
	50.0	S2
	100.5	C
	100.0	S3
501	18.4	
502	-0.6	
503	48.2	

501	40.3
502	24.5
503	69.9
504	19.4

547	73.6
548	35.3
549	37.8
550	20.5
551	71.4
552	30.6
553	43.6
554	40.6
555	64.8
556	17.0
557	23.5
558	76.0

501	46.0	
502	21.9	
503	71.1	
504	14.5	
505	18.2	
506	20.5	
507	21.2	
508	29.8	
504	19.9	
505	37.0	
508	27.7	
509	35.3	
501	37.5	
502	14.7	
503	68.8	
504	20.6	
505	22.9	
506	31.6	
507	36.1	
506	18.8	
507	30.3	
508	17.8	
509	36.6	
510	19.6	
511	32.8	
512	20.4	
513	19.0	
514	22.0	
515	91.0	
516	19.2	
517	37.7	
518	15.9	
519	44.3	
520	79.1	
521	26.8	
522	45.4	
523	99.1	
524	41.4	
525	66.1	
526	20.9	
527	91.0	
528	76.1	
529	35.1	
530	59.3	
531	136.0	C
532	36.0	
533	21.9	
534	49.0	
535	21.4	
536	28.5	
537	31.0	
538	19.1	
539	69.8	
540	16.2	
541	14.8	
542	20.6	
543	24.9	
544	151.7	C
545	27.7	
546	30.2	

	0.7	
518	0.2	AV
	96	ER
	37.1	
	35.5	
519	36.3	AV
	3.12	CV
	37.1	
	36.2	
520	37.6	AV
	2.07	CV
	11.5	
	11.2	
521	11.4	AV
	1.87	CV
	35.6	
	36.7	
522	36.2	AV
	2.15	CV
	59.6	
	58.0	
523	58.8	AV
	1.92	CV
	42.4	
	44.8	
524	43.6	AV
	3.69	CV
	61.7	
	61.6	
525	61.6	AV
	0.12	CV
	0.6	
	-0.1	
526	0.2	AV
	96	ER
	51.2	
	47.5	
527	49.3	AV
	5.30	CV
	39.5	
	35.7	
528	37.6	AV
	7.15	CV
	12.1	
	11.2	
529	11.7	AV
	5.46	CV
	22.1	
	21.4	
530	21.7	AV
	2.28	CV
	63.9	
	61.5	
531	62.7	AV
	2.71	CV
	18.3	
	19.1	
532	18.7	AV
	3.03	CV
	7.7	
	8.0	
533	7.9	AV
	2.70	CV
	26.9	
	25.3	
534	26.1	AV
	4.34	CV
	6.3	
	6.8	
535	6.6	AV
	5.40	CV
	16.0	
	16.7	
536	16.3	AV
	3.03	CV
	24.2	
	22.9	
537	23.5	AV
	3.95	CV
538	-0.1	

HGA FORM #1

ELEMENT: As, DATE: 12/[illegible]

S_1 = [illegible] PPB., S_2 = [illegible] PPB

S_3 = 100 PPB, BOOK NO.

JOB #:
4432
4441
4442

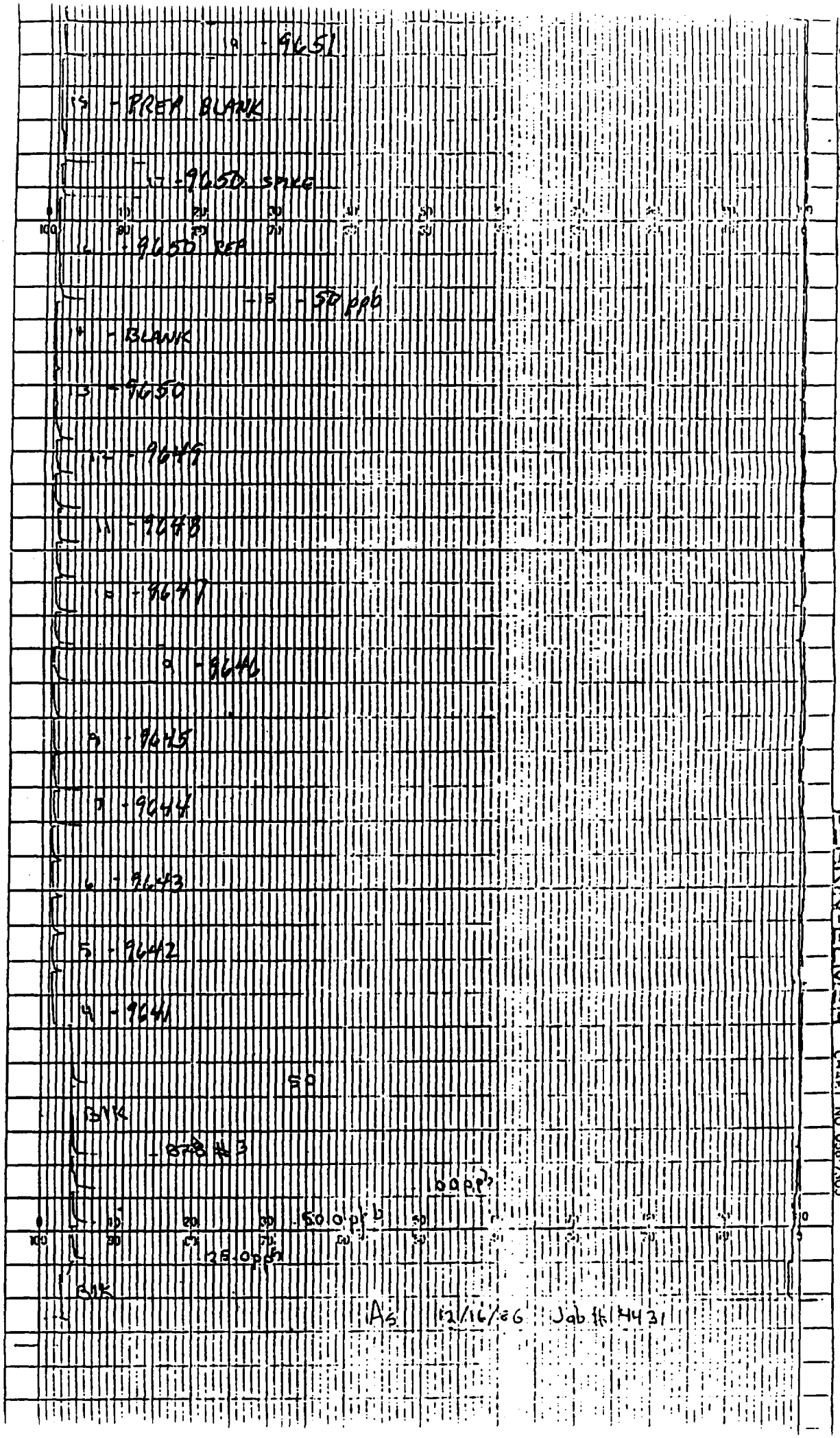
536	9666.0402
37	9667.0402
38	Cal Blk
39	50.0 ppb
40	Blk 9[illegible]
41	9680.0603
42	9680.0603 R1
43	9680.0603 R1 S1
44	9681.0603
45	9682.0603
46	9683.0402
47	9684.0402
48	9685.0402 (2→10)
49	9686.0402 (1→10)
50	Cal Blk
51	50.0 ppb
52	9687.0402 (2→10), S_2
53	9688.0402
54	9688.0402 R
55	9688.0402 R S1
56	Blk 9[illegible]
57	Cal Blk
58	50.0 ppb

, S_3

539	54.7	
	-0.9	
	-1.6	
540	-1.3	AV
	39.60	CV
	-1.2	
	-0.4	
541	-0.8	AV
	70.71	CV
	-0.0	
	-0.3	
542	-0.2	AV
	06	ER
	19.8	
	19.7	
543	19.8	AV
	0.36	CV
	471.3	C
	549.9	C
544	507.3	AV
	10.89	CV
	4.2	
	4.3	
545	4.2	AV
	1.66	CV
	27.2	
	25.6	
546	26.4	AV
	4.29	CV
	81.8	
	79.9	
547	80.9	AV
	1.66	CV
	27.1	
	27.4	
548	27.2	AV
	0.78	CV
	30.4	
	30.4	
549	30.4	AV
	0.00	CV
550	-0.7	
551	53.0	
	12.3	
	12.9	
552	12.6	AV
	3.37	CV
	44.8	
	44.1	
553	44.4	AV
	1.11	CV
	44.5	
	42.2	
554	43.3	AV
	3.75	CV
	72.4	
	72.7	
555	72.5	AV
	0.29	CV
	-0.4	
	-0.2	
556	-0.3	AV
	47.14	CV
557	-0.7	
558	51.8	

recycled paper

page 1 of 3



Arsenic
U-4432
U-4442
12-16-86

page 2 of 3

Arsenic
V-4432
V-4442
12-16-86

36 - 9666

35 - 9665

34 - 9664

33 - 9663

32 - 9662

31 - 9661

30 - 9660

29 - 9659

28 - 9658

27 - 50 ppb

26 - BLANK

25 - 9657

24 - 9656

23 - 9655

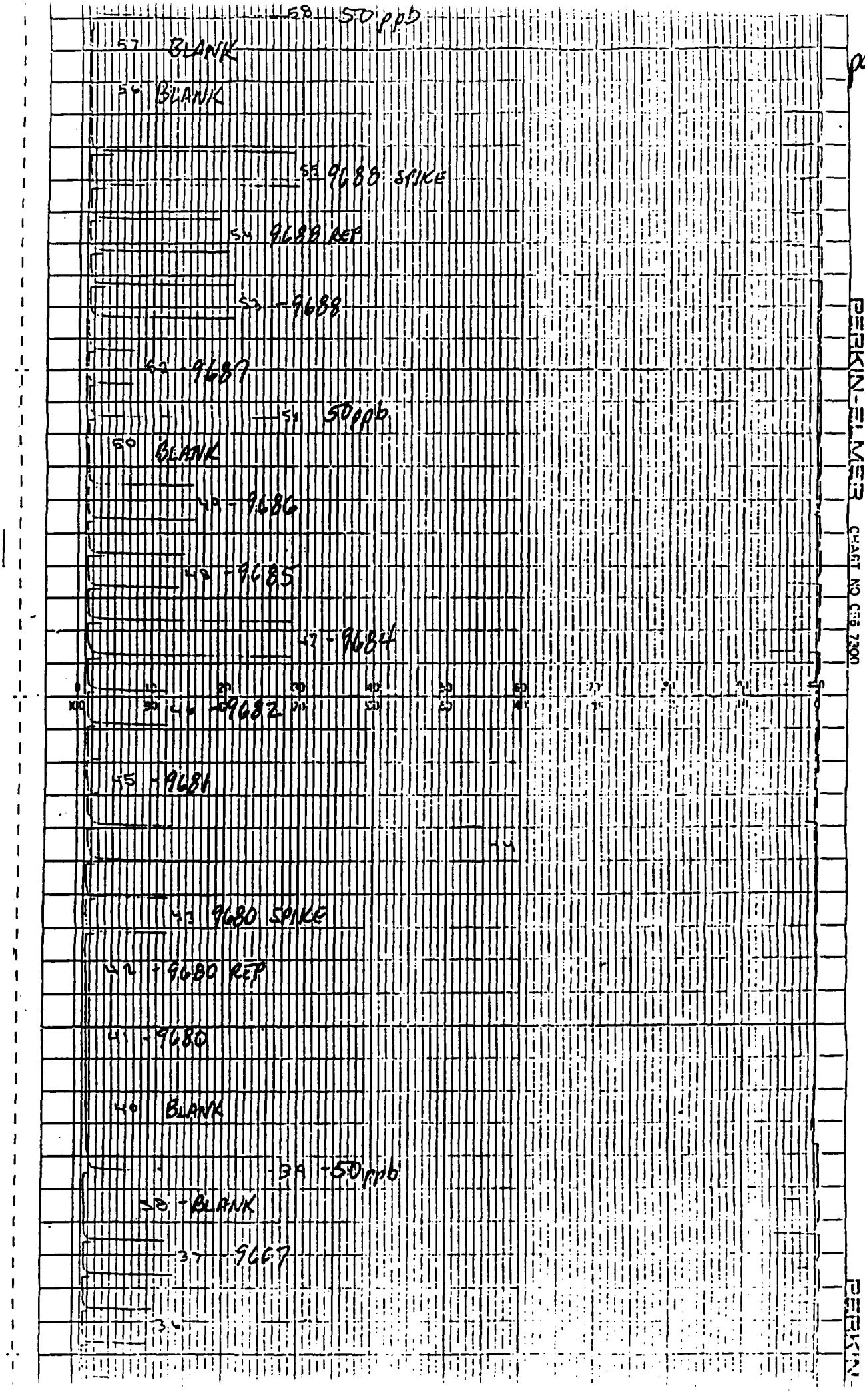
22 - 9654

21 - 9653

20 - 9652

PERKIN-ELMER CHART NO. 056-7330

PERKIN-ELMER CHART NO. 056-7330



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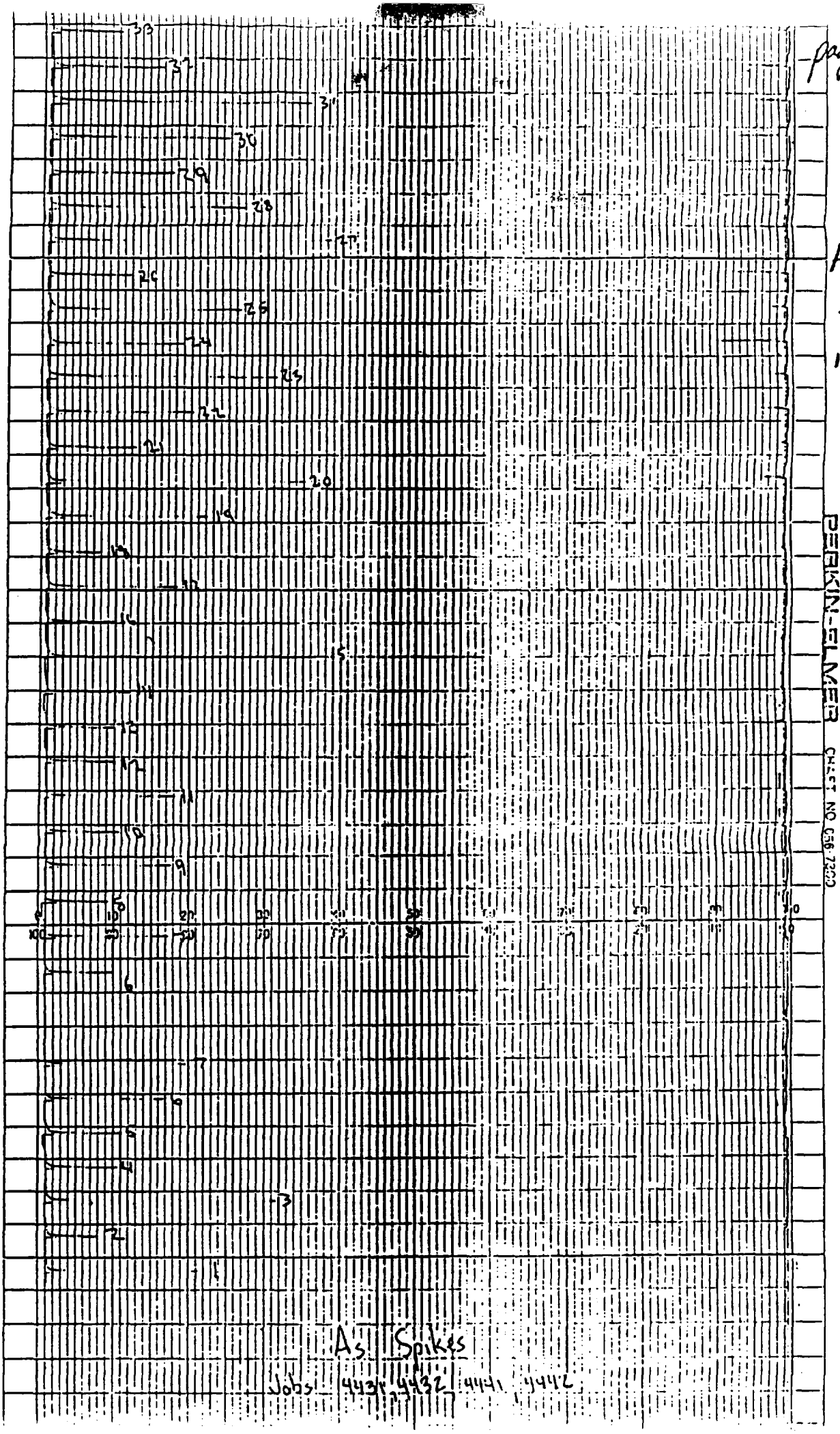
Arsenic
U-4432
U-4442
12-16-86

page 1 of 3

Arsenic Spikes 12/16/86



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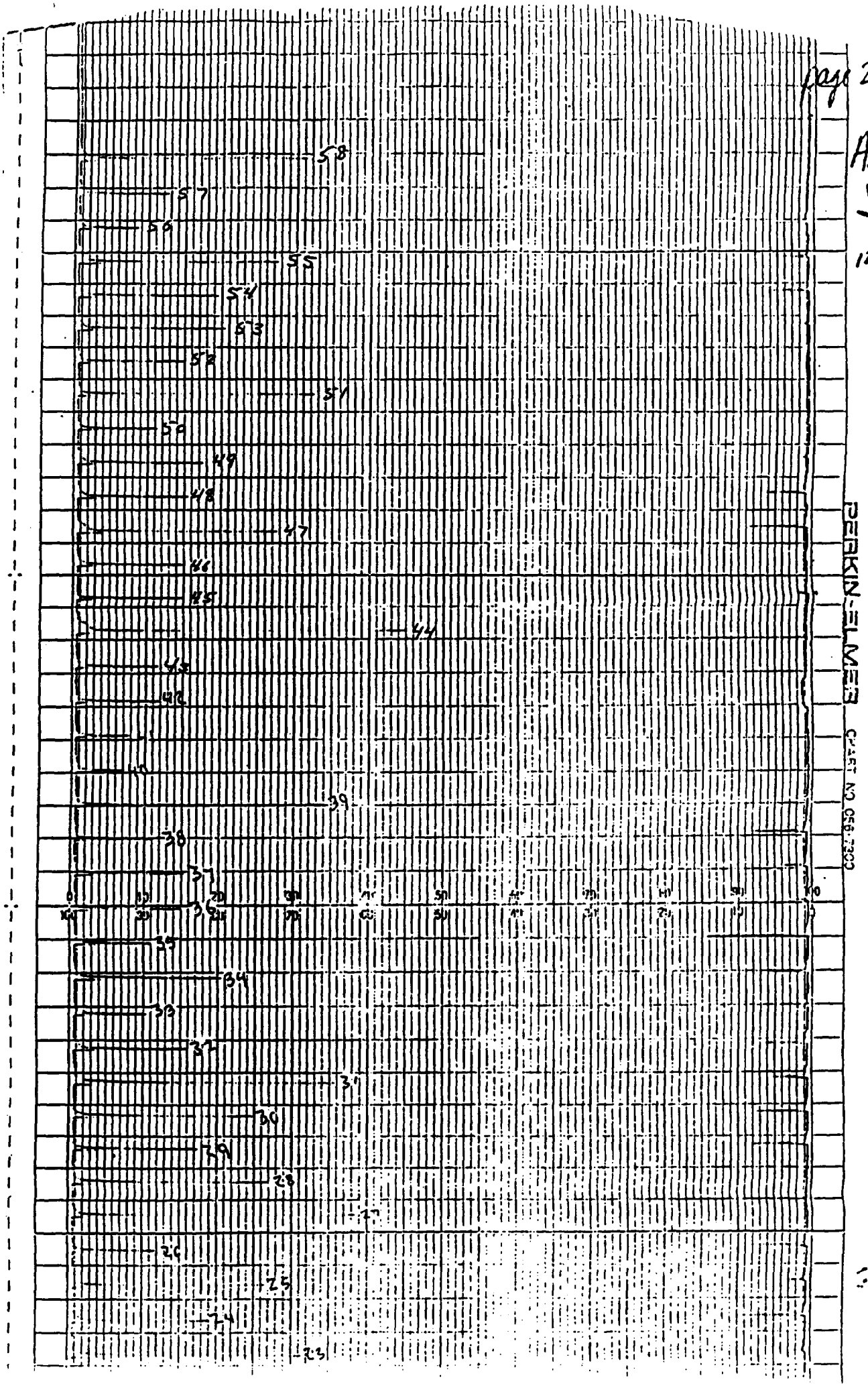
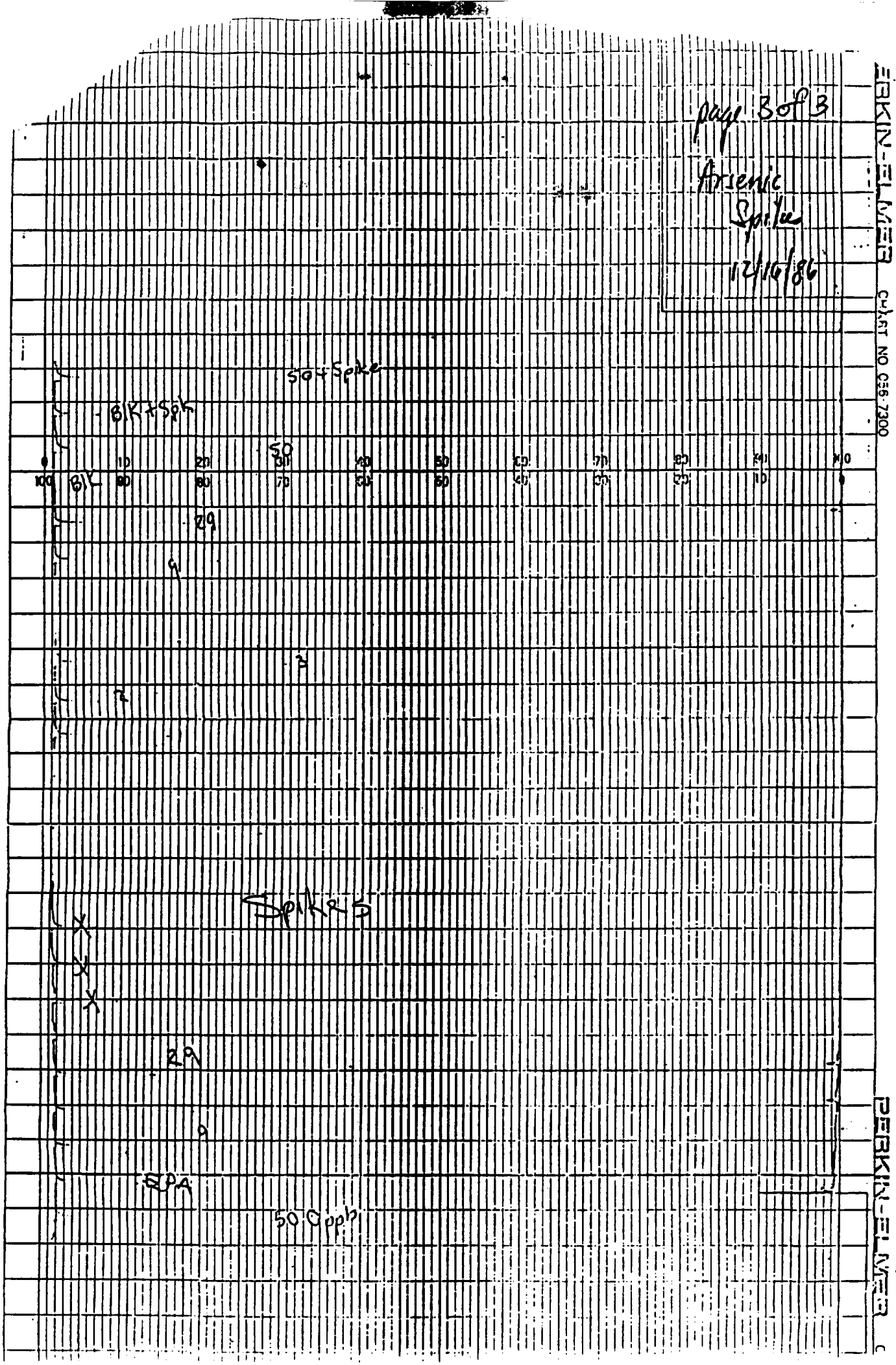
page 2 of 3

Arsenic Spikes 12/16/86



195


page 3 of 3
Arsenic
Spike
12/16/86
50+Spike
BK+Spk
50
BK
29
9
3
2
Spikes
29
9
EPA
50.0ppb
PERKIN-ELMER
CHART NO 056-7300

HGA FORM #1

ELEMENT: As , DATE: 12/23/86 .

S_1 = 25.0 PPB., S_2 = 50.0 PPB.

S_3 = 100 PPB, BOOK NO. ,

	501	WS 375#3	
	X02	Cal Blk	
	X03	50.0ppb	
	X04	9651.0402	
JOB #:	X05	9652.0402 (1>10)	
	X06	9653.0402	
	X07	9654	
	X08	9655	
	X09	9656	
	X10	9657	
	X11	9658	
	X12	9659	
	X13	9660	
	X14	Cal Blk	
	X15	50.0ppb	
	X16	9661.0402	
	X17	9666.0402	, S_2
	X18	9667.0402	
	X19	9683.0402	
	X20	9684	
	X21	9685	
	X22	9686	
	X23	9688	
	X24	9688R1	
	X25	9688R1S1	
	X26	Cal Blk	
	X27	50.0ppb	
	X28		
	X29		
	X30		
	X31		
	X32		
	X33		
	X34		
	X35		, S_3

501	41.7
502	22.4
503	70.5
504	56.3
~~505~~	~~61.0~~ xcontam
505	56.7
506	33.2
~~507~~	~~61.1~~ xcontam
507	57.6
508	74.9
509	58.7
~~510~~	~~[illegible]~~ poor INJ
510	74.1
511	61.0
~~512~~	~~[illegible]~~ xcontam.
512	33.5
513	43.6
514	25.2
515	73.2
516	63.7
517	36.7
~~518~~	~~49.2~~
518	43.7
519	36.0
519	41.7
~~[illegible]~~	~~[illegible]~~

poor INJ, 508

Arsenic
12/23/86.

	0.020	
	0.000	AZ
	0.110	
	29.0	S1
	49.4	C
	50.0	S2
	100.0	S3
501	57.8	
502		
503	38.6	
	37.7	
504	38.1	AV
	1.67	CV
	37.3	
	38.2	
505	37.7	AV
	1.60	CV
506	[illegible]	AV
507	[illegible]	AV
	[illegible]	CV

P.E. Kilin

	57.2	
	54.8	
508	56.0	AV
	3.08	CV
	12.1	
	11.7	
506	11.9	AV
	2.38	CV
	36.4	
	37.1	
507	36.8	AV
	1.35	CV
	55.7	
	57.2	
508	56.4	AV
	1.88	CV
	41.4	
	41.6	
509	41.5	AV
	0.34	CV
	52.5	
	52.7	
510	52.6	AV
	0.27	CV
	39.7	
	38.8	
511	39.2	AV
	1.62	CV
	12.1	
	11.9	
512	12.0	AV
	1.18	CV
	21.3	
	21.4	
513	21.3	AV
	0.33	CV

514	[illegible]	AV
	32.64	CV
	45.2	
	45.3	
515	45.2	AV
	0.18	CV
	63.6	
	60.3	
516	61.6	AV
	3.10	CV
	17.9	
	17.0	
517	17.4	AV
	3.65	CV
	24.2	
	24.0	
518	24.1	AV
	0.59	CV
	22.6	
	22.5	
519	22.6	AV
	0.31	CV
	64.3	
	65.0	
520	64.6	AV
	0.77	CV
	99.8	
	99.1	
521	99.4	AV
	0.50	CV
	186.2	C
	181.7	C
522	184.0	AV
	1.73	CV
	37.7	
	38.4	
523	38.0	AV
	1.30	CV
	39.3	
	40.6	
524	40.2	AV
	1.41	CV
	59.7	
	59.6	
525	59.7	AV
	0.12	CV
	0.3	
	1.1	
526	0.7	AV
	80.81	CV
	44.6	
	45.7	
527	45.2	AV
	1.72	CV

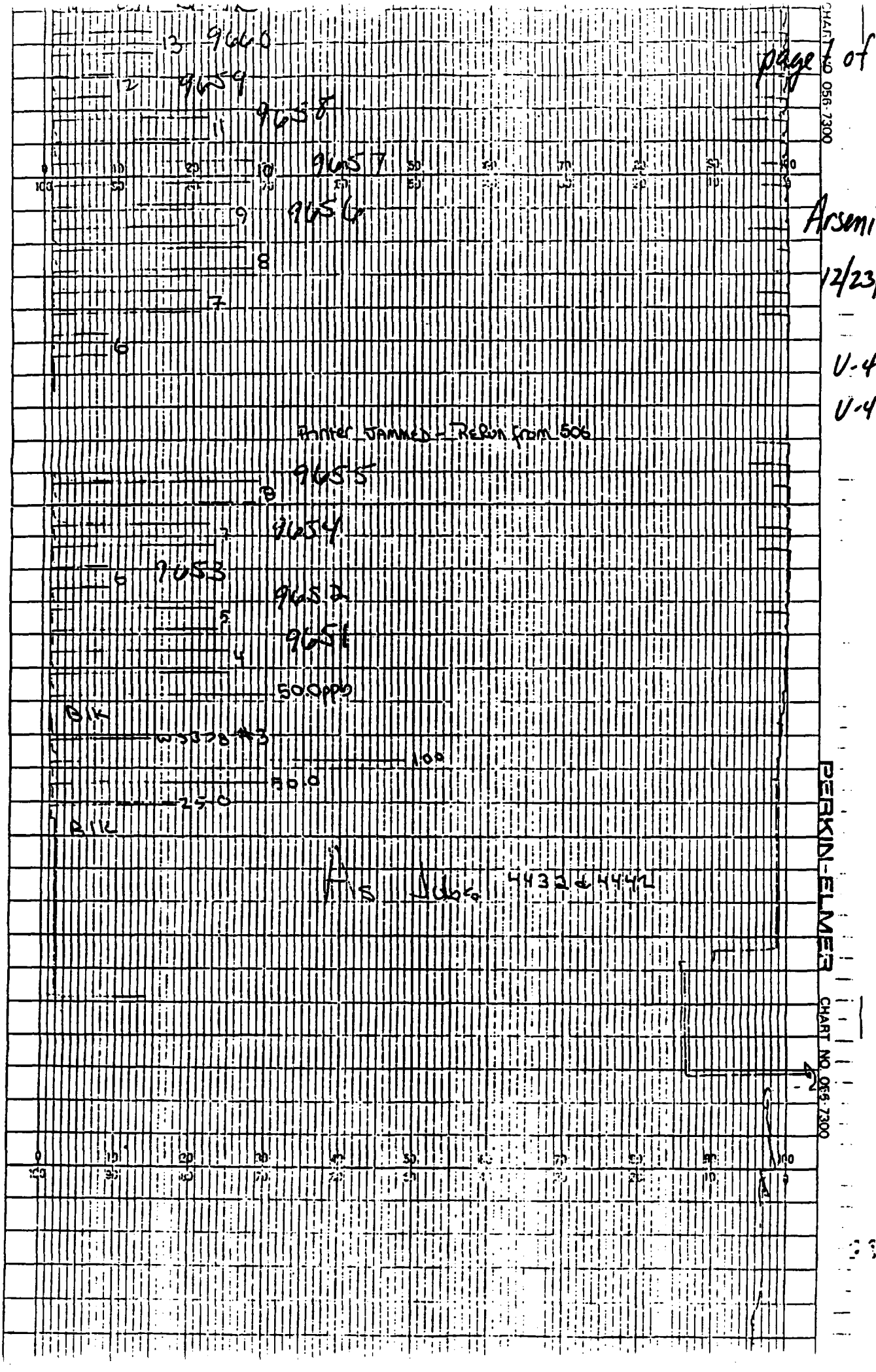
DF = 1 → 10

	25.2	
	26.0	
522	25.5	AV
	2.21	CV

520	96.8	
521	115.9	C
522	46.3	

Poor INJ.

523	58.6
524	61.6
525	78.0
526	21.0
527	63.3


page 1 of 4
Arsenic
12/23/86
U-4432
U-4442
Printer JAMMED - Rerun from 506
9660
9659
9658
9657
9656
9655
9654
9653
9652
9651
500ppb
100
50.0
25.0
4432 & 4442
PERKIN-ELMER
CHART NO. 056-7300

page 2 of 4

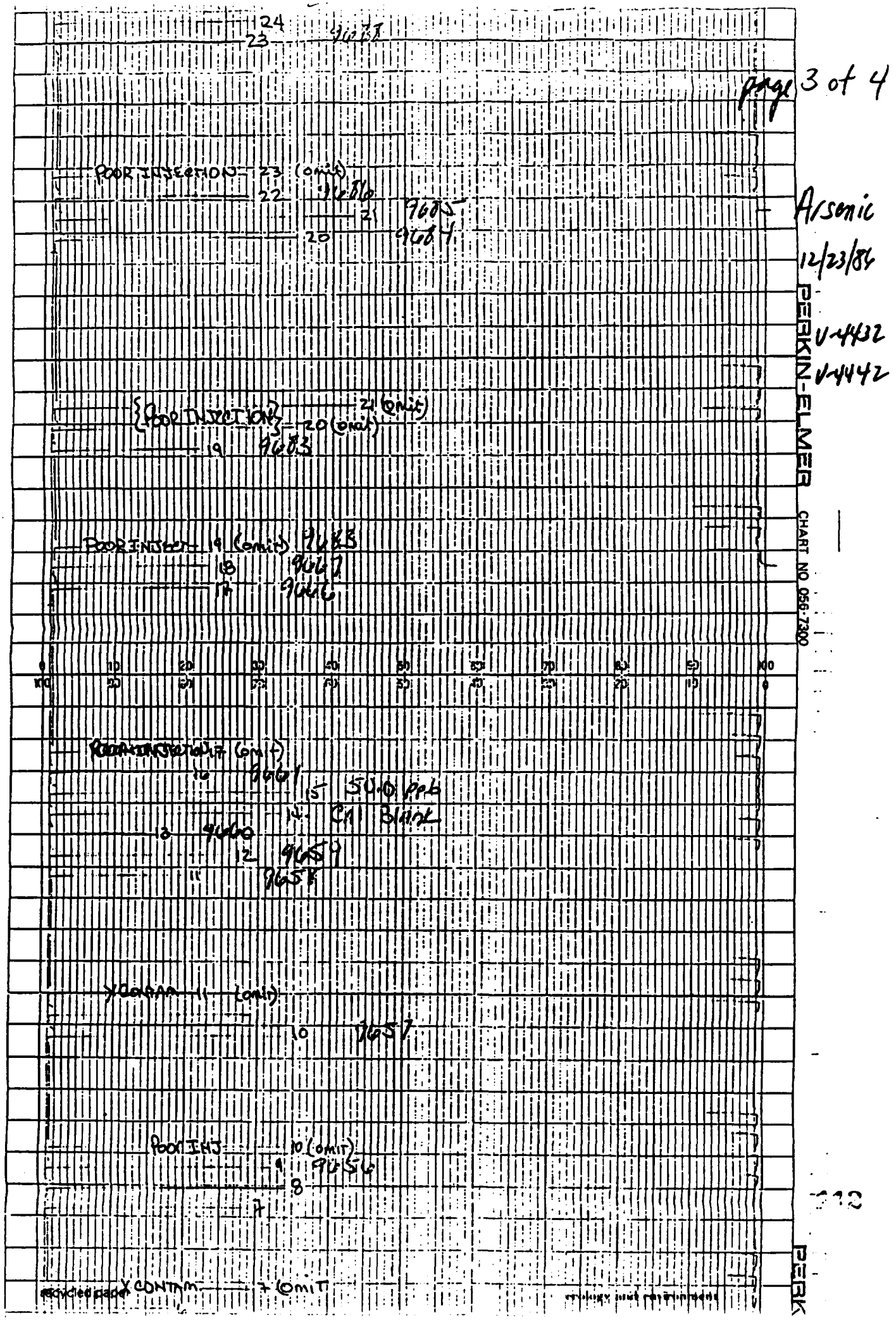
Arsenic
12/23/86

V-4432
V-4442

8 9655
7 9654
X CONTAM 7 (OMIT)
6 9653
5 9652
X CONTAM 5 (OMIT)
4 9651
503 50.0 ppb
502 CAL BLANK
501 WS 378 #3
As Spiked
0 10 20 30 40 50 60 70 80 90 100
100 90 80 70 60 50 40 30 20 10 0
OMIT
22 9686
DF=1+10
27 50.0 ppb
26 CAL BLANK
25 9688 R1 S1
24 9688 R1
23 9688
22 9686
21 9685
20 9684
19 9683
18 9667
17 9666
16 9661
15 50.0 ppb
14
13

PERKIN-ELMER CHART NO 056-7300

PERKIN-ELMER CHART


page 3 of 4
Arsenic
12/23/86
V-4432
V-4442
PERKIN-ELMER
CHART NO 056-7300
POOR INJECTION 23 (omit)
22 9686
21 9685
20 9684
{POOR INJECTION} 21 (omit)
20 (omit)
19 9683
POOR INJECT 19 (omit) 9682
18 9667
17 9666
POOR INJECTION 17 (omit)
16 9661
15 540 ppb
14 CA Blank
13 9660
12 9659
11 9658
10 9657
POOR INJ 10 (omit)
9 9656
8
7
CONTAM 7 (omit)
PERK

page 4 of 4

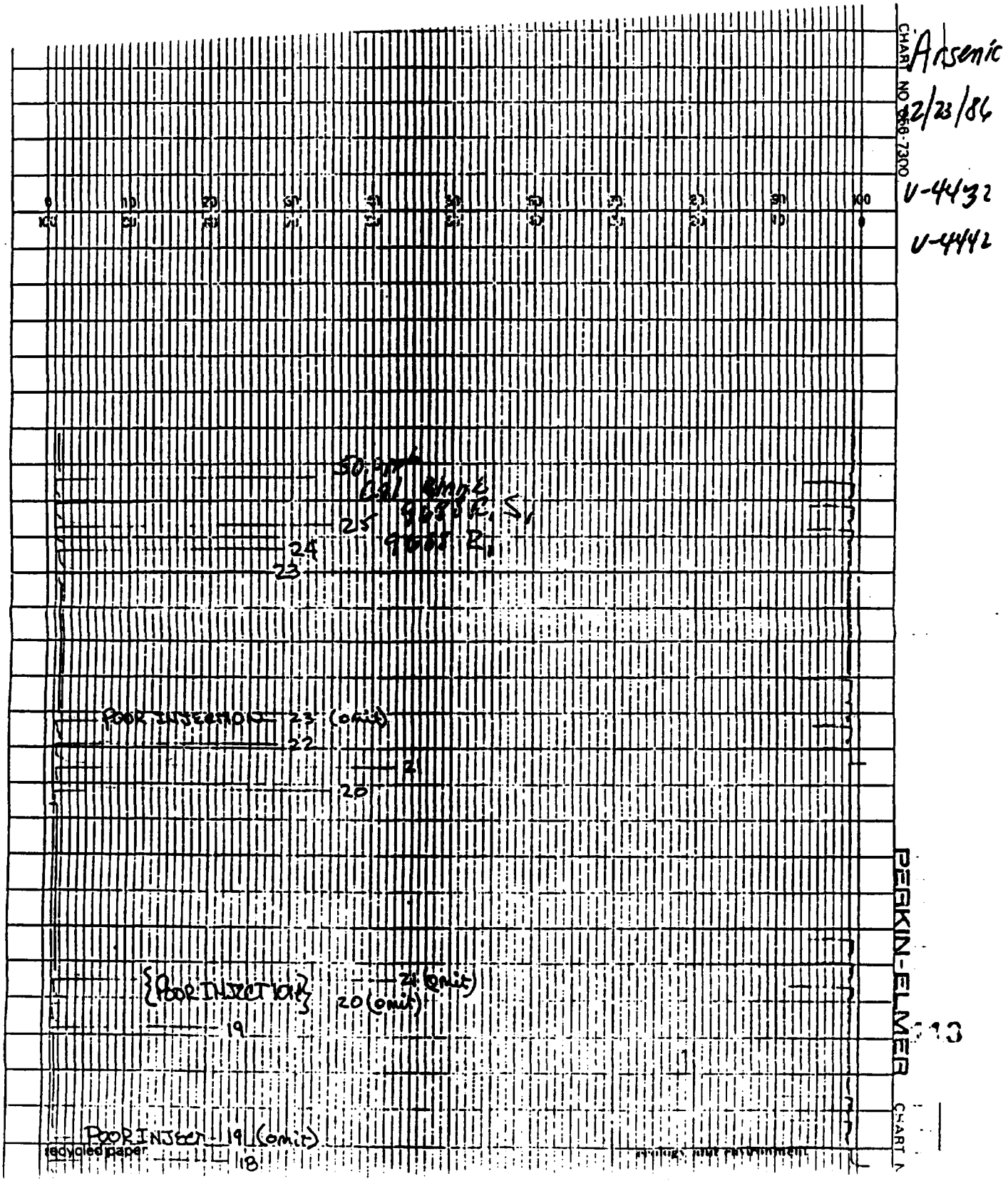


CHART NO 858-7300
Arsenic
12/23/86
V-4432
V-4442
25
24
23
POOR INJECTION 23 (omit)
22
21
20
{POOR INJECTION} 21 (omit)
20 (omit)
19
POOR INJECT 19 (omit)
18
recycled paper
PERKIN-ELMER
CHART

TITLE _____ Project No. _____ Book No. _____ COPY

Test Performed No. [illegible]
Received: [illegible]
Work Performed By: [illegible]

See pg 10

Job No.	ID No.	Custody Seal Intact Yes No	Secure Storage Area Received From N	C	ppb Burn 1	ppb Burn 2	ppb Ave	CV	100 ppb Spike	% Rec	DF	Sample Wt	Units	Final Conc
	[illegible]				16.1				20.3	02			µg/l	101
	Cal Blk				0.1				6.1	06				<5.00
	50.0 ppb				51.9				73.0					51.9
4441	9680.0603				0.8	2.3	1.5	-	9.1	11				<5.00
	9680.R1				0.6	0.2	0.2	-	9.0	10				<5.00
	9680.R2				17.1	17.9	17.5	3.23	36.7					88% Rec
	9681.0603				05 ER	05 ER	05 ER	-						
	9682.0603				58.4	56.1	57.6	2.09	96.2					
	Blk 923				0.5	6.7	6.0	-	10.7	107			µg/l	<5.00
4465	9653.0302				54.5	53.1	50.3	4.52	96.7			1.00	mg/kg	
	Blk 912				7.4	6.5	6.9	9.16	20.0				µg/l	
4503	10210.0102				46.7				87.5			1.02	mg/kg	
	Blk 90[illegible]				-1.2				8.5	85			µg/l	<5.00
	Cal Blk				-1.9				9.0	90				<5.00
	50.0 ppb				49.4				89.4					49.4
	9681.0603				24.0	24.[illegible]	24.5	0.29	46.[illegible]		.1→10		µg/l	
4441	9681.0603				35.6	37.1	36.4	2.92	46.[illegible]	99	.1→10		µg/l	36.40
	9682.0603				85.5	83.8	84.6	1.42	96.2	116			µg/l	84.6
~~4465~~ 4432	9653.0302				86.5	88.8	87.7	1.86	96.7	90		1.00	mg/kg	~~8.7~~ 17.5
	Blk 912				3.1	3.0	3.1	2.32	8.8	88			µg/l	<5.00
4[illegible]	10210.0102				69.5				80.7	112		1.02	mg/kg	6.81
	Cal Blk				0.4				7.0	70			µg/l	<5.00
	50.0 ppb				51.5				84.4					51.5

Other Client

Other Client

To Page No.

Witnessed/Understood by me: Bill Rohrbach

Date: 1/6/87

Presented by: [illegible]

Recorded by: [illegible]

Date: 1/[illegible]/87

[illegible]

HGA FORM #1

ELEMENT: Pb, DATE: 1/5/87.

S_1 = 25.0 PPB., S_2 = 50.0 PPI

S_3 = 100 PPB, BOOK NO. 266, pg. 33

Pb

	_01	WS 378 #3
	X02	CAL BLANK
	X03	50.0 ppb
	X04	9680.0603
JOB #:	X05	9680. R1
	X06	9680. R.S1
	X07	9681.0603 (.1 → 10)
	X08	9682.0603
	X09	BLK 923
	X10	9653.0402
	X11	BLK 912
	X12	10216.0102 — Other Client
	X13	BLK 965
	X14	CAL BLANK
	X15	50.0 ppb
	X16	
	X17	, S_2
	X18	
	X19	4 9681.0603 (.1 → 10)
	X20	5 9682.0603
	X21	6 9653.0302
	X22	7 BLK 912
	X23	8 10216.0102 — Other Client
	X24	
	X25	
	X26	
	X27	
	X28	
	X29	
	X30	
	X31	
	X32	
	X33	
	X34	
	X35	, S_3

	-0.164	
	0.000	AZ
	0.135	
	25.0	S1
	47.0	C
	50.0	S2
	96.4	C
	100.0	S3
201	16.1	
202	0.1	
203	51.9	
	0.8	
	2.3	
204	1.5	AV
	68.43	CV
	0.6	
	-0.2	
205	0.2	AV
	06	ER
	17.1	
	17.9	
206	17.5	AV
	3.23	CV
	05	ER
	05	ER
207	05	ER
	0.00	CV
	58.4	
	56.7	
208	57.6	AV
	2.09	CV
	0.5	
	0.7	
209	0.6	AV
	23.57	CV
	54.5	
	58.1	
210	56.3	AV
	4.52	CV
	7.4	
	6.5	
211	6.9	AV
	9.16	CV
~~212~~	~~100.3~~	
212	46.7	DF = 1→2
213	-1.2	
214	-1.9	
215	~~42.8~~	
215	~~44.7~~	
215	49.4	

203	49.9	
	35.6	
	37.1	
204	36.4	AV
	2.92	CV
	85.5	
	93.8	
205	84.6	AV
	1.42	CV
	86.5	
	88.8	
206	87.7	AV
	1.86	CV
	3.1	
	3.0	
207	3.1	AV
	2.32	CV
208	69.5	
209	0.4	
210	51.5	

207	8.8	
208	80.7	
209	7.0	
210	84.4	

201	26.3	
202	6.6	
203	78.0	
204	9.1	
205	9.0	
206	36.7	
207	45.3	
208	95.2	
209	10.7	
210	96.7	
211	20.0	
212	87.5	
213	8.5	
214	9.0	
215	89.4	

201	38.0	
202	29.3	
203	69.5	
204	23.9	
205	20.8	
206	44.7	
~~207~~	~~[illegible]~~	C
208	78.4	
209	26.0	
210	80.1	
211	31.6	
212	74.6	
213	30.1	
214	28.1	
215	75.7	

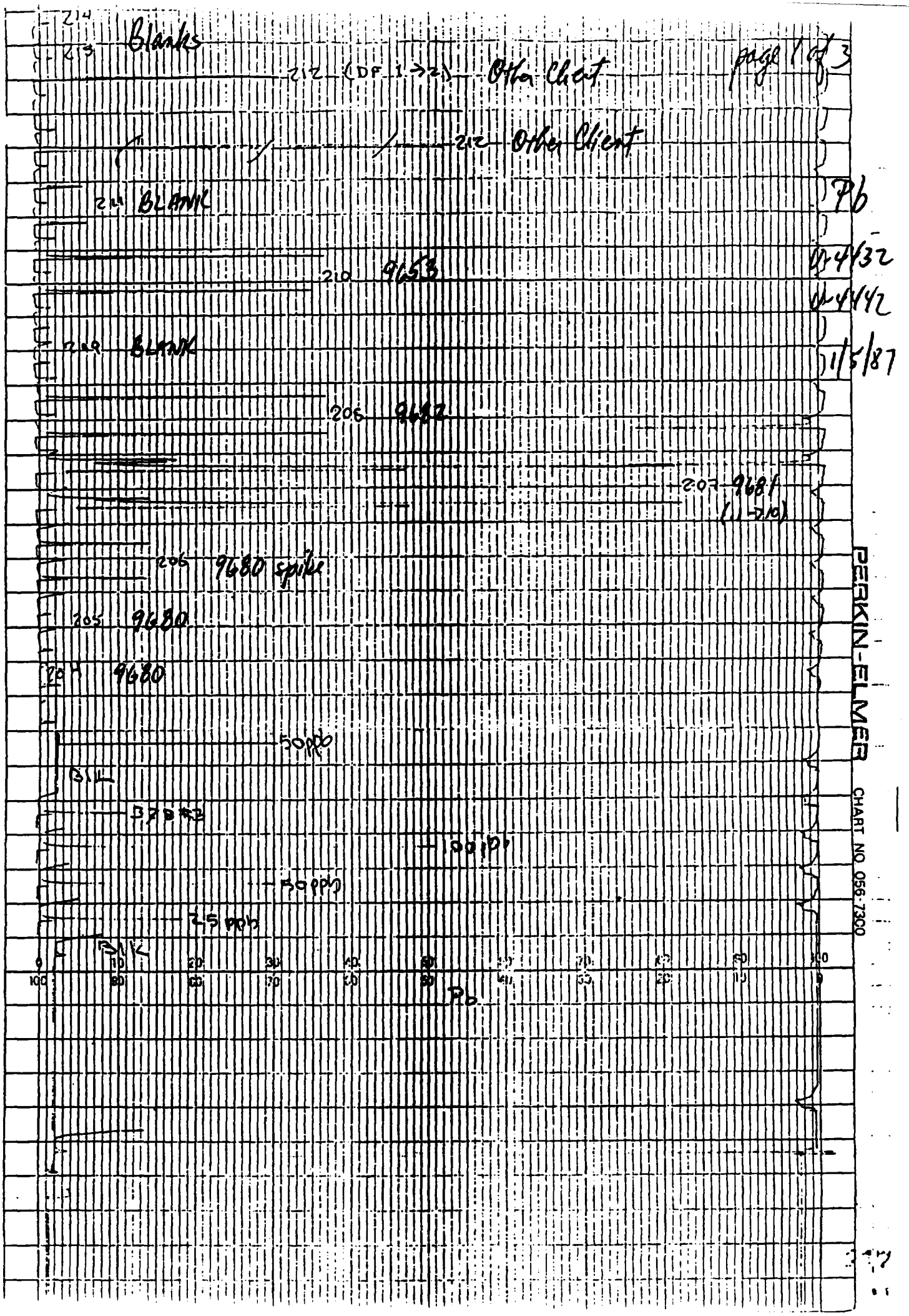
DF= .1→10

	24.6	
	24.5	
207	24.5	AV
	0.29	CV

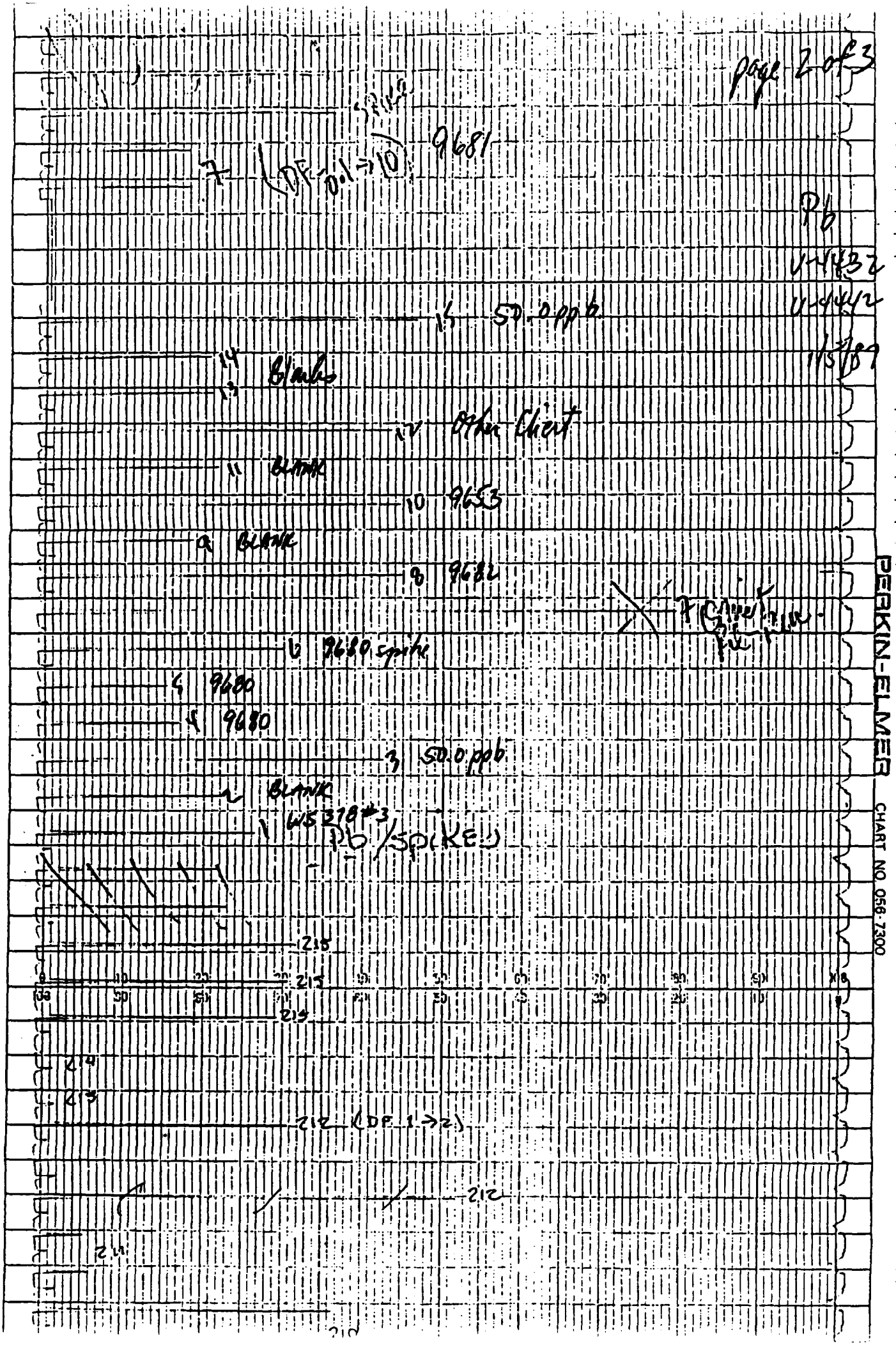
~~207~~ X-contam. ~~54.0~~

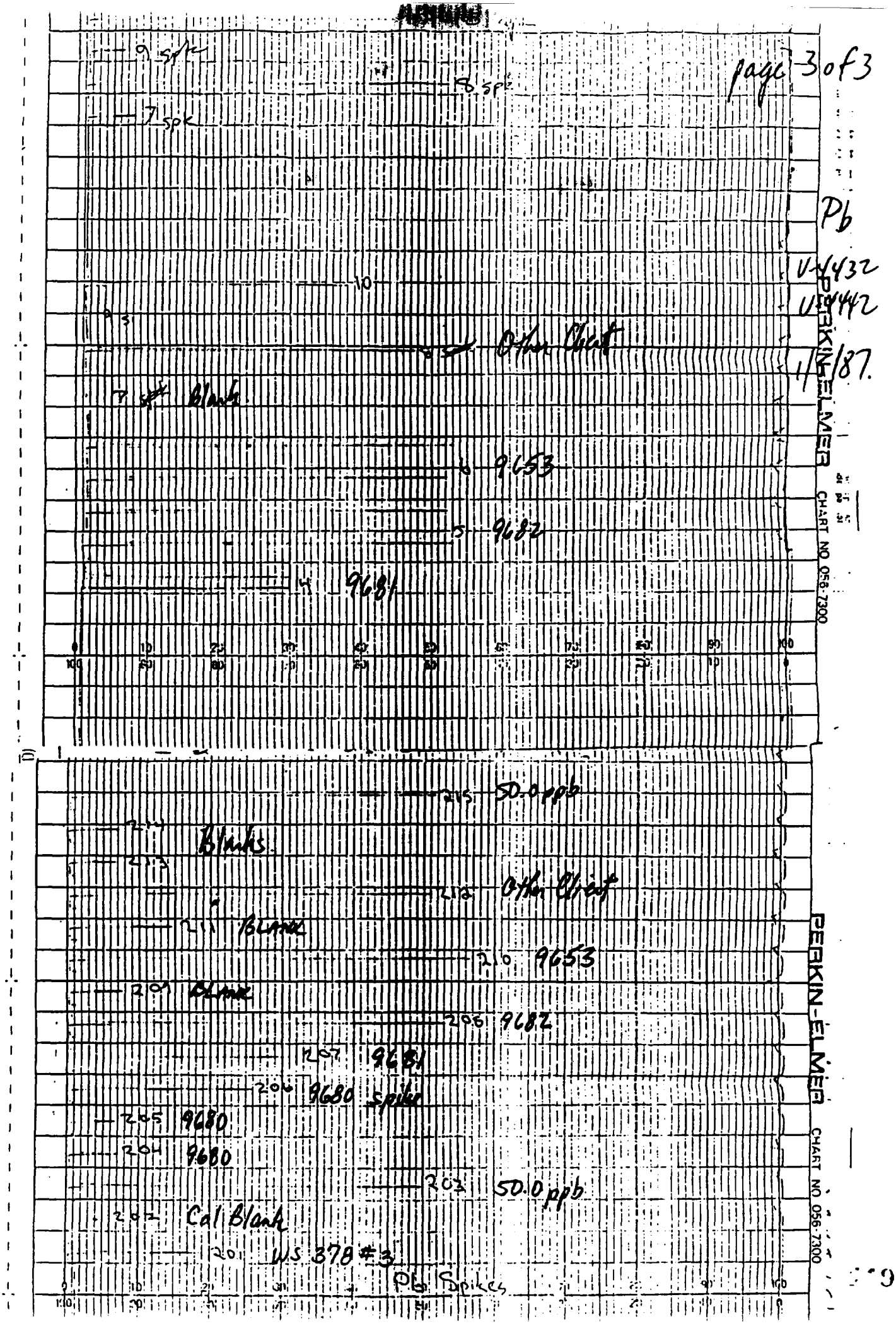
Re-RUN

207	52.6



Blanks
212 (DF 1→2) Other Client
page 1 of 3
212 Other Client
BLANK
Pb
210 9653
U-4432
U-4442
BLANK
1/5/87
206 9682
207 9681
(1→10)
206 9680 spike
205 9680
204 9680
50ppb
BLK
378 #3
100 ppb
50ppb
25 ppb
BLK
Pb
PERKIN-ELMER
CHART NO. 056-7300


page 2 of 3
7 (DF 0.1 → 10) 9681
Pb
U-4432
U-4442
1/5/89
15 50.0 ppb
14
13 Blanks
12 Other Client
11 BLANK
10 9653
9 BLANK
8 9682
7 Client
6 9680 spike
5 9680
4 9680
3 50.0 ppb
2 BLANK
1 WS 378 #3
Pb/SPIKED
215
215
215
214
213
212 (DF 1 → 2)
212
211
210
PERKIN-ELMER
CHART NO 056-7300


page 3 of 3
Pb
V-4432
V-4442
1/5/87.
9 spk
8 spk
7 spk
10
9
Other Chart
7 spk Blank
6 9653
5 9682
4 9681
PERKIN-ELMER
CHART NO 056-7300
215 50.0 ppb
214 Blanks
213
212 Other Chart
211 BLANK
210 9653
209 BLANK
208 9682
207 9681
206 9680 spike
205 9680
204 9680
203 50.0 ppb
202 Cal Blank
201 WS 378 #3
Pb Spikes
PERKIN-ELMER
CHART NO 056-7300

LF

CLP-SOILS: 1 REP +20% QC.
(SEE Page 59-60 Book 224 – IL Vol. XXII)

(SEE Page 1)

om Page No.
t Performed: Hg
te Received: NOVEMBER 21, 1986
rk Performed By: [signature]

All sample volume = 100 mL

Job No.	ID No.	Custody Seal Intact Yes No	Secure Storage Area Received From		READ	(µg/L) CONC.	µg ~~D.F.~~	AMOUNT OF SAMPLE	UNITS	FINAL CONC.	
											r = .999982
	Blank				3						y = .048x - .127
	0.2 µg/L				7						
	0.4				11						
	0.8				19						
	2.0				44						
	4.0				85						
	8.0				169						
	WS 348 #14				95	4.45		100 ml	µg/L	4.45	(Known = 4.40)
4432	9651.04	No	A-4		27	1.17	0.117 µg	0.30 gm	mg/Kg	0.391	
	9652.04	No	A-4		41	1.85	0.185 µg	0.37 gm		0.500	
	9653.04	No	A-4		9	.31	0.031	0.36 gm		<0.10	B#[illegible]
	9654.04	No	A-4		26	1.13	0.113	0.35 gm		0.322	
	9655.04	No	A-4		10	.35	0.035	0.38 gm		<0.10	
	9656.04	No	A-4		38	1.70		0.36 gm		0.473	
	9657.04	No	A-4		72	3.34		0.39 gm		0.860	
	9658.04	No	A-4		45	2.04		0.39 gm		0.524	
	9659.04	No	A-4		26	1.13		0.36 gm		0.313	
	9660.04	No	A-4		33	1.46		0.33 gm		0.443	
	9661.04	No	A-4		52	2.38		0.34 gm		0.700	
	9662.04	No	A-4		136	6.43		0.36 gm		1.79	
	9663.04	No	A-4		31	1.37		0.35 gm		0.391	
	9664.04	No	A-4		46	2.09		0.35 gm		0.600	
	9665.04	No	A-4		10	.35		0.38 gm		<0.10	
	9666.04	No	A-4		11	.40		0.33 gm		0.122	
	9667.04	No	A-4		5	<.20		0.35 gm		<0.10	
	9667.Rep	No	A-4		5	<.20		0.36 gm		<0.10	
	9667 + 1.0 ppb	No	A-4		24	1.03		0.37 gm	mg/Kg		(103% REC)

To Page No. 28

Witnessed & Understood by me. | Date 11/21/86 | Invented by [signature] | Date 11/21/86

Project No._____

Book No._____ TITLE _____

From Page No. 27

Performed: Hg (CONT'D)

Date Received: NOVEMBER 21, 1986

Work Performed By: [signature]

Job No.	ID No.	Custody Seal Intact Yes No	Secure Storage Area Received From		Read	Conc.	D.F.	Amount of Sample	Units	Final Conc.	
4442	9683.04		NO	A-16	6	<.20		0.31 gm	mg/Kg	<0.10	
	9683. Rep.		No	A-16	6	<.20		0.36 gm		<0.10	
	9683 H.O ppb		No	A-16	25	1.08		0.31 gm			(108% Rec.)
	9684.04		No	A-16	>180	> 8.00		0.35 gm		/	(over-cal → Re Run)
	9685.04		No	A-16	178	8.45		0.33 gm		2.56	
	9686.04		No	A-16	>180	> 8.00		0.32 gm		/	(over-cal → Re Run)
	9687.04		No	A-16	136	6.43		0.39 gm		1.65	
	9688.04		No	A-16	64	2.96		0.39 gm	mg/Kg	0.760	[signature]

To Page No. ____

Witnessed & Understood by me. [signature] Date 11/21/86 Invented by [signature] Date 11/21/86

Page No: 5
Performed:
Received: 12/22/91
Performed By: J. Gray

Sampling

Job No.	ID No.	Custody Seal Intact Yes	No	Secure Storage Area Received From		ppb Burn 1	ppb Burn 2	ppb Ave	CV	10.0ppb Spike	% Rec	DF	Sample Wgt	Limits	Final Conc
				N	C										
	WS373#14					8.45	8.70	8.58	2.06	23.10	145			µg/l	8.55
	CalBlk					-0.37	-0.43	-0.40	—	8.12	86				<5.00
	25.0ppb					25.76	26.24	26.00	1.31	36.13	101			µg/l	26.0
132	9651.0402					8.06	7.69	7.88	3.32	14.12	/		1.06	mg/kg	/
	9652.0402					8.78	9.53	9.15	5.79	14.42	/		1.02		/
	9653.0402					0.61	0.64	0.63	—	9.05	91		1.00		<
	9654.0402					2.01	1.68	1.85		9.56	80		1.06		<
	9655.0402					2.76	2.40	2.58	9.87	12.04	95		1.09		<
	9656.0402					~~1.87~~ 9.98	~~2.95~~ 9.96	9.97	5.32	15.73	/		1.09		/
	9657.0402					3.75	3.79	3.77	0.79	12.12	90		1.08		<
	9658.0402					1.81	2.42	2.12	17.0	12.05	99 ✓		1.05		<
	9659.0402					2.61	2.29	2.45	9.24	12.43	99		1.09		<
	9660.0402					3.74	3.32	3.52	8.41	9.58	61		1.04	mg/kg	<
	CalBlk					-0.30	-0.29	-0.29	—	9.31	93			µg/l	<5.00
	25.0ppb					24.23	23.95	24.09	1.85	33.21	92			µg/l	24.1
	9661.0402					4.77	4.63	4.70	2.41	13.95	84		1.01	mg/kg	<
	9662.0402					6.28	6.05	6.17	2.64	13.58	/		1.01		/
	9663.0402					0.94	0.92	0.93	—	10.39	104		1.03		<
	9664.0402					2.91	2.83	2.87	1.97	10.36	79		1.04		<
	9665.0402					2.59	2.14	2.37	13.5	11.33	95		1.09		<
	9666.0402					1.61	1.24	1.43	18.4	10.21	89		1.02		<
	9667.0402					1.54	1.51	1.53	1.39	10.45	89		1.09	mg/kg	<
	Blk925					-0.69	-0.73	-0.71	3.93	7.62	76			µg/l	<5.00
144.2	9683.0402					1.00	1.32	1.16	19.5	9.41	93		1.09	mg/kg	<
	9684.0402					4.56	4.71	4.63	3.45	11.50	67		1.00	mg/kg	<
	CalBlk					-0.94	-0.36	-0.65	—	9.08	91			µg/l	<5.00
	25.0ppb					27.72	23.23	25.51	1.66	23.34	/			µg/l	23.5
	9685.0402					9.43	9.47	9.45	0.28	11.46	/		1.05	mg/kg	/
	9686.0402					19.42	18.66	19.04	5.29	31.68	/		1.02	mg/kg	/

To Page No. 372

E _____ Book No. _____

Page No. 26 Go (cont'd)
st Performed: _____
te Received: 12/23/86
r formed By: J.G.M.P.

Job No.	ID No.	Custody Seal Intact Yes No	Secure Storage Area Received From N	C	ppb Burn 1	ppb Burn 2	ppb Ave	CV	10.0 ppb Spike	% Rec	DF	Samp Wgt	Units	Fnal Conc
	9687.0402				9.27	10.[illegible]	9.76	7.10	13.48	/		1.09	mg/kg	/
442	9688.0402				4.19	4.36	4.27	2.81	10.49	62		1.03		<
	9688.R1				4.39	4.40	4.39	0.1[illegible]	10.38	60		1.06		<
	9688.R1S1				12.39	12.36	12.63	2.63	14.04	/		1.01	mg/kg	83%
	Blk 912				-0.48	-0.5[illegible]	-0.52	–	6.83	65			µg/l	<5.0
	Cal Blk				-0.29	-0.05	-0.18	–	7.72	77				<5.0
	250 ppb				26.58	Jo			24.91	/			µg/l	26.6
									17.46					
432	9651.0402				9.18	8.94	9.06	12.[illegible]	18.35	93		1.06	mg/kg	
	9652.0402				7.61	7.73	7.69	1.56	~~[illegible]~~ Jo	/ 98		1.02		
	9656.0402				11.68	11.61	11.64	0.4[illegible]	20.54	89		1.09		
	9662.0402				7.61	7.55	7.58	0.5[illegible]	19.22	116		1.01		
442	9685.0402				9.15	9.20	9.17	0.[illegible]	22.88	/		1.05		/
	9686.0402				18.11	18.12	18.11	0.04	26.45	/		1.06		/
	9687.0402				8.86	9.20	9.03	2.6[illegible]	20.25	112		1.09	mg/kg	
	Cal Blk				0.10	0.3[illegible]	0.20	–					<µg/l	
	25.0 ppb				25.3	25.09	25.21	0.93					µg/l	
	9685.0402				11.09	10.67	10.88	2.73	22.06	112				
	9686.0402				9.83	9.98	9.91	1.07	16.07	/	1→2			/
	9686.0402				4.53	4.79	4.66	3.95	10.19	102	2→10		mg/kg	<

To Page No. ____

nessed & Understood by me. | Date | Invented by | Date

HGA FORM #1

ELEMENT: Se, DATE: 12/19/86.

S_1 = 10.00 PPB., S_2 = 25.0 PPB

S_3 = 50.0 PPB, BOOK NO. 266, 19

	_01	WS 373#14	
	X02	Cal BLK	
	X03	25.0 ppb	
	X04	9651.0402	
JOB #:	X05	9652	
	X06	9653	
	X07	9654	
	X08	9655	
	X09	9656	
	X10	9657	
	X11	9658	
	X12	9659	
	X13	9660	
	X14	Cal BLK	
	X15	25.0 ppb	
	X16	9661.0402	
	X17	9662	, S_2
	X18	9663	
	X19	9664	
	X20	9665	
	X21	9666	
	X22	9667	
	X23	BLK 923	
	X24	9683.0402	
	X25	9684	
	X26	Cal BLK	
	X27	25.0 ppb	
	X28	9685.0402	
	X29	9686	
	X30	9687	
	X31	9688	
	X32	9688 K1	
	X33	9688 K1 S1	
	X34	BLK 917	
	X35	Cal BLK	, S_3
		25.0 ppb	

	-0.009	
	0.000	AZ
	0.036	
	10.00	S1
	24.74	C
	25.00	S2
	46.24	C
	8.45	
	8.70	
601	8.58	AV
	2.06	CV
	-0.37	
	-0.43	
602	-0.40	AV
	10.61	CV
	25.76	
	26.24	
603	26.00	AV
	1.31	CV
	8.06	
	7.69	
604	7.88	AV
	3.32	CV
	8.78	
	9.53	
605	9.15	AV
	5.79	CV
	0.61	
	0.64	
606	0.63	AV
	3.39	CV
	2.01	
	1.68	
607	1.85	AV
	12.65	CV
	2.76	
	2.40	
608	2.58	AV
	9.87	CV
	9.59	
	10.34	
609	9.97	AV
	5.32	CV
	3.75	
	3.79	
610	3.77	AV
	0.75	CV
	1.87	
	2.38	
611	2.12	AV
	10.97	CV
	2.61	
	2.29	
612	2.45	AV
	9.24	CV
[illegible]	3.74	
	[illegible]	

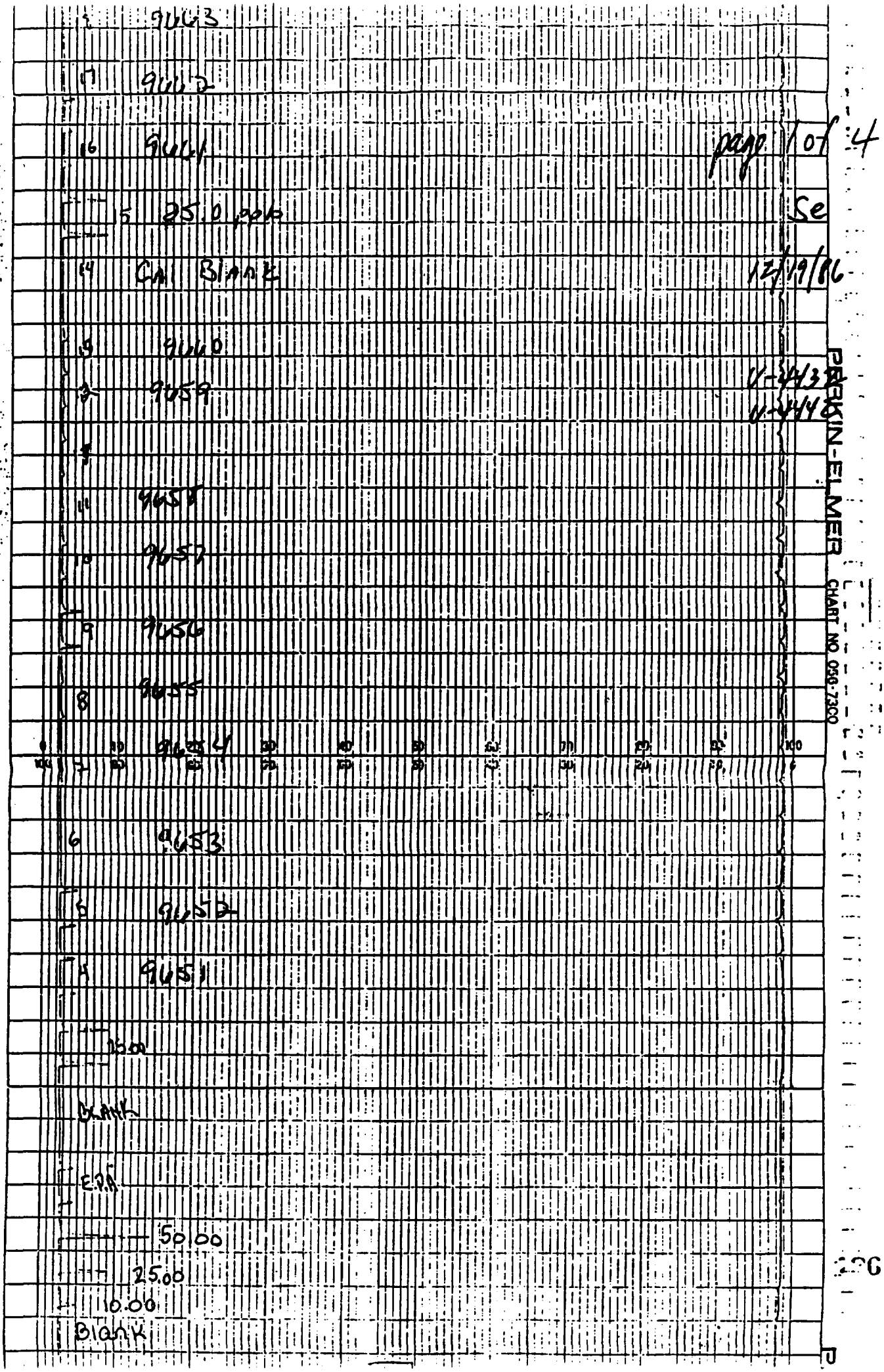
Se

12/19/86

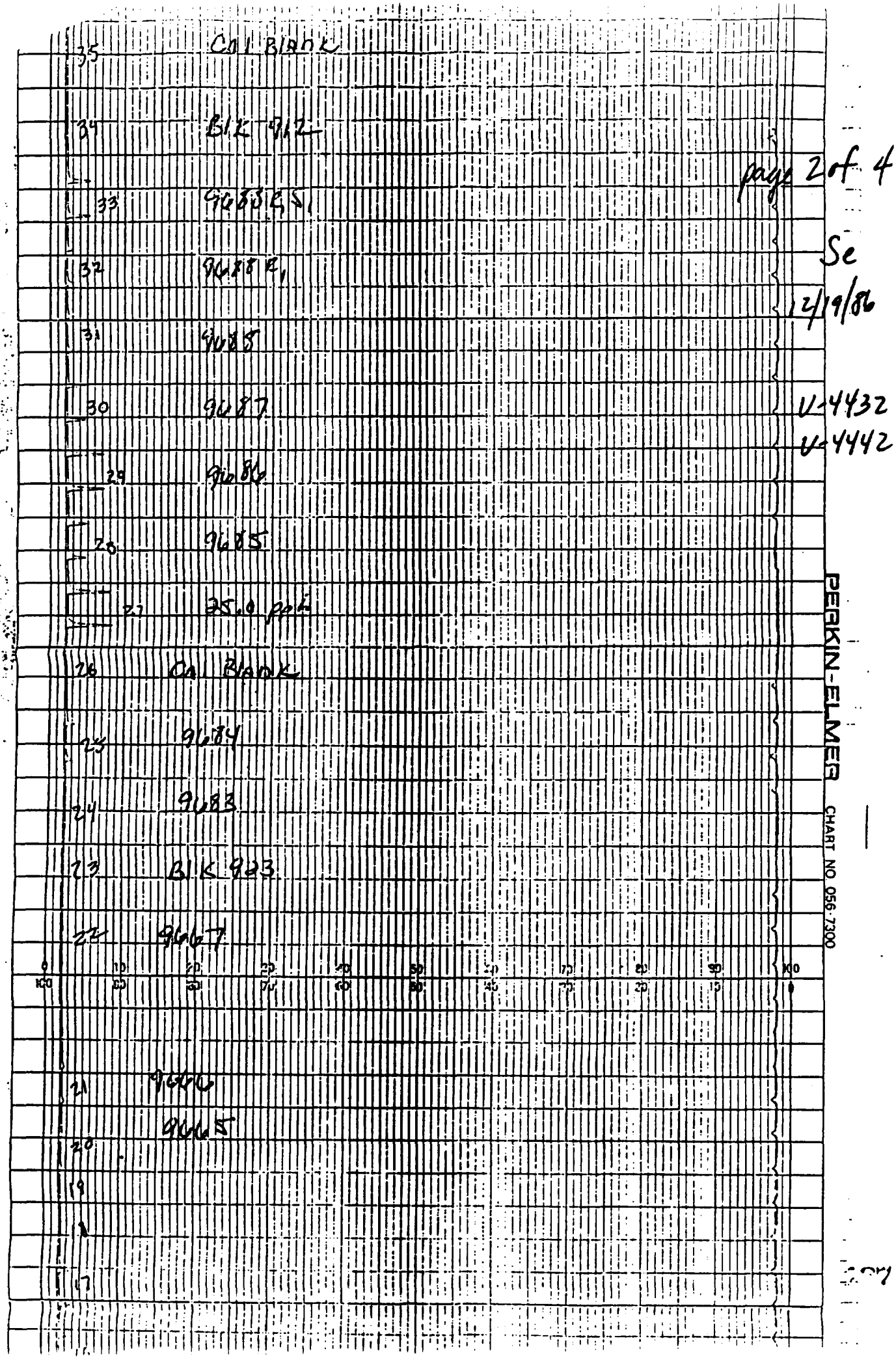
613	3.52	AV
	8.41	CV
	-0.30	
	-0.29	
614	-0.29	AV
	2.40	CV
	24.28	
	23.82	
615	24.05	AV
	1.35	CV
	4.77	
	4.63	
616	4.70	AV
	2.11	CV
	6.28	
	6.05	
617	6.17	AV
	2.64	CV
	0.54	
	0.92	
618	0.73	AV
	36.81	CV
	2.91	
	2.83	
619	2.87	AV
	1.97	CV
	2.59	
	2.14	
620	2.37	AV
	13.45	CV
	1.61	
	1.24	
621	1.43	AV
	18.36	CV
	1.54	
	1.51	
622	1.53	AV
	1.39	CV
	-0.69	
	-0.73	
623	-0.71	AV
	3.98	CV
	1.00	
	1.32	

624	1.16	AV
	19.51	CV
	4.56	
	4.79	
625	4.68	AV
	3.43	CV
	-0.94	
	-0.36	
626	-0.65	AV
	63.10	CV
	23.79	
	23.23	
627	23.51	AV
	1.66	CV
	9.48	
	9.47	
628	9.48	AV
	0.09	CV
	19.40	
	18.00	
629	18.70	AV
	5.29	CV
	9.27	
	10.25	
630	9.76	AV
	7.10	CV
	4.19	
	4.36	
631	4.27	AV
	2.81	CV
	4.39	
	4.40	
632	4.39	AV
	0.16	CV
	12.39	
	12.86	
633	12.63	AV
	2.63	CV
	-0.48	
	-0.56	
634	-0.52	AV
	10.88	CV
	-0.29	
	-0.08	
635	-0.16	AV
	80.27	CV
636	[illegible]	[illegible]
636	[illegible]	[illegible]

601	23.10
602	8.62
603	36.13
604	14.12
605	14.42
606	9.05
607	9.86
608	12.04
609	15.73
610	12.78
611	12.05
612	12.33
613	9.58
614	9.34
615	33.21
616	13.05
617	13.56
618	10.39
619	10.80
620	11.83
621	10.34
622	10.45
623	7.62
624	9.41
625	11.39
626	9.08
627	28.34
628	14.46
629	31.08
630	13.48
631	10.49
632	10.38
633	14.04
634	6.83
635	7.72
636	24.91



9663
17 9662
16 9661
15 25.0 ppb
14 Cal Blank
13 9660
12 9659
11 9658
10 9657
9 9656
8 9655
9654
6 9653
5 9652
4 9651
15.00
BLANK
E.P.A.
50.00
25.00
10.00
Blank
page 1 of 4
Se
12/19/86
V-4432
V-4448
PERKIN-ELMER
CHART NO. 050-7300



page 2 of 4

Se

12/19/86

V-4432

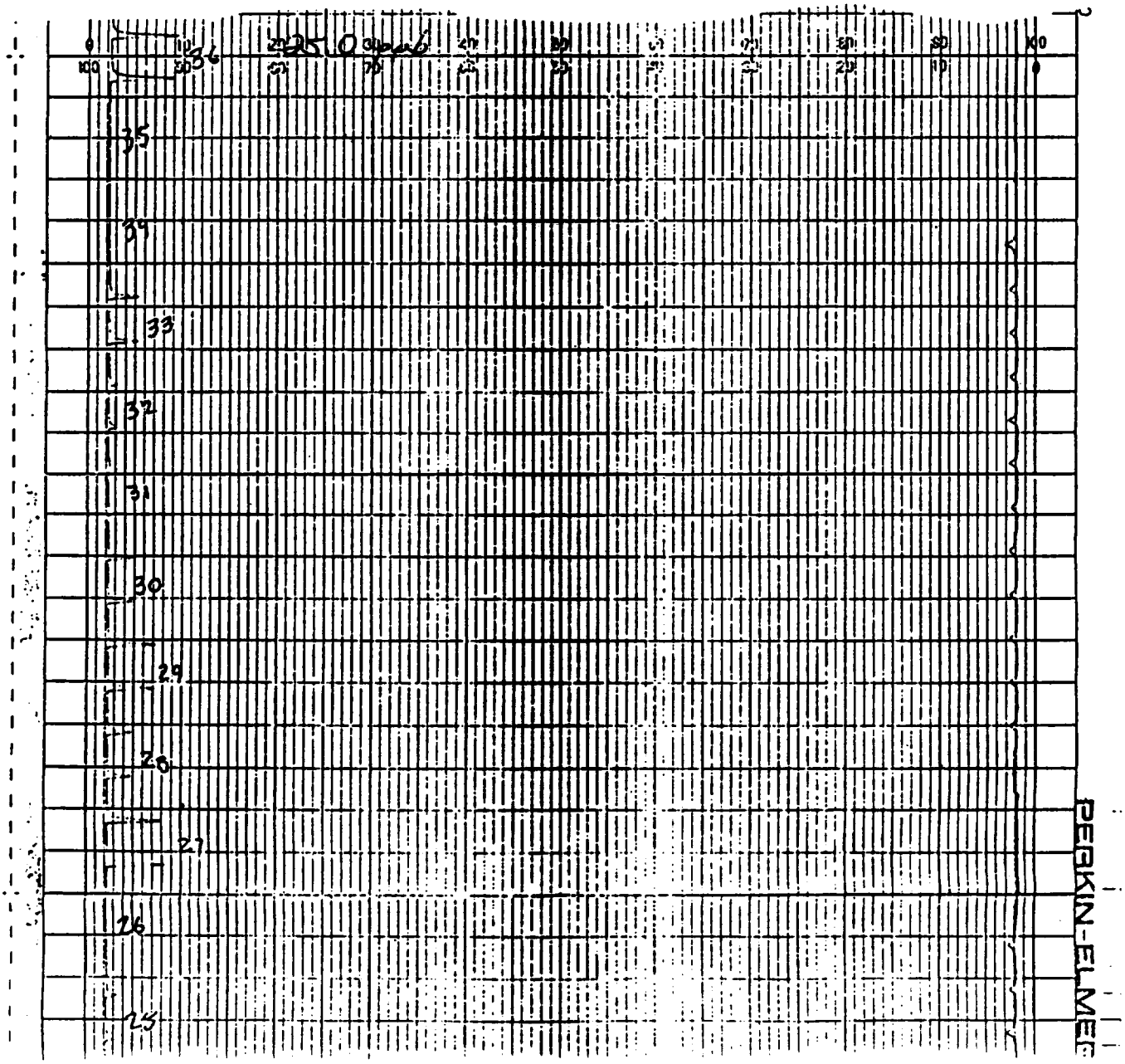
V-4442

page 3 of 4

Sc

12/19/86

U-4432
U-4442



page 4 of 4

Se

12/19/86.

U-4432

U-9942

36	250 ppb
35	Cal Blank
34	Blk Spl D
33	96882
32	96881
31	96880
30	96879
29	96878
28	96875
27	250 ppb
26	Cal Blank
25	96874
24	96873
23	BLC 923
22	96867
21	96866
20	96865
19	96864
18	96863
17	96862
16	96861
15	250 ppb
14	Cal Blank
13	96860
12	96859
11	96858
10	96857
9	96856
8	96855
7	96854
6	96853
5	96852
4	96851
3	250 ppb
2	Cal Blank
1	WS 378 #14

PART NO 056-7300
PERKIN-ELMER
CHART NO 056-7300

HGA FORM #1

ELEMENT: So, DATE: 12/23/86.

S_1 = 10.0 PPB., S_2 = 25.0 PPB.

S_3 = 100 PPB, BOOK NO. ,

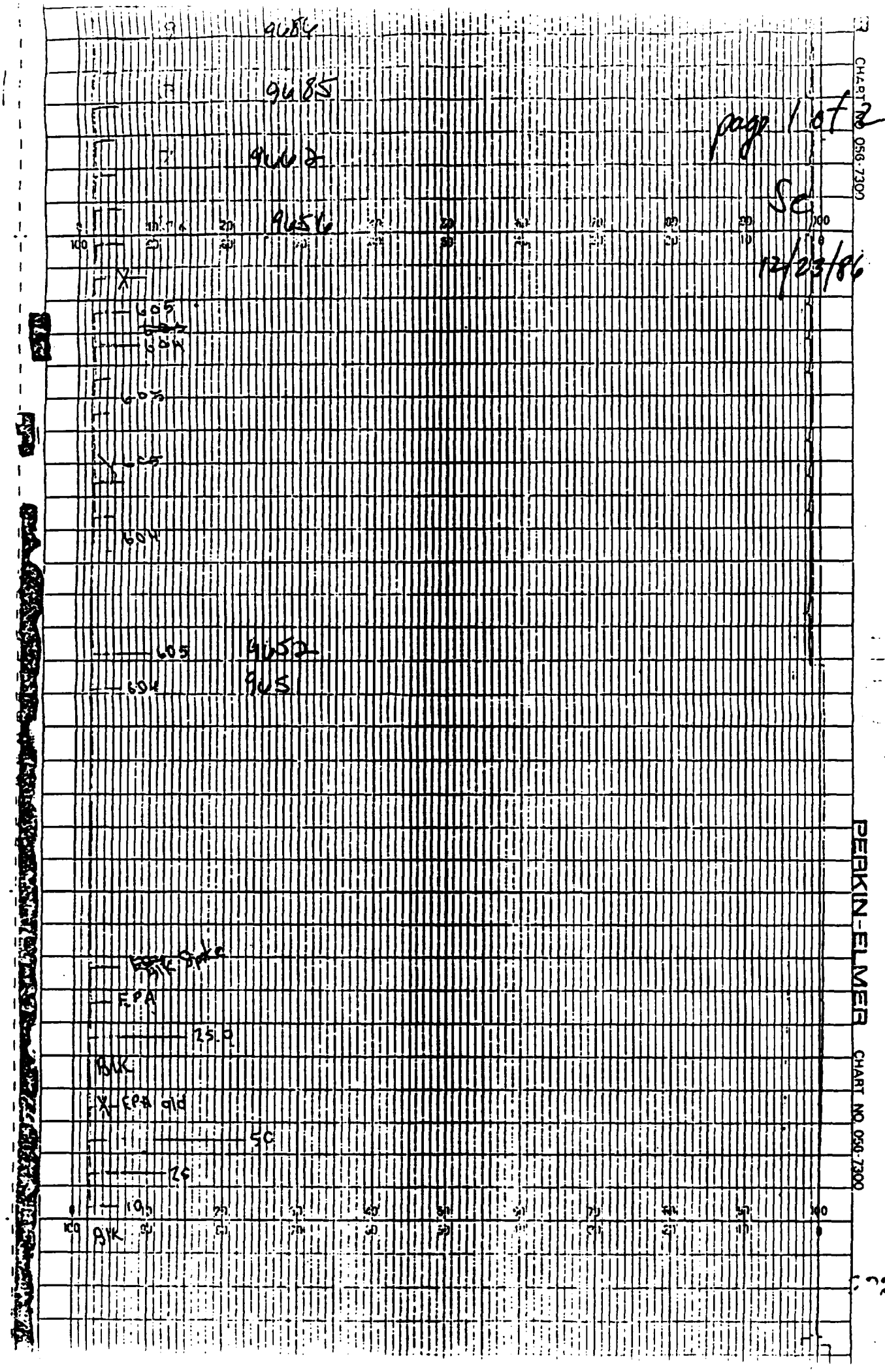
JOB #:

601	105378 #10	
X02	Cal Blk	
X03	250 ppb	
X04	9651.0402	
X05	9652	
X06	9656	
X07	9662	
X08	9685	
X09	9686	
X10	9687	
X11	Cal Blk	
X12	25.0 ppb	
X13		
X14		
X15	9686.0402 (1→2)	
X16	9686 1 (2→10)	
X17		, S_2
X18		
X19		
X20		
X21		
X22		
X23		
X24		
X25		
X26		
X27		
X28		
X29		
X30		
X31		
X32		
X33		
X34		
X35		, S_3

601	7.76	
602	11.08	
604	10.63	
605	21.29	
	0.72	
	0.67	
604	0.70	AV
	5.09	CV
	9.16	
	8.94	
604	9.06	AV
	1.67	CV
	12.16	
	1.98	
605	7.05	AV
	06	ER
	7.61	
	7.78	
605	7.69	AV
	1.56	CV
604	18.38	
605	14.50	
[illegible]	20.54	
	11.68	
	11.61	
606	11.64	AV
	0.43	CV
	7.61	
	7.55	
607	7.58	AV
	0.56	CV
	9.15	
	9.20	
608	9.17	AV
	0.39	CV
	18.11	
	18.12	
609	18.11	AV
	0.04	CV
	8.86	
	9.20	
610	9.03	AV
	2.65	CV
	0.10	
	0.30	
611	0.20	AV
	70.71	CV
	25.37	
	25.04	
612	25.21	AV
	0.93	CV

Se
12/23/86

			11.09	
			10.67	
		608	10.88	AV
			2.73	CV
			19.20	
601	21.10		21.27	
602	12.56	609	20.23	AV
603	40.76		7.23	CV
		608	22.06	
		609	25.65	
605	17.46			
606	23.13			
607	19.22			
608	22.88			
609	26.45		9.83	
610	20.25		9.98	
		615	9.91	AV
			1.07	CV
			16.07	
			4.53	
			4.79	
		616	4.66	AV
			3.95	CV
		616	10.19	



9684
9685
9662
9656
page 1 of 2
SC
12/23/86
605
604
605
604
605
9652
604
9651
EPA
25.0
BLK
X EPA old
50
25
10
BLK
CHART NO 056-7300
PERKIN-ELMER
CHART NO 056-7300

PERKIN-ELMER
CHART NO 056-7300
PERKIN-ELMER
CHART NO 0

Page No.

st Performed: Cm

Received: 12/14/96

Performed By: LCH

λ 336.3 Energy: 44 Time: 5 sec

S1 50.0 ppb S2 100 S3 200

See Slide log # 008 pg. 87

Job No.	ID No.	Custody Seal Intact Yes	No	Secure Storage Area Received From No	C	ppb Run 1	ppb Run 2	ppb Ave.	% CV	50.0 ppb Spike	% Rec	DF	Samp. Wgt	Units	Fin Con
	WS 578 # 3					-0.7				91.2	114			µg/l	<40.
	Cal Blk					-0.9				88.3	110				<40.
	100 ppb					95.9				213.0	/			µg/l	95.
1432	9651.0402					88.6	86.5	87.6	1.70	157.6	88		1.06	mg/kg	
	9652.0402					51.9	52.5	52.2	0.81	118.0	82		1.02		
	9653.0402					2.3	1.6	2.0		71.5	89		1.00		
	9654.0402					68.7	69.1	68.9	0.41	140.6	90		1.06		
	9655.0402					5.0	5.0	5.0	0.00	78.4	98		1.09		
	9656.0402					34.4	33.0	33.7	2.94	94.8	76 ~~119~~		1.09		/
	9657.0402					12.7	12.9	12.8	1.11	90.5	113		1.09		
	9658.0402					6.0	5.1	5.5	11.47	86.2	108		1.05		
	9659.0402					8.2	8.7	8.4	4.18	87.6	110		1.09		
	9660.0402					15.6	16.5	16.1	3.97	94.5	118		1.04	mg/kg	/
	Cal Blk.					-1.5				91.6	115			µg/l	<40
	100 ppb					97.6				/ 05 ER	/			µg/l	97.
	9661.0402					37.9	36.9	37.4	1.89	123.9	108		1.01	mg/kg	
	9662.0402					9.2	8.9	9.1	2.34	92.3	115		1.01		
	9663.0402					2.4	2.3	2.3	3.01	82.7	103		1.03		
	9664.0402					1.6	1.5	1.6	4.56	83.4	104		1.04		
	9665.0402					3.7	3.0	3.4	14.78	83.2	104		1.09		
	9666.0402					2.1	2.3	2.2	6.43	81.3	102		1.02		
	9667.0402					0.8	37.9	19.3	/	83.4	104		1.09	mg/kg	/
	BLK 923					29.1	29.1	29.1	0.00	112.7	105			µg/l	<40
4442	9683.0402					0.9	0.3	0.6		80.6	101		1.09	mg/kg	
	9684.0402					52.0	50.7	51.3	1.79	128.7	97		1.00	mg/kg	
	Cal Blk					-2.0	-1.7	-1.9	11.47	80.3	100			µg/l	<40.
	100 ppb					101.6	102.9	102.3	0.90	223.1	/		~~1.05~~	µg/l	102
	9685.0402					05 ER	05 ER	/	/	~~106.4~~	/		1.05	mg/kg	/

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12/12

ILE

om Page No. 29

Test Performed: Sn (Cont'd)

Received: 12/14/86

Work Performed By: J. OLKA

Job No.	ID No.	Custody Seal Intact Yes No	Secure Storage Area Received From N	C	ppb Found	ppb Burn2	ppb Ave	CV	80 50 ~~25~~ ppb Spike	% Rec	DF	Samp Wgt	Units	Fir Cor
4442	9686.0402				05 ER	05 ER	/	/	/	/		1.02	mg/kg	/
	9687.0402				157.2	150.4	153.7	3.13	05 ER	/		1.09		/
	9688.0402				36.9	36.0	36.5	1.75	105.9	87		1.03		
	9688.R1				41.0	39.9	40.5	1.92	109.9	87		1.06		
	9688.R1,S1				31.5	31.4	31.4	0.23	103.0	90		1.01	mg/kg	/
	BLK912				30.3	29.8	30.1	1.18	107.8	97			µg/l	<40
	Cal BLK				-1.8				77.6	97				<40
	100 ppb				100.6				202.3				µg/l	10
	9685.0402				25.7	24.1	25.1	3.38	106.4 ~~05 ER~~	102	1→10	1.05	mg/kg	
	9686.0402				119.4	117.3	118.3	1.26	05 ER	/	1→10		/	/
	9652.0402				46.6	46.3	46.7	0.30	129.5	104				
	9656.0402				39.6	38.2	38.9	2.55	105.6	83				
	9660.0402				14.7	15.2	15.0	2.37	90.1	94				
	9667.0402				3.9	3.6	3.7	5.66	73.3	92				
	9686.0402				68.5	69.4	69.0	0.92	133.1	86	0.5→10			
	9687.0402				85.3	86.2	85.7	0.7	156.2	88	1→2			
	Cal BLK				0.4				78.0	98				
	100 ppb				104.7				185	100				

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Witnessed & Understood by: [illegible] 12/[illegible]

HGA FORM #1

ELEMENT: Sn, DATE: 12/19/86.

S_1 = 50.0 PPB., S_2 = 100 PPB.

S_3 = 200 PPB, BOOK NO. [illegible]

JOB #:

401	103 378 #3 (no Tin)	
X02	Cal Blk	
X03	100 ppb	
X04	9651.0402	
X05	9652	
X06	9653	
X07	9654	
X08	9655	
X09	9656	
X10	9657	
X11	9658	
X12	9659	
X13	9660	
X14	Cal Blk	
X15	100 ppb	
X16	9661.0402	
X17	9662	S_2
X18	9663	
X19	9664	
X20	9665	
X21	9666	
X22	9667	
X23	Blk 923	
X24	9683.0402	
X25	9684.0402	
X26	Cal Blk	
X27	100 ppb	
X28	9685.0402 ÷(1→10)	
X29	9686 ÷(1→10)	
X30	9687	
X31	9688	
X32	9688 R1	
X33	9688 R.S.	
X34	Blk 912	
X35	Cal Blk	S_3
	100 ppb	

Sn

	-0.092	
	0.000	AV
	0.185	
	50.0	SD
	98.5	C
	100.0	SD
	173.3	C
	200.0	SD
401	-0.7	
402	-0.9	
403	95.9	
	88.6	
	86.5	
404	87.6	AV
	1.70	CV
	51.9	
	52.5	
405	52.2	AV
	0.81	CV
	2.3	
	1.6	
406	2.0	AV
	25.38	CV
	68.7	
	69.1	
407	68.9	AV
	0.41	CV
	5.0	
	5.0	
408	5.0	AV
	0.00	CV
	34.4	
	33.0	
409	33.7	AV
	2.94	CV
	12.4	
	12.9	
410	12.8	AV
	1.11	CV
	6.0	
	5.1	
411	5.5	AV
	11.47	CV
	8.2	
	8.7	
412	8.4	AV
	4.18	CV
	15.6	
	16.5	
413	16.1	AV
	3.97	CV
414	-1.5	
415	97.6	
	37.9	
	36.9	
416	37.4	AV
	1.89	CV
416	9.2	

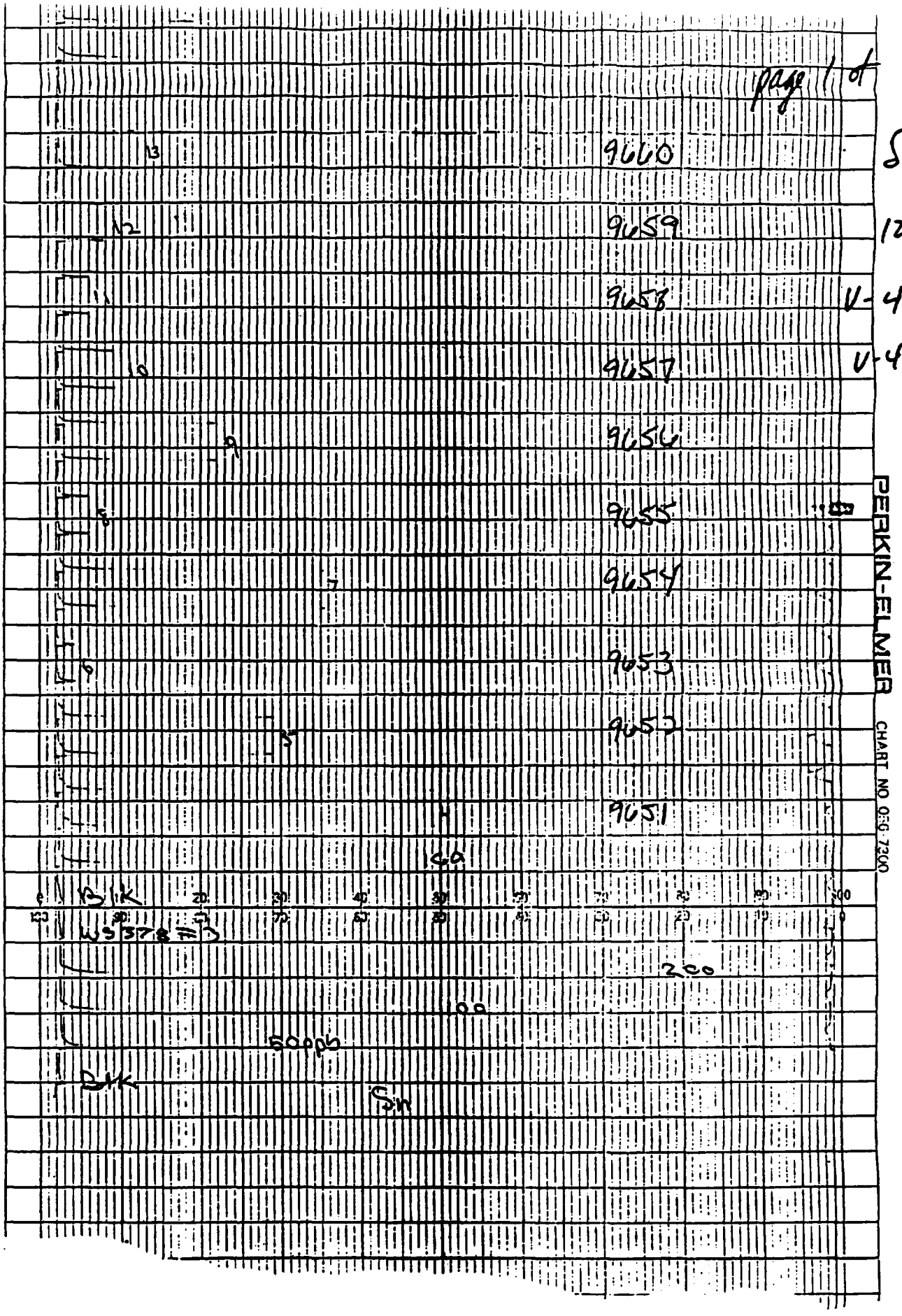
417	9.1	AV
	2.34	CV
	2.4	
	2.3	
418	2.3	AV
	3.01	CV
	1.6	
	1.5	
419	1.6	AV
	4.56	CV
	3.7	
	3.0	
420	3.4	AV
	14.78	CV
	2.1	
	2.3	
421	2.2	AV
	6.43	CV
	0.8	
	37.9	
422	19.3	AV
	00	ER
	29.1	
	29.1	
423	29.1	AV
	0.00	CV
	0.9	
	0.3	
424	0.6	AV
	70.71	CV
	32.0	
	50.7	
425	51.3	AV
	1.79	CV
	-2.0	
	-1.7	
426	-1.9	AV
	11.47	CV
	101.6	
	102.9	
427	102.3	AV
	0.90	CV
	05	ER
	05	ER
428	05	ER
	0.00	CV
	05	ER
	05	ER
429	05	ER
	0.00	CV
	157.2	
	150.4	
430	153.7	AV
	3.13	CV
	36.9	
	36.0	
431	36.5	AV
	1.75	CV
	41.0	
	39.0	
432	40.5	AV
	1.92	CV
	31.5	

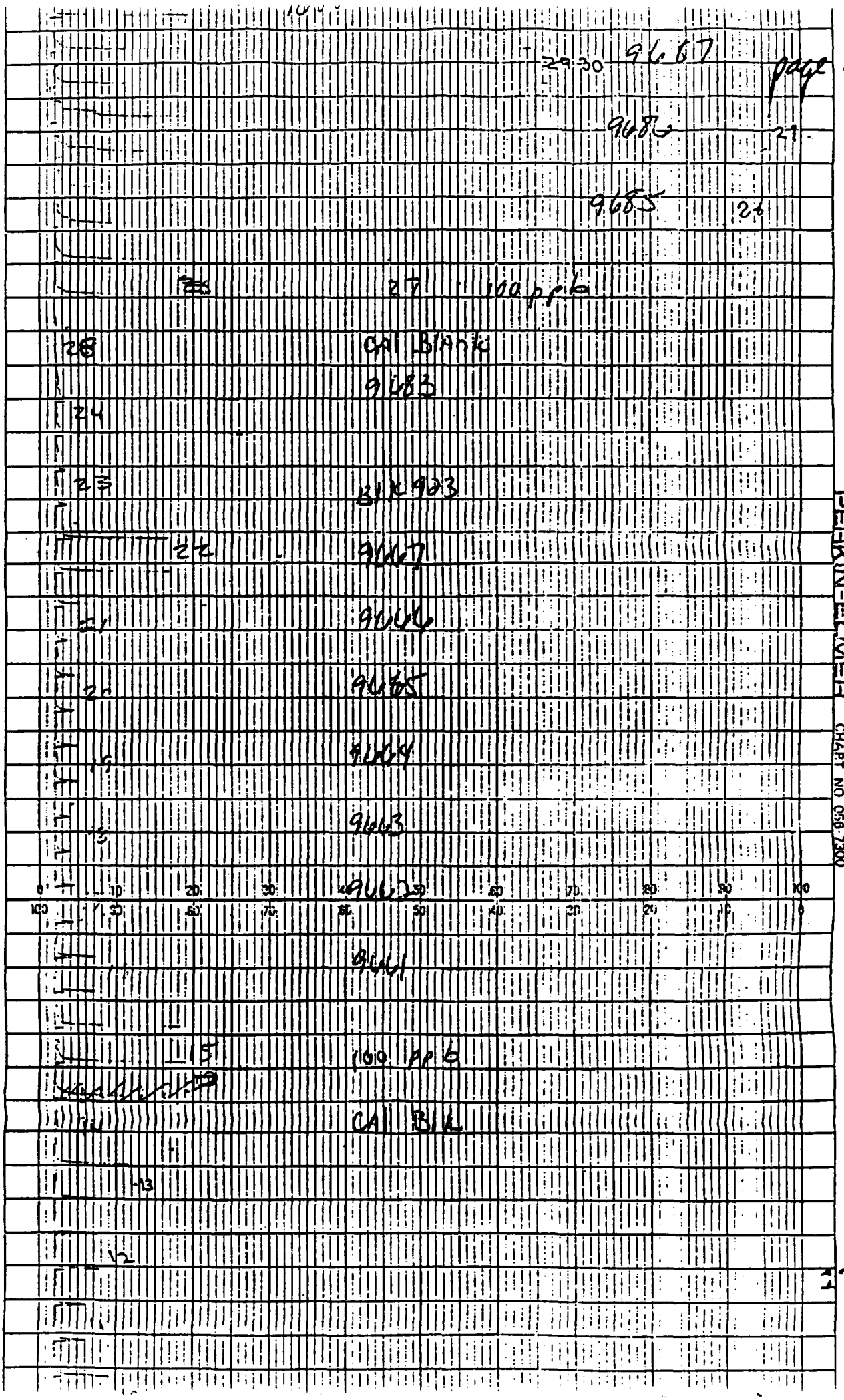
	0.23	CV
	30.3	
	29.8	
434	30.1	AV
	1.18	CV
435	-1.8	
436	100.6	

Sn
12/19/86

	0.5	
	25.7	
	24.5	
428	25.1	AV
	3.38	CV
	119.4	
	117.3	
429	118.3	AV
	1.26	CV

401	91.2	
402	88.3	
403	213.0	C
404	157.6	
405	118.0	
406	71.5	
407	140.6	
408	78.4	
409	94.8	
410	90.5	
411	86.2	
412	87.6	
413	94.5	
414	91.6	
415	05	ER
416	123.9	
417	92.3	
418	82.7	
419	83.4	
420	83.2	
421	81.3	
422	83.4	
423	112.7	
424	80.6	
425	128.7	
426	80.3	
427	222.1	C
428	106.4	
429	05	ER
430	05	ER
431	105.9	
432	109.9	
433	103.0	
434	107.9	
435	77.6	
436	282.3	


page 1 of 4
Sn
12/19/86
V-4432
V-4442
9660
9659
9658
9657
9656
9655
9654
9653
9652
9651
13
12
11
10
9
8
7
6
5
4
100
Blk
WS378 #3
200
100
50ppb
Blk
Sn
PERKIN-ELMER
CHART NO 050-7300

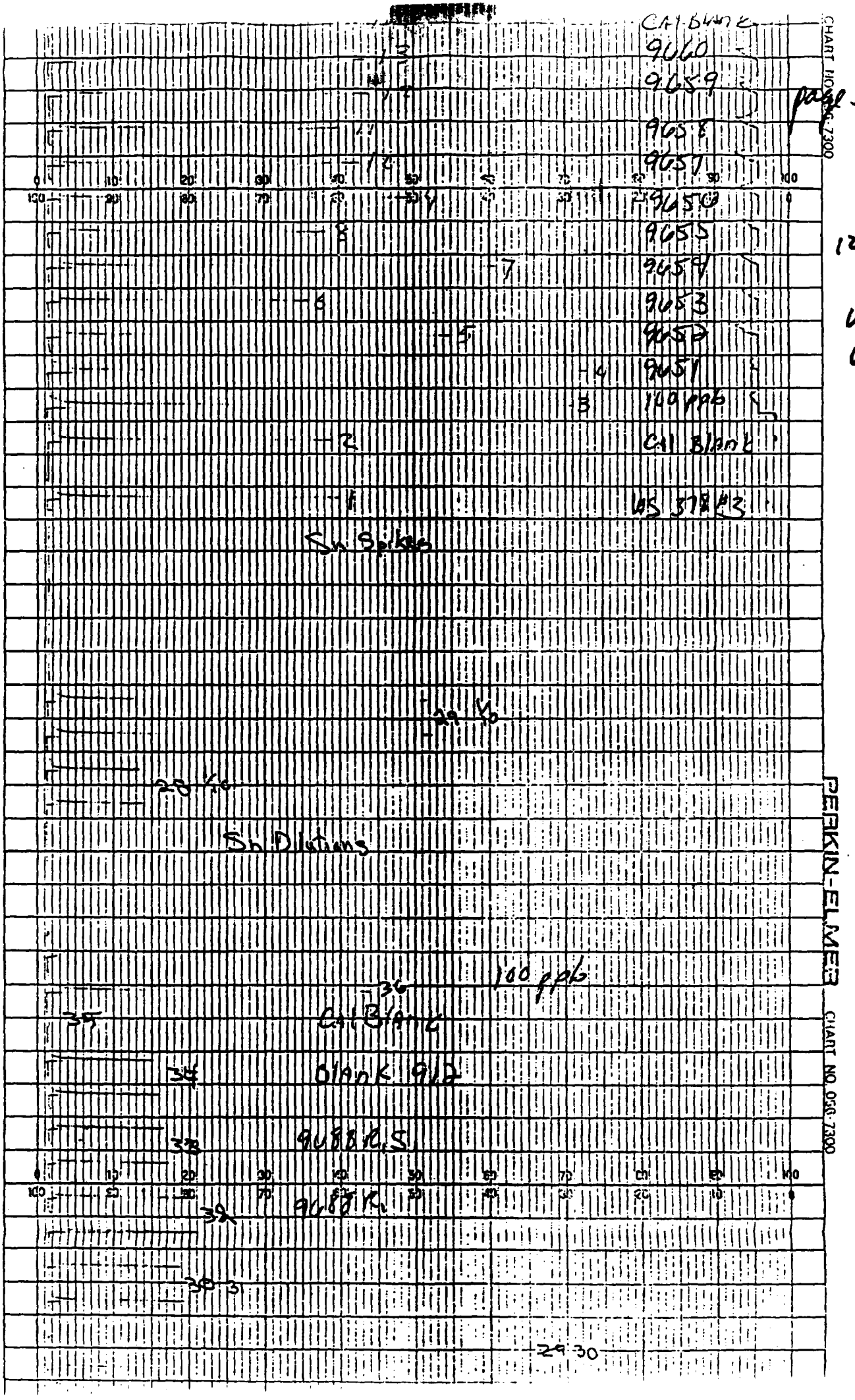


page 2 of 4

Sn

12/19/84

U-4432
U-4442



page 3 of 4

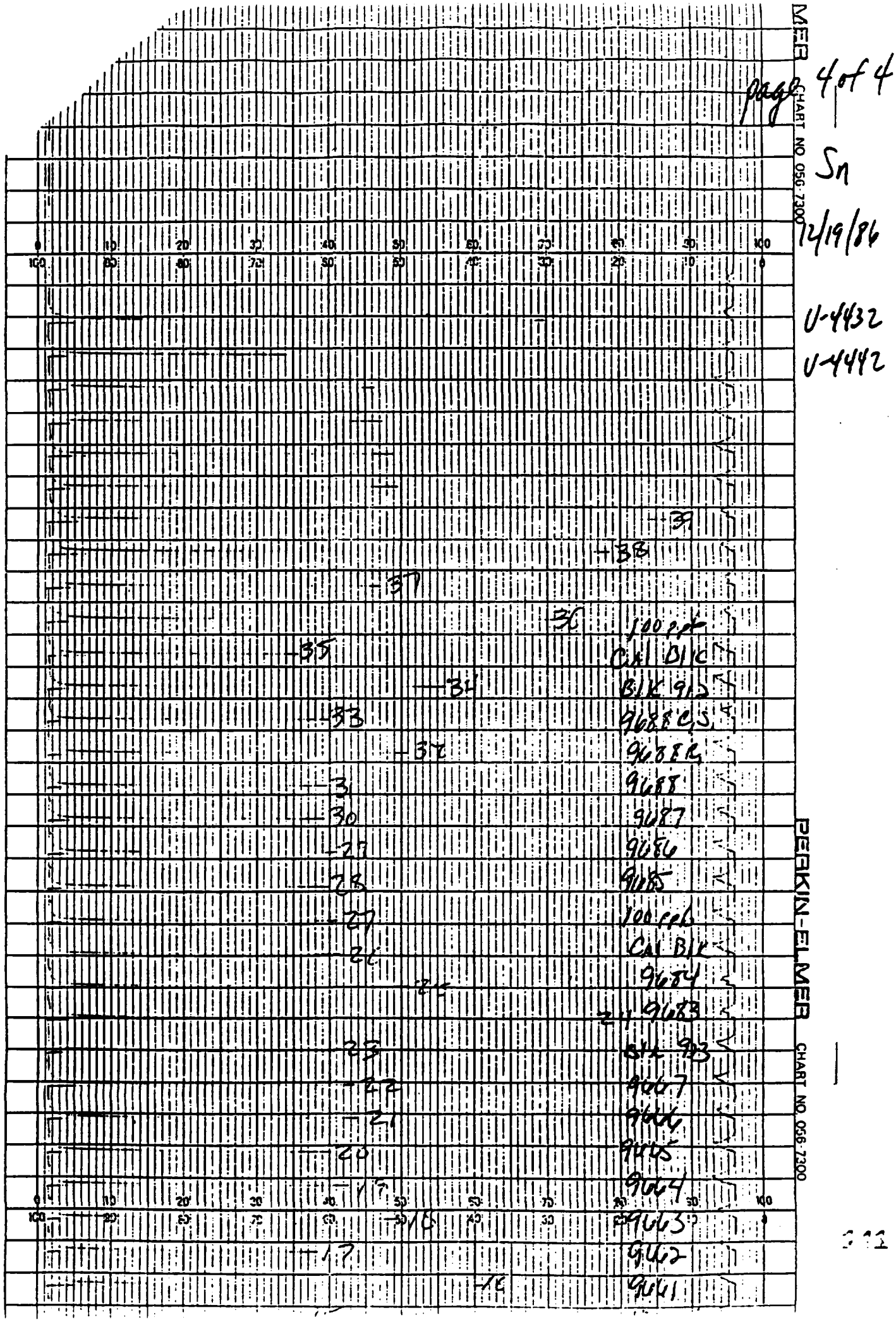
Sn

12/19/84

U-4432

U-4442

CHART NO. 056-7300
PERKIN-ELMER
CHART NO. 056-7300


page 4 of 4
Sn
12/19/86
U-4432
U-4442
100 ppb
CAL BLK
BLK 912
9688 C.S.
9688 R
9688
9687
9686
9685
100 ppb
CAL BLK
9684
9683
BLK 913
9667
9666
9665
9664
9663
9662
9661
PERKIN-ELMER
CHART NO. 056-7300

HGA FORM #1

ELEMENT: Sn, DATE: 12/2[illegible].

S_1 = 50.0 PPB., S_2 = 100.0 PPB.

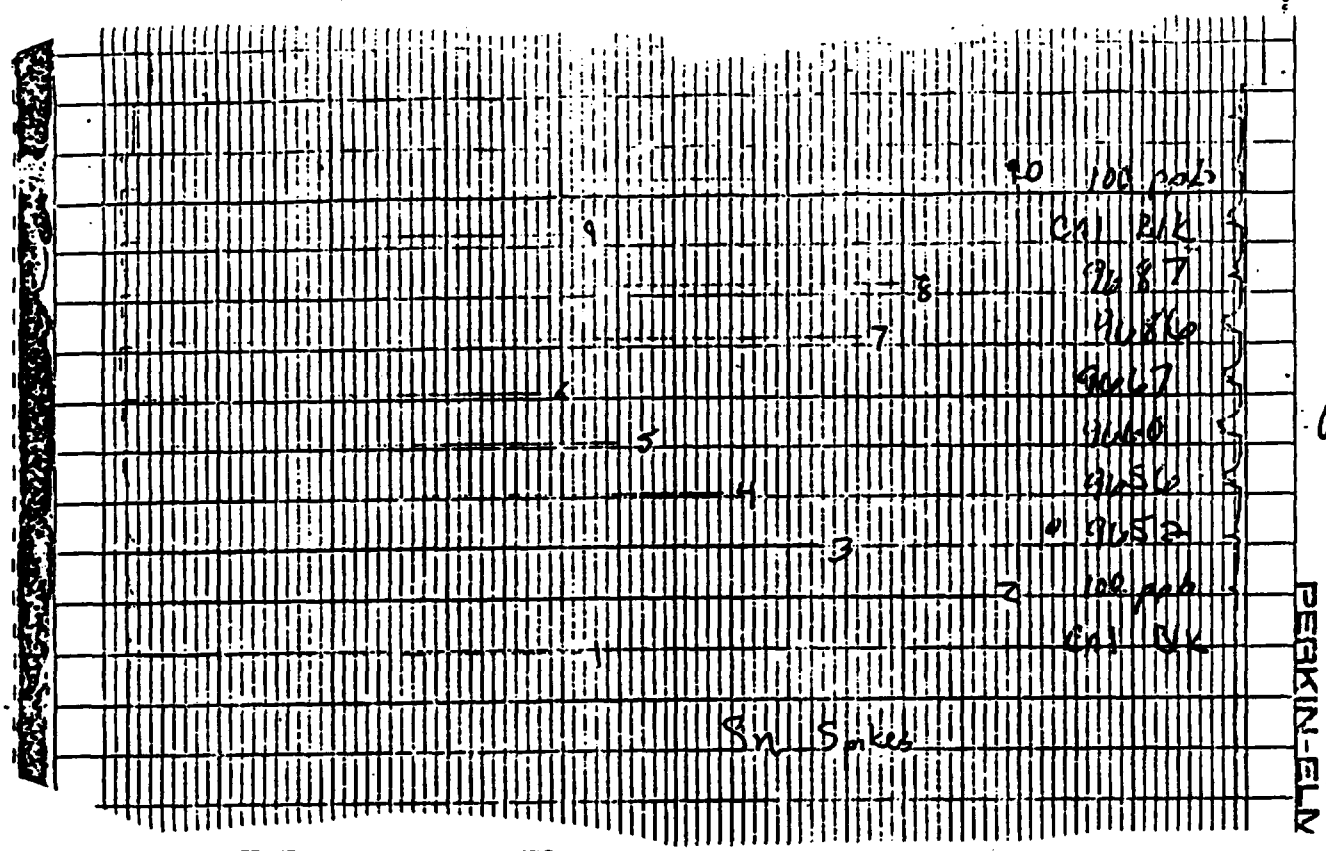
S_3 = 200.0 PPB, BOOK NO. , [illegible]

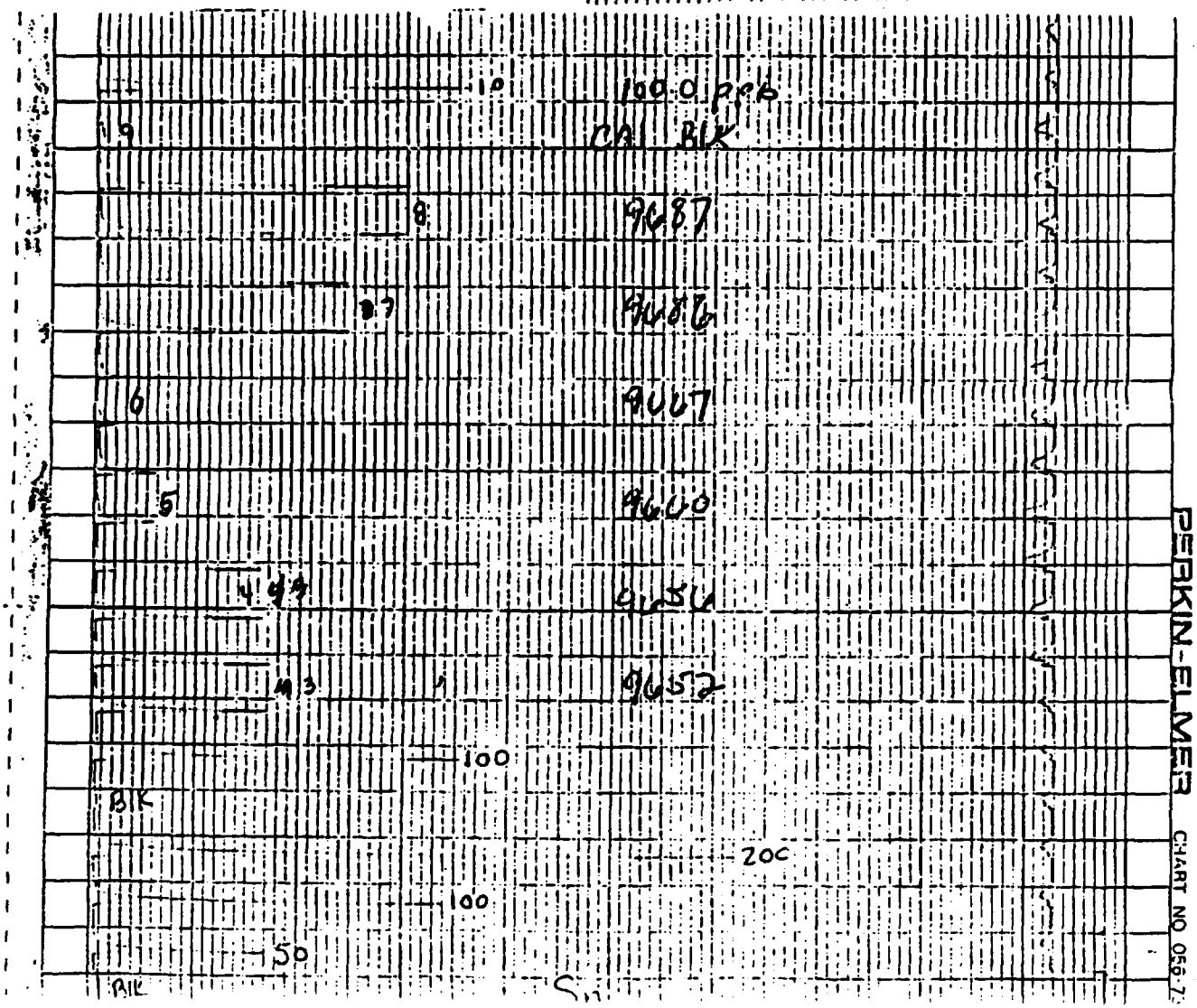
JOB #:			
	X01	Cal Blank	
	X02	100.0 PPB	
	X03	9652, 9902	
	X04	9656.	
	X05	9660.	
	X06	9667.	
	X07	9686. (0.5 ml)	
	X08	9687. (1:2)	
	X09	Cal Blank	
	X10	100.0	
	X11		
	X12		
	X13		
	X14		
	X15		
	X16		
	X17	, S_2	
	X18		
	X19		
	X20		
	X21		
	X22		
	X23		
	X24		
	X25		
	X26		
	X27		
	X28		
	X29		
	X30		
	X31		
	X32		
	X33		
	X34		
	X35	, S_3	

	-0.006	
	[illegible]	AV
	0.204	
	50.0	S1
	100.8	C
	199.0	S2
	195.4	C
	12	[illegible]
402	103.4	
	46.6	
	46.8	
403	46.7	AV
	0.30	CV
	39.6	
	38.2	
404	38.9	AV
	2.55	CV
	14.7	
	15.2	
405	15.0	AV
	2.37	CV
	3.9	
	3.6	
406	3.7	AV
	5.46	CV
	69.5	
	69.4	
407	69.0	AV
	0.92	CV
	85.3	
	86.2	
408	85.7	AV
	0.74	CV
409	0.4	
410	104.7	
401	78.5	
402	176.0	
403	129.5	
404	105.6	
405	90.1	
406	73.8	
407	139.1	
408	156.2	
409	78.0	
410	195.2	

Sn Spikes

U-4432
U-4442





Page No.__
Performed: TI
Received: [illegible]
Performed By: [illegible]

λ 276.8
Energy:
Time: 5 sec

S_1 20.0 ppb
S_2 50.0
S_3 100

See Std Log # 036 pg 88

Job No.	ID No.	Custody Seal Intact Yes No	Secure Storage Area Received From N	C	ppb Burn 1	ppb Burn 2	ppb Ave	CV	20.0 ppb Spike	% Rec	DF	Samp Wgt	Units	Final Conc.
	WP1133 #1				25.2	25.1	0.5.1	0.22	46.43	107			µg/l	25.1
	Cal Blk				0.0	0.3	0.2	—	20.78	104				<5.00
	50.0 ppb				50.6	49.6	50.1	1.41	65.17	/			µg/l	50.1
32	9651.0402				0.5	-0.1	0.1	—	20.42	102		1.06	mg/kg	<10.0
	9652.0402				1.2	0.9	1.0	—	20.29	101		1.02		<10.0
	9653.0402				0.4	0.8	0.6	—	18.65	93		1.00		<10.0
	9654.0402				0.3	0.2	0.3	—	15.76	79		1.06		<10.0
	9655.0402				1.1	1.1	1.1	—	19.03	95		1.09		<10.0
	9656.0402				-0.1	0.3	0.1	—	19.90	100		1.09		<10.0
	9657.0402				1.6	1.1	1.4		19.10	96		1.08		<10.0
	9658.0402				1.1	1.6	1.3		17.86	89		1.05		<10.0
	9659.0402				0.6	1.3	1.0		19.55	98		1.09		<10.0
	9660.0402				1.5	2.1	1.8		19.05	95		1.04	mg/kg	<10.0
	Cal Blk				0.5	0.3	0.4		16.36	77			µg/l	<10.0
	50.0 ppb				52.3	51.4	51.8	1.33	55.15	/			µg/l	51.8
	9661.0402				0.7	0.7	0.4		17.05	85		1.01	mg/kg	<10.0
	9662.0402				1.7	1.5	1.6		17.66	88		1.01		<10.0
	9663.0402				0.5	1.0	0.7		19.22	96		1.03		<10.0
	9664.0402				1.6	1.7	1.7		18.81	94		1.04		<10.0
	9665.0402				0.5	0.3	0.4		16.91	85		1.09		<10.0
	9666.0402				0.9	1.3	1.1		17.28	86		1.02		<10.0
	9667.0402				1.0	1.2	1.1	✓	17.33	87		1.09	mg/kg	<10.0
	Blk 923				0.2	0.3	0.2	✓	17.52	88			µg/l	<10.0
442	9683.0402				1.6	1.0	1.3	✓	16.47	82		1.09	mg/kg	<10.0
	9684.0402				0.8	0.8	0.8	✓	16.98	85		1.00	mg/kg	<10.0
	Cal Blk				0.5	0.0	0.3		19.83	99			µg/l	<10.0
	9685.0402				1.2	1.1	1.2	✓	21.17 ~~56.48~~	106		1.05	mg/kg	<10.0
	9686.0402				0.9	0.6	0.7	✓	23.33 ~~21.17~~	117		1.02	mg/kg	<10.0
	50.0 ppb				~~49.5~~	~~48.2~~	~~48.7~~	~~1.75~~					µg/l	47.8
					48.1	47.6	47.8	0.74	56.48	/			To Page No.	23

Witnessed & Understood by me: [illegible] Date: 12/[illegible] Invented by: Date: [illegible]

Page No. 23

st Performed: TI (Cont'd)

eceived: [illegible]

ork Performed By: [illegible]

Job No.	ID No.	Custody Seal Intact Yes	No	Secure Storage Area Received From	ppb Burn 1	ppb Burn 2	ppb Ave	CV	20.0 ppb Spike	% Rec	DF	Samp Wgt	Units	Final Conc
	9687.0402				1.1	0.9	1.0	–	20.75	104		1.09	mg/kg	<10.
442	9688.0402				1.1	0.6	0.9	–	20.45	102		1.03	|	~~<10~~
	9688.R1				1.3	0.9	1.1	–	19.40	97		1.06	|	~~<10~~
	9688.R1S1				52.9	53.2	53.1	0.40	45.12	/		1.01	mg/kg	(106
	Blk 912				0.1	0.2	0.2		19.36	97			µg/l	<10.0
	Cal Blk				0.0	0.4	0.2		22.37	112			|	<10.0
	50.0 ppb				49.5	48.2	48.9	1.86	50.00	/			µg/l	48.9

To Page No...

nessed & Understood by me: [illegible]

Date: 12/[illegible]

Invented by:

Date: [illegible]

HGA FORM #1

ELEMENT: Tl , DATE: 12/19/90 .

S_1 = 25.00 PPB., S_2 = 50.0 PPB

S_3 = 100.0 PPB, BOOK NO. ,

JOB #:						
	01	wp 1183 (II) #1				
	X02	Cal Blank			-0.046	
	X03	50.0 ppb			-0.045	
	X04	9651.0402			-0.045	AV
	X05	9652.0402			1.55	CV
	X06	9653.0402			0.000	A2
	X07	9654.0402			0.083	
	X08	9655.0402			0.082	
	X09	9656.0402			0.082	AV
	X10	9657.0402			0.86	CV
	X11	9658.0402			25.0	S1
	X12	9659.0402			45.1	C
	X13	9660.0402			45.6	C
	X14	Cal Blank			45.3	AV
	X15	50.0 ppb			0.78	CV
	X16	9661.0402			50.0	S2
	X17	9662.0402	, S_2		105.0	C
	X18	9663.0402			103.3	C
	X19	9664.0402			104.1	AV
	X20	9665.0402		401	1.15	CV
	X21	9666.0402			100.0	S3
	X22	9667.0402			25.2	
	X23	PrepBlank 923			25.1	
	X24	9683.0402		402	25.1	AV
	X25	9684.0402			0.28	CV
	X26	Cal Blank			0.0	
	X27	50.0 ppb			0.3	
	X28	9685.0402		403	0.2	AV
	X29	9686.0402			06	LR
	X30	9687.0402			50.6	
	X31	9688.0402			49.6	
	X32	9688. Rep		404	50.1	AV
	X33	9688. R.S.			1.41	CV
	X34	Prep Blank 912			0.3	
	X35	Cal Blank	, S_3		-0.1	
	36	50.0 ppb		405	0.1	AV
					06	LR
					1.2	
					0.9	
					1.0	AV
					20.70	CV
					0.4	
					0.5	
				406	0.6	A
					47.14	C
					0.3	
					0.2	
				407	0.3	A
				406	28.28	C

408	1.1	AV
	0.00	CV
	-0.1	
	0.3	
409	0.1	AV
	00	ER
	1.6	
	1.1	
410	1.4	AV
	26.19	CV
	1.1	
	1.6	
411	1.3	AV
	26.19	CV
	0.6	
	1.3	
412	1.0	AV
	52.10	CV
	1.5	
	2.1	
413	1.8	AV
	23.57	CV
	0.5	
	0.3	
414	0.4	AV
	35.36	CV
	52.3	
	51.4	
415	51.8	AV
	1.23	CV
	0.7	
	0.2	
416	0.4	AV
	78.57	CV
	1.7	
	1.5	
417	1.6	AV
	8.84	CV
	0.5	
	1.0	
418	0.7	AV
	47.14	CV
	1.6	
	1.7	
419	1.7	AV
	4.29	CV
	0.5	
	0.3	
420	0.4	AV
	35.36	CV
	0.9	
	1.3	
421	1.1	AV
	25.71	CV
	1.0	
	1.2	
422	1.1	AV
	12.86	CV
	0.2	
	0.3	

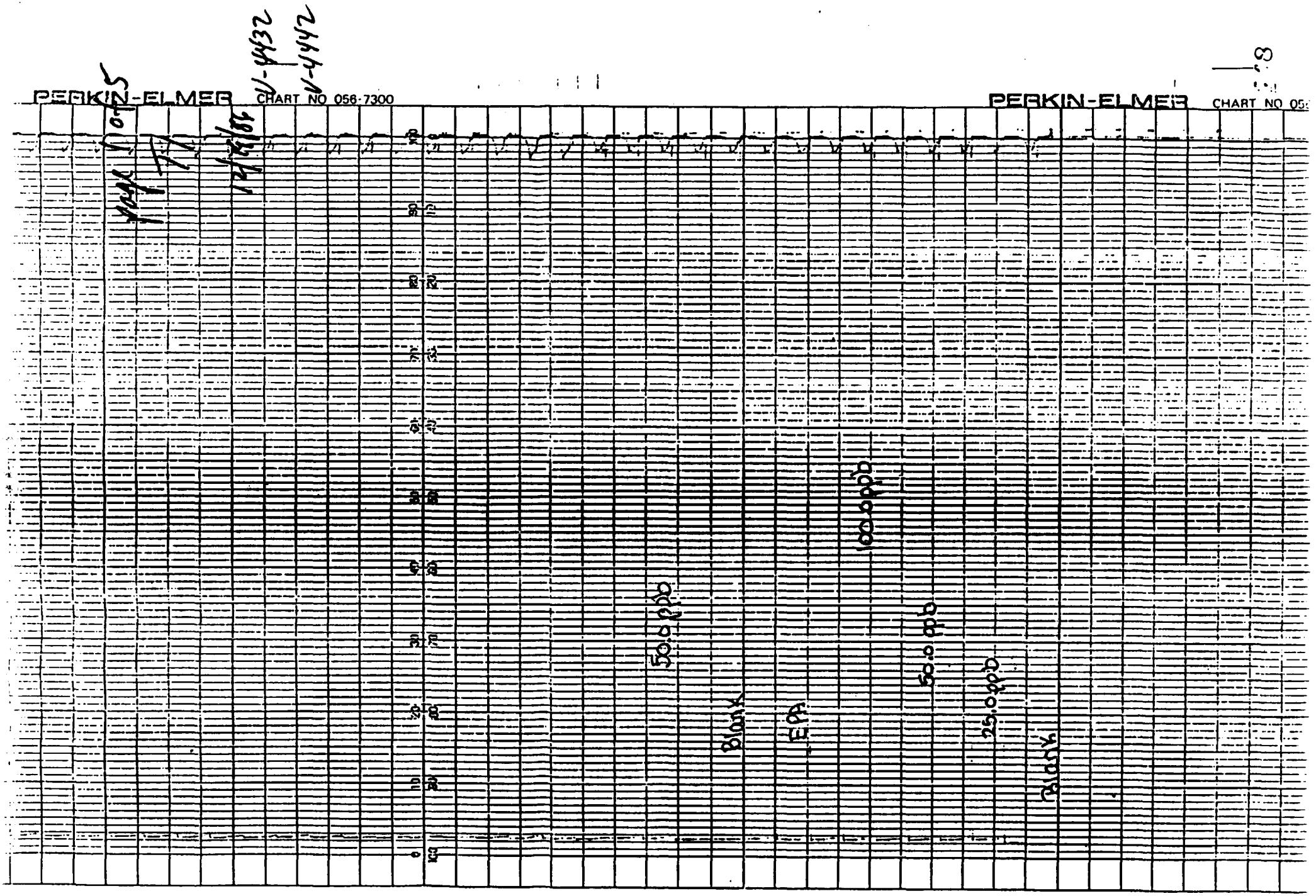
423	0.2	AV
	28.28	CV
	1.6	
	1.0	
424	1.3	AV
	42.64	CV
	0.8	
	0.6	
425	0.8	AV
	0.00	CV
	0.5	
	0.0	
426	0.3	AV
	06	ER
	56.6	
X-Contam	50.7	
~~427~~	~~56.2~~	AV
	1.13	CV
	1.2	
	1.1	
428	1.2	AV
	6.15	CV
	0.9	
	0.6	
429	0.7	AV
	28.28	CV
	1.1	
	0.9	
430	1.0	AV
	14.14	CV
	1.1	
	0.6	
431	0.9	AV
	41.59	CV
	1.3	
	0.9	
432	1.1	AV
	25.71	CV
	52.9	
	53.2	
433	53.1	AV
	0.40	CV
	0.1	
	0.2	
434	0.2	AV
	47.14	CV
	0.0	
	0.4	
435	0.2	AV
	06	ER
	49.5	
	48.2	
436	48.9	AV
	1.58	CV
	44.1	
	47.6	
427	47.9	AV

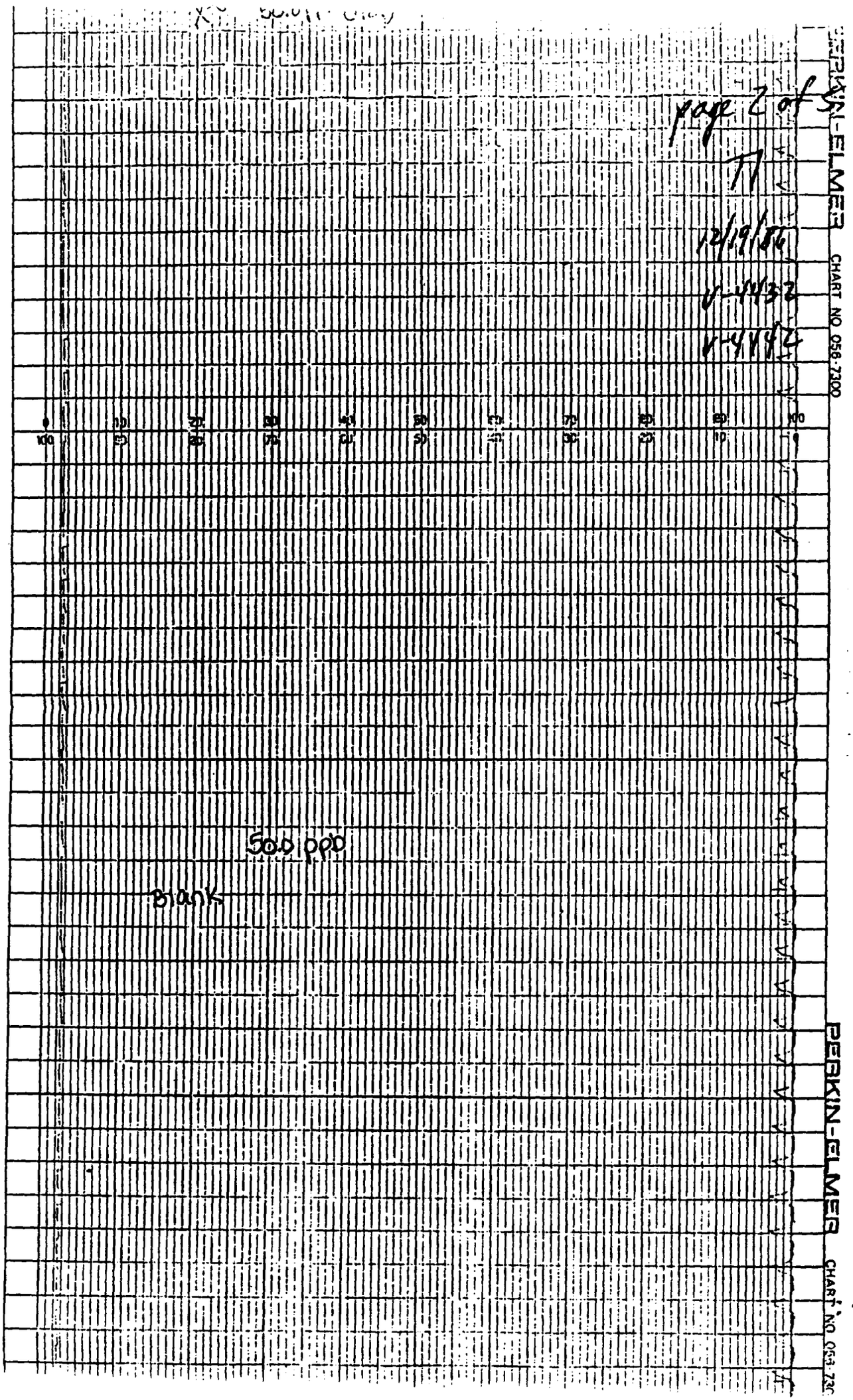
T1

12/19/86

T1 SPIKED

401	46.43
402	20.78
403	65.17
404	20.42
405	20.29
406	18.60
407	15.76
408	19.03
409	19.90
410	19.10
411	17.87
412	19.55
413	19.05
414	15.30
415	55.15
416	17.05
417	17.66
418	19.22
419	18.81
420	16.91
421	17.73
422	17.33
423	17.52
424	16.47
425	16.98
426	19.63
427	56.48
428	21.17
429	23.33 ←
430	20.75
431	20.45
432	19.40
433	45.12
434	19.36
435	22.37
436	50.00


PERKIN-ELMER CHART NO 056-7300
PERKIN-ELMER CHART NO 05
V-4432
V-4442
50.0 ppb
Blank
EPA
100.0 ppb
50.0 ppb
25.0 ppb
Blank


page 2 of 5
TI
12/19/86
V-4432
V-4442
0 10 20 30 40 50 60 70 80 90 100
100 90 80 70 60 50 40 30 20 10 0
50.0 ppb
Blank
PERKIN-ELMER
CHART NO 058-7300
PERKIN-ELMER
CHART NO 058-730

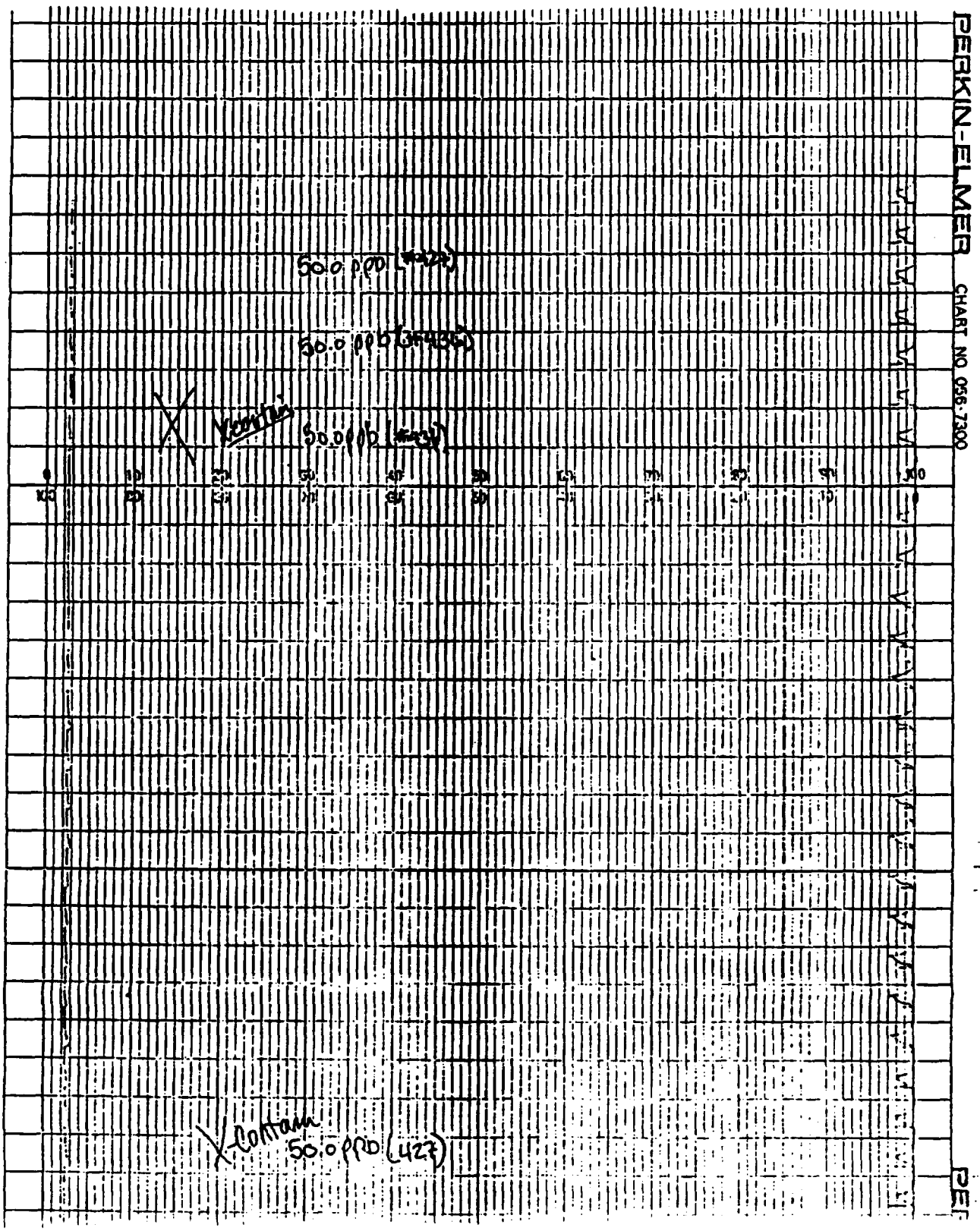
page 3 of 5

TT

12/19/86

U-4432

U-4442



PERKIN-ELMER CHART NO. 056-7300

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TI

12/19/86

V-4432

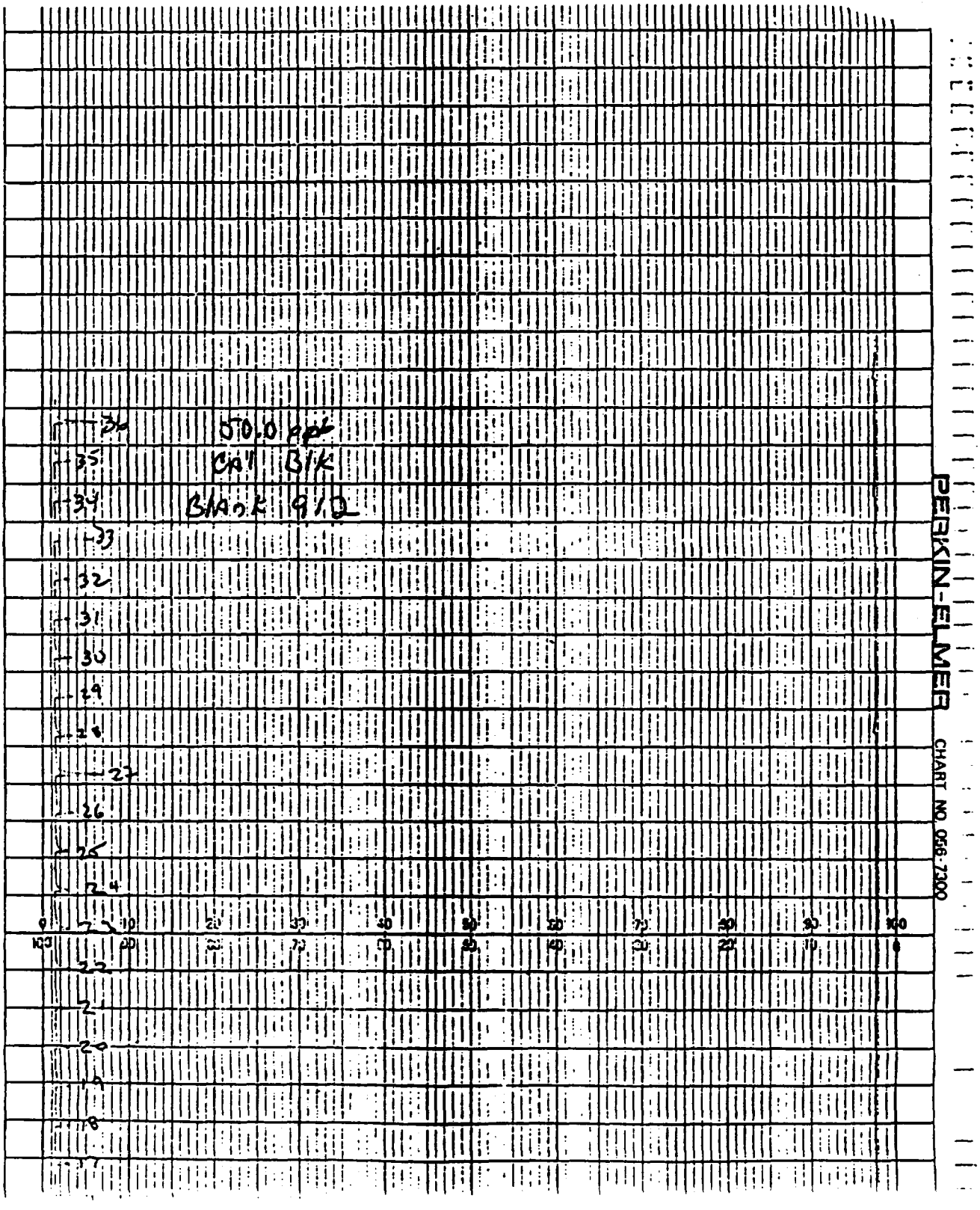
V-4442

32	9688
31	9688
30	9687
29	9686
28	9685
27	50.0 ppb
26	CAL BLANK
25	9684
24	9683
23	BLK 9683
22	9667
21	9666
20	9665
19	9664
18	9663
17	9662
16	9661
15	50.0 ppb
14	CAL BLANK
13	9660
12	9659
11	9658
10	9657
9	9656
8	9655
7	9654
6	9653
5	9652
4	9651
3	50.0 ppb
2	CAL BLANK
1	WP 1183 (#) #1

TI Spikes Jds 443244442

PERKIN-ELMER CHART NO. 056-7300

page 5 of 5
T1.
12/19/86
U-4432
U-4442



Project No._____

E_____ Book No._____ 11

Page No.___

Method EPA-335.2
Instrument Spec 88
Stock CN⁻ 0.0185N .963mg/ml
Prepared 11/7/96 Book, page 251, 19
Stand. 11/7/96 Book, page 210, 61
Curve Date 11/7/96 Expires 12/7/96
Other:

STD① = 100ml Stock/1000
STD② = 100ml STD①/1000

Test Performed: CN⁻ Curve
Date Received: 11-7-96
Work Performed By: D. Gallivan

Job No.	ID No.	Custody Seal Intact Yes No	Secure Storage Area Received From	Dilution	mls for Color	Abs
	Blank				50	set @ 0.000
	4.82 ug			0.5ml STD②/250	50	0.029
	9.63 ug			1.0ml STD②/250	50	0.060
	19.26 ug			2.0ml STD②/250	50	0.119
	48.15 ug			5.0ml STD②/250	50	0.295
	96.3 ug			10.0ml STD②/250	50	0.581
	144.45 ug			15.0ml STD②/250	50	0.829

Corr. = 0.9995 ✓

To Page No.____

Witnessed & Understood by me. Date Invented by Date

Project No._____

TITLE _____ Book No._____ 15

From Page No.__

Method: EPA 335.2
Spec 88
CN: .0185N 0.963 mg/ml
11/5/86 Book, page 251.19
11/7/86 Book, page 210.61
11/7/86 Expires 12/7/86

Test Performed: CN
Date Received: 11-17-86
Work Performed By: D. [illegible]

STD① = 100 mls Stock/1000
STD② = 100 mls STD①/1000

Job No.	ID No.	Custody Seal Intact Yes No	Sample Source Area Received From	Ⓑ mls distilled	Ⓒ mls for Color	Abs	Ⓐ ug from Curve	Results
	Blank	–	–	500	50	cal @ 0.000	-1.0	<0.02 mg/l
	DI spike	–	–	5.0 ml STD②/500	50	0.269	45.35	94.2% Rec ✓
1432	9651.04	N	A-4	7.0140 g/500	50	0.011	0.9	<1 mg/Kg
	9652.04	N	A-4	7.0130 g/500	50	0.062	9.7	1.4
	9653.04	N	A-4	7.738 g/500	50	0.010	0.7	<1
	9654.04	N	A-4	7.075 g/500	50	0.011	0.9	<1
	9655.04	N	A-4	7.031 g/500	50	0.012	1.0	<1
	9656.04	N	A-4	7.1590 g/500	50	0.011	0.9	<1
	9657.04	N	A-4	7.0860 g/500	50	0.018	2.1	<1 ✓
	9658.04	N	A-4	7.203 g/500	50	0.009	0.5	<1
	9658.04	spike	5.0 ml STD②	+7.258 g/500 6.634 ✓	50	0.271	45.69 6.295 ✓	94.9% Rec

To Page No._____

Witnessed & Understood by me. | Date | Invented by | Date

16

Project No.
Book No.
TITLE

From Page No.

Test Performed: Cr
Date Received: 11/17/86
Work Performed By: [illegible]

Method EPA 3352
Instrument SPEC 88
Stock Cr 0.0185N 0.963 mg/ml
Prepared 11/5/86 [illegible] 251,19
Stand. 11/7/86 [illegible] 210,61
Curve Date 11/17/86 [illegible] 12/7/86
Other:

STD① = 100ml stock / 1000ml
STD② = 100ml STD① / 1000ml

$Cr, mg/L = \frac{A \times 50}{B \times C}$

Job No.	ID No.	Custody Seal Intact Yes No	Secure Storage Area Received	(3) mls distilled	(4) mls for color	ABS	(5) mg from curve	Results (mg/L)
	BLANK			500ml	50	cal@0.000	-1.0	< 0.02 mg/L
DI	SPIKE			5ml STD② / 500	50	0.269	45.35	94.2% rec ✓
4432	9659.04	N	A-4	6.270 g/500	50	0.009	0.5	<1 mg/kg
4432	9660.04	N	A-4	6.419 g/500	50	0.019	2.2	<1 mg/kg ✓
4432	9661.04	N	A-4	6.428 g/500	50	0.010	0.7	<1 mg/kg
4432	9662.04	N	A-4	6.724 g/500	50	0.011	0.9	<1 mg/kg
4432	9663.04	N	A-4	6.053 g/500	50	0.001	-0.9	<1 mg/kg
4432	9664.04	N	A-4	6.414 g/500	50	0.005	-0.2	<1 mg/kg
4432	9665.04	N	A-4	6.448 g/500	50	0.003	-0.5	<1 mg/kg
4432	9666.04	N	A-4	6.222 g/500	50	0.005	-0.2	<1 mg/kg
4432	9666.04	FEP	A-4	6.176 g/500	50	0.004	-0.3	<1 mg/kg UC

To Page No

Witnessed & Understood by me. Date Invented by Date 255

Recorded by

Project No.

TITLE

Book No. 256

From Page No.

Test Performed: Cr⁻

Date Performed: 11/16/06

Analyst: R. Vogel

Method: EPA 3352

Instrument: Spec 88

Stock: Cr⁻ 0.4165N .0963 mg/ml

Prep: 11/15/06 25,19

Stand: 11/16/06 3104

Curve: 11/16/06 11/16/06

Other:

STD① = 100ml STOCK /1000

STD② = 100ml STD① /1000

Cr⁻, mg/L = ~~A×50 / Wt~~

Sample No.	Lab No.	Dilution Factor	Reported Flag	(g) mL digested	(g) mL final	ABS	Conc. mg/L	Results (mg/L)
	BLANK			500ml	50	0.000	-1.0	<0.02 mg/L
01	SPIKE			5ml STD②/500	50	0.265	44.66	92.8% rec
1453	9702.01	Y	A-12	500ml	50	0.000	-1.0	<0.02 mg/L
1442	9667.04	N	A-4	7.593 g/500	50	0.001	-0.85	<1 mg/kg
1442	9683.04	N	A-16	6.620 g/500	50	0.001	-0.85	<1
1442	9684.04	N	A-16	6.493 g/500	50	0.000	-1.0	<1
1442	9685.04	N	A-16	6.650 g/500	50	0.010	0.70	<1
1442	9686.04	N	A-16	6.093 g/500	50	0.015	1.56	<1
1442	9687.04	N	A-16	6.182 g/500	50	0.020	2.42	<1
1442	9688.04	N	A-16	6.080 g/500	50	0.000	-1.0	<1 mg/kg
1442	9688.04	SPIKE REPLICATE	A-16	5.4 STD② 6.4 3 g/500 7.216 g/kg	50	0.252	43.28 6.496 mg/kg	89.9% rec
01	SPIKE			5ml STD② /500	50	0.258	43.45	90.2% rec ✓
1452	9702.01	Y	A-12	500	50	0.029	3.975	<0.02 mg/L
1465	9748.04	Y	A-30	6.327 g/500	50	0.000	-1.0	<1 mg/kg
1465	9749.04	Y	A-30	6.179 g/500	50	0.003	-6.5	
1465	9750.04	Y	A-30	6.456 g/500	50	0.001	-0.85	
1465	9751.04	Y	A-30	6.141 g/500	50	0.004	-0.35	
1465	9752.04	Y	A-30	6.703 g/500	50	0.015	1.56	
1465	9753.04	Y	A-30	6.765 g/500	50	0.008	0.36	
1465	9754.04	Y	A-30	6.140 g/500	50	0.016	1.73	
1465	9755.01	Y	A-30	6.007 g/500	50	0.010	0.70	
1465	9755.04	REP	A-30	6.090 g/500	50	0.010	0.70	<1 mg/kg 0.0 RPD

Wastewater initial 12/16/06 RN

To Page No.

Witnessed & Understood by me: Date: Invented by: Date: 256

Dead Creek

All Results Expressed in mg/kg (dry wt basis)

Job # 4432	Wet Wt	% Sol.	G/200ml	Ag	Al	Ba	Be	Cd	Co	Cr	Cu	Fe	Mn	Ni	Sb	Tl	Zn		Dry Wt	Hg
51.0401	1.02	52.5	0.536	10.4	4800.	410.	<1.9	21.5	6.62	61.6	8741.	16364	197.	56.2	<22.4	23.0	3313		0.161	0.73
52.0401	1.04	36.9	0.384	11.1	6375.	1110.	<2.6	35.6	9.24	153	6698.	19466.	153	502.	<31.2	27.3	6646		0.147	1.30
53.0401	1.02	65.9	0.672	<3.0	6560.	156.	<1.5	1.51	7.67	14.7	167.	11146.	100.	356	<17.9	18.7	868		0.242	0.13
54.0401	1.00	57.5	0.575	<3.5	2426.	131.	<1.7	11.3	7.18	37.1	1270	26024.	969	238.	<20.9	<17.4	872		0.201	0.36
55.0401	1.02	63.2	0.645	<3.1	7509.	196.	<1.6	7.76	5.02	53.3	1783	14381.	139	309	<18.6	18.9	1011		0.245	0.14
56.0401	1.07	49.0	0.524	13.7	5376.	467.	<1.9	29.2	6.78	79.4	8645	16300	218	82.0	<22.9	24.5	3415		0.189	0.90
57.0401	1.09	46.7	0.509	15.4	9754.	1734	<2.0	30.1	10.6	118	15312	38212	82.3	1518	<23.6	48.1	11892		0.199	1.68
58.0401	1.01	57.9	0.585	<3.4	12863.	3115	<1.7	8.23	6.92	113	2607	21265	70.5	867	<20.5	25.0	~~6614~~	<6614	0.228	0.89
59.0401	1.03	43.1	0.444	<4.5	12633	376.	<2.3	17.3	7.53	409	580	18426	177	116.	<27.0	32.5	1366.		0.160	0.71
60.0401	1.02	45.4	0.463	<4.3	7533	570	<2.2	34.0	10.0	603	3911	18600	98.2	838	<25.9	22.0	15633		0.153	0.95
61.0401	1.08	37.0	0.400	<5.0	8448	1703	<2.5	26.6	6.55	536	6642	35815	161	1293	<30.0	27.0	6880		0.136	1.64
62.0401	1.04	61.1	0.635	<3.1	12658	1011.	<1.6	42.0	7.21	67.9	2438	50913	151	748	<18.9	36.3	6433		0.229	2.81
63.0401	1.03	47.9	0.493	<4.1	11251.	239.	<2.0	11.9	5.24	32.6	379	22755	190	174.	<24.3	36.8	1006		0.173	0.79
64.0401	1.05	64.3	0.675	<3.0	12483.	622.	<1.5	41.9	12.0	481	1626	40163	273	665	<17.8	32.2	6588		0.236	0.89
65.0401	1.08	25.5	0.275	<7.3	6397.	214.	<3.6	22.9	<7.27	34.3	1322	31342	178	537	<43.6	<36.4	2354		0.104	0.34
66.0401	1.01	66.9	0.676	<3.0	5871.	199.	<1.5	5.58	6.36	13.1	247		191	236.	<17.8	17.4	917		0.223	0.189
67.0401	1.04	78.7	0.818	<2.5	11841.	362	<1.2	2.50	5.85	14.8	350	16626	412	17.6	<14.7	26.7	197		0.286	<0.07
																		R	0.294	<0.07
																		RS	0.303	0.34
																				0.33
																				-103% R

3 4442

DEAD CREEK

	WET WT.	% Solids	Dry wt / 200mL	AG	AL	BA	BE	CD	CO	CU	FE	MN	NI	SB	V	ZN	CR	HG (ug)	dry wt	Hg Conc. (mg/kg)
683.0401	1.06	80.3	0.851	<2.4	10541	277	<1.2	2.12	5.40	31.2	15716		19.2	<14.1	23.7	172	13	<0.02	[illegible]	.249 <0.08
683.04 R	—	80.3		—	—	—	—	—	—	—	—	—	—	—	—	—		<0.02		.289 <0.08
683.04 RS	—	80.3		—	—	—	—	—	—	—	—	—	—	—	—	—		0.188	.249	0.434
684.0401	1.06	71.1	0.754	6.0	8568	430	<1.3	17.9	8.87	2622	24954	123	765	<15.9	24.0	1590	34	.699	.249	108% 2.81
685.0401	1.02	62.9	0.642	25.9	6724	287	<1.6	25.4	3.25	4632	37352	69	310	<18.7	20.0	1513	102	.845	.208	4.06
686.0401	1.01	65.7	0.664	22.7	8310	287	<1.5	22.5	<3.01	3128	36099	66	255	<18.1	22.7	1227	121	1.18	.210	5.62
Serial Dil. 687.0401	1.05	55.0	0.578	33.1	(8765) 7211	732	<1.7	30.6	26.6	11396	36592	296	(234) 559	<20.8	25.2	(1344) 3422	206	0.643	.214	3.00
688.0401	1.00	64.2	0.642	13.4	(7740) 9176	328	<1.6	16.7	10.8	(10232) 10279	21861	153	307	<18.7	21.9	2745	75	0.296	.250	1.18
688.0401 R	1.04	64.2	0.655	13.3	10246	365	<1.5	19.2	11.8	25462	25366	165	418	<18.3	24.3	3165	84	—	—	—
688.0401 RS	1.08	64.2	0.643	27.9	(10794) 10756	877	15.0	33.3	106.5	11127	24440	(179) 313	525	97.0	168.7	3065	136	—	—	—
Spike Conc.			~~[illegible]~~	(14.4)	—	(577)	(14.3)	(14.4)	(144)	(72)	—	(144)	(144)	(144)	(144)	(144)	(58)			
% Recovery				101%	—	95%	105%	115%	101%	—	—	111%		(67%)	102%	—				

DEAD CREEK

Results expressed in mg/kg on dry wt basis)

	Pb	As	Se	Tl	Sn
JOB 4432					
9651.0401	853	13.7	3.3	<3.6	31.5
9652.0401	931	20.0	4.1	<5.3	27.8
9653.0401 HGA Dol.	26	3.5	<1.5	<3.0	<12.1
9654.0401	64.8	12.1	<1.6	<3.3	22.6
9655.0401	71.2	16.4	<1.5	<2.9	<11.6
9656.0401	983	15.5	4.4	<3.7	<15.0
9657.0401	1465	20.9	<2.0	<4.0	<15.4
9658.0401	330	12.9	<1.6	<3.3	<13.1
9659.0401	467	5.1	<2.1	<4.3	<17.0
9660.0401	593	9.0	<2.1	<4.2	<17.0
9661.0401	975	32.9	<2.7	<5.3	<21.4
9662.0401	661	30.3	2.5	<3.2	<13.0
9663.0401	146	3.2	<2.0	<4.1	<16.2
9664.0401	480	7.8	<1.5	<3.0	<12.0
9665.0401	309	4.7	<3.6	<7.2	<25.[illegible]
9666.0401	438	5.1	<1.5	<2.9	<11.7
9667.0401	47.0	5.6	<1.2	<2.3	<4.3
JOB 4442					
9683.0401	30.4	5.2	<1.1	<2.3	<4.1
9684.0401	225	18.2	<1.4	<2.8	14.4
9685.0401	1904	30.1	3.3	<3.0	76.1
9686.0401	2029	76.4	<7.5	<3.0	412
9687.0401	1599	21.0	3.0	<3.3	57.1
9688.0401	910	11.5	<1.5	<3.0	<12.1
9688.0401 R	956	11.8	<1.5	<2.9	11.9 ~~12.5~~
9688.0401 RS	N/A 802	18.4	3.9	16.4	<12.3
	(1[illegible])	(12.3)	(3.1)	(15.4)	N/A
% Recovery	N/A	([illegible])	([illegible])	106	N/A

Project No._____
Book No._____ TITLE _____

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STIONS (CONT'D)

By:_____

	Custody Seal Intact Yes No	Secure Storage Area Received From	AMOUNT OF SAMPLE	TYPE OF DIGESTION	FINAL VOLUME	Dry Weight
2/						
51.04	(SEE ABOVE)	(SEE ABOVE)	1.06 gm	O2	200 ml.	0.557
52.04			1.02 gm	O2	200 ml.	0.376
53.04			1.00 gm	O2	200 ml.	0.659
54.04			1.06 gm	O2	200 ml.	0.610
55.04			1.09 gm	O2	200 ml.	0.684
56.04			1.09 gm	O2	200 ml.	0.554
57.04			1.08 gm	O2	200 ml.	0.504
58.04			1.05 gm	O2	200 ml.	0.608
59.04			1.09 gm	O2	200 ml.	0.470
60.04			1.04 gm	O2	200 ml.	0.472
61.04			1.01 gm	O2	200 ml.	0.371
62.04			1.01 gm	O2	200 ml.	0.617
63.04			1.03 gm	O2	200 ml.	0.493
64.04			1.04 gm	O2	200 ml.	0.664
65.04			1.09 gm	O2	200 ml.	0.278
66.04			1.02 gm	O2	200 ml.	0.682
67.04			1.09 gm	O2	200 ml	BLR ~~0.558~~ 0.558
42/						
68.04	(SEE ABOVE)	(SEE ABOVE)	1.09 gm	O2	200 ml.	0.575
69.04			1.00 gm	O2	200 ml.	0.711
70.04			1.05 gm	O2	200 ml.	0.660
71.04			1.02 gm	O2	200 ml.	0.670
72.04			1.09 gm	O2	200 ml.	0.660
73.04			1.03 gm	O2	200 ml.	0.661
74.04 (R1)			1.06 gm	O2	200 ml.	0.681
75.04 (RS)			1.01 gm	O2	200 ml.	0.648
Blank 912	-		— 0 —	O2	200 ml	

Project No.
Book No.

ge No.
formed: DIGESTIONS
eived: NOVEMBER 10, 1986
rformed By:

(C.L.P. - SOILS FINAL VOLUME = 200 ml.)

ID No.	Custody Seal Intact Yes No	Secure Storage Area Received From	AMOUNT OF SAMPLE	TYPE OF DIGESTION	FINAL VOLUME	Dry Weight
9651.04	Yes	A-4	1.02 gm	01	200ml.	0.536
9652.04	Yes	A-4	1.04 gm	01	200ml.	0.384
9653.04	Yes	A4	1.02 gm	01	200ml.	0.672
9654.04	Yes	A-4	1.00 gm	01	200ml.	0.575
9655.04	Yes	A-4	1.02gm	01	200ml.	0.645
9656.04	Yes	A-4	1.07gm	01	200 ml.	0.524
9657.04	Yes	A-4	1.09 gm.	01	200 ml.	0.509
9658.04	Yes	A-4	1.01 gm.	01	200ml.	0.585
9659.04	Yes	A-4	1.03 gm	01	200ml.	0.444
9660.04	Yes	A-4	1.02gm	01	200 ml.	0.463
9661.04	Yes	A-4	1.08gm	01	200 ml.	0.400
9662.04	Yes	A-4	1.04gm	01	200ml.	0.635
9663.04	Yes	A-4	1.03 gm	01	200ml	0.493
9664.04	Yes	A-4	1.05 gm	01	200 ml	0.675
9665.04	Yes	A-4	1.08 gm	01	200 ml.	0.272
9666.04	Yes	A-4	1.01 gm	01	200 ml.	0.676
9667.04	Yes	A-4	1.04 gm	01	200 ml	0.818
9683.04	Yes	A	1.06gm	01	200ml.	0.851
9684.04	Yes	A	1.06gm	01	200 ml	0.754
9685.04	Yes	A	1.02gm	01	200ml.	0.642
9686.04	Yes	A	1.01 gm	01	200 ml.	0.664
9687.04	Yes	A	1.05 gm	01	200ml.	0.578
9688.04	Yes	A	1.00gm	01	200 ml	0.642
9688.04 (R1)	Yes	A	1.04 gm	01	200ml.	0.668
9688.04 (RS)	Yes	A	1.06gm	01	200ml.	0.693
Blank 911	-		—0—	01	200 ml.	