

THE AVENDT GROUP, INC.

ENGINEERS & SCIENTISTS

HITTMAN EBASCO ASSOCIATES INC.
ANALYTICAL REPORT
AVENDT GROUP: CERRO PROJECT
CLP DATA PACKAGE
AVNT-8062-011
FEBRUARY 8, 1989



HITTMAN EBASCO ASSOCIATES INC.
A Subsidiary of EBASCO SERVICES INCORPORATED

HITTMAN EBASCO

9151 Rumsey Road, Columbia, MD 21045-1992
(301) 730-8525

February 8, 1989

Mr. Craig Owen
Aventt Group
1906 Forest Drive
Annapolis, Maryland 21401

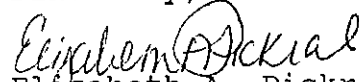
Dear Mr. Owen:

Enclosed is a full CLP data package for the Cerro project, including Total Cyanide and Copper, and EP TOX leachable Copper.

The samples were analyzed in accordance with EPA-approved procedures.

Please feel free to call me at (301) 730-8525 if you have any questions about this report.

Sincerely,


Elizabeth A. Pickral
Marketing/Contracts

AVNT-8062-011
Enclosures
eap

FORM I
INORGANIC ANALYSIS DATA SHEET

REPORTING DATE: 2/3/89

LAB NAME: HITTMAN EBASCO ASSOC.

CONTRACT NO.: AVNT-8062-011

SOW NO.: 7/85

LAB RECEIPT DATE: 11/18/88

CONCENTRATION: LOW ☒ MEDIUM ☐

MATRIX: WATER ☐ SOIL ☒

UNITS : ug/l (LEACHATE)

LAB SAMPLE ID	CLIENT ID	(EPTOX) COPPER
BLK #1		[23]
BLK #2		61
BLK #3		<17
BLK #4		<17
6870	C 101 9ft	595
6871	C 101 12ft	1110
6872	C 102 7ft	4190
6873	C 102 10ft	1460
6874	C 103 3ft	7700
6875	C 103 6ft	4790
6876	C 104 9ft	1940
6877	C 104 12ft	4840
6878	C 105 9ft	7070
6879	C 105 12ft	4740
6880	C 201 3ft	431
6881	C 201 6ft	639
6882	C 202 3ft	25900
6883	C 202 6ft	2460
6884	C 203 3ft	1680
6885	C 203 6ft	2210
6886	C 204 3ft	671
6887	C 204 6ft	899
6888	C 205 3ft	4370
6889	C 205 6ft	3650
6890	C 206 3ft	3410
6891	C 206 6ft	2010
6892	C 207 3ft	1490
6893	C 207 6ft	650
6894	C 301 3ft	17300
6895	C 301 6ft	10500
6896	C 302 3ft	1660
6897	C 302 6ft	1200
6898	C 303 3ft	1050
6899	C 303 6ft	2260
6900	C 304 3ft	880
6901	C 304 6ft	999
6902	B 109A	38
6903	B 109B	34
6904	B 109C	406
6905	B 109D	<17

FORM II

CONTRACT NO.: AVNT-8062-011

SOW NO.: 7/85

UNITS: $\mu\text{g/l}$

[illegible]

INITIAL AND CONTINUING CALIBRATION SOURCE ON NEXT PAGE. ICV #1 (0487), FISHER 500 ppb

CONTROL LIMITS: COPPER 80-120

INDICATE ANALYTICAL METHOD USED: P - ICP

BLANKS

CONTRACT NO.: AVNT-8062-011

UNITS: $\mu\text{g/l}$

[illegible]

FORM VI A

SPIKES

CLIENT: AVENDT GROUP

CONTRACT NO.: AVENT-8062-011

CLIENT ID: C10596+

HEAT ID: 6878

LAB NAME: HITTMAN EBASCO ASSOCIATES INC.

DATE 2/3/89

MATRIX SOIL

UNITS: $\mu\text{g/l}$

COMPOUND	CONTROL LIMIT	SAMPLE RESULT(SSR)	SAMPLE RESULT(SR)	SPIKE ADDED(SA)	%R
ANALYTES:					
COPPER	75 - 125	18600	7070	12500	92

$$\%R = [(SSR - SR) / SA] * 100$$

R" - OUT OF CONTROL

NR" - NOT REQUIRED

FORM VI ^B

SPIKES

CLIENT: AVENDT GROUP

CONTRACT NO.: AVENT-8062-011

CLIENT ID: C 2053ftHEAT ID: 6888

LAB NAME: HITTMAN EBASCO ASSOCIATES INC.

DATE 2/3/89MATRIX SOILUNITS: $\mu\text{g/l}$

COMPOUND	CONTROL LIMIT	SAMPLE RESULT(SSR)	SAMPLE RESULT(SR)	SPIKE ADDED(SA)	%R
ANALYTES:					
COPPER	75 - 125	9280	4370	500	98

$$\%R = [(SSR - SR) / SA] * 100$$

R" - OUT OF CONTROL

NR" - NOT REQUIRED

FORM VI C

SPIKES

CLIENT: AVENDT GROUP

CONTRACT NO.: AVENT-8062-011

CLIENT ID: C 207 6ftHEAI ID: 6893

LAB NAME: HITTMAN EBASCO ASSOCIATES INC.

DATE 2/3/89MATRIX SOILUNITS: $\mu\text{g/l}$

COMPOUND	CONTROL LIMIT	SAMPLE RESULT(SSR)	SAMPLE RESULT(SR)	SPIKE ADDED(SA)	%R
ANALYTES:					
COPPER	75 - 125	1140	650	500	98

$$\%R = [(SSR - SR) / SA] * 100$$

R" - OUT OF CONTROL

NR" - NOT REQUIRED

FORM VI D

SPIKES

CLIENT: AVENDT GROUP

CONTRACT NO.: AVENT-8062-011

LAB NAME: HITTMAN EBASCO ASSOCIATES INC.

CLIENT ID: C 303 34

DATE

2/3/89

HEAT ID:

6898

MATRIX

SOIL

UNITS: #g/l

COMPOUND	CONTROL LIMIT	SAMPLE RESULT(SSR)	SAMPLE RESULT(SR)	SPIKE ADDED(SA)	%R
ANALYTES:					
COPPER	75 - 125	1480	1050	^{KH 2/3/89} 8500	86

$$\%R = [(SSR - SR) / SA] * 100$$

R" - OUT OF CONTROL

NR" - NOT REQUIRED

FORM VI ^A

DUPLICATES

CLIENT: AVENDT GROUP

CONTRACT NO.: AVENT-8062-011

CLIENT ID: C 10594HEAI ID: 6878

LAB NAME: HITTMAN EBASCO ASSOCIATES INC.

DATE 2/3/89MATRIX SOILUNITS: $\mu\text{g/l}$

COMPOUND	CONTROL LIMIT	SAMPLE (S)	DUPLICATE (D)	%RPD
ANALYTES:				
COPPER	$\pm 20\%$	7070	4350	48 *

* OUT OF CONTROL

 $\text{RPD} = [S - D / ((S + D) / 2)] * 100$

NC - NON CALCULABLE RPD DUE TO VALUE(S) LESS THAN CRDL

FORM VI B

DUPLICATES

CLIENT: AVENDT GROUP

CONTRACT NO.: AVENT-8062-011

LAB NAME: HITTMAN EBASCO ASSOCIATES INC.

CLIENT ID: C 205 3P+DATE 2/3/89HEAT ID: 6888MATRIX SOIL

UNITS: µg/l

COMPOUND	CONTROL LIMIT	SAMPLE (S)	DUPLICATE (D)	%RPD
ANALYTES:				
COPPER	$\pm 20\%$	4370	1770	85 *

* OUT OF CONTROL

 $RPD = [S - D / ((S + D) / 2)] * 100$

NC - NON CALCULABLE RPD DUE TO VALUE(S) LESS THAN CRDL

FORM VI^C

DUPLICATES

CLIENT: AVENT GROUP

CONTRACT NO.: AVENT-8062-011

LAB NAME: HITTMAN EBASCO ASSOCIATES INC.

CLIENT ID: C 207 64DATE 2/3/89HEAT ID: 6893MATRIX SOIL

UNITS: µg/l

COMPOUND	CONTROL LIMIT	SAMPLE (S)	DUPLICATE (D)	%RPD
ANALYTES:				
COPPER	$\pm 20\%$	650	232	95 *

* OUT OF CONTROL

$$RPD = [S - D / ((S + D) / 2)] * 100$$

NC - NON CALCULABLE RPD DUE TO VALUE(S) LESS THAN CRDL

FORM VI ^D

DUPLICATES

CLIENT: AVENDT GROUP

CONTRACT NO.: AVENT-8062-011

CLIENT ID: C 303 3F4HEAT ID: 6898

LAB NAME: HITTMAN EBASCO ASSOCIATES INC.

DATE 2/3/89MATRIX SOILUNITS: $\mu\text{g/l}$

COMPOUND	CONTROL LIMIT	SAMPLE (S)	DUPLICATE (D)	%RPD
ANALYTES:				
COPPER	$\pm 20\%$	1050	5290	134 *
		1050 KH 2/3/89		

* OUT OF CONTROL

$$\text{RPD} = [(S-D) / ((S+D)/2)] * 100$$

NC - NON CALCULABLE RPD DUE TO VALUE(S) LESS THAN CRDL

EP TOX EXTRACTION PROCEDURE
USEPA METHOD 1310
SOIL [] SLUDGE [] LIQUID []

SUP. REVIEW 6/18/89
DATE 2/8/89

ANALYST CC
DATE 12-19-88
NOTEBOOK 041
PAGE 36

DAAD05-84-C0094
PICKUP ORDER _____

HEAT #	CLIENT NO.	SAMPLE WEIGHT	ml MEASURED or FILTERED (H2O or sludge)	ml WATER ADDED	INITIAL pH	ml ACID ADDED to pH 5	15 MIN pH	ml ACID ADDED	30 MIN pH	ml ACID ADDED	1 HR pH	ml ACID ADDED
BLANK				1400	5.9	1	4.8	0	4.8	0	4.7	0
	6870	100.12		1400	7.9	1	5.0	0	5.1	0.5	5.0	0
	6871	100.06		1400	7.5	1	4.9	0	5.0	0	5.1	0
	6872	100.18		1400	8.5	.5	5.3	.5	5.3	.5	5.06	0
	6873	100.09		1400	8.1	.5	5.08	0	5.2	.5	5.0	0
	6874	100.03		1400	6.9	.5	5.01	0	5.2	.5	4.99	0
	6875	100.14		1400	7.0	1	5.36	.75	4.9	0	5.05	0
	6876	100.13		1400	7.0	.5	5.46	1	5.2	.5	4.91	0
	6877	100.16		1400	6.9	1	5.25	.75	5.1	.5	5.00	0
	6878	100.10		1400	7.3	1	5.65	1	5.1	.5	5.07	0
	6879	100.08		1400	7.6	1	5.34	1	5.1	.5	4.97	0
	6880	100.16		1400	9.7	2	6.15	3	5.5	3	5.07	0

	11:30 2 HR pH	ml ACID ADDED	12:30 3 HR pH	ml ACID ADDED	1:30 4 HR pH	ml ACID ADDED	5 HR pH	ml ACID ADDED	6 HR pH	FINAL 124-HR ml ACID ADDED	FINAL ml ACID ADDED	TOTAL ACID ADD	TOTAL VOLUME
BLANK	4.91	0	4.7	0	4.3	0	4.5	0	5.0	0	5.0	0	1 mL
6870	5.04	0	5.0	0	4.9	0	5.1	.5	5.0	0	5.0	0	2 mL
6871	5.08	0	5.0	0	5.0	0	5.2	1	5.0	0	5.0	0	2 mL
6872	5.09	0	5.1	.5	5.1	0.5	5.0	0	5.0	0	5.0	0	2 1/2 mL
6873	5.02	0	5.2	1	4.9	0	5.0	0	5.0	0	5.0	0	2 mL
6874	5.03	0	5.2	1	5.0	0	5.1	.5	5.0	0	5.0	0	2 1/2 mL
6875	5.06	0	5.3	1	4.8	0	4.9	0	5.0	0	5.0	0	2.75 mL
6876	4.91	0	4.9	0	4.9	0	5.1	.5	5.0	0	5.0	0	2 1/2 mL
6877	4.95	0	5.0	0	5.0	0	5.1	.5	5.0	0	5.0	0	2 1/2 mL
6878	5.01	0	5.2	1	4.9	0	5.0	0	5.0	0	5.0	0	3 1/2 mL
6879	5.00	0	5.1	.5	5.0	0	5.0	0	5.0	0	5.0	0	3 mL
6880	5.13	0	5.3	3	5.0	0	5.1	.5	5.0	0	5.0	0	3 1/2 mL

COMMENTS: _____

EP TOX EXTRACTION PROCEDURE
USEPA METHOD 1310
SOIL ☒ SLUDGE ☐ LIQUID ☐

SUP. REVIEW CAP
DATE 2/8/89

ANALYST CIC CNP
DATE 12/21/88
NOTEBOOK 991
PAGE 37

DAAD05-B4-C0094
PICKUP ORDER _____

HEAT #	CLIENT NO.	SAMPLE WEIGHT	ml MEASURED or FILTERED (H2O or sludge)	ml WATER ADDED	12:30 INITIAL pH	ml ACID ADDED to pH 5	12:45 15 MIN pH	ml ACID ADDED	1:00 30 MIN pH	ml ACID ADDED	1:15 1 HR pH	ml ACID ADDED
BLANK				1600	6.6	.05	4.8	—	4.8	—	4.8	—
6881		100.02		1600	8.6	1	5.5	1	5.1	—	5.0	—
6882		100.05		1600	7.5	.75	5.8	1	5.7	4	5.9	10
6883		100.10		1600	9.2	1.5	6.3	2	6.1	5	5.1	—
6884		100.11		1600	8.4	1	6.2	2	5.4	3	5.1	—
6885		100.07		1600	8.2	1	5.8	1	5.1	—	5.1	—
6886		100.15		1600	8.8	1.5	6.2	2	5.5	3	5.6	5
6887		100.18		1600	7.7	1	6.6	3	5.4	3	5.1	—
6888		100.07		1600	6.5	.5	5.9	2	4.9	—	4.9	—
6889		100.05		1600	6.1	1	5.0	—	5.1	—	5.0	—
6890		100.12		1600	7.8	1	5.7	1	5.0	—	5.0	—
6891		100.11		1600	7.2	2	5.4	1	5.0	—	4.9	—

	1:30 2 HR pH	ml ACID ADDED	2:00 2 HR 30 min pH	ml ACID ADDED	3:00 4 HR pH	ml ACID ADDED	4:00	5:00	24 hr FINAL pH (24 HR) ml acid	24 hr period ml acid added	TOTAL VOLUME ml acid added
BLANK	4.8	—	4.7	—	4.7	—	4.7	—	4.7	—	—
6881	5.0	—	5.1	—	4.8	—	4.9	—	4.9	—	—
6882	5.0	—	5.2	—	5.5	30	5.2	—	5.1	—	25
6883	5.0	—	5.1	—	5.1	—	5.0	—	5.0	—	10
6884	5.1	—	5.0	—	5.1	—	4.9	—	5.0	—	—
6885	4.9	—	5.1	—	5.3	3	4.8	—	4.9	—	—
6886	4.9	—	5.2	—	5.4	2	5.1	—	5.2	—	8
6887	5.1	—	5.1	—	5.5	5	5.0	—	5.0	—	11
6888	4.8	—	4.9	—	4.9	—	5.08	—	5.0	—	2.5
6889	5.1	—	4.9	—	5.0	—	5.0	—	5.1	—	3
6890	4.9	—	5.0	—	5.3	2	4.95	—	5.0	—	—
6891	4.8	—	5.1	—	5.2	—	5.0	—	5.1	—	2

COMMENTS:

EP TOX EXTRACTION PROCEDURE
USEPA METHOD 1310
SOIL ☐ SLUDGE ☐ LIQUID ☐

SUP. REVIEW *EAP*
DATE *2/8/89*

ANALYST ccc CRUP
DATE 12/22/89
NOTEBOOK 941
PAGE 38

DAAD05-84-C0094
PICKUP ORDER_____

[illegible]

COMMENTS:

EP TOX EXTRACTION PROCEDURE
USEPA METHOD 1310
SOIL [] SLUDGE [] LIQUID []

SUP. REVIEW P. DP
DATE 2/8/89

ANALYST SUP
DATE 12-22-88
NOTEBOOK 941
PAGE 39

DAAD05-84-C0094
PICKUP ORDER _____

HEAT #	CLIENT NO.	SAMPLE WEIGHT	ml MEASURED or FILTERED (H2O or sludge)	ml WATER ADDED	INITIAL pH	ml ACID ADDED to pH 5	15 MIN pH	ml ACID ADDED	30 MIN pH	ml ACID ADDED	1 HR pH	ml ACID ADDED
BLANK				160.0	5.8	1.75	4.9	0	4.8	0	4.7	0
6892		100.09		140.0	9.4	5	6.0	4	5.3	3	5.1	1
6893		100.11		160.0	9.4	3	5.1	1	4.9	0	5.0	0
6894		100.15		160.0	6.6	2	5.2	1	5.0	0	5.1	1
6895		100.07		160.0	6.6	1	5.1	0.5	5.0	0	5.1	0.5
6896		100.02		160.0	6.7	1	4.9	0	4.9	0	4.9	0
6897		100.01										
6898		100.10										
6899		100.10										
6900		100.12										
6901		100.01										
6902		100.15										

	10:30 2 HR pH	ml ACID ADDED	11:30 3 HR pH	ml ACID ADDED	12:30 4 HR pH	ml ACID ADDED	5 HR pH	ml ACID ADDED	6 HR pH	ml FINAL pH 124 HRT Acid	FINAL ml Acid ADDED pH	ml Acid TOTAL VOLUME	TOTAL ml Acid ADDED
BLANK	4.7	0	4.8	0	4.7	0	4.7	0	4.7	0	4.5	0	1.75 ML
6892	5.3	5	5.1	2	5.1	1	5.1	1	5.1	2	5.0	0	22 1/2 MLS
6893	5.6	2	5.3	2	5.2	1	5.2	2	5.1	1	5.0	0	12 MLS
6894	5.0	0	5.1	1	4.9	0	5.0	0	5.0	0	5.0	0	5 MLS
6895	5.0	0	5.1	0	4.9	0	4.9	0	4.9	0	4.9	0	3 MLS
6896	5.0	0	6.0	0	5.0	0	5.1	1	4.9	0	4.9	0	2 MLS

COMMENTS:

SUP. REVIEW *EAP*
DATE *2/8/80*

ANALYST ccc
DATE 12/22/88
NOTEBOOK 94C
PAGE 40

PICKUP ORDER

COMMENTS:

EP TOX EXTRACTION PROCEDURE
USEPA METHOD 1310
SOIL [] SLUDGE [] LIQUID []

SUP. REVIEW
DATE 2

ANALYST CUP
DATE 12-20-82
NOTEBOOK 947
PAGE 43

DAAD05-84-C0094
PICKUP ORDER

[illegible]

	2 HR pH	ml ACID ADDED	3 HR pH	ml ACID ADDED	4 HR pH	ml ACID ADDED	FINAL pH (24 HR)	ml acid ADDED	TOTAL VOLUME	TOTAL ml ACID
BLANK										
100	6.88						4.9	0	2L	2
11	6.82						4.9	0	2L	2
11	6.80						4.4	0	2L	1 1/2
11	6.80						4.7	0	2L	4 1/2
11	7.15						5.1	0	2L	225
11	7.26						5.4	0	2L	

COMMENTS:

=====
 ===
 Perkin-Elmer ICP/6500 Analytical Report

Method File: epa cu Date Collected: 89/01/03 Time: 13:53
 Date of Report: 89/01/03 Time: 16:35
 =====

icv-1, *41542* cu324epa-1
 Units ppb
 Conc. 479 *860/0*
 SD 6.4

eptox blk1 cu324epa-1
 Units ppb
 Conc. 23
 SD 29.9

eptox blk2 cu324epa-1
 Units ppb
 Conc. 61
 SD 2.5

eptox blk1 reru cu324epa-1
 Units ppb
 Conc. 27
 SD 32.2

eptox blk3 cu324epa-1
 Units ppb
 Conc. 1
 SD 6.5

eptox blk4 cu324epa-1
 Units ppb
 Conc. 6
 SD 1.1

6870 cu324epa-1
 Units ppb
 Conc. 595
 SD 6.8

6871 cu324epa-1
 Units ppb
 Conc. 1128
 SD 5.2

6871 2x cu324epa-1
 Units ppb
 Conc. 557 *x2 = 1114*
 SD 4.9

6872 cu324epa-1
 Units ppb
 Conc. Over Range

6873 cu324epa-1
Units ppb
Conc. 1533
SD 26.3

d.i rinse cu324epa-1
Units ppb
Conc. -1
SD 4.4

ccv500ppb cu324epa-1
Units ppb
Conc. 473
SD 3.6

6872 5x cu324epa-1
Units ppb
Conc. 837
SD 30.2

6873 5x cu324epa-1
Units ppb
Conc. 291
SD 5.8

6874 cu324epa-1
Units ppb
Conc. 2729
SD 0.8

6874 5x cu324epa-1
Units ppb
Conc. 1451
SD 21.5

6875 cu324epa-1
Units ppb
Conc. Over Range

6874 10x cu324epa-1
Units ppb
Conc. 770
SD 10.4

6875 10x cu324epa-1
Units ppb
Conc. 479
SD 14.8

6876 cu324epa-1
Units ppb
Conc. 2136
SD 43.7

6876 10x cu324epa-1
Units ppb
Conc. 194
SD 4.1

9570

x5 = 4185

x5 = 4185
1455

x5 = 7255

x10 = 7700

x10 = 4790

x10 = 1940

6877 cu324epa-1
Units ppb
Conc. Over Range

d.i rinse cu324epa-1
Units ppb
Conc. 0
SD 5.9

ccvf-500ppb cu324epa-1
Units ppb
Conc. 475
SD 14.9

95%

6877 10x cu324epa-1
Units ppb
Conc. 484 $\times 10 = 4840$
SD 8.2

6878 cu324epa-1
Units ppb
Conc. 2729
SD 0.8

6879 cu324epa-1
Units ppb
Conc. Over Range

6878 10x cu324epa-1
Units ppb
Conc. 707 $\times 10 = 7070$
SD 16.1

6879 10x cu324epa-1
Units ppb
Conc. 474 $\times 10 = 4740$
SD 0.0

6878-d cu324epa-1
Units ppb
Conc. Over Range

6878-d 10x cu324epa-1
Units ppb
Conc. 435 $\times 10 = 4350$
SD 13.7

6878 spk 50x cu324epa-1
Units ppb
Conc. 371 $\times 50 = 18550$
SD 6.4
92%

6878spk rerun50x cu324epa-1
Units ppb
Conc. 367
SD 3.8

6879 10x cu324epa-1
 Units ppb
 Conc. 425 $\times 10 = 4250$
 SD 0.1

d.i rinse cu324epa-1
 Units ppb
 Conc. 25
 SD 31.4

cevf-500ppb cu324epa-1
 Units ppb
 Conc. 471 $\times 94\%$
 SD 8.1

6880 cu324epa-1
 Units ppb
 Conc. 431
 SD 4.6

6881 cu324epa-1
 Units ppb
 Conc. 639
 SD 8.6

6882 cu324epa-1
 Units ppb
 Conc. 2729
 SD 0.8

6883 cu324epa-1
 Units ppb
 Conc. 2694
 SD 26.0

6882 10x cu324epa-1
 Units ppb
 Conc. 2441 $\times 10 = 24410$ O.C.
 SD 14.8 $\times 10 = 148$

6883 10x cu324epa-1
 Units ppb
 Conc. 246 $\times 10 = 2460$
 SD 0.0

6884 cu324epa-1
 Units ppb
 Conc. 1855
 SD 47.5

6884 10x cu324epa-1
 Units ppb
 Conc. 168 $\times 10 = 1680$
 SD 0.0

6882 25x	cu324epa-1	
Units	ppb	
Conc.	1036	$125 = 25,900$
SD	19.0	

6883 25x	cu324epa-1	
Units	ppb	
Conc.	87 25	2175
SD	4.7	not needed

d.i rinse	cu324epa-1	
Units	ppb	
Conc.	-1	
SD	4.0	

ccvf-500ppb	cu324epa-1	
Units	ppb	
Conc.	481	96%
SD	6.7	

6885	cu324epa-1	
Units	ppb	
Conc.	2002	
SD	28.8	

6886	cu324epa-1	
Units	ppb	
Conc.	671	
SD	6.6	

6885 10x	cu324epa-1	
Units	ppb	
Conc.	221	$\times 10 = 2210$
SD	16.5	

6887	cu324epa-1	
Units	ppb	
Conc.	899	
SD	9.4	

6888	cu324epa-1	
Units	ppb	
Conc.	Over Range	

6888-d	cu324epa-1	
Units	ppb	
Conc.	1611	
SD	27.7	

6888 10x	cu324epa-1	
Units	ppb	
Conc.	437	$\times 10 = 4370$
SD	5.3	

6888-d 10x	cu324epa-1	
Units	ppb	
Conc.	177	$\times 10 = 1770$
SD	28.2	

6888-spK 20x	cu324epa-1
Units	ppb
Conc.	464 $\times 20 = 9280$
SD	12.8 98%

6889	cu324epa-1
Units	ppb
Conc.	Over Range

d.i rinse	cu324epa-1
Units	ppb
Conc.	5
SD	1.5

ccvf-500ppb	cu324epa-1
Units	ppb
Conc.	480 96%
SD	6.2

6889	cu324epa-1
Units	ppb
Conc.	Over Range

6889 10x	cu324epa-1
Units	ppb
Conc.	365 $\times 10 = 3650$
SD	16.5

6890	cu324epa-1
Units	ppb
Conc.	2678
SD	39.8

6890 10x	cu324epa-1
Units	ppb
Conc.	341 $\times 10 = 3410$
SD	10.5

6891	cu324epa-1
Units	ppb
Conc.	1607
SD	57.1

6892	cu324epa-1
Units	ppb
Conc.	1156
SD	36.9

6891 10x	cu324epa-1
Units	ppb
Conc.	201 $\times 10 = 2010$
SD	18.3

6892 10x	cu324epa-1
Units	ppb
Conc.	149 $\times 10 = 1490$
SD	32.6

6897		cu324epa-1	
	Units	ppb	
	Conc.	1089	
	SD	9.1	
6896 10x		cu324epa-1	
	Units	ppb	
	Conc.	166	$\times 10 = 1660$
	SD	6.1	
ccvf-500ppb		cu324epa-1	
	Units	ppb	
	Conc.	470	94%
	SD	16.5	
6897 2x		cu324epa-1	
	Units	ppb	
	Conc.	602	$\times 2 = 1204$
	SD	22.0	
6898		cu324epa-1	
	Units	ppb	
	Conc.	1047	
	SD	14.7	
6899		cu324epa-1	
	Units	ppb	
	Conc.	2170	
	SD	24.1	
6898-d		cu324epa-1	
	Units	ppb	
	Conc.	2729	
	SD	0.8	
6899 10x		cu324epa-1	
	Units	ppb	
	Conc.	226	$\times 10 = 2260$
	SD	26.7	
6898-d 10x		cu324epa-1	
	Units	ppb	
	Conc.	529	$\times 10 = 5290$
	SD	3.8	
6898spk 2x		cu324epa-1	
	Units	ppb	
	Conc.	738	$\times 2 = 1476$
	SD	14.6	86%
6900		cu324epa-1	
	Units	ppb	
	Conc.	1282	
	SD	27.7	

6901 cu324epa-1
 Units ppb
 Conc. 999
 SD 2.4

6900 10x cu324epa-1
 Units ppb
 Conc. 88 $\times 10 = 880$
 SD 7.8

ccvf-500ppb cu324epa-1
 Units ppb
 Conc. 468 94%
 SD 0.3

6902 cu324epa-1
 Units ppb
 Conc. 38
 SD 16.2

6903 cu324epa-1
 Units ppb
 Conc. 34
 SD 7.0

6902 rerun cu324epa-1
 Units ppb
 Conc. 46
 SD 33.9

6903 rerun cu324epa-1
 Units ppb
 Conc. 26
 SD 3.2

6904 cu324epa-1
 Units ppb
 Conc. 406
 SD 7.4

6905 cu324epa-1
 Units ppb
 Conc. -3
 SD 3.0

ccvf-500ppb cu324epa-1
 Units ppb
 Conc. 499 99%
 SD 14.4

EPA CONTRACT LABORATORY PROGRAM: METALS
CONTRACT NO. 68-01-7056

ANALYST
DATE
NOTEBOOK NO.
PAGE NO.

AMK
11/3/89
1971
709

EPA CLP ICP

INSTRUMENT NUMBER: 3

CASE # EPA AWT-8062-EPTOX

STOCK SOLUTION LOT # Cu Spex

STD. PREP DATE 1/3/89

SUPERVISORY REVIEW

DATE

INITIAL CAL. VERIFICATION 10K1(4A)1:10
CONCENTRATION = 542
CONTINUING CAL. VERIF. Fisher
CONCENTRATION 500000
LAB CONTROL SAMPLE (H2O) N/A
(SOIL)

STANDARD 1 1000ppb
2 100
3 25
4 BLK
5

CAL. BLANK

ICV

1. ICS eptox blk
2. LCS H2O eptox blk
3. SOIL eptox blk rem
4. eptox blk 3
5. eptox blk 4
6. eptox
7. eptox
8. eptox 2x
9. eptox
10. eptox
CAL. BLANK N.I. Lunge
CCV

11. 68725X
12. 68735X
13. 6874
14. 68745X
15. 6875
16. 687410X
17. 687510X
18. 6876
19. 687610X
20. 6877
CAL. BLANK N.I. Lunge
CCV

21. 687710X
22. 6878
23. 6879
24. 687810X
25. 687910X
26. 6878 DUP
27. 6878 DUP 10X
28. 6878 40K 100X 50 100K 250
29. 6878 40K 100X 50 100K 250
30. 687910X
CAL. BLANK N.I. Lunge
CCV

EPA CONTRACT LABORATORY PROGRAM: METALS
CONTRACT NO. 68-01-7056

EPA CLP ICP
INSTRUMENT NUMBER: 3
CASE # ANAL SOUZEPTUP
Metal Cu

ANALYST 1/3/59
DATE ENC
NOTEBOOK NO. 678
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31 6880
32 6881
33 6882
34 6883
35 6882 10X
36 6883 10X
37 6884
38 6884 10X
39 6882 25X
40 6883 25X not needed
CAL. BLANK D. J. Linse
CCV ✓
41 6885
42 6886
43 6885 10X
44 6887
45 6888
46 6888-DUP
47 6888 10X
48 6888-DUP 10X
49 6888-SPK 20X SPK250
50 6889
CAL. BLANK D. J. Linse
CCV ✓

51 6889
52 6889 10X
53 6890
54 6890 10X
55 6891
56 6892
57 6891 10X
58 6892 10X
59 6893
60 6893-DUP
CAL. BLANK ✓
CCV ✓
63 6893-SPK 2X + 250
64 6894
65 6895
66 6894 10X
67 6895 10X
68 6894 25X
69 6895 25X
70 6896
SERIAL DILUTION H2O 6897
SOIL 6896 10X
CAL. BLANK ✓
CCV ✓

71 6897 2X
72 6898
73 6899
74 6898-DUP
75 6899 10X
76 6898-DUP 10X
77 6898-SPK 2X SPK25
78 6900
79 6901
80 6900 10X
CCV ✓
81 6902
82 6902 10X
83 6902 rerun
84 6903 rerun
85 6904
86 6905
CCV ✓

Run Manual Mode

89/01/03 13:53

Method Name: epa cu Replicates: 2 Read Delay: 20
Print Format: All Data ID Name: Data Name: avnt687
0cu
Remarks: AVNT 8062 eptox 6870-6905 cu only analyst kmk

cu324epa-1

Element Name cu324epa-1 Gain 528

Standard 1 Replicate 1
cu324epa-1 EM 136545

Standard 1 Replicate 2
cu324epa-1 EM 135862
cu324epa-1 AV 136204 SD 480.7 CV 0.3 CONC 1000 ppb

Standard 2 Replicate 1
cu324epa-1 EM 76344

Standard 2 Replicate 2
cu324epa-1 EM 79263
cu324epa-1 AV 77803 SD 2063.9 CV 2.6 CONC 100 ppb

Standard 3 Replicate 1
cu324epa-1 EM 71389

Standard 3 Replicate 2
cu324epa-1 EM 73787
cu324epa-1 AV 72588 SD 1695.3 CV 2.3 CONC 25 ppb

Blank Replicate 1
cu324epa-1 EM 69835

Blank Replicate 2
cu324epa-1 EM 69446

cu324epa-1 AV 69640 SD 273.1 CV 0.3 CONC 0 ppb

Element Name cu324epa-1 Correlation Coefficient 0.9997

icv-1 Replicate 1
cu324epa-1 475 ppb

icv-1 Replicate 2
cu324epa-1 484 ppb
cu324epa-1 AV 479 ppb SD 6.4 CV 1.3

eptox blk1 Replicate 1
cu324epa-1 2 ppb

eptox blk1 Replicate 2
cu324epa-1 44 ppb
cu324epa-1 AV 23 ppb SD 29.9 CV 127.1

eptox blk2 Replicate 1
cu324epa-1 63 ppb

eptox blk2 Replicate 2
cu324epa-1 59 ppb
cu324epa-1 AV 61 ppb SD 2.5 CV 4.1

eptox blk1 rer Replicate 1
cu324epa-1 50 ppb

eptox blk1 rer Replicate 2
cu324epa-1 5 ppb

cu324epa-1 AV 27 ppb SD 32.2 CV 115.8

eptox blk3 Replicate 1

cu324epa-1 6 ppb Peak Offset

eptox blk3 Replicate 2

cu324epa-1 -3 ppb

cu324epa-1 AV 1 ppb SD 6.5 CV 437.1

eptox blk4 Replicate 1

cu324epa-1 5 ppb

eptox blk4 Replicate 2

cu324epa-1 6 ppb

cu324epa-1 AV 6 ppb SD 1.1 CV 18.0

6870 Replicate 1

cu324epa-1 590 ppb

6870 Replicate 2

cu324epa-1 600 ppb

cu324epa-1 AV 595 ppb SD 6.8 CV 1.1

6871 Replicate 1

cu324epa-1 1124 ppb Over Calib.

6871 Replicate 2

cu324epa-1 1132 ppb Over Calib.

cu324epa-1 AV 1128 ppb SD 5.2 CV 0.4

6871 2x Replicate 1

cu324epa-1 560 ppb

6871 2x Replicate 2

cu324epa-1 553 ppb

cu324epa-1 AV 557 ppb

SD

4.9 CV 0.8

6872

Replicate 1

cu324epa-1

Over Range

6872

Replicate 2

cu324epa-1

Over Range

cu324epa-1

Over Range

6873

Replicate 1

cu324epa-1

1515 ppb

Over Calib.

6873

Replicate 2

cu324epa-1

1552 ppb

Over Calib.

cu324epa-1 AV 1533 ppb

SD

26.3 CV 1.7

d.i rinse

Replicate 1

cu324epa-1

-4 ppb

Peak Offset

d.i rinse

Replicate 2

cu324epa-1

1 ppb

cu324epa-1 AV -1 ppb

SD

4.4 CV 355.7

ccv500ppb

Replicate 1

cu324epa-1

471 ppb

ccv500ppb

Replicate 2

cu324epa-1

476 ppb

cu324epa-1 AV 473 ppb

SD

3.6 CV 0.7

6872 5x

Replicate 1

cu324epa-1

816 ppb

6872 5x

Replicate 2

	cu324epa-1	859 ppb			
	cu324epa-1 AV	837 ppb	SD	30.2 CV	3.6
6873 5x	Replicate 1				
	cu324epa-1	295 ppb			
6873 5x	Replicate 2				
	cu324epa-1	287 ppb			
	cu324epa-1 AV	291 ppb	SD	5.8 CV	2.0
6874	Replicate 1				
	cu324epa-1	2729 ppb		Peak Offset	
6874	Replicate 2				
	cu324epa-1	2729 ppb		Peak Offset	
	cu324epa-1 AV	2729 ppb	SD	0.8 CV	0.0
6874 5x	Replicate 1				
	cu324epa-1	1467 ppb		Over Calib.	
6874 5x	Replicate 2				
	cu324epa-1	1436 ppb		Over Calib.	
	cu324epa-1 AV	1451 ppb	SD	21.5 CV	1.4
6875	Replicate 1				
	cu324epa-1			Over Range	
6875	Replicate 2				
	cu324epa-1			Over Range	
	cu324epa-1			Over Range	
6874 10x	Replicate 1				
	cu324epa-1	762 ppb			

6874 10x Replicate 2
 cu324epa-1 777 ppb
 cu324epa-1 AV 770 ppb SD 10.4 CV 1.3

6875 10x Replicate 1
 cu324epa-1 469 ppb

6875 10x Replicate 2
 cu324epa-1 490 ppb
 cu324epa-1 AV 479 ppb SD 14.8 CV 3.0

6876 Replicate 1
 cu324epa-1 2105 ppb Over Calib.

6876 Replicate 2
 cu324epa-1 2167 ppb Over Calib.
 cu324epa-1 AV 2136 ppb SD 43.7 CV 2.0

6876 10x Replicate 1
 cu324epa-1 191 ppb

6876 10x Replicate 2
 cu324epa-1 197 ppb
 cu324epa-1 AV 194 ppb SD 4.1 CV 2.1

6877 Replicate 1
 cu324epa-1 Over Range

6877 Replicate 2
 cu324epa-1 Over Range
 cu324epa-1 Over Range

d.i rinse Replicate 1

cu324epa-1 3 ppb

d.i rinse Replicate 2

cu324epa-1 -4 ppb Peak Offset

cu324epa-1 AV 0 ppb SD 5.9 CV>.999

ccvf-500ppb Replicate 1

cu324epa-1 464 ppb

ccvf-500ppb Replicate 2

cu324epa-1 485 ppb

cu324epa-1 AV 475 ppb SD 14.9 CV 3.1

6877 10x Replicate 1

cu324epa-1 478 ppb

6877 10x Replicate 2

cu324epa-1 490 ppb

cu324epa-1 AV 484 ppb SD 8.2 CV 1.6

6878 Replicate 1

cu324epa-1 2729 ppb Peak Offset

6878 Replicate 2

cu324epa-1 2729 ppb Peak Offset

cu324epa-1 AV 2729 ppb SD 0.8 CV 0.0

6879 Replicate 1

cu324epa-1 Over Range

6879 Replicate 2

cu324epa-1 Over Range

					Over Range
6878 10x	Replicate 1				
	cu324epa-1		696 ppb		
6878 10x	Replicate 2				
	cu324epa-1		719 ppb		
	cu324epa-1 AV	707 ppb	SD	16.1 CV	2.2
6879 10x	Replicate 1				
	cu324epa-1		474 ppb		
6879 10x	Replicate 2				
	cu324epa-1		474 ppb		
	cu324epa-1 AV	474 ppb	SD	0.0 CV	0.0
6878-d	Replicate 1				
	cu324epa-1				Over Range
6878-d	Replicate 2				
	cu324epa-1		2721 ppb		Over Calib.
	cu324epa-1				Over Range
6878-d 10x	Replicate 1				
	cu324epa-1		425 ppb		
6878-d 10x	Replicate 2				
	cu324epa-1		444 ppb		
	cu324epa-1 AV	435 ppb	SD	13.7 CV	3.1
6878 spk 50x	Replicate 1				
	cu324epa-1		376 ppb		
6878 spk 50x	Replicate 2				

cu324epa-1		367 ppb				
cu324epa-1	AV	371 ppb	SD	6.4	CV	1.7
6878spk rerun5	Replicate 1					
cu324epa-1		364 ppb				
6878spk rerun5	Replicate 2					
cu324epa-1		369 ppb				
cu324epa-1	AV	367 ppb	SD	3.8	CV	1.0
6879 10x	Replicate 1					
cu324epa-1		425 ppb				
6879 10x	Replicate 2					
cu324epa-1		425 ppb				
cu324epa-1	AV	425 ppb	SD	0.1	CV	0.0
d.i rinse	Replicate 1					
cu324epa-1		48 ppb				
d.i rinse	Replicate 2					
cu324epa-1		3 ppb				
cu324epa-1	AV	25 ppb	SD	31.4	CV	121.5
ccvf-500ppb	Replicate 1					
cu324epa-1		465 ppb				
ccvf-500ppb	Replicate 2					
cu324epa-1		477 ppb				
cu324epa-1	AV	471 ppb	SD	8.1	CV	1.7
6880	Replicate 1					
cu324epa-1		428 ppb				
6880	Replicate 2					

	cu324epa-1	434 ppb			
	cu324epa-1 AV	431 ppb	SD	4.6 CV	1.0
6881	Replicate 1				
	cu324epa-1	633 ppb			
6881	Replicate 2				
	cu324epa-1	645 ppb			
	cu324epa-1 AV	639 ppb	SD	8.6 CV	1.3
6882	Replicate 1				
	cu324epa-1	2729 ppb		Peak Offset	
6882	Replicate 2				
	cu324epa-1	2729 ppb		Peak Offset	
	cu324epa-1 AV	2729 ppb	SD	0.8 CV	0.0
6883	Replicate 1				
	cu324epa-1	2676 ppb		Over Calib.	
6883	Replicate 2				
	cu324epa-1	2713 ppb		Over Calib.	
	cu324epa-1 AV	2694 ppb	SD	26.0 CV	0.9
6882 10x	Replicate 1				
	cu324epa-1	2651 ppb		Over Calib.	
6882 10x	Replicate 2				
	cu324epa-1	2630 ppb		Over Calib.	
	cu324epa-1 AV	2641 ppb	SD	14.8 CV	0.5
6883 10x	Replicate 1				
	cu324epa-1	246 ppb			
6883 10x	Replicate 2				

	cu324epa-1	246 ppb			
	cu324epa-1 AV	246 ppb	SD	0.0 CV	0.0
6884	Replicate 1				
	cu324epa-1	1821 ppb		Over Calib.	
6884	Replicate 2				
	cu324epa-1	1889 ppb		Over Calib.	
	cu324epa-1 AV	1855 ppb	SD	47.5 CV	2.5
6884 10x	Replicate 1				
	cu324epa-1	168 ppb			
6884 10x	Replicate 2				
	cu324epa-1	168 ppb			
	cu324epa-1 AV	168 ppb	SD	0.0 CV	0.0
6882 25x	Replicate 1				
	cu324epa-1	1023 ppb			
6882 25x	Replicate 2				
	cu324epa-1	1050 ppb			
	cu324epa-1 AV	1036 ppb	SD	19.0 CV	1.8
6883 25x	Replicate 1				
	cu324epa-1	84 ppb			
6883 25x	Replicate 2				
	cu324epa-1	91 ppb			
	cu324epa-1 AV	87 ppb	SD	4.7 CV	5.4
d.i rinse	Replicate 1				
	cu324epa-1	-4 ppb			
d.i rinse	Replicate 2				

	cu324epa-1	1 ppb			
	cu324epa-1 AV	-1 ppb	SD	4.0	CV 341.6
ccvf-500ppb	Replicate 1				
	cu324epa-1	476 ppb			
ccvf-500ppb	Replicate 2				
	cu324epa-1	485 ppb			
	cu324epa-1 AV	481 ppb	SD	6.7	CV 1.3
6885	Replicate 1				
	cu324epa-1	1981 ppb			Over Calib.
6885	Replicate 2				
	cu324epa-1	2022 ppb			Over Calib.
	cu324epa-1 AV	2002 ppb	SD	28.8	CV 1.4
6886	Replicate 1				
	cu324epa-1	666 ppb			
6886	Replicate 2				
	cu324epa-1	676 ppb			
	cu324epa-1 AV	671 ppb	SD	6.6	CV 0.9
6885 10x	Replicate 1				
	cu324epa-1	209 ppb			
6885 10x	Replicate 2				
	cu324epa-1	233 ppb			
	cu324epa-1 AV	221 ppb	SD	16.5	CV 7.4
6887	Replicate 1				
	cu324epa-1	892 ppb			
6887	Replicate 2				

	cu324epa-1	905 ppb			
	cu324epa-1 AV	899 ppb	SD	9.4 CV	1.0
6888	Replicate 1				
	cu324epa-1			Over Range	
6888	Replicate 2				
	cu324epa-1			Over Range	
	cu324epa-1			Over Range	
6888-d	Replicate 1				
	cu324epa-1	1592 ppb		Over Calib.	
6888-d	Replicate 2				
	cu324epa-1	1631 ppb		Over Calib.	
	cu324epa-1 AV	1611 ppb	SD	27.7 CV	1.7
6888 10x	Replicate 1				
	cu324epa-1	441 ppb			
6888 10x	Replicate 2				
	cu324epa-1	433 ppb			
	cu324epa-1 AV	437 ppb	SD	5.3 CV	1.2
6888-d 10x	Replicate 1				
	cu324epa-1	197 ppb			
6888-d 10x	Replicate 2				
	cu324epa-1	157 ppb			
	cu324epa-1 AV	177 ppb	SD	28.2 CV	15.9
6888-spk 20x	Replicate 1				
	cu324epa-1	455 ppb			

6888-spk 20x

Replicate 2

cu324epa-1 473 ppb

cu324epa-1 AV 464 ppb SD 12.8 CV 2.7

6889

Replicate 1

cu324epa-1 Over Range

6889

Replicate 2

cu324epa-1 Over Range

cu324epa-1 Over Range

d.i rinse

Replicate 1

cu324epa-1 6 ppb

d.i rinse

Replicate 2

cu324epa-1 4 ppb

cu324epa-1 AV 5 ppb SD 1.5 CV 29.4

ccvf-500ppb

Replicate 1

cu324epa-1 476 ppb

ccvf-500ppb

Replicate 2

cu324epa-1 484 ppb

cu324epa-1 AV 480 ppb SD 6.2 CV 1.2

6889

Replicate 1

cu324epa-1 Over Range

6889

Replicate 2

cu324epa-1 Over Range

cu324epa-1 Over Range

6891 10x Replicate 1

cu324epa-1 188 ppb

6891 10x Replicate 2

cu324epa-1 214 ppb

cu324epa-1 AV 201 ppb SD 18.3 CV 9.1

6892 10x Replicate 1

cu324epa-1 172 ppb

6892 10x Replicate 2

cu324epa-1 126 ppb

cu324epa-1 AV 149 ppb SD 32.6 CV 21.7

6893 Replicate 1

cu324epa-1 630 ppb

6893 Replicate 2

cu324epa-1 671 ppb

cu324epa-1 AV 650 ppb SD 29.0 CV 4.4

6893-d Replicate 1

cu324epa-1 246 ppb

6893-d Replicate 2

cu324epa-1 219 ppb

cu324epa-1 AV 232 ppb SD 18.6 CV 8.0

ccvf-500ppb Replicate 1

cu324epa-1 478 ppb

ccvf-500ppb Replicate 2

cu324epa-1 476 ppb

cu324epa-1 AV 477 ppb SD 1.5 CV 0.3

6894	25x	Replicate 1					
		cu324epa-1	664	ppb			
6894	25x	Replicate 2					
		cu324epa-1	718	ppb			
		cu324epa-1 AV	691	ppb	SD	38.6 CV	5.5
6895	25x	Replicate 1					
		cu324epa-1	376	ppb			
6895	25x	Replicate 2					
		cu324epa-1	391	ppb			
		cu324epa-1 AV	384	ppb	SD	10.1 CV	2.6
6896		Replicate 1					
		cu324epa-1	1563	ppb		Over Calib.	
6896		Replicate 2					
		cu324epa-1	1592	ppb		Over Calib.	
		cu324epa-1 AV	1577	ppb	SD	20.7 CV	1.3
6897		Replicate 1					
		cu324epa-1	1082	ppb			
6897		Replicate 2					
		cu324epa-1	1095	ppb			
		cu324epa-1 AV	1089	ppb	SD	9.1 CV	0.8
6896	10x	Replicate 1					
		cu324epa-1	162	ppb			
6896	10x	Replicate 2					
		cu324epa-1	170	ppb			
		cu324epa-1 AV	166	ppb	SD	6.1 CV	3.6

6889 10x	Replicate 1						
	cu324epa-1	353 ppb					
6889 10x	Replicate 2						
	cu324epa-1	377 ppb					
	cu324epa-1 AV	365 ppb	SD	16.5	CV	4.5	
6890	Replicate 1						
	cu324epa-1	2650 ppb			Over Calib.		
6890	Replicate 2						
	cu324epa-1	2706 ppb			Over Calib.		
	cu324epa-1 AV	2678 ppb	SD	39.8	CV	1.4	
6890 10x	Replicate 1						
	cu324epa-1	333 ppb					
6890 10x	Replicate 2						
	cu324epa-1	348 ppb					
	cu324epa-1 AV	341 ppb	SD	10.5	CV	3.0	
6891	Replicate 1						
	cu324epa-1	1566 ppb			Over Calib.		
6891	Replicate 2						
	cu324epa-1	1647 ppb			Over Calib.		
	cu324epa-1 AV	1607 ppb	SD	57.1	CV	3.5	
6892	Replicate 1						
	cu324epa-1	1130 ppb			Over Calib.		
6892	Replicate 2						
	cu324epa-1	1182 ppb			Over Calib.		
	cu324epa-1 AV	1156 ppb	SD	36.9	CV	3.1	

6893spk 2x Replicate 1

cu324epa-1 587 ppb

6893spk 2x Replicate 2

cu324epa-1 551 ppb

cu324epa-1 AV 569 ppb SD 25.2 CV 4.4

6894 Replicate 1

cu324epa-1 2729 ppb Peak Offset

6894 Replicate 2

cu324epa-1 2729 ppb Peak Offset

cu324epa-1 AV 2729 ppb SD 0.8 CV 0.0

6895 Replicate 1

cu324epa-1 2729 ppb Peak Offset

6895 Replicate 2

cu324epa-1 2729 ppb Peak Offset

cu324epa-1 AV 2729 ppb SD 0.8 CV 0.0

6894 10x Replicate 1

cu324epa-1 1661 ppb Over Calib.

6894 10x Replicate 2

cu324epa-1 1681 ppb Over Calib.

cu324epa-1 AV 1671 ppb SD 14.4 CV 0.8

6895 10x Replicate 1

cu324epa-1 1049 ppb

6895 10x Replicate 2

cu324epa-1 1057 ppb

cu324epa-1 AV 1053 ppb SD 5.7 CV 0.5

ccvf-500ppb	Replicate 1					
	cu324epa-1	458 ppb				
ccvf-500ppb	Replicate 2					
	cu324epa-1	482 ppb				
	cu324epa-1 AV	470 ppb	SD	16.5	CV	3.5
6897 2x	Replicate 1					
	cu324epa-1	586 ppb				
6897 2x	Replicate 2					
	cu324epa-1	617 ppb				
	cu324epa-1 AV	602 ppb	SD	22.0	CV	3.6
6898	Replicate 1					
	cu324epa-1	1057 ppb				
6898	Replicate 2					
	cu324epa-1	1036 ppb				
	cu324epa-1 AV	1047 ppb	SD	14.7	CV	1.4
6899	Replicate 1					
	cu324epa-1	2153 ppb				Over Calib.
6899	Replicate 2					
	cu324epa-1	2187 ppb				Over Calib.
	cu324epa-1 AV	2170 ppb	SD	24.1	CV	1.1
6898-d	Replicate 1					
	cu324epa-1	2729 ppb				Peak Offset
6898-d	Replicate 2					
	cu324epa-1	2729 ppb				Peak Offset
	cu324epa-1 AV	2729 ppb	SD	0.8	CV	0.0

6899 10x	Replicate 1					
	cu324epa-1		207 ppb			
6899 10x	Replicate 2					
	cu324epa-1		245 ppb			
	cu324epa-1 AV	226 ppb	SD	26.7	CV	11.8
6898-d 10x	Replicate 1					
	cu324epa-1		526 ppb			
6898-d 10x	Replicate 2					
	cu324epa-1		531 ppb			
	cu324epa-1 AV	529 ppb	SD	3.8	CV	0.7
6898spk 2x	Replicate 1					
	cu324epa-1		727 ppb			
6898spk 2x	Replicate 2					
	cu324epa-1		748 ppb			
	cu324epa-1 AV	738 ppb	SD	14.6	CV	1.9
6900	Replicate 1					
	cu324epa-1		1262 ppb			Over Calib.
6900	Replicate 2					
	cu324epa-1		1301 ppb			Over Calib.
	cu324epa-1 AV	1282 ppb	SD	27.7	CV	2.1
6901	Replicate 1					
	cu324epa-1		997 ppb			
6901	Replicate 2					
	cu324epa-1		1001 ppb			
	cu324epa-1 AV	999 ppb	SD	2.4	CV	0.2

6900 10x Replicate 1

cu324epa-1 82 ppb

6900 10x Replicate 2

cu324epa-1 94 ppb

cu324epa-1 AV 88 ppb SD 7.8 CV 8.8

ccvf-500ppb Replicate 1

cu324epa-1 467 ppb

ccvf-500ppb Replicate 2

cu324epa-1 468 ppb

cu324epa-1 AV 468 ppb SD 0.3 CV 0.0

6902 Replicate 1

cu324epa-1 27 ppb

6902 Replicate 2

cu324epa-1 50 ppb

cu324epa-1 AV 38 ppb SD 16.2 CV 41.9

6903 Replicate 1

cu324epa-1 29 ppb

6903 Replicate 2

cu324epa-1 39 ppb

Peak Offset

cu324epa-1 AV 34 ppb SD 7.0 CV 20.6

6902 rerun Replicate 1

cu324epa-1 70 ppb

6902 rerun Replicate 2

cu324epa-1 22 ppb

cu324epa-1 AV 46 ppb SD 33.9 CV 72.6

6903 rerun

Replicate 1

cu324epa-1

28 ppb

6903 rerun

Replicate 2

cu324epa-1

23 ppb

cu324epa-1 AV

26 ppb

SD

3.2 CV 12.4

6904

Replicate 1

cu324epa-1

400 ppb

6904

Replicate 2

cu324epa-1

411 ppb

cu324epa-1 AV

406 ppb

SD

7.4 CV 1.8

6905

Replicate 1

cu324epa-1

-1 ppb

6905

Replicate 2

cu324epa-1

-5 ppb

cu324epa-1 AV

-3 ppb

SD

3.0 CV 88.3

ccvf-500ppb

Replicate 1

cu324epa-1

510 ppb

ccvf-500ppb

Replicate 2

cu324epa-1

489 ppb

cu324epa-1 AV

499 ppb

SD

14.4 CV 2.8

FORM I
INORGANIC ANALYSIS DATA SHEET

REPORTING DATE:

LAB NAME: HITTMAN EBASCO ASSOC.

CONTRACT NO.: AVNT-8062-011

SOW NO.: 7/85

LAB RECEIPT DATE: 11/18/88

CONCENTRATION: LOW ☒ MEDIUM ☐
MATRIX: WATER ☐ SOIL ☒
UNITS : $\mu\text{g/l}$ OR mg/kg

LAB SAMPLE ID	CLIENT ID	COPPER	CYANIDE	% SOLIDS
6870	C 101 9ft	99	11	96.8
6871	C 101 12ft	108	15	97.3
6872	C 102 7ft	504	22	96.7
6873	C 102 10ft	183	21	96.2
6874	C 103 3ft	1040	47	93.5
6875	C 103 6ft	500	10	96.3
6876	C 104 9ft	316	4.5	95.8
6877	C 104 12ft	317	9.0	95.4
6878	C 105 9ft	570	25	89.4
6879	C 105 12ft	319	8.6	95.4
6880	C 201 3ft	108	(1.0	96.7
6881	C 201 6ft	124	(1.0	95.5
6882	C 202 3ft	2290	96	90.9
6883	C 202 6ft	397	6.4	96.6
6884	C 203 3ft	317	2.1	95.4
6885	C 203 6ft	259	5.7	96.6
6886	C 204 3ft	106	1.9	97.2
6887	C 204 6ft	171	1.7	96.0
6888	C 205 3ft	417	16	95.9
6889	C 205 6ft	217	8.9	97.3
6890	C 206 3ft	320	8.8	97.5
6891	C 206 6ft	235	5.1	96.4
6892	C 207 3ft	213	5.8	97.2
6893	C 207 6ft	112	3.6	95.9
6894	C 301 3ft	2070	44	93.4
6895	C 301 6ft	1900	15	94.3
6896	C 302 3ft	39	1.3	95.2
6897	C 302 6ft	32	(1.0	96.2
6898	C 303 3ft	1210	1.7	84.5
6899	C 303 6ft	299	1.0	97.2
6900	C 304 3ft	15	(1.1	95.0
6901	C 304 6ft	5.7	(1.0	96.3
6902	B 109A	21	(1.0	97.5
6903	B 109B	22	(1.0	97.7
6904	B 109C	12	(1.0	95.7
6905	B 109D	2.90	(1.0	97.2

FORM I
INORGANIC ANALYSIS DATA SHEET

REPORTING DATE:

LAB NAME: HITTMAN EBASCO ASSOC.

CONTRACT NO.: AVNT-8062-011

SOW NO.: 7/85

LAB RECEIPT DATE: 11/18/88

CONCENTRATION: LOW ☒ MEDIUM ☐

MATRIX: WATER ☒ SOIL ☐

UNITS : μg/L OR mg/kg

LAB SAMPLE ID	CLIENT ID	COPPER	CYANIDE	% SOLIDS
6909,6906	FIELD BLANK	17U	<10	NR
6910,6907	RINSE BLK B109A	17U	<10	NR
6911,6908	RINSE BLK C206	17U	<10	NR

FORM II *A*

CONTRACT NO.: AVNT-8062-011

SDW NO.: 7/85

UNITS: $\mu\text{g/l}$

COMPOUND	INITIAL CALIBRATION			CONTINUING CALIBRATION					
	TRUE VALUE	FOUND	%R	TRUE VALUE	FOUND	%R	FOUND	%R	METHOD
COPPER	542	495	91	500	519	104	467	93	P
COPPER				500	475	95	460	92	P
COPPER				500	462	92	461	92	P
COPPER	542	540	97	500	516	103	492	98	P
COPPER	542	494	91	500	491	98	477	95	P
COPPER									
COPPER									
COPPER									
COPPER									
COPPER									
COPPER									
COPPER									
COPPER									
CYANIDE	90	95	105	90	93	103	92	102	335.2
CYANIDE				90	97	107			335.2
CYANIDE	90	94	104	90	93	103	90	100	335.2
CYANIDE	90	95	105	90	92	102	88	98	335.2

INITIAL AND CONTINUING CALIBRATION SOURCE ON NEXT PAGE.

CONTROL LIMITS: COPPER 80-120; CYANIDE 85-115

INDICATE ANALYTICAL METHOD USED: P - ICP

FORM II-B

CONTRACT NO.: AVNT-8062-011

SDW NO.: 7/85

UNITS: μg/l

[illegible]

INITIAL AND CONTINUING CALIBRATION SOURCE ON NEXT PAGE.

CONTROL LIMITS: COPPER 80-120; CYANIDE 85-115

INDICATE ANALYTICAL METHOD USED: P - ICP

ICV AND CCV SOURCES

LAB NAME: HITTMAN EBASCO ASSOC. INC.

CONTRACT NO.: AVNT-8062-011

DATE _____

ELEMENT	ICV SOURCE	CCV SOURCE
COPPER	ICV#1(0487)	FISTER 500ppb
CYANIDE	ICV#6	

FORM III

BLANKS

LAB NAME: HITTMAN ERASCO ASSOC.

CONTRACT NO.: AVNT-8062-011

DATE:

UNITS: $\mu\text{g/l}$

COMPOUND	INITIAL CALIBRATION BLANK VALUE	CONTINUING CALIBRATION BLANK VALUE				PREPARATION BLANK		*
		1	2	3	4	MATRIX: SOIL mg/Kg	MATRIX: WATER $\mu\text{g/l}$	
COPPER	174	174	174	174	174	3.44		
COPPER		174	174	174		3.44		
COPPER	[24]	174						
COPPER	174	174	174				174	
COPPER								
COPPER								
COPPER								
COPPER								
COPPER								
COPPER								
COPPER								
COPPER								
CYANIDE	104	104	104			2.04		
CYANIDE	104	104	104			2.04		
CYANIDE	104	104	104			2.04		
CYANIDE	104	104	104				104	
CYANIDE								
CYANIDE								

* mg/Kg results calculated as follows:

$$\text{mg/Kg} = \text{mg/L} \times 2 (\text{final digestate volume})$$

FORM IV

CONTRACT NO.: AVNT-8062-011

ICP INTERFERENCE CHECK SAMPLE

CHECK SAMPLE ID: ICS AB 1188

LAB NAME: HITTMAN EBASCO ASSOC.

UNITS: $\mu\text{g/l}$

DATE:

COMPOUND	CONTROL LIMITS		TRUE	INITIAL OBSERVED	%R	FINAL OBSERVED	%R
	MEAN	STD. DEV.					
COPPER	510	4.8	534	434	81	*	
COPPER	510	4.8	534	551	103	536	100
COPPER	510	4.8	534	430	81	430	81
COPPER	510	4.8	534				

recalibrated

FORM V *A*

LAB NAME: HITTMAN EBASCO ASSOC. INC.

SPIKES

PROJECT: AVENDT GROUP

DATE: _____

CONTRACT NO.: AVNT-8062-011

SAMPLE NO. *C1019411/28 (6870)*MATRIX: *SOIL*UNITS: $\mu\text{g/l}$

COMPOUND	CONTROL LIMIT	SPIKED SAMPLE RESULT (SSR)	SAMPLE RESULT (SR)	SPIKE ADDED	%R
COPPER	75 - 125	488	582	250	-38 <i>N</i>
CYANIDE	75 - 125	410 103	1110 ^{<i>EH</i>} _{12/22/88}	100	299 <i>N</i>

N - indicates spike recovery is out of control.

FORM V *B*

LAB NAME: HITTMAN EBASCO ASSOC. INC.

SPIKES

PROJECT: AVENDT GROUP

DATE: _____

CONTRACT NO.: AVNT-8062-011

SAMPLE NO. *C206 3ft (6890)*

MATRIX: *SOIL*

UNITS: $\mu\text{g/l}$

COMPOUND	CONTROL LIMIT	SPIKED SAMPLE RESULT (SSR)	SAMPLE RESULT (SR)	SPIKE ADDED	%R
COPPER	75 - 125	2340	2110	250	92
CYANIDE	75 - 125				

FORM V C

LAB NAME: HITTMAN EBASCO ASSOC. INC.

SPIKES

PROJECT: AVENDT GROUP

DATE: _____

CONTRACT NO.: AVNT-8062-011

SAMPLE NO. C303A. (6899)

MATRIX: Soil

UNITS: $\mu\text{g/l}$

COMPOUND	CONTROL LIMIT	SPIKED SAMPLE RESULT (SSR)	SAMPLE RESULT (SR)	SPIKE ADDED	%R
COPPER	75 - 125				
CYANIDE	75 - 125	99	104	100	99

FORM VI A

LAB NAME: HITTMAN EBASCO ASSOC. INC.

DUPLICATES

PROJECT: AVENDT GROUP

DATE: _____

CONTRACT NO.: AVNT-8062-011

SAMPLE NO. C101 94 11/28 (6870)

MATRIX: SOIL

UNITS: $\mu\text{g/l}$

COMPOUND	CONTROL LIMIT	SAMPLE	DUPLICATE	%RPD
COPPER	$\pm 20\%$	582	495	16
CYANIDE	$\pm 20\%$	111	124	11

FORM VI 8

LAB NAME: HITTMAN ERASCO ASSOC. INC.

DUPLICATES

PROJECT: AVENDT GROUP

CONTRACT NO.: AVNT-8062-011

DATE: _____

SAMPLE NO. C2d6 3A (6890)

MATRIX: SOIL

UNITS: $\mu\text{g/l}$

COMPOUND	CONTROL LIMIT	SAMPLE	DUPLICATE	%RPD
COPPER	± 2090	2110	2340	10
CYANIDE				

FORM VI ✓

LAB NAME: HITTMAN EBASCO ASSOC. INC.

DUPLICATES

PROJECT: AVENDT GROUP

DATE: _____

CONTRACT NO.: AVNT-8062-011

SAMPLE NO. C303 34 (299)

MATRIX: SOIL

UNITS: µg/l

COMPOUND	CONTROL LIMIT	SAMPLE	DUPLICATE	%RPD
COPPER				
CYANIDE		104	13	NC

FORM VII

PROJECT: AVENDT GROUP

LAB NAME: HITTMAN EBASCO ASSOC.

DETECTION LIMITS &
LAB CONTROL SAMPLE

CONTRACT NO.: AVNT-8062-011

DATE: _____

COMPOUND	REQUIRED DETECTION LIMITS (CDL)-µg/l	INSTRUMENT DETECTION LIMITS (IDL) - µg/l FURNACE	LAB CONTROL SAMPLE		
			µg/l TRUE	mg/kg FOUND	%R
COPPER	25	17.3	400	365	91
COPPER	25	17.3	400	335	84
COPPER	25	17.3	460	361	90
COPPER	25	17.3			
COPPER	25	17.3			
CYANIDE	10	NR	88/100 2/11/22/84	88	88
CYANIDE	.10	NR	100	91	91
CYANIDE	10	NR	100	93	93
CYANIDE	10	NR	100	96	96

FORM IX

CONTRACT NO.: AVNT-8052-011

ICP SERIAL DILUTIONS

LAB NAME: HITTMAN EBASCO ASSOC.

UNITS: ug/l

PARAMETER: COPPER

DATE:

SAMPLE ID	INITIAL RESULT	SERIAL DILUTION	%R
(6882) C102 3ft.	13900	15000	7.9
(6874) C103 3ft.	6240	6800	9.0
(6895) C301 6ft.	10500	11100	5.7

%R IS CALCULATED AS FOLLOWS:

$$\frac{\text{INITIAL RESULT} - \text{SERIAL DILUTION}}{\text{INITIAL RESULT}} \times 100$$

>DIGESTION<
>ATOMIC ABSORPTION TECHNIQUE<

EPA CONTRACT LABORATORY PROGRAM: METALS
CONTRACT NO: 68-01-7056 SOW 7/84 ()
CONTRACT NO: 68-01-7311 SOW 7/85 ()

NOTEBOOK : 1015
PAGE : 98
TECHNICIAN : L. G. / RS
DATE : 12/15/88

METALS TO BE ANALYZED:
(FOR REDIGESTION SELECT ONLY THOSE METALS APPLICABLE)
FLAME (X) Sb() Al() Ba() Be() Cd() Ca() Co() Cu() Fe()
Hg() Mn() Ni() K() Na() Sn() V() Zn()

CASE NUMBER

AVNT 8062

FURNACE () As() Cr() Pb() Se() Ag() Tl()
COLD VAPOR () Hg()

SUPERVISOR REVIEW

DATE

12/14/88

SAMPLE MATRIX
LIQUID (X) 6908-0906 EPA 200.7-MDD-CLP
SOIL (X) EPA 3050-MDD-CLP
OTHER (SPECIFY) ()

MERCURY DIGESTION () EPA 245.5 CLP-M

SAMPLE CONCENTRATION LOW() MEDIUM()

INITIAL DIGESTION (X)
REDIGESTION ()
REASON FOR REDIGESTION

	HEAT NUMBER	CLIENT ID	WEIGHT OR VOLUME	FINAL DIGESTATE VOLUME	COLORATION	CLARITY	TEXTURE	H2O2 ADDED	COMMENTS
LABORATORY CONTROL SAMPLE									
PREPARATION BLANK									
MATRIX SPIKE (X)	2290	C206304	1.35g						
UNSPIKED SAMPLE									
UNSPIKED DUPLICATE									
Dup 7.6895	7.6895	C206304	1.36g						
2.6897	2.6897	C206304	1.15g						
3.6897	3.6897	C207304	1.43g						
4.6893	4.6893	C207304	1.22g						
5.6894	5.6894	C207304	1.05g						
6.6895	6.6895	C207304	1.17g						
7.6896	7.6896	C302304	1.72g						
8.6897	8.6897	C302304	1.23g						
9.6898	9.6898	C303304	1.76g						
10.6899	10.6899	C303304	1.15g						
11.6900	11.6900	C304304	1.09g						
12.6901	12.6901	C304304	1.38g						
13.6902	13.6902	B105A	1.23g						
14.6903	14.6903	B105B	1.23g						
15.6904	15.6904	B105C	1.34g						
16.6905	16.6905	B105D	1.14g						
17.6912	17.6912		1.10g						
18.									
19.									
20.									

COLORATION: RED, BLUE, YELLOW, GREEN, ORANGE, VIOLET, WHITE, COLORLESS, BROWN, GRAY, BLACK
CLARITY: CLEAR, CLOUDY, OPAQUE
TEXTURE: FINE, MEDIUM, COARSE

>DIGESTION<
>ATOMIC ABSORPTION TECHNIQUE<

EPA CONTRACT LABORATORY PROGRAM: METALS
CONTRACT NO: 68-01-7056 SOW 7/84 ()
CONTRACT NO: 68-01-7311 SOW 7/85 ()

NOTEBOOK : 1015
PAGE : 10
TECHNICIAN : L.G.
DATE : 12/2/88

METALS TO BE ANALYZED:
(FOR REDIGESTION SELECT ONLY THOSE METALS APPLICABLE)

FLAME (X) Sb() Al() Ba() Be() Cd() Ca() Co() Cu() Fe()
Mg() Mn() Ni() K() Na() Sn() V() Zn()

FURNACE () As() Cr() Pb() Se() Ag() Tl()

COLD VAPOR () Hg()

CASE NUMBER AVNT 8062 6820-6889

SUPERVISOR REVIEW

DATE 12/14/88

INITIAL DIGESTION X
REDIGESTION ()
REASON FOR REDIGESTION

SAMPLE MATRIX
LIQUID () EPA 200.7-MDD-CLP
SOIL (X) EPA 3050-MDD-CLP
OTHER (SPECIFY) ()
MERCURY DIGESTION () EPA 245.5 CLP-M
SAMPLE CONCENTRATION LOW() MEDIUM()

	HEAT NUMBER	CLIENT ID	WEIGHT OR VOLUME(g)	FINAL DIGESTATE VOLUME	COLORATION	CLARITY	TEXTURE	H2O2 ADDED	COMMENTS
LABORATORY CONTROL SAMPLE	LCS C		100 ml.	100 ml.					
PREPARATION BLANK	BLANK		100 ml.	100 ml.					
MATRIX SPIKE									
UNSPIKED SAMPLE	6870	C1019A	1.22 g						
UNSPIKED DUPLICATE	6870	C1019A	1.44 g						
	12871	C10112A	1.19 g						
	26872	C1021E	1.22 g						
	36873	C10210A	1.08 g						
	46874	C10332A	1.28 g						
	56875	C10361A	1.42 g						
	66876	C10490A	1.15 g						
	76877	C10412A	1.87 g						
	86878	C1069A	1.32 g						
	96879	C10512A	1.04 g						
	106880	C2023A	1.25 g						
	116881	C2016A	1.20 g						
	126882	C2023A	1.24 g						
	136883	C2026A	1.32 g						
	146884	C2033A	1.19 g						
	156885	C2031A	1.20 g						
	166886	C2043A	1.11 g						
	176887	C2046A	1.46 g						
	186888	C2053A	1.07 g						
	196889	C2056A	1.42 g						
	20								

COLORATION: RED, BLUE, YELLOW, GREEN, ORANGE, VIOLET, WHITE, COLORLESS, BROWN, GRAY, BLACK
CLARITY: CLEAR, CLOUDY, OPAQUE
TEXTURE: FINE, MEDIUM, COARSE

HITTMAN EBASCO ASSOCIATES, INC.
EPA CONTRACT LABORATORY PROGRAM: METALS
CONTRACT #: 7311

>PERCENT SOLIDS<
EPA METHOD 335.2 CLP-M
METTLER AE 163

CASE # 40WTF-8062

ANALYST CUT
DATE 12/1/88
NOTEBOOK # 947
PAGE # 99

SUPERVISOR REVIEW: EAP
DATE: 12/9/88

START TIME 1:50
OVEN TEMP 103°C

END TIME 8:30
OVEN TEMP 103°C

CRUCIBLE #	HEAT#	EPA#	CRUCIBLE TARE WT.	WET SAMPLE WT.	WT.#1	WT.#2	DRY SAMPLE WT.	% SOLIDS
1	5	6870	0.9601	5.0035	5.8020		4.8419	96.8
2	6	6871	0.9620	5.0029	5.8332		4.8712	97.5
3	7	6872	0.9598	5.0081	5.8016		4.8418	96.7
4	8	6873	0.9647	5.0035	5.7783		4.8136	96.2
5	9	6874	0.9671	5.0032	5.6427		4.6756	93.5
6	10	6875	0.9646	5.0008	5.7818		4.8172	96.3
7	11	6876	0.9662	5.0056	5.7800		4.7938	95.8
8	12	6877	0.9807	5.0084	5.7585		4.7778	95.4
9	13	6878	0.9842	5.0023	5.4369		4.4727	89.4
10	14	6879	0.9697	5.0054	5.7456		4.7759	95.4
11	15	6880	0.9827	5.0011	5.8186		4.8359	96.7
12	16	6881	0.9716	5.0020	5.7471		4.7755	95.5
13	17	6882	0.9774	5.0081	5.5306		4.5532	90.9
14	18	6883	0.9808	5.0026	5.8136		4.8328	96.6
15	19	6884	0.9748	5.0077	5.7508		4.7760	95.4
16	20	6885	0.9803	5.0003	5.8103		4.8300	96.6
17	21	6886	0.9747	5.0051	5.8375		4.8628	97.2
18	22	6887	0.9812	5.0090	5.7979		4.8096	96.0
19	23	6888	0.9774	5.0080	5.7816		4.8042	95.9
20	24	6889	0.9797	5.0079	5.8510		4.8913	97.3
21	25	BLANK DI H2O	0.9731	5.3881	0.7728		-0.0003	0

- Put only one case lot on each notebook page.
- Weight units are grams.

HITTMAN EBASCO ASSOCIATES, INC.
EPA CONTRACT LABORATORY PROGRAM: METALS
CONTRACT #: 7311

>PERCENT SOLIDS<
EPA METHOD 335.2 CLP-M
METTLER AE 163

CASE # AVNT-8062

ANALYST CNP
DATE 12/1/88
NOTEBOOK # 947
PAGE # 100

SUPERVISOR REVIEW: EN
DATE: 12/9/88

START TIME 2:10
OVEN TEMP 1030

END TIME 8:39
OVEN TEMP 1030

CRUCIBLE #	HEA#	EPA#	CRUCIBLE TARE WT.	WET SAMPLE WT.	WT.#1	WT.#2	DRY SAMPLE WT.	% SOLIDS
1	26	6890	0.9553	5.0023	5.8304		4.8751	99.5
2	27	6891	0.9629	5.0074	5.7897		4.8208	910.4
3	28	6892	0.9763	5.0037	5.8401		4.8638	97.2
4	29	6893	0.9664	5.0038	5.7632		4.7968	95.9
5	30	6894	0.9668	5.0038	5.6425		4.6751	93.4
6	31	6895	0.9655	5.0020	5.6832		4.7177	94.3
7	32	6896	0.9639	5.0083	5.7315		4.7676	95.2
8	33	6897	0.9657	5.0047	5.7783		4.8126	96.2
9	34	6898	0.9672	5.0072	5.7983		4.8311	84.5
10	35	6899	0.9733	5.0003	5.8339		4.8006	97.2
11	36	6900	0.9673	5.0204	5.7173		4.7500	95.0
12	37	6901	0.9773	5.0041	5.7970		4.8189	96.3
13	38	6902	0.9775	5.0019	5.8529		4.8784	97.5
14	39	6903	0.9743	5.0037	5.8672		4.8929	97.7
15	40	6904	0.9681	5.0039	5.7551		4.7870	95.7
16	41	6905	0.9688	5.0020	5.8309		4.8621	97.2
17	42	6906	0.9636	5.0086	5.0993		4.1357	82.6
18	43	BLANK DI H2O 5ML	0.9654	5.3918	0.9635		0.0001	0
19								
20								
21								

- Put only one case lot on each notebook page.
- Weight units are grams.

EPA CONTRACT LABORATORY PROGRAM: METALS
CONTRACT NO. 68-01-7056

CYANIDE
COLORIMETRIC USEPA METHOD 335.2
EPACLP DETECTION 10 ug/L

SUPERVISORY REVIEW

DATE

CALIBRATION CURVE

ABSORBANCE

ug/250ml

0	0.000
5	0.020
10	0.050
20	0.111
50	0.286
100	0.594

$f = 0.9998$

CASE

Case Comm
AVNT

ANALYST

DATE

NOTEBOOK NO.

PAGE NO.

JD
11/18/88
706
55

ICV & CCV SOURCE *FCUG* TV 90 ug/L
LAB CONTROL SOURCE (WATER) *Small water* 5 ug/L
LAB CONTROL CONCENTRATION 100 ug/L
LAB CONTROL SOURCE (SOIL) _____
LAB CONTROL CONCENTRATION _____ ug/L
METHOD SPIKE CONCENTRATION 100 ug/L

DATE SAMPLES DISTILLED 11/23, 11/28/88
DATE SAMPLES ANALYZED 11/30/88

1. THE CALIBRATION BLANK AND CONTINUING CALIBRATION VERIFICATION MUST BE THE LAST ANALYSES RUN REGARDLESS OF THE NUMBER OF SAMPLES.
2. BLANK MUST BE LESS THAN FIVE TIMES THE DETECTION LIMIT. ALL RECOVERY CRITERIA MUST BE MET.
3. THE METHOD SPIKE AND DISTILLED STANDARD MUST BE 10ml OF THE 5ug/ml STANDARD.

	EPA SAMPLE NO.	ABSORBANCE	STARTING SAMPLE VOLUME OR HEIGHT	ANALYZED VOLUME	DILUTION FACTOR	ug FROM CURVE	ug/L	ug/Kg
CAL. BLANK		0.001	250	50ml	1X	25.0	CDL	
INIT. CAL. VERIFICATION (90-110Z) 11/23		0.275	500			47.2	94.5	105%
1 LAB CONTROL SAMPLE (80-120Z) 11/23		0.255	500			43.9	87.8	88% rec
2 METHOD BLANK 11/23		0.000	500			25.0	CDL	
3 SAMPLE 11/23	6824	0.002	500			25.0	CDL	
4 SAMPLE DUP 11/23	6824	0.000	500			25.0	CDL	
5 METHOD SPIKE								
6 11/23	6825	0.000	500			25.0	CDL	
7 ICV 11/28		0.266	500			45.7	91.5	102%
8 LCS 11/28		0.283	500			48.6	97.2	97% rec
9 meth. Blank 11/28		0.000	500			25.0	CDL	
10 11/28	6827	0.323	5.01g			55.3	110.6	11.0
CALIBRATION BLANK 101 9ft		0.004	250			25.0	CDL	
CONT. CAL. VERIFICATION (90-110Z)		0.269	500			46.2	92.5	103% rec
11 C 101 9ft 11/28	6870	0.362	5.02g			61.8	123.6	12.3
12 C 101 9ft	6870	0.239	4.99g	10ml	5	20.5	41.2	41.2
13 C 101 12ft	6871	0.477	4.98g	50ml	1	76.3	15.3	15.3
14 C 102 7ft	6872	0.303	5.02g	25ml	2	104.1	20.7	20.7
15 C 102 10ft	6873	0.289	5.01g	25ml	2	99.2	19.8	19.8
16 C 103 3ft	6874	0.255	4.99g	10ml	5	43.7	44.1	44.1
17 C 103 6ft	6875	0.276	4.99g	50ml	1	47.4	9.5	9.5
18 C 104 9ft	6876	0.121	4.99g	50ml	1	21.5	7.32	7.32
19 C 104 12ft	6877	0.253	5.06g	50ml	1	43.6	8.61	8.61
20 C 105 9ft	6878	0.320	4.99g	25	2	104.5	22.0	22.0
CALIBRATION BLANK		0.002	250	50ml	1	25.0	CDL	
CONT. CAL. VERIFICATION (90-110Z)		0.268	500	50ml	1	46.1	92.1	102% rec

NOTES:

EPA CONTRACT LABORATORY PROGRAM: METALS
CONTRACT NO. 68-01-7056

ANALYST JD
DATE 11/30/87
NOTEBOOK NO. 706
PAGE NO. 56

<CYANIDE>
COLORIMETRIC USEPA METHOD 335.2
EPACLP DETECTION 10 ug/L

SUPERVISORY REVIEW PC
DATE 12/2/87

CASE # AVNT

CALIBRATION CURVE

ug/250ml

ABSORBANCE

0
5
10
20
50
100

1.000
1.020
1.050
1.111
1.286
1.594

1.0.9998

ICV & CCV SOURCE ICUG TV 90 ug/L
LAB CONTROL SOURCE (WATER) 5ml water in 50ml
LAB CONTROL CONCENTRATION 100 ug/L
LAB CONTROL SOURCE (SOIL) _____
LAB CONTROL CONCENTRATION _____ ug/L
METHOD SPIKE CONCENTRATION _____ ug/L

DATE SAMPLES DISTILLED 11/28/88
DATE SAMPLES ANALYZED 11/30/89

1. THE CALIBRATION BLANK AND CONTINUING CALIBRATION VERIFICATION MUST BE THE LAST ANALYSES RUN REGARDLESS OF THE NUMBER OF SAMPLES.
2. BLANK MUST BE LESS THAN FIVE TIMES THE DETECTION LIMIT. ALL RECOVERY CRITERIA MUST BE MET.
3. THE METHOD SPIKE AND DISTILLED STANDARD MUST BE 10ml OF THE 5ug/ml STANDARD.

EPA
SAMPLE NO.

ABSORBANCE

STARTING
SAMPLE
VOLUME
OR HGT

ANALYZED
VOLUME

DILUTION
FACTOR

ug FROM
CURVE

ug/L

ug/Kg

CAL. BLANK

INIT. CAL. VERIFICATION (90-110Z)

1 LAB CONTROL SAMPLE (80-120Z)

2 METHOD BLANK

3 SAMPLE C 105 12ft

4 SAMPLE DUP

5 METHOD SPIKE

6 C 201 3ft

7 C 201 6ft

8 C 202 3ft

9 C 202 6ft

10

CALIBRATION BLANK

CONT. CAL. VERIFICATION (90-110Z)

11

12

13

14

15

16

17

18

19

20

CALIBRATION BLANK

CONT. CAL. VERIFICATION (90-110Z)

See
Previous
Page

6879

1.238

4.99

50ml

50X

41.1

8.23

8.23

6880

1.006

5.06

50ml

50X

25.0

CDL

CDL

6881

1.004

5.00

50ml

50X

25.0

CDL

CDL

6882

1.253

5.05

5ml

10X

439.

86.9

86.9

6883

1.175

4.96

50ml

1X

30.5

16.15

16.15

1.004

1.281

250

50ml

1X

45.0

CDL

CDL

1.281

1.281

500

50ml

1X

48.2

96.5

107.6

NOTES:

ANALYST JD
DATE 11/30/88
NOTEBOOK NO. 906
PAGE NO. 57

CASE # AUNT

ICV & CCV SOURCE ICV 6 TV 90 ug/L
LAB CONTROL SOURCE (WATER) 5 ml water 2750 ug/L
LAB CONTROL CONCENTRATION 100 ug/L
LAB CONTROL SOURCE (SOIL) _____
LAB CONTROL CONCENTRATION _____ ug/L
METHOD SPIKE CONCENTRATION _____ ug/L

ABSORBANCE

ug/250ul

0

5

10

20

50

100

$$r = 0,9997$$

DATE SAMPLES DISTILLED 11/29/88
DATE SAMPLES ANALYZED 12/5/88

1. THE CALIBRATION BLANK AND CONTINUING CALIBRATION VERIFICATION MUST BE THE LAST ANALYSES RUN REGARDLESS OF THE NUMBER OF SAMPLES.
2. BLANK MUST BE LESS THAN FIVE TIMES THE DETECTION LIMIT. ALL RECOVERY CRITERIA MUST BE MET.
3. THE METHOD SPIKE AND DISTILLED STANDARD MUST BE 10ml OF THE 5ug/ml STANDARD.

	EPA SAMPLE NO.	ABSORBANCE	STARTING SAMPLE VOLUME OR WGT	ANALYZED VOLUME	DILUTION FACTOR	ug FROM CURVE	ug/L	ug/Kg
CAL. BLANK		.000	250ml	50ml	1X	15.0	0.02	
INIT. CAL. VERIFICATION (90-110%)		.279	500ml	50ml	-	47.1	94.2	105%
1 LAB CONTROL SAMPLE (80-120%)		.268	500ml	50ml	-	45.3	90.5	91% RE
2 METHOD BLANK	C 203 3ft	.001	500ml	50ml	-	15.0	0.02	
3 SAMPLE	Distilled 11/28/88	.053	5.02g	50ml	-	9.87		1.97
4 SAMPLE DUP								
5 METHOD SPIKE								
6 C 203 6ft	11/28/88	.160	5.61g	50ml	-	27.5		5.49
7 C 204 3ft		.048	5.00g		-	9.05		1.81
8 C 204 6ft		.042	4.99g		-	8.06		1.62
9 C 205 3ft		.441	5.04g		-	73.7		14.6
10 C 205 6ft		.256	4.98g		-	43.3		8.69
CALIBRATION BLANK		.002	250ml		-	15.0	0.02	
CONT. CAL. VERIFICATION (90-110%)		.274	500ml		-	46.3	92.5	103% RE
11 C 206 3ft	6890	.253	4.98g		-	42.8		8.59
12 C 206 6ft	6891	.140	4.98g		-	24.2		4.86
13								
14								
15								
16								
17								
18								
19								
20								
CALIBRATION BLANK		.004	250ml		-	15.0	0.02	
CONT. CAL. VERIFICATION (90-110%)		.266	500ml		-	44.9	89.9	100% RE

NOTES:

EPA CONTRACT LABORATORY PROGRAM: METALS
CONTRACT NO. 68-01-7056

ANALYST JD
DATE 12/1/88
NOTEBOOK NO. 906
PAGE NO. 58

<CYANIDE>
COLORIMETRIC USEPA METHOD 335.2
EPA CLP DETECTION 10 ug/L

SUPERVISORY REVIEW PC
DATE 12/19/88

CASE # AUNT

CALIBRATION CURVE	ABSORBANCE
ug/250ml	
0	0.000
5	0.025
10	0.056
20	0.118
50	0.305
100	0.624

$f = 0.9999$

ICV & CCV SOURCE ICV 6 TV 90 ug/L
LAB CONTROL SOURCE (WATER) 5ml working soln ug/L
LAB CONTROL CONCENTRATION 100 ug/L
LAB CONTROL SOURCE (SOIL) _____
LAB CONTROL CONCENTRATION _____ ug/L
METHOD SPIKE CONCENTRATION 100 ug/L

DATE SAMPLES DISTILLED 12/1/88
DATE SAMPLES ANALYZED 12/6/88

1. THE CALIBRATION BLANK AND CONTINUING CALIBRATION VERIFICATION MUST BE THE LAST ANALYSES RUN REGARDLESS OF THE NUMBER OF SAMPLES.
2. BLANK MUST BE LESS THAN FIVE TIMES THE DETECTION LIMIT. ALL RECOVERY CRITERIA MUST BE MET.
3. THE METHOD SPIKE AND DISTILLED STANDARD MUST BE 10ml OF THE 5ug/ml STANDARD.

	EPA SAMPLE NO.	ABSORBANCE	STARTING SAMPLE VOLUME OR WGT	ANALYZED VOLUME	DILUTION FACTOR	ug FROM CURVE	ug/L	ug/Kg
CAL. BLANK		0.001	250	50ml		25.0	20.0	
INIT. CAL. VERIFICATION (90-110Z)		0.280	500			45.5	91.0	101% rec
1 LAB CONTROL SAMPLE (80-120Z)		0.285	500			46.3	92.6	93% rec
2 METHOD BLANK		0.002	500			25.0	20.0	
3 SAMPLE C 303 6ft	6899	0.024	5.03		25	4.7	118.40	0.93
4 SAMPLE DUP C 303 6ft	6899	0.035	5.04			6.4	127.90	1.27
5 METHOD SPIKE C 303 6ft	6899	0.304	5.02			49.3	98.6	9.82
6 C 207 3ft	6896	0.168	4.96			27.6		5.57
7 C 207 6ft	6893	0.103	4.99			17.3		3.47
8 C 301 3ft	6894	0.255	5.02	10ml	5X	208.		41.4
9 C 301 6ft	6895	0.422	5.00	50ml		68.1		13.6
10 C 302 3ft	6896	0.031	5.04			5.80		1.15
CALIBRATION BLANK		0.002	250			25.0	20.0	
CONT. CAL. VERIFICATION (90-110Z)		0.284	500			46.1	92.3	103% rec
11 C 302 6ft	6897	0.004	4.98			15.0	20.0	
12 C 303 3ft	6899	0.037	4.99			6.76		1.35
13 C 304 3ft	6900	0.004	5.00			25.0		20.0
14 C 304 6ft	6901	0.008	5.04			25.0		20.0
15 B 109 A	6902	0.003	4.99			25.0		20.0
16 B 109 B	6903	0.004	3.03			15.0		20.0
17 A 109 C	6904	0.002	5.00			15.0		20.0
18 B 109 D	6905	0.005	5.02			15.0		20.0
19 Field Blank	6906	0.000	500ml			25.0		20.0
20 CALIBRATION BLANK		0.005	250			25.0		20.0
CONT. CAL. VERIFICATION (90-110Z)		0.271	500			44.1	88.1	98% rec

NOTES: _____

EPA CONTRACT LABORATORY PROGRAM: METALS
CONTRACT NO. 68-01-7054

ANALYST SD
DATE 12/6/88
NOTEBOOK NO. 906
PAGE NO. 59

>CYANIDE<
COLORIMETRIC USEPA METHOD 335.2
EPACLP DETECTION 10 ug/L

SUPERVISORY REVIEW Pg 1
DATE 12/19/88

CASE AVUNT
EPA 1092-3
GMC

1=0.9999
See
Previous
Page
+ Curve

CALIBRATION CURVE	ABSORBANCE
ug/250ml	
0	1.000
5	1.025
10	1.056
20	1.119
50	1.305
100	1.624

ICV & CCV SOURCE FCOG TV 90 ug/L
LAB CONTROL SOURCE (WATER) 5ml ug/L
LAB CONTROL CONCENTRATION 100 ug/L
LAB CONTROL SOURCE (SOIL) _____
LAB CONTROL CONCENTRATION _____ ug/L
METHOD SPIKE CONCENTRATION _____ ug/L

DATE SAMPLES DISTILLED 12/2/88
DATE SAMPLES ANALYZED 12/6/88

1. THE CALIBRATION BLANK AND CONTINUING CALIBRATION VERIFICATION MUST BE THE LAST ANALYSES RUN REGARDLESS OF THE NUMBER OF SAMPLES.
2. BLANK MUST BE LESS THAN FIVE TIMES THE DETECTION LIMIT. ALL RECOVERY CRITERIA MUST BE MET.
3. THE METHOD SPIKE AND DISTILLED STANDARD MUST BE 10ml OF THE 5ug/ml STANDARD.

EPA SAMPLE NO.	ABSORBANCE	STARTING SAMPLE VOLUME OR WGT	ANALYZED VOLUME	DILUTION FACTOR	ug FROM CURVE	ug/L	ug/Kg
CAL. BLANK <u>Cont.</u>	1.000	250ml	50ml	1X	25.0	20L	
CONT. CAL. VERIFICATION (90-110%)	1.285	500ml			46.3	92.6	103% rec
1 LAB CONTROL SAMPLE (80-120%)	1.297	500ml			48.2	96.4	96% rec
2 METHOD BLANK	1.000	500ml			25.0	20L	
3 SAMPLE							
4 SAMPLE DUP							
5 METHOD SPIKE							
6 <u>Rinse blank B109A</u>	1.000	500ml			25.0	20L	
7 <u>Rinse blank C206</u>	1.002	500ml			25.0	20L	
8 <u>Basin 1</u>	1.270	4.94	2ml	25X	109.8	20L	222%
9 <u>MCY 954</u>	1.000	500ml	50ml	1X	25.0	20L	
10 <u>MCY 955</u>	1.001	500ml			25.0	20L	
CALIBRATION BLANK	1.003	250ml	50ml		25.0	20L	
CONT. CAL. VERIFICATION (90-110%)	1.277	500ml	50ml		45.0	90.0	100% rec
11 <u>MCY 956</u>	1.000	500ml	50ml		25.0	20L	
12 <u>MCY 957</u>	1.000	500ml	50ml		25.0	20L	
13 <u>MCY 958</u>	1.000	500ml	50ml		25.0	20L	
14 <u>Treatment Tank</u>	1.358	500ml	50ml		57.9	116.	
15 <u>Sewer</u>	1.233	500ml	10ml	5X	190.	380.	
16							
17							
18							
19							
20							
CALIBRATION BLANK	1.002	250ml	50ml		25.0	20L	
CONT. CAL. VERIFICATION (90-110%)	1.290	500ml	50ml		49.1	94.2	105% rec

NOTES: _____

Perkin-Elmer ICP/6500 Analytical Report

Method File: epa cu

Date Collected: 88/12/05

Time: 13:44

Date of Report: 88/12/05

Time: 18:15

cal blk cu324epa-1
Units ppb
Conc. -9
SD 12.5

icv-1 cu324epa-1
Units ppb
Conc. 468
SD 9.0

ics ab cu324epa-1
Units ppb
Conc. 426
SD 6.9

cal blk cu324epa-1
Units ppb
Conc. 13
SD 40.2

icv-1 cu324epa-1
Units ppb
Conc. 495 91%
SD 24.4

ics ab cu324epa-1
Units ppb
Conc. 434 81%
SD 24.3

lin. range cu324epa-1
Units ppb
Conc. 49
SD 0.1

ics c cu324epa-1
Units ppb
Conc. 365 91%
SD 0.8

prep blk-s cu324epa-1
Units ppb
Conc. -1
SD 12.2

6870-d cu324epa-1
Units ppb
Conc. 495
SD 31.5

reviewed by
PC
12/14/88

6870 spk 12/14/11	cu324epa-1	
Units	ppb	
Conc.	582	
SD	12.8	
6871	cu324epa-1	
Units	ppb	
Conc.	628	
SD	18.1	
6872	cu324epa-1	
Units	ppb	
Conc.	Over Range	
6873	cu324epa-1	
Units	ppb	
Conc.	950	
SD	8.6	
d.i rinse	cu324epa-1	
Units	ppb	
Conc.	-3	
SD	2.6	
cal blk	cu324epa-1	
Units	ppb	
Conc.	-13	
SD	8.4	
ccvf-500ppb	cu324epa-1	
Units	ppb	
Conc.	519	104%
SD	11.0	
6872 5x	cu324epa-1	
Units	ppb	
Conc.	594	75 = 2970
SD	20.0	
6874	cu324epa-1	
Units	ppb	
Conc.	Over Range	
6874 10x	cu324epa-1	
Units	ppb	
Conc.	624	10 = 6240
SD	7.8	
6875	cu324epa-1	
Units	ppb	
Conc.	Over Range	
6875 10x	cu324epa-1	
Units	ppb	
Conc.	342	10 = 3420
SD	13.0	

6876		cu324epa-1	
	Units	ppb	
	Conc.	1536	
	SD	1.1	
6877		cu324epa-1	
	Units	ppb	
	Conc.	1959	
	SD	28.7	
6876 5x		cu324epa-1	
	Units	ppb	
	Conc.	342 $\times 5 = 1710$	
	SD	24.5	
6877 5x		cu324epa-1	
	Units	ppb	
	Conc.	420 $\times 5 = 2100$	
	SD	1.2	
6878		cu324epa-1	
	Units	ppb	
	Conc.	Over Range	
cal blk		cu324epa-1	
	Units	ppb	
	Conc.	-10	
	SD	0.3	
ccvf-500ppb		cu324epa-1	
	Units	ppb	
	Conc.	467 93%	
	SD	29.1	
6878 5x		cu324epa-1	
	Units	ppb	
	Conc.	673 $\times 5 = 3365$	
	SD	2.2	
6879		cu324epa-1	
	Units	ppb	
	Conc.	1682	
	SD	106.5	
6879 5x		cu324epa-1	
	Units	ppb	
	Conc.	332 $\times 5 = 1660$	
	SD	11.0	
6880		cu324epa-1	
	Units	ppb	
	Conc.	650	
	SD	5.4	
6881		cu324epa-1	
	Units	ppb	
	Conc.	710	

6882		cu324epa-1	
	Units	ppb	
	Conc.	2736	
	SD	0.9	
6882 5x		cu324epa-1	
	Units	ppb	
	Conc.	Over Range	
6882 10x		cu324epa-1	
	Units	ppb	
	Conc.	1413	
	SD	10.7	
6882 25x		cu324epa-1	
	Units	ppb	
	Conc.	557	$\times 25 = 13925$
	SD	17.0	
6883		cu324epa-1	
	Units	ppb	
	Conc.	2311	
	SD	38.4	
cal blk		cu324epa-1	
	Units	ppb	
	Conc.	-13	
	SD	0.7	
ccvf-500ppb		cu324epa-1	
	Units	ppb	
	Conc.	475	95%
	SD	10.7	
6883 10x		cu324epa-1	
	Units	ppb	
	Conc.	253	$\times 10 = 2530$
	SD	11.8	
6884		cu324epa-1	
	Units	ppb	
	Conc.	1767	
	SD	68.9	
6884 3x		cu324epa-1	
	Units	ppb	
	Conc.	600	$\times 3 = 1800$
	SD	15.0	
6885		cu324epa-1	
	Units	ppb	
	Conc.	1425	
	SD	36.1	
6885 5x		cu324epa-1	
	Units	ppb	
	Conc.	300	$\times 5 = 1500$

6886		cu324epa-1	
	Units	ppb	
	Conc.	624	
	SD	3.3	
6887		cu324epa-1	
	Units	ppb	
	Conc.	1277	
	SD	40.5	
6887 5x		cu324epa-1	
	Units	ppb	
	Conc.	239x5 = 1195	
	SD	5.2	
6888		cu324epa-1	
	Units	ppb	
	Conc.	1960	
	SD	2.6	
6888 5x		cu324epa-1	
	Units	ppb	
	Conc.	428x5 = 2140	
	SD	7.2	
6889		cu324epa-1	
	Units	ppb	
	Conc.	1439	
	SD	11.4	
cal blk		cu324epa-1	
	Units	ppb	
	Conc.	-11	
	SD	0.3	
ccvf-500ppb		cu324epa-1	
	Units	ppb	
	Conc.	475x50%	
	SD	9.1	
6889 5x		cu324epa-1	
	Units	ppb	
	Conc.	300x5 = 1500	
	SD	8.2	
1cs c2		cu324epa-1	
	Units	ppb	
	Conc.	335x40%	
	SD	17.0	
		10400	
prep blk-2		cu324epa-1	
	Units	ppb	
	Conc.	-5	
	SD	4.2	

6912 cu324epa-1
 Units ppb
 Conc. 2736
 SD 0.9

6912 10x cu324epa-1
 Units ppb
 Conc. 1021 $\times 10 = 10210$
 SD 75.6

6890 cu324epa-1
 Units ppb
 Conc. 2079
 SD 5.6

6890 5x cu324epa-1
 Units ppb
 Conc. 421 $\times 5 = 2105$
 SD 7.4

6890 dup cu324epa-1
 Units ppb
 Conc. 2248
 SD 27.1

6890 ~~dup~~ 5x cu324epa-1
 Units ppb
 Conc. 468 $\times 5 = 2340$
 SD 10.6

6891 cu324epa-1
 Units ppb
 Conc. 1143
 SD 18.5

cal blk cu324epa-1
 Units ppb
 Conc. -15
 SD 9.1

ccvf-500ppb cu324epa-1
 Units ppb
 Conc. 460 92%
 SD 5.7

6891 5x cu324epa-1
 Units ppb
 Conc. 261 $\times 5 = 1305$
 SD 13.3

6392 cu324epa-1
 Units ppb
 Conc. 1397
 SD 33.4

6892 5x		cu324epa-1	
	Units	ppb	
	Conc.	304	15 = 1520
	SD	1.3	
6893		cu324epa-1	
	Units	ppb	
	Conc.	656	
	SD	28.6	
6894		cu324epa-1	
	Units	ppb	
	Conc.	2736	
	SD	0.9	
6895		cu324epa-1	
	Units	ppb	
	Conc.	2736	
	SD	0.9	
6894 10x		cu324epa-1	
	Units	ppb	
	Conc.	1016	x10 = 10160
	SD	12.0	
6895 10x		cu324epa-1	
	Units	ppb	
	Conc.	1049	x10 = 10490
	SD	11.7	
6896		cu324epa-1	
	Units	ppb	
	Conc.	215	
	SD	1.3	
6897		cu324epa-1	
	Units	ppb	
	Conc.	190	
	SD	7.9	
cal blk		cu324epa-1	
	Units	ppb	
	Conc.	-9	
	SD	9.4	
ccvf-500ppb		cu324epa-1	
	Units	ppb	
	Conc.	462	92%
	SD	3.6	
6898		cu324epa-1	
	Units	ppb	
	Conc.	Over Range	
6899		cu324epa-1	
	Units	ppb	
	Conc.	1543	

6898 10x		cu324epa-1	
	Units	ppb	
	Conc.	591	$\times 10 = 5910$
	SD	15.0	
6899 5x		cu324epa-1	
	Units	ppb	
	Conc.	334	$\times 5 = 1670$
	SD	1.8	
6900		cu324epa-1	
	Units	ppb	
	Conc.	74	
	SD	2.2	
6901		cu324epa-1	
	Units	ppb	
	Conc.	38	
	SD	0.8	
6902		cu324epa-1	
	Units	ppb	
	Conc.	126	
	SD	9.1	
6903		cu324epa-1	
	Units	ppb	
	Conc.	129	
	SD	7.9	
6904		cu324epa-1	
	Units	ppb	
	Conc.	79	
	SD	7.2	
6905		cu324epa-1	
	Units	ppb	
	Conc.	13	
	SD	13.4	
cal blk		cu324epa-1	
	Units	ppb	
	Conc.	-10	
	SD	1.2	
ccvf-500ppb		cu324epa-1	
	Units	ppb	
	Conc.	461	$\times 20 = 9220$
	SD	10.6	
6905 rerun		cu324epa-1	
	Units	ppb	
	Conc.	3	
	SD	0.5	$\uparrow$ new

688210xs.d1:5	cu324epa-1
Units	ppb
Conc.	281
SD	22.3

687410xs.d1:5	cu324epa-1
Units	ppb
Conc.	136
SD	13.9

ics ab	cu324epa-1
Units	ppb
Conc.	410
SD	2.0

lin. range	cu324epa-1
Units	ppb
Conc.	42
SD	5.3

689510xs.d1:5	cu324epa-1
Units	ppb
Conc.	204
SD	8.1

ics ab	cu324epa-1
Units	ppb
Conc.	394
SD	5.1

lin. range	cu324epa-1
Units	ppb
Conc.	45
SD	2.7

cal blk	cu324epa-1
Units	ppb
Conc.	8
SD	34.2

ccvf-500ppb	cu324epa-1
Units	ppb
Conc.	446
SD	6.8

cal blk	cu324epa-1
Units	ppb
Conc.	5
SD	12.4

icv-1	cu324epa-1
Units	ppb
Conc.	479
SD	20.3

89% Recal

Run Manual Mode

88/12/05

13:44

Method Name: epa cu
Print Format: All Data

Replicates: 2
ID Name:

Read Delay: 20

Data Name: avnt-cu

Remarks: AVNT 8062 011 #6870-6911 analyst kmk

cu324epa-1

Element Name cu324epa-1 Gain 524

Standard 1 Replicate 1

cu324epa-1 EM 131617

Standard 1 Replicate 2

cu324epa-1 EM 132450

cu324epa-1 AV 132034 SD 588.6 CV 0.4 CONC 1000 ppb

Standard 2 Replicate 1

cu324epa-1 EM 77026

Standard 2 Replicate 2

cu324epa-1 EM 78076

cu324epa-1 AV 77551 SD 741.8 CV 0.9 CONC 100 ppb

Standard 3 Replicate 1

cu324epa-1 EM 72885

Standard 3 Replicate 2

cu324epa-1 EM 73138

cu324epa-1 AV 73011 SD 176.2 CV 0.2 CONC 25 ppb

Blank Replicate 1
cu324epa-1 EM 72455

Blank Replicate 2
cu324epa-1 EM 71092
cu324epa-1 AV 71773 SD 963.6 CV 1.3 CONC 0 ppb

Element Name cu324epa-1 Correlation Coefficient 0.9999

cal blk Replicate 1
cu324epa-1 0 ppb

cal blk Replicate 2
cu324epa-1 -18 ppb Peak Offset
cu324epa-1 AV -9 ppb SD 12.5 CV 130.5

icv-1 Replicate 1
cu324epa-1 461 ppb

icv-1 Replicate 2
cu324epa-1 474 ppb
cu324epa-1 AV 468 ppb SD 9.0 CV 1.9

ics ab Replicate 1
cu324epa-1 421 ppb

ics ab Replicate 2
cu324epa-1 431 ppb
cu324epa-1 AV 426 ppb SD 6.9 CV 1.6

Element Name cu324epa-1 Gain 528

Standard 1 Replicate 1
cu324epa-1 EM 138764

cu324epa-1 EM 139407

cu324epa-1 AV 139086 SD 450.0 CV 0.3 CONC 1000 ppb

Standard 2 Replicate 1

cu324epa-1 EM 80869

Standard 2 Replicate 2

cu324epa-1 EM 81960

cu324epa-1 AV 81414 SD 771.2 CV 0.9 CONC 100 ppb

Standard 3 Replicate 1

cu324epa-1 EM 76282

Standard 3 Replicate 2

cu324epa-1 EM 78626

cu324epa-1 AV 77454 SD 1657.4 CV 2.1 CONC 25 ppb

Blank Replicate 1

cu324epa-1 EM 75356

Blank Replicate 2

cu324epa-1 EM 74282

cu324epa-1 AV 74819 SD 758.7 CV 1.0 CONC 0 ppb

Element Name cu324epa-1 Correlation Coefficient 0.9998

cal blk Replicate 1

cu324epa-1 -15 ppb Peak Offset

cal blk Replicate 2

cu324epa-1 41 ppb

cu324epa-1 AV 13 ppb SD 40.2 CV 300.6

icv-1	Replicate 1					
	cu324epa-1	478 ppb				
icv-1	Replicate 2					
	cu324epa-1	513 ppb				
	cu324epa-1 AV	495 ppb	SD	24.4	CV	4.9
ics ab	Replicate 1					
	cu324epa-1	417 ppb				
ics ab	Replicate 2					
	cu324epa-1	452 ppb				
	cu324epa-1 AV	434 ppb	SD	24.3	CV	5.6
lin. range	Replicate 1					
	cu324epa-1	49 ppb				
lin. range	Replicate 2					
	cu324epa-1	49 ppb				
	cu324epa-1 AV	49 ppb	SD	0.1	CV	0.2
ics c	Replicate 1					
	cu324epa-1	364 ppb				
ics c	Replicate 2					
	cu324epa-1	365 ppb				
	cu324epa-1 AV	365 ppb	SD	0.8	CV	0.2
prep blk-s	Replicate 1					
	cu324epa-1	-10 ppb				
prep blk-s	Replicate 2					
	cu324epa-1	7 ppb				
	cu324epa-1 AV	-1 ppb	SD	12.2	CV	847.2

6870-d	Replicate 1					
	cu324epa-1	472 ppb				
6870-d	Replicate 2					
	cu324epa-1	517 ppb				
	cu324epa-1 AV	495 ppb	SD	31.5	CV	6.3
6870-spK	Replicate 1					
	cu324epa-1	573 ppb				
6870-spK	Replicate 2					
	cu324epa-1	591 ppb				
	cu324epa-1 AV	582 ppb	SD	12.8	CV	2.2
6871	Replicate 1					
	cu324epa-1	641 ppb				
6871	Replicate 2					
	cu324epa-1	615 ppb				
	cu324epa-1 AV	628 ppb	SD	18.1	CV	2.8
6872	Replicate 1					
	cu324epa-1	2716 ppb			Over Calib.	
6872	Replicate 2					
	cu324epa-1				Over Range	
	cu324epa-1				Over Range	
6873	Replicate 1					
	cu324epa-1	944 ppb				
6873	Replicate 2					
	cu324epa-1	956 ppb				

d.i rinse	Replicate 1					
	cu324epa-1	-5 ppb				
d.i rinse	Replicate 2					
	cu324epa-1	-1 ppb				
	cu324epa-1 AV	-3 ppb	SD	2.6	CV	79.4
cal blk	Replicate 1					
	cu324epa-1	-7 ppb			Peak Offset	
cal blk	Replicate 2					
	cu324epa-1	-19 ppb			Peak Offset	
	cu324epa-1 AV	-13 ppb	SD	8.4	CV	61.2
ccvf-500ppb	Replicate 1					
	cu324epa-1	527 ppb				
ccvf-500ppb	Replicate 2					
	cu324epa-1	511 ppb				
	cu324epa-1 AV	519 ppb	SD	11.0	CV	2.1
6872 5x	Replicate 1					
	cu324epa-1	580 ppb				
6872 5x	Replicate 2					
	cu324epa-1	609 ppb				
	cu324epa-1 AV	594 ppb	SD	20.0	CV	3.3
6874	Replicate 1					
	cu324epa-1				Over Range	
6874	Replicate 2					
	cu324epa-1	2736 ppb			Peak Offset	

	cu324epa-1		Over Range
6874 10x	Replicate 1		
	cu324epa-1	618 ppb	
6874 10x	Replicate 2		
	cu324epa-1	629 ppb	
	cu324epa-1 AV	624 ppb	SD 7.8 CV 1.2
6875	Replicate 1		
	cu324epa-1		Over Range
6875	Replicate 2		
	cu324epa-1		Over Range
	cu324epa-1		Over Range
6875 10x	Replicate 1		
	cu324epa-1	351 ppb	
6875 10x	Replicate 2		
	cu324epa-1	333 ppb	
	cu324epa-1 AV	342 ppb	SD 13.0 CV 3.8
6876	Replicate 1		
	cu324epa-1	1536 ppb	Over Calib.
6876	Replicate 2		
	cu324epa-1	1535 ppb	Over Calib.
	cu324epa-1 AV	1536 ppb	SD 1.1 CV 0.0
6877	Replicate 1		
	cu324epa-1	1938 ppb	Over Calib.

6877	Replicate 2						
	cu324epa-1	1979 ppb	Over Calib.				
	cu324epa-1 AV	1959 ppb	SD	28.7	CV	1.4	
6876 5x	Replicate 1						
	cu324epa-1	360 ppb					
6876 5x	Replicate 2						
	cu324epa-1	325 ppb					
	cu324epa-1 AV	342 ppb	SD	24.5	CV	7.1	
6877 5x	Replicate 1						
	cu324epa-1	419 ppb					
6877 5x	Replicate 2						
	cu324epa-1	421 ppb					
	cu324epa-1 AV	420 ppb	SD	1.2	CV	0.3	
6878	Replicate 1						
	cu324epa-1			Over Range			
6878	Replicate 2						
	cu324epa-1			Over Range			
	cu324epa-1			Over Range			
cal blk	Replicate 1						
	cu324epa-1	-10 ppb					
cal blk	Replicate 2						
	cu324epa-1	-11 ppb					
	cu324epa-1 AV	-10 ppb	SD	0.3	CV	3.3	
ccvf-500ppb	Replicate 1						

	cu324epa-1	488 ppb				
ccvf-500ppb	Replicate 2					
	cu324epa-1	446 ppb				
	cu324epa-1 AV	467 ppb	SD	29.1	CV	6.2
6878 5x	Replicate 1					
	cu324epa-1	672 ppb				
6878 5x	Replicate 2					
	cu324epa-1	675 ppb				
	cu324epa-1 AV	673 ppb	SD	2.2	CV	0.3
6879	Replicate 1					
	cu324epa-1	1758 ppb			Over Calib.	
6879	Replicate 2					
	cu324epa-1	1607 ppb			Over Calib.	
	cu324epa-1 AV	1682 ppb	SD	106.5	CV	6.3
6879 5x	Replicate 1					
	cu324epa-1	324 ppb				
6879 5x	Replicate 2					
	cu324epa-1	340 ppb				
	cu324epa-1 AV	332 ppb	SD	11.0	CV	3.3
6880	Replicate 1					
	cu324epa-1	646 ppb				
6880	Replicate 2					
	cu324epa-1	654 ppb				
	cu324epa-1 AV	650 ppb	SD	5.4	CV	0.8
6881	Replicate 1					

	cu324epa-1	686 ppb				
6881	Replicate 2					
	cu324epa-1	734 ppb				
	cu324epa-1 AV	710 ppb	SD	34.4	CV	4.8
6882	Replicate 1					
	cu324epa-1	2736 ppb			Peak Offset	
6882	Replicate 2					
	cu324epa-1	2736 ppb			Peak Offset	
	cu324epa-1 AV	2736 ppb	SD	0.9	CV	0.0
6882 5x	Replicate 1					
	cu324epa-1	2718 ppb			Over Calib.	
6882 5x	Replicate 2					
	cu324epa-1				Over Range	
	cu324epa-1				Over Range	
6882 10x	Replicate 1					
	cu324epa-1	1406 ppb			Over Calib.	
6882 10x	Replicate 2					
	cu324epa-1	1421 ppb			Over Calib.	
	cu324epa-1 AV	1413 ppb	SD	10.7	CV	0.7
6882 25x	Replicate 1					
	cu324epa-1	545 ppb				
6882 25x	Replicate 2					
	cu324epa-1	570 ppb				
	cu324epa-1 AV	557 ppb	SD	17.0	CV	3.0

6883	Replicate 1					
	cu324epa-1	2284 ppb	Over Calib.			
6883	Replicate 2					
	cu324epa-1	2337 ppb	Over Calib.			
	cu324epa-1 AV	2311 ppb	SD	38.4	CV	1.6
cal blk	Replicate 1					
	cu324epa-1	-12 ppb	Peak Offset			
cal blk	Replicate 2					
	cu324epa-1	-13 ppb	Peak Offset			
	cu324epa-1 AV	-13 ppb	SD	0.7	CV	5.3
ccvf-500ppb	Replicate 1					
	cu324epa-1	468 ppb				
ccvf-500ppb	Replicate 2					
	cu324epa-1	483 ppb				
	cu324epa-1 AV	475 ppb	SD	10.7	CV	2.2
6883 10x	Replicate 1					
	cu324epa-1	261 ppb				
6883 10x	Replicate 2					
	cu324epa-1	244 ppb				
	cu324epa-1 AV	253 ppb	SD	11.8	CV	4.6
6884	Replicate 1					
	cu324epa-1	1718 ppb	Over Calib.			
6884	Replicate 2					
	cu324epa-1	1816 ppb	Over Calib.			
	cu324epa-1 AV	1767 ppb	SD	68.9	CV	3.9

6884	3x	Replicate 1					
		cu324epa-1	611	ppb			
6884	3x	Replicate 2					
		cu324epa-1	589	ppb			
		cu324epa-1 AV	600	ppb	SD	15.0 CV	2.5
6885		Replicate 1					
		cu324epa-1	1400	ppb		Over Calib.	
6885		Replicate 2					
		cu324epa-1	1451	ppb		Over Calib.	
		cu324epa-1 AV	1425	ppb	SD	36.1 CV	2.5
6885	5x	Replicate 1					
		cu324epa-1	301	ppb			
6885	5x	Replicate 2					
		cu324epa-1	300	ppb			
		cu324epa-1 AV	300	ppb	SD	0.3 CV	0.1
6886		Replicate 1					
		cu324epa-1	622	ppb			
6886		Replicate 2					
		cu324epa-1	627	ppb			
		cu324epa-1 AV	624	ppb	SD	3.3 CV	0.5
6887		Replicate 1					
		cu324epa-1	1248	ppb		Over Calib.	
6887		Replicate 2					
		cu324epa-1	1305	ppb		Over Calib.	
		cu324epa-1 AV	1277	ppb	SD	40.5 CV	3.1

6887 5x	Replicate 1					
	cu324epa-1	235 ppb				
6887 5x	Replicate 2					
	cu324epa-1	242 ppb				
	cu324epa-1 AV	239 ppb	SD	5.2	CV	2.1
6888	Replicate 1					
	cu324epa-1	1962 ppb		Over	Calib.	
6888	Replicate 2					
	cu324epa-1	1959 ppb		Over	Calib.	
	cu324epa-1 AV	1960 ppb	SD	2.6	CV	0.1
6888 5x	Replicate 1					
	cu324epa-1	423 ppb				
6888 5x	Replicate 2					
	cu324epa-1	434 ppb				
	cu324epa-1 AV	428 ppb	SD	7.2	CV	1.6
6889	Replicate 1					
	cu324epa-1	1447 ppb		Over	Calib.	
6889	Replicate 2					
	cu324epa-1	1431 ppb		Over	Calib.	
	cu324epa-1 AV	1439 ppb	SD	11.4	CV	0.7
cal blk	Replicate 1					
	cu324epa-1	-11 ppb				
cal blk	Replicate 2					
	cu324epa-1	-10 ppb				
	cu324epa-1 AV	-11 ppb	SD	0.3	CV	2.9

ccvf-500ppb	Replicate 1					
	cu324epa-1	469 ppb				
ccvf-500ppb	Replicate 2					
	cu324epa-1	482 ppb				
	cu324epa-1 AV	475 ppb	SD	9.1	CV	1.9
6889 5x	Replicate 1					
	cu324epa-1	294 ppb				
6889 5x	Replicate 2					
	cu324epa-1	306 ppb				
	cu324epa-1 AV	300 ppb	SD	8.2	CV	2.7
ics c2	Replicate 1					
	cu324epa-1	348 ppb				
ics c2	Replicate 2					
	cu324epa-1	323 ppb				
	cu324epa-1 AV	335 ppb	SD	17.0	CV	5.0
prep blk-2	Replicate 1					
	cu324epa-1	-8 ppb				
prep blk-2	Replicate 2					
	cu324epa-1	-2 ppb				
	cu324epa-1 AV	-5 ppb	SD	4.2	CV	73.6
6912	Replicate 1					
	cu324epa-1	2736 ppb			Peak Offset	
6912	Replicate 2					
	cu324epa-1	2736 ppb			Peak Offset	
	cu324epa-1 AV	2736 ppb	SD	0.9	CV	0.0

6912 10x	Replicate 1					
	cu324epa-1	967 ppb				
6912 10x	Replicate 2					
	cu324epa-1	1074 ppb				
	cu324epa-1 AV	1021 ppb	SD	75.6	CV	7.4
6890	Replicate 1					
	cu324epa-1	2083 ppb			Over Calib.	
6890	Replicate 2					
	cu324epa-1	2075 ppb			Over Calib.	
	cu324epa-1 AV	2079 ppb	SD	5.6	CV	0.2
6890 5x	Replicate 1					
	cu324epa-1	416 ppb				
6890 5x	Replicate 2					
	cu324epa-1	426 ppb				
	cu324epa-1 AV	421 ppb	SD	7.4	CV	1.7
6890	Replicate 1					
	cu324epa-1	2228 ppb			Over Calib.	
6890	Replicate 2					
	cu324epa-1	2267 ppb			Over Calib.	
	cu324epa-1 AV	2248 ppb	SD	27.1	CV	1.2
6890-spik 5x	Replicate 1					
	cu324epa-1	461 ppb				
6890-spik 5x	Replicate 2					
	cu324epa-1	476 ppb				
	cu324epa-1 AV	468 ppb	SD	10.6	CV	2.2

6891	Replicate 1					
	cu324epa-1	1156 ppb	Over Calib.			
6891	Replicate 2					
	cu324epa-1	1129 ppb	Over Calib.			
	cu324epa-1 AV	1143 ppb	SD	18.5	CV	1.6
cal blk	Replicate 1					
	cu324epa-1	-9 ppb				
cal blk	Replicate 2					
	cu324epa-1	-22 ppb	Peak Offset			
	cu324epa-1 AV	-15 ppb	SD	9.1	CV	58.1
ccvf-500ppb	Replicate 1					
	cu324epa-1	456 ppb				
ccvf-500ppb	Replicate 2					
	cu324epa-1	464 ppb				
	cu324epa-1 AV	460 ppb	SD	5.7	CV	1.2
6891 5x	Replicate 1					
	cu324epa-1	271 ppb				
6891 5x	Replicate 2					
	cu324epa-1	252 ppb				
	cu324epa-1 AV	261 ppb	SD	13.3	CV	5.1
6892	Replicate 1					
	cu324epa-1	1421 ppb	Over Calib.			
6892	Replicate 2					
	cu324epa-1	1374 ppb	Over Calib.			
	cu324epa-1 AV	1397 ppb	SD	33.4	CV	2.3

6892 5x	Replicate 1					
	cu324epa-1	305 ppb				
6892 5x	Replicate 2					
	cu324epa-1	303 ppb				
	cu324epa-1 AV	-304 ppb	SD	1.3	CV	0.4
6893	Replicate 1					
	cu324epa-1	636 ppb				
6893	Replicate 2					
	cu324epa-1	676 ppb				
	cu324epa-1 AV	656 ppb	SD	28.6	CV	4.3
6894	Replicate 1					
	cu324epa-1	2736 ppb				Peak Offset
6894	Replicate 2					
	cu324epa-1	2736 ppb				Peak Offset
	cu324epa-1 AV	2736 ppb	SD	0.9	CV	0.0
6895	Replicate 1					
	cu324epa-1	2736 ppb				Peak Offset
6895	Replicate 2					
	cu324epa-1	2736 ppb				Peak Offset
	cu324epa-1 AV	2736 ppb	SD	0.9	CV	0.0
6894 10x	Replicate 1					
	cu324epa-1	1025 ppb				
6894 10x	Replicate 2					
	cu324epa-1	1008 ppb				
	cu324epa-1 AV	1016 ppb	SD	12.0	CV	1.1

6895 10x	Replicate 1					
	cu324epa-1	1057 ppb				
6895 10x	Replicate 2					
	cu324epa-1	1040 ppb				
	cu324epa-1 AV	1049 ppb	SD	11.7	CV	1.1
6896	Replicate 1					
	cu324epa-1	216 ppb				
6896	Replicate 2					
	cu324epa-1	214 ppb				
	cu324epa-1 AV	215 ppb	SD	1.3	CV	0.6
6897	Replicate 1					
	cu324epa-1	195 ppb				
6897	Replicate 2					
	cu324epa-1	184 ppb				
	cu324epa-1 AV	190 ppb	SD	7.9	CV	4.1
cal blk	Replicate 1					
	cu324epa-1	-15 ppb			Peak Offset	
cal blk	Replicate 2					
	cu324epa-1	-2 ppb				
	cu324epa-1 AV	-9 ppb	SD	9.4	CV	104.7
ccvf-500ppb	Replicate 1					
	cu324epa-1	465 ppb				
ccvf-500ppb	Replicate 2					
	cu324epa-1	459 ppb				
	cu324epa-1 AV	462 ppb	SD	3.6	CV	0.7

6898 Replicate 1

cu324epa-1 Over Range

6898 Replicate 2

cu324epa-1 Over Range

cu324epa-1 Over Range

6899 Replicate 1

cu324epa-1 1551 ppb Over Calib.

6899 Replicate 2

cu324epa-1 1535 ppb Over Calib.

cu324epa-1 AV 1543 ppb SD 11.5 CV 0.7

6898 10x Replicate 1

cu324epa-1 581 ppb

6898 10x Replicate 2

cu324epa-1 602 ppb

cu324epa-1 AV 591 ppb SD 15.0 CV 2.5

6899 5x Replicate 1

cu324epa-1 335 ppb

6899 5x Replicate 2

cu324epa-1 333 ppb

cu324epa-1 AV 334 ppb SD 1.8 CV 0.5

6900 Replicate 1

cu324epa-1 76 ppb

6900 Replicate 2

cu324epa-1 73 ppb

	cu324epa-1	AV	74 ppb	SD	2.2	CV	2.9
6901		Replicate 1					
	cu324epa-1		38 ppb				
6901		Replicate 2					
	cu324epa-1		37 ppb				
	cu324epa-1	AV	38 ppb	SD	0.8	CV	2.2
6902		Replicate 1					
	cu324epa-1		120 ppb				
6902		Replicate 2					
	cu324epa-1		133 ppb				
	cu324epa-1	AV	126 ppb	SD	9.1	CV	7.2
6903		Replicate 1					
	cu324epa-1		123 ppb				
6903		Replicate 2					
	cu324epa-1		134 ppb				
	cu324epa-1	AV	129 ppb	SD	7.9	CV	6.1
6904		Replicate 1					
	cu324epa-1		74 ppb				
6904		Replicate 2					
	cu324epa-1		84 ppb				
	cu324epa-1	AV	79 ppb	SD	7.2	CV	9.0
6905		Replicate 1					
	cu324epa-1		4 ppb				
6905		Replicate 2					
	cu324epa-1		23 ppb				

cu324epa-1	AV	13 ppb	SD	13.4	CV	96.6
cal blk	Replicate 1					
	cu324epa-1	-11 ppb				
cal blk	Replicate 2					
	cu324epa-1	-9 ppb				
	cu324epa-1	AV	-10 ppb	SD	1.2	CV 12.0
ccvf-500ppb	Replicate 1					
	cu324epa-1	453 ppb				
ccvf-500ppb	Replicate 2					
	cu324epa-1	469 ppb				
	cu324epa-1	AV	461 ppb	SD	10.6	CV 2.3
6905 rerun	Replicate 1					
	cu324epa-1	3 ppb				
6905 rerun	Replicate 2					
	cu324epa-1	3 ppb				
	cu324epa-1	AV	3 ppb	SD	0.5	CV 16.1
688210xs.d1:5	Replicate 1					
	cu324epa-1	265 ppb				
688210xs.d1:5	Replicate 2					
	cu324epa-1	297 ppb				
	cu324epa-1	AV	281 ppb	SD	22.3	CV 7.9
687410xs.d1:5	Replicate 1					
	cu324epa-1	146 ppb				
687410xs.d1:5	Replicate 2					
	cu324epa-1	126 ppb				

cu324epa-1	AV	136 ppb	SD	13.9	CV	10.2
ics ab	Replicate 1					
cu324epa-1		408 ppb				
ics ab	Replicate 2					
cu324epa-1		411 ppb				
cu324epa-1	AV	410 ppb	SD	2.0	CV	0.4
lin. range	Replicate 1					
cu324epa-1		38 ppb				
lin. range	Replicate 2					
cu324epa-1		45 ppb				
cu324epa-1	AV	42 ppb	SD	5.3	CV	12.6
689510xs.d1:5	Replicate 1					
cu324epa-1		210 ppb				
689510xs.d1:5	Replicate 2					
cu324epa-1		198 ppb				
cu324epa-1	AV	204 ppb	SD	8.1	CV	3.9
ics ab	Replicate 1					
cu324epa-1		390 ppb				
ics ab	Replicate 2					
cu324epa-1		397 ppb				
cu324epa-1	AV	394 ppb	SD	5.1	CV	1.3
lin. range	Replicate 1					
cu324epa-1		47 ppb				
lin. range	Replicate 2					
cu324epa-1		43 ppb				

cu324epa-1 AV 45 ppb SD 2.7 CV 6.0

cal blk Replicate 1

cu324epa-1 32 ppb

cal blk Replicate 2

cu324epa-1 -16 ppb Peak Offset

cu324epa-1 AV 8 ppb SD 34.2 CV 427.2

ccvf-500ppb Replicate 1

cu324epa-1 450 ppb

ccvf-500ppb Replicate 2

cu324epa-1 441 ppb

cu324epa-1 AV 446 ppb SD 6.8 CV 1.5

Element Name cu324epa-1 Gain 536

Standard 1 Replicate 1

cu324epa-1 EM 147896

Standard 1 Replicate 2

cu324epa-1 EM 147718

cu324epa-1 AV 147807 SD 107.9 CV 0.0 CONC 1000 ppb

Standard 2 Replicate 1

cu324epa-1 EM 88567

Standard 2 Replicate 2

cu324epa-1 EM 88093

cu324epa-1 AV 88330 SD 333.7 CV 0.3 CONC 100 ppb

Standard 3 Replicate 1

cu324epa-1 EM 83550

Standard 3	Replicate 2
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cu324epa-1 EM 83656

cu324epa-1 AV 83603 SD 70.0 CV 0.0 CONC 25 ppb

Blank	Replicate 1
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cu324epa-1 EM 82164

Blank Replicate 2

cu324epa-1 EM 81845

cu324epa-1 AV 82004 SD 224.1 CV 0.2 CONC 0 ppb

Element Name	cu324epa-1	Correlation Coefficient	0.9999
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cal blk Replicate 1

cu324epa-1 14 pgs

cal blk Replicate 2

cu324epa-1	-3 ppb	Peak Offset
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cu324epa-1	AV	5 ppb	SD	12.4	CV	221.4
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icv-1 Replicate 1

cu324epa-1 465 ppb

icv-1 Replicate 2

cu324epa-1 494 ppb

cu324epa-1	AV	479 ppb	SD	20.3	CV	4.2
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Element Name cu324epa-1 Gain 536

Standard	1	Replicate	1
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cu324epa-1 EM 149972

Standard 1	Replicate 2
1	1
2	2
3	3
4	4
5	5
6	6
7	7
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96	96
97	97
98	98
99	99
100	100

cu324epa-1 EM 148393

cu324epa-1 AV 149183 SD 1115.0 CV 0.7 CONC 1000 ppb

Standard 2 Replicate 1

cu324epa-1 EM 89004

Standard 2 Replicate 2

cu324epa-1 EM 88793

cu324epa-1 AV 88898 SD 146.1 CV 0.1 CONC 100 ppb

Standard 3 Replicate 1

cu324epa-1 EM 83985

Standard 3 Replicate 2

cu324epa-1 EM 85188

cu324epa-1 AV 84586 SD 850.1 CV 1.0 CONC 25 ppb

Blank Replicate 1

cu324epa-1 EM 83628

Blank Replicate 2

cu324epa-1 EM 81587

cu324epa-1 AV 82607 SD 1442.7 CV 1.7 CONC 0 ppb

Element Name cu324epa-1 Correlation Coefficient 0.9999

cal blk Replicate 1

cu324epa-1 7 ppb

cal blk Replicate 2

cu324epa-1 -2 ppb

cu324epa-1 AV 2 ppb SD 7.1 CV 241.5

icv-1 Replicate 1

icv-1

Replicate 2

cu324epa-1

482 ppb

cu324epa-1 AV

474 ppb

SD

10.3 CV

2.1

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Perkin-Elmer ICP/6500 Analytical Report

Method File: epa cu

Date Collected: 88/12/05

Time: 12:50

Date of Report: 88/12/05

Time: 13:20

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cal blk		cu324epa-1
Units		ppb
Conc.		24
SD		17.7

icv-1		cu324epa-1
Units		ppb
Conc.		540 <i>98%</i>
SD		18.7

ics ab		cu324epa-1
Units		ppb
Conc.		551 <i>103%</i>
SD		11.4

lin. range		cu324epa-1
Units		ppb
Conc.		65
SD		8.7

6905 rerun		cu324epa-1
Units		ppb
Conc.		39
SD		16.3

VOID PC 12/14/88

688210x s.d1:5		cu324epa-1
Units		ppb
Conc.		300 <i>X50 = 15000</i>
SD		6.0

687410xs.d1:5		cu324epa-1
Units		ppb
Conc.		136 <i>X50 = 6800</i>
SD		6.8

689510xs.d1:5		cu324epa-1
Units		ppb
Conc.		222 <i>X50 = 11100</i>
SD		2.4

ics ab		cu324epa-1
Units		ppb
Conc.		536 <i>100%</i>
SD		6.3

lin.range		cu324epa-1
Units		ppb
Conc.		66
SD		3.5

cal blk	cu324epa-1
Units	ppb
Conc.	16
SD	11.4
ccvf-500ppb	cu324epa-1
Units	ppb
Conc.	516 103%
SD	26.5
6479 10x marat	cu324epa-1
Units	ppb
Conc.	1870 10=1870
SD	17.2
ccvf-500ppb	cu324epa-1
Units	ppb
Conc.	492 98%
SD	0.1
test soln.	cu324epa-1
Units	ppb
Conc.	446
SD	8.7
test2	cu324epa-1
Units	ppb
Conc.	997
SD	10.0
test3	cu324epa-1
Units	ppb
Conc.	106
SD	0.0
test4	cu324epa-1
Units	ppb
Conc.	478
SD	7.7

Run Manual Mode

88/12/05

12:50

Method Name: epa cu Replicates: 2 Read Delay: 20
Print Format: All Data ID Name: Data Name: avnt-cu2
Remarks: AVNT 8062 011 #6870-6911 analyst kmk

cu324epa-1

Element Name cu324epa-1 Gain 524

Standard 1 Replicate 1

cu324epa-1 EM 131802

Standard 1 Replicate 2

cu324epa-1 EM 130518

cu324epa-1 AV 131160 SD 905.5 CV 0.6 CONC 1000 ppb

Standard 2 Replicate 1

cu324epa-1 EM 68735

Standard 2 Replicate 2

cu324epa-1 EM 69227

cu324epa-1 AV 68981 SD 346.5 CV 0.5 CONC 100 ppb

Standard 3 Replicate 1

cu324epa-1 EM 68712

Standard 3 Replicate 2

cu324epa-1 EM 68052

cu324epa-1 AV 68382 SD 466.1 CV 0.6 CONC 25 ppb

Blank Replicate 1

cu324epa-1 EM 68055

Blank Replicate 2

cu324epa-1 EM 67045

cu324epa-1 AV 67550 SD 713.9 CV 1.0 CONC 0 ppb
Element Name cu324epa-1 Correlation Coefficient 0.9974

cal blk Replicate 1

cu324epa-1 36 ppb

cal blk Replicate 2

cu324epa-1 11 ppb

cu324epa-1 AV 24 ppb SD 17.7 CV 73.4

icv-1 Replicate 1

cu324epa-1 527 ppb

icv-1 Replicate 2

cu324epa-1 553 ppb

cu324epa-1 AV 540 ppb SD 18.7 CV 3.4

ics ab Replicate 1

cu324epa-1 559 ppb

ics ab Replicate 2

cu324epa-1 543 ppb

cu324epa-1 AV 551 ppb SD 11.4 CV 2.0

lin. range Replicate 1

cu324epa-1 71 ppb

lin. range Replicate 2

cu324epa-1 59 ppb Peak Offset

cu324epa-1 AV 65 ppb SD 8.7 CV 13.3

6905 rerun Replicate 1

cu324epa-1 50 ppb

6905 rerun Replicate 2

cu324epa-1	27 ppb				
cu324epa-1 AV 39 ppb	SD	16.3	CV	41.4	
688210x s.d1:5 Replicate 1					
cu324epa-1	296 ppb				
688210x s.d1:5 Replicate 2					
cu324epa-1	304 ppb				
cu324epa-1 AV 300 ppb	SD	6.0	CV	2.0	
687410xs.d1:5 Replicate 1					
cu324epa-1	141 ppb				
687410xs.d1:5 Replicate 2					
cu324epa-1	131 ppb				
cu324epa-1 AV 136 ppb	SD	6.8	CV	5.0	
689510xs.d1:5 Replicate 1					
cu324epa-1	220 ppb				
689510xs.d1:5 Replicate 2					
cu324epa-1	223 ppb				
cu324epa-1 AV 222 ppb	SD	2.4	CV	1.0	
ics ab Replicate 1					
cu324epa-1	532 ppb				
ics ab Replicate 2					
cu324epa-1	541 ppb				
cu324epa-1 AV 536 ppb	SD	6.3	CV	1.1	
lin.range Replicate 1					
cu324epa-1	68 ppb				

lin.range Replicate 2

	cu324epa-1	63 ppb				
	cu324epa-1 AV	66 ppb	SD	3.5	CV	5.3
cal blk	Replicate 1					
	cu324epa-1	8 ppb				
cal blk	Replicate 2					
	cu324epa-1	24 ppb			Peak Offset	
	cu324epa-1 AV	16 ppb	SD	11.4	CV	68.2
ccvf-500ppb	Replicate 1					
	cu324epa-1	497 ppb				
ccvf-500ppb	Replicate 2					
	cu324epa-1	534 ppb				
	cu324epa-1 AV	516 ppb	SD	26.5	CV	5.1
6479 10x marat	Replicate 1					
	cu324epa-1	175 ppb				
6479 10x marat	Replicate 2					
	cu324epa-1	199 ppb				
	cu324epa-1 AV	187 ppb	SD	17.2	CV	9.1
ccvf-500ppb	Replicate 1					
	cu324epa-1	492 ppb				
ccvf-500ppb	Replicate 2					
	cu324epa-1	492 ppb				
	cu324epa-1 AV	492 ppb	SD	0.1	CV	0.0

ANALYST RMK
DATE 12/13/82
NOTEBOOK NO. 677
PAGE NO. 674

INITIAL CAL. VERIFICATION (CV-1)
CONCENTRATION 3/2
CONTINUING CAL. VERIF. 7/24
CONCENTRATION 5/24
LAE CONTROL SAMPLE (H2O) 1/24
(5011)

YEARS: 1 1,000
 2 100
 3 25
 4 BK
 5
 BLANK ✓
 ✓
 A- 1CSAB 534TV
 LES H2G Lin range
 SOTL 64DSTEAL
 666210X serial dil: 1:5
 667410X serial dil: 1:5
 667510X serial dil: 1:5
 1CSAB
 Lin range
 CAZB)CS
 CCV
 BLANK: morphon 647910X
 CCV

11. _____
 12. _____
 13. _____
 14. _____
 15. _____
 16. _____
 17. _____
 18. _____
 19. _____
 20. _____
 CAL. BLANK _____
 CCV _____
 21. _____
 22. _____
 23. _____
 24. _____
 25. _____
 26. _____
 27. _____
 28. _____
 29. _____
 30. _____
 CAL. BLANK _____
 CCV _____

EPA CONTRACT LABORATORY PROGRAM: METALS
CONTRACT NO. 68-II-7056

ANALYST KMC
DATE 12/13/78
NOTEBOOK NO. 677
PAGE NO. 672

CLF ICF
ELEMENT NUMBER 3
E # Ant 8002
EX SOLUTION LOT # SPX
AGENT CU
PREP DATE 12/15/78
ANALYST REVIEW PC
E 12/14/78

INITIAL CAL. VERIFICATION 10V-1/437X1:10
CONCENTRATION 542
CONTINUING CAL. VERIF. FISH
CONCENTRATION 200ppb
LAB CONTROL SAMPLE (H2O) LCSD400ppb
(SOIL)
SPK250

STANDARD 1 1.000 ppb
2 1.000 ppb
3 25
4 BIK
5
BLANK ✓
ICSAB +V534
LES H2O in. range
SOIL LCSCS
maple Hill
6570DVP
65702PK
65711
65712
65713
du. range
BLANK ✓

11. 657254
12. 6574
13. 657410X
14. 6572
15. 6573 KX
16. 6576
17. 6577
18. 657654
19. 657754
20. 6578
CAL. BLANK ✓
CCV
21. 657854
22. 6579
23. 657954
24. 6580
25. 6581
26. 6582
27. 658254
28. 6582 10V
29. 6582 10V
30. 6583
CAL. BLANK ✓
CCV ✓

EPA CONTRACT LABORATORY PROGRAM: METALS
CONTRACT NO. 68-01-7056

EPA CLP ICP
INSTRUMENT NUMBER: 3
CASE # AVNT8062
Metal CU

ANALYST Rmk
DATE 12/13/88
NOTEBOOK NO. 677
PAGE NO. 673

31 6883 10X
32 6884
33 6885 3X
34 6886
35 6887 15X
36 6888
37 6889
38 6890
39 6891
40 6892
CAL. BLANK ✓
CCV ✓
41 6893 5X
42 6894
43 6895 10X
44 6896
45 6897 10X
46 6898
47 6899 5X
48 6900
49 6901 5X
50 6902
CAL. BLANK ✓
CCV ✓

51 6891 5X
52 6892
53 6893 5X
54 6894
55 6895
56 6896
57 6897 10X
58 6898 10X
59 6899
60 6900
CAL. BLANK ✓
CCV ✓
61 6901
62 6902
63 6903
64 6904
65 6905 10X
66 6906 5X
67 6907
68 6908
69 6909
70 6910
SERIAL DILUTION H2O 6904
SOIL 6905
CAL. BLANK ✓
CCV ✓

71 6905 rerun
72 6882 10X serial dil 1:5
73 6874 10X serial dil 1:5
74 1.03 ab
75 Lin. range
76 6895 serial dil 1:5
77 Lin. range
CAL. BLK
CCV/CCV out Recd

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Perkin-Elmer ICP/6500 Analytical Report

Method File: epa cu

Date Collected: 88/12/05

Time: 11:49

Date of Report: 88/12/05

Time: 12:12

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cal blk cu324epa-1

Units	ppb
Conc.	-8
SD	1.1

icv-1 *11542* cu324epa-1

Units	ppb
Conc.	494 <i>910%</i>
SD	3.9

ics ab *11534* cu324epa-1

Units	ppb
Conc.	430 <i>810%</i>
SD	3.5

lin. range cu324epa-1

Units	ppb
Conc.	39
SD	12.3

ics c cu324epa-1

Units	ppb
Conc.	361 <i>909%</i>
SD	4.8

TV 400

prep blk-w cu324epa-1

Units	ppb
Conc.	-22
SD	2.5

prep blk-s cu324epa-1

Units	ppb
Conc.	-8
SD	3.7

6870-spik cu324epa-1

Units	ppb
Conc.	488 <i>-380%</i>
SD	11.4

TV 250

6890-spik cu324epa-1

Units	ppb
Conc.	2336 <i>92%</i>
SD	128.9

TV 250

6909 cu324epa-1

Units	ppb
Conc.	-15

*re viewed by
PC 12/15/11*

6910 cu324epa-1
 Units ppb
 Conc. 15
 SD 0.5

6911 cu324epa-1
 Units ppb
 Conc. 6
 SD 0.3

cal blk cu324epa-1
 Units ppb
 Conc. 7
 SD 27.4

ccvf-500ppb cu324epa-1
 Units ppb
 Conc. 491
 SD 12.9

~~not used~~
~~6890apk-5x cu324epa-1~~
~~Units ppb~~
~~Conc. 493~~
~~SD 7.8~~

ics ab tv 534 cu324epa-1
 Units ppb
 Conc. 430
 SD 6.4

lin. range cu324epa-1
 Units ppb
 Conc. 34
 SD 3.9

cal blk cu324epa-1
 Units ppb
 Conc. 2
 SD 20.9

ccvf-500ppb cu324epa-1
 Units ppb
 Conc. 477
 SD 3.5

98%

x 5 = 2465

91%

95%

Run Manual Mode

88/12/05

11:49

Method Name: epa cu Replicates: 2 Read Delay: 20
Print Format: All Data ID Name: Data Name: avnt8062cu
Remarks: AVNT 8062 #6870spk,6890spk,6909-11 totals analyst kmk

cu324epa-1

Element Name cu324epa-1 Gain 524

Standard 1 Replicate 1

cu324epa-1 EM 134883

Standard 1 Replicate 2

cu324epa-1 EM 136297

cu324epa-1 AV 135590 SD 997.7 CV 0.7 CONC 1000 ppb

Standard 2 Replicate 1

cu324epa-1 EM 78623

Standard 2 Replicate 2

cu324epa-1 EM 78925

cu324epa-1 AV 78774 SD 210.5 CV 0.2 CONC 100 ppb

Standard 3 Replicate 1

cu324epa-1 EM 75707 Peak Offset

Standard 3 Replicate 1

cu324epa-1 EM 74571

Standard 3 Replicate 2

cu324epa-1 EM 75586

cu324epa-1 AV 75078 SD 716.8 CV 0.9 CONC 25 ppb

Blank Replicate 1

Blank

Replicate 2

cu324epa-1 EM 73103

cu324epa-1 AV 74292 SD 1681.0 CV 2.2 CONC 0 ppb

Element Name cu324epa-1 Correlation Coefficient 0.9997

cal blk

Replicate 1

cu324epa-1 -8 ppb

cal blk

Replicate 2

cu324epa-1 -9 ppb Peak Offset

cu324epa-1 AV -8 ppb SD 1.1 CV 12.8

icv-1

Replicate 1

cu324epa-1 491 ppb

icv-1

Replicate 2

cu324epa-1 497 ppb

cu324epa-1 AV 494 ppb SD 3.9 CV 0.8

ics ab

Replicate 1

cu324epa-1 427 ppb

ics ab

Replicate 2

cu324epa-1 432 ppb

cu324epa-1 AV 430 ppb SD 3.5 CV 0.8

lin. range

Replicate 1

cu324epa-1 48 ppb

lin. range

Replicate 2

cu324epa-1 31 ppb

cu324epa-1 AV 39 ppb SD 12.3 CV 30.9

ics c Replicate 1

cu324epa-1 364 ppb

ics c Replicate 2

cu324epa-1 357 ppb

cu324epa-1 AV 361 ppb SD 4.8 CV 1.3

prep blk-w Replicate 1

cu324epa-1 -21 ppb

prep blk-w Replicate 2

cu324epa-1 -24 ppb Peak Offset

cu324epa-1 AV -22 ppb SD 2.5 CV 11.1

prep blk-s Replicate 1

cu324epa-1 -10 ppb

prep blk-s Replicate 2

cu324epa-1 -5 ppb Peak Offset

cu324epa-1 AV -8 ppb SD 3.7 CV 45.6

6370-spk Replicate 1

cu324epa-1 496 ppb

6370-spk Replicate 2

cu324epa-1 480 ppb

cu324epa-1 AV 488 ppb SD 11.4 CV 2.3

6890-spk Replicate 1

cu324epa-1 2245 ppb Over Calib.

6890-spk Replicate 2

cu324epa-1 2427 ppb Over Calib.

cu324epa-1 AV 2336 ppb SD 128.9 CV 5.5

	cu324epa-1	-20 ppb	Peak Offset		
6909	Replicate 2				
	cu324epa-1	-9 ppb			
	cu324epa-1 AV	-15 ppb	SD	7.8 CV	51.8
6910	Replicate 1				
	cu324epa-1	15 ppb			
6910	Replicate 2				
	cu324epa-1	14 ppb			
	cu324epa-1 AV	15 ppb	SD	0.5 CV	3.4
6911	Replicate 1				
	cu324epa-1	6 ppb			
6911	Replicate 2				
	cu324epa-1	6 ppb			
	cu324epa-1 AV	6 ppb	SD	0.3 CV	5.0
cal blk	Replicate 1				
	cu324epa-1	-11 ppb			
cal blk	Replicate 2				
	cu324epa-1	27 ppb			
	cu324epa-1 AV	7 ppb	SD	27.4 CV	360.5
ccvf-500ppb	Replicate 1				
	cu324epa-1	481 ppb			
ccvf-500ppb	Replicate 2				
	cu324epa-1	500 ppb			
	cu324epa-1 AV	491 ppb	SD	12.7 CV	2.6

cu324epa-1 487 ppb

6870spk-5x Replicate 2

cu324epa-1 498 ppb

cu324epa-1 AV 493 ppb SD 7.8 CV 1.5

ics ab Replicate 1

cu324epa-1 425 ppb

ics ab Replicate 2

cu324epa-1 435 ppb

cu324epa-1 AV 430 ppb SD 6.4 CV 1.4

lin. range Replicate 1

cu324epa-1 37 ppb

lin. range Replicate 2

cu324epa-1 31 ppb

cu324epa-1 AV 34 ppb SD 3.9 CV 11.5

cal blk Replicate 1

cu324epa-1 16 ppb

cal blk Replicate 2

cu324epa-1 -12 ppb

cu324epa-1 AV 2 ppb SD 20.9 CV 970.5

ccvf-500ppb Replicate 1

cu324epa-1 474 ppb

ccvf-500ppb Replicate 2

cu324epa-1 479 ppb

cu324epa-1 AV 477 ppb SD 3.5 CV 0.7

EPA CONTRACT LABORATORY PROGRAM: METALS
CONTRACT NO. 68-01-7056

ANALYST RMK
DATE 12/15/88
NOTEBOOK NO. 677
PAGE NO. 163

EPA CLP ICP
INSTRUMENT NUMBER: 3
CASE # Avnt 8062 cu
STOCK SOLUTION LOT # Spex
STD. PREP DATE 12/15/88
SUPERVISORY REVIEW PL
DATE 12/15/88

INITIAL CAL. VERIFICATION ICV-1(487) 1:10
CONCENTRATION = 132
CONTINUING CAL. VERIF. fish
CONCENTRATION suppb
LAB CONTROL SAMPLE (H2O) HA
(SOIL) HA

STANDARD 1 100D
2 100
3 25
4 BK
5 ---
CAL. BLANK ---
ICV ---
1. ICS LCSC icsab tv 534
2. LCS H2O lin range
3. SOIL LCSC
4. nephk water
5. nephk soil
6. 6890spk
7. 6890spk
8. 6909
9. 6910
10. 6911
CAL. BLANK ---
CCV ---

11. 6890spk 54
12. ICS ab
13. lin range
14. nephk
15. CCV
16. ---
17. ---
18. ---
19. ---
20. ---
CAL. BLANK ---
CCV ---
21. ---
22. ---
23. ---
24. ---
25. ---
26. ---
27. ---
28. ---
29. ---
30. ---
CAL. BLANK ---
CCV ---

HITTMAN EBASCO

CHAIN OF CUSTODY RECORD

HITTMAN EBASCO ASSOCIATES INC.
A Subsidiary of EBASCO SERVICES INCORPORATED
9151 Rumsey Road, Columbia, MD 21045
(301) 730-8525

PROJECT Avent Group, Project No. 86001				CONTAINERS NO.	ANALYSIS REQUIRED										REMARKS OR SAMPLE LOCATION	PRESERVATION			
SAMPLERS: (Signature) Pamela Gratton					Total Copper	Cyanide	EP Toxic Copper												ICED
SAMPLE NUMBER	DATE	TIME	MATRIX																
C 101 9ft	11/16/88	2:30 p	soil	1	✓	✓	✓											✓	none
C 101 12ft	11/16/88	2:30 p	soil	1	✓	✓	✓												
C 102 7ft	11/16/88	2:00 p	soil	1	✓	✓	✓												
C 102 10ft	11/16/88	2:00 p	soil	1	✓	✓	✓												
C 103 3ft	11/16/88	1:45 p	soil	1	✓	✓	✓												
C 103 6ft	11/16/88	1:45 p	soil	1	✓	✓	✓												
C 104 9ft	11/16/88	3:30 p	soil	1	✓	✓	✓												
C 104 12ft	11/16/88	3:30 p	soil	1	✓	✓	✓												
C 105 9ft	11/16/88	3:00 p	soil	1	✓	✓	✓												
C 105 12ft	11/16/88	3:00 p	soil	1	✓	✓	✓												
C 201 3ft	11/16/88	12:30 p	soil	1	✓	✓	✓												
C 201 6ft	11/16/88	12:30 p	soil	1	✓	✓	✓												
C 202 3ft	11/16/88	12 p	soil	1	✓	✓	✓												
C 202 6ft	11/16/88	12 p	soil	1	✓	✓	✓												
C 203 3ft	11/16/88	11:30 a	soil	1	✓	✓	✓												
Relinquished by: (Signature) ① Pamela F. Gratton				Date / Time 11/17/88 4:45 p	Received by: (Signature) Tracy Bonds				Relinquished by: (Signature) ④				Date / Time		Shipped via:				
Relinquished by: (Signature) ②				Date / Time	Received by: (Signature)				Received for Laboratory by: (Signature)				Date / Time		Shipping Ticket No.				
Relinquished by: (Signature) ③				Date / Time	Received by: (Signature)				Remarks:										

CHAIN OF CUSTODY RECORD

HITTMAN EBASCO ASSOCIATES INC.
A Subsidiary of EBASCO SERVICES INCORPORATED
9151 Rumsey Road, Columbia, MD 21045
(301) 730-8525

[illegible]

HITTMAN EBASCO

CHAIN OF CUSTODY RECORD

HITTMAN EBASCO ASSOCIATES INC.
A Subsidiary of EBASCO SERVICES INCORPORATED
9151 Rumsey Road, Columbia, MD 21045
(301) 730-8525

PROJECT Averett Group, Project No. 86001				CONTAINERS NO.	ANALYSIS REQUIRED													PRESERVATION	
SAMPLERS: (Signature) Pamela Galt					Total Copper Cyanide ED Toxic Copper													I C E D	SPECIFY CHEMICALS ADDED AND FINAL pH IF KNOWN
SAMPLE NUMBER	DATE	TIME	MATRIX																
C 301 3ft	11/15/88	11:30a	Soil	1	✓	✓	✓											✓	none
C 301 6ft		11:30a																	
C 302 3ft		1:30p																	
C 302 6ft		1:30p																	
C 303 3ft		11:50a																	
C 303 6ft		11:50a																	
C 304 3ft		12:30p																split with NYSDEC	
C 304 6ft		12:30p																split with NYSDEC	
B 109 A		10:30a																25 ft	
B 109 B		9:30a																25 ft split with NYSDEC	
B 109 C		11:00a																25 ft	
B 109 D		10:00a																25 ft	
Rinse Blank B 109 A	11/15/88	11:00a	water	1	✓													✓	HNO ₃
Rinse Blank B 109 A	11/15/88	11:00a	water	1		✓												✓	NaOH
Rinse Blank C 206	11/16/88	11:00a	water	1	✓													✓	HNO ₃
Relinquished by: (Signature) ① Pamela Galt		Date / Time 11/17/88 4:45p		Received by: (Signature) Sharon Jones		Relinquished by: (Signature) ④		Date / Time		Shipped via:									
Relinquished by: (Signature) ②		Date / Time		Received by: (Signature)		Received for Laboratory by: (Signature)		Date / Time		Shipping Ticket No.									
Relinquished by: (Signature) ③		Date / Time		Received by: (Signature)		Remarks:													

CHAIN OF CUSTODY RECORD

HITTMAN EBASCO ASSOCIATES INC.
A Subsidiary of EBASCO SERVICES INCORPORATED
9151 Rumsey Road, Columbia, MD 21045
(301) 730-8525

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