APPENDIX B

QA REVIEW OF LABORATORY ANALYTICAL RESULTS

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MEMORANDUM

DATE: August 11, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of nine samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Cyanide analyses (EPA Methods 335.4 and/or 9010) were performed by North Creek Analytical, Inc., Beaverton, Oregon, and Bothell, Washington.

The samples were numbered:

03050724	03050725	03050726	03050727
03050728	03050729	03050730	03050731
03050732			

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained and received within the QC limits of 4°C ± 2°C. The samples were collected on June 20, 2003, and were analyzed by July 3, 2003, therefore meeting QC criteria of less than 14 days between collection and analysis.

2. **Initial and Continuing Calibration: Acceptable.**

No reported results were greater than 110% of the highest calibration standard. All AA recoveries were within QC limits of 85% to 115%.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results.

4. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

6. **Matrix Spike Analysis: Acceptable.**

Matrix spike(MS)/matrix spike duplicate (MSD) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. MS and MS duplicate recoveries were within the QC limits.

7. **Duplicate Analysis: Acceptable.**

All spike duplicate results were within QC limits.

8. **Laboratory Control Sample Analysis: Acceptable.**

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

9. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/14/03 17:23

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050724 (P3F0751-01) Soil					Sampled: 06/20/03 Received: 06/23/03				
Cyanide (total)	361	50.0	mg/kg wet	100	EPA 9010B	07/03/03	07/03/03	3G05015	
3050725 (P3F0751-02) Soil					Sampled: 06/20/03 Received: 06/23/03				
Cyanide (total)	140	25.0	mg/kg wet	50	EPA 9010B	07/03/03	07/03/03	3G05015	
3050726 (P3F0751-03) Soil					Sampled: 06/20/03 Received: 06/23/03				
Cyanide (total)	82.0	25.0	mg/kg wet	50	EPA 9010B	07/03/03	07/03/03	3G05015	
3050727 (P3F0751-04) Soil					Sampled: 06/20/03 Received: 06/23/03				
Cyanide (total)	292	42.4	mg/kg wet	100	EPA 9010B	07/03/03	07/03/03	3G05015	
3050728 (P3F0751-05) Soil					Sampled: 06/20/03 Received: 06/23/03				
Cyanide (total)	1870	100	mg/kg wet	200	EPA 9010B	07/03/03	07/03/03	3G05015	
3050729 (P3F0751-06) Soil					Sampled: 06/20/03 Received: 06/23/03				
Cyanide (total)	103	5.00	mg/kg wet	10	EPA 9010B	07/03/03	07/03/03	3G05015	
3050730 (P3F0751-07) Soil					Sampled: 06/20/03 Received: 06/23/03				
Cyanide (total)	265	37.9	mg/kg wet	100	EPA 9010B	07/03/03	07/03/03	3G05015	
3050731 (P3F0751-08) Soil					Sampled: 06/20/03 Received: 06/23/03				
Cyanide (total)	500	50.0	mg/kg wet	100	EPA 9010B	07/03/03	07/03/03	3G05015	
3050732 (P3F0751-09) Soil					Sampled: 06/20/03 Received: 06/23/03				
Cyanide (total)	606	44.2	mg/kg wet	100	EPA 9010B	07/03/03	07/03/03	3G05015	

MW
8/12/03

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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MEMORANDUM

DATE: August 11, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of nine samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Target Analyte List (TAL) metals analyses (EPA Methods 6020 and 7471) and Toxicity Characteristic Leaching Procedure (TCLP) metals analyses (EPA Methods 1311, 6020, and 7470) were performed by North Creek Analytical, Inc., Beaverton, Oregon.

The samples were numbered:

Soil	03050724	03050725	03050726	03050727
	03050728	03050729	03050730	03050731
	03050732			

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained and received within the QC limits of 4°C ± 2°C. The samples were collected on June 20, 2003, and were extracted and/or analyzed by July 10, 2003, therefore meeting QC criteria of less than 6 months between collection, extraction, and analysis (28 days for mercury) for soil and TCLP samples.

2. Initial and Continuing Calibration: Acceptable.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All applicable ICP recoveries were within the QC limits of 90% to 110% (± 1%). All applicable AA recoveries were within QC limits of 80% to 120%.

3. **Blanks: Satisfactory.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results except mercury (-0.17 ug/L) in the TAL metals blank. Associated sample results were qualified as estimated quantities (J or UJ).

4. **ICP Interference Check Sample: Not Applicable.**

Interference Check Sample (ICS) analyses were not performed for ICP-MS analyses; no action was taken.

5. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

7. **ICP Serial Dilution: Not Performed.**

Serial dilution analyses were not performed; no action was taken.

8. **Matrix Spike Analysis: Satisfactory.**

Matrix spike(MS)/matrix spike duplicate (MSD) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. MS and MS duplicate recoveries were within the QC limits except MS1 for lead (27.7%) and MS2 for arsenic (70.5%), chromium (-126%), and lead (9.1%) in the TAL metals spike. Lead and arsenic results were qualified as estimated quantities (J or UJ). Positive chromium sample results were qualified as estimated quantities (J).

9. **Duplicate Analysis: Satisfactory.**

All duplicate results were within QC limits except barium, chromium, and lead in the TAL metals sample. Associated results were qualified as estimated quantities (J or UJ).

10. **Laboratory Control Sample Analysis: Acceptable.**

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

11. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical

methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management
6825 216th Street SW, Suite A
Lynnwood, WA 98036

Project: Columbia American Plating
Project Number: 030202.0015, PO# 5770
Project Manager: Jerry Wade

Reported:
07/14/03 17:23

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050724 (P3F0751-01) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	17.7 J	0.500	mg/kg dry	1	EPA 6020	06/25/03	07/10/03	3060973	
Barium	18.8 J	0.500	"	"	"	"	07/08/03	"	
Cadmium	1150	2.50	"	5	"	"	07/10/03	"	
Chromium	28700 J	250	"	500	"	"	07/10/03	"	
Lead	105 J	0.500	"	1	"	"	07/08/03	"	
Mercury	0.0840 J	0.0543	"	"	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	4.20	0.500	"	"	EPA 6020	06/25/03	07/08/03	3060973	
Silver	9.17	0.500	"	"	"	"	"	"	
3050725 (P3F0751-02) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	38.5 J	4.46	mg/kg dry	5	EPA 6020	06/25/03	07/08/03	3060973	
Barium	76.8 J	0.893	"	1	"	"	"	"	
Cadmium	2710	4.46	"	5	"	"	"	"	
Chromium	885 J	0.893	"	1	"	"	"	"	
Lead	245 J	0.893	"	"	"	"	"	"	
Mercury	0.356	0.0610	"	"	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	2.77	0.893	"	"	EPA 6020	06/25/03	07/08/03	3060973	
Silver	19.3	0.893	"	"	"	"	"	"	
3050726 (P3F0751-03) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	10.9 J	0.862	mg/kg dry	1	EPA 6020	06/25/03	07/10/03	3060973	
Barium	197 J	0.862	"	"	"	"	07/08/03	"	
Cadmium	142	0.862	"	"	"	"	"	"	
Chromium	2740 J	5.12	"	5.94	"	"	07/10/03	"	
Lead	260 J	0.862	"	1	"	"	07/08/03	"	
Mercury	0.214	0.0543	"	"	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	2.61	0.862	"	"	EPA 6020	06/25/03	07/08/03	3060973	
Silver	113	0.862	"	"	"	"	"	"	

MW 8-12-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite A	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	07/14/03 17:23

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050727 (P3F0751-04) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	23.2 J	1.96	mg/kg dry	1	EPA 6020	06/25/03	07/10/03	3060973	
Barium	447 J	1.96	"	"	"	"	07/08/03	"	
Cadmium	490	11.6	"	5.93	"	"	"	"	
Chromium	4750 J	11.7	"	"	"	"	07/10/03	"	
Lead	699 J	1.96	"	1	"	"	07/08/03	"	
Mercury	ND	0.131 UJ	"	"	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	5.11	1.96	"	"	EPA 6020	06/25/03	07/08/03	3060973	
Silver	143	1.96	"	"	"	"	"	"	
03050728 (P3F0751-05) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	24.2 J	0.926	mg/kg dry	1	EPA 6020	06/25/03	07/10/03	3060973	
Barium	196 J	0.926	"	"	"	"	07/08/03	"	
Cadmium	72.8	0.926	"	"	"	"	"	"	
Chromium	2300 J	1.85	"	2	"	"	07/10/03	"	
Lead	2750 J	5.58	"	6.02	"	"	07/08/03	"	
Mercury	0.418	0.0658	"	1	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	1.55	0.926	"	"	EPA 6020	06/25/03	07/08/03	3060973	
Silver	68.3	0.926	"	"	"	"	"	"	
03050729 (P3F0751-06) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	7.08 J	2.22	mg/kg dry	1	EPA 6020	06/25/03	07/10/03	3060973	
Barium	431 J	2.22	"	"	"	"	07/08/03	"	
Cadmium	67.4	2.22	"	"	"	"	"	"	
Chromium	1180 J	12.1	"	5.46	"	"	"	"	
Lead	737 J	12.1	"	"	"	"	"	"	
Mercury	0.767	0.145	"	1	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	5.17	2.22	"	"	EPA 6020	06/25/03	07/08/03	3060973	
Silver	142	2.22	"	"	"	"	"	"	

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8-12-03

North Creek Analytical - Portland

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Environmental Laboratory Network

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Environmental Quality Management 5825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 07/14/03 17:23

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050730 (P3F0751-07) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	6.95 J	0.893	mg/kg dry	1	EPA 6020	06/25/03	07/10/03	3060973	
Barium	651 J	5.37	"	6.02	"	"	07/08/03	"	
Cadmium	30.7	0.893	"	1	"	"	"	"	
Chromium	1240 J	5.37	"	6.02	"	"	"	"	
Lead	15500 J	10.4	"	11.7	"	"	"	"	
Mercury	0.771	0.0806	"	1	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	1.71	0.893	"	"	EPA 6020	06/25/03	07/08/03	3060973	
Silver	97.4	0.893	"	"	"	"	"	"	
3050731 (P3F0751-08) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	6.11 J	1.00	mg/kg dry	1	EPA 6020	06/25/03	07/08/03	3060973	
Barium	271 J	1.00	"	"	"	"	"	"	
Cadmium	27.4	1.00	"	"	"	"	"	"	
Chromium	1250 J	5.71	"	5.71	"	"	"	"	
Lead	14300 J	12.1	"	12.1	"	"	"	"	
Mercury	0.523	0.0658	"	1	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	1.02	1.00	"	"	EPA 6020	06/25/03	07/08/03	3060973	
Silver	107	1.00	"	"	"	"	"	"	
3050732 (P3F0751-09) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	11.2 J	1.56	mg/kg dry	2	EPA 6020	06/25/03	07/10/03	3060973	
Barium	217 J	0.781	"	1	"	"	07/08/03	"	
Cadmium	59.9	0.781	"	"	"	"	"	"	
Chromium	7270 J	7.81	"	10	"	"	07/10/03	"	
Lead	16300 J	9.52	"	12.2	"	"	07/08/03	"	
Mercury	0.322	0.0862	"	1	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	3.06	0.781	"	"	EPA 6020	06/25/03	07/08/03	3060973	
Silver	84.0	0.781	"	"	"	"	"	"	

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 07/14/03 17:23

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050724 (P3F0751-01) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	ND	0.250	mg/l	0.5	1311/6020	07/02/03	07/07/03	3070103	
Barium	**5.33**	0.250	"	"	"	"	"	"	
Cadmium	**11.3**	0.250	"	"	"	"	"	"	
Chromium	**60.3**	1.50	"	3	"	"	07/07/03	"	
Lead	ND	0.250	"	0.5	"	"	07/07/03	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/07/03	07/08/03	3070182	
Selenium	ND	0.250	"	0.5	1311/6020	07/02/03	07/07/03	3070103	
Silver	ND	0.250	"	"	"	"	"	"	
3050725 (P3F0751-02) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	ND	0.250	mg/l	0.5	1311/6020	07/02/03	07/07/03	3070103	
Barium	**0.476**	0.250	"	"	"	"	"	"	
Cadmium	**0.563**	0.250	"	"	"	"	"	"	
Chromium	ND	0.250	"	"	"	"	"	"	
Lead	ND	0.250	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/07/03	07/08/03	3070182	
Selenium	ND	0.250	"	0.5	1311/6020	07/02/03	07/07/03	3070103	
Silver	ND	0.250	"	"	"	"	"	"	
3050726 (P3F0751-03) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	ND	0.250	mg/l	0.5	1311/6020	07/02/03	07/07/03	3070103	
Barium	**0.456**	0.250	"	"	"	"	"	"	
Cadmium	ND	0.250	"	"	"	"	"	"	
Chromium	ND	0.250	"	"	"	"	"	"	
Lead	ND	0.250	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/07/03	07/08/03	3070182	
Selenium	ND	0.250	"	0.5	1311/6020	07/02/03	07/07/03	3070103	
Silver	ND	0.250	"	"	"	"	"	"	

MW 8-12-03

North Creek Analytical - Portland

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Environmental Quality Management 825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/14/03 17:23

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
050727 (P3F0751-04) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	ND	0.250	mg/l	0.5	1311/6020	07/02/03	07/07/03	3070103	
Barium	0.716	0.250	"	"	"	"	"	"	
Cadmium	1.37	0.250	"	"	"	"	"	"	
Chromium	0.532	0.250	"	"	"	"	"	"	
Lead	ND	0.250	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/07/03	07/08/03	3070182	
Selenium	ND	0.250	"	0.5	1311/6020	07/02/03	07/07/03	3070103	
Silver	ND	0.250	"	"	"	"	"	"	
050728 (P3F0751-05) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	ND	0.250	mg/l	0.5	1311/6020	07/02/03	07/07/03	3070103	
Barium	0.531	0.250	"	"	"	"	"	"	
Cadmium	ND	0.250	"	"	"	"	"	"	
Chromium	0.386	0.250	"	"	"	"	"	"	
Lead	ND	0.250	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/07/03	07/08/03	3070182	
Selenium	ND	0.250	"	0.5	1311/6020	07/02/03	07/07/03	3070103	
Silver	ND	0.250	"	"	"	"	"	"	
050729 (P3F0751-06) Soil					Sampled: 06/20/03 Received: 06/23/03				
Arsenic	ND	0.250	mg/l	0.5	1311/6020	07/02/03	07/07/03	3070103	
Barium	0.562	0.250	"	"	"	"	"	"	
Cadmium	1.55	0.250	"	"	"	"	"	"	
Chromium	0.282	0.250	"	"	"	"	"	"	
Lead	ND	0.250	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/07/03	07/08/03	3070182	
Selenium	ND	0.250	"	0.5	1311/6020	07/02/03	07/07/03	3070103	
Silver	ND	0.250	"	"	"	"	"	"	

JMW 8-12-03

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Brian L Cone

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite A	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	07/14/03 17:23

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050730 (P3F0751-07) Soil					Sampled: 06/20/03	Received: 06/23/03			
Arsenic	ND	0.250 U	mg/l	0.5	1311/6020	07/02/03	07/07/03	3070103	
Barium	**0.498**	0.250	"	"	"	"	"	"	
Cadmium	**0.714**	0.250	"	"	"	"	"	"	
Chromium	**0.352**	0.250	"	"	"	"	"	"	
Lead	**0.741**	0.250	"	"	"	"	"	"	
Mercury	**0.00404**	0.00160	"	1	1311/7470A	07/07/03	07/08/03	3070182	
Selenium	ND	0.250 U	"	0.5	1311/6020	07/02/03	07/07/03	3070103	
Silver	ND	0.250 U	"	"	"	"	"	"	
3050731 (P3F0751-08) Soil					Sampled: 06/20/03	Received: 06/23/03			
Arsenic	ND	0.250 U	mg/l	0.5	1311/6020	07/02/03	07/07/03	3070103	
Barium	**0.504**	0.250	"	"	"	"	"	"	
Cadmium	**0.831**	0.250	"	"	"	"	"	"	
Chromium	**1.32**	0.250	"	"	"	"	"	"	
Lead	**15.6**	0.250	"	"	"	"	"	"	
Mercury	**0.00382**	0.00160	"	1	1311/7470A	07/07/03	07/08/03	3070182	
Selenium	ND	0.250 U	"	0.5	1311/6020	07/02/03	07/07/03	3070103	
Silver	ND	0.250 U	"	"	"	"	"	"	
3050732 (P3F0751-09) Soil					Sampled: 06/20/03	Received: 06/23/03			
Arsenic	ND	0.250 U	mg/l	0.5	1311/6020	07/02/03	07/07/03	3070103	
Barium	**0.444**	0.250	"	"	"	"	"	"	
Cadmium	**0.781**	0.250	"	"	"	"	"	"	
Chromium	**7.25**	0.250	"	"	"	"	"	"	
Lead	**0.376**	0.250	"	"	"	"	"	"	
Mercury	ND	0.00160 U	"	1	1311/7470A	07/07/03	07/08/03	3070182	
Selenium	ND	0.250 U	"	0.5	1311/6020	07/02/03	07/07/03	3070103	
Silver	**0.325**	0.250	"	"	"	"	"	"	

MW 8/12-03

North Creek Analytical - Portland

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Brian L Cone

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MEMORANDUM

DATE: August 11, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of nine samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. pH analyses (EPA Methods 150.1 and 9045) were performed by North Creek Analytical, Inc., Beaverton, Oregon.

The samples were numbered:

Soil	03050724	03050725	03050726	03050727
	03050728	03050729	03050730	03050731
	03050732			

Data Qualifications:

The samples were maintained and received within the QC limits of 4°C ± 2°C. The samples were collected on June 20, 2003, and were analyzed on June 24, 2003, therefore exceeding QC holding time criteria of "immediate analysis"; all sample results were qualified as estimated quantities (J). The three-point initial calibration (pH 4.0, 7.0, and 10.0), calibration verification (at pH 8.0), and continuing calibration (pH 7.0) results were within QC limits. Any sample result < 4.0 or > 10.0 are outside the calibration range and are qualified as estimated quantities (J).

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004) and the analytical methods. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

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Environmental Quality Management 5825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/14/03 17:23

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
050724 (P3F0751-01) Soil					Sampled: 06/20/03 Received: 06/23/03				
pH	7.44	J	pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	
050725 (P3F0751-02) Soil					Sampled: 06/20/03 Received: 06/23/03				
pH	9.84	J	pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	
050726 (P3F0751-03) Soil					Sampled: 06/20/03 Received: 06/23/03				
pH	6.51	J	pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	
050727 (P3F0751-04) Soil					Sampled: 06/20/03 Received: 06/23/03				
pH	9.09	J	pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	
050728 (P3F0751-05) Soil					Sampled: 06/20/03 Received: 06/23/03				
pH	8.41	J	pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	
050729 (P3F0751-06) Soil					Sampled: 06/20/03 Received: 06/23/03				
pH	5.67	J	pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	
050730 (P3F0751-07) Soil					Sampled: 06/20/03 Received: 06/23/03				
pH	7.20	J	pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	
050731 (P3F0751-08) Soil					Sampled: 06/20/03 Received: 06/23/03				
pH	4.19	J	pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	
050732 (P3F0751-09) Soil					Sampled: 06/20/03 Received: 06/23/03				
pH	8.84	J	pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	

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Brian Cone, Industrial Services Manager

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MEMORANDUM

DATE: August 11, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 37 samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Cyanide analyses (EPA Methods 335.4 and/or 9010) were performed by North Creek Analytical, Inc., Beaverton, Oregon, and Bothell, Washington.

The samples were numbered:

Batch	Samples			
P3F0048	Tank 1	Tank 2		
P3F0221	03050661	03050662	03050663	03050664
	03050665	03050666	03050667	03050668
	03050669	03050670	03050671	03050672
	03050673	03050674	03050675	03050676
	03050677	03050678	03050679	03050680
	03050681	03050682	03050683	03050684
	03050685	03050686	03050687	03050688
	03050701			
P3F0223	03050702	03050703	03050704	03050705
	03050706	03050707	844	
P3F0300	Base Bulk			

Data Qualifications:

1. **Sample Holding Times: Satisfactory.**

The samples were maintained and received within the QC limits of 4°C ± 2°C except as

noted below. The samples were collected between May 20 and June 4, 2003, and were analyzed between June 6 and June 22, 2003, therefore some samples exceeded QC holding time criteria of less than 14 days between collection and analysis; these sample results were qualified as estimated quantities J or UJ). The sample coolers for batches P3F0221 and P3F0223 were received with no ice and were significantly above the QC temperature limits of 4°C ± 2°C; associated sample results were qualified as estimated quantities (J or UJ). The samples in batches P3F0048 and P3F0300 were received unpreserved for cyanide analysis; associated sample results were qualified as estimated quantities (J or UJ). Samples 03050674 through 03050682 and 03050702 through 03050707 were received at the secondary laboratory after QC holding time limits had expired; associated sample results were qualified as estimated quantities (J or UJ).

2. Initial and Continuing Calibration: Acceptable.

No reported results were greater than 110% of the highest calibration standard. All AA recoveries were within QC limits of 85% to 115%.

3. Blanks: Acceptable.

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results.

4. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

6. Matrix Spike Analysis: Acceptable.

Matrix spike(MS)/matrix spike duplicate (MSD) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. MS and MS duplicate recoveries were within the QC limits.

7. Duplicate Analysis: Satisfactory.

All duplicate and spike duplicate results were within QC limits except in batch P3F0300 for free cyanide (34.8% vs. the QC limits of < 20%); associated sample results were qualified as estimated quantities (J or UJ).

8. Laboratory Control Sample Analysis: Acceptable.

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

9. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite A Linnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0016 Project Manager: Jerry Wade	**Reported:** 06/09/03 17:17

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Spokane

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
Tank 1 (P3F0048-01) Water					Sampled: 06/02/03 Received: 06/02/03				
Cyanide (amenable)	**1.56** J	0.00500	mg/l	1	SM 4500-CN I	06/06/03	06/09/03	3060058	
Cyanide (free)	**1.12** J	0.00500	"	"	"	"	06/06/03	"	
Tank 2 (P3F0048-02) Water					Sampled: 06/02/03 Received: 06/02/03				
Cyanide (amenable)	**10.7** J	0.00500	mg/l	1	SM 4500-CN I	06/06/03	06/09/03	3060058	
Cyanide (free)	**1.51** J	0.00500	"	"	"	"	06/06/03	"	

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite A	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	06/23/03 14:22

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050657 (P3F0221-55) Other wet					Sampled: 05/29/03	Received: 06/05/03			
pH	ND		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
03050658 (P3F0221-56) Other wet					Sampled: 05/28/03	Received: 06/05/03			
pH	**12.7**		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
03050659 (P3F0221-57) Other wet					Sampled: 05/29/03	Received: 06/05/03			
pH	ND		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
03050660 (P3F0221-58) Other wet					Sampled: 05/29/03	Received: 06/05/03			
pH	**0.530**		pH Units	1	150.1/9040A MW	06/10/03	06/10/03	3060358	A-01
03050661 (P3F0221-59) Other wet					Sampled: 05/21/03	Received: 06/05/03			
Cyanide (total)	**6750** J	1200	mg/kg wet	500	EPA 335.4	06/10/03	06/17/03	3060356	
~~**pH**~~	~~**11.7**~~		~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/10/03~~	~~06/10/03~~	~~3060358~~	~~A-01~~ MW
03050662 (P3F0221-60) Other wet					Sampled: 05/28/03	Received: 06/05/03			
Cyanide (total)	**12900** J	1180	mg/kg wet	500	EPA 335.4	06/10/03	06/17/03	3060356	
~~**pH**~~	~~**10.6**~~		~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/10/03~~	~~06/10/03~~	~~3060358~~	~~A-01~~ MW
03050663 (P3F0221-61) Other wet					Sampled: 05/21/03	Received: 06/05/03			
Cyanide (total)	**34700** J	2050	mg/kg wet	1000	EPA 335.4	06/10/03	06/17/03	3060356	
~~**pH**~~	~~**13.1**~~		~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/10/03~~	~~06/10/03~~	~~3060369~~	~~A-01~~ MW
03050664 (P3F0221-62) Other wet					Sampled: 05/22/03	Received: 06/05/03			
Cyanide (total)	ND	2.36	mg/kg wet	UJ 1	EPA 335.4	06/10/03	06/17/03	3060356	
~~**pH**~~	~~**13.9**~~		~~pH Units~~	~~"~~	~~150.1/9040A~~	~~06/10/03~~	~~06/10/03~~	~~3060369~~	~~A-01~~ MW

MW
8/2-03

North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 06/23/03 14:22

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050665 (P3F0221-63) Other wet					Sampled: 05/22/03	Received: 06/05/03			
Cyanide (total)	53000 J	11600	mg/kg wet	5000	EPA 335.4	06/10/03	06/17/03	3060356	
pH	10.1		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050666 (P3F0221-64) Other wet					Sampled: 05/19/03	Received: 06/05/03			
Cyanide (total)	32400 J	2450	mg/kg wet	1000	EPA 335.4	06/10/03	06/17/03	3060356	
pH	11.6		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050667 (P3F0221-65) Other wet					Sampled: 05/22/03	Received: 06/05/03			
Cyanide (total)	19900 J	1060	mg/kg wet	500	EPA 335.4	06/10/03	06/17/03	3060356	
pH	10.3		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050668 (P3F0221-66) Other wet					Sampled: 05/22/03	Received: 06/05/03			
Cyanide (total)	82100 J	12300	mg/kg wet	5000	EPA 335.4	06/10/03	06/17/03	3060356	
pH	11.2		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050669 (P3F0221-67) Other wet					Sampled: 05/28/03	Received: 06/05/03			
Cyanide (total)	13600 J	1080	mg/kg wet	500	EPA 335.4	06/10/03	06/17/03	3060356	
pH	11.6		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050670 (P3F0221-68) Other wet					Sampled: 05/22/03	Received: 06/05/03			
Cyanide (total)	74300 J	11000	mg/kg wet	5000	EPA 335.4	06/10/03	06/17/03	3060356	
pH	11.2		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050671 (P3F0221-69) Other wet					Sampled: 05/21/03	Received: 06/05/03			
Cyanide (total)	30700 J	2270	mg/kg wet	1000	EPA 335.4	06/10/03	06/17/03	3060356	
pH	13.3		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01

MW 8/12/03

North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 06/23/03 14:22

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050672 (P3F0221-70) Other wet					Sampled: 05/28/03	Received: 06/05/03			
Cyanide (total)	**10200** J	1160	mg/kg wet	500	EPA 335.4	06/10/03	06/17/03	3060356	
~~**pH**~~	~~**10.7**~~		~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/10/03~~	~~06/10/03~~	~~3060369~~	~~A-01~~ MW
03050673 (P3F0221-71) Other wet					Sampled: 05/21/03	Received: 06/05/03			
Cyanide (total)	**35600** J	2400	mg/kg wet	1000	EPA 335.4	06/10/03	06/17/03	3060356	
~~**pH**~~	~~**13.5**~~		~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/10/03~~	~~06/10/03~~	~~3060369~~	~~A-01~~ MW
03050674 (P3F0221-72) Other wet					Sampled: 05/20/03	Received: 06/05/03			
pH	**0.220**		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050675 (P3F0221-73) Other wet					Sampled: 05/27/03	Received: 06/05/03			
pH	**14.0**		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050676 (P3F0221-74) Other wet					Sampled: 05/20/03	Received: 06/05/03			
pH	**11.0**		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050677 (P3F0221-75) Other wet					Sampled: 05/21/03	Received: 06/05/03			
pH	**12.9**		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050678 (P3F0221-76) Other wet					Sampled: 05/28/03	Received: 06/05/03			
pH	**10.0**		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050679 (P3F0221-77) Other wet					Sampled: 05/22/03	Received: 06/05/03			
pH	**15.8**		pH Units	1	150.1/9040A	06/10/03	06/10/03 MW	3060369	A-01

MW
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North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 06/23/03 14:22

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050674 (P3F0221-72) Other wet					Sampled: 05/20/03 Received: 06/05/03				
Cyanide (total)	ND	0.0250	UJ mg/l	1	EPA 335.2	06/21/03	06/21/03	3F22006	I-05
03050675 (P3F0221-73) Other wet					Sampled: 05/27/03 Received: 06/05/03				
Cyanide (total)	ND	0.0250	UJ mg/l	1	EPA 335.2	06/21/03	06/21/03	3F22006	I-05
03050676 (P3F0221-74) Other wet					Sampled: 05/20/03 Received: 06/05/03				
Cyanide (total)	33800 J	2000	mg/l	8000	EPA 335.2	06/21/03	06/21/03	3F22006	I-05
03050677 (P3F0221-75) Other wet					Sampled: 05/21/03 Received: 06/05/03				
Cyanide (total)	4600 J	500	mg/l	1000	EPA 335.2	06/21/03	06/21/03	3F22006	I-05
03050678 (P3F0221-76) Other wet					Sampled: 05/28/03 Received: 06/05/03				
Cyanide (total)	3930 J	500	mg/l	1000	EPA 335.2	06/22/03	06/22/03	3F22007	I-05
03050679 (P3F0221-77) Other wet					Sampled: 05/22/03 Received: 06/05/03				
Cyanide (total)	1.70 J	0.100	mg/l	1	EPA 335.2	06/22/03	06/22/03	3F22007	I-05
03050680 (P3F0221-78) Other wet					Sampled: 05/28/03 Received: 06/05/03				
Cyanide (total)	19400 J	2000	mg/l	4000	EPA 335.2	06/22/03	06/22/03	3F22007	I-05
03050681 (P3F0221-79) Other wet					Sampled: 05/20/03 Received: 06/05/03				
Cyanide (total)	36000 J	2000	mg/l	4000	EPA 335.2	06/22/03	06/22/03	3F22007	I-05
03050682 (P3F0221-80) Other wet					Sampled: 05/28/03 Received: 06/05/03				
Cyanide (total)	12000 J	2000	mg/l	4000	EPA 335.2	06/22/03	06/22/03	3F22007	I-05

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 06/23/03 14:22

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050683 (P3F0221-81) Other wet					Sampled: 05/20/03	Received: 06/05/03			
Cyanide (total)	**91400** J	10000	mg/l	20000	EPA 335.2	06/22/03	06/22/03	3F22007	I-05
03050684 (P3F0221-82) Other wet					Sampled: 06/02/03	Received: 06/05/03			
Cyanide (total)	**107000** J	10000	mg/l	20000	EPA 335.2	06/22/03	06/22/03	3F22007	I-05
03050685 (P3F0221-83) Other wet					Sampled: 06/02/03	Received: 06/05/03			
Cyanide (total)	**33800** J	2000	mg/l	4000	EPA 335.2	06/22/03	06/22/03	3F22007	I-05
03050686 (P3F0221-84) Other wet					Sampled: 05/28/03	Received: 06/05/03			
Cyanide (total)	**9760** J	2000	mg/l	4000	EPA 335.2	06/22/03	06/22/03	3F22007	I-05
03050687 (P3F0221-85) Other wet					Sampled: 05/28/03	Received: 06/05/03			
Cyanide (total)	**4760** J	200	mg/l	4000	EPA 335.2	06/22/03	06/22/03	3F22007	I-05
03050688 (P3F0221-86) Other wet					Sampled: 05/20/03	Received: 06/05/03			
Cyanide (total)	**59200** J	4000	mg/l	8000	EPA 335.2	06/22/03	06/22/03	3F22007	I-05
03050701 (P3F0221-99) Other wet					Sampled: 06/02/03	Received: 06/05/03			
Cyanide (total)	**36500** J	1600	mg/l	80000	EPA 335.2	06/22/03	06/22/03	3F22007	I-05

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 06/23/03 14:40

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050702 (P3F0223-01) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Cyanide (total)	**1450** J	125	mg/l	500	EPA 335.2	06/20/03	06/20/03	3F21003	I-05
03050703 (P3F0223-02) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Cyanide (total)	ND	0.0200	UJ mg/l	1	EPA 335.2	06/20/03	06/20/03	3F21003	I-05
03050704 (P3F0223-03) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Cyanide (total)	**1.11** J	0.200	mg/l	10	EPA 335.2	06/20/03	06/20/03	3F21003	I-05
03050705 (P3F0223-04) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Cyanide (total)	**4.88** J	0.400	mg/l	1	EPA 335.2	06/20/03	06/20/03	3F21003	I-05
03050706 (P3F0223-05) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Cyanide (total)	**0.0408** J	0.0200	mg/l	1	EPA 335.2	06/20/03	06/20/03	3F21003	I-05
03050707 (P3F0223-06) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Cyanide (total)	**0.0308** J	0.0200	mg/l	1	EPA 335.2	06/20/03	06/20/03	3F21003	I-05
844 (P3F0223-07) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Cyanide (total)	**16200** J	2000	mg/l	4000	EPA 335.2	06/20/03	06/20/03	3F21003	I-05

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Environmental Quality Management 6825 216th Street SW, Suite A Linnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0016, PO# 5770 Project Manager: Jerry Wade	**Reported:** 06/12/03 16:48

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Spokane

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
Base Bulk (P3F0300-01) Water					Sampled: 06/09/03	Received: 06/09/03			
Cyanide (amenable)	**870** J	0.00500	mg/l	1	SM 4500-CN I	06/11/03	06/11/03	3060106	
Cyanide (free)	**1060** J	0.00500	"	"	"	"	"	"	

MW
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MEMORANDUM

DATE: August 11, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 92 samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. pH analyses (EPA Methods 150.1 and 9045) were performed by North Creek Analytical, Inc., Beaverton, Oregon.

The samples were numbered:

Batch	Samples			
P3F0221	03050601	03050602	03050603	03050604
	03050604	03050606	03050607	03050608
	03050609	03050610	03050611	03050612
	03050613	03050614	03050615	03050616
	03050617	03050618	03050619	03050620
	03050622	03050623	03050624	03050625
	03050626	03050627	03050628	03050629
	03050631	03050632	03050633	03050634
	03050635	03050636	03050637	03050638
	03050639	03050640	03050641	03050642
	03050643	03050644	03050645	03050646
	03050647	03050648	03050649	03050650
	03050651	03050652	03050653	03050654
	03050655	03050656	03050657	03050658
	03050659	03050660	03050661	03050662
	03050663	03050664	03050665	03050666
	03050667	03050668	03050669	03050670
	03050671	03050672	03050673	03050674
	03050675	03050676	03050677	03050678
	03050679	03050680	03050681	03050682
	03050683	03050684	03050685	03050686
	03050687	03050688	03050689	03050690
	03050691	03050692	03050693	03050694

	03050695	03050696	03050697	03050698
	03050699	03050700	03050701	
P3F0223	03050702	03050703	03050704	03050705
	03050706	03050707	844	

Data Qualifications

The sample coolers for batches P3F0221 and P3F0223 were received with no ice and were significantly above the QC temperature limits of 4°C ± 2°C; associated sample results were qualified as estimated quantities (J). The samples were collected on between May 20 and June 4, 2003, and were analyzed on June 9 or 10, 2003, therefore exceeding QC holding time criteria of "immediate analysis"; all sample results were qualified as estimated quantities (J). The three-point initial calibration (pH 4.0, 7.0, and 10.0), calibration verification (pH 8.0), and continuing calibration (pH 7.0) results were within QC limits. Any sample results < 4.0 or > 10.0 are outside the calibration range and are qualified as estimated quantities (J).

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004) and the analytical methods. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 06/23/03 14:22

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050601 (P3F0221-01) Other wet					Sampled: 05/20/03 Received: 06/05/03				
pH	4.82	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050602 (P3F0221-02) Other wet					Sampled: 05/20/03 Received: 06/05/03				
pH	0.110	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
~~**03050603 (P3F0221-03) Other wet**~~					Sampled: 05/20/03 Received: 06/05/03				
~~pH~~	~~ND~~	~~J~~	~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/09/03~~	~~06/09/03~~	~~3060312~~	~~A-01~~
03050604 (P3F0221-04) Other wet					Sampled: 05/20/03 Received: 06/05/03				
pH	5.89	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050605 (P3F0221-05) Other wet					Sampled: 05/20/03 Received: 06/05/03				
pH	5.71	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050606 (P3F0221-06) Other wet					Sampled: 05/20/03 Received: 06/05/03				
pH	5.80	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050607 (P3F0221-07) Other wet					Sampled: 05/22/03 Received: 06/05/03				
pH	2.13	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050608 (P3F0221-08) Other wet					Sampled: 05/21/03 Received: 06/05/03				
pH	9.56	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050609 (P3F0221-09) Other wet					Sampled: 05/21/03 Received: 06/05/03				
pH	11.0	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01

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8/12/03

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 06/23/03 14:22

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050610 (P3F0221-10) Other wet					Sampled: 05/21/03	Received: 06/05/03			
pH	**0.200**	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050611 (P3F0221-11) Other wet					Sampled: 05/22/03	Received: 06/05/03			
pH	**1.50**	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050612 (P3F0221-12) Other wet					Sampled: 05/21/03	Received: 06/05/03			
pH	**0.0100**	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050613 (P3F0221-13) Other wet					Sampled: 05/21/03	Received: 06/05/03			
pH	**8.14**	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050614 (P3F0221-14) Other wet					Sampled: 05/21/03	Received: 06/05/03			
pH	**1.74**	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050615 (P3F0221-15) Other wet					Sampled: 05/21/03	Received: 06/05/03			
pH	**1.12**	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050616 (P3F0221-16) Other wet					Sampled: 05/21/03	Received: 06/05/03			
pH	**10.9**	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050617 (P3F0221-17) Other wet					Sampled: 05/21/03	Received: 06/05/03			
pH	**1.71**	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050618 (P3F0221-18) Other wet					Sampled: 05/21/03	Received: 06/05/03			
pH	**1.75**	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01

JMW
8/12/03

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 06/23/03 14:22

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050619 (P3F0221-19) Other wet					Sampled: 05/21/03	Received: 06/05/03			
pH	0.960	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050620 (P3F0221-20) Other wet					Sampled: 05/22/03	Received: 06/05/03			
pH	1.92	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060312	A-01
03050622 (P3F0221-21) Other wet					Sampled: 05/22/03	Received: 06/05/03			
pH	11.1	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
03050623 (P3F0221-22) Other wet					Sampled: 05/22/03	Received: 06/05/03			
pH	0.650	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
03050624 (P3F0221-23) Other wet					Sampled: 05/27/03	Received: 06/05/03			
pH	0.280	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
~~**03050625 (P3F0221-24) Other wet**~~					~~Sampled: 05/22/03~~	~~Received: 06/05/03~~			
~~pH~~	~~ND~~	J	~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/09/03~~	~~06/09/03~~	~~3060316~~	~~A-01~~
03050626 (P3F0221-25) Other wet					Sampled: 05/22/03	Received: 06/05/03			
pH	0.0300	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
03050627 (P3F0221-26) Other wet					Sampled: 05/22/03	Received: 06/05/03			
pH	9.93	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
03050628 (P3F0221-27) Other wet					Sampled: 05/22/03	Received: 06/05/03			
pH	12.8	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 06/23/03 14:22

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
~~03050629 (P3F0221-28) Other wet~~					~~Sampled: 05/22/03~~	~~Received: 06/05/03~~			
~~pH~~	~~ND~~	~~J~~	~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/09/03~~	~~06/09/03~~	~~3060316~~	~~A-01~~
03050631 (P3F0221-29) Other wet					Sampled: 05/22/03	Received: 06/05/03			
pH	12.6	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
~~03050632 (P3F0221-30) Other wet~~					~~Sampled: 05/22/03~~	~~Received: 06/05/03~~			
~~pH~~	~~ND~~	~~J~~	~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/09/03~~	~~06/09/03~~	~~3060316~~	~~A-01~~
03050633 (P3F0221-31) Other wet					Sampled: 05/22/03	Received: 06/05/03			
pH	13.6	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
03050634 (P3F0221-32) Other wet					Sampled: 05/27/03	Received: 06/05/03			
pH	11.7	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
03050635 (P3F0221-33) Other wet					Sampled: 05/27/03	Received: 06/05/03			
pH	11.9	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
03050636 (P3F0221-34) Other wet					Sampled: 05/29/03	Received: 06/05/03			
pH	9.10	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
~~03050637 (P3F0221-35) Other wet~~					~~Sampled: 05/27/03~~	~~Received: 06/05/03~~			
~~pH~~	~~ND~~	~~J~~	~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/09/03~~	~~06/09/03~~	~~3060316~~	~~A-01~~
03050638 (P3F0221-36) Other wet					Sampled: 05/27/03	Received: 06/05/03			
pH	5.55	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 06/23/03 14:22

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050639 (P3F0221-37) Other wet					Sampled: 05/27/03 Received: 06/05/03				
pH	14.0	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
03050640 (P3F0221-38) Other wet					Sampled: 05/27/03 Received: 06/05/03				
pH	2.50	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
03050641 (P3F0221-39) Other wet					Sampled: 05/29/03 Received: 06/05/03				
pH	0.930	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
03050642 (P3F0221-40) Other wet					Sampled: 05/27/03 Received: 06/05/03				
pH	7.07	J	pH Units	1	150.1/9040A	06/09/03	06/09/03	3060316	A-01
~~**03050643 (P3F0221-41) Other wet**~~					~~Sampled: 05/27/03 Received: 06/05/03~~				
~~pH~~	~~ND~~	~~J~~	~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/10/03~~	~~06/10/03~~	~~3060358~~	~~A-01~~ MW
03050644 (P3F0221-42) Other wet					Sampled: 05/30/03 Received: 06/05/03				
pH	14.1	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
03050645 (P3F0221-43) Other wet					Sampled: 05/27/03 Received: 06/05/03				
pH	8.82	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
~~**03050646 (P3F0221-44) Other wet**~~					~~Sampled: 05/27/03 Received: 06/05/03~~				MW
~~pH~~	~~ND~~	~~J~~	~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/10/03~~	~~06/10/03~~	~~3060358~~	~~A-01~~
03050647 (P3F0221-45) Other wet					Sampled: 05/28/03 Received: 06/05/03				
pH	1.25	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 06/23/03 14:22

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050648 (P3F0221-46) Other wet					Sampled: 05/28/03 Received: 06/05/03				
pH	0.910	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
~~**03050649 (P3F0221-47) Other wet**~~					~~Sampled: 05/28/03 Received: 06/05/03~~				
~~pH~~	~~ND~~	~~J~~	~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/10/03~~	~~06/10/03~~	~~3060358~~	~~A-01~~ MW
03050650 (P3F0221-48) Other wet					Sampled: 05/28/03 Received: 06/05/03				
pH	7.27	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
03050651 (P3F0221-49) Other wet					Sampled: 05/28/03 Received: 06/05/03				
pH	0.110	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
~~**03050652 (P3F0221-50) Other wet**~~					~~Sampled: 05/28/03 Received: 06/05/03~~				
~~pH~~	~~ND~~	~~J~~	~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/10/03~~	~~06/10/03~~	~~3060358~~	~~A-01~~ MW
03050653 (P3F0221-51) Other wet					Sampled: 05/29/03 Received: 06/05/03				
pH	9.19	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
03050654 (P3F0221-52) Other wet					Sampled: 05/28/03 Received: 06/05/03				
pH	13.8	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
03050655 (P3F0221-53) Other wet					Sampled: 05/28/03 Received: 06/05/03				
pH	10.6	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
03050656 (P3F0221-54) Other wet					Sampled: 05/29/03 Received: 06/05/03				
pH	13.8	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 06/23/03 14:22

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050657 (P3F0221-55) Other wet					Sampled: 05/29/03	Received: 06/05/03			
pH	ND	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01 MW
03050658 (P3F0221-56) Other wet					Sampled: 05/28/03	Received: 06/05/03			
pH	12.7	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
03050659 (P3F0221-57) Other wet					Sampled: 05/29/03	Received: 06/05/03			
pH	ND	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01 MW
03050660 (P3F0221-58) Other wet					Sampled: 05/29/03	Received: 06/05/03			
pH	0.530	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
03050661 (P3F0221-59) Other wet					Sampled: 05/21/03	Received: 06/05/03			
Cyanide (total)	6750	1200	mg/kg wet	500	EPA 335.4	06/10/03	06/17/03	3060356 MW	
pH	11.7	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
03050662 (P3F0221-60) Other wet					Sampled: 05/28/03	Received: 06/05/03			
Cyanide (total)	12900	1180	mg/kg wet	500	EPA 335.4	06/10/03	06/17/03	3060356 MW	
pH	10.6	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060358	A-01
03050663 (P3F0221-61) Other wet					Sampled: 05/21/03	Received: 06/05/03			
Cyanide (total)	34700	2050	mg/kg wet	1000	EPA 335.4	06/10/03	06/17/03	3060356 MW	
pH	13.1	J	pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050664 (P3F0221-62) Other wet					Sampled: 05/22/03	Received: 06/05/03			
Cyanide (total)	ND	2.36	mg/kg wet	1	EPA 335.4	06/10/03	06/17/03	3060356 MW	
pH	13.9	J	pH Units	"	150.1/9040A	06/10/03	06/10/03	3060369	A-01

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Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050665 (P3F0221-63) Other wet					Sampled: 05/22/03	Received: 06/05/03			
~~Cyanide (total)~~	~~53000~~	~~11600~~	~~mg/kg wet~~	~~5000~~	~~EPA 335.4~~	~~06/10/03~~	~~06/17/03~~	~~3060356~~ MW	
pH	10.1 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050666 (P3F0221-64) Other wet					Sampled: 05/19/03	Received: 06/05/03			
~~Cyanide (total)~~	~~32400~~	~~2450~~	~~mg/kg wet~~	~~1000~~	~~EPA 335.4~~	~~06/10/03~~	~~06/17/03~~	~~3060356~~ MW	
pH	11.6 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050667 (P3F0221-65) Other wet					Sampled: 05/22/03	Received: 06/05/03			
~~Cyanide (total)~~	~~19900~~	~~1060~~	~~mg/kg wet~~	~~500~~	~~EPA 335.4~~	~~06/10/03~~	~~06/17/03~~	~~3060356~~ MW	
pH	10.3 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050668 (P3F0221-66) Other wet					Sampled: 05/22/03	Received: 06/05/03			
~~Cyanide (total)~~	~~82100~~	~~12300~~	~~mg/kg wet~~	~~5000~~	~~EPA 335.4~~	~~06/10/03~~	~~06/17/03~~	~~3060356~~ MW	
pH	11.2 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050669 (P3F0221-67) Other wet					Sampled: 05/28/03	Received: 06/05/03			
~~Cyanide (total)~~	~~13600~~	~~1080~~	~~mg/kg wet~~	~~500~~	~~EPA 335.4~~	~~06/10/03~~	~~06/17/03~~	~~3060356~~ MW	
pH	11.6 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050670 (P3F0221-68) Other wet					Sampled: 05/22/03	Received: 06/05/03			
~~Cyanide (total)~~	~~74300~~	~~11000~~	~~mg/kg wet~~	~~5000~~	~~EPA 335.4~~	~~06/10/03~~	~~06/17/03~~	~~3060356~~ MW	
pH	11.2 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050671 (P3F0221-69) Other wet					Sampled: 05/21/03	Received: 06/05/03			
~~Cyanide (total)~~	~~30700~~	~~2270~~	~~mg/kg wet~~	~~1000~~	~~EPA 335.4~~	~~06/10/03~~	~~06/17/03~~	~~3060356~~ MW	
pH	13.3 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01

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North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050672 (P3F0221-70) Other wet						Sampled: 05/28/03	Received: 06/05/03		
~~Cyanide (total)~~	~~10200~~	~~1160~~	~~mg/kg wet~~	~~500~~	~~EPA 335.4~~	~~06/10/03~~	~~06/17/03~~	~~3060356~~ MW	
pH	10.7 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050673 (P3F0221-71) Other wet						Sampled: 05/21/03	Received: 06/05/03		
~~Cyanide (total)~~	~~35600~~	~~2400~~	~~mg/kg wet~~	~~1000~~	~~EPA 335.4~~	~~06/10/03~~	~~06/17/03~~	~~3060356~~ MW	
pH	13.5 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050674 (P3F0221-72) Other wet						Sampled: 05/20/03	Received: 06/05/03		
pH	0.220 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050675 (P3F0221-73) Other wet						Sampled: 05/27/03	Received: 06/05/03		
pH	14.0 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050676 (P3F0221-74) Other wet						Sampled: 05/20/03	Received: 06/05/03		
pH	11.0 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050677 (P3F0221-75) Other wet						Sampled: 05/21/03	Received: 06/05/03		
pH	12.9 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050678 (P3F0221-76) Other wet						Sampled: 05/28/03	Received: 06/05/03		
pH	10.0 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050679 (P3F0221-77) Other wet						Sampled: 05/22/03	Received: 06/05/03		
pH	15.8 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01

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Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050680 (P3F0221-78) Other wet					Sampled: 05/28/03	Received: 06/05/03			
pH	13.3 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050681 (P3F0221-79) Other wet					Sampled: 05/20/03	Received: 06/05/03			
pH	10.9 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050682 (P3F0221-80) Other wet					Sampled: 05/28/03	Received: 06/05/03			
pH	11.8 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060369	A-01
03050683 (P3F0221-81) Other wet					Sampled: 05/20/03	Received: 06/05/03			
pH	11.1 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050684 (P3F0221-82) Other wet					Sampled: 06/02/03	Received: 06/05/03			
pH	10.5 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050685 (P3F0221-83) Other wet					Sampled: 06/02/03	Received: 06/05/03			
pH	11.5 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050686 (P3F0221-84) Other wet					Sampled: 05/28/03	Received: 06/05/03			
pH	10.3 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050687 (P3F0221-85) Other wet					Sampled: 05/28/03	Received: 06/05/03			
pH	13.9 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050688 (P3F0221-86) Other wet					Sampled: 05/20/03	Received: 06/05/03			
pH	13.3 J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 06/23/03 14:22

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050689 (P3F0221-87) Other wet					Sampled: 06/02/03	Received: 06/05/03			
pH	**6.11** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050690 (P3F0221-88) Other wet					Sampled: 05/28/03	Received: 06/05/03			
pH	**7.61** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050691 (P3F0221-89) Other wet					Sampled: 05/27/03	Received: 06/05/03			
pH	**5.84** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050692 (P3F0221-90) Other wet					Sampled: 05/27/03	Received: 06/05/03			
pH	**11.0** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050693 (P3F0221-91) Other wet					Sampled: 05/27/03	Received: 06/05/03			
pH	**4.94** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050694 (P3F0221-92) Other wet					Sampled: 05/27/03	Received: 06/05/03			
pH	**7.91** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
~~**03050695 (P3F0221-93) Other wet**~~					~~Sampled: 06/02/03~~	~~Received: 06/05/03~~			MW
~~pH~~	~~ND~~ J		~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/10/03~~	~~06/10/03~~	~~3060379~~	~~A-01~~ MW
03050696 (P3F0221-94) Other wet					Sampled: 06/02/03	Received: 06/05/03			
pH	**0.840** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
~~**03050697 (P3F0221-95) Other wet**~~					~~Sampled: 06/02/03~~	~~Received: 06/05/03~~			MW
~~pH~~	~~ND~~ J		~~pH Units~~	~~1~~	~~150.1/9040A~~	~~06/10/03~~	~~06/10/03~~	3060379	~~A-01~~ MW

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 06/23/03 14:22

Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050698 (P3F0221-96) Other wet					Sampled: 06/02/03	Received: 06/05/03			
pH	**13.7** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050699 (P3F0221-97) Other wet					Sampled: 06/02/03	Received: 06/05/03			
pH	**10.2** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050700 (P3F0221-98) Other wet					Sampled: 06/02/03	Received: 06/05/03			
pH	**5.00** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050701 (P3F0221-99) Other wet					Sampled: 06/02/03	Received: 06/05/03			
pH	**11.5** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 06/23/03 14:40

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050702 (P3F0223-01) Other wet					Sampled: 06/04/03 Received: 06/05/03				
pH	**10.4** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050703 (P3F0223-02) Other wet					Sampled: 06/04/03 Received: 06/05/03				
pH	**12.3** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050704 (P3F0223-03) Other wet					Sampled: 06/04/03 Received: 06/05/03				
pH	**7.55** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050705 (P3F0223-04) Other wet					Sampled: 06/04/03 Received: 06/05/03				
pH	**0.0900** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050706 (P3F0223-05) Other wet					Sampled: 06/04/03 Received: 06/05/03				
pH	**2.61** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
03050707 (P3F0223-06) Other wet					Sampled: 06/04/03 Received: 06/05/03				
pH	**0.610** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01
844 (P3F0223-07) Other wet					Sampled: 06/04/03 Received: 06/05/03				
pH	**11.3** J		pH Units	1	150.1/9040A	06/10/03	06/10/03	3060379	A-01

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MEMORANDUM

DATE: August 11, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 9 samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Target Analyte List (TAL) metals analyses (EPA Methods 6020 and 7471) and Toxicity Characteristic Leaching Procedure (TCLP) metals analyses (EPA Methods 1311, 6020, and 7470) were performed by North Creek Analytical, Inc., Beaverton, Oregon.

The samples were numbered:

Batch	**Samples**			
P3F0048	Tank 1	Tank 2		
P3F0223	03050702 03050706	03050703 03050707	03050704	03050705
P3F0300	Base Bulk			

Data Qualifications:

1. Sample Holding Times: Satisfactory.

The sample cooler for batch P3F0223 was received with no ice and was significantly above the QC temperature limits of 4°C ± 2°C; associated sample results were qualified as estimated quantities (J or UJ). The samples were collected between May 20 and June 4, 2003, and were extracted and/or analyzed by June 19, 2003, therefore meeting QC criteria of less than 6 months between collection, extraction, and analysis (28 days for mercury) for soil and TCLP soil samples. The base bulk sample was received unpreserved; associated sample results were qualified as estimated quantities (J or UJ).

2. **Initial and Continuing Calibration: Acceptable.**

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits of 90% to 110% (± 1%). All AA recoveries were within QC limits of 80% to 120%.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results.

4. **ICP Interference Check Sample: Not Applicable.**

Interference Check Sample (ICS) analyses were not performed for ICP-MS analyses; no action was taken.

5. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

7. **ICP Serial Dilution: Not Performed.**

Serial dilution analyses were not performed.

8. **Matrix Spike Analysis: Satisfactory.**

Matrix spike(MS)/matrix spike duplicate (MSD) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. MS and MS duplicate recoveries were within the QC limits. The chromium recoveries associated with samples 03050702 through 03050707 exceeded QC limits; associated positive sample results were previously qualified as estimated quantities (J).

9. **Duplicate Analysis: Satisfactory.**

All duplicate results were within QC limits except lead associated with samples 03050702 through 03050707; associated sample results were previously qualified as estimated quantities (J or UJ).

10. **Laboratory Control Sample Analysis: Acceptable.**

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

11. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite A Linnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0016 Project Manager: Jerry Wade	**Reported:** 06/09/03 17:17

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
Tank 1 (P3F0048-01) Water					Sampled: 06/02/03 Received: 06/02/03				
Arsenic	0.556	0.0500	mg/l	1	EPA 6020	06/02/03	06/03/03	3060033	
Barium	0.345	0.0500	"	"	"	"	"	"	
Cadmium	9.00	0.0500	"	"	"	"	"	"	
Chromium	51.7	5.00	"	100	"	"	06/05/03	"	
Lead	2.86	0.0500	"	1	"	"	06/03/03	"	
Mercury	ND	0.0160 U	"	"	EPA 7470A	06/04/03	06/04/03	3060175	
Selenium	ND	0.0500 U	"	"	EPA 6020	06/02/03	06/03/03	3060033	
Silver	0.178	0.0500	"	"	"	"	06/03/03	"	
Tank 2 (P3F0048-02) Water					Sampled: 06/02/03 Received: 06/02/03				
Arsenic	0.238	0.0500	mg/l	1	EPA 6020	06/02/03	06/03/03	3060033	
Barium	0.644	0.0500	"	"	"	"	"	"	
Cadmium	30.4	0.500	"	10	"	"	06/03/03	"	
Chromium	3480	5.00	"	100	"	"	06/05/03	"	
Lead	3.06	0.0500	"	1	"	"	06/03/03	"	
Mercury	ND	0.0160 U	"	"	EPA 7470A	06/04/03	06/04/03	3060175	
Selenium	0.238	0.0500	"	"	EPA 6020	06/02/03	06/03/03	3060033	
Silver	0.0780	0.0500	"	"	"	"	"	"	

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Environmental Quality Management 6825 216th Street SW, Suite A. Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 06/23/03 14:40

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050702 (P3F0223-01) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Arsenic	**0.802** J	0.500	mg/kg wet	1	EPA 6020	06/09/03	06/12/03	3060314	
Barium	ND	0.500 UJ	"	"	"	"	"	"	
Cadmium	**15.0** J	0.500	"	"	"	"	"	"	
Chromium	**5.22**	0.500	"	"	"	"	"	"	
Lead	**3.36**	0.500	"	"	"	"	"	"	
Mercury	ND	0.100 UJ	mg/kg	"	EPA 7471A	06/13/03	06/13/03	3060539	
Selenium	ND	0.500 UJ	mg/kg wet	"	EPA 6020	06/09/03	06/12/03	3060314	
Silver	**21.8** J	0.500	"	"	"	"	"	"	
03050703 (P3F0223-02) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Arsenic	ND	0.500 UJ	mg/kg wet	1	EPA 6020	06/09/03	06/12/03	3060314	
Barium	ND	0.500	"	"	"	"	"	"	
Cadmium	ND	0.500	"	"	"	"	"	"	
Chromium	**5.76** J	0.500	"	"	"	"	"	"	
Lead	ND	0.500 UJ	"	"	"	"	"	"	
Mercury	ND	0.100	mg/kg	"	EPA 7471A	06/13/03	06/13/03	3060539	
Selenium	ND	0.500	mg/kg wet	"	EPA 6020	06/09/03	06/12/03	3060314	
Silver	ND	0.500	"	"	"	"	"	"	
03050704 (P3F0223-03) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Arsenic	**0.665** J	0.500	mg/kg wet	1	EPA 6020	06/09/03	06/12/03	3060314	
Barium	ND	0.500 UJ	"	"	"	"	"	"	
Cadmium	ND	0.500 UJ	"	"	"	"	"	"	
Chromium	**36.0** J	0.500	"	"	"	"	"	"	
Lead	ND	0.500 UJ	"	"	"	"	"	"	
Mercury	ND	0.100	mg/kg	"	EPA 7471A	06/13/03	06/13/03	3060539	
Selenium	ND	0.500	mg/kg wet	"	EPA 6020	06/09/03	06/12/03	3060314	
Silver	ND	0.500	"	"	"	"	"	"	

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 06/23/03 14:40

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050705 (P3F0223-04) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Arsenic	ND	0.500 UJ	mg/kg wet	1	EPA 6020	06/09/03	06/12/03	3060314	
Barium	ND	0.500 UJ	"	"	"	"	"	"	
Cadmium	**7.41** J	0.500	"	"	"	"	"	"	
Chromium	**22.8** J	0.500	"	"	"	"	"	"	
Lead	**5.60** J	0.500	"	"	"	"	"	"	
Mercury	ND	0.0481 UJ	mg/kg	"	EPA 7471A	06/13/03	06/13/03	3060539	
Selenium	ND	0.500 UJ	mg/kg wet	"	EPA 6020	06/09/03	06/12/03	3060314	
Silver	**6.46** J	0.500	"	"	"	"	"	"	
03050706 (P3F0223-05) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Arsenic	ND	0.500 UJ	mg/kg wet	1	EPA 6020	06/09/03	06/12/03	3060314	
Barium	ND	0.500	"	"	"	"	"	"	
Cadmium	ND	0.500	"	"	"	"	"	"	
Chromium	**420** J	0.500	"	"	"	"	"	"	
Lead	ND	0.500 UJ	"	"	"	"	"	"	
Mercury	ND	0.0893	mg/kg	"	EPA 7471A	06/13/03	06/13/03	3060539	
Selenium	ND	0.500	mg/kg wet	"	EPA 6020	06/09/03	06/12/03	3060314	
Silver	ND	0.500	"	"	"	"	"	"	
03050707 (P3F0223-06) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Arsenic	ND	0.431 UJ	mg/kg wet	1	EPA 6020	06/09/03	06/12/03	3060314	
Barium	ND	0.431 UJ	"	"	"	"	"	"	
Cadmium	**2.91** J	0.431	"	"	"	"	"	"	
Chromium	**35.2** J	0.431	"	"	"	"	"	"	
Lead	**1.20** J	0.431	"	"	"	"	"	"	
Mercury	ND	0.0806 UJ	mg/kg	"	EPA 7471A	06/13/03	06/13/03	3060539	
Selenium	ND	0.431	mg/kg wet	"	EPA 6020	06/09/03	06/12/03	3060314	
Silver	ND	0.431	"	"	"	"	"	"	

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 06/23/03 14:40

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050702 (P3F0223-01) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Arsenic	ND	1.25 UJ	mg/l	1	1311/6020	06/18/03	06/19/03	3060727	
Barium	**4.75** J	1.25	"	"	"	"	"	"	
Cadmium	**2.15**	1.25	"	"	"	"	"	"	
Chromium	**4.92**	1.25	"	"	"	"	"	"	
Lead	**2.08**	1.25	"	"	"	"	"	"	
Mercury	**0.0102**	0.00400	"	"	1311/7470A	06/19/03	06/19/03	3060768	
Selenium	ND	1.25 UJ	"	"	1311/6020	06/18/03	06/19/03	3060727	
Silver	**122** J	7.32	"	5.86	"	"	06/19/03	"	
03050703 (P3F0223-02) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Arsenic	ND	1.25 UJ	mg/l	1	1311/6020	06/18/03	06/19/03	3060728	
Barium	**2.14** J	1.25	"	"	"	"	"	"	
Cadmium	ND	1.25 UJ	"	"	"	"	"	"	
Chromium	**9.94** J	1.25	"	"	"	"	"	"	
Lead	ND	1.25 UJ	"	"	"	"	"	"	
Mercury	ND	0.00400	"	"	1311/7470A	06/19/03	06/19/03	3060766	
Selenium	ND	1.25	"	"	1311/6020	06/18/03	06/19/03	3060728	
Silver	ND	1.25	"	"	"	"	"	"	
03050704 (P3F0223-03) Other wet					Sampled: 06/04/03 Received: 06/05/03				
Arsenic	ND	1.25 UJ	mg/l	1	1311/6020	06/18/03	06/19/03	3060727	
Barium	**2.36** J	1.25	"	"	"	"	"	"	
Cadmium	ND	1.25 UJ	"	"	"	"	"	"	
Chromium	**35.0** J	8.06	"	6.45	"	"	"	"	
Lead	ND	1.25 UJ	"	1	"	"	"	"	
Mercury	ND	0.00400	"	"	1311/7470A	06/19/03	06/19/03	3060768	
Selenium	ND	1.25	"	"	1311/6020	06/18/03	06/19/03	3060727	
Silver	ND	1.25	"	"	"	"	06/19/03	"	

MW
8/12-03

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 06/23/03 14:40

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050705 (P3F0223-04) Other wet					Sampled: 06/04/03	Received: 06/05/03			
Arsenic	ND	1.25 UJ	mg/l	1	1311/6020	06/18/03	06/19/03	3060727	
Barium	ND	1.25 UJ	"	"	"	"	"	"	
Cadmium	**2.30** J	1.25	"	"	"	"	"	"	
Chromium	**33.4** J	1.25	"	"	"	"	"	"	
Lead	ND	1.25 UJ	"	"	"	"	"	"	
Mercury	ND	0.00400	"	"	1311/7470A	06/19/03	06/19/03	3060768	
Selenium	ND	1.25	"	"	1311/6020	06/18/03	06/19/03	3060727	
Silver	**1.65** J	1.25	"	"	"	"	"	"	
03050706 (P3F0223-05) Other wet					Sampled: 06/04/03	Received: 06/05/03			
Arsenic	ND	1.25 UJ	mg/l	1	1311/6020	06/18/03	06/19/03	3060728	
Barium	**3.30** J	1.25	"	"	"	"	"	"	
Cadmium	**20.7**	1.25	"	"	"	"	"	"	
Chromium	**67.1**	1.25	"	"	"	"	"	"	
Lead	**14.3**	1.25	"	"	"	"	"	"	
Mercury	ND	0.00400 UJ	"	"	1311/7470A	06/19/03	06/19/03	3060766	
Selenium	ND	1.25 UJ	"	"	1311/6020	06/18/03	06/19/03	3060728	
Silver	**6.24** J	1.25	"	"	"	"	"	"	
03050707 (P3F0223-06) Other wet					Sampled: 06/04/03	Received: 06/05/03			
Arsenic	ND	1.25 UJ	mg/l	1	1311/6020	06/18/03	06/19/03	3060727	
Barium	**4.21** J	1.25	"	"	"	"	"	"	
Cadmium	ND	1.25 UJ	"	"	"	"	"	"	
Chromium	**661** J	8.38	"	6.7	"	"	06/19/03	"	
Lead	ND	1.25 UJ	"	1	"	"	06/19/03	"	
Mercury	ND	0.00400	"	"	1311/7470A	06/19/03	06/19/03	3060768	
Selenium	ND	1.25	"	"	1311/6020	06/18/03	06/19/03	3060727	
Silver	ND	1.25	"	"	"	"	"	"	

MW 8-12-03

North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite A Linnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0016, PO# 5770 Project Manager: Jerry Wade	**Reported:** 06/12/03 16:48

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
Base Bulk (P3F0300-01) Water					Sampled: 06/09/03 Received: 06/09/03				
Arsenic	**0.664** J	0.0500	mg/l	1	EPA 6020	06/10/03	06/12/03	3060385	R-03
Barium	**22.7**	0.0500	"	"	"	"	"	"	R-03
Cadmium	**750**	14.4	"	288	"	"	06/12/03	"	R-03
Chromium	**88.2**	0.313	"	6.26	"	"	06/12/03	"	R-03
Lead	**71.6**	0.313	"	"	"	"	"	"	R-03
Mercury	**0.0279**	0.0200	"	1	EPA 7470A	06/11/03	06/11/03	3060422	
Selenium	ND	0.0500 UJ	"	"	EPA 6020	06/10/03	06/12/03	3060385	R-03
Silver	**21.8** J	0.313	"	6.26	"	"	06/12/03	"	R-03

MW
8-12-03

North Creek Analytical - Portland

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Brian Cone, Industrial Services Manager

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MEMORANDUM

DATE: August 11, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of one sample collected from the Columbia American Plating site in Portland, Oregon, has been completed. Flashpoint analyses (EPA Method 1010) was performed by North Creek Analytical, Inc., Beaverton, Oregon.

The sample was numbered:

Batch	Sample
P3F0221	03050699

Data Qualifications:

The sample was collected on June 2, 2003, and was analyzed by June 17, 2003, therefore exceeding QC holding time criteria of analysis "as soon as possible"; the sample result was qualified as an estimated quantity (J). The duplicate sample result was within QC limits.

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004) and the analytical method. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 06/23/03 14:22

Physical Parameters per APHA/ASTM/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050699 (P3F0221-97) Other wet					Sampled: 06/02/03 Received: 06/05/03				
Flashpoint	ND	~~>~~150 J	°F	1	EPA 1010	06/17/03	06/17/03	3060653	

MW 8-11-03

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MEMORANDUM

DATE: August 14, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of two samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Flashpoint analyses (EPA Method 1010) was performed by North Creek Analytical, Inc., Beaverton, Oregon.

The samples were numbered: 03050743 03050744

Data Qualifications:

The samples were collected on June 27, 2003, and were analyzed on July 14, 2003, therefore exceeding QC holding time criteria of analysis "as soon as possible"; the sample results were qualified as estimated quantities (J). The duplicate sample result was within QC limits. The sample flashed at the initial analysis temperatures, therefore the actual flashpoint is likely less than the listed flashpoint.

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004) and the analytical method. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 07/15/03 09:33

Physical Parameters per APHA/ASTM/EPA Methods
North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050743 (P3F0978-01) Other wet					Sampled: 06/27/03 Received: 06/30/03				
Flashpoint	33.0 J	33.0	°F	1	EPA 1010	07/14/03	07/14/03	3070473	F-03
03050744 (P3F0978-02) Other wet					Sampled: 06/27/03 Received: 06/30/03				
Flashpoint	32.0 J	32.0	°F	1	EPA 1010	07/14/03	07/14/03	3070473	F-03

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MEMORANDUM

DATE: August 18, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of eight liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. pH analyses (EPA Methods 150.1 and 9045) were performed by North Creek Analytical, Inc., Beaverton, Oregon.

The samples were numbered:

03050708	03050709	03050710	03050711
03050712	03050713	03050714	03050715

Data Qualifications:

The samples were received at 17.8°C, exceeding the QC limits of 4°C ± 2°C; all sample results were qualified as estimated quantities (J). The samples were collected between June 4 and 9, 2003, and were analyzed on June 17, 2003, therefore exceeding QC holding time criteria of "immediate analysis"; all sample results were qualified as estimated quantities (J). The three-point initial calibration (pH 4.0, 7.0, and 10.0) and calibration verification (at pH 8.0) results were within QC limits. Any sample result < 4.0 or > 10.0 is outside the calibration range and is qualified as an estimated quantity (J). The duplicate result was within QC limits.

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004) and the analytical method. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/01/03 16:23

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050708 (P3F0535-01) Other wet					Sampled: 06/06/03 Received: 06/13/03				
pH	2.21	J	pH Units	1	150.1/9040A	06/17/03	06/17/03	3060641	
03050709 (P3F0535-02) Other wet					Sampled: 06/06/03 Received: 06/13/03				
pH	3.71	J	pH Units	1	150.1/9040A	06/17/03	06/17/03	3060641	
03050710 (P3F0535-03) Other wet					Sampled: 06/09/03 Received: 06/13/03				
pH	10.7	J	pH Units	1	150.1/9040A	06/17/03	06/17/03	3060641	
03050711 (P3F0535-04) Other wet					Sampled: 06/09/03 Received: 06/13/03				
pH	12.3	J	pH Units	1	150.1/9040A	06/17/03	06/17/03	3060641	
03050712 (P3F0535-05) Other wet					Sampled: 06/09/03 Received: 06/13/03				
pH	5.37	J	pH Units	1	150.1/9040A	06/17/03	06/17/03	3060641	
03050713 (P3F0535-06) Other wet					Sampled: 06/09/03 Received: 06/13/03				
pH	3.87	J	pH Units	1	150.1/9040A	06/17/03	06/17/03	3060641	
03050714 (P3F0535-07) Other wet					Sampled: 06/04/03 Received: 06/13/03				
pH	4.78	J	pH Units	1	150.1/9040A	06/17/03	06/17/03	3060641	
03050715 (P3F0535-08) Other wet					Sampled: 06/04/03 Received: 06/13/03				
pH	4.60	J	pH Units	1	150.1/9040A	06/17/03	06/17/03	3060641	

MW 8-18-03

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/01/03 16:23

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050714 (P3F0535-07) Other wet					Sampled: 06/04/03 Received: 06/13/03				
Arsenic	ND	2.00	mg/l	2	1311/6020	06/24/03	07/23/03	3061003	
Barium	ND	2.00	"	"	"	"	"	"	
Cadmium	ND	2.00	"	"	"	"	"	"	R-04
Chromium	**2.02**	2.00	"	"	"	"	"	"	
Lead	ND	2.00	"	"	"	"	"	"	
Mercury	ND	0.0160	"	1	1311/7470A	06/26/03	06/26/03	3061009	R-03
Selenium	ND	2.00	"	2	1311/6020	06/24/03	07/23/03	3061003	R-04
Silver	ND	2.00	"	"	"	"	"	"	
03050715 (P3F0535-08) Other wet					Sampled: 06/04/03 Received: 06/13/03				
Arsenic	ND	2.00	mg/l	2	1311/6020	06/24/03	07/24/03	3061003	
Barium	**2.22**	2.00	"	"	"	"	07/23/03	"	
Cadmium	ND	2.00	"	"	"	"	"	"	R-04
Chromium	**3.75**	2.00	"	"	"	"	"	"	
Lead	ND	2.00	"	"	"	"	"	"	
Mercury	ND	0.00800	"	1	1311/7470A	06/26/03	06/26/03	3061009	R-03
Selenium	ND	2.00	"	2	1311/6020	06/24/03	07/23/03	3061003	R-04
Silver	ND	2.00	"	"	"	"	"	"	

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MEMORANDUM

DATE: August 18, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of eight liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Target Analyte List (TAL) metals analyses (EPA Methods 6020 and 7471) and Toxicity Characteristic Leaching Procedure (TCLP) metals analyses (EPA Methods 1311, 6020, and 7471) were performed by North Creek Analytical, Inc., Beaverton, Oregon.

The samples were numbered:

03050708	03050709	03050710	03050711
03050712	03050713	03050714	03050715

Data Qualifications:

1. Sample Holding Times: Satisfactory.

The samples were received at 17.8°C, exceeding the QC limits of 4°C ± 2°C; all sample results were qualified as estimated quantities (J or UJ). The samples were collected between June 4 and 9, 2003, and were extracted and/or analyzed by June 26, 2003 (mercury) or July 23, 2003, therefore meeting QC criteria of less than 6 months between collection, extraction, and analysis (28 days for mercury) for soil and TCLP samples.

2. Initial and Continuing Calibration: Acceptable.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All applicable ICP recoveries were within the QC limits of 90% to 110% (± 1%). All applicable AA recoveries were within QC limits of 80% to 120%.

3. **Blanks: Satisfactory.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results except mercury (-0.17 ug/L) in the TAL metals blank. Associated sample results were qualified as estimated quantities (J or UJ).

4. **ICP Interference Check Sample: Not Applicable.**

Interference Check Sample (ICS) analyses were not performed for ICP-MS analyses; no action was taken.

5. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

7. **ICP Serial Dilution: Not Performed.**

Serial dilution analyses were not performed; no action was taken.

8. **Matrix Spike Analysis: Satisfactory.**

Matrix spike(MS)/matrix spike duplicate (MSD) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. MS and MS duplicate recoveries were within the QC limits except for chromium (Batch 3050644), arsenic and selenium (Batch 3060870), and TCLP barium and lead (Batch 3061003), all with low recoveries. Associated sample results were qualified as estimated quantities (J or UJ).

9. **Duplicate Analysis: Acceptable.**

All duplicate results were within QC limits.

10. **Laboratory Control Sample Analysis: Acceptable.**

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

11. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data

Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/01/03 16:23

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050708 (P3F0535-01) Other wet					Sampled: 06/06/03 Received: 06/13/03				
Arsenic	0.244 J	0.100	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Barium	1.47	0.100	"	"	"	"	"	"	
Cadmium	13.4	0.100	"	"	"	"	06/27/03	"	
Chromium	1090	2.50	"	500	"	"	06/27/03	"	
Lead	3.48	0.100	"	20	"	"	06/26/03	"	
Mercury	ND	0.100 UJ	mg/kg	1	EPA 7471A	06/24/03	06/24/03	3060900	
Selenium	ND	0.100	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Silver	7.40 J	0.100	"	"	"	"	"	"	
03050709 (P3F0535-02) Other wet					Sampled: 06/06/03 Received: 06/13/03				
Arsenic	ND	0.100 UJ	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Barium	ND	0.100 UJ	"	"	"	"	"	"	
Cadmium	0.189 J	0.100	"	"	"	"	06/27/03	"	
Chromium	6.42 J	0.100	"	"	"	"	06/26/03	"	
Lead	ND	0.100 UJ	"	"	"	"	"	"	
Mercury	ND	0.0610	mg/kg	1	EPA 7471A	06/24/03	06/24/03	3060900	
Selenium	ND	0.100	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Silver	ND	0.100	"	"	"	"	"	"	
03050710 (P3F0535-03) Other wet					Sampled: 06/09/03 Received: 06/13/03				
Arsenic	0.426 J	0.266	mg/kg wet	1	EPA 6020	06/17/03	06/25/03	3060644	
Barium	1.31	0.266	"	"	"	"	06/22/03	"	
Cadmium	1130	2.66	"	10	"	"	06/25/03	"	
Chromium	10.2	0.266	"	1	"	"	06/22/03	"	
Lead	32.0	0.266	"	"	"	"	"	"	
Mercury	ND	0.0714 UJ	mg/kg	"	EPA 7471A	06/24/03	06/24/03	3060900	
Selenium	ND	0.266	mg/kg wet	"	EPA 6020	06/17/03	06/25/03	3060644	
Silver	13.0 J	0.266	"	"	"	"	06/22/03	"	

MW 8-18-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/01/03 16:23

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050711 (P3F0535-04) Other wet					Sampled: 06/09/03 Received: 06/13/03				
Arsenic	0.482 J	0.100	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Barium	1.32	0.100	"	"	"	"	"	"	
Cadmium	72.6	0.250	"	50	"	"	06/27/03	"	
Chromium	11.1	0.100	"	20	"	"	06/26/03	"	
Lead	7.66	0.100	"	"	"	"	"	"	
Mercury	ND	0.0556 UJ	mg/kg	1	EPA 7471A	06/24/03	06/24/03	3060900	
Selenium	ND	0.100 UJ	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Silver	25.1 J	0.250	"	50	"	"	06/27/03	"	
03050712 (P3F0535-05) Other wet					Sampled: 06/09/03 Received: 06/13/03				
Arsenic	0.135 J	0.100	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Barium	0.559	0.100	"	"	"	"	"	"	
Cadmium	3.34	0.100	"	"	"	"	"	"	
Chromium	36.3	0.100	"	"	"	"	"	"	
Lead	5.31	0.100	"	"	"	"	"	"	
Mercury	ND	0.0862 UJ	mg/kg	1	EPA 7471A	06/24/03	06/24/03	3060900	
Selenium	ND	0.100 UJ	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Silver	0.556 J	0.100	"	"	"	"	06/27/03	"	
03050713 (P3F0535-06) Other wet					Sampled: 06/09/03 Received: 06/13/03				
Arsenic	0.316 J	0.100	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Barium	0.263	0.100	"	"	"	"	"	"	
Cadmium	9.48	0.100	"	"	"	"	06/27/03	"	
Chromium	51.1	0.100	"	"	"	"	06/26/03	"	
Lead	1.39	0.100	"	"	"	"	"	"	
Mercury	ND	0.0595 UJ	mg/kg	1	EPA 7471A	06/24/03	06/24/03	3060900	
Selenium	ND	0.100 UJ	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Silver	0.297 J	0.100	"	"	"	"	"	"	

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/01/03 16:23

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050714 (P3F0535-07) Other wet					Sampled: 06/04/03 Received: 06/13/03				
Arsenic	ND	0.100 UJ	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Barium	ND	0.250 UJ	"	50	"	"	06/27/03	"	
Cadmium	0.915 J	0.250	"	"	"	"	"	"	
Chromium	6.98 J	0.100	"	20	"	"	06/26/03	"	
Lead	1.85 J	0.250	"	50	"	"	06/27/03	"	
Mercury	ND	0.0368 UJ	mg/kg	1	EPA 7471A	06/24/03	06/24/03	3060900	
Selenium	ND	0.100 UJ	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Silver	0.788 J	0.100	"	"	"	"	"	"	
03050715 (P3F0535-08) Other wet					Sampled: 06/04/03 Received: 06/13/03				
Arsenic	ND	0.100 UJ	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Barium	0.184 J	0.100	"	"	"	"	"	"	
Cadmium	1.20	0.100	"	"	"	"	06/27/03	"	
Chromium	8.62	0.100	"	"	"	"	06/26/03	"	
Lead	3.66	0.100	"	"	"	"	"	"	
Mercury	ND	0.0510 UJ	mg/kg	1	EPA 7471A	06/24/03	06/24/03	3060900	
Selenium	ND	0.100	mg/l	20	EPA 6020	06/23/03	06/26/03	3060870	
Silver	1.27 J	0.100	"	"	"	"	"	"	

MW 8-18-03

North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/01/03 16:23

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050708 (P3F0535-01) Other wet					Sampled: 06/06/03 Received: 06/13/03				
Arsenic	6.17 J	5.00	mg/l	5	1311/6020	06/24/03	07/15/03	3061001	
Barium	ND	2.50 UJ	"	2.5	"	"	06/26/03	"	
Cadmium	13.9 J	2.50	"	"	"	"	"	"	
Chromium	1170 J	15.6	"	15.6	"	"	06/26/03	"	
Lead	3.07 J	2.50	"	2.5	"	"	06/26/03	"	
Mercury	ND	0.00800 UJ	"	1	1311/7470A	06/26/03	06/26/03	3061007	R-03
Selenium	ND	2.50	"	2.5	1311/6020	06/24/03	06/26/03	3061001	
Silver	ND	2.50	"	"	"	"	"	"	
03050709 (P3F0535-02) Other wet					Sampled: 06/06/03 Received: 06/13/03				
Arsenic	ND	2.50 UJ	mg/l	2.5	1311/6020	06/24/03	07/15/03	3061001	
Barium	ND	1.00	"	1	"	"	07/01/03	"	
Cadmium	ND	1.00	"	"	"	"	"	"	
Chromium	6.12 J	1.00	"	"	"	"	"	"	
Lead	ND	1.00 UJ	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	1311/7470A	06/26/03	06/26/03	3061007	
Selenium	ND	1.00	"	"	1311/6020	06/24/03	07/01/03	3061001	
Silver	ND	1.00	"	"	"	"	"	"	
03050710 (P3F0535-03) Other wet					Sampled: 06/09/03 Received: 06/13/03				
Arsenic	ND	2.50 UJ	mg/l	0.5	1311/6020	06/24/03	07/23/03	3061003	
Barium	ND	2.50 UJ	"	"	"	"	"	"	R-04
Cadmium	156 J	2.50	"	"	"	"	"	"	
Chromium	4.00	2.50	"	"	"	"	"	"	
Lead	7.62	2.50	"	"	"	"	"	"	
Mercury	0.0226	0.00800	"	1	1311/7470A	06/26/03	06/26/03	3061009	R-03
Selenium	ND	2.50 UJ	"	0.5	1311/6020	06/24/03	07/23/03	3061003	R-04
Silver	17.2 J	2.50	"	"	"	"	"	"	

JMN 8-18-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/01/03 16:23

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050711 (P3F0535-04) Other wet					Sampled: 06/09/03 Received: 06/13/03				
Arsenic	ND	2.00 UJ	mg/l	2	1311/6020	06/24/03	07/23/03	3061003	
Barium	ND	2.00 UJ	"	"	"	"	"	"	
Cadmium	6.94 J	2.00 UJ	"	"	"	"	"	"	R-04
Chromium	ND	2.00	"	"	"	"	"	"	
Lead	ND	2.00	"	"	"	"	"	"	
Mercury	ND	0.00800	"	1	1311/7470A	06/26/03	06/26/03	3061009	R-03
Selenium	ND	2.00	"	2	1311/6020	06/24/03	07/23/03	3061003	R-04
Silver	ND	2.00	"	"	"	"	"	"	
03050712 (P3F0535-05) Other wet					Sampled: 06/09/03 Received: 06/13/03				
Arsenic	ND	2.00 UJ	mg/l	2	1311/6020	06/24/03	07/23/03	3061003	
Barium	2.33 J	2.00	"	"	"	"	"	"	
Cadmium	2.99 J	2.00	"	"	"	"	"	"	R-04
Chromium	29.4 J	2.00	"	"	"	"	"	"	
Lead	ND	2.00 UJ	"	"	"	"	"	"	
Mercury	ND	0.0160	"	1	1311/7470A	06/26/03	06/26/03	3061009	R-03
Selenium	ND	2.00	"	2	1311/6020	06/24/03	07/23/03	3061003	R-04
Silver	ND	2.00	"	"	"	"	"	"	
03050713 (P3F0535-06) Other wet					Sampled: 06/09/03 Received: 06/13/03				
Arsenic	ND	2.00 UJ	mg/l	2	1311/6020	06/24/03	07/23/03	3061003	
Barium	ND	2.00 UJ	"	"	"	"	"	"	
Cadmium	8.38 J	2.00	"	"	"	"	"	"	R-04
Chromium	40.8 J	2.00	"	"	"	"	"	"	
Lead	ND	2.00 UJ	"	"	"	"	"	"	
Mercury	ND	0.0160	"	1	1311/7470A	06/26/03	06/26/03	3061009	R-03
Selenium	ND	2.00	"	2	1311/6020	06/24/03	07/23/03	3061003	R-04
Silver	ND	2.00	"	"	"	"	"	"	

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North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 08/01/03 16:23

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050714 (P3F0535-07) Other wet					Sampled: 06/04/03 Received: 06/13/03				
Arsenic	ND	2.00	mg/l	2	1311/6020	06/24/03	07/23/03	3061003	
Barium	ND	2.00	"	"	"	"	"	"	
Cadmium	ND	2.00	"	"	"	"	"	"	R-04
Chromium	2.02	2.00	"	"	"	"	"	"	
Lead	ND	2.00	"	"	"	"	"	"	
Mercury	ND	0.0160	"	1	1311/7470A	06/26/03	06/26/03	3061009	R-03
Selenium	ND	2.00	"	2	1311/6020	06/24/03	07/23/03	3061003	R-04
Silver	ND	2.00	"	"	"	"	"	"	
03050715 (P3F0535-08) Other wet					Sampled: 06/04/03 Received: 06/13/03				
Arsenic	ND	2.00	mg/l	2	1311/6020	06/24/03	07/24/03	3061003	
Barium	2.22	2.00	"	"	"	"	07/23/03	"	
Cadmium	ND	2.00	"	"	"	"	"	"	R-04
Chromium	3.75	2.00	"	"	"	"	"	"	
Lead	ND	2.00	"	"	"	"	"	"	
Mercury	ND	0.00800	"	1	1311/7470A	06/26/03	06/26/03	3061009	R-03
Selenium	ND	2.00	"	2	1311/6020	06/24/03	07/23/03	3061003	R-04
Silver	ND	2.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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MEMORANDUM

DATE: August 18, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of eight liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Cyanide analyses (EPA Methods 335.4 and/or 9010) were performed by North Creek Analytical, Inc., Beaverton, Oregon, and Bothell, Washington.

The samples were numbered:

03050708	03050709	03050710	03050711
03050712	03050713	03050714	03050715

Data Qualifications:

1. **Sample Holding Times: Satisfactory.**

The samples were received at 17.8°C, exceeding the QC limits of 4°C ± 2°C; all sample results were qualified as estimated quantities (J or UJ). The samples were collected between June 4 and 9, 2003, and were analyzed by June 22, 2003, therefore meeting QC criteria of less than 28 days between collection and analysis.

2. **Initial and Continuing Calibration: Acceptable.**

No reported results were greater than 110% of the highest calibration standard. The initial calibration correlation coefficient was 0.9999. All recoveries were within QC limits of 85% to 115%.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks.

4. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

6. **Matrix Spike Analysis: Acceptable.**

Matrix spike(MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. MS recoveries were within the QC limits.

7. **Duplicate Analysis: Acceptable.**

All duplicate and blank spike duplicate results were within QC limits.

8. **Laboratory Control Sample Analysis: Acceptable.**

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

9. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/01/03 16:23

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result		Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050708 (P3F0535-01) Other wet						Sampled: 06/06/03 Received: 06/13/03				
Cyanide (total)	0.572	J	0.0400	mg/l	2	EPA 335.2	06/21/03	06/21/03	3F22006	I-05
03050709 (P3F0535-02) Other wet						Sampled: 06/06/03 Received: 06/13/03				
Cyanide (total)	0.0340	J	0.0200	mg/l	1	EPA 335.2	06/20/03	06/20/03	3F21003	
03050710 (P3F0535-03) Other wet						Sampled: 06/09/03 Received: 06/13/03				
Cyanide (total)	5360	J	400	mg/l	8000	EPA 335.2	06/22/03	06/22/03	3F22007	
03050711 (P3F0535-04) Other wet						Sampled: 06/09/03 Received: 06/13/03				
Cyanide (total)	1600	J	200	mg/l	4000	EPA 335.2	06/22/03	06/22/03	3F22007	
03050712 (P3F0535-05) Other wet						Sampled: 06/09/03 Received: 06/13/03				
Cyanide (total)	0.800	J	0.250	mg/l	1	EPA 335.2	06/20/03	06/20/03	3F21003	
03050713 (P3F0535-06) Other wet						Sampled: 06/09/03 Received: 06/13/03				
Cyanide (total)	0.268	J	0.0200	mg/l	1	EPA 335.2	06/20/03	06/20/03	3F21003	
03050714 (P3F0535-07) Other wet						Sampled: 06/04/03 Received: 06/13/03				
Cyanide (total)	0.770	J	0.0500	mg/l	1	EPA 335.2	06/21/03	06/21/03	3F22006	I-05
03050715 (P3F0535-08) Other wet						Sampled: 06/04/03 Received: 06/13/03				
Cyanide (total)	1.11	J	0.500	mg/l	1	EPA 335.2	06/21/03	06/21/03	3F22006	I-05

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MEMORANDUM

DATE: September 4, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 1 water and 6 sludge samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Semivolatile Organic Compounds (EPA SW-846 Method 8270) was performed by North Creek Analytical, Inc., Beaverton, Oregon.

The samples were numbered:

Sludge	03050762	03050763	03050764	03050782	03050783
	03050784				
Water	03050785				

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were received at approximately 9.6°C, just above the QC limits of 4°C ± 2°C; no action was taken based on this slight outlier. The samples were collected on July 8 or 10, 2003, were extracted on July 15 or 17, 2003, and were analyzed by July 23, 2003, therefore meeting holding time criteria of less than 7 days between collection and extraction (14 days for soil) and less than 40 days between extraction and analysis. Soil holding times were applied to sludge samples in the absence of sludge criteria.

2. Tuning: Acceptable.

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. Initial Calibration: Acceptable.

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050: All Relative Standard Deviations (RSDs) were less than the QC limit of 30%.

4. Continuing Calibration: Acceptable.

All RRFs were greater than the QC limit of 0.050. All applicable % differences were less than the QC limits of 25%.

5. Blanks: Acceptable.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any blank.

6. Surrogates: Acceptable.

All surrogate recoveries were within QC limits.

7. Matrix and Blank Spike Analysis: Acceptable.

All spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits.

8. Duplicate Analysis: Acceptable.

Matrix and blank spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All spike duplicate results were within QC limits except 1,4-dichlorobenzidine in the soil matrix spike samples; no action was taken based on this outlier alone.

9. Internal Standards: Acceptable.

All internal standards (IS) were within $\pm$ 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

10. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

12. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

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Environmental Quality Management
5825 216th Street SW, Suite A
Lynnwood, WA 98036

Project: Columbia American Plating
Project Number: 030202.0015, PO# 5770
Project Manager: Jerry Wade

Reported:
07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050785 (P3G0368-07) Water					Sampled: 07/10/03	Received: 07/10/03			R-05
luorene	ND	10.0	ug/l	2	EPA 8270C	07/15/03	07/17/03	3070482	
exachlorobenzene	ND	10.0	"	"	"	"	"	"	
exachlorobutadiene	ND	20.0	"	"	"	"	"	"	
exachlorocyclopentadiene	ND	20.0	"	"	"	"	"	"	
exachloroethane	ND	20.0	"	"	"	"	"	"	
deno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
ophorone	ND	10.0	"	"	"	"	"	"	
-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
-Methylphenol	ND	20.0	"	"	"	"	"	"	
,4-Methylphenol	ND	10.0	"	"	"	"	"	"	
aphthalene	ND	10.0	"	"	"	"	"	"	
-Nitroaniline	ND	10.0	"	"	"	"	"	"	
-Nitroaniline	ND	20.0	"	"	"	"	"	"	
-Nitroaniline	ND	20.0	"	"	"	"	"	"	
itrobenzene	ND	10.0	"	"	"	"	"	"	
-Nitrophenol	ND	10.0	"	"	"	"	"	"	
-Nitrophenol	ND	50.0	"	"	"	"	"	"	
-Nitrosodi-n-propylamine	ND	20.0	"	"	"	"	"	"	
-Nitrosodiphenylamine	ND	10.0	"	"	"	"	"	"	
entachlorophenol	ND	20.0	"	"	"	"	"	"	
henanthrene	ND	10.0	"	"	"	"	"	"	
henol	ND	10.0	"	"	"	"	"	"	
yrene	ND	10.0	"	"	"	"	"	"	
2,4-Trichlorobenzene	ND	10.0	"	"	"	"	"	"	
4,5-Trichlorophenol	ND	10.0	"	"	"	"	"	"	
4,6-Trichlorophenol	ND	10.0	"	"	"	"	"	"	
urr: 2-Fluorobiphenyl	*42.9 %*	*26-135*							
urr: 2-Fluorophenol	*48.1 %*	*6-124*							
urr: Nitrobenzene-d5	*60.7 %*	*23-147*							
urr: Phenol-d6	*41.7 %*	*11-130*							
urr: p-Terphenyl-d14	*55.0 %*	*38-149*							
urr: 2,4,6-Tribromophenol	*50.3 %*	*19-126*							

MW 9-4-03

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050785 (P3G0368-07) Water					Sampled: 07/10/03	Received: 07/10/03			R-05
Acenaphthene	ND	10.0	ug/l	2	EPA 8270C	07/15/03	07/17/03	3070482	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzoic Acid	ND	100	"	"	"	"	"	"	
Benzyl alcohol	ND	20.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	10.0	"	"	"	"	"	"	
4-Chloroaniline	ND	40.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	20.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	20.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	10.0	"	"	"	"	"	"	
2-Chlorophenol	ND	10.0	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
Dibenzofuran	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	10.0	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	20.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	20.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	50.0	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	10.0	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	**240**	20.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050784 (P3G0368-06) Soil					Sampled: 07/10/03 Received: 07/10/03				
luorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
exachlorobenzene	ND	0.330	"	"	"	"	"	"	
exachlorobutadiene	ND	1.00	"	"	"	"	"	"	
exachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
exachloroethane	ND	1.00	"	"	"	"	"	"	
ndeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
sophorone	ND	0.330	"	"	"	"	"	"	
-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
-Methylphenol	ND	0.330	"	"	"	"	"	"	
-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
aphthalene	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	1.00	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
itrobenzene	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	1.00	"	"	"	"	"	"	
-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
entachlorophenol	ND	1.00	"	"	"	"	"	"	
henanthrene	ND	0.330	"	"	"	"	"	"	
henol	ND	0.330	"	"	"	"	"	"	
yrene	ND	0.330	"	"	"	"	"	"	
,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
urr: 2-Fluorobiphenyl	*83.7 %*	*44-146*							
urr: 2-Fluorophenol	*85.4 %*	*42-126*							
urr: Nitrobenzene-d5	*81.6 %*	*42-126*							
urr: Phenol-d6	*90.1 %*	*42-131*							
urr: p-Terphenyl-d14	*86.9 %*	*49-150*							
urr: 2,4,6-Tribromophenol	*83.0 %*	*48-119*							

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050784 (P3G0368-06) Soil					Sampled: 07/10/03 Received: 07/10/03				
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Environmental Quality Management 5825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050783 (P3G0368-05) Soil					Sampled: 07/10/03 Received: 07/10/03				
luorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
exachlorobenzene	ND	0.330	"	"	"	"	"	"	
exachlorobutadiene	ND	1.00	"	"	"	"	"	"	
exachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
exachloroethane	ND	1.00	"	"	"	"	"	"	
deno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
ophorone	ND	0.330	"	"	"	"	"	"	
-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
-Methylphenol	ND	0.330	"	"	"	"	"	"	
,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
aphthalene	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	1.00	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
itrobenzene	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	1.00	"	"	"	"	"	"	
-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
entachlorophenol	ND	1.00	"	"	"	"	"	"	
henanthrene	ND	0.330	"	"	"	"	"	"	
henol	ND	0.330	"	"	"	"	"	"	
yrene	ND	0.330	"	"	"	"	"	"	
,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
urr: 2-Fluorobiphenyl	*90.7 %*	*44-146*							
urr: 2-Fluorophenol	*85.5 %*	*42-126*							
urr: Nitrobenzene-d5	*84.8 %*	*42-126*							
urr: Phenol-d6	*89.6 %*	*42-131*							
urr: p-Terphenyl-d14	*88.1 %*	*49-150*							
urr: 2,4,6-Tribromophenol	*84.4 %*	*48-119*							

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 7-29-03

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050783 (P3G0368-05) Soil					Sampled: 07/10/03 Received: 07/10/03				
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 5825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050782 (P3G0368-04) Soil				Sampled: 07/10/03 Received: 07/10/03					
luorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
exachlorobenzene	ND	0.330	"	"	"	"	"	"	
exachlorobutadiene	ND	1.00	"	"	"	"	"	"	
exachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
exachloroethane	ND	1.00	"	"	"	"	"	"	
deno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
ophorone	ND	0.330	"	"	"	"	"	"	
-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
-Methylphenol	ND	0.330	"	"	"	"	"	"	
,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
aphthalene	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	1.00	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
itrobenzene	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	1.00	"	"	"	"	"	"	
-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
entachlorophenol	ND	1.00	"	"	"	"	"	"	
henanthrene	ND	0.330	"	"	"	"	"	"	
henol	ND	0.330	"	"	"	"	"	"	
yrene	ND	0.330	"	"	"	"	"	"	
,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
urr: 2-Fluorobiphenyl	*85.7 %*	*44-146*							
urr: 2-Fluorophenol	*78.1 %*	*42-126*							
urr: Nitrobenzene-d5	*81.5 %*	*42-126*							
urr: Phenol-d6	*89.2 %*	*42-131*							
urr: p-Terphenyl-d14	*88.3 %*	*49-150*							
urr: 2,4,6-Tribromophenol	*60.7 %*	*48-119*							

MW 9-4-03

North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050782 (P3G0368-04) Soil					Sampled: 07/10/03 Received: 07/10/03				
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 9-4-03

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050764 (P3G0368-03) Soil					Sampled: 07/08/03 Received: 07/10/03				
luorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
lexachlorobenzene	ND	0.330	"	"	"	"	"	"	
lexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
lexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
lexachloroethane	ND	1.00	"	"	"	"	"	"	
ndeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
sophorone	ND	0.330	"	"	"	"	"	"	
-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
-Methylphenol	ND	0.330	"	"	"	"	"	"	
-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
aphthalene	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	1.00	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
itrobenzene	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	1.00	"	"	"	"	"	"	
-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
entachlorophenol	ND	1.00	"	"	"	"	"	"	
henanthrene	ND	0.330	"	"	"	"	"	"	
henol	ND	0.330	"	"	"	"	"	"	
yrene	ND	0.330	"	"	"	"	"	"	
2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
urr: 2-Fluorobiphenyl	*70.0 %*	*44-146*							
urr: 2-Fluorophenol	*65.0 %*	*42-126*							
urr: Nitrobenzene-d5	*62.6 %*	*42-126*							
urr: Phenol-d6	*70.3 %*	*42-131*							
urr: p-Terphenyl-d14	*89.4 %*	*49-150*							
urr: 2,4,6-Tribromophenol	*86.6 %*	*48-119*							

MW 9-4-03

North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050764 (P3G0368-03) Soil					Sampled: 07/08/03 Received: 07/10/03				
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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MW 9-4-03

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050763 (P3G0368-02) Soil					Sampled: 07/08/03 Received: 07/10/03				
luorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
exachlorobenzene	ND	0.330	"	"	"	"	"	"	
exachlorobutadiene	ND	1.00	"	"	"	"	"	"	
exachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
exachloroethane	ND	1.00	"	"	"	"	"	"	
deno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
sophorone	ND	0.330	"	"	"	"	"	"	
-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
-Methylphenol	ND	0.330	"	"	"	"	"	"	
-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
laphthalene	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	1.00	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
litrobenzene	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	1.00	"	"	"	"	"	"	
I-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
I-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
entachlorophenol	ND	1.00	"	"	"	"	"	"	
henanthrene	ND	0.330	"	"	"	"	"	"	
henol	ND	0.330	"	"	"	"	"	"	
yrene	ND	0.330	"	"	"	"	"	"	
,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
urr: 2-Fluorobiphenyl	*74.1 %*	*44-146*							
urr: 2-Fluorophenol	*66.5 %*	*42-126*							
urr: Nitrobenzene-d5	*65.4 %*	*42-126*							
urr: Phenol-d6	*69.2 %*	*42-131*							
urr: p-Terphenyl-d14	*81.7 %*	*49-150*							
urr: 2,4,6-Tribromophenol	*78.2 %*	*48-119*							

Mrg 7-03

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C
North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050763 (P3G0368-02) Soil					Sampled: 07/08/03 Received: 07/10/03				
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 7-29-03

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Environmental Laboratory Network

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050762 (P3G0368-01) Soil					Sampled: 07/08/03 Received: 07/10/03				
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*86.4 %*	*44-146*							
Surr: 2-Fluorophenol	*81.5 %*	*42-126*							
Surr: Nitrobenzene-d5	*81.1 %*	*42-126*							
Surr: Phenol-d6	*84.1 %*	*42-131*							
Surr: p-Terphenyl-d14	*90.9 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*81.3 %*	*48-119*							

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050762 (P3G0368-01) Soil					Sampled: 07/08/03	Received: 07/10/03			
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 9/4/03

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Environmental Laboratory Network

Brian Cone, Industrial Services Manager

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MEMORANDUM

DATE: September 4, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 1 water and 6 sludge samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Volatile Organic Compounds (EPA SW-846 Method 8260) was performed by North Creek Analytical, Inc., Beaverton, Oregon.

The samples were numbered:

Sludge	03050762	03050763	03050764	03050782	03050783
	03050784				
Water	03050785				

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were received at approximately 9.6°C, just above the QC limits of 4°C ± 2°C; no action was taken based on this slight outlier. The samples were collected on July 8 or 10, 2003, and were analyzed by July 19, 2003, therefore meeting QC criteria of less than 14 days between collection and analysis for preserved water samples. Soil holding time criteria were applied to the sludge samples in the absence of sludge criteria.

2. Tuning: Acceptable.

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Acceptable.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limits of 30%.\

4. **Continuing Calibration: Satisfactory.**

All RRFs were greater than the QC limit of 0.050. All % differences were less than the QC limit of 25% except bromomethane (decreasing) in the sludge sample calibration and dichlorodifluoromethane (increasing) and bromomethane (decreasing) in the water sample calibration. Positive results and sample quantitation limits for associated "decreasing" outliers were qualified as estimated quantities (J or UJ). Associated positive results for "increasing" outliers were qualified as estimated quantities (J).

4. **Blanks: Acceptable.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

5. **Surrogates: Acceptable.**

All surrogate recoveries were within QC limits.

6. **Matrix Spike/Blank Spike Analysis: Acceptable.**

Matrix spike and blank spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits.

7. **Duplicate Analysis: Acceptable.**

Laboratory spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All duplicate results were within QC limits.

8. **Internal Standards: Acceptable.**

All internal standards were within $\pm$ 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50% to 200% of the continuing calibration area counts.

9. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

10. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

11. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050762 (P3G0368-01) Soil					Sampled: 07/08/03 Received: 07/10/03				
cetone	ND	2500	ug/kg dry	1	EPA 8260B	07/15/03	07/17/03	3070479	
enzene	ND	100	"	"	"	"	"	"	
romobenzene	ND	100	"	"	"	"	"	"	
romochloromethane	ND	100	"	"	"	"	"	"	
romodichloromethane	ND	100	"	"	"	"	"	"	
romoform	ND	100	"	"	"	"	"	"	
romomethane	ND	500	"	"	"	"	"	"	
-Butanone	ND	1000	"	"	"	"	"	"	
-Butylbenzene	ND	500	"	"	"	"	"	"	
c-Butylbenzene	ND	100	"	"	"	"	"	"	
rt-Butylbenzene	ND	100	"	"	"	"	"	"	
arbon disulfide	ND	1000	"	"	"	"	"	"	
arbon tetrachloride	ND	100	"	"	"	"	"	"	
hlorobenzene	ND	100	"	"	"	"	"	"	
hloroethane	ND	100	"	"	"	"	"	"	
hloroform	ND	100	"	"	"	"	"	"	
hloromethane	ND	500	"	"	"	"	"	"	
-Chlorotoluene	ND	100	"	"	"	"	"	"	
-Chlorotoluene	ND	100	"	"	"	"	"	"	
2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
ibromochloromethane	ND	100	"	"	"	"	"	"	
2-Dibromoethane	ND	100	"	"	"	"	"	"	
ibromomethane	ND	100	"	"	"	"	"	"	
2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
ichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1-Dichloroethane	ND	100	"	"	"	"	"	"	
2-Dichloroethane	ND	100	"	"	"	"	"	"	
1-Dichloroethene	ND	100	"	"	"	"	"	"	
s-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
ans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
2-Dichloropropane	ND	100	"	"	"	"	"	"	
3-Dichloropropane	ND	100	"	"	"	"	"	"	
2-Dichloropropane	ND	100	"	"	"	"	"	"	
1-Dichloropropene	ND	100	"	"	"	"	"	"	
s-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
ans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
thylbenzene	ND	100	"	"	"	"	"	"	

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Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050762 (P3G0368-01) Soil					Sampled: 07/08/03 Received: 07/10/03				
iexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/15/03	07/17/03	3070479	
-Hexanone	ND	1000	"	"	"	"	"	"	
ıopropylbenzene	ND	200	"	"	"	"	"	"	
-Isopropyltoluene	ND	200	"	"	"	"	"	"	
-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
fethyl tert-butyl ether	ND	100	"	"	"	"	"	"	
fethylene chloride	ND	500	"	"	"	"	"	"	
laphthalene	ND	200	"	"	"	"	"	"	
-Propylbenzene	ND	100	"	"	"	"	"	"	
tyrene	ND	100	"	"	"	"	"	"	
,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
etrachloroethene	ND	100	"	"	"	"	"	"	
oluene	ND	100	"	"	"	"	"	"	
,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
richloroethene	ND	100	"	"	"	"	"	"	
richlorofluoromethane	ND	100	"	"	"	"	"	"	
,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
'inyl chloride	ND	100	"	"	"	"	"	"	
-Xylene	ND	100	"	"	"	"	"	"	
ı,p-Xylene	ND	200	"	"	"	"	"	"	
urr: 4-BFB	*84.4 %*	*42.6-130*							
urr: 1,2-DCA-d4	*96.2 %*	*57.3-144*							
urr: Dibromofluoromethane	*93.4 %*	*45.5-130*							
urr: Toluene-d8	*92.4 %*	*42.1-144*							

MW 9-4-03

North Creek Analytical - Portland

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Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050763 (P3G0368-02) Soil					Sampled: 07/08/03 Received: 07/10/03				
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/15/03	07/17/03	3070479	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 9/4/03

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050763 (P3G0368-02) Soil					Sampled: 07/08/03	Received: 07/10/03			
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/15/03	07/17/03	3070479	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
4-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*81.5 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*87.3 %*	*57.3-144*							
Surr: Dibromofluoromethane	*81.9 %*	*45.5-130*							
Surr: Toluene-d8	*86.6 %*	*42.1-144*							

MW 9-4-03

North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050764 (P3G0368-03) Soil					Sampled: 07/08/03 Received: 07/10/03				
cetone	ND	2500	ug/kg dry	1	EPA 8260B	07/15/03	07/17/03	3070479	
enzene	ND	100	"	"	"	"	"	"	
romobenzene	ND	100	"	"	"	"	"	"	
romochloromethane	ND	100	"	"	"	"	"	"	
romodichloromethane	ND	100	"	"	"	"	"	"	
romoform	ND	100	"	"	"	"	"	"	
romomethane	ND	500	"	"	"	"	"	"	
Butanone	ND	1000	"	"	"	"	"	"	
Butylbenzene	ND	500	"	"	"	"	"	"	
c-Butylbenzene	ND	100	"	"	"	"	"	"	
rt-Butylbenzene	ND	100	"	"	"	"	"	"	
arbon disulfide	ND	1000	"	"	"	"	"	"	
arbon tetrachloride	ND	100	"	"	"	"	"	"	
hlorobenzene	ND	100	"	"	"	"	"	"	
hloroethane	ND	100	"	"	"	"	"	"	
hloroform	ND	100	"	"	"	"	"	"	
hloromethane	ND	500	"	"	"	"	"	"	
Chlorotoluene	ND	100	"	"	"	"	"	"	
Chlorotoluene	ND	100	"	"	"	"	"	"	
2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
ibromochloromethane	ND	100	"	"	"	"	"	"	
2-Dibromoethane	ND	100	"	"	"	"	"	"	
ibromomethane	ND	100	"	"	"	"	"	"	
2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
ichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1-Dichloroethane	ND	100	"	"	"	"	"	"	
2-Dichloroethane	ND	100	"	"	"	"	"	"	
1-Dichloroethene	ND	100	"	"	"	"	"	"	
s-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
ans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
2-Dichloropropane	ND	100	"	"	"	"	"	"	
3-Dichloropropane	ND	100	"	"	"	"	"	"	
2-Dichloropropane	ND	100	"	"	"	"	"	"	
1-Dichloropropene	ND	100	"	"	"	"	"	"	
s-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
ans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
hylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 9-4-03

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050764 (P3G0368-03) Soil					Sampled: 07/08/03 Received: 07/10/03				
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/15/03	07/17/03	3070479	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
4-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*87.9 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*92.3 %*	*57.3-144*							
Surr: Dibromofluoromethane	*84.7 %*	*45.5-130*							
Surr: Toluene-d8	*91.5 %*	*42.1-144*							

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 7-29-03

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050782 (P3G0368-04) Soil					Sampled: 07/10/03 Received: 07/10/03				
cetone	ND	2500	ug/kg dry	1	EPA 8260B	07/15/03	07/17/03	3070479	
enzene	ND	100	"	"	"	"	"	"	
romobenzene	ND	100	"	"	"	"	"	"	
romochloromethane	ND	100	"	"	"	"	"	"	
romodichloromethane	ND	100	"	"	"	"	"	"	
romoform	ND	100	"	"	"	"	"	"	
romomethane	ND	500	"	"	"	"	"	"	
-Butanone	ND	1000	"	"	"	"	"	"	
-Butylbenzene	ND	500	"	"	"	"	"	"	
ec-Butylbenzene	ND	100	"	"	"	"	"	"	
rt-Butylbenzene	ND	100	"	"	"	"	"	"	
arbon disulfide	ND	1000	"	"	"	"	"	"	
arbon tetrachloride	ND	100	"	"	"	"	"	"	
hlorobenzene	ND	100	"	"	"	"	"	"	
hloroethane	ND	100	"	"	"	"	"	"	
hloroform	ND	100	"	"	"	"	"	"	
hloromethane	ND	500	"	"	"	"	"	"	
-Chlorotoluene	ND	100	"	"	"	"	"	"	
-Chlorotoluene	ND	100	"	"	"	"	"	"	
,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
ibromochloromethane	ND	100	"	"	"	"	"	"	
,2-Dibromoethane	ND	100	"	"	"	"	"	"	
ibromomethane	ND	100	"	"	"	"	"	"	
,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
ichlorodifluoromethane	ND	500	"	"	"	"	"	"	
,1-Dichloroethane	ND	100	"	"	"	"	"	"	
,2-Dichloroethane	ND	100	"	"	"	"	"	"	
,1-Dichloroethene	ND	100	"	"	"	"	"	"	
is-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
ans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
,2-Dichloropropane	ND	100	"	"	"	"	"	"	
,3-Dichloropropane	ND	100	"	"	"	"	"	"	
,2-Dichloropropane	ND	100	"	"	"	"	"	"	
,1-Dichloropropene	ND	100	"	"	"	"	"	"	
is-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
ans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
thylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050782 (P3G0368-04) Soil					Sampled: 07/10/03	Received: 07/10/03			
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/15/03	07/17/03	3070479	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
4-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*92.5 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*99.5 %*	*57.3-144*							
Surr: Dibromofluoromethane	*96.7 %*	*45.5-130*							
Surr: Toluene-d8	*100 %*	*42.1-144*							

MW 9-4-03

North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050783 (P3G0368-05) Soil					Sampled: 07/10/03 Received: 07/10/03				
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/15/03	07/17/03	3070479	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050783 (P3G0368-05) Soil					Sampled: 07/10/03 Received: 07/10/03				
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/15/03	07/17/03	3070479	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*93.5 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*99.5 %*	*57.3-144*							
Surr: Dibromofluoromethane	*95.8 %*	*45.5-130*							
Surr: Toluene-d8	*100 %*	*42.1-144*							

JMW 9-4-03

North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050784 (P3G0368-06) Soil					Sampled: 07/10/03 Received: 07/10/03				
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/15/03	07/17/03	3070479	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 9-4-03

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050784 (P3G0368-06) Soil					Sampled: 07/10/03 Received: 07/10/03				
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/15/03	07/17/03	3070479	
-Hexanone	ND	1000	"	"	"	"	"	"	
sopropylbenzene	ND	200	"	"	"	"	"	"	
-Isopropyltoluene	ND	200	"	"	"	"	"	"	
-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
urr: 4-BFB	*79.3 %*	*42.6-130*							
urr: 1,2-DCA-d4	*83.3 %*	*57.3-144*							
urr: Dibromofluoromethane	*80.0 %*	*45.5-130*							
urr: Toluene-d8	*84.0 %*	*42.1-144*							

MM 9-4-03

North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050785 (P3G0368-07) Water					Sampled: 07/10/03 Received: 07/10/03				
Acetone	ND	25.0	ug/l	1	EPA 8260B	07/19/03	07/19/03	3070690	
Benzene	ND	1.00	"	"	"	"	"	"	
Bromobenzene	ND	1.00	"	"	"	"	"	"	
Bromochloromethane	ND	1.00	"	"	"	"	"	"	
Bromodichloromethane	ND	1.00	"	"	"	"	"	"	
Bromoform	ND	1.00	"	"	"	"	"	"	
Bromomethane	ND	5.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.00	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.00	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	10.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroethane	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Chloromethane	ND	5.00	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.00	"	"	"	"	"	"	
Dibromochloromethane	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
Dibromomethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.00	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	**4.85**	1.00	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**3.81**	1.00	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian Cone, Industrial Services Manager

MW 9-4-03

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/29/03 15:04

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050785 (P3G0368-07) Water					Sampled: 07/10/03 Received: 07/10/03				
Hexachlorobutadiene	ND	2.00	ug/l	1	EPA 8260B	07/19/03	07/19/03	3070690	
2-Hexanone	ND	10.0	"	"	"	"	"	"	
Isopropylbenzene	ND	2.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	2.00	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.00	"	"	"	"	"	"	
Methylene chloride	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	2.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
Tetrachloroethene	**3.23**	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	**32.7**	1.00	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
Vinyl chloride	**1.60**	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surr: 4-BFB	*91.5 %*	*80-120*							
Surr: 1,2-DCA-d4	*102 %*	*77-135*							
Surr: Dibromofluoromethane	*98.0 %*	*80-122*							
Surr: Toluene-d8	*98.5 %*	*80-120*							

MW 9-4-03

North Creek Analytical - Portland

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Environmental Laboratory Network

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Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: September 5, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of one liquid sample collected from the Columbia American Plating site in Portland, Oregon, has been completed. pH analyses (EPA Methods 150.1/9045) were performed by North Creek Analytical, Inc., Beaverton, Oregon.

The sample was numbered: 03050761

Data Qualifications:

The sample was maintained within the QC limits of 4°C ± 2°C. The sample was collected on July 7, 2003, and was analyzed on July 19, 2003, therefore exceeding QC holding time criteria of "immediate analysis"; the sample result was qualified as an estimated quantity (J). The three-point initial calibration (pH 4.0, 7.0, and 10.0) and calibration verification (at pH 8.0) results were within QC limits. Any sample result < 4.0 or > 10.0 is outside the calibration range and is qualified as an estimated quantity (J).

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004) and the analytical method. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

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541.383.9310 fax 541.382.7588

Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/31/03 17:16

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050761 (P3G0269-03) Water					Sampled: 07/07/03	Received: 07/08/03			
pH	13.6	J	pH Units	1	150.1/9040A	07/09/03	07/09/03	3070269	I-05

MW 9-9-03

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Laboratory Network

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Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: September 5, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of one liquid sample collected from the Columbia American Plating site in Portland, Oregon, has been completed. Target Analyte List (TAL) metals analyses (EPA Methods 6020 and 7470) and Toxicity Characteristic Leaching Procedure (TCLP) metals analyses (EPA Methods 1311, 6020, and 7470) were performed by North Creek Analytical, Inc., Beaverton, Oregon.

The sample was numbered: 03050761

Data Qualifications:

1. Sample Holding Times: Acceptable.

The sample was maintained within the QC limits of 4°C ± 2°C. The sample was collected on July 7, 2003, and was extracted and/or analyzed by July 18, 2003, therefore meeting QC criteria of less than 6 months between collection, extraction, and analysis (28 days for mercury) for soil and TCLP samples.

2. Initial and Continuing Calibration: Acceptable.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All applicable ICP recoveries were within the QC limits of 90% to 110% (± 1%). All applicable AA recoveries were within QC limits of 80% to 120%.

3. Blanks: Acceptable.

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results.

4. **ICP Interference Check Sample: Acceptable.**

Interference Check Sample (ICS) solution AB recoveries were within QC limits.

5. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

7. **ICP Serial Dilution: Not Performed.**

Serial dilution analyses were not performed; no action was taken.

8. **Matrix Spike Analysis: Satisfactory.**

Matrix spike(MS)/matrix spike duplicate (MSD) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. MS and MS duplicate recoveries were within the QC limits except for mercury with recoveries less than 10% in the total and TCLP analyses. The mercury sample quantitation limits were rejected (R).

9. **Duplicate Analysis: Acceptable.**

All duplicate results were within QC limits.

10. **Laboratory Control Sample Analysis: Satisfactory.**

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits except the silver TCLP low recovery. The silver TCLP result was qualified as an estimated quantity (UJ).

11. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

R - The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable. Resampling and/or reanalysis is necessary for verification.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 07/31/03 17:16

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050761 (P3G0269-03) Water					Sampled: 07/07/03 Received: 07/08/03				
Arsenic	ND	1.00	mg/l	100	EPA 6020	07/09/03	07/11/03	3070307	R-03
Barium	3.01	1.00	"	"	"	"	"	"	R-03
Cadmium	1.57	1.00	"	"	"	"	"	"	R-03
Chromium	14.2	1.00	"	"	"	"	"	"	R-03
Lead	1.15	1.00	"	"	"	"	"	"	R-03
Mercury	~~ND~~	~~0.000800~~	"	1	EPA 7470A	07/10/03	07/10/03	3070312	
Selenium	ND	5.00	"	100	EPA 6020	07/09/03	07/18/03	3070307	R-03
Silver	ND	1.00	"	"	"	"	07/11/03	"	R-03

JMW 9-9-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 07/31/03 17:16

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050761 (P3G0269-03) Water					Sampled: 07/07/03	Received: 07/08/03			
Arsenic	ND	5.00 U	mg/l	1	1311/6020	07/11/03	07/11/03	3070412	
Barium	ND	5.00	"	"	"	"	"	"	
Cadmium	ND	1.00	"	0.5	"	"	07/18/03	"	
Chromium	ND	5.00	"	1	"	"	07/11/03	"	
Lead	ND	5.00	"	"	"	"	"	"	
Mercury	R ~~ND~~	~~0.00160~~ MW	"	"	1311/7470A	07/11/03	07/11/03	3070413	
Selenium	2.14	1.00	"	0.5	1311/6020	07/11/03	07/18/03	3070412	
Silver	ND	5.00 UJ	"	1	"	"	07/11/03	"	

MW 9-9-03

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MEMORANDUM

DATE: September 5, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of one liquid and two sludge samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Cyanide analyses (EPA Method 9012) were performed by North Creek Analytical, Inc., Beaverton, Oregon, and Bothell, Washington.

The samples were numbered: 03050759 03050760 03050761

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected on July 7, 2003, and were analyzed on July 10, 2003, therefore meeting QC criteria of less than 28 days between collection and analysis.

2. **Initial and Continuing Calibration: Acceptable.**

No reported results were greater than 110% of the highest calibration standard. The initial calibration correlation coefficient was 0.999. All recoveries were within QC limits of 85% to 115%.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks.

4. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory.

All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

6. Matrix Spike Analysis: Satisfactory.

Matrix spike(MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. MS recoveries were within the QC limits except a low recovery in the sludge MS sample. Associated results were qualified as estimated quantities (J).

7. Duplicate Analysis: Acceptable.

All duplicate and blank spike duplicate results were within QC limits.

8. Laboratory Control Sample Analysis: Satisfactory.

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS and LCS duplicate results were below the established control limits, therefore all cyanide results were qualified as estimated quantities (J).

9. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 07/31/03 17:16

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050759 (P3G0269-01) Other wet					Sampled: 07/07/03 Received: 07/08/03				
Cyanide (total)	9700 J	424	mg/kg wet	1000	EPA 9010B	07/10/03	07/10/03	3G11034	
03050760 (P3G0269-02) Other wet					Sampled: 07/07/03 Received: 07/08/03				
Cyanide (total)	4640 J	455	mg/kg wet	1000	EPA 9010B	07/10/03	07/10/03	3G11034	
03050761 (P3G0269-03) Water					Sampled: 07/07/03 Received: 07/08/03				
Cyanide (total)	3.08 J	0.200	mg/kg	2	EPA 9010B	07/10/03	07/10/03	3G11035	

MW 9-9-03

North Creek Analytical - Portland

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MEMORANDUM

DATE: September 8, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 12 sludge samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. pH analyses (EPA Methods 150.1/9045) were performed by North Creek Analytical, Inc., Beaverton, Oregon.

The samples were numbered:

03050745	03050746	03050747	03050748	03050749
03050750	03050753	03050754	03050755	03050756
03050757	03050758			

Data Qualifications:

The samples were received at 22.7°C, exceeding the QC limits of 4°C ± 2°C; all sample results were qualified as estimated quantities (J). The samples were collected on July 1, 2003, and were analyzed on July 7, 2003, therefore exceeding QC holding time criteria of "immediate analysis"; all sample results were qualified as estimated quantities (J). The three-point initial calibration (pH 4.0, 7.0, and 10.0) and calibration verification (at pH 8.0) results were within QC limits. Any sample result < 4.0 or > 10.0 is outside the calibration range and is qualified as an estimated quantity (J).

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004) and the analytical method. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/22/03 11:33

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050745 (P3G0084-01) Other wet					Sampled: 07/01/03 Received: 07/02/03				
pH	7.17 J		pH Units	1	150.1/9040A	07/03/03	07/07/03	3070119	I-05
03050746 (P3G0084-02) Other wet					Sampled: 07/01/03 Received: 07/02/03				
pH	9.14 J		pH Units	1	150.1/9040A	07/03/03	07/07/03	3070119	I-05
03050747 (P3G0084-03) Other wet					Sampled: 07/01/03 Received: 07/02/03				
pH	7.55 J		pH Units	1	150.1/9040A	07/03/03	07/07/03	3070119	I-05
03050748 (P3G0084-04) Other wet					Sampled: 07/01/03 Received: 07/02/03				
pH	4.93 J		pH Units	1	150.1/9040A	07/03/03	07/07/03	3070119	I-05
03050749 (P3G0084-05) Other wet					Sampled: 07/01/03 Received: 07/02/03				
pH	4.78 J		pH Units	1	150.1/9040A	07/03/03	07/07/03	3070119	I-05
03050750 (P3G0084-06) Other wet					Sampled: 07/01/03 Received: 07/02/03				
pH	9.26 J		pH Units	1	150.1/9040A	07/03/03	07/07/03	3070119	I-05
03050753 (P3G0084-09) Other wet					Sampled: 07/01/03 Received: 07/02/03				
pH	2.95 J		pH Units	1	150.1/9040A	07/03/03	07/07/03	3070119	I-05
03050754 (P3G0084-10) Other wet					Sampled: 07/01/03 Received: 07/02/03				
pH	10.0 J		pH Units	1	150.1/9040A	07/03/03	07/07/03	3070119	I-05
03050755 (P3G0084-11) Other wet					Sampled: 07/01/03 Received: 07/02/03				
pH	8.21 J		pH Units	1	150.1/9040A	07/03/03	07/07/03	3070119	I-05

MW 9-4-03

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

North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/22/03 11:33

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050756 (P3G0084-12) Other wet					Sampled: 07/01/03	Received: 07/02/03			
pH	9.32 J		pH Units	1	150.1/9040A	07/03/03	07/07/03	3070119	I-05
03050757 (P3G0084-13) Other wet					Sampled: 07/01/03	Received: 07/02/03			
pH	3.80 J		pH Units	1	150.1/9040A	07/03/03	07/07/03	3070119	I-05
03050758 (P3G0084-14) Other wet					Sampled: 07/01/03	Received: 07/02/03			
pH	6.15 J		pH Units	1	150.1/9040A	07/03/03	07/07/03	3070119	I-05

MW 9-4-03

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MEMORANDUM

DATE: September 8, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 14 sludge samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Target Analyte List (TAL) metals analyses (EPA Methods 6020 and 7470) and Toxicity Characteristic Leaching Procedure (TCLP) metals analyses (EPA Methods 1311, 6020, and 7470) were performed by North Creek Analytical, Inc., Beaverton, Oregon.

The samples were numbered:

03050745	03050746	03050747	03050748	03050749
03050750	03050751	03050752	03050753	03050754
03050755	03050756	03050757	03050758	

Data Qualifications:

1. Sample Holding Times: Satisfactory.

The samples were received at 22.7°C, exceeding the QC limits of 4°C ± 2°C; all sample results were qualified as estimated quantities (J or UJ). The samples were collected on July 1, 2003, and were extracted and/or analyzed by August 13, 2003, therefore meeting QC criteria of less than 6 months between collection, extraction, and analysis (28 days for mercury) for soil, water, and TCLP samples. Soil criteria were applied to the sludge samples in the absence of sludge criteria.

2. Initial and Continuing Calibration: Acceptable.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All applicable ICP recoveries were within the QC limits of 90% to 110% (± 1%). All applicable AA recoveries were within QC limits of 80% to 120%.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results.

4. **ICP Interference Check Sample: Acceptable.**

Interference Check Sample (ICS) solution AB recoveries were within QC limits.

5. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

7. **ICP Serial Dilution: Not Performed.**

Serial dilution analyses were not performed; no action was taken.

8. **Matrix Spike Analysis: Satisfactory.**

Matrix spike(MS)/matrix spike duplicate (MSD) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. MS and MS duplicate recoveries were within the QC limits. except for barium (a 0% recovery in the MS sample and a 235% recovery in the MSD sample), arsenic (a 127% recovery), chromium (a 174% recovery), cadmium (a 133% recovery in the TCLP sample), and barium (an 8.1% recovery associated with the TCLP sludge sample); associated positive sample results were qualified as estimated quantities (J) for analytes with high recoveries, associated positive results and sample quantitation limits for analytes with low recoveries were qualified as estimated quantities (J or UJ); and sample quantitation limits for analytes with recoveries less than 10% were rejected (R).

9. **Duplicate Analysis: Satisfactory.**

All duplicate results were within QC limits except the mercury duplicate result; the associated results were qualified as estimated quantities (J).

10. **Laboratory Control Sample Analysis: Acceptable.**

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

11. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities,

Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

R - The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable. Resampling and/or reanalysis is necessary for verification

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/22/03 11:33

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050745 (P3G0084-01) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	11.0 J	0.500	mg/kg wet	1	EPA 6020	07/03/03	07/08/03	3070132	
Barium	93.4	0.500	"	"	"	"	"	"	
Cadmium	1100	3.03	"	6.06	"	"	07/08/03	"	
Chromium	7130	25.0	"	50	"	"	07/10/03	"	
Lead	284	0.500	"	1	"	"	07/08/03	"	
Mercury	0.135	0.0568	"	"	EPA 7471A	07/09/03	07/09/03	3070263	
Selenium	2.11	0.500	"	"	EPA 6020	07/03/03	07/08/03	3070132	
Silver	30.5	0.500	"	"	"	"	07/08/03	"	
03050746 (P3G0084-02) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	3.30 J	0.424	mg/kg wet	1	EPA 6020	07/03/03	07/08/03	3070132	
Barium	892	2.57	"	6.06	"	"	07/08/03	"	
Cadmium	317	2.57	"	"	"	"	"	"	
Chromium	1370	2.12	"	5	"	"	07/10/03	"	
Lead	49.2	0.424	"	1	"	"	07/08/03	"	
Mercury	ND	0.0568 UJ	"	"	EPA 7471A	07/09/03	07/09/03	3070263	
Selenium	ND	0.424 UJ	"	"	EPA 6020	07/03/03	07/08/03	3070132	
Silver	27.7 J	0.424	"	"	"	"	07/08/03	"	
03050747 (P3G0084-03) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	4.23 J	0.450	mg/kg wet	1	EPA 6020	07/03/03	07/08/03	3070132	
Barium	51.8	0.450	"	"	"	"	"	"	
Cadmium	208	2.76	"	6.13	"	"	07/08/03	"	
Chromium	658	2.74	"	6.08	"	"	07/10/03	"	
Lead	108	0.450	"	1	"	"	07/08/03	"	
Mercury	0.194	0.0595	"	"	EPA 7471A	07/09/03	07/09/03	3070263	
Selenium	1.41	0.450	"	"	EPA 6020	07/03/03	07/10/03	3070132	
Silver	38.7	0.450	"	"	"	"	07/08/03	"	

MW 9/4/03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/22/03 11:33

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050748 (P3G0084-04) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	8.10 J	0.258	mg/kg wet	1	EPA 6020	07/03/03	07/08/03	3070132	
Barium	56.7	0.258	"	"	"	"	"	"	
Cadmium	34.0	0.258	"	"	"	"	"	"	
Chromium	1660	2.58	"	10	"	"	07/10/03	"	
Lead	297	1.54	"	5.99	"	"	07/08/03	"	
Mercury	0.0683	0.0446	"	1	EPA 7471A	07/09/03	07/09/03	3070263	
Selenium	1.01	0.258	"	"	EPA 6020	07/03/03	07/10/03	3070132	
Silver	19.5	0.258	"	"	"	"	07/08/03	"	
03050749 (P3G0084-05) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	8.43 J	0.442	mg/kg wet	1	EPA 6020	07/03/03	07/08/03	3070132	
Barium	179	0.442	"	"	"	"	"	"	
Cadmium	23.1	0.442	"	"	"	"	"	"	
Chromium	2300	4.42	"	10	"	"	07/10/03	"	
Lead	856	2.65	"	5.99	"	"	07/08/03	"	
Mercury	3.35	0.676	"	10	EPA 7471A	07/09/03	07/09/03	3070263	
Selenium	1.76	0.442	"	1	EPA 6020	07/03/03	07/10/03	3070132	
Silver	43.7	0.442	"	"	"	"	07/08/03	"	
03050750 (P3G0084-06) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	11.0 J	0.403	mg/kg wet	1	EPA 6020	07/03/03	07/08/03	3070132	
Barium	75.3	0.403	"	"	"	"	"	"	
Cadmium	582	2.47	"	6.13	"	"	07/08/03	"	
Chromium	1880	4.03	"	10	"	"	07/10/03	"	
Lead	403	2.47	"	6.13	"	"	07/08/03	"	
Mercury	0.186	0.0581	"	1	EPA 7471A	07/09/03	07/09/03	3070263	
Selenium	1.42	0.403	"	"	EPA 6020	07/03/03	07/10/03	3070132	
Silver	44.9	2.47	"	6.13	"	"	07/08/03	"	

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/22/03 11:33

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050751 (P3G0084-07) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Mercury	0.551 J	0.0714	mg/kg wet	1	EPA 7471A	07/09/03	07/09/03	3070263	
03050752 (P3G0084-08) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Mercury	0.181 J	0.0500	mg/kg wet	1	EPA 7471A	07/09/03	07/09/03	3070263	
03050753 (P3G0084-09) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	5.07 J	0.301	mg/kg wet	1	EPA 6020	07/03/03	07/08/03	3070132	
Barium	269	1.86	"	6.16	"	"	07/08/03	"	
Cadmium	19.5	0.301	"	1	"	"	07/08/03	"	
Chromium	5080	15.1	"	50	"	"	07/10/03	"	
Lead	1540	1.86	"	6.16	"	"	07/08/03	"	
Mercury	1.84	0.385	"	10	EPA 7471A	07/09/03	07/09/03	3070263	
Selenium	2.07	0.301	"	1	EPA 6020	07/03/03	07/10/03	3070132	
Silver	27.5	0.301	"	"	"	"	07/08/03	"	
03050754 (P3G0084-10) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	3.73 J	0.150	mg/kg wet	1	EPA 6020	07/03/03	07/08/03	3070132	
Barium	113	0.150	"	"	"	"	"	"	
Cadmium	9400	29.9	"	200	"	"	07/11/03	"	
Chromium	1040	1.50	"	10	"	"	07/10/03	"	
Lead	966	0.920	"	6.15	"	"	07/08/03	"	
Mercury	0.116	0.0417	"	1	EPA 7471A	07/09/03	07/09/03	3070263	
Selenium	0.801	0.150	"	"	EPA 6020	07/03/03	07/10/03	3070132	
Silver	14.3	0.920	"	6.15	"	"	07/08/03	"	

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 08/22/03 11:33

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050755 (P3G0084-11) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	0.830 J	0.446	mg/kg wet	1	EPA 6020	07/03/03	07/08/03	3070132	
Barium	6.11	0.446	"	"	"	"	"	"	
Cadmium	93.1	0.446	"	"	"	"	"	"	
Chromium	173	0.446	"	"	"	"	07/10/03	"	
Lead	39.6	0.446	"	"	"	"	07/08/03	"	
Mercury	ND	0.0472 UJ	"	"	EPA 7471A	07/09/03	07/09/03	3070263	
Selenium	0.897 J	0.446	"	"	EPA 6020	07/03/03	07/10/03	3070132	
Silver	15.3 J	0.446	"	"	"	"	07/08/03	"	
03050756 (P3G0084-12) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	0.589 J	0.195	mg/kg wet	1	EPA 6020	07/03/03	07/08/03	3070132	
Barium	3.61	0.195	"	"	"	"	"	"	
Cadmium	202	1.16	"	5.96	"	"	07/08/03	"	
Chromium	922	1.95	"	10	"	"	07/10/03	"	
Lead	57.5	0.195	"	1	"	"	07/08/03	"	
Mercury	ND	0.0714 UJ	"	"	EPA 7471A	07/09/03	07/09/03	3070263	
Selenium	0.214 J	0.195	"	"	EPA 6020	07/03/03	07/10/03	3070132	
Silver	15.3 J	0.195	"	"	"	"	07/08/03	"	
03050757 (P3G0084-13) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	7.40 J	0.500	mg/kg wet	1	EPA 6020	07/03/03	07/08/03	3070132	
Barium	60.0	0.500	"	"	"	"	"	"	
Cadmium	2900	10.0	"	20	"	"	07/10/03	"	
Chromium	907	10.0	"	"	"	"	"	"	
Lead	257	0.500	"	1	"	"	07/08/03	"	
Mercury	ND	0.0472 UJ	"	"	EPA 7471A	07/09/03	07/09/03	3070263	
Selenium	0.921 J	0.500	"	"	EPA 6020	07/03/03	07/10/03	3070132	
Silver	29.5 J	0.500	"	"	"	"	07/08/03	"	

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/22/03 11:33

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050758 (P3G0084-14) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	ND UJ	0.223	mg/kg wet	1	EPA 6020	07/03/03	07/08/03	3070132	
Barium	2.60 J	0.223	"	"	"	"	"	"	
Cadmium	169	1.40	"	6.28	"	"	07/10/03	"	
Chromium	417	1.12	"	5	"	"	07/08/03	"	
Lead	61.1	0.223	"	1	EPA 7471A	07/09/03	07/09/03	3070263	
Mercury	ND UJ	0.0532	"	"	EPA 6020	07/03/03	07/10/03	3070132	
Selenium	ND	0.223	"	"	"	"	07/08/03	"	
Silver	ND UJ	0.223	"	"					

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/22/03 11:33

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050745 (P3G0084-01) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	ND	0.250	mg/l	0.5	1311/6020	07/05/03	07/14/03	3070236	
Barium	**1.67**	0.250	"	"	"	"	07/11/03	"	
Cadmium	**50.8**	2.50	"	5	"	"	08/13/03	"	
Chromium	**19.3**	0.250	"	0.5	"	"	07/11/03	"	
Lead	ND	0.250	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/08/03	07/08/03	3070225	
Selenium	ND	0.250	"	0.5	1311/6020	07/05/03	07/11/03	3070236	
Silver	ND	0.250	"	"	"	"	"	"	
03050746 (P3G0084-02) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	**0.161**	0.100	mg/l	0.5	1311/6020	07/05/03	07/14/03	3070236	
Barium	**0.963**	0.100	"	"	"	"	07/11/03	"	
Cadmium	**4.85**	0.449	"	2.25	"	"	"	"	
Chromium	**0.151**	0.100	"	0.5	"	"	07/11/03	"	
Lead	ND	0.100	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/08/03	07/08/03	3070225	
Selenium	**0.103**	0.100	"	0.5	1311/6020	07/05/03	07/11/03	3070236	
Silver	ND	0.100	"	"	"	"	"	"	
03050747 (P3G0084-03) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	ND	0.100	mg/l	0.5	1311/6020	07/05/03	07/14/03	3070236	
Barium	**0.563**	0.100	"	"	"	"	07/11/03	"	
Cadmium	**20.8**	1.00	"	5	"	"	08/13/03	"	
Chromium	**0.567**	0.100	"	0.5	"	"	07/11/03	"	
Lead	ND	0.100	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/08/03	07/08/03	3070225	
Selenium	ND	0.100	"	0.5	1311/6020	07/05/03	07/11/03	3070236	
Silver	ND	0.100	"	"	"	"	"	"	

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TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050748 (P3G0084-04) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	ND	0.100 UJ	mg/l	0.5	1311/6020	07/05/03	07/14/03	3070236	
Barium	0.412 J	0.100	"	"	"	"	07/11/03	"	
Cadmium	0.191	0.100	"	"	"	"	"	"	
Chromium	0.225	0.100	"	"	"	"	"	"	
Lead	ND	0.100 UJ	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/08/03	07/08/03	3070225	
Selenium	ND	0.100	"	0.5	1311/6020	07/05/03	07/11/03	3070236	
Silver	ND	0.100 UJ	"	"	"	"	"	"	
03050749 (P3G0084-05) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	ND	0.100 UJ	mg/l	0.5	1311/6020	07/05/03	07/14/03	3070236	
Barium	0.416 J	0.100	"	"	"	"	07/11/03	"	
Cadmium	0.290	0.100	"	"	"	"	"	"	
Chromium	0.461	0.100	"	"	"	"	"	"	
Lead	0.198	0.100	"	"	"	"	"	"	
Mercury	0.00290	0.00160	"	1	1311/7470A	07/08/03	07/08/03	3070225	
Selenium	ND	0.100 UJ	"	0.5	1311/6020	07/05/03	07/11/03	3070236	
Silver	ND	0.100 UJ	"	"	"	"	"	"	
03050750 (P3G0084-06) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	ND	0.100 UJ	mg/l	0.5	1311/6020	07/05/03	~~07/11/03~~	3070236 7/14/03	
Barium	0.645 J	0.100	"	"	"	"	~~07/14/03~~	" 7/11/03	
Cadmium	7.07	0.457	"	2.28	"	"	07/11/03	"	
Chromium	0.327	0.100	"	0.5	"	"	07/11/03	"	
Lead	ND	0.100 UJ	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/08/03	07/08/03	3070225	
Selenium	ND	0.100	"	0.5	1311/6020	07/05/03	07/11/03	3070236	
Silver	ND	0.100 UJ	"	"	"	"	"	"	

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TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050751 (P3G0084-07) Other wet					Sampled: 07/01/03	Received: 07/02/03			
Mercury	0.00202 J	0.00160	mg/l	1	1311/7470A	07/08/03	07/08/03	3070225	
03050752 (P3G0084-08) Other wet					Sampled: 07/01/03	Received: 07/02/03			
Mercury	0.00839 J	0.00160	mg/l	1	1311/7470A	07/08/03	07/08/03	3070225	
03050753 (P3G0084-09) Other wet					Sampled: 07/01/03	Received: 07/02/03			
Arsenic	ND	0.100 UJ	mg/l	0.5	1311/6020	07/05/03	07/14/03	3070238	
Barium	0.601	0.100	"	"	"	"	07/12/03	"	
Cadmium	0.227	0.100	"	"	"	"	"	"	
Chromium	1.34	0.100	"	"	"	"	"	"	
Lead	7.86	0.100	"	"	"	"	"	"	
Mercury	ND	0.00160 UJ	"	1	1311/7470A	07/08/03	07/08/03	3070225	
Selenium	ND	0.100	"	0.5	1311/6020	07/05/03	07/12/03	3070238	
Silver	ND	0.100	"	"	"	"	"	"	
03050754 (P3G0084-10) Other wet					Sampled: 07/01/03	Received: 07/02/03			
Arsenic	ND	1.00 UJ	mg/l	5	1311/6020	07/05/03	07/14/03	3070237	
Barium	0.588 J	0.100	"	0.5	"	"	07/11/03	"	
Cadmium	89.9 J	1.00	"	5	"	"	07/14/03	"	
Chromium	ND	0.100 UJ	"	0.5	"	"	07/11/03	"	
Lead	ND	0.100	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/08/03	07/08/03	3070232	
Selenium	ND	0.100	"	0.5	1311/6020	07/05/03	07/11/03	3070237	
Silver	0.237 J	0.100	"	"	"	"	"	"	

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/22/03 11:33

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050755 (P3G0084-11) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	ND	0.100	mg/l	0.5	1311/6020	07/05/03	07/14/03	3070237	
Barium	0.268	0.100	"	"	"	"	07/12/03	"	
Cadmium	3.45	0.478	"	2.39	"	"	07/12/03	"	
Chromium	0.154	0.100	"	0.5	"	"	07/12/03	"	
Lead	ND	0.100	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/08/03	07/08/03	3070232	
Selenium	ND	0.100	"	0.5	1311/6020	07/05/03	07/12/03	3070237	
Silver	ND	0.100	"	"	"	"	"	"	
03050756 (P3G0084-12) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	ND	0.100	mg/l	0.5	1311/6020	07/05/03	07/14/03	3070237	
Barium	1.47	0.100	"	"	"	"	07/12/03	"	
Cadmium	33.9	2.00	"	10	"	"	07/15/03	"	
Chromium	19.7	0.100	"	0.5	"	"	07/12/03	"	
Lead	0.117	0.100	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/08/03	07/08/03	3070232	
Selenium	ND	0.100	"	0.5	1311/6020	07/05/03	07/12/03	3070237	
Silver	ND	0.100	"	"	"	"	"	"	
03050757 (P3G0084-13) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Arsenic	0.102	0.100	mg/l	0.5	1311/6020	07/05/03	07/14/03	3070237	
Barium	0.769	0.100	"	"	"	"	"	"	
Cadmium	291	5.00	"	25	"	"	07/14/03	"	
Chromium	5.83	0.100	"	0.5	"	"	07/14/03	"	
Lead	ND	0.100	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/08/03	07/08/03	3070232	
Selenium	0.185	0.100	"	0.5	1311/6020	07/05/03	07/15/03	3070237	
Silver	ND	0.100	"	"	"	"	07/14/03	"	

MW 9-4-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/22/03 11:33

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050758 (P3G0084-14) Other wet					Sampled: 07/01/03	Received: 07/02/03			
Arsenic	ND	0.250	mg/l	0.5	1311/6020	07/05/03	07/15/03	3070239	
Barium	**0.514**	0.250	"	"	"	"	07/12/03	"	
Cadmium	**2.19**	0.250	"	"	"	"	"	"	
Chromium	**2.78**	0.250	"	"	"	"	"	"	
Lead	ND	0.250	"	"	"	"	"	"	
Mercury	ND	0.00160	"	1	1311/7470A	07/08/03	07/08/03	3070232	
Selenium	ND	0.250	"	0.5	1311/6020	07/05/03	07/12/03	3070239	
Silver	ND	0.250	"	"	"	"	"	"	

MW 9-4-03

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MEMORANDUM

DATE: September 8, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 14 sludge samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Cyanide analyses (EPA Method 9012) were performed by North Creek Analytical, Inc., Beaverton, Oregon, and Bothell, Washington.

The samples were numbered:

03050745	03050746	03050747	03050748	03050749
03050750	03050753	03050754	03050755	03050756
03050757	03050758			

Data Qualifications:

1. Sample Holding Times: Satisfactory.

The samples were received at 22.7°C, exceeding the QC limits of 4°C ± 2°C; all sample results were qualified as estimated quantities (J or UJ). The samples were collected on July 1, 2003, and were analyzed by July 12, 2003, therefore meeting QC criteria of less than 28 days between collection and analysis.

2. Initial and Continuing Calibration: Acceptable.

No reported results were greater than 110% of the highest calibration standard. The initial calibration correlation coefficient was 0.9997. All recoveries were within QC limits of 85% to 115%.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks.

4. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

6. **Blank Spike Analysis: Acceptable.**

Blank spike (BS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. BS recoveries were within the QC limits.

7. **Duplicate Analysis: Acceptable.**

All duplicate and blank spike duplicate results were within QC limits.

8. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 08/22/03 11:33

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050745 (P3G0084-01) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Cyanide (total)	205 J	39.6	mg/kg wet	100	EPA 9010B	07/12/03	07/12/03	3G14008	
03050746 (P3G0084-02) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Cyanide (total)	398 J	45.5	mg/kg wet	100	EPA 9010B	07/12/03	07/12/03	3G14008	
03050747 (P3G0084-03) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Cyanide (total)	572 J	44.0	mg/kg wet	100	EPA 9010B	07/12/03	07/12/03	3G14008	
03050748 (P3G0084-04) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Cyanide (total)	66.1 J	5.00	mg/kg wet	10	EPA 9010B	07/12/03	07/12/03	3G14008	
03050749 (P3G0084-05) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Cyanide (total)	154 J	10.0	mg/kg wet	20	EPA 9010B	07/12/03	07/12/03	3G14008	
03050750 (P3G0084-06) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Cyanide (total)	182 J	22.4	mg/kg wet	50	EPA 9010B	07/12/03	07/12/03	3G14008	
03050753 (P3G0084-09) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Cyanide (total)	416 J	43.7	mg/kg wet	100	EPA 9010B	07/12/03	07/12/03	3G14008	
03050754 (P3G0084-10) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Cyanide (total)	3490 J	500	mg/kg wet	1000	EPA 9010B	07/12/03	07/12/03	3G14008	
03050755 (P3G0084-11) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Cyanide (total)	13.9 J	0.862	mg/kg wet	2	EPA 9010B	07/12/03	07/12/03	3G14008	

MW 9-4-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 08/22/03 11:33

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050756 (P3G0084-12) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Cyanide (total)	**69.0** J	5.00	mg/kg wet	10	EPA 9010B	07/12/03	07/12/03	3G14008	
03050757 (P3G0084-13) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Cyanide (total)	**157** J	21.9	mg/kg wet	50	EPA 9010B	07/12/03	07/12/03	3G14008	
03050758 (P3G0084-14) Other wet					Sampled: 07/01/03 Received: 07/02/03				
Cyanide (total)	ND	0.500 UJ	mg/kg wet	1	EPA 9010B	07/12/03	07/12/03	3G14008	

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MEMORANDUM

DATE: September 9, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of five water, five sludge, and four soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Cyanide analyses (EPA Method 9010) were performed by North Creek Analytical, Inc., Beaverton, Oregon, and Bothell, Washington.

The samples were numbered:

03050733	03050734	03050735	03050736	03050737
03050738	03050739	03050740	03050741	03050742
03050774	03050775	03050776	03050789	

Data Qualifications:

1. Sample Holding Times: Satisfactory.

The samples were maintained within the QC limits of 4°C ± 2°C except the water samples which were received at the secondary laboratory at 9.6°C; associated sample results were qualified as estimated quantities (J or UJ). The samples were collected between June 23 and July 9, 2003, and were analyzed between June 27 and July 10, 2003, therefore meeting QC criteria of less than 28 days between collection and analysis.

2. Initial and Continuing Calibration: Acceptable.

No reported results were greater than 110% of the highest calibration standard. The initial calibration correlation coefficient was 0.999. All recoveries were within QC limits of 85% to 115%.

3. Blanks: Acceptable.

A preparation blank was analyzed for each 20 samples or per matrix per concentration

level. Blanks were analyzed after each Initial or Continuing Calibration Verification. Cyanide was not detected in applicable calibration and/or preparation blanks.

4. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

6. Matrix Spike Analysis: Satisfactory.

Matrix spike(MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. MS recoveries were within the QC limits except a high recovery in the sludge MS sample. Associated sample results were qualified as estimated quantities (J).

7. Duplicate Analysis: Satisfactory.

All duplicate and blank spike duplicate results were within QC limits except the sludge duplicate; associated sample results were qualified as estimated quantities (J).

8. Laboratory Control Sample Analysis: Acceptable.

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS and LCS duplicate results were below the established control limits.

9. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0016, PO# 5770 Project Manager: Jerry Wade	**Reported:** 08/27/03 10:45

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050733 (P3F0806-01) Water					Sampled: 06/23/03 Received: 06/24/03				
Cyanide (amenable)	ND	0.0167 UJ	mg/l	1	EPA 335.1	06/27/03	06/27/03	3F30041	
Cyanide (total)	2.40 J	0.167	"	10	EPA 335.2	"	"	"	
3050734 (P3F0806-02) Water					Sampled: 06/24/03 Received: 06/24/03				
Cyanide (total)	99000 J	10000	mg/l	20000	EPA 335.2	06/27/03	06/27/03	3F30041	
3050735 (P3F0806-03) Water					Sampled: 06/24/03 Received: 06/24/03				
Cyanide (total)	45200 J	2000	mg/l	4000	EPA 335.2	06/27/03	06/27/03	3F30041	
3050736 (P3F0806-04) Water					Sampled: 06/24/03 Received: 06/24/03				
Cyanide (amenable)	ND	0.0169 UJ	mg/l	1	EPA 335.1	06/27/03	06/27/03	3F30041	
Cyanide (total)	ND	0.0169 UJ	"		EPA 335.2	"	"	"	
3050737 (P3F0806-05) Water					Sampled: 06/23/03 Received: 06/24/03				
Cyanide (total)	37.2 J	2.00	mg/l	100	EPA 335.2	06/27/03	06/27/03	3F30041	

MW 9/8/03

North Creek Analytical - Portland

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Environmental Quality Management 5825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 001281.0276.01RZ, PO# 5770 Project Manager: Jerry Wade	**Reported:** 07/21/03 19:49

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
050738 (P3F0897-01) Other wet					Sampled: 06/25/03 Received: 06/26/03				
yanide (total)	**4600** J	500	mg/l	1000	EPA 335.2	07/06/03	07/06/03	3G07020	
050739 (P3F0897-02) Other wet					Sampled: 06/25/03 Received: 06/26/03				
yanide (total)	**8450** J	500	mg/l	1000	EPA 335.2	07/06/03	07/06/03	3G07020	
050740 (P3F0897-03) Other wet					Sampled: 06/25/03 Received: 06/26/03				
yanide (total)	**520** J	50.0	mg/l	100	EPA 335.2	07/06/03	07/06/03	3G07020	
050741 (P3F0897-04) Other wet					Sampled: 06/25/03 Received: 06/26/03				
yanide (total)	**8.90** J	0.500	mg/l	10	EPA 335.2	07/06/03	07/06/03	3G07020	
050742 (P3F0897-05) Other wet					Sampled: 06/25/03 Received: 06/26/03				
yanide (total)	**0.955** J	0.0500	mg/l	1	EPA 335.2	07/06/03	07/06/03	3G07020	

MW 7-8-03

North Creek Analytical - Portland

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	08/27/03 09:56

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050774 (P3G0350-01) Soil					Sampled: 07/09/03	Received: 07/10/03			
Cyanide (total)	ND	0.500	mg/kg dry	1	EPA 9010B	07/11/03	07/11/03	3G13004	
03050775 (P3G0350-02) Soil					Sampled: 07/09/03	Received: 07/10/03			
Cyanide (total)	**1.03**	0.500	mg/kg dry	1	EPA 9010B	07/11/03	07/11/03	3G13004	
03050776 (P3G0350-03) Soil					Sampled: 07/09/03	Received: 07/10/03			
Cyanide (total)	ND	0.358	mg/kg dry	1	EPA 9010B	07/11/03	07/11/03	3G13004	
03050789 (P3G0350-04) Soil					Sampled: 07/09/03	Received: 07/10/03			
Cyanide (total)	**1.47**	0.318	mg/kg dry	1	EPA 9010B	07/11/03	07/11/03	3G13004	

MW 8-8-03

North Creek Analytical - Portland

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MEMORANDUM

DATE: September 9, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of three water and five sludge samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. pH analyses (EPA Methods 150.1/9040) were performed by North Creek Analytical, Inc., Beaverton, Oregon.

The samples were numbered:

Water	03050733	03050736	03050737		
Sludge	03050738	03050739	03050740	03050741	03050742

Data Qualifications:

The samples was maintained within the QC limits of 4°C ± 2°C except the water samples which were received at the laboratory at 25.3°C; associated sample results were qualified as estimated quantities (J). The samples were collected between June 23 and June 25, 2003, and was analyzed on July 25 or 30, 2003, therefore all samples exceeded QC holding time criteria of "immediate analysis"; the sample results were qualified as estimated quantities (J). The three-point initial calibration (pH 4.0, 7.0, and 10.0) and calibration verification (at pH 8.0) results were within QC limits. Any sample result < 4.0 or > 10.0 is outside the calibration range and is qualified as an estimated quantity (J). The duplicate results were within QC limits.

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004) and the analytical method. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

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Environmental Quality Management 5825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0016, PO# 5770 Project Manager: Jerry Wade	Reported: 08/27/03 10:45

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0050733 (P3F0806-01) Water					Sampled: 06/23/03 Received: 06/24/03				
pH	9.17 J		pH Units	1	150.1/9040A	06/25/03	06/25/03	3060963	I-05
0050736 (P3F0806-04) Water					Sampled: 06/24/03 Received: 06/24/03				
pH	13.9 J		pH Units	1	150.1/9040A	06/25/03	06/25/03	3060963	
0050737 (P3F0806-05) Water					Sampled: 06/23/03 Received: 06/24/03				
pH	1.66 J		pH Units	1	150.1/9040A	06/25/03	06/25/03	3060963	I-05

MW 9-8-03

North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 001281.0276.01RZ, PO# 5770 Project Manager: Jerry Wade	**Reported:** 07/21/03 19:49

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050738 (P3F0897-01) Other wet					Sampled: 06/25/03	Received: 06/26/03			
pH	**11.3** J		pH Units	1	150.1/9040A	06/30/03	06/30/03	3061126	
03050739 (P3F0897-02) Other wet					Sampled: 06/25/03	Received: 06/26/03			
pH	**11.0** J		pH Units	1	150.1/9040A	06/30/03	06/30/03	3061126	
03050740 (P3F0897-03) Other wet					Sampled: 06/25/03	Received: 06/26/03			
pH	**4.92** J		pH Units	1	150.1/9040A	06/30/03	06/30/03	3061126	
03050741 (P3F0897-04) Other wet					Sampled: 06/25/03	Received: 06/26/03			
pH	**12.9** J		pH Units	1	150.1/9040A	06/30/03	06/30/03	3061126	
03050742 (P3F0897-05) Other wet					Sampled: 06/25/03	Received: 06/26/03			
pH	**8.27** J		pH Units	1	150.1/9040A	06/30/03	06/30/03	3061126	

MW 9-8-03

North Creek Analytical - Portland

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MEMORANDUM

DATE: September 9, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of five water, five sludge, and four soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Cyanide analyses (EPA Method 9010) were performed by North Creek Analytical, Inc., Beaverton, Oregon, and Bothell, Washington.

The samples were numbered:

03050733	03050734	03050735	03050736	03050737
03050738	03050739	03050740	03050741	03050742
03050774	03050775	03050776	03050789	

Data Qualifications:

1. **Sample Holding Times: Satisfactory.**

The samples were maintained within the QC limits of 4°C ± 2°C except the water samples which were received at the secondary laboratory at 9.6°C; associated sample results were qualified as estimated quantities (J or UJ). The samples were collected between June 23 and July 9, 2003, and were analyzed between June 27 and July 10, 2003, therefore meeting QC criteria of less than 28 days between collection and analysis.

2. **Initial and Continuing Calibration: Acceptable.**

No reported results were greater than 110% of the highest calibration standard. The initial calibration correlation coefficient was 0.999. All recoveries were within QC limits of 85% to 115%.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration

level. Blanks were analyzed after each Initial or Continuing Calibration Verification. Cyanide was not detected in applicable calibration and/or preparation blanks.

4. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

6. **Matrix Spike Analysis: Satisfactory.**

Matrix spike(MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. MS recoveries were within the QC limits except a high recovery in the sludge MS sample. Associated sample results were qualified as estimated quantities (J).

7. **Duplicate Analysis: Satisfactory.**

All duplicate and blank spike duplicate results were within QC limits except the sludge duplicate; associated sample results were qualified as estimated quantities (J).

8. **Laboratory Control Sample Analysis: Acceptable.**

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS and LCS duplicate results were below the established control limits.

9. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0016, PO# 5770 Project Manager: Jerry Wade	**Reported:** 08/27/03 10:45

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050733 (P3F0806-01) Water					Sampled: 06/23/03 Received: 06/24/03				
Cyanide (amenable)	ND	0.0167 UJ	mg/l	1	EPA 335.1	06/27/03	06/27/03	3F30041	
Cyanide (total)	2.40 J	0.167	"	10	EPA 335.2	"	"	"	
3050734 (P3F0806-02) Water					Sampled: 06/24/03 Received: 06/24/03				
Cyanide (total)	99000 J	10000	mg/l	20000	EPA 335.2	06/27/03	06/27/03	3F30041	
3050735 (P3F0806-03) Water					Sampled: 06/24/03 Received: 06/24/03				
Cyanide (total)	45200 J	2000	mg/l	4000	EPA 335.2	06/27/03	06/27/03	3F30041	
3050736 (P3F0806-04) Water					Sampled: 06/24/03 Received: 06/24/03				
Cyanide (amenable)	ND	0.0169 UJ	mg/l	1	EPA 335.1	06/27/03	06/27/03	3F30041	
Cyanide (total)	ND	0.0169 UJ	"	"	EPA 335.2	"	"	"	
3050737 (P3F0806-05) Water					Sampled: 06/23/03 Received: 06/24/03				
Cyanide (total)	37.2 J	2.00	mg/l	100	EPA 335.2	06/27/03	06/27/03	3F30041	

MW 9/8/03

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 001281.0276.01RZ, PO# 5770 Project Manager: Jerry Wade	Reported: 07/21/03 19:49

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050738 (P3F0897-01) Other wet					Sampled: 06/25/03 Received: 06/26/03				
Cyanide (total)	4600 J	500	mg/l	1000	EPA 335.2	07/06/03	07/06/03	3G07020	
03050739 (P3F0897-02) Other wet					Sampled: 06/25/03 Received: 06/26/03				
Cyanide (total)	8450 J	500	mg/l	1000	EPA 335.2	07/06/03	07/06/03	3G07020	
03050740 (P3F0897-03) Other wet					Sampled: 06/25/03 Received: 06/26/03				
Cyanide (total)	520 J	50.0	mg/l	100	EPA 335.2	07/06/03	07/06/03	3G07020	
03050741 (P3F0897-04) Other wet					Sampled: 06/25/03 Received: 06/26/03				
Cyanide (total)	8.90 J	0.500	mg/l	10	EPA 335.2	07/06/03	07/06/03	3G07020	
03050742 (P3F0897-05) Other wet					Sampled: 06/25/03 Received: 06/26/03				
Cyanide (total)	0.955 J	0.0500	mg/l	1	EPA 335.2	07/06/03	07/06/03	3G07020	

MW 7-8-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 08/27/03 09:56

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050774 (P3G0350-01) Soil					Sampled: 07/09/03 Received: 07/10/03				
Cyanide (total)	ND	0.500	mg/kg dry	1	EPA 9010B	07/11/03	07/11/03	3G13004	
03050775 (P3G0350-02) Soil					Sampled: 07/09/03 Received: 07/10/03				
Cyanide (total)	**1.03**	0.500	mg/kg dry	1	EPA 9010B	07/11/03	07/11/03	3G13004	
03050776 (P3G0350-03) Soil					Sampled: 07/09/03 Received: 07/10/03				
Cyanide (total)	ND	0.358	mg/kg dry	1	EPA 9010B	07/11/03	07/11/03	3G13004	
03050789 (P3G0350-04) Soil					Sampled: 07/09/03 Received: 07/10/03				
Cyanide (total)	**1.47**	0.318	mg/kg dry	1	EPA 9010B	07/11/03	07/11/03	3G13004	

MW 8-29

North Creek Analytical - Portland

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MEMORANDUM

DATE: September 9, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of four sludge, three soil, and two water samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Target Analyte List (TAL) metals analyses (EPA Methods 6020 and 7470) and Toxicity Characteristic Leaching Procedure (TCLP) metals analyses (EPA Methods 1311, 6020, and 7470) were performed by North Creek Analytical, Inc., Beaverton, Oregon. Gold assay analysis was performed by NA Degerstrom, Spokane, WA; validation was not performed on the gold results.

The samples were numbered:

Water	03050735	03050737		
Sludge	03050738	03050739	03050741	03050742
Soil	03050774	03050775	03050776	

Gold Assay 03050734 = P3F0806-02 03050740 = P3F0897-03

Data Qualifications:

1. Sample Holding Times: Satisfactory.

The samples were maintained within the QC limits of 4°C ± 2°C except the water samples which were received at the laboratory at 25.3°C; associated sample results were qualified as estimated quantities (J or UJ). The samples were collected between June 23 and July 9, 2003, and were extracted and/or analyzed by July 22, 2003, therefore meeting QC criteria of less than 6 months between collection, extraction, and analysis (28 days for mercury) for soil, water, and TCLP samples. Soil criteria were applied to the sludge samples in the absence of sludge criteria.

2. Initial and Continuing Calibration: Acceptable.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All applicable ICP recoveries were within the QC limits of 90% to 110% (± 1%). All applicable AA recoveries were within QC limits of 80% to 120%.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results.

4. **ICP Interference Check Sample: Acceptable.**

Interference Check Sample (ICS) solution AB recoveries were within QC limits.

5. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

7. **ICP Serial Dilution: Not Performed.**

Serial dilution analyses were not performed; no action was taken.

8. **Matrix Spike Analysis: Satisfactory.**

Matrix spike(MS)/matrix spike duplicate (MSD) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. MS and MS duplicate recoveries were within the QC limits except for barium (a high recovery associated with the sludge sample) and cadmium (high recoveries associated with the sludge sample); associated positive sample results were qualified as estimated quantities (J).

9. **Duplicate Analysis: Satisfactory.**

All duplicate results were within QC limits except the barium spike duplicate result associated with the sludge samples; the associated results were qualified as estimated quantities (J or UJ).

10. **Laboratory Control Sample Analysis: Acceptable.**

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

11. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0016, PO# 5770 Project Manager: Jerry Wade	Reported: 08/27/03 10:45

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050737 (P3F0806-05) Water					Sampled: 06/23/03 Received: 06/24/03				
rsenic	ND	2.50	mg/l	2.5	1311/6020	07/02/03	07/07/03	3070103	R-03
arium	**0.811** J	0.500	"	0.5	"	"	07/07/03	"	
admium	**182**	2.50	"	2.5	"	"	07/07/03	"	
hromium	**266**	2.50	"	"	"	"	"	"	
ead	**9.08**	0.500	"	0.5	"	"	07/07/03	"	
ercury	ND	0.0160	"	1	1311/7470A	07/10/03	07/10/03	3070366	
elenium	ND	2.50	"	2.5	1311/6020	07/02/03	07/07/03	3070103	R-03
lver	ND	2.50	"	"	"	"	"	"	R-03

MW 9-8-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0016, PO# 5770 Project Manager: Jerry Wade	Reported: 08/27/03 10:45

Total Metals by EPA 6000/7000 Series Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050735 (P3F0806-03) Water					Sampled: 06/24/03 Received: 06/24/03				
Silver	117 J	1.00	mg/l	100	EPA 6020	07/09/03	07/11/03	3G09041	
03050737 (P3F0806-05) Water					Sampled: 06/23/03 Received: 06/24/03				
Arsenic	ND	1.00 UJ	mg/l	100	EPA 6020	07/17/03	07/18/03	3G17033	
Barium	18.9 J	10.0	"	"	"	"	"	"	
Cadmium	274	1.00	"	"	"	"	"	"	
Chromium	546	5.00	"	500	"	"	07/18/03	"	
Lead	41.1	1.00	"	100	"	"	07/18/03	"	
Mercury	0.0106	0.0100	"	1	EPA 7470A	07/21/03	07/22/03	3G21043	I-02
Selenium	ND	1.00 U	"	100	EPA 6020	07/17/03	07/18/03	3G17033	
Silver	4.92 J	1.00	"	"	"	"	"	"	

MW 9-8-03

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 001281.0276.01RZ, PO# 5770 Project Manager: Jerry Wade	Reported: 07/21/03 19:49

Total Metals by EPA 6000/7000 Series Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050738 (P3F0897-01) Other wet					Sampled: 06/25/03 Received: 06/26/03				
Arsenic	0.555	0.500	mg/l	50	EPA 6020	07/09/03	07/11/03	3G09041	D-14
Barium	ND	5.00	"	"	"	"	"	"	D-14
Cadmium	376	2.50	"	250	"	"	07/11/03	"	
Chromium	4.68	0.500	"	50	"	"	07/11/03	"	D-14
Lead	5.70	0.500	"	"	"	"	"	"	D-14
Mercury	ND	0.0100	"	1	EPA 7470A	07/10/03	07/10/03	3G10033	
Selenium	ND	0.500	"	50	EPA 6020	07/09/03	07/11/03	3G09041	D-14
Silver	2.07	0.500	"	"	"	"	"	"	D-14
03050739 (P3F0897-02) Other wet					Sampled: 06/25/03 Received: 06/26/03				
Arsenic	0.770	0.500	mg/l	50	EPA 6020	07/09/03	07/11/03	3G09041	D-14
Barium	ND	5.00	"	"	"	"	"	"	D-14
Cadmium	365	2.50	"	250	"	"	07/11/03	"	
Chromium	15.9	0.500	"	50	"	"	07/11/03	"	
Lead	7.21	0.500	"	"	"	"	"	"	D-14
Mercury	ND	0.0100	"	1	EPA 7470A	07/10/03	07/10/03	3G10033	
Selenium	ND	0.500	"	50	EPA 6020	07/09/03	07/11/03	3G09041	D-14
Silver	0.930	0.500	"	"	"	"	"	"	D-14
03050741 (P3F0897-04) Other wet					Sampled: 06/25/03 Received: 06/26/03				
Arsenic	1.44	0.500	mg/l	50	EPA 6020	07/09/03	07/11/03	3G09041	D-14
Barium	ND	5.00	"	"	"	"	"	"	D-14
Cadmium	1.62	0.500	"	"	"	"	"	"	D-14
Chromium	18.8	0.500	"	"	"	"	"	"	
Lead	0.525	0.500	"	"	"	"	"	"	D-14
Mercury	ND	0.0100	"	1	EPA 7470A	07/10/03	07/10/03	3G10033	
Selenium	ND	0.500	"	50	EPA 6020	07/09/03	07/11/03	3G09041	D-14
Silver	ND	0.500	"	"	"	"	"	"	D-14

North Creek Analytical - Portland

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Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite A	Project Number: 001281.0276.01RZ, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	07/21/03 19:49

Total Metals by EPA 6000/7000 Series Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050742 (P3F0897-05) Other wet					Sampled: 06/25/03	Received: 06/26/03			
Arsenic	ND	0.0500	mg/l	10	EPA 6020	07/09/03	07/14/03	3G09041	D-14
Barium	ND	0.500	"	"	"	"	"	"	D-14
Cadmium	**0.592** J	0.0500	"	"	"	"	"	"	D-14
Chromium	**0.104**	0.0500	"	"	"	"	"	"	D-14
Lead	ND	0.0500	"	"	"	"	"	"	D-14
Mercury	ND	0.0100	"	1	EPA 7470A	07/10/03	07/10/03	3G10033	
Selenium	ND	0.0500	"	10	EPA 6020	07/09/03	07/14/03	3G09041	D-14
Silver	ND	0.0500	"	"	"	"	"	"	D-14

MW 9-8-03

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite A Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 001281.0276.01RZ, PO# 5770 Project Manager: Jerry Wade	**Reported:** 07/21/03 19:49

TCLP Metals by EPA 1311/6000/7000 Series Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050738 (P3F0897-01) Other wet					Sampled: 06/25/03 Received: 06/26/03				
Arsenic	ND	25.0	mg/l	100	EPA 6020	07/09/03	07/11/03	3G09042	
Barium	ND	25.0	"	"	"	"	"	"	
Cadmium	344	25.0	"	500	"	"	07/11/03	"	
Chromium	ND	25.0	"	100	"	"	07/11/03	"	
Lead	ND	25.0	"	"	"	"	"	"	
Mercury	ND	0.00100	"	1	EPA 7470A	07/10/03	07/10/03	3G10019	
Selenium	ND	5.00	"	100	EPA 6020	07/09/03	07/11/03	3G09042	
Silver	ND	25.0	"	"	"	"	"	"	
03050739 (P3F0897-02) Other wet					Sampled: 06/25/03 Received: 06/26/03				
Arsenic	ND	25.0	mg/l	100	EPA 6020	07/09/03	07/11/03	3G09042	
Barium	ND	25.0	"	"	"	"	"	"	
Cadmium	37.0	5.00	"	"	"	"	"	"	
Chromium	ND	25.0	"	"	"	"	"	"	
Lead	ND	25.0	"	"	"	"	"	"	
Mercury	ND	0.00100	"	1	EPA 7470A	07/10/03	07/10/03	3G10019	
Selenium	ND	5.00	"	100	EPA 6020	07/09/03	07/11/03	3G09042	
Silver	ND	25.0	"	"	"	"	"	"	
03050741 (P3F0897-04) Other wet					Sampled: 06/25/03 Received: 06/26/03				
Arsenic	ND	25.0	mg/l	100	EPA 6020	07/09/03	07/11/03	3G09042	
Barium	ND	25.0	"	"	"	"	"	"	
Cadmium	ND	5.00	"	"	"	"	"	"	
Chromium	ND	25.0	"	"	"	"	"	"	
Lead	ND	25.0	"	"	"	"	"	"	
Mercury	ND	0.00100	"	1	EPA 7470A	07/10/03	07/10/03	3G10019	
Selenium	ND	5.00	"	100	EPA 6020	07/09/03	07/11/03	3G09042	
Silver	ND	25.0	"	"	"	"	"	"	

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite A	Project Number: 001281.0276.01RZ, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	07/21/03 19:49

TCLP Metals by EPA 1311/6000/7000 Series Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050742 (P3F0897-05) Other wet					Sampled: 06/25/03 Received: 06/26/03				
Arsenic	ND	12.5	mg/l	50	EPA 6020	07/09/03	07/11/03	3G09042	
Barium	ND	12.5	"	"	"	"	"	"	
Cadmium	ND	2.50	"	"	"	"	"	"	
Chromium	ND	12.5	"	"	"	"	"	"	
Lead	ND	12.5	"	"	"	"	"	"	
Mercury	ND	0.00100	"	1	EPA 7470A	07/10/03	07/10/03	3G10019	
Selenium	ND	2.50	"	50	EPA 6020	07/09/03	07/11/03	3G09042	
Silver	ND	12.5	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 08/27/03 09:56

Total Metals by EPA 6000/7000 Series Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050774 (P3G0350-01) Soil					Sampled: 07/09/03 Received: 07/10/03				
Arsenic	**2.25**	0.500	mg/kg dry	1	EPA 6020	07/11/03	07/14/03	3G11031	
Barium	**77.2**	5.00	"	"	"	"	"	"	
Cadmium	ND	0.500	"	"	"	"	"	"	
Chromium	**18.4**	0.500	"	"	"	"	"	"	
Lead	**2.45**	0.500	"	"	"	"	"	"	
Mercury	ND	0.200	"	"	EPA 7471A	07/14/03	07/14/03	3G14035	
Selenium	ND	0.500	"	"	EPA 6020	07/11/03	07/14/03	3G11031	
Silver	ND	0.500	"	"	"	"	"	"	
03050775 (P3G0350-02) Soil					Sampled: 07/09/03 Received: 07/10/03				
Arsenic	**2.30**	0.676	mg/kg dry	1	EPA 6020	07/11/03	07/14/03	3G11031	
Barium	**82.0**	6.76	"	"	"	"	"	"	
Cadmium	ND	0.676	"	"	"	"	"	"	
Chromium	**19.6**	0.676	"	"	"	"	"	"	
Lead	**2.62**	0.676	"	"	"	"	"	"	
Mercury	ND	0.200	"	"	EPA 7471A	07/14/03	07/14/03	3G14035	
Selenium	ND	0.676	"	"	EPA 6020	07/11/03	07/14/03	3G11031	
Silver	ND	0.676	"	"	"	"	"	"	
03050776 (P3G0350-03) Soil					Sampled: 07/09/03 Received: 07/10/03				
Arsenic	**2.88**	0.500	mg/kg dry	1	EPA 6020	07/11/03	07/14/03	3G11031	
Barium	**137**	5.00	"	"	"	"	"	"	
Cadmium	ND	0.500	"	"	"	"	"	"	
Chromium	**23.9**	0.500	"	"	"	"	"	"	
Lead	**5.18**	0.500	"	"	"	"	"	"	
Mercury	ND	0.200	"	"	EPA 7471A	07/14/03	07/14/03	3G14035	
Selenium	ND	0.500	"	"	EPA 6020	07/11/03	07/14/03	3G11031	
Silver	ND	0.500	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	08/27/03 09:56

Total Metals by EPA 6000/7000 Series Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050789 (P3G0350-04) Soil					Sampled: 07/09/03 Received: 07/10/03				
Arsenic	**4.78**	0.500	mg/kg dry	1	EPA 6020	07/11/03	07/14/03	3G11031	
Barium	**82.7**	5.00	"	"	"	"	"	"	
Cadmium	**2.54**	0.500	"	"	"	"	"	"	
Chromium	**12.9**	0.500	"	"	"	"	"	"	
Lead	**7.59**	0.500	"	"	"	"	"	"	
Mercury	ND	0.200	"	"	EPA 7471A	07/14/03	07/14/03	3G14035	
Selenium	ND	0.500	"	"	EPA 6020	07/11/03	07/14/03	3G11031	
Silver	ND	0.500	"	"	"	"	"	"	

MW 8-8-03

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

N. A. Dagerstrom, Inc.

Trans. #:

Job #: 8633

Project: North Creek Analytical

Date Rec'd.: 07/28/03

Date Reported: 07/30/03

REPORT OF ASSAY

Sample Number	Au mg/kg	Total CN mg/kg	Solids %
~~P3F0194-03~~	39	0.07	31.17
P3F0194-04	109	~~1.8~~	20.51

Sample Number	Au mg/L	Total CN mg/L	pH
P3F0806-02	0.06	95,000	---
~~P3F0867-01~~	~~1,085~~	---	---
P3F0897-03	3,289	490	5.30

Michael E. Coleman, Lab Manager

MW 9-8-03

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Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: October 20, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 1 liquid and 4 soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Semivolatile Organic Compounds (EPA SW-846 Method 8270) was performed by North Creek Analytical, Bothell, Washington.

The samples were numbered:	Water		03050765	
Soil	03050778	03050779	03050780	03050781

Data Qualifications:

1. Sample Holding Times: Satisfactory.

The samples were received at 9.6°C, slightly above the QC limits of 4°C ± 2°C; all sample results were qualified as estimated quantities (J or UJ). The samples were collected between July 8 and 10, 2003, and were extracted and analyzed by July 24, 2003, therefore meeting holding time criteria of less than 7 days between collection and extraction (14 days for soil) and less than 40 days between extraction and analysis.

2. Tuning: Acceptable.

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. Initial Calibration: Acceptable.

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limit of 30%.

4. **Continuing Calibration: Satisfactory.**

All RRFs were greater than the QC limit of 0.050. All applicable % differences were less than the QC limits of 25% except 3-nitroaniline with an increasing response factor; associated positive sample results were qualified as estimated quantities (J).

5. **Blanks: Acceptable.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any blank.

6. **Surrogates: Acceptable.**

All surrogate recoveries were within QC limits.

7. **Matrix and Blank Spike Analysis: Acceptable.**

All spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits.

8. **Duplicate Analysis: Satisfactory.**

Spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All spike duplicate results were within QC limits except 1,4-dichlorobenzene in the soil duplicate analysis; no additional action was taken.

9. **Internal Standards: Acceptable.**

All internal standards (IS) were within ± 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

10. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

12. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/01/03 16:26

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0305765 (P3G0363-01) Water					Sampled: 07/08/03	Received: 07/10/03			R-05
Acenaphthene	ND	25.0	ug/l	5	EPA 8270C	07/15/03	07/17/03	3070482	
Acenaphthylene	ND	25.0	"	"	"	"	"	"	
Anthracene	ND	25.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	25.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	25.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	25.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	25.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	25.0	"	"	"	"	"	"	
Benzoic Acid	ND	250	"	"	"	"	"	"	
Benzyl alcohol	ND	50.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	25.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	25.0	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	25.0	"	"	"	"	"	"	
4-Chloroaniline	ND	100	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	50.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	25.0	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	50.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	25.0	"	"	"	"	"	"	
2-Chlorophenol	ND	25.0	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	25.0	"	"	"	"	"	"	
Chrysene	ND	25.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	25.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	25.0	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	25.0	"	"	"	"	"	"	
Dibenzofuran	ND	25.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	25.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	25.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	25.0	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	25.0	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	25.0	"	"	"	"	"	"	
Diethyl phthalate	ND	25.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	50.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	25.0	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	50.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	125	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	25.0	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	25.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	524 J	50.0	"	"	"	"	"	"	
Fluoranthene	ND	25.0	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

10-20-03

Brian Cone, Industrial Services Manager

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vironmental Quality Management
25 216th Street SW, Suite J
nnwood, WA 98036

Project: Columbia American Plating
Project Number: 030202.0015, PO# 5770
Project Manager: Jerry Wade

Reported:
10/01/03 16:26

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

alyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
5765 (P3G0363-01) Water					Sampled: 07/08/03 Received: 07/10/03				R-05
orene	ND	25.0	ug/l	5	EPA 8270C	07/15/03	07/17/03	3070482	
xachlorobenzene	ND	25.0	"	"	"	"	"	"	
xachlorobutadiene	ND	50.0	"	"	"	"	"	"	
xachlorocyclopentadiene	ND	50.0	"	"	"	"	"	"	
xachloroethane	ND	50.0	"	"	"	"	"	"	
eno (1,2,3-cd) pyrene	ND	25.0	"	"	"	"	"	"	
phorone	ND	25.0	"	"	"	"	"	"	
Methylnaphthalene	ND	25.0	"	"	"	"	"	"	
Methylphenol	ND	50.0	"	"	"	"	"	"	
4-Methylphenol	ND	25.0	"	"	"	"	"	"	
phthalene	ND	25.0	"	"	"	"	"	"	
Nitroaniline	ND	25.0	"	"	"	"	"	"	
Nitroaniline	ND	50.0	"	"	"	"	"	"	
Nitroaniline	ND	50.0	"	"	"	"	"	"	
itrobenzene	ND	25.0	"	"	"	"	"	"	
Nitrophenol	ND	25.0	"	"	"	"	"	"	
Nitrophenol	ND	125	"	"	"	"	"	"	
-Nitrosodi-n-propylamine	ND	50.0	"	"	"	"	"	"	
-Nitrosodiphenylamine	ND	25.0	"	"	"	"	"	"	
entachlorophenol	ND	50.0	"	"	"	"	"	"	
henanthrene	ND	25.0	"	"	"	"	"	"	
henol	ND	25.0	"	"	"	"	"	"	
yrene	ND	25.0	"	"	"	"	"	"	
,2,4-Trichlorobenzene	ND	25.0	"	"	"	"	"	"	
,4,5-Trichlorophenol	ND	25.0	"	"	"	"	"	"	
,4,6-Trichlorophenol	ND	25.0	"	"	"	"	"	"	
urr: 2-Fluorobiphenyl	*60.6 %*	*26-135*							
urr: 2-Fluorophenol	*42.9 %*	*6-124*							
urr: Nitrobenzene-d5	*86.6 %*	*23-147*							
urr: Phenol-d6	*34.6 %*	*11-130*							
urr: p-Terphenyl-d14	*99.9 %*	*38-149*							
urr: 2,4,6-Tribromophenol	*108 %*	*19-126*							

MW 10-2-03

North Creek Analytical - Portland

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/01/03 16:26

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0305778 (P3G0363-05) Soil					Sampled: 07/09/03	Received: 07/10/03			
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/22/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 10-2003

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/01/03 16:26

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
305778 (P3G0363-05) Soil					Sampled: 07/09/03	Received: 07/10/03			
luorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/22/03	3070592	
lexachlorobenzene	ND	0.330	"	"	"	"	"	"	
lexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
lexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
lexachloroethane	ND	1.00	"	"	"	"	"	"	
ndeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
sophorone	ND	0.330	"	"	"	"	"	"	
-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
-Methylphenol	ND	0.330	"	"	"	"	"	"	
-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	1.00	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*83.8 %*	*44-146*							
Surr: 2-Fluorophenol	*78.9 %*	*42-126*							
Surr: Nitrobenzene-d5	*82.6 %*	*42-126*							
Surr: Phenol-d6	*81.5 %*	*42-131*							
Surr: p-Terphenyl-d14	*83.4 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*78.9 %*	*48-119*							

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North Creek Analytical - Portland

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/01/03 16:26

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0305779 (P3G0363-06) Soil					Sampled: 07/09/03 Received: 07/10/03				
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 10-20-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/01/03 16:26

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3305779 (P3G0363-06) Soil					Sampled: 07/09/03 Received: 07/10/03				
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*87.2 %*	*44-146*							
Surr: 2-Fluorophenol	*81.5 %*	*42-126*							
Surr: Nitrobenzene-d5	*80.0 %*	*42-126*							
Surr: Phenol-d6	*83.8 %*	*42-131*							
Surr: p-Terphenyl-d14	*89.4 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*86.6 %*	*48-119*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/01/03 16:26

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
305780 (P3G0363-07) Soil				Sampled: 07/09/03 Received: 07/10/03					
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/24/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

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Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 10/01/03 16:26

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
305780 (P3G0363-07) Soil					Sampled: 07/09/03	Received: 07/10/03			
luorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/24/03	3070592	
lexachlorobenzene	ND	0.330	"	"	"	"	"	"	
lexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
lexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
lexachloroethane	ND	1.00	"	"	"	"	"	"	
ndeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
sophorone	ND	0.330	"	"	"	"	"	"	
-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
-Methylphenol	ND	0.330	"	"	"	"	"	"	
-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
-Nitroaniline	ND	1.00	"	"	"	"	"	"	
-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	0.330	"	"	"	"	"	"	
-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*80.5 %*	*44-146*							
Surr: 2-Fluorophenol	*68.0 %*	*42-126*							
Surr: Nitrobenzene-d5	*69.8 %*	*42-126*							
Surr: Phenol-d6	*76.1 %*	*42-131*							
Surr: p-Terphenyl-d14	*89.9 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*86.5 %*	*48-119*							

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509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/01/03 16:26

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0305781 (P3G0363-08) Water					Sampled: 07/09/03	Received: 07/10/03			R-05
Acenaphthene	ND	50.0	ug/l	10	EPA 8270C	07/15/03	07/17/03	3070482	
Acenaphthylene	ND	50.0	"	"	"	"	"	"	
Anthracene	ND	50.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	50.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	50.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	50.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	50.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	50.0	"	"	"	"	"	"	
Benzoic Acid	ND	500	"	"	"	"	"	"	
Benzyl alcohol	ND	100	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	50.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	50.0	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	50.0	"	"	"	"	"	"	
4-Chloroaniline	ND	200	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	100	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	50.0	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	100	"	"	"	"	"	"	
2-Chloronaphthalene	ND	50.0	"	"	"	"	"	"	
2-Chlorophenol	ND	50.0	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	50.0	"	"	"	"	"	"	
Chrysene	ND	50.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	50.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	50.0	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	50.0	"	"	"	"	"	"	
Dibenzofuran	ND	50.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	50.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	50.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	50.0	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	50.0	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	50.0	"	"	"	"	"	"	
Diethyl phthalate	ND	50.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	100	"	"	"	"	"	"	
Dimethyl phthalate	ND	50.0	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	100	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	250	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	50.0	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	50.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	**378**	100	"	"	"	"	"	"	
Fluoranthene	ND	50.0	"	"	"	"	"	"	

North Creek Analytical - Portland

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

Brian L Cone

MW 10-20-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management 5825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/01/03 16:26

Semivolatile Organic Compounds per EPA Method 8270C
North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
305781 (P3G0363-08) Water					Sampled: 07/09/03	Received: 07/10/03			R-05
luorene	ND	50.0	ug/l	10	EPA 8270C	07/15/03	07/17/03	3070482	
exachlorobenzene	ND	50.0	"	"	"	"	"	"	
exachlorobutadiene	ND	100	"	"	"	"	"	"	
exachlorocyclopentadiene	ND	100	"	"	"	"	"	"	
exachloroethane	ND	100	"	"	"	"	"	"	
deno (1,2,3-cd) pyrene	ND	50.0	"	"	"	"	"	"	
sophorone	ND	50.0	"	"	"	"	"	"	
-Methylnaphthalene	ND	50.0	"	"	"	"	"	"	
-Methylphenol	ND	100	"	"	"	"	"	"	
-,4-Methylphenol	ND	50.0	"	"	"	"	"	"	
Naphthalene	ND	50.0	"	"	"	"	"	"	
-Nitroaniline	ND	50.0	"	"	"	"	"	"	
-Nitroaniline	ND	100	"	"	"	"	"	"	
-Nitroaniline	ND	100	"	"	"	"	"	"	
Nitrobenzene	ND	50.0	"	"	"	"	"	"	
-Nitrophenol	ND	50.0	"	"	"	"	"	"	
-Nitrophenol	ND	250	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	100	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	50.0	"	"	"	"	"	"	
Pentachlorophenol	ND	100	"	"	"	"	"	"	
Phenanthrene	ND	50.0	"	"	"	"	"	"	
Phenol	ND	50.0	"	"	"	"	"	"	
Pyrene	ND	50.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	50.0	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	50.0	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	50.0	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*38.7 %*	*26-135*							J
Surr: 2-Fluorophenol	*26.3 %*	*6-124*							J
Surr: Nitrobenzene-d5	*55.1 %*	*23-147*							J
Surr: Phenol-d6	*39.1 %*	*11-130*							J
Surr: p-Terphenyl-d14	*56.3 %*	*38-149*							J
Surr: 2,4,6-Tribromophenol	*28.1 %*	*19-126*							

MW 10-20-03

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

ecology and environment, inc.
International Specialists in the Environment
2101 Fourth Avenue, Suite 1900, Seattle, WA 98121
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 9 solid and 3 liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Volatile Organic Compounds (EPA SW-846 Method 8260) was performed by STL-Seattle, Tacoma, Washington.

The samples were numbered:

03050884	03050885	03050886	03050880	03050881
03050882	03050864	03050865	03050866	03050867
03050883	03050887			

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected on July 15 or 16, 2003, and were analyzed by July 29, 2003, therefore meeting QC criteria of less than 14 days between collection and analysis for soil samples.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Acceptable.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limits of 30%.

4. **Continuing Calibration: Satisfactory.**

All RRFs were greater than the QC limit of 0.050. All % differences were less than the QC limit of 25% except chloromethane, bromochloromethane, sec-butylbenzene, 1,2,4-trichlorobenzene, hexachlorobutadiene, naphthalene, and 1,2,3-trichlorobenzene in the July 15 calibration, and bromomethane in the July 23 calibration, and 2,2-dichloropropane in the July 29 calibration; no action was taken as these analytes were not detected in any samples.

5. **Blanks: Acceptable.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

6. **Surrogates: Satisfactory.**

All surrogate recoveries were within QC limits except dibromofluoromethane and fluorobenzene in sample 03050881; all results were qualified as estimated quantities (J or UJ).

7. **Matrix and Blank Spike Analysis: Satisfactory.**

Spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits except trichloroethane in sample 03050884; no action was taken based on this outlier alone.

8. **Duplicate Analysis: Satisfactory.**

The laboratory duplicate analysis results were within QC limits except some outliers in the solid spike duplicate; no action was taken based on these outliers alone.

9. **Internal Standards: Acceptable.**

All internal standards were within ± 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50% to 200% of the continuing calibration area counts.

10. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

12. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050884
Lab ID:	114927-01
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/24/2003
% Solids	90.36
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	High
Dibromofluoromethane	81.2		75	125
Fluorobenzene	84.2		75	125
Toluene-D8	83.2		75	125
Ethylbenzene-d10	83.4		75	125
Bromofluorobenzene	82.4		75	125
Trifluorotoluene	109		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	435	217	
Chloromethane	ND	1090	543	
Vinyl chloride	ND	435	217	
Bromomethane	ND	869	435	
Chloroethane	ND	435	217	
Trichlorofluoromethane	ND	435	217	
1,1-Dichloroethene	ND	435	217	
Methylene chloride	ND	435	217	
trans-1,2-Dichloroethene	ND	435	217	
1,1-Dichloroethane	ND	435	217	
2,2-Dichloropropane	ND	435	217	
cis-1,2-Dichloroethene	ND	435	217	
Bromochloromethane	ND	435	217	
Chloroform	ND	435	217	
1,1,1-Trichloroethane	ND	435	217	
Carbon Tetrachloride	ND	435	217	
1,1-Dichloropropene	ND	435	217	
Benzene	ND	435	217	
1,2-Dichloroethane	ND	435	217	
Trichloroethene	ND	435	217	
1,2-Dichloropropane	ND	435	217	
Dibromomethane	ND	435	217	
Bromodichloromethane	ND	435	217	
cis-1,3-Dichloropropene	ND	435	217	
Toluene	ND	435	217	
trans-1,3-Dichloropropene	ND	435	217	

MW 7-28-03

00007

STL Seattle

Volatile Organics by USEPA Method 5035\8260B data for 114927-01 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	435	217
Tetrachloroethene	ND	435	217
1,3-Dichloropropane	ND	435	217
Dibromochloromethane	ND	435	217
1,2-Dibromoethane	ND	435	217
Chlorobenzene	ND	435	217
Ethylbenzene	ND	435	217
1,1,1,2-Tetrachloroethane	ND	435	217
m,p-Xylene	ND	869	435
o-Xylene	ND	435	217
Styrene	ND	435	217
Bromoform	ND	435	217
Isopropylbenzene	ND	435	217
Bromobenzene	ND	435	217
n-Propylbenzene	ND	435	217
1,1,2,2-Tetrachloroethane	ND	435	217
1,2,3-Trichloropropane	ND	435	217
2-Chlorotoluene	ND	435	217
1,3,5-Trimethylbenzene	ND	435	217
4-Chlorotoluene	ND	435	217
t-Butylbenzene	ND	435	217
1,2,4-Trimethylbenzene	ND	435	217
sec-Butylbenzene	ND	435	217
1,3-Dichlorobenzene	ND	435	217
4-Isopropyltoluene	ND	435	217
1,4-Dichlorobenzene	ND	435	217
n-Butylbenzene	ND	435	217
1,2-Dichlorobenzene	ND	435	217
1,2-Dibromo-3-chloropropane	ND	869	435
1,2,4-Trichlorobenzene	ND	435	217
Hexachlorobutadiene	ND	435	217
Naphthalene	ND	435	217
1,2,3-Trichlorobenzene	ND	435	217

MW
10-28-03

00008

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050885
Lab ID:	114927-02
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/24/2003
% Solids	80.12
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	High
Dibromofluoromethane	78.1		75	125
Fluorobenzene	82.7		75	125
Toluene-D8	84.5		75	125
Ethylbenzene-d10	85.8		75	125
Bromofluorobenzene	85.9		75	125
Trifluorotoluene	107		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	494	247	
Chloromethane	ND	1230	617	
Vinyl chloride	ND	494	247	
Bromomethane	ND	987	494	
Chloroethane	ND	494	247	
Trichlorofluoromethane	ND	494	247	
1,1-Dichloroethene	ND	494	247	
Methylene chloride	ND	494	247	
trans-1,2-Dichloroethene	ND	494	247	
1,1-Dichloroethane	ND	494	247	
2,2-Dichloropropane	ND	494	247	
cis-1,2-Dichloroethene	ND	494	247	
Bromochloromethane	ND	494	247	
Chloroform	ND	494	247	
1,1,1-Trichloroethane	ND	494	247	
Carbon Tetrachloride	ND	494	247	
1,1-Dichloropropene	ND	494	247	
Benzene	ND	494	247	
1,2-Dichloroethane	ND	494	247	
Trichloroethene	ND	494	247	
1,2-Dichloropropane	ND	494	247	
Dibromomethane	ND	494	247	
Bromodichloromethane	ND	494	247	
cis-1,3-Dichloropropene	ND	494	247	
Toluene	ND	494	247	
trans-1,3-Dichloropropene	ND	494	247	

MW 10-28-03

60000

STL Seattle

Volatile Organics by USEPA Method 5035\8260B data for 114927-02 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	494	247
Tetrachloroethene	ND	494	247
1,3-Dichloropropane	ND	494	247
Dibromochloromethane	ND	494	247
1,2-Dibromoethane	ND	494	247
Chlorobenzene	ND	494	247
Ethylbenzene	ND	494	247
1,1,1,2-Tetrachloroethane	ND	494	247
m,p-Xylene	ND	987	494
o-Xylene	ND	494	247
Styrene	ND	494	247
Bromoform	ND	494	247
Isopropylbenzene	ND	494	247
Bromobenzene	ND	494	247
n-Propylbenzene	ND	494	247
1,1,2,2-Tetrachloroethane	ND	494	247
1,2,3-Trichloropropane	ND	494	247
2-Chlorotoluene	ND	494	247
1,3,5-Trimethylbenzene	ND	494	247
4-Chlorotoluene	ND	494	247
t-Butylbenzene	ND	494	247
1,2,4-Trimethylbenzene	ND	494	247
sec-Butylbenzene	ND	494	247
1,3-Dichlorobenzene	ND	494	247
4-Isopropyltoluene	ND	494	247
1,4-Dichlorobenzene	ND	494	247
n-Butylbenzene	ND	494	247
1,2-Dichlorobenzene	ND	494	247
1,2-Dibromo-3-chloropropane	ND	987	494
1,2,4-Trichlorobenzene	ND	494	247
Hexachlorobutadiene	ND	494	247
Naphthalene	ND	494	247
1,2,3-Trichlorobenzene	ND	494	247

MW
10-28-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050886
Lab ID:	114927-03
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/24/2003
% Solids	78.3
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	77.8		75	125
Fluorobenzene	80.7		75	125
Toluene-D8	81.7		75	125
Ethylbenzene-d10	80.7		75	125
Bromofluorobenzene	79.6		75	125
Trifluorotoluene	103		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	501	250	
Chloromethane	ND	1250	626	
Vinyl chloride	ND	501	250	
Bromomethane	ND	1000	501	
Chloroethane	ND	501	250	
Trichlorofluoromethane	ND	501	250	
1,1-Dichloroethene	ND	501	250	
Methylene chloride	ND	501	250	
trans-1,2-Dichloroethene	ND	501	250	
1,1-Dichloroethane	ND	501	250	
2,2-Dichloropropane	ND	501	250	
cis-1,2-Dichloroethene	ND	501	250	
Bromochloromethane	ND	501	250	
Chloroform	ND	501	250	
1,1,1-Trichloroethane	ND	501	250	
Carbon Tetrachloride	ND	501	250	
1,1-Dichloropropene	ND	501	250	
Benzene	ND	501	250	
1,2-Dichloroethane	ND	501	250	
Trichloroethene	ND	501	250	
1,2-Dichloropropane	ND	501	250	
Dibromomethane	ND	501	250	
Bromodichloromethane	ND	501	250	
cis-1,3-Dichloropropene	ND	501	250	
Toluene	ND	501	250	
trans-1,3-Dichloropropene	ND	501	250	

MW 10-28-03

00011

STL Seattle

Volatile Organics by USEPA Method 5035\8260B data for 114927-03 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	501	250
Tetrachloroethene	ND	501	250
1,3-Dichloropropane	ND	501	250
Dibromochloromethane	ND	501	250
1,2-Dibromoethane	ND	501	250
Chlorobenzene	ND	501	250
Ethylbenzene	ND	501	250
1,1,1,2-Tetrachloroethane	ND	501	250
m,p-Xylene	ND	1000	501
o-Xylene	ND	501	250
Styrene	ND	501	250
Bromoform	ND	501	250
Isopropylbenzene	ND	501	250
Bromobenzene	ND	501	250
n-Propylbenzene	ND	501	250
1,1,2,2-Tetrachloroethane	ND	501	250
1,2,3-Trichloropropane	ND	501	250
2-Chlorotoluene	ND	501	250
1,3,5-Trimethylbenzene	ND	501	250
4-Chlorotoluene	ND	501	250
t-Butylbenzene	ND	501	250
1,2,4-Trimethylbenzene	ND	501	250
sec-Butylbenzene	ND	501	250
1,3-Dichlorobenzene	ND	501	250
4-Isopropyltoluene	ND	501	250
1,4-Dichlorobenzene	ND	501	250
n-Butylbenzene	ND	501	250
1,2-Dichlorobenzene	ND	501	250
1,2-Dibromo-3-chloropropane	ND	1000	501
1,2,4-Trichlorobenzene	ND	501	250
Hexachlorobutadiene	ND	501	250
Naphthalene	ND	501	250
1,2,3-Trichlorobenzene	ND	501	250

MW
10-28-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050880
Lab ID:	114927-04
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/24/2003
% Solids	89.64
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	85		75	125
Fluorobenzene	87.4		75	125
Toluene-D8	88.5		75	125
Ethylbenzene-d10	89.6		75	125
Bromofluorobenzene	87.7		75	125
Trifluorotoluene	108		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	431	216	
Chloromethane	ND	1080	539	
Vinyl chloride	ND	431	216	
Bromomethane	ND	863	431	
Chloroethane	ND	431	216	
Trichlorofluoromethane	ND	431	216	
1,1-Dichloroethene	ND	431	216	
Methylene chloride	ND	431	216	
trans-1,2-Dichloroethene	ND	431	216	
1,1-Dichloroethane	ND	431	216	
2,2-Dichloropropane	ND	431	216	
cis-1,2-Dichloroethene	ND	431	216	
Bromochloromethane	ND	431	216	
Chloroform	ND	431	216	
1,1,1-Trichloroethane	ND	431	216	
Carbon Tetrachloride	ND	431	216	
1,1-Dichloropropene	ND	431	216	
Benzene	ND	431	216	
1,2-Dichloroethane	ND	431	216	
Trichloroethene	ND	431	216	
1,2-Dichloropropane	ND	431	216	
Dibromomethane	ND	431	216	
Bromodichloromethane	ND	431	216	
cis-1,3-Dichloropropene	ND	431	216	
Toluene	ND	431	216	
trans-1,3-Dichloropropene	ND	431	216	

STL Seattle

Volatile Organics by USEPA Method 5035\8260B data for 114927-04 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	431	216
Tetrachloroethene	ND	431	216
1,3-Dichloropropane	ND	431	216
Dibromochloromethane	ND	431	216
1,2-Dibromoethane	ND	431	216
Chlorobenzene	ND	431	216
Ethylbenzene	ND	431	216
1,1,1,2-Tetrachloroethane	ND	431	216
m,p-Xylene	ND	863	431
o-Xylene	ND	431	216
Styrene	ND	431	216
Bromoform	ND	431	216
Isopropylbenzene	ND	431	216
Bromobenzene	ND	431	216
n-Propylbenzene	ND	431	216
1,1,2,2-Tetrachloroethane	ND	431	216
1,2,3-Trichloropropane	ND	431	216
2-Chlorotoluene	ND	431	216
1,3,5-Trimethylbenzene	ND	431	216
4-Chlorotoluene	ND	431	216
t-Butylbenzene	ND	431	216
1,2,4-Trimethylbenzene	ND	431	216
sec-Butylbenzene	ND	431	216
1,3-Dichlorobenzene	ND	431	216
4-Isopropyltoluene	ND	431	216
1,4-Dichlorobenzene	ND	431	216
n-Butylbenzene	ND	431	216
1,2-Dichlorobenzene	ND	431	216
1,2-Dibromo-3-chloropropane	ND	863	431
1,2,4-Trichlorobenzene	ND	431	216
Hexachlorobutadiene	ND	431	216
Naphthalene	ND	431	216
1,2,3-Trichlorobenzene	ND	431	216

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050881
Lab ID:	114927-05
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/24/2003
% Solids	79.51
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	71.7	N	75	125
Fluorobenzene	74.5	N	75	125
Toluene-D8	75.3		75	125
Ethylbenzene-d10	76.5		75	125
Bromofluorobenzene	75.4		75	125
Trifluorotoluene	104		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	467	233	
Chloromethane	ND	1170	583	
Vinyl chloride	ND	467	233	
Bromomethane	ND	933	467	
Chloroethane	ND	467	233	
Trichlorofluoromethane	ND	467	233	
1,1-Dichloroethene	ND	467	233	
Methylene chloride	ND	467	233	
trans-1,2-Dichloroethene	ND	467	233	
1,1-Dichloroethane	ND	467	233	
2,2-Dichloropropane	ND	467	233	
cis-1,2-Dichloroethene	ND	467	233	
Bromochloromethane	ND	467	233	
Chloroform	ND	467	233	
1,1,1-Trichloroethane	ND	467	233	
Carbon Tetrachloride	ND	467	233	
1,1-Dichloropropene	ND	467	233	
Benzene	ND	467	233	
1,2-Dichloroethane	ND	467	233	
Trichloroethene	ND	467	233	
1,2-Dichloropropane	ND	467	233	
Dibromomethane	ND	467	233	
Bromodichloromethane	ND	467	233	
cis-1,3-Dichloropropene	ND	467	233	
Toluene	ND	467	233	
trans-1,3-Dichloropropene	ND	467	233	

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STL Seattle

Volatile Organics by USEPA Method 5035\8260B data for 114927-05 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	467	233
Tetrachloroethene	ND	467	233
1,3-Dichloropropane	ND	467	233
Dibromochloromethane	ND	467	233
1,2-Dibromoethane	ND	467	233
Chlorobenzene	ND	467	233
Ethylbenzene	ND	467	233
1,1,1,2-Tetrachloroethane	ND	467	233
m,p-Xylene	ND	933	467
o-Xylene	ND	467	233
Styrene	ND	467	233
Bromoform	ND	467	233
Isopropylbenzene	ND	467	233
Bromobenzene	ND	467	233
n-Propylbenzene	ND	467	233
1,1,2,2-Tetrachloroethane	ND	467	233
1,2,3-Trichloropropane	ND	467	233
2-Chlorotoluene	ND	467	233
1,3,5-Trimethylbenzene	ND	467	233
4-Chlorotoluene	ND	467	233
t-Butylbenzene	ND	467	233
1,2,4-Trimethylbenzene	579 J	467	233
sec-Butylbenzene	ND	467 UJ	233
1,3-Dichlorobenzene	ND	467	233
4-Isopropyltoluene	ND	467	233
1,4-Dichlorobenzene	ND	467	233
n-Butylbenzene	ND	467	233
1,2-Dichlorobenzene	ND	467	233
1,2-Dibromo-3-chloropropane	ND	933	467
1,2,4-Trichlorobenzene	ND	467	233
Hexachlorobutadiene	ND	467	233
Naphthalene	ND	467	233
1,2,3-Trichlorobenzene	ND	467	233

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STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050882
Lab ID:	114927-06
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/24/2003
% Solids	77.52
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	81		75	125
Fluorobenzene	84.9		75	125
Toluene-D8	86.3		75	125
Ethylbenzene-d10	87		75	125
Bromofluorobenzene	84.3		75	125
Trifluorotoluene	103		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	495	247	
Chloromethane	ND	1240	618	
Vinyl chloride	ND	495	247	
Bromomethane	ND	989	495	
Chloroethane	ND	495	247	
Trichlorofluoromethane	ND	495	247	
1,1-Dichloroethene	ND	495	247	
Methylene chloride	ND	495	247	
trans-1,2-Dichloroethene	ND	495	247	
1,1-Dichloroethane	ND	495	247	
2,2-Dichloropropane	ND	495	247	
cis-1,2-Dichloroethene	ND	495	247	
Bromochloromethane	ND	495	247	
Chloroform	ND	495	247	
1,1,1-Trichloroethane	ND	495	247	
Carbon Tetrachloride	ND	495	247	
1,1-Dichloropropene	ND	495	247	
Benzene	ND	495	247	
1,2-Dichloroethane	ND	495	247	
Trichloroethene	ND	495	247	
1,2-Dichloropropane	ND	495	247	
Dibromomethane	ND	495	247	
Bromodichloromethane	ND	495	247	
cis-1,3-Dichloropropene	ND	495	247	
Toluene	ND	495	247	
trans-1,3-Dichloropropene	ND	495	247	

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Volatile Organics by USEPA Method 5035\8260B data for 114927-06 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	495	247
Tetrachloroethene	ND	495	247
1,3-Dichloropropane	ND	495	247
Dibromochloromethane	ND	495	247
1,2-Dibromoethane	ND	495	247
Chlorobenzene	ND	495	247
Ethylbenzene	ND	495	247
1,1,1,2-Tetrachloroethane	ND	495	247
m,p-Xylene	ND	989	495
o-Xylene	ND	495	247
Styrene	ND	495	247
Bromoform	ND	495	247
Isopropylbenzene	ND	495	247
Bromobenzene	ND	495	247
n-Propylbenzene	ND	495	247
1,1,2,2-Tetrachloroethane	ND	495	247
1,2,3-Trichloropropane	ND	495	247
2-Chlorotoluene	ND	495	247
1,3,5-Trimethylbenzene	ND	495	247
4-Chlorotoluene	ND	495	247
t-Butylbenzene	ND	495	247
1,2,4-Trimethylbenzene	ND	495	247
sec-Butylbenzene	ND	495	247
1,3-Dichlorobenzene	ND	495	247
4-Isopropyltoluene	ND	495	247
1,4-Dichlorobenzene	ND	495	247
n-Butylbenzene	ND	495	247
1,2-Dichlorobenzene	ND	495	247
1,2-Dibromo-3-chloropropane	ND	989	495
1,2,4-Trichlorobenzene	ND	495	247
Hexachlorobutadiene	ND	495	247
Naphthalene	ND	495	247
1,2,3-Trichlorobenzene	ND	495	247

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050864
Lab ID:	114927-12
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/24/2003
% Solids	88.69
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	High
Dibromofluoromethane	94.8		75	125
Fluorobenzene	98.2		75	125
Toluene-D8	99.5		75	125
Ethylbenzene-d10	101		75	125
Bromofluorobenzene	97.1		75	125
Trifluorotoluene	104		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	440	220	
Chloromethane	ND	1100	550	
Vinyl chloride	ND	440	220	
Bromomethane	ND	880	440	
Chloroethane	ND	440	220	
Trichlorofluoromethane	ND	440	220	
1,1-Dichloroethene	ND	440	220	
Methylene chloride	ND	440	220	
trans-1,2-Dichloroethene	ND	440	220	
1,1-Dichloroethane	ND	440	220	
2,2-Dichloropropane	ND	440	220	
cis-1,2-Dichloroethene	ND	440	220	
Bromochloromethane	ND	440	220	
Chloroform	ND	440	220	
1,1,1-Trichloroethane	ND	440	220	
Carbon Tetrachloride	ND	440	220	
1,1-Dichloropropene	ND	440	220	
Benzene	ND	440	220	
1,2-Dichloroethane	ND	440	220	
Trichloroethene	ND	440	220	
1,2-Dichloropropane	ND	440	220	
Dibromomethane	ND	440	220	
Bromodichloromethane	ND	440	220	
cis-1,3-Dichloropropene	ND	440	220	
Toluene	ND	440	220	
trans-1,3-Dichloropropene	ND	440	220	

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STL Seattle

Volatile Organics by USEPA Method 5035\8260B data for 114927-12 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	440	220
Tetrachloroethene	ND	440	220
1,3-Dichloropropane	ND	440	220
Dibromochloromethane	ND	440	220
1,2-Dibromoethane	ND	440	220
Chlorobenzene	ND	440	220
Ethylbenzene	ND	440	220
1,1,1,2-Tetrachloroethane	ND	440	220
m,p-Xylene	ND	880	440
o-Xylene	ND	440	220
Styrene	ND	440	220
Bromoform	ND	440	220
Isopropylbenzene	ND	440	220
Bromobenzene	ND	440	220
n-Propylbenzene	ND	440	220
1,1,2,2-Tetrachloroethane	ND	440	220
1,2,3-Trichloropropane	ND	440	220
2-Chlorotoluene	ND	440	220
1,3,5-Trimethylbenzene	ND	440	220
4-Chlorotoluene	ND	440	220
t-Butylbenzene	ND	440	220
1,2,4-Trimethylbenzene	ND	440	220
sec-Butylbenzene	ND	440	220
1,3-Dichlorobenzene	ND	440	220
4-Isopropyltoluene	ND	440	220
1,4-Dichlorobenzene	ND	440	220
n-Butylbenzene	ND	440	220
1,2-Dichlorobenzene	ND	440	220
1,2-Dibromo-3-chloropropane	ND	880	440
1,2,4-Trichlorobenzene	ND	440	220
Hexachlorobutadiene	ND	440	220
Naphthalene	ND	440	220
1,2,3-Trichlorobenzene	ND	440	220

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STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050865
Lab ID:	114927-13
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/24/2003
% Solids	81.54
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	72.8	N	75	125
Fluorobenzene	75.7		75	125
Toluene-D8	75		75	125
Ethylbenzene-d10	76.1		75	125
Bromofluorobenzene	76		75	125
Trifluorotoluene	105		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	460	230	
Chloromethane	ND	1150	575	
Vinyl chloride	ND	460	230	
Bromomethane	ND	920	460	
Chloroethane	ND	460	230	
Trichlorofluoromethane	ND	460	230	
1,1-Dichloroethene	ND	460	230	
Methylene chloride	ND	460	230	
trans-1,2-Dichloroethene	ND	460	230	
1,1-Dichloroethane	ND	460	230	
2,2-Dichloropropane	ND	460	230	
cis-1,2-Dichloroethene	ND	460	230	
Bromochloromethane	ND	460	230	
Chloroform	ND	460	230	
1,1,1-Trichloroethane	ND	460	230	
Carbon Tetrachloride	ND	460	230	
1,1-Dichloropropene	ND	460	230	
Benzene	ND	460	230	
1,2-Dichloroethane	ND	460	230	
Trichloroethene	ND	460	230	
1,2-Dichloropropane	ND	460	230	
Dibromomethane	ND	460	230	
Bromodichloromethane	ND	460	230	
cis-1,3-Dichloropropene	ND	460	230	
Toluene	ND	460	230	
trans-1,3-Dichloropropene	ND	460	230	

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STL Seattle

Volatile Organics by USEPA Method 5035\8260B data for 114927-13 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	460	230
Tetrachloroethene	ND	460	230
1,3-Dichloropropane	ND	460	230
Dibromochloromethane	ND	460	230
1,2-Dibromoethane	ND	460	230
Chlorobenzene	ND	460	230
Ethylbenzene	ND	460	230
1,1,1,2-Tetrachloroethane	ND	460	230
m,p-Xylene	ND	920	460
o-Xylene	ND	460	230
Styrene	ND	460	230
Bromoform	ND	460	230
Isopropylbenzene	ND	460	230
Bromobenzene	ND	460	230
n-Propylbenzene	ND	460	230
1,1,2,2-Tetrachloroethane	ND	460	230
1,2,3-Trichloropropane	ND	460	230
2-Chlorotoluene	ND	460	230
1,3,5-Trimethylbenzene	ND	460	230
4-Chlorotoluene	ND	460	230
t-Butylbenzene	ND	460	230
1,2,4-Trimethylbenzene	ND	460	230
sec-Butylbenzene	ND	460	230
1,3-Dichlorobenzene	ND	460	230
4-Isopropyltoluene	ND	460	230
1,4-Dichlorobenzene	ND	460	230
n-Butylbenzene	ND	460	230
1,2-Dichlorobenzene	ND	460	230
1,2-Dibromo-3-chloropropane	ND	920	460
1,2,4-Trichlorobenzene	ND	460	230
Hexachlorobutadiene	ND	460	230
Naphthalene	ND	460	230
1,2,3-Trichlorobenzene	ND	460	230

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STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050866
Lab ID:	114927-14
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/24/2003
% Solids	75.38
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	78.3		75	125
Fluorobenzene	83		75	125
Toluene-D8	82.7		75	125
Ethylbenzene-d10	82.7		75	125
Bromofluorobenzene	80.4		75	125
Trifluorotoluene	104		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	507	253	
Chloromethane	ND	1270	634	
Vinyl chloride	ND	507	253	
Bromomethane	ND	1010	507	
Chloroethane	ND	507	253	
Trichlorofluoromethane	ND	507	253	
1,1-Dichloroethene	ND	507	253	
Methylene chloride	ND	507	253	
trans-1,2-Dichloroethene	ND	507	253	
1,1-Dichloroethane	ND	507	253	
2,2-Dichloropropane	ND	507	253	
cis-1,2-Dichloroethene	ND	507	253	
Bromochloromethane	ND	507	253	
Chloroform	ND	507	253	
1,1,1-Trichloroethane	ND	507	253	
Carbon Tetrachloride	ND	507	253	
1,1-Dichloropropene	ND	507	253	
Benzene	ND	507	253	
1,2-Dichloroethane	ND	507	253	
Trichloroethene	ND	507	253	
1,2-Dichloropropane	ND	507	253	
Dibromomethane	ND	507	253	
Bromodichloromethane	ND	507	253	
cis-1,3-Dichloropropene	ND	507	253	
Toluene	ND	507	253	
trans-1,3-Dichloropropene	ND	507	253	

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00023

STL Seattle

Volatile Organics by USEPA Method 5035\8260B data for 114927-14 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	507	253
Tetrachloroethene	ND	507	253
1,3-Dichloropropane	ND	507	253
Dibromochloromethane	ND	507	253
1,2-Dibromoethane	ND	507	253
Chlorobenzene	ND	507	253
Ethylbenzene	ND	507	253
1,1,1,2-Tetrachloroethane	ND	507	253
m,p-Xylene	ND	1010	507
o-Xylene	ND	507	253
Styrene	ND	507	253
Bromoform	ND	507	253
Isopropylbenzene	ND	507	253
Bromobenzene	ND	507	253
n-Propylbenzene	ND	507	253
1,1,2,2-Tetrachloroethane	ND	507	253
1,2,3-Trichloropropane	ND	507	253
2-Chlorotoluene	ND	507	253
1,3,5-Trimethylbenzene	ND	507	253
4-Chlorotoluene	ND	507	253
t-Butylbenzene	ND	507	253
1,2,4-Trimethylbenzene	ND	507	253
sec-Butylbenzene	ND	507	253
1,3-Dichlorobenzene	ND	507	253
4-Isopropyltoluene	ND	507	253
1,4-Dichlorobenzene	ND	507	253
n-Butylbenzene	ND	507	253
1,2-Dichlorobenzene	ND	507	253
1,2-Dibromo-3-chloropropane	ND	1010	507
1,2,4-Trichlorobenzene	ND	507	253
Hexachlorobutadiene	ND	507	253
Naphthalene	ND	507	253
1,2,3-Trichlorobenzene	ND	507	253

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00024

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050867
Lab ID:	114927-15
Date Received:	7/18/2003
Date Prepared:	7/29/2003
Date Analyzed:	7/29/2003
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 5030/8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	96.6		80	120
Fluorobenzene	98.6		80	120
Toluene-D8	100		80	120
Ethylbenzene-d10	108		80	120
Bromofluorobenzene	106		80	120
Trifluorotoluene	109		80	120

Analyte	Result (ug/L)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	1	0.5	
Chloromethane	ND	2	1	
Vinyl chloride	ND	1	0.5	
Bromomethane	ND	2.5	1.25	
Chloroethane	ND	1	0.5	
Trichlorofluoromethane	ND	1	0.5	
1,1-Dichloroethene	ND	1	0.5	
Methylene chloride	ND	2	1	
trans-1,2-Dichloroethene	ND	1	0.5	
1,1-Dichloroethane	ND	1	0.5	
2,2-Dichloropropane	ND	1	0.5	
cis-1,2-Dichloroethene	ND	1	0.5	
Bromochloromethane	ND	1	0.5	
Chloroform	ND	1	0.5	
1,1,1-Trichloroethane	ND	1	0.5	
Carbon Tetrachloride	ND	1	0.5	
1,1-Dichloropropene	ND	1	0.5	
Benzene	ND	1	0.5	
1,2-Dichloroethane	2.57	1	0.5	
Trichloroethene	26.3	1	0.5	
1,2-Dichloropropane	ND	1	0.5	
Dibromomethane	ND	1	0.5	
Bromodichloromethane	ND	1	0.5	
cis-1,3-Dichloropropene	ND	1	0.5	
Toluene	ND	1	0.5	
trans-1,3-Dichloropropene	ND	1	0.5	

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STL Seattle

Volatile Organics by USEPA Method 5030/8260B data for 114927-15 continued...

Analyte	Result (ug/L)	PQL	MRL
1,1,2-Trichloroethane	ND	1 U	0.5
Tetrachloroethene	0.515 J	1	0.5
1,3-Dichloropropane	ND	1 U	0.5
Dibromochloromethane	ND	1	0.5
1,2-Dibromoethane	ND	1	0.5
Chlorobenzene	ND	1	0.5
Ethylbenzene	ND	1	0.5
1,1,1,2-Tetrachloroethane	ND	1	0.5
m,p-Xylene	ND	2	1
o-Xylene	ND	1	0.5
Styrene	ND	1	0.5
Bromoform	ND	1	0.5
Isopropylbenzene	ND	1	0.5
Bromobenzene	ND	1	0.5
n-Propylbenzene	ND	1	0.5
1,1,2,2-Tetrachloroethane	ND	1	0.5
1,2,3-Trichloropropane	ND	1	0.5
2-Chlorotoluene	ND	1	0.5
1,3,5-Trimethylbenzene	ND	1	0.5
4-Chlorotoluene	ND	1	0.5
t-Butylbenzene	ND	1	0.5
1,2,4-Trimethylbenzene	ND	1	0.5
sec-Butylbenzene	ND	1	0.5
1,3-Dichlorobenzene	ND	1	0.5
4-Isopropyltoluene	ND	1	0.5
1,4-Dichlorobenzene	ND	1	0.5
n-Butylbenzene	ND	1	0.5
1,2-Dichlorobenzene	ND	1	0.5
1,2-Dibromo-3-chloropropane	ND	1	0.5
1,2,4-Trichlorobenzene	ND	1	0.5
Hexachlorobutadiene	ND	1	0.5
Naphthalene	ND	2	1
1,2,3-Trichlorobenzene	ND	1	0.5

MW
10-28-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050883
Lab ID:	114927-18
Date Received:	7/18/2003
Date Prepared:	7/29/2003
Date Analyzed:	7/29/2003
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 5030/8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	94.5		80	120
Fluorobenzene	98.8		80	120
Toluene-D8	102		80	120
Ethylbenzene-d10	107		80	120
Bromofluorobenzene	104		80	120
Trifluorotoluene	109		80	120

Analyte	Result (ug/L)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	1 U	0.5	
Chloromethane	ND	2	1	
Vinyl chloride	ND	1	0.5	
Bromomethane	ND	2.5	1.25	
Chloroethane	ND	1	0.5	
Trichlorofluoromethane	ND	1	0.5	
1,1-Dichloroethene	ND	1	0.5	
Methylene chloride	ND	2	1	
trans-1,2-Dichloroethene	ND	1	0.5	
1,1-Dichloroethane	ND	1	0.5	
2,2-Dichloropropane	ND	1	0.5	
cis-1,2-Dichloroethene	17.6	1	0.5	
Bromochloromethane	ND	1 U	0.5	
Chloroform	ND	1	0.5	
1,1,1-Trichloroethane	ND	1	0.5	
Carbon Tetrachloride	ND	1	0.5	
1,1-Dichloropropene	ND	1	0.5	
Benzene	ND	1	0.5	
1,2-Dichloroethane	2.51	1	0.5	
Trichloroethene	0.74 J	1	0.5	J Mu
1,2-Dichloropropane	ND	1 U	0.5	
Dibromomethane	ND	1	0.5	
Bromodichloromethane	ND	1	0.5	
cis-1,3-Dichloropropene	ND	1	0.5	
Toluene	ND	1	0.5	
trans-1,3-Dichloropropene	ND	1	0.5	

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Volatile Organics by USEPA Method 5030/8260B data for 114927-18 continued...

Analyte	Result (ug/L)	PQL	MRL
1,1,2-Trichloroethane	ND	1	0.5
Tetrachloroethene	ND	1	0.5
1,3-Dichloropropane	ND	1	0.5
Dibromochloromethane	ND	1	0.5
1,2-Dibromoethane	ND	1	0.5
Chlorobenzene	ND	1	0.5
Ethylbenzene	ND	1	0.5
1,1,1,2-Tetrachloroethane	ND	1	0.5
m,p-Xylene	ND	2	1
o-Xylene	ND	1	0.5
Styrene	ND	1	0.5
Bromoform	ND	1	0.5
Isopropylbenzene	ND	1	0.5
Bromobenzene	ND	1	0.5
n-Propylbenzene	ND	1	0.5
1,1,2,2-Tetrachloroethane	ND	1	0.5
1,2,3-Trichloropropane	ND	1	0.5
2-Chlorotoluene	ND	1	0.5
1,3,5-Trimethylbenzene	ND	1	0.5
4-Chlorotoluene	ND	1	0.5
t-Butylbenzene	ND	1	0.5
1,2,4-Trimethylbenzene	1.72	1	0.5
sec-Butylbenzene	ND	1	0.5
1,3-Dichlorobenzene	ND	1	0.5
4-Isopropyltoluene	ND	1	0.5
1,4-Dichlorobenzene	ND	1	0.5
n-Butylbenzene	ND	1	0.5
1,2-Dichlorobenzene	ND	1	0.5
1,2-Dibromo-3-chloropropane	ND	1	0.5
1,2,4-Trichlorobenzene	ND	1	0.5
Hexachlorobutadiene	ND	1	0.5
Naphthalene	ND	2	1
1,2,3-Trichlorobenzene	ND	1	0.5

MW
10-28-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050887
Lab ID:	114927-19
Date Received:	7/18/2003
Date Prepared:	7/29/2003
Date Analyzed:	7/29/2003
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 5030/8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	96.6		80	120
Fluorobenzene	97.3		80	120
Toluene-D8	101		80	120
Ethylbenzene-d10	106		80	120
Bromofluorobenzene	105		80	120
Trifluorotoluene	95.3		80	120

Analyte	Result (ug/L)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	1 U	0.5	
Chloromethane	ND	2	1	
Vinyl chloride	ND	1	0.5	
Bromomethane	ND	2.5	1.25	
Chloroethane	ND	1	0.5	
Trichlorofluoromethane	ND	1	0.5	
1,1-Dichloroethene	ND	1	0.5	
Methylene chloride	ND	2	1	
trans-1,2-Dichloroethene	4.76	1	0.5	
1,1-Dichloroethane	ND	1 U	0.5	
2,2-Dichloropropane	ND	1 U	0.5	
cis-1,2-Dichloroethene	171	1	0.5	~~D10~~
Bromochloromethane	ND	1 U	0.5	
Chloroform	ND	1	0.5	
1,1,1-Trichloroethane	ND	1	0.5	
Carbon Tetrachloride	ND	1	0.5	
1,1-Dichloropropene	ND	1	0.5	
Benzene	ND	1	0.5	
1,2-Dichloroethane	2.15	1	0.5	
Trichloroethene	6.22	1	0.5	
1,2-Dichloropropane	ND	1 U	0.5	
Dibromomethane	ND	1	0.5	
Bromodichloromethane	ND	1	0.5	
cis-1,3-Dichloropropene	ND	1	0.5	
Toluene	ND	1	0.5	
trans-1,3-Dichloropropene	ND	1	0.5	

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STL Seattle

Volatile Organics by USEPA Method 5030/8260B data for 114927-19 continued...

Analyte	Result (ug/L)	PQL	MRL
1,1,2-Trichloroethane	ND	1	0.5
Tetrachloroethene	ND	1	0.5
1,3-Dichloropropane	ND	1	0.5
Dibromochloromethane	ND	1	0.5
1,2-Dibromoethane	ND	1	0.5
Chlorobenzene	ND	1	0.5
Ethylbenzene	ND	1	0.5
1,1,1,2-Tetrachloroethane	ND	1	0.5
m,p-Xylene	ND	2	1
o-Xylene	ND	1	0.5
Styrene	ND	1	0.5
Bromoform	ND	1	0.5
Isopropylbenzene	ND	1	0.5
Bromobenzene	ND	1	0.5
n-Propylbenzene	ND	1	0.5
1,1,2,2-Tetrachloroethane	ND	1	0.5
1,2,3-Trichloropropane	ND	1	0.5
2-Chlorotoluene	ND	1	0.5
1,3,5-Trimethylbenzene	ND	1	0.5
4-Chlorotoluene	ND	1	0.5
t-Butylbenzene	ND	1	0.5
1,2,4-Trimethylbenzene	ND	1	0.5
sec-Butylbenzene	ND	1	0.5
1,3-Dichlorobenzene	ND	1	0.5
4-Isopropyltoluene	ND	1	0.5
1,4-Dichlorobenzene	ND	1	0.5
n-Butylbenzene	ND	1	0.5
1,2-Dichlorobenzene	ND	1	0.5
1,2-Dibromo-3-chloropropane	ND	1	0.5
1,2,4-Trichlorobenzene	ND	1	0.5
Hexachlorobutadiene	ND	1	0.5
Naphthalene	ND	2	1
1,2,3-Trichlorobenzene	ND	1	0.5

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 10 liquid and 9 soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Cyanide analyses (EPA Methods 9012/9013) were performed by STL-Seattle, Tacoma Washington.

The samples were numbered:

03050884	03050880	03050881	03050882	03050856
03050857	03050858	03050859	03050863	03050864
03050865	03050866	03050867	03050871	03050879
03050883	03050887	03050891	03050875	

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected between July 15 and 17, 2003, and were analyzed on July 24,2003, therefore meeting QC criteria of less than 28 days between collection and analysis.

2. Initial and Continuing Calibration: Acceptable.

No reported results were greater than 110% of the highest calibration standard. The initial calibration correlation coefficients were greater than 0.995. All recoveries were within QC limits of 85% to 115%.

3. Blanks: Acceptable.

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. Cyanide was not detected in applicable calibration and/or preparation blanks.

4. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

6. Matrix Spike Analysis: Acceptable.

Matrix spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All results were within QC limits.

7. Duplicate Analysis: Satisfactory.

All duplicate results were within QC limits except samples 03050880 and 03050864; no action was taken based on these outliers alone.

8. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Project Name	Columbia American Plating
Date Received	07-18-03

General Chemistry Parameters

Client Sample ID 03050884
Lab ID 114927-01

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	0.2	0.2
Cyanide	EPA 9012/9013	07-24-03	mg/kg	0.2	0.2

Client Sample ID 03050880
Lab ID 114927-04

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	0.5	0.2
Cyanide	EPA 9012/9013	07-24-03	mg/kg	0.5	0.2

Client Sample ID 03050881
Lab ID 114927-05

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	1.9	0.2
Cyanide	EPA 9012/9013	07-24-03	mg/kg	1.9	0.2

Client Sample ID 03050882
Lab ID 114927-06

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2 U
Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2 U

Client Sample ID 03050856
Lab ID 114927-07

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2 U
Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2 U

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STL Seattle

Client Sample ID	03050857
Lab ID	114927-08

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	0.7	0.2
Cyanide	EPA 9012/9013	07-24-03	mg/kg	1.1	0.2

Client Sample ID	03050858
Lab ID	114927-09

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	0.6	0.2
Cyanide	EPA 9012/9013	07-24-03	mg/kg	0.6	0.2

Client Sample ID	03050859
Lab ID	114927-10

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U
Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U

Client Sample ID	03050863
Lab ID	114927-11

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/L	0.37	0.02
Cyanide	EPA 9012/9013	07-24-03	mg/L	0.53	0.02

Client Sample ID	03050864
Lab ID	114927-12

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	0.6	0.2
Cyanide	EPA 9012/9013	07-24-03	mg/kg	0.6	0.2

Client Sample ID	03050865
Lab ID	114927-13

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	0.4	0.2
Cyanide	EPA 9012/9013	07-24-03	mg/kg	0.4	0.2

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STL Seattle

Client Sample ID	03050866
Lab ID	114927-14

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	0.5	0.2
Cyanide	EPA 9012/9013	07-24-03	mg/kg	0.5	0.2

Client Sample ID	03050867
Lab ID	114927-15

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U
Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U

Client Sample ID	03050871
Lab ID	114927-16

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U
Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U

Client Sample ID	03050879
Lab ID	114927-17

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U
Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U

Client Sample ID	03050883
Lab ID	114927-18

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U
Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U

Client Sample ID	03050887
Lab ID	114927-19

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U
Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U

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STL Seattle

	Client Sample ID		03050891		
	Lab ID		114927-20		
Parameter	**Method**	**Date Analyzed**	**Units**	**Result**	**PQL**
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U
Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U

	Client Sample ID		03050875		
	Lab ID		114927-21		
Parameter	**Method**	**Date Analyzed**	**Units**	**Result**	**PQL**
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U
Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U

MW 10-28-03

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 9 solid and 3 liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Semivolatile Organic Compounds (EPA SW-846 Method 8270) was performed by STL-Seattle, Tacoma, Washington.

The samples were numbered:

03050884	03050885	03050886	03050880	03050881
03050882	03050864	03050865	03050866	03050867
03050883	03050887			

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected on July 15 or 16, 2003, were extracted on July 22, 2003, and were analyzed by July 28, 2003, therefore meeting holding time criteria of less than 7 days between collection and extraction and less than 40 days between extraction and analysis.

2. Tuning: Acceptable.

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. Initial Calibration: Satisfactory.

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limit of 30% except benzoic acid and 2,4-dinitrophenol in the July 26 calibration and 2,4-dinitrophenol in the July 30 calibration; no action was taken as these analytes were not detected in any samples.

4. Continuing Calibration: Satisfactory.

All RRFs were greater than the QC limit of 0.050. All applicable % differences were less than the QC limits of 25% except benzoic acid, 4-chloroaniline, 3-nitroaniline, 3,3-dichlorobenzidine; no action was taken as these analytes were not detected in any samples.

5. Blanks: Acceptable.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any blank.

6. Surrogates: Satisfactory.

All surrogate recoveries were within QC limits except phenol in sample 03050867 with a recovery less than 10%; associated acid fraction results in that sample were qualified as estimated quantities (J) or rejected (R).

7. Blank Spike Analysis: Acceptable.

All spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits.

8. Duplicate Analysis: Satisfactory.

Spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All results were within QC limits except two spike duplicate outliers; no action was taken based on these outliers alone.

9. Internal Standards: Acceptable.

All internal standards (IS) were within $\pm$ 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

10. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

12. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

R - The sample result is rejected.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050884
Lab ID:	114927-01
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/28/2003
% Solids	90.36
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	High
2 - Fluorophenol	98.9		35	144
Phenol - d5	99.3		39	140
Nitrobenzene - d5	100		37	156
2 - Fluorobiphenyl	87.1		39	145
2,4,6 - Tribromophenol	102		25	148
p - Terphenyl - d14	96.4		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	107	53.6	
bis(2-Chloroethyl)ether	ND	107	53.6	
2-Chlorophenol	ND	107	53.6	
1,3-Dichlorobenzene	ND	107	53.6	
1,4-Dichlorobenzene	ND	107	53.6	
Benzyl Alcohol	ND	134	67	
1,2-Dichlorobenzene	ND	107	53.6	
2-Methylphenol	ND	107	53.6	
bis(2-Chloroisopropyl)ether	ND	107	53.6	
3-&4-Methylphenol	ND	214	107	
N-nitroso-di-n-propylamine	ND	107	53.6	
Hexachloroethane	ND	107	53.6	
Nitrobenzene	ND	107	53.6	
Isophorone	ND	107	53.6	
2-Nitrophenol	ND	107	53.6	
2,4-Dimethylphenol	ND	107	53.6	
Benzoic Acid	ND	536	268	
bis(2-Chloroethoxy)methane	ND	107	53.6	
2,4-Dichlorophenol	ND	107	53.6	
1,2,4-Trichlorobenzene	ND	107	53.6	
Naphthalene	ND	26.8	5.36	
4-Chloroaniline	ND	107	53.6	
Hexachlorobutadiene	ND	107	53.6	
4-Chloro-3-methylphenol	ND	107	53.6	
2-Methylnaphthalene	ND	26.8	13.4	
Hexachlorocyclopentadiene	ND	107	53.6	

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STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114927-01 continued...

Analyte	Result (ug/kg)	PQL	MRL
2,4,6-Trichlorophenol	ND	107	53.6
2,4,5-Trichlorophenol	ND	107	53.6
2-Chloronaphthalene	ND	26.8	13.4
2-Nitroaniline	ND	107	53.6
Dimethylphthalate	ND	107	53.6
Acenaphthylene	ND	26.8	13.4
2,6-Dinitrotoluene	ND	107	53.6
3-Nitroaniline	ND	107	53.6
Acenaphthene	ND	26.8	13.4
2,4-Dinitrophenol	ND	536	268
4-Nitrophenol	ND	683	341
Dibenzofuran	ND	107	53.6
2,4-Dinitrotoluene	ND	107	53.6
Diethylphthalate	ND	107	53.6
4-Chlorophenylphenylether	ND	107	53.6
Fluorene	ND	26.8	13.4
4-Nitroaniline	ND	107	53.6
4,6-Dinitro-2-methylphenol	ND	536	268
N-Nitrosodiphenylamine	ND	107	53.6
4-Bromophenylphenylether	ND	107	53.6
Hexachlorobenzene	ND	107	53.6
Pentachlorophenol	ND	107	53.6
Phenanthrene	ND	26.8	13.4
Anthracene	ND	26.8	13.4
Di-n-butylphthalate	ND	107	53.6
Fluoranthene	ND	26.8	13.4
Pyrene	ND	26.8	13.4
Butylbenzylphthalate	ND	134	67
3,3'-Dichlorobenzidine	ND	214	107
Benzo(a)anthracene	ND	26.8	13.4
Chrysene	ND	26.8	13.4
bis(2-Ethylhexyl)phthalate	ND	107	53.6
Di-n-octylphthalate	ND	107	53.6
Benzofluoranthenes	ND	26.8	13.4
Benzo(a)pyrene	ND	26.8	13.4
Indeno(1,2,3-cd)pyrene	ND	26.8	13.4
Dibenz(a,h)anthracene	ND	26.8	13.4
Benzo(g,h,i)perylene	ND	26.8	13.4

MW
10-28-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050885
Lab ID:	114927-02
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	80.12
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	High
2 - Fluorophenol	82.3		35	144
Phenol - d5	80.6		39	140
Nitrobenzene - d5	81.3		37	156
2 - Fluorobiphenyl	55.9		39	145
2,4,6 - Tribromophenol	77.8		25	148
p - Terphenyl - d14	67.6		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	122	60.8	
bis(2-Chloroethyl)ether	ND	122	60.8	
2-Chlorophenol	ND	122	60.8	
1,3-Dichlorobenzene	ND	122	60.8	
1,4-Dichlorobenzene	ND	122	60.8	
Benzyl Alcohol	ND	152	76	
1,2-Dichlorobenzene	ND	122	60.8	
2-Methylphenol	ND	122	60.8	
bis(2-Chloroisopropyl)ether	ND	122	60.8	
3-&4-Methylphenol	ND	243	122	
N-nitroso-di-n-propylamine	ND	122	60.8	
Hexachloroethane	ND	122	60.8	
Nitrobenzene	ND	122	60.8	
Isophorone	ND	122	60.8	
2-Nitrophenol	ND	122	60.8	
2,4-Dimethylphenol	ND	122	60.8	
Benzoic Acid	ND	608	304	
bis(2-Chloroethoxy)methane	ND	122	60.8	
2,4-Dichlorophenol	ND	122	60.8	
1,2,4-Trichlorobenzene	ND	122	60.8	
Naphthalene	ND	30.4	6.08	
4-Chloroaniline	ND	122	60.8	
Hexachlorobutadiene	ND	122	60.8	
4-Chloro-3-methylphenol	ND	122	60.8	
2-Methylnaphthalene	ND	30.4	15.2	
Hexachlorocyclopentadiene	ND	122	60.8	

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00033

STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114927-02 continued...

Analyte	Result (ug/kg)	PQL	MRL	
2,4,6-Trichlorophenol	ND	122 U	60.8	
2,4,5-Trichlorophenol	ND	122	60.8	
2-Chloronaphthalene	ND	30.4	15.2	
2-Nitroaniline	ND	122	60.8	
Dimethylphthalate	ND	122	60.8	
Acenaphthylene	ND	30.4	15.2	
2,6-Dinitrotoluene	ND	122	60.8	
3-Nitroaniline	ND	122	60.8	
Acenaphthene	ND	30.4	15.2	
2,4-Dinitrophenol	ND	608	304	
4-Nitrophenol	ND	775	387	
Dibenzofuran	ND	122	60.8	
2,4-Dinitrotoluene	ND	122	60.8	
Diethylphthalate	ND	122	60.8	
4-Chlorophenylphenylether	ND	122	60.8	
Fluorene	ND	30.4	15.2	
4-Nitroaniline	ND	122	60.8	
4,6-Dinitro-2-methylphenol	ND	608	304	
N-Nitrosodiphenylamine	ND	122	60.8	
4-Bromophenylphenylether	ND	122	60.8	
Hexachlorobenzene	ND	122	60.8	
Pentachlorophenol	ND	122	60.8	
Phenanthrene	40.8	30.4	15.2	
Anthracene	ND	30.4 U	15.2	
Di-n-butylphthalate	ND	122 U	60.8	
Fluoranthene	47.9	30.4	15.2	
Pyrene	60.8	30.4	15.2	
Butylbenzylphthalate	ND	152 U	76	
3,3'-Dichlorobenzidine	ND	243 U	122	
Benzo(a)anthracene	31.8	30.4	15.2	
Chrysene	35.2	30.4	15.2	
bis(2-Ethylhexyl)phthalate	ND	122 U	60.8	
Di-n-octylphthalate	ND	122 U	60.8	
Benzofluoranthenes	40.3	30.4	15.2	
Benzo(a)pyrene	28.2 J	30.4	15.2	
Indeno(1,2,3-cd)pyrene	ND	30.4 U	15.2	
Dibenz(a,h)anthracene	ND	30.4 U	15.2	
Benzo(g,h,i)perylene	15.6 J	30.4	15.2	

MW 10-28-03

00034

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050886
Lab ID:	114927-03
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	78.3
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	87.9		35	144
Phenol - d5	87.4		39	140
Nitrobenzene - d5	70.2		37	156
2 - Fluorobiphenyl	57.5		39	145
2,4,6 - Tribromophenol	78.7		25	148
p - Terphenyl - d14	61.8		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	127	63.5	
bis(2-Chloroethyl)ether	ND	127	63.5	
2-Chlorophenol	ND	127	63.5	
1,3-Dichlorobenzene	ND	127	63.5	
1,4-Dichlorobenzene	ND	127	63.5	
Benzyl Alcohol	ND	159	79.4	
1,2-Dichlorobenzene	ND	127	63.5	
2-Methylphenol	ND	127	63.5	
bis(2-Chloroisopropyl)ether	ND	127	63.5	
3-&4-Methylphenol	ND	254	127	
N-nitroso-di-n-propylamine	ND	127	63.5	
Hexachloroethane	ND	127	63.5	
Nitrobenzene	ND	127	63.5	
Isophorone	ND	127	63.5	
2-Nitrophenol	ND	127	63.5	
2,4-Dimethylphenol	ND	127	63.5	
Benzoic Acid	ND	635	317	
bis(2-Chloroethoxy)methane	ND	127	63.5	
2,4-Dichlorophenol	ND	127	63.5	
1,2,4-Trichlorobenzene	ND	127	63.5	
Naphthalene	ND	31.7	6.35	
4-Chloroaniline	ND	127	63.5	
Hexachlorobutadiene	ND	127	63.5	
4-Chloro-3-methylphenol	ND	127	63.5	
2-Methylnaphthalene	ND	31.7	15.9	
Hexachlorocyclopentadiene	ND	127	63.5	

JMW 10-28-03

00035

STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114927-03 continued...

Analyte	Result (ug/kg)	PQL	MRL
2,4,6-Trichlorophenol	ND	127	63.5
2,4,5-Trichlorophenol	ND	127	63.5
2-Chloronaphthalene	ND	31.7	15.9
2-Nitroaniline	ND	127	63.5
Dimethylphthalate	ND	127	63.5
Acenaphthylene	ND	31.7	15.9
2,6-Dinitrotoluene	ND	127	63.5
3-Nitroaniline	ND	127	63.5
Acenaphthene	ND	31.7	15.9
2,4-Dinitrophenol	ND	635	317
4-Nitrophenol	ND	810	405
Dibenzofuran	ND	127	63.5
2,4-Dinitrotoluene	ND	127	63.5
Diethylphthalate	ND	127	63.5
4-Chlorophenylphenylether	ND	127	63.5
Fluorene	ND	31.7	15.9
4-Nitroaniline	ND	127	63.5
4,6-Dinitro-2-methylphenol	ND	635	317
N-Nitrosodiphenylamine	ND	127	63.5
4-Bromophenylphenylether	ND	127	63.5
Hexachlorobenzene	ND	127	63.5
Pentachlorophenol	ND	127	63.5
Phenanthrene	ND	31.7	15.9
Anthracene	ND	31.7	15.9
Di-n-butylphthalate	ND	127	63.5
Fluoranthene	ND	31.7	15.9
Pyrene	ND	31.7	15.9
Butylbenzylphthalate	ND	159	79.4
3,3'-Dichlorobenzidine	ND	254	127
Benzo(a)anthracene	ND	31.7	15.9
Chrysene	ND	31.7	15.9
bis(2-Ethylhexyl)phthalate	ND	127	63.5
Di-n-octylphthalate	ND	127	63.5
Benzofluoranthenes	ND	31.7	15.9
Benzo(a)pyrene	ND	31.7	15.9
Indeno(1,2,3-cd)pyrene	ND	31.7	15.9
Dibenz(a,h)anthracene	ND	31.7	15.9
Benzo(g,h,i)perylene	ND	31.7	15.9

MW
10-28-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050880
Lab ID:	114927-04
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	89.64
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	124		35	144
Phenol - d5	125		39	140
Nitrobenzene - d5	125		37	156
2 - Fluorobiphenyl	120		39	145
2,4,6 - Tribromophenol	118		25	148
p - Terphenyl - d14	131		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	110	55.2	
bis(2-Chloroethyl)ether	ND	110	55.2	
2-Chlorophenol	ND	110	55.2	
1,3-Dichlorobenzene	ND	110	55.2	
1,4-Dichlorobenzene	ND	110	55.2	
Benzyl Alcohol	ND	138	69	
1,2-Dichlorobenzene	ND	110	55.2	
2-Methylphenol	ND	110	55.2	
bis(2-Chloroisopropyl)ether	ND	110	55.2	
3-&4-Methylphenol	ND	221	110	
N-nitroso-di-n-propylamine	ND	110	55.2	
Hexachloroethane	ND	110	55.2	
Nitrobenzene	ND	110	55.2	
Isophorone	ND	110	55.2	
2-Nitrophenol	ND	110	55.2	
2,4-Dimethylphenol	ND	110	55.2	
Benzoic Acid	ND	552	276	
bis(2-Chloroethoxy)methane	ND	110	55.2	
2,4-Dichlorophenol	ND	110	55.2	
1,2,4-Trichlorobenzene	ND	110	55.2	
Naphthalene	ND	27.6	5.52	
4-Chloroaniline	ND	110	55.2	
Hexachlorobutadiene	ND	110	55.2	
4-Chloro-3-methylphenol	ND	110	55.2	
2-Methylnaphthalene	ND	27.6	13.8	
Hexachlorocyclopentadiene	ND	110	55.2	

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00037

STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114927-04 continued...

Analyte	Result (ug/kg)	PQL	MRL
2,4,6-Trichlorophenol	ND	110	55.2
2,4,5-Trichlorophenol	ND	110	55.2
2-Chloronaphthalene	ND	27.6	13.8
2-Nitroaniline	ND	110	55.2
Dimethylphthalate	ND	110	55.2
Acenaphthylene	ND	27.6	13.8
2,6-Dinitrotoluene	ND	110	55.2
3-Nitroaniline	ND	110	55.2
Acenaphthene	ND	27.6	13.8
2,4-Dinitrophenol	ND	552	276
4-Nitrophenol	ND	703	352
Dibenzofuran	ND	110	55.2
2,4-Dinitrotoluene	ND	110	55.2
Diethylphthalate	ND	110	55.2
4-Chlorophenylphenylether	ND	110	55.2
Fluorene	ND	27.6	13.8
4-Nitroaniline	ND	110	55.2
4,6-Dinitro-2-methylphenol	ND	552	276
N-Nitrosodiphenylamine	ND	110	55.2
4-Bromophenylphenylether	ND	110	55.2
Hexachlorobenzene	ND	110	55.2
Pentachlorophenol	ND	110	55.2
Phenanthrene	ND	27.6	13.8
Anthracene	ND	27.6	13.8
Di-n-butylphthalate	ND	110	55.2
Fluoranthene	ND	27.6	13.8
Pyrene	ND	27.6	13.8
Butylbenzylphthalate	ND	138	69
3,3'-Dichlorobenzidine	ND	221	110
Benzo(a)anthracene	ND	27.6	13.8
Chrysene	ND	27.6	13.8
bis(2-Ethylhexyl)phthalate	ND	110	55.2
Di-n-octylphthalate	ND	110	55.2
Benzofluoranthenes	ND	27.6	13.8
Benzo(a)pyrene	ND	27.6	13.8
Indeno(1,2,3-cd)pyrene	ND	27.6	13.8
Dibenz(a,h)anthracene	ND	27.6	13.8
Benzo(g,h,i)perylene	ND	27.6	13.8

MW 10-28-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050881
Lab ID:	114927-05
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	79.51
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	86.3		35	144
Phenol - d5	86.7		39	140
Nitrobenzene - d5	81.9		37	156
2 - Fluorobiphenyl	64.5		39	145
2,4,6 - Tribromophenol	80.2		25	148
p - Terphenyl - d14	70		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)		PQL	MRL	Flags
Phenol	ND		122	61.1	
bis(2-Chloroethyl)ether	ND		122	61.1	
2-Chlorophenol	ND		122	61.1	
1,3-Dichlorobenzene	ND		122	61.1	
1,4-Dichlorobenzene	ND		122	61.1	
Benzyl Alcohol	ND		153	76.4	
1,2-Dichlorobenzene	ND		122	61.1	
2-Methylphenol	ND		122	61.1	
bis(2-Chloroisopropyl)ether	ND		122	61.1	
3-&4-Methylphenol	ND		244	122	
N-nitroso-di-n-propylamine	ND		122	61.1	
Hexachloroethane	ND		122	61.1	
Nitrobenzene	ND		122	61.1	
Isophorone	ND		122	61.1	
2-Nitrophenol	ND		122	61.1	
2,4-Dimethylphenol	ND		122	61.1	
Benzoic Acid	ND		611	305	
bis(2-Chloroethoxy)methane	ND		122	61.1	
2,4-Dichlorophenol	ND		122	61.1	
1,2,4-Trichlorobenzene	ND		122	61.1	
Naphthalene	ND		30.5	6.11	
4-Chloroaniline	ND		122	61.1	
Hexachlorobutadiene	ND		122	61.1	
4-Chloro-3-methylphenol	ND		122	61.1	
2-Methylnaphthalene		103	30.5	15.3	
Hexachlorocyclopentadiene	ND		122	61.1	

MW 10-28-03

00039

STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114927-05 continued...

Analyte		Result (ug/kg)	PQL	MRL	
2,4,6-Trichlorophenol	ND		122 U	61.1	
2,4,5-Trichlorophenol	ND		122	61.1	
2-Chloronaphthalene	ND		30.5	15.3	
2-Nitroaniline	ND		122	61.1	
Dimethylphthalate	ND		122	61.1	
Acenaphthylene	ND		30.5	15.3	
2,6-Dinitrotoluene	ND		122	61.1	
3-Nitroaniline	ND		122	61.1	
Acenaphthene		20.6 J	30.5	15.3	
2,4-Dinitrophenol	ND		611 U	305	
4-Nitrophenol	ND		779	389	
Dibenzofuran	ND		122	61.1	
2,4-Dinitrotoluene	ND		122	61.1	
Diethylphthalate	ND		122	61.1	
4-Chlorophenylphenylether	ND		122	61.1	
Fluorene		20 J	30.5	15.3	
4-Nitroaniline	ND		122 U	61.1	
4,6-Dinitro-2-methylphenol	ND		611	305	
N-Nitrosodiphenylamine	ND		122	61.1	
4-Bromophenylphenylether	ND		122	61.1	
Hexachlorobenzene	ND		122	61.1	
Pentachlorophenol	ND		122	61.1	
Phenanthrene		36.4	30.5	15.3	
Anthracene	ND		30.5 U	15.3	
Di-n-butylphthalate	ND		122	61.1	
Fluoranthene	ND		30.5	15.3	
Pyrene		22.4 J	30.5	15.3	
Butylbenzylphthalate	ND		153 U	76.4	
3,3'-Dichlorobenzidine	ND		244	122	
Benzo(a)anthracene	ND		30.5	15.3	
Chrysene	ND		30.5	15.3	
bis(2-Ethylhexyl)phthalate		103 J	122	61.1	
Di-n-octylphthalate	ND		122 U	61.1	
Benzofluoranthenes	ND		30.5	15.3	
Benzo(a)pyrene	ND		30.5	15.3	
Indeno(1,2,3-cd)pyrene	ND		30.5	15.3	
Dibenz(a,h)anthracene	ND		30.5	15.3	
Benzo(g,h,i)perylene	ND		30.5	15.3	

MW 10-28-03

00040

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050882
Lab ID:	114927-06
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	77.52
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	85.2		35	144
Phenol - d5	83.5		39	140
Nitrobenzene - d5	76.5		37	156
2 - Fluorobiphenyl	52.8		39	145
2,4,6 - Tribromophenol	75.6		25	148
p - Terphenyl - d14	69		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	129	64.4	
bis(2-Chloroethyl)ether	ND	129	64.4	
2-Chlorophenol	ND	129	64.4	
1,3-Dichlorobenzene	ND	129	64.4	
1,4-Dichlorobenzene	ND	129	64.4	
Benzyl Alcohol	ND	161	80.5	
1,2-Dichlorobenzene	ND	129	64.4	
2-Methylphenol	ND	129	64.4	
bis(2-Chloroisopropyl)ether	ND	129	64.4	
3-&4-Methylphenol	ND	258	129	
N-nitroso-di-n-propylamine	ND	129	64.4	
Hexachloroethane	ND	129	64.4	
Nitrobenzene	ND	129	64.4	
Isophorone	ND	129	64.4	
2-Nitrophenol	ND	129	64.4	
2,4-Dimethylphenol	ND	129	64.4	
Benzoic Acid	ND	644	322	
bis(2-Chloroethoxy)methane	ND	129	64.4	
2,4-Dichlorophenol	ND	129	64.4	
1,2,4-Trichlorobenzene	ND	129	64.4	
Naphthalene	ND	32.2	6.44	
4-Chloroaniline	ND	129	64.4	
Hexachlorobutadiene	ND	129	64.4	
4-Chloro-3-methylphenol	ND	129	64.4	
2-Methylnaphthalene	ND	32.2	16.1	
Hexachlorocyclopentadiene	ND	129	64.4	

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00041

STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114927-06 continued...

Analyte		Result (ug/kg)	PQL	MRL	
2,4,6-Trichlorophenol	ND		129 U	64.4	
2,4,5-Trichlorophenol	ND		129	64.4	
2-Chloronaphthalene	ND		32.2	16.1	
2-Nitroaniline	ND		129	64.4	
Dimethylphthalate	ND		129	64.4	
Acenaphthylene	ND		32.2	16.1	
2,6-Dinitrotoluene	ND		129	64.4	
3-Nitroaniline	ND		129	64.4	
Acenaphthene	ND		32.2	16.1	
2,4-Dinitrophenol	ND		644	322	
4-Nitrophenol	ND		821	411	
Dibenzofuran	ND		129	64.4	
2,4-Dinitrotoluene	ND		129	64.4	
Diethylphthalate	ND		129	64.4	
4-Chlorophenylphenylether	ND		129	64.4	
Fluorene	ND		32.2	16.1	
4-Nitroaniline	ND		129	64.4	
4,6-Dinitro-2-methylphenol	ND		644	322	
N-Nitrosodiphenylamine	ND		129	64.4	
4-Bromophenylphenylether	ND		129	64.4	
Hexachlorobenzene	ND		129	64.4	
Pentachlorophenol	ND		129	64.4	
Phenanthrene		16.3 J	32.2	16.1	J MW
Anthracene	ND		32.2 U	16.1	
Di-n-butylphthalate	ND		129 U	64.4	
Fluoranthene		18.7 J	32.2	16.1	J MW
Pyrene		24.6 J	32.2	16.1	J MW
Butylbenzylphthalate	ND		161 U	80.5	
3,3'-Dichlorobenzidine	ND		258	129	
Benzo(a)anthracene	ND		32.2	16.1	
Chrysene	ND		32.2	16.1	
bis(2-Ethylhexyl)phthalate	ND		129	64.4	
Di-n-octylphthalate	ND		129	64.4	
Benzofluoranthenes		18.2 J	32.2	16.1	J MW
Benzo(a)pyrene	ND		32.2 U	16.1	
Indeno(1,2,3-cd)pyrene	ND		32.2	16.1	
Dibenz(a,h)anthracene	ND		32.2	16.1	
Benzo(g,h,i)perylene	ND		32.2	16.1	

MW
10-28-03

00042

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050864
Lab ID:	114927-12
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	88.69
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	High
2 - Fluorophenol	113		35	144
Phenol - d5	113		39	140
Nitrobenzene - d5	116		37	156
2 - Fluorobiphenyl	97.8		39	145
2,4,6 - Tribromophenol	113		25	148
p - Terphenyl - d14	115		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	109	54.3	
bis(2-Chloroethyl)ether	ND	109	54.3	
2-Chlorophenol	ND	109	54.3	
1,3-Dichlorobenzene	ND	109	54.3	
1,4-Dichlorobenzene	ND	109	54.3	
Benzyl Alcohol	ND	136	67.9	
1,2-Dichlorobenzene	ND	109	54.3	
2-Methylphenol	ND	109	54.3	
bis(2-Chloroisopropyl)ether	ND	109	54.3	
3-&4-Methylphenol	ND	217	109	
N-nitroso-di-n-propylamine	ND	109	54.3	
Hexachloroethane	ND	109	54.3	
Nitrobenzene	ND	109	54.3	
Isophorone	ND	109	54.3	
2-Nitrophenol	ND	109	54.3	
2,4-Dimethylphenol	ND	109	54.3	
Benzoic Acid	ND	543	271	
bis(2-Chloroethoxy)methane	ND	109	54.3	
2,4-Dichlorophenol	ND	109	54.3	
1,2,4-Trichlorobenzene	ND	109	54.3	
Naphthalene	ND	27.1	5.43	
4-Chloroaniline	ND	109	54.3	
Hexachlorobutadiene	ND	109	54.3	
4-Chloro-3-methylphenol	ND	109	54.3	
2-Methylnaphthalene	ND	27.1	13.6	
Hexachlorocyclopentadiene	ND	109	54.3	

MW 10-28-03

00043

STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114927-12 continued...

Analyte		Result (ug/kg)	PQL	MRL	
2,4,6-Trichlorophenol	ND		109 U	54.3	
2,4,5-Trichlorophenol	ND		109	54.3	
2-Chloronaphthalene	ND		27.1	13.6	
2-Nitroaniline	ND		109	54.3	
Dimethylphthalate	ND		109	54.3	
Acenaphthylene	ND		27.1	13.6	
2,6-Dinitrotoluene	ND		109	54.3	
3-Nitroaniline	ND		109	54.3	
Acenaphthene	ND		27.1	13.6	
2,4-Dinitrophenol	ND		543	271	
4-Nitrophenol	ND		692	346	
Dibenzofuran	ND		109	54.3	
2,4-Dinitrotoluene	ND		109	54.3	
Diethylphthalate	ND		109	54.3	
4-Chlorophenylphenylether	ND		109	54.3	
Fluorene	ND		27.1	13.6	
4-Nitroaniline	ND		109	54.3	
4,6-Dinitro-2-methylphenol	ND		543	271	
N-Nitrosodiphenylamine	ND		109	54.3	
4-Bromophenylphenylether	ND		109	54.3	
Hexachlorobenzene	ND		109	54.3	
Pentachlorophenol	ND		109 U	54.3	
Phenanthrene		22.4 J	27.1	13.6	JMW
Anthracene	ND		27.1 U	13.6	
Di-n-butylphthalate	ND		109 U	54.3	
Fluoranthene		58.5	27.1	13.6	
Pyrene		60.7	27.1	13.6	
Butylbenzylphthalate	ND		136 U	67.9	
3,3'-Dichlorobenzidine	ND		217 U	109	
Benzo(a)anthracene		28.3	27.1	13.6	
Chrysene		25 J	27.1	13.6	JMW
bis(2-Ethylhexyl)phthalate	ND		109 U	54.3	
Di-n-octylphthalate	ND		109 U	54.3	
Benzofluoranthenes		34.3	27.1	13.6	
Benzo(a)pyrene	ND		27.1 U	13.6	
Indeno(1,2,3-cd)pyrene		14.1 J	27.1	13.6	JMW
Dibenz(a,h)anthracene	ND		27.1 U	13.6	
Benzo(g,h,i)perylene		19.7 J	27.1	13.6	JMW

MW
10-28-03

00044

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050865
Lab ID:	114927-13
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/28/2003
% Solids	81.54
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	High
2 - Fluorophenol	81.3		35	144
Phenol - d5	79.8		39	140
Nitrobenzene - d5	83.5		37	156
2 - Fluorobiphenyl	63.2		39	145
2,4,6 - Tribromophenol	79.9		25	148
p - Terphenyl - d14	70.1		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)		PQL	MRL	Flags
Phenol	ND		122 U	61.1	
bis(2-Chloroethyl)ether	ND		122	61.1	
2-Chlorophenol	ND		122	61.1	
1,3-Dichlorobenzene	ND		122	61.1	
1,4-Dichlorobenzene	ND		122	61.1	
Benzyl Alcohol	ND		153	76.3	
1,2-Dichlorobenzene	ND		122	61.1	
2-Methylphenol	ND		122	61.1	
bis(2-Chloroisopropyl)ether	ND		122	61.1	
3-&4-Methylphenol	ND		244	122	
N-nitroso-di-n-propylamine	ND		122	61.1	
Hexachloroethane	ND		122	61.1	
Nitrobenzene	ND		122	61.1	
Isophorone	ND		122	61.1	
2-Nitrophenol	ND		122	61.1	
2,4-Dimethylphenol	ND		122	61.1	
Benzoic Acid	ND		611	305	
bis(2-Chloroethoxy)methane	ND		122	61.1	
2,4-Dichlorophenol	ND		122	61.1	
1,2,4-Trichlorobenzene	ND		122	61.1	
Naphthalene	ND		30.5	6.11	
4-Chloroaniline	ND		122	61.1	
Hexachlorobutadiene	ND		122	61.1	
4-Chloro-3-methylphenol	ND		122 U	61.1	
2-Methylnaphthalene		19.5 J	30.5	15.3	J MW
Hexachlorocyclopentadiene	ND		122 U	61.1	

MW 10-28-03

00045

STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114927-13 continued...

Analyte		Result (ug/kg)	PQL	MRL
2,4,6-Trichlorophenol	ND		122 U	61.1
2,4,5-Trichlorophenol	ND		122	61.1
2-Chloronaphthalene	ND		30.5	15.3
2-Nitroaniline	ND		122	61.1
Dimethylphthalate	ND		122	61.1
Acenaphthylene		42.1	30.5	15.3
2,6-Dinitrotoluene	ND		122 U	61.1
3-Nitroaniline	ND		122 U	61.1
Acenaphthene		51.3	30.5	15.3
2,4-Dinitrophenol	ND		611 U	305
4-Nitrophenol	ND		779	389
Dibenzofuran	ND		122	61.1
2,4-Dinitrotoluene	ND		122	61.1
Diethylphthalate	ND		122	61.1
4-Chlorophenylphenylether	ND		122	61.1
Fluorene		38.7	30.5	15.3
4-Nitroaniline	ND		122 U	61.1
4,6-Dinitro-2-methylphenol	ND		611	305
N-Nitrosodiphenylamine	ND		122	61.1
4-Bromophenylphenylether	ND		122	61.1
Hexachlorobenzene	ND		122	61.1
Pentachlorophenol	ND		122	61.1
Phenanthrene		508	30.5	15.3
Anthracene		171	30.5	15.3
Di-n-butylphthalate	ND		122 U	61.1
Fluoranthene		468	30.5	15.3
Pyrene		638	30.5	15.3
Butylbenzylphthalate	ND		153 U	76.3
3,3'-Dichlorobenzidine	ND		244 U	122
Benzo(a)anthracene		229	30.5	15.3
Chrysene		255	30.5	15.3
bis(2-Ethylhexyl)phthalate	ND		122 U	61.1
Di-n-octylphthalate	ND		122 U	61.1
Benzofluoranthenes		262	30.5	15.3
Benzo(a)pyrene		223	30.5	15.3
Indeno(1,2,3-cd)pyrene		94.9	30.5	15.3
Dibenz(a,h)anthracene		57	30.5	15.3
Benzo(g,h,i)perylene		138	30.5	15.3

MW
10-28-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050866
Lab ID:	114927-14
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/28/2003
% Solids	75.38
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	83.4		35	144
Phenol - d5	81.7		39	140
Nitrobenzene - d5	80		37	156
2 - Fluorobiphenyl	50		39	145
2,4,6 - Tribromophenol	74.2		25	148
p - Terphenyl - d14	64.2		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	129	64.7	
bis(2-Chloroethyl)ether	ND	129	64.7	
2-Chlorophenol	ND	129	64.7	
1,3-Dichlorobenzene	ND	129	64.7	
1,4-Dichlorobenzene	ND	129	64.7	
Benzyl Alcohol	ND	162	80.8	
1,2-Dichlorobenzene	ND	129	64.7	
2-Methylphenol	ND	129	64.7	
bis(2-Chloroisopropyl)ether	ND	129	64.7	
3-&4-Methylphenol	ND	259	129	
N-nitroso-di-n-propylamine	ND	129	64.7	
Hexachloroethane	ND	129	64.7	
Nitrobenzene	ND	129	64.7	
Isophorone	ND	129	64.7	
2-Nitrophenol	ND	129	64.7	
2,4-Dimethylphenol	ND	129	64.7	
Benzoic Acid	ND	647	323	
bis(2-Chloroethoxy)methane	ND	129	64.7	
2,4-Dichlorophenol	ND	129	64.7	
1,2,4-Trichlorobenzene	ND	129	64.7	
Naphthalene	ND	32.3	6.47	
4-Chloroaniline	ND	129	64.7	
Hexachlorobutadiene	ND	129	64.7	
4-Chloro-3-methylphenol	ND	129	64.7	
2-Methylnaphthalene	ND	32.3	16.2	
Hexachlorocyclopentadiene	ND	129	64.7	

MW 10-28-03

00047

STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114927-14 continued...

Analyte	Result (ug/kg)	PQL	MRL
2,4,6-Trichlorophenol	ND	129	64.7
2,4,5-Trichlorophenol	ND	129	64.7
2-Chloronaphthalene	ND	32.3	16.2
2-Nitroaniline	ND	129	64.7
Dimethylphthalate	ND	129	64.7
Acenaphthylene	ND	32.3	16.2
2,6-Dinitrotoluene	ND	129	64.7
3-Nitroaniline	ND	129	64.7
Acenaphthene	ND	32.3	16.2
2,4-Dinitrophenol	ND	647	323
4-Nitrophenol	ND	825	412
Dibenzofuran	ND	129	64.7
2,4-Dinitrotoluene	ND	129	64.7
Diethylphthalate	ND	129	64.7
4-Chlorophenylphenylether	ND	129	64.7
Fluorene	ND	32.3	16.2
4-Nitroaniline	ND	129	64.7
4,6-Dinitro-2-methylphenol	ND	647	323
N-Nitrosodiphenylamine	ND	129	64.7
4-Bromophenylphenylether	ND	129	64.7
Hexachlorobenzene	ND	129	64.7
Pentachlorophenol	ND	129	64.7
Phenanthrene	ND	32.3	16.2
Anthracene	ND	32.3	16.2
Di-n-butylphthalate	ND	129	64.7
Fluoranthene	19.9 J	32.3	16.2
Pyrene	21.3 J	32.3	16.2
Butylbenzylphthalate	ND	162	80.8
3,3'-Dichlorobenzidine	ND	259	129
Benzo(a)anthracene	ND	32.3	16.2
Chrysene	ND	32.3	16.2
bis(2-Ethylhexyl)phthalate	ND	129	64.7
Di-n-octylphthalate	ND	129	64.7
Benzofluoranthenes	ND	32.3	16.2
Benzo(a)pyrene	ND	32.3	16.2
Indeno(1,2,3-cd)pyrene	ND	32.3	16.2
Dibenz(a,h)anthracene	ND	32.3	16.2
Benzo(g,h,i)perylene	ND	32.3	16.2

MW 10-8-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050867
Lab ID:	114927-15
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	-
Dilution Factor	0.5

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	15.7		10	112
Phenol - d5	7.75	X9	10	85
Nitrobenzene - d5	79.9		41	155
2 - Fluorobiphenyl	78.6		34	148
2,4,6 - Tribromophenol	69.5		29	159
p - Terphenyl - d14	88.5		33	172

Analyte	Result (ug/L)	PQL	MRL	Flags
Phenol	~~ND~~	~~0.95~~	~~0.475~~	
bis(2-Chloroethyl)ether	ND	0.95	0.475	
2-Chlorophenol	~~ND~~	~~0.95~~	~~0.475~~	
1,3-Dichlorobenzene	ND	0.95	0.475	
1,4-Dichlorobenzene	ND	0.95	0.475	
Benzyl Alcohol	~~ND~~	~~0.95~~	~~0.475~~	
1,2-Dichlorobenzene	ND	0.95	0.475	
2-Methylphenol	~~ND~~	~~0.95~~	~~0.475~~	
bis(2-Chloroisopropyl)ether	ND	0.95	0.475	
3-&4-Methylphenol	~~ND~~	~~1.9~~	~~0.95~~	
N-nitroso-di-n-propylamine	ND	0.95	0.475	
Hexachloroethane	ND	0.95	0.475	
Nitrobenzene	ND	0.95	0.475	
Isophorone	ND	0.95	0.475	
2-Nitrophenol	~~ND~~	~~0.95~~	~~0.475~~	
2,4-Dimethylphenol	~~ND~~	~~4.75~~	~~2.37~~	
Benzoic Acid	ND	4.75	2.37	
bis(2-Chloroethoxy)methane	ND	0.95	0.475	
2,4-Dichlorophenol	~~ND~~	~~0.95~~	~~0.475~~	
1,2,4-Trichlorobenzene	ND	0.95	0.475	
Naphthalene	ND	0.285	0.142	
4-Chloroaniline	ND	1.42	0.712	
Hexachlorobutadiene	ND	0.95	0.475	
4-Chloro-3-methylphenol	~~ND~~	~~0.95~~	~~0.475~~	
2-Methylnaphthalene	ND	0.237	0.119	
Hexachlorocyclopentadiene	ND	4.75	2.37	

MW 10-28-03

00049

STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114927-15 continued...

Analyte	Result (ug/L)	PQL	MRL
2,4,6-Trichlorophenol	~~ND~~	~~0.95~~	~~0.475~~ MW R
2,4,5-Trichlorophenol	~~ND~~	~~0.95~~	~~0.475~~ MW R
2-Chloronaphthalene	ND	0.095	0.0475
2-Nitroaniline	ND	0.95	0.475
Dimethylphthalate	ND	0.95	0.475
Acenaphthylene	ND	0.095	0.0475
2,6-Dinitrotoluene	ND	0.95	0.475
3-Nitroaniline	ND	0.95	0.475
Acenaphthene	ND	0.095	0.0475
2,4-Dinitrophenol	~~ND~~	~~4.75~~	~~2.37~~ MW R
4-Nitrophenol	~~ND~~	~~4.75~~	~~2.37~~ MW R
Dibenzofuran	ND	0.95	0.475
2,4-Dinitrotoluene	ND	0.95	0.475
Diethylphthalate	ND	0.95	0.475
4-Chlorophenylphenylether	ND	0.95	0.475
Fluorene	ND	0.095	0.0475
4-Nitroaniline	ND	0.95	0.475
4,6-Dinitro-2-methylphenol	~~ND~~	~~4.75~~	~~2.37~~ MW R
N-Nitrosodiphenylamine	ND	0.95	0.475
4-Bromophenylphenylether	ND	0.95	0.475
Hexachlorobenzene	ND	0.95	0.475
Pentachlorophenol	~~ND~~	~~3.09~~	~~1.54~~ MW R
Phenanthrene	ND	0.095	0.0475
Anthracene	ND	0.095	0.0475
Di-n-butylphthalate	ND	0.95	0.475
Fluoranthene	ND	0.095	0.0475
Pyrene	ND	0.095	0.0475
Butylbenzylphthalate	ND	1.42	0.712
3,3'-Dichlorobenzidine	ND	4.75	2.37
Benzo(a)anthracene	ND	0.095	0.0475
Chrysene	ND	0.119	0.0594
bis(2-Ethylhexyl)phthalate	ND	7.12	3.56
Di-n-octylphthalate	ND	0.95	0.475
Benzofluoranthenes	ND	0.19	0.095
Benzo(a)pyrene	ND	0.095	0.0475
Indeno(1,2,3-cd)pyrene	ND	0.095	0.0475
Dibenz(a,h)anthracene	ND	0.095	0.0475
Benzo(g,h,i)perylene	ND	0.095	0.0475

MW 10-28-03

00050

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050883
Lab ID:	114927-18
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	-
Dilution Factor	0.5

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	High
2 - Fluorophenol	31		10	112
Phenol - d5	18.2		10	85
Nitrobenzene - d5	71.5		41	155
2 - Fluorobiphenyl	69.5		34	148
2,4,6 - Tribromophenol	77.1		29	159
p - Terphenyl - d14	79.7		33	172

Analyte		Result (ug/L)	PQL	MRL	Flags
Phenol	ND		1.01	0.503	
bis(2-Chloroethyl)ether	ND		1.01	0.503	
2-Chlorophenol	ND		1.01	0.503	
1,3-Dichlorobenzene	ND		1.01	0.503	
1,4-Dichlorobenzene	ND		1.01	0.503	
Benzyl Alcohol	ND		1.01	0.503	
1,2-Dichlorobenzene	ND		1.01	0.503	
2-Methylphenol	ND		1.01	0.503	
bis(2-Chloroisopropyl)ether	ND		1.01	0.503	
3-&4-Methylphenol	ND		2.01	1.01	
N-nitroso-di-n-propylamine	ND		1.01	0.503	
Hexachloroethane	ND		1.01	0.503	
Nitrobenzene	ND		1.01	0.503	
Isophorone	ND		1.01	0.503	
2-Nitrophenol	ND		1.01	0.503	
2,4-Dimethylphenol	ND		5.03	2.51	
Benzoic Acid	ND		5.03	2.51	
bis(2-Chloroethoxy)methane	ND		1.01	0.503	
2,4-Dichlorophenol	ND		1.01	0.503	
1,2,4-Trichlorobenzene	ND		1.01	0.503	
Naphthalene	ND		0.302	0.151	
4-Chloroaniline	ND		1.51	0.754	
Hexachlorobutadiene	ND		1.01	0.503	
4-Chloro-3-methylphenol	ND		1.01	0.503	
2-Methylnaphthalene		1.18	0.251	0.126	
Hexachlorocyclopentadiene	ND		5.03	2.51	

JMW 10-28-03

00051

STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114927-18 continued...

Analyte	Result (ug/L)	PQL	MRL	
2,4,6-Trichlorophenol	ND	1.01	0.503	
2,4,5-Trichlorophenol	ND	1.01	0.503	
2-Chloronaphthalene	ND	0.101	0.0503	
2-Nitroaniline	ND	1.01	0.503	
Dimethylphthalate	ND	1.01	0.503	
Acenaphthylene	ND	0.101	0.0503	
2,6-Dinitrotoluene	ND	1.01	0.503	
3-Nitroaniline	ND	1.01	0.503	
Acenaphthene	ND	0.101	0.0503	
2,4-Dinitrophenol	ND	5.03	2.51	
4-Nitrophenol	ND	5.03	2.51	
Dibenzofuran	ND	1.01	0.503	
2,4-Dinitrotoluene	ND	1.01	0.503	
Diethylphthalate	ND	1.01	0.503	
4-Chlorophenylphenylether	ND	1.01	0.503	
Fluorene	0.142	0.101	0.0503	
4-Nitroaniline	ND	1.01	0.503	
4,6-Dinitro-2-methylphenol	ND	5.03	2.51	
N-Nitrosodiphenylamine	ND	1.01	0.503	
4-Bromophenylphenylether	ND	1.01	0.503	
Hexachlorobenzene	ND	1.01	0.503	
Pentachlorophenol	ND	3.27	1.63	
Phenanthrene	0.249	0.101	0.0503	
Anthracene	ND	0.101	0.0503	
Di-n-butylphthalate	ND	1.01	0.503	
Fluoranthene	ND	0.101	0.0503	
Pyrene	ND	0.101	0.0503	
Butylbenzylphthalate	ND	1.51	0.754	
3,3'-Dichlorobenzidine	ND	5.03	2.51	
Benzo(a)anthracene	ND	0.101	0.0503	
Chrysene	ND	0.126	0.0628	
bis(2-Ethylhexyl)phthalate	72.3	7.54	3.77	~~D10~~
Di-n-octylphthalate	ND	1.01	0.503	
Benzofluoranthenes	ND	0.201	0.101	
Benzo(a)pyrene	ND	0.101	0.0503	
Indeno(1,2,3-cd)pyrene	ND	0.101	0.0503	
Dibenz(a,h)anthracene	ND	0.101	0.0503	
Benzo(g,h,i)perylene	ND	0.101	0.0503	

MW 10-28-03

00052

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050887
Lab ID:	114927-19
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	-
Dilution Factor	0.5

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	40.8		10	112
Phenol - d5	26		10	85
Nitrobenzene - d5	79.6		41	155
2 - Fluorobiphenyl	80.9		34	148
2,4,6 - Tribromophenol	79.8		29	159
p - Terphenyl - d14	88.7		33	172

Analyte	Result (ug/L)	PQL	MRL	Flags
Phenol	ND	1.06	0.529	
bis(2-Chloroethyl)ether	ND	1.06	0.529	
2-Chlorophenol	ND	1.06	0.529	
1,3-Dichlorobenzene	ND	1.06	0.529	
1,4-Dichlorobenzene	ND	1.06	0.529	
Benzyl Alcohol	ND	1.06	0.529	
1,2-Dichlorobenzene	ND	1.06	0.529	
2-Methylphenol	ND	1.06	0.529	
bis(2-Chloroisopropyl)ether	ND	1.06	0.529	
3-&4-Methylphenol	ND	2.12	1.06	
N-nitroso-di-n-propylamine	ND	1.06	0.529	
Hexachloroethane	ND	1.06	0.529	
Nitrobenzene	ND	1.06	0.529	
Isophorone	ND	1.06	0.529	
2-Nitrophenol	ND	1.06	0.529	
2,4-Dimethylphenol	ND	5.29	2.65	
Benzoic Acid	ND	5.29	2.65	
bis(2-Chloroethoxy)methane	ND	1.06	0.529	
2,4-Dichlorophenol	ND	1.06	0.529	
1,2,4-Trichlorobenzene	ND	1.06	0.529	
Naphthalene	ND	0.317	0.159	
4-Chloroaniline	ND	1.59	0.794	
Hexachlorobutadiene	ND	1.06	0.529	
4-Chloro-3-methylphenol	ND	1.06	0.529	
2-Methylnaphthalene	ND	0.265	0.132	
Hexachlorocyclopentadiene	ND	5.29	2.65	

MW 10-28-03

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STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114927-19 continued...

Analyte		Result (ug/L)	PQL	MRL	
2,4,6-Trichlorophenol	ND		1.06	0.529	
2,4,5-Trichlorophenol	ND		1.06	0.529	
2-Chloronaphthalene	ND		0.106	0.0529	
2-Nitroaniline	ND		1.06	0.529	
Dimethylphthalate	ND		1.06	0.529	
Acenaphthylene	ND		0.106	0.0529	
2,6-Dinitrotoluene	ND		1.06	0.529	
3-Nitroaniline	ND		1.06	0.529	
Acenaphthene	ND		0.106	0.0529	
2,4-Dinitrophenol	ND		5.29	2.65	
4-Nitrophenol	ND		5.29	2.65	
Dibenzofuran	ND		1.06	0.529	
2,4-Dinitrotoluene	ND		1.06	0.529	
Diethylphthalate	ND		1.06	0.529	
4-Chlorophenylphenylether	ND		1.06	0.529	
Fluorene	ND		0.106	0.0529	
4-Nitroaniline	ND		1.06	0.529	
4,6-Dinitro-2-methylphenol	ND		5.29	2.65	
N-Nitrosodiphenylamine	ND		1.06	0.529	
4-Bromophenylphenylether	ND		1.06	0.529	
Hexachlorobenzene	ND		1.06	0.529	
Pentachlorophenol	ND		3.44	1.72	
Phenanthrene	ND		0.106	0.0529	
Anthracene	ND		0.106	0.0529	
Di-n-butylphthalate	ND		1.06	0.529	
Fluoranthene	ND		0.106	0.0529	
Pyrene	ND		0.106	0.0529	
Butylbenzylphthalate	ND		1.59	0.794	
3,3'-Dichlorobenzidine	ND		5.29	2.65	
Benzo(a)anthracene	ND		0.106	0.0529	
Chrysene	ND		0.132	0.0661	
bis(2-Ethylhexyl)phthalate		87.5	7.94	3.97	~~D10~~ MW
Di-n-octylphthalate	ND		1.06	0.529	
Benzofluoranthenes	ND		0.212	0.106	
Benzo(a)pyrene	ND		0.106	0.0529	
Indeno(1,2,3-cd)pyrene	ND		0.106	0.0529	
Dibenz(a,h)anthracene	ND		0.106	0.0529	
Benzo(g,h,i)perylene	ND		0.106	0.0529	

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00054

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 4 liquid and 8 soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Cyanide analyses (EPA Method 9012) were performed by North Creek Analytical, Inc., Bothell, Washington.

The samples were numbered:

03050801	03050805	03050792	03050794	03050798	03050799
03050800	03050808	03050809	03050810	03050811	03050815

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected between July 8 and 10, 2003, and were analyzed by July 11, 2003, therefore meeting QC criteria of less than 28 days between collection and analysis.

2. **Initial and Continuing Calibration: Acceptable.**

No reported results were greater than 110% of the highest calibration standard. The initial calibration correlation coefficient was 0.998. All recoveries were within QC limits of 85% to 115%.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. Cyanide was not detected in applicable calibration and/or preparation blanks.

4. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

6. Blank and Matrix Spike Analysis: Acceptable.

Blank spike and matrix spike analyses was performed per SDG or per matrix per concentration level, whichever was more frequent.

7. Duplicate Analysis: Acceptable.

All duplicate and spike duplicate results were within QC limits.

8. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 13:12

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050810 (P3G0412-10) Soil					Sampled: 07/10/03 Received: 07/11/03				
Cyanide (total)	ND	0.390 U	mg/kg dry	1	EPA 9010B	07/22/03	07/23/03	3G23019	
03050811 (P3G0412-11) Water					Sampled: 07/10/03 Received: 07/11/03				
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/22/03	07/22/03	3G22048	
03050815 (P3G0412-12) Water					Sampled: 07/10/03 Received: 07/11/03				
Cyanide (total)	0.0340	0.0100	mg/l	1	EPA 335.2	07/22/03	07/22/03	3G22048	
03050806 (P3G0412-13) Water					Sampled: 07/10/03 Received: 07/11/03				
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/22/03	07/22/03	3G22048	
03050807 (P3G0412-14) Water					Sampled: 07/11/03 Received: 07/11/03				
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/22/03	07/22/03	3G22048	

MW 10-27-03

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Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/10/03 13:12

Physical Parameters by APHA/ASTM/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050792 (P3G0412-03) Soil					Sampled: 07/08/03 Received: 07/11/03				
Dry Weight	87.7	1.00	%	1	BSOPSPL003R	08/21/03	08/21/03	3H21054	
03050794 (P3G0412-04) Soil					Sampled: 07/08/03 Received: 07/11/03				
Dry Weight	86.4	1.00	%	1	BSOPSPL003R	08/21/03	08/21/03	3H21054	
03050798 (P3G0412-05) Soil					Sampled: 07/10/03 Received: 07/11/03				
Dry Weight	95.1	1.00	%	1	BSOPSPL003R	08/21/03	08/21/03	3H21054	
03050799 (P3G0412-06) Soil					Sampled: 07/10/03 Received: 07/11/03				
Dry Weight	93.6	1.00	%	1	BSOPSPL003R	08/21/03	08/21/03	3H21054	
03050800 (P3G0412-07) Soil					Sampled: 07/10/03 Received: 07/11/03				
Dry Weight	74.7	1.00	%	1	BSOPSPL003R	08/21/03	08/21/03	3H21054	
03050808 (P3G0412-08) Soil					Sampled: 07/10/03 Received: 07/11/03				
Dry Weight	94.3	1.00	%	1	BSOPSPL003R	08/21/03	08/21/03	3H21054	
03050809 (P3G0412-09) Soil					Sampled: 07/10/03 Received: 07/11/03				
Dry Weight	93.1	1.00	%	1	BSOPSPL003R	08/21/03	08/21/03	3H21054	
03050810 (P3G0412-10) Soil					Sampled: 07/10/03 Received: 07/11/03				
Dry Weight	76.6	1.00	%	1	BSOPSPL003R	08/21/03	08/21/03	3H21054	

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 13:12

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050801 (P3G0412-01) Water					Sampled: 07/10/03 Received: 07/11/03				
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/22/03	07/22/03	3G22048	
03050805 (P3G0412-02) Water					Sampled: 07/10/03 Received: 07/11/03				
Cyanide (total)	**0.0120**	0.0100	mg/l	1	EPA 335.2	07/22/03	07/22/03	3G22048	
03050792 (P3G0412-03) Soil					Sampled: 07/08/03 Received: 07/11/03				
Cyanide (total)	**16.6**	0.823	mg/kg dry	2	EPA 9010B	07/19/03	07/19/03	3G20001	
03050794 (P3G0412-04) Soil					Sampled: 07/08/03 Received: 07/11/03				
Cyanide (total)	**1.47**	0.424	mg/kg dry	1	EPA 9010B	07/19/03	07/19/03	3G20001	
03050798 (P3G0412-05) Soil					Sampled: 07/10/03 Received: 07/11/03				
Cyanide (total)	ND	0.500 U	mg/kg dry	1	EPA 9010B	07/21/03	07/21/03	3G22015	
03050799 (P3G0412-06) Soil					Sampled: 07/10/03 Received: 07/11/03				
Cyanide (total)	ND	0.500 U	mg/kg dry	1	EPA 9010B	07/22/03	07/23/03	3G23019	
03050800 (P3G0412-07) Soil					Sampled: 07/10/03 Received: 07/11/03				
Cyanide (total)	ND	0.500 U	mg/kg dry	1	EPA 9010B	07/22/03	07/23/03	3G23019	
03050808 (P3G0412-08) Soil					Sampled: 07/10/03 Received: 07/11/03				
Cyanide (total)	ND	0.500 U	mg/kg dry	1	EPA 9010B	07/22/03	07/23/03	3G23019	
03050809 (P3G0412-09) Soil					Sampled: 07/10/03 Received: 07/11/03				
Cyanide (total)	ND	0.500 U	mg/kg dry	1	EPA 9010B	07/22/03	07/23/03	3G23019	

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/10/03 13:12

Percent Dry Weight (Solids) per Standard Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050792 (P3G0412-03) Soil					Sampled: 07/08/03	Received: 07/11/03			
% Solids	**87.7**	1.00	% by Weight	1	NCA SOP	07/15/03	07/16/03	3070523	
03050794 (P3G0412-04) Soil					Sampled: 07/08/03	Received: 07/11/03			
% Solids	**86.4**	1.00	% by Weight	1	NCA SOP	07/15/03	07/16/03	3070523	
03050798 (P3G0412-05) Soil					Sampled: 07/10/03	Received: 07/11/03			
% Solids	**95.1**	1.00	% by Weight	1	NCA SOP	07/15/03	07/16/03	3070523	
03050799 (P3G0412-06) Soil					Sampled: 07/10/03	Received: 07/11/03			
% Solids	**93.6**	1.00	% by Weight	1	NCA SOP	07/15/03	07/16/03	3070523	
03050800 (P3G0412-07) Soil					Sampled: 07/10/03	Received: 07/11/03			
% Solids	**74.7**	1.00	% by Weight	1	NCA SOP	07/15/03	07/16/03	3070523	
03050808 (P3G0412-08) Soil					Sampled: 07/10/03	Received: 07/11/03			
% Solids	**94.3**	1.00	% by Weight	1	NCA SOP	07/15/03	07/16/03	3070523	
03050809 (P3G0412-09) Soil					Sampled: 07/10/03	Received: 07/11/03			
% Solids	**93.1**	1.00	% by Weight	1	NCA SOP	07/15/03	07/16/03	3070523	
03050810 (P3G0412-10) Soil					Sampled: 07/10/03	Received: 07/11/03			
% Solids	**76.6**	1.00	% by Weight	1	NCA SOP	07/15/03	07/16/03	3070523	

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA/MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 2 liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Volatile Organic Compounds (EPA SW-846 Method 8260) was performed by North Creek Analytical, Beaverton, Oregon.

The samples were numbered: 03050806 03050807

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected on July 10 or 11, 2003, and were analyzed on July 17, 2003, therefore meeting QC criteria of less than 14 days between collection and analysis for preserved liquid samples.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Acceptable.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limits of 30%.

4. **Continuing Calibration: Satisfactory.**

All RRFs were greater than the QC limit of 0.050. All % differences were less than the QC limit of 25% except bromomethane with a lower response than the initial calibration; associated sample results were qualified as estimated quantities (UJ).

5. **Blanks: Acceptable.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

6. **Surrogates: Acceptable.**

All surrogate recoveries were within QC limits.

7. **Matrix and Blank Spike Analysis: Acceptable.**

Spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits.

8. **Duplicate Analysis: Acceptable.**

The laboratory duplicate analysis results were within QC limits.

9. **Internal Standards: Acceptable.**

All internal standards were within ± 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50% to 200% of the continuing calibration area counts.

10. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

12. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 13:12

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050807 (P3G0412-14) Water					Sampled: 07/11/03 Received: 07/11/03				
Acetone	ND	25.0	ug/l	1	EPA 8260B	07/17/03	07/17/03	3070595	
Benzene	ND	1.00	"	"	"	"	"	"	
Bromobenzene	ND	1.00	"	"	"	"	"	"	
Bromochloromethane	ND	1.00	"	"	"	"	"	"	
Bromodichloromethane	ND	1.00	"	"	"	"	"	"	
Bromoform	ND	1.00	"	"	"	"	"	"	
Bromomethane	ND	5.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.00	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.00	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	10.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroethane	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Chloromethane	ND	5.00	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.00	"	"	"	"	"	"	
Dibromochloromethane	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
Dibromomethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.00	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	3.46	1.00	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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CMW 10-27-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 13:12

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050807 (P3G0412-14) Water					Sampled: 07/11/03 Received: 07/11/03				
Hexachlorobutadiene	ND	2.00	ug/l	1	EPA 8260B	07/17/03	07/17/03	3070595	
2-Hexanone	ND	10.0	"	"	"	"	"	"	
Isopropylbenzene	ND	2.00	"	"	"	"	"	"	
4-Isopropyltoluene	ND	2.00	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.00	"	"	"	"	"	"	
Methylene chloride	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	2.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
Tetrachloroethene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
Vinyl chloride	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surr: 4-BFB	*95.5 %*	*80-120*							
Surr: 1,2-DCA-d4	*104 %*	*77-135*							
Surr: Dibromofluoromethane	*98.0 %*	*80-122*							
Surr: Toluene-d8	*100 %*	*80-120*							

MW 10-27-03

North Creek Analytical - Portland

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/10/03 13:12

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050806 (P3G0412-13) Water					Sampled: 07/10/03 , Received: 07/11/03				
Acetone	ND	25.0	ug/l	1	EPA 8260B	07/17/03	07/17/03	3070595	
Benzene	ND	1.00	"	"	"	"	"	"	
Bromobenzene	ND	1.00	"	"	"	"	"	"	
Bromochloromethane	ND	1.00	"	"	"	"	"	"	
Bromodichloromethane	ND	1.00	"	"	"	"	"	"	
Bromoform	ND	1.00	"	"	"	"	"	"	
Bromomethane	ND	5.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.00	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.00	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	10.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroethane	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Chloromethane	ND	5.00	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.00	"	"	"	"	"	"	
Dibromochloromethane	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
Dibromomethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.00	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	**2.76**	1.00	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 10-7-03

Brian Cone, Industrial Services Manager

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Environmental Laboratory Network

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 13:12

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050806 (P3G0412-13) Water					Sampled: 07/10/03	Received: 07/11/03			
Hexachlorobutadiene	ND	2.00	ug/l	1	EPA 8260B	07/17/03	07/17/03	3070595	
2-Hexanone	ND	10.0	"	"	"	"	"	"	
Isopropylbenzene	ND	2.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	2.00	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.00	"	"	"	"	"	"	
Methylene chloride	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	2.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
Tetrachloroethene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
Vinyl chloride	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surr: 4-BFB	*95.0 %*	*80-120*							
Surr: 1,2-DCA-d4	*102 %*	*77-135*							
Surr: Dibromofluoromethane	*100 %*	*80-122*							
Surr: Toluene-d8	*99.0 %*	*80-120*							

MW 10-27-03

North Creek Analytical - Portland

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Brian Cone, Industrial Services Manager

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 2 liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Semivolatile Organic Compounds (EPA SW-846 Method 8270) was performed by North Creek Analytical, Beaverton, Oregon.

The samples were numbered: 03050806 03050807

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected on July 10 or 11, 2003, and were extracted and analyzed by July 21, 2003, therefore meeting holding time criteria of less than 7 days between collection and extraction and less than 40 days between extraction and analysis.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Acceptable.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limit of 30%.

4. **Continuing Calibration: Acceptable.**

All RRFs were greater than the QC limit of 0.050. All applicable % differences were less than the QC limits of 25%.

5. **Blanks: Acceptable.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any blank.

6. **Surrogates: Acceptable.**

All surrogate recoveries were within QC limits.

7. **Blank Spike Analysis: Acceptable.**

All spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits.

8. **Duplicate Analysis: Satisfactory.**

Spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All results were within QC limits except 1,4-dichlorobenzene and 1,2,4-trichlorobenzene; no action was taken based on these outliers alone.

9. **Internal Standards: Acceptable.**

All internal standards (IS) were within ± 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

10. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

12. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/10/03 13:12

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050807 (P3G0412-14) Water					Sampled: 07/11/03	Received: 07/11/03			
Acenaphthene	ND	5.00	ug/l	1	EPA 8270C	07/16/03	07/21/03	3070545	
Acenaphthylene	ND	5.00	"	"	"	"	"	"	
Anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) pyrene	ND	5.00	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	5.00	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzoic Acid	ND	50.0	"	"	"	"	"	"	
Benzyl alcohol	ND	10.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	5.00	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	5.00	"	"	"	"	"	"	
4-Chloroaniline	ND	20.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	5.00	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	10.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	5.00	"	"	"	"	"	"	
2-Chlorophenol	ND	5.00	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Chrysene	ND	5.00	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	5.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	5.00	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	5.00	"	"	"	"	"	"	
Dibenzofuran	ND	5.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.00	"	"	"	"	"	"	
Diethyl phthalate	ND	5.00	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	5.00	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	25.0	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	5.00	"	"	"	"	"	"	

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CMW 10-27-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/10/03 13:12

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050807 (P3G0412-14) Water					Sampled: 07/11/03 Received: 07/11/03				
Fluorene	ND	5.00	ug/l	1	EPA 8270C	07/16/03	07/21/03	3070545	
Hexachlorobenzene	ND	5.00	"	"	"	"	"	"	
Hexachlorobutadiene	ND	10.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	10.0	"	"	"	"	"	"	
Hexachloroethane	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	5.00	"	"	"	"	"	"	
Isophorone	ND	5.00	"	"	"	"	"	"	
2-Methylnaphthalene	ND	5.00	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3-,4-Methylphenol	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	5.00	"	"	"	"	"	"	
2-Nitroaniline	ND	5.00	"	"	"	"	"	"	
3-Nitroaniline	ND	10.0	"	"	"	"	"	"	
4-Nitroaniline	ND	10.0	"	"	"	"	"	"	
Nitrobenzene	ND	5.00	"	"	"	"	"	"	
2-Nitrophenol	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	25.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	10.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	5.00	"	"	"	"	"	"	
Phenol	ND	5.00	"	"	"	"	"	"	
Pyrene	ND	5.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*61.0 %*	*26-135*							
Surr: 2-Fluorophenol	*34.1 %*	*6-124*							
Surr: Nitrobenzene-d5	*73.1 %*	*23-147*							
Surr: Phenol-d6	*25.8 %*	*11-130*							
Surr: p-Terphenyl-d14	*77.7 %*	*38-149*							
Surr: 2,4,6-Tribromophenol	*72.6 %*	*19-126*							

JMW 10-27-03

North Creek Analytical - Portland

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/10/03 13:12

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050806 (P3G0412-13) Water					Sampled: 07/10/03	Received: 07/11/03			
Acenaphthene	ND	5.00	ug/l	1	EPA 8270C	07/16/03	07/21/03	3070545	
Acenaphthylene	ND	5.00	"	"	"	"	"	"	
Anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) pyrene	ND	5.00	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	5.00	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzoic Acid	ND	50.0	"	"	"	"	"	"	
Benzyl alcohol	ND	10.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	5.00	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	5.00	"	"	"	"	"	"	
4-Chloroaniline	ND	20.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	5.00	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	10.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	5.00	"	"	"	"	"	"	
2-Chlorophenol	ND	5.00	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Chrysene	ND	5.00	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	5.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	5.00	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	5.00	"	"	"	"	"	"	
Dibenzofuran	ND	5.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.00	"	"	"	"	"	"	
Diethyl phthalate	ND	5.00	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	5.00	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	25.0	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	5.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 10-17-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 13:12

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050806 (P3G0412-13) Water					Sampled: 07/10/03	Received: 07/11/03			
Fluorene	ND	5.00	ug/l	1	EPA 8270C	07/16/03	07/21/03	3070545	
Hexachlorobenzene	ND	5.00	"	"	"	"	"	"	
Hexachlorobutadiene	ND	10.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	10.0	"	"	"	"	"	"	
Hexachloroethane	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	5.00	"	"	"	"	"	"	
Isophorone	ND	5.00	"	"	"	"	"	"	
2-Methylnaphthalene	ND	5.00	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3-,4-Methylphenol	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	5.00	"	"	"	"	"	"	
2-Nitroaniline	ND	5.00	"	"	"	"	"	"	
3-Nitroaniline	ND	10.0	"	"	"	"	"	"	
4-Nitroaniline	ND	10.0	"	"	"	"	"	"	
Nitrobenzene	ND	5.00	"	"	"	"	"	"	
2-Nitrophenol	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	25.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	10.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	5.00	"	"	"	"	"	"	
Phenol	ND	5.00	"	"	"	"	"	"	
Pyrene	ND	5.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*69.2 %*	*26-135*							
Surr: 2-Fluorophenol	*34.1 %*	*6-124*							
Surr: Nitrobenzene-d5	*78.9 %*	*23-147*							
Surr: Phenol-d6	*24.7 %*	*11-130*							
Surr: p-Terphenyl-d14	*84.7 %*	*38-149*							
Surr: 2,4,6-Tribromophenol	*79.0 %*	*19-126*							

MW 10-27-03

North Creek Analytical - Portland

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Brian Cone, Industrial Services Manager

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 6 liquid and 8 soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Resource Conservation and Recovery Act (RCRA) metals analyses (EPA 6000/7000 Series Methods) were performed by North Creek Analytical, Beaverton, Oregon.

The samples were numbered:

03050801	03050805	03050792	03050794	03050798
03050799	03050800	03050808	03050809	03050810
03050811	03050815	03050806	03050807	

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected between July 8 and 11, 2003, and were analyzed by July 27, 2003, therefore meeting QC criteria of less than 6 months between collection and analysis (28 days for mercury).

2. Initial and Continuing Calibration: Satisfactory.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits of 90% to 110% (± 1%) except arsenic in the CCV associated with sample 03050808; the associated sample result was qualified as an estimated quantity (J). All AA recoveries were within QC limits of 80% to 120%.

3. Blanks: Satisfactory.

A preparation blank was analyzed for each 20 samples or per matrix per concentration

level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results except chromium (2.12 mg/kg) and lead (1.51 mg/kg) in the soil method blank; associated sample results were qualified as not detected (U).

4. ICP Interference Check Sample: Acceptable.

Interference Check Sample (ICS) results were within QC limits.

5. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

7. ICP Serial Dilution: Acceptable.

Serial dilution results were within QC limits.

8. Blank Spike/Matrix Spike Analysis: Satisfactory.

Blank spike(BS)/matrix spike (MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits except chromium with a high soil blank spike recovery, chromium with a high soil matrix spike recovery, and cadmium with a low soil matrix spike recovery. Positive sample results for high spike QC outliers were qualified as estimated quantities (J). Positive results and sample quantitation limits for low spike QC outliers were qualified as estimated quantities (J or UJ).

9. Duplicate Analysis: Satisfactory.

All duplicate results were within QC limits except the water mercury sample; associated results were qualified as estimated quantities (J or UJ).

10. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 13:12

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050800 (P3G0412-07) Soil					Sampled: 07/10/03 Received: 07/11/03				
Arsenic	0.932 J	0.676	mg/kg dry	2	EPA 6020	07/15/03	07/17/03	3070512	
Barium	66.3	0.676	"	"	"	"	"	"	
Cadmium	ND	0.676 UJ	"	"	"	"	"	"	
Chromium	8.80	0.676	"	"	"	"	"	"	
Lead	1.66	0.676	"	"	"	"	"	"	
Mercury	ND	0.0472 UJ	"	1	EPA 7471A	07/14/03	07/14/03	3070451	
Selenium	ND	0.676	"	2	EPA 6020	07/15/03	07/17/03	3070512	
Silver	ND	0.676	"	"	"	"	"	"	
03050808 (P3G0412-08) Soil					Sampled: 07/10/03 Received: 07/11/03				
Arsenic	2.07 J	1.00	mg/kg dry	2	EPA 6020	07/15/03	07/17/03	3070512	
Barium	93.1	1.00	"	"	"	"	07/17/03	"	
Cadmium	3.19 J	1.00	"	"	"	"	07/17/03	"	
Chromium	13.3 J	1.00	"	"	"	"	07/17/03	"	
Lead	4.01	1.00	"	"	"	"	07/17/03	"	
Mercury	ND	0.100 UJ	"	1	EPA 7471A	07/14/03	07/14/03	3070451	
Selenium	ND	1.00	"	2	EPA 6020	07/15/03	07/17/03	3070512	
Silver	ND	1.00	"	"	"	"	"	"	
03050809 (P3G0412-09) Soil					Sampled: 07/10/03 Received: 07/11/03				
Arsenic	2.53	0.901	mg/kg dry	2	EPA 6020	07/15/03	07/17/03	3070512	
Barium	85.5	0.901	"	"	"	"	"	"	
Cadmium	ND	0.901 UJ	"	"	"	"	"	"	
Chromium	14.7 J	0.901	"	"	"	"	"	"	
Lead	2.61	0.901	"	"	"	"	"	"	
Mercury	ND	0.0862 UJ	"	1	EPA 7471A	07/14/03	07/14/03	3070451	
Selenium	ND	0.901	"	2	EPA 6020	07/15/03	07/17/03	3070512	
Silver	ND	0.901	"	"	"	"	"	"	

JMW 10-27-03

North Creek Analytical - Portland

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Brian L Cone

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/10/03 13:12

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050794 (P3G0412-04) Soil					Sampled: 07/08/03 Received: 07/11/03				
Arsenic	**2.45**	0.813	mg/kg dry	2	EPA 6020	07/15/03	07/16/03	3070512	
Barium	**84.9**	0.813	"	"	"	"	"	"	
Cadmium	ND	0.813 UJ	"	"	"	"	"	"	
Chromium	**16.0** J	0.813	"	"	"	"	"	"	
Lead	**7.57**	0.813	"	"	"	"	"	"	
Mercury	ND	0.100 U	"	1	EPA 7471A	07/14/03	07/14/03	3070451	
Selenium	ND	0.813	"	2	EPA 6020	07/15/03	07/16/03	3070512	
Silver	ND	0.813	"	"	"	"	"	"	
03050798 (P3G0412-05) Soil					Sampled: 07/10/03 Received: 07/11/03				
Arsenic	**1.78**	1.00	mg/kg dry	2	EPA 6020	07/15/03	07/17/03	3070512	
Barium	**72.9**	1.00	"	"	"	"	"	"	
Cadmium	ND	1.00 UJ	"	"	"	"	"	"	
Chromium	**13.4** J	1.00	"	"	"	"	"	"	
Lead	**4.19** U	1.00	"	"	"	"	"	"	
Mercury	ND	0.100 U	"	1	EPA 7471A	07/14/03	07/14/03	3070451	
Selenium	ND	1.00	"	2	EPA 6020	07/15/03	07/17/03	3070512	
Silver	ND	1.00	"	"	"	"	"	"	
03050799 (P3G0412-06) Soil					Sampled: 07/10/03 Received: 07/11/03				
Arsenic	**1.99**	1.00	mg/kg dry	2	EPA 6020	07/15/03	07/17/03	3070512	
Barium	**164**	1.00	"	"	"	"	"	"	
Cadmium	ND	1.00 UJ	"	"	"	"	"	"	
Chromium	**13.5** J	1.00	"	"	"	"	"	"	
Lead	**2.45** U	1.00	"	"	"	"	"	"	
Mercury	ND	0.100 U	"	1	EPA 7471A	07/14/03	07/14/03	3070451	
Selenium	ND	1.00	"	2	EPA 6020	07/15/03	07/17/03	3070512	
Silver	ND	1.00	"	"	"	"	"	"	

JMW 10-27-03

North Creek Analytical - Portland

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/10/03 13:12

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3050806 (P3G0412-13) Water					Sampled: 07/10/03 Received: 07/11/03				
Arsenic	ND	0.00100	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	ND	0.00100	"	"	"	"	07/26/03	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Chromium	**0.00441**	0.00100	"	"	"	"	"	"	
Lead	ND	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	EPA 7470A	07/14/03	07/14/03	3070456	
Selenium	ND	0.00100	"	"	EPA 6020	07/19/03	07/26/03	3070697	
Silver	ND	0.00100	"	"	"	"	"	"	
3050807 (P3G0412-14) Water					Sampled: 07/11/03 Received: 07/11/03				
Arsenic	ND	0.00100	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	ND	0.00100	"	"	"	"	07/26/03	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Chromium	**0.00163**	0.00100	"	"	"	"	"	"	
Lead	ND	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	EPA 7470A	07/14/03	07/14/03	3070456	
Selenium	ND	0.00100	"	"	EPA 6020	07/19/03	07/26/03	3070697	
Silver	ND	0.00100	"	"	"	"	"	"	

MW 10-27-03

North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 13:12

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050810 (P3G0412-10) Soil					Sampled: 07/10/03	Received: 07/11/03			
Arsenic	**1.16**	0.735	mg/kg dry	2	EPA 6020	07/15/03	07/17/03	3070512	
Barium	**74.3**	0.735	"	"	"	"	"	"	
Cadmium	ND	0.735 UJ	"	"	"	"	"	"	
Chromium	**10.6**	0.735	"	"	"	"	"	"	
Lead	**2.30**	0.735	"	"	"	"	"	"	
Mercury	ND	0.0714 U	"	1	EPA 7471A	07/14/03	07/14/03	3070451	
Selenium	ND	0.735	"	2	EPA 6020	07/15/03	07/17/03	3070512	
Silver	ND	0.735	"	"	"	"	"	"	
03050811 (P3G0412-11) Water					Sampled: 07/10/03	Received: 07/11/03			
Arsenic	**0.00246**	0.00100	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	**0.0316**	0.00100	"	"	"	"	07/26/03	"	
Cadmium	**0.00490**	0.00100	"	"	"	"	"	"	
Chromium	**0.00335**	0.00100	"	"	"	"	"	"	
Lead	**0.00193**	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 UJ	"	"	EPA 7470A	07/14/03	07/14/03	3070456	
Selenium	ND	0.00100	"	"	EPA 6020	07/19/03	07/26/03	3070697	
Silver	ND	0.00100	"	"	"	"	"	"	
03050815 (P3G0412-12) Water					Sampled: 07/10/03	Received: 07/11/03			
Arsenic	**0.00382**	0.00100	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	**0.0355**	0.00100	"	"	"	"	07/26/03	"	
Cadmium	ND	0.00100 U	"	"	"	"	"	"	
Chromium	**0.00633**	0.00100	"	"	"	"	"	"	
Lead	**0.00258**	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 UJ	"	"	EPA 7470A	07/14/03	07/14/03	3070456	
Selenium	ND	0.00100	"	"	EPA 6020	07/19/03	07/26/03	3070697	
Silver	ND	0.00100	"	"	"	"	"	"	

MW 10-27-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/10/03 13:12

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050801 (P3G0412-01) Water					Sampled: 07/10/03 Received: 07/11/03				
Arsenic	0.00236	0.00100	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	0.0617	0.00100	"	"	"	"	07/26/03	"	
Cadmium	0.00260	0.00100	"	"	"	"	"	"	
Chromium	0.0148	0.00100	"	"	"	"	"	"	
Lead	0.00522	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 UJ	"	"	EPA 7470A	07/14/03	07/14/03	3070456	
Selenium	ND	0.00100	"	"	EPA 6020	07/19/03	07/26/03	3070697	
Silver	ND	0.00100	"	"	"	"	"	"	
03050805 (P3G0412-02) Water					Sampled: 07/10/03 Received: 07/11/03				
Arsenic	0.00571	0.00100	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	0.210	0.00100	"	"	"	"	07/26/03	"	
Cadmium	0.00320	0.00100	"	"	"	"	"	"	
Chromium	0.0352	0.00100	"	"	"	"	"	"	
Lead	0.00820	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 UJ	"	"	EPA 7470A	07/14/03	07/14/03	3070456	
Selenium	ND	0.00100	"	"	EPA 6020	07/19/03	07/26/03	3070697	
Silver	ND	0.00100	"	"	"	"	"	"	
03050792 (P3G0412-03) Soil					Sampled: 07/08/03 Received: 07/11/03				
Arsenic	2.25	0.719	mg/kg dry	2	EPA 6020	07/15/03	07/16/03	3070512	
Barium	98.6	0.719	"	"	"	"	"	"	
Cadmium	34.3 J	0.719	"	"	"	"	"	"	
Chromium	457 J	0.719	"	"	"	"	"	"	
Lead	87.6	0.719	"	"	"	"	"	"	
Mercury	0.154	0.0714	"	1	EPA 7471A	07/14/03	07/14/03	3070451	
Selenium	ND	0.719	"	2	EPA 6020	07/15/03	07/16/03	3070512	
Silver	13.4	0.719	"	"	"	"	"	"	

JMW 10-27-03

North Creek Analytical - Portland

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

Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 13:12

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
03050801	P3G0412-01	Water	07/10/03 10:45	07/11/03 13:45
03050805	P3G0412-02	Water	07/10/03 11:55	07/11/03 13:45
03050792	P3G0412-03	Soil	07/08/03 11:16	07/11/03 13:45
03050794	P3G0412-04	Soil	07/08/03 11:23	07/11/03 13:45
03050798	P3G0412-05	Soil	07/10/03 10:13	07/11/03 13:45
03050799	P3G0412-06	Soil	07/10/03 10:20	07/11/03 13:45
03050800	P3G0412-07	Soil	07/10/03 10:28	07/11/03 13:45
03050808	P3G0412-08	Soil	07/10/03 15:10	07/11/03 13:45
03050809	P3G0412-09	Soil	07/10/03 15:16	07/11/03 13:45
03050810	P3G0412-10	Soil	07/10/03 15:25	07/11/03 13:45
03050811	P3G0412-11	Water	07/10/03 15:45	07/11/03 13:45
03050815	P3G0412-12	Water	07/10/03 17:15	07/11/03 13:45
03050806	P3G0412-13	Water	07/10/03 17:25	07/11/03 13:45
03050807	P3G0412-14	Water	07/11/03 07:45	07/11/03 13:45

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 8 liquid and 6 soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Resource Conservation and Recovery Act (RCRA) metals analyses (EPA 6000/7000 Series Methods) were performed by STL-Seattle, Tacoma Washington.

The samples were numbered:

03050884	03050880	03050881	03050882	03050856
03050857	03050859	03050867	03050871	03050879
03050883	03050887	03050891	03050875	

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected between July 15 and 17, 2003, and were analyzed by July 24, 2003, therefore meeting QC criteria of less than 6 months between collection and analysis (28 days for mercury).

2. Initial and Continuing Calibration: Acceptable.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits of 90% to 110% (± 1%). All AA recoveries were within QC limits of 80% to 120%.

3. Blanks: Satisfactory.

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No

elements were detected in applicable calibration and/or preparation blanks that affected sample results except arsenic, cadmium, silver, and lead; associated sample results were qualified as not detected (U or UJ).

4. ICP Interference Check Sample: Acceptable.

Interference Check Sample (ICS) results were within QC limits.

5. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

7. ICP Serial Dilution: Satisfactory.

Serial dilution results were within QC limits except lead associated with samples 03050856, 03050857, and 03050880 and chromium associated with samples 03050858, 03050864, and 03050865; associated results were qualified as estimated quantities (J or UJ).

8. Blank Spike/Matrix Spike Analysis: Satisfactory.

Blank spike(BS)/matrix spike (MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits except silver with a low spike recovery associated with samples 03050880, 03050881, 03050882, 03050884, 03050856, 03050857, 03050858, 03050864, and 03050865, and mercury with a low recovery associated with samples 03050858, 03050859, 03050863, 03050867, 03050871, 03050875, 03050879, 03050883, 03050887, 03050891, 03050864, and 03050865; associated results were qualified as estimated quantities (J or UJ).

9. Duplicate Analysis: Satisfactory.

All duplicate results were within QC limits except lead associated with samples 03050856, 03050857, and 03050880; associated sample results were qualified as estimated quantities (J or UJ).

10. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050864
Lab ID:	114927-12
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/23/03
Dilution Factor	1
% Solids	88.69

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	2.7 UJ	2.22	0.399	
Barium	103	1.11	0.0444	
Cadmium	ND	1.11 U	0.0222	
Chromium	13.7 J	2.22	0.0222	~~B2~~ UM
Lead	1.97 J	2.22	0.732	J UM
Selenium	ND	11.1 U	2.57	
Silver	ND	2.22 UJ	0.111	

MW
10-28-03

00759

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050864
Lab ID:	114927-12
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	88.69

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.271 J	0.0206	0.00546	~~B2~~ MW

MW
10-B-03

00760

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050884
Lab ID:	114927-01
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/23/03
Dilution Factor	1
% Solids	90.36

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	2.53 UJ	2.17	0.391	
Barium	75.9	1.09	0.0435	
Cadmium	ND	1.09 UJ	0.0217	
Chromium	12.7	2.17	0.0217	
Lead	ND	2.17 UJ	0.717	
Selenium	ND	10.9	2.52	
Silver	ND	2.17 UJ	0.109	

MW
10-28-03

00625

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050884
Lab ID:	114927-01
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	90.36

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.26	0.0197	0.00523	~~B2~~ MW

MW
10-28-03

00626

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050881
Lab ID:	114927-05
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/23/03
Dilution Factor	1
% Solids	79.51

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	1.62 UJ	2.47	0.445	~~J~~ Min
Barium	102	1.24	0.0495	
Cadmium	ND	1.24 U	0.0247	
Chromium	19.1	2.47	0.0247	
Lead	45.3	2.47	0.816	
Selenium	ND	12.4 U	2.87	
Silver	ND	2.47 UJ	0.124	

MW
10-28-03

00627

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050881
Lab ID:	114927-05
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	79.51

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.328	0.0224	0.00594	~~B2~~ mu

MM
10-28-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050882
Lab ID:	114927-06
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/23/03
Dilution Factor	1
% Solids	77.52

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	0.975 UJ	2.46	0.443	~~J/mu~~
Barium	104	1.23	0.0492	
Cadmium	ND	1.23 U	0.0246	
Chromium	10.6	2.46	0.0246	
Lead	ND	2.46 UJ	0.812	
Selenium	ND	12.3	2.86	
Silver	ND	2.46 UJ	0.123	

MW
10-28-03

00629

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050882
Lab ID:	114927-06
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	77.52

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.408	0.0228	0.00604	~~B2~~ MW

MW
10-28-03

00630

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050857
Lab ID:	114927-08
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/23/03
Dilution Factor	1
% Solids	75.34

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	1.45 J	2.62	0.471	J MU
Barium	85.9	1.31	0.0523	
Cadmium	2.59	1.31	0.0262	
Chromium	33.7	2.62	0.0262	
Lead	ND	2.62 UJ	0.863	
Selenium	ND	13.1 U	3.03	
Silver	ND	2.62 UJ	0.131	

MN
10-28-03

00703

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050857
Lab ID:	114927-08
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	75.34

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.298	0.0239	0.00632	~~B2~~

MV
10-28-03

00704

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050856
Lab ID:	114927-07
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/23/03
Dilution Factor	1
% Solids	89.61

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	1.39 J	2.16	0.389	~~J~~
Barium	61.7	1.08	0.0432	
Cadmium	5.7	1.08	0.0216	
Chromium	114	2.16	0.0216	
Lead	4.36 J	2.16	0.713	
Selenium	ND	10.8 U	2.51	
Silver	ND	2.16 UJ	0.108	

MW
10-28-03

00701

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050856
Lab ID:	114927-07
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	89.61

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.67	0.0168	0.00446	~~B2~~ JMW

JMW
10-28-03

00702

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050880
Lab ID:	114927-04
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/23/03
Dilution Factor	1
% Solids	89.64

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	1.89 J	2.17	0.391	dmn
Barium	90.8	1.09	0.0435	
Cadmium	7.31	1.09	0.0217	
Chromium	21.7	2.17	0.0217	
Lead	20.2 J	2.17	0.717	
Selenium	ND	10.9 UJ	2.52	
Silver	ND	2.17 UJ	0.109	

MW
10-28-03

66900

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050880
Lab ID:	114927-04
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	89.64

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.317	0.0215	0.0057	~~B2~~ MW

MW
10-28-03

00700

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050858
Lab ID:	114927-09
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/23/03
Dilution Factor	1
% Solids	74.26

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	2.81 UJ	2.63	0.473	
Barium	106	1.31	0.0526	
Cadmium	ND	1.31 U	0.0263	
Chromium	11.8 J	2.63	0.0263	~~B2~~ MW
Lead	2.14 J	2.63	0.867	~~B~~ MW
Selenium	ND	13.1 U	3.05	
Silver	ND	2.63 UJ	0.131	

MW
10-28-03

00757

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050858
Lab ID:	114927-09
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	74.26

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.293 J	0.022	0.00583	~~B~~

MW
10-28-03

00758

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050865
Lab ID:	114927-13
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/23/03
Dilution Factor	1
% Solids	81.54

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	2.39 U	2.38	0.428	
Barium	121	1.19	0.0476	
Cadmium	ND	1.19 U	0.0238	
Chromium	13.2 J	2.38	0.0238	~~B2~~ m u
Lead	2 J	2.38	0.785	~~J~~ m u
Selenium	ND	11.9 U	2.76	
Silver	ND	2.38 U J	0.119	

MW
10-20-03

00761

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050865
Lab ID:	114927-13
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	81.54

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.289 J	0.0177	0.00468	~~B2~~ MU

MW
10-28-03

00762

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050866
Lab ID:	114927-14
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/23/03
Dilution Factor	1
% Solids	75.38

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	2.27 ~~U~~	2.63	0.473	~~J~~ JMW
Barium	89.8	1.31	0.0525	
Cadmium	ND	1.31 U	0.0263	
Chromium	12.5	2.63	0.0263	~~B2~~ JMW
Lead	1.21 ~~J~~	2.63	0.867	~~J~~ JMW
Selenium	ND	13.1 U	3.05	
Silver	ND	2.63 U	0.131	

JMW
10-28-03

00763

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050866
Lab ID:	114927-14
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	75.38

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.275	0.0212	0.00563	~~B2~~ MW

MW
10-28-03

00764

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050867
Lab ID:	114927-15
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	MDL	Flags
Arsenic	0.00939	0.01	0.0018	~~JB~~
Barium	0.0227	0.005	0.0002	
Cadmium	ND	0.005	0.0001	
Chromium	0.00339	0.01	0.0001	
Lead	ND	0.01	0.0033	
Selenium	ND	0.05	0.0116	
Silver	0.00127	0.01	0.0005	~~JB~~

MW
10-28-03

00822

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050867
Lab ID:	114927-15
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/23/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MDL	Flags
Mercury	0.00349 J	0.0002	0.000053	

MW
10-28-03

00823

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050875
Lab ID:	114927-21
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	MDL	Flags
Arsenic	0.0201	0.01	0.0018	~~B1~~ Mn
Barium	0.359	0.005	0.0002	
Cadmium	ND	0.005 U	0.0001	
Chromium	0.069	0.01	0.0001	
Lead	0.0137	0.01	0.0033	
Selenium	ND	0.05 U	0.0116	
Silver	ND	0.01 U	0.0005	

MW
10-28-03

00834

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050875
Lab ID:	114927-21
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/23/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MDL	Flags
Mercury	0.00381 J	0.0002	0.000053	

MW
10-28-03

00835

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050891
Lab ID:	114927-20
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	MDL	Flags
Arsenic	0.00896 J	0.01	0.0018	~~J B1~~ MU
Barium	0.155	0.005	0.0002	
Cadmium	ND	0.005 U	0.0001	
Chromium	0.0257	0.01	0.0001	
Lead	0.00492 J	0.01	0.0033	JMU
Selenium	ND	0.05 U	0.0116	
Silver	0.000652 J	0.01	0.0005	~~J B1~~ MU

MW
10-28-03

00832

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050891
Lab ID:	114927-20
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/23/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MDL	Flags
Mercury	0.00411 J	0.0002	0.000053	

MW
10-28-03

00833

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050887
Lab ID:	114927-19
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	MDL	Flags
Arsenic	0.00808 J	0.01	0.0018	~~J-B1~~ MK
Barium	0.0888	0.005	0.0002	
Cadmium	ND	0.005 U	0.0001	
Chromium	0.0193	0.01	0.0001	
Lead	0.00516 J	0.01	0.0033	JMK
Selenium	ND	0.05 U	0.0116	
Silver	0.00167 J	0.01	0.0005	~~J-B1~~ MK

JMW
10-28-03

00830

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050887
Lab ID:	114927-19
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/23/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MDL	Flags
Mercury	0.00337 J	0.0002	0.000053	

MW
10-28-03

00831

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050883
Lab ID:	114927-18
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	MDL	Flags
Arsenic	0.0104 U	0.01	0.0018	~~B1mh~~
Barium	0.149	0.005	0.0002	
Cadmium	ND	0.005 U	0.0001	
Chromium	0.0273	0.01	0.0001	
Lead	0.0115	0.01	0.0033	
Selenium	ND	0.05 U	0.0116	
Silver	0.00131 J	0.01	0.0005	~~dB1mv~~

MW
10-28-03

00828

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050883
Lab ID:	114927-18
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/23/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MDL	Flags
Mercury	0.00343 J	0.0002	0.000053	

MW
10-28-03

00829

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050879
Lab ID:	114927-17
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	MDL	Flags
Arsenic	0.0221	0.01	0.0018	~~B1~~
Barium	0.364	0.005	0.0002	
Cadmium	0.000286 U	0.005	0.0001	
Chromium	0.0788	0.01	0.0001	
Lead	0.0366	0.01	0.0033	
Selenium	ND	0.05 U	0.0116	
Silver	ND	0.01 U	0.0005	

MW
10-28-03

00826

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050879
Lab ID:	114927-17
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/23/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MDL	Flags
Mercury	0.00438 J	0.0002	0.000053	

JMW
10-28-03

00827

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050871
Lab ID:	114927-16
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	MDL	Flags
Arsenic	0.00702 J	0.01	0.0018	~~LB1~~
Barium	0.0328	0.005	0.0002	
Cadmium	ND	0.005 U	0.0001	
Chromium	0.00413 J	0.01	0.0001	
Lead	ND	0.01 U	0.0033	
Selenium	ND	0.05 U	0.0116	
Silver	0.0017 J	0.01	0.0005	~~LB1~~

MW
10-28-03

00824

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050871
Lab ID:	114927-16
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/23/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MDL	Flags
Mercury	0.00366 J	0.0002	0.000053	

MW
10-28-03

00825

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050863
Lab ID:	114927-11
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	MDL	Flags
Arsenic	0.0193 U	0.01	0.0018	~~B1~~ MW
Barium	0.0889	0.005	0.0002	
Cadmium	0.0023 J	0.005	0.0001	~~J~~ MW
Chromium	0.0142	0.01	0.0001	
Lead	ND	0.01 U	0.0033	
Selenium	ND	0.05 U	0.0116	
Silver	0.00233 J	0.01	0.0005	~~J B1~~ MW

MW
10-28-03

00820

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050863
Lab ID:	114927-11
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/23/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MDL	Flags
Mercury	0.00396 J	0.0002	0.000053	

JMW
10-28-03

00821

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050859
Lab ID:	114927-10
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	MDL	Flags
Arsenic	0.0181	0.01	0.0018	~~B1~~ MW
Barium	0.061	0.005	0.0002	
Cadmium	0.000222 ~~U~~ J	0.005	0.0001	~~J~~ MW
Chromium	0.0181	0.01	0.0001	
Lead	0.00633 J	0.01	0.0033	~~J~~ MW
Selenium	ND	0.05 U	0.0116	
Silver	ND	0.01 U	0.0005	

MW
10-28-03

00818

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050859
Lab ID:	114927-10
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/23/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MDL	Flags
Mercury	0.00417 J	0.0002	0.000053	

MW
10-28-03

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 1 liquid sample collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Total Petroleum Hydrocarbons (TPH - EPA Method 1664) and Total Sulfide (EPA Method 376.2) was performed by STL-Seattle, Tacoma, Washington.

The sample was numbered: 03050897

Data Qualifications:

The sample was maintained within the QC limits of 4°C ± 2°C. The sample was collected on July 17, 2003.

TPH
The sample was analyzed on July 22, 2003. There were no detections in the method blank. The blank spike and blank spike duplicate results were within QC limits.

Total Sulfides
The sample was analyzed on July 21, 2003. There were no detections in the method blank. The blank spike and blank spike duplicate results were within QC limits. The initial calibration correlation coefficient was 0.995.

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004) and the analytical methods. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Project Name	Columbia American Plating
Date Received	07-18-03

General Chemistry Parameters

Client Sample ID			03050897		
Lab ID			114946-01		
Parameter	**Method**	**Date Analyzed**	**Units**	**Result**	**PQL**
Sulfide	EPA 376.2	07-21-03	mg/L	ND	0.005
TPH (SGT-HEM)	EPA 1664	07-22-03	mg/L	ND	5

JMW 10-20-03

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 1 liquid sample collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Semivolatile Organic Compounds (EPA SW-846 Method 625) was performed by STL-Seattle, Tacoma, Washington.

The sample was numbered: 03050897

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The sample was maintained within the QC limits of 4°C ± 2°C. The sample was collected on July 17, 2003, and was extracted and analyzed on July 21, 2003, therefore meeting holding time criteria of less than 7 days between collection and extraction and less than 40 days between extraction and analysis.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Acceptable.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limit of 30%.

4. **Continuing Calibration: Acceptable.**

All RRFs were greater than the QC limit of 0.050. All applicable % differences were less than the QC limits of 25%.

5. **Blanks: Acceptable.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any blank.

6. **Surrogates: Acceptable.**

All surrogate recoveries were within QC limits.

7. **Blank Spike Analysis: Acceptable.**

All spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits.

8. **Duplicate Analysis: Acceptable.**

Blank spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All spike duplicate results were within QC limits.

9. **Internal Standards: Acceptable.**

All internal standards (IS) were within ± 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

10. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

12. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050897
Lab ID:	114946-01
Date Received:	7/18/2003
Date Prepared:	7/21/2003
Date Analyzed:	7/21/2003
% Solids	-
Dilution Factor	0.5

Semivolatile Organics by USEPA Method 625

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	26.1		10	112
Phenol - d5	30.2		10	85
Nitrobenzene - d5	93.6		41	155
2 - Fluorobiphenyl	79.1		34	148
2,4,6 - Tribromophenol	69.2		29	159
p - Terphenyl - d14	112		33	172

Analyte	Result (ug/L)	PQL	MRL	Flags
Nitrobenzene	ND	0.975	0.487	
2,4-Dinitrotoluene	ND	0.975	0.487	
Pentachlorophenol	ND	3.17	1.58	

MW
10-20-03

00007

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 1 liquid sample collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Volatile Organic Compounds (EPA SW-846 Method 624) was performed by STL-Seattle, Tacoma, Washington.

The sample was numbered: 03050897

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The sample was maintained within the QC limits of 4°C ± 2°C. The sample was collected on July 17, 2003, and was analyzed on July 21, 2003, therefore meeting QC criteria of less than 14 days between collection and analysis for preserved liquid samples.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Acceptable.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limits of 30%.

4. **Continuing Calibration: Acceptable.**

All RRFs were greater than the QC limit of 0.050. All % differences were less than the QC limit of 25%.

4. **Blanks: Acceptable.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

5. **Surrogates: Acceptable.**

All surrogate recoveries were within QC limits except outliers in method blanks.

6. **Blank Spike Analysis: Acceptable.**

Blank spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits.

7. **Duplicate Analysis: Not Analyzed.**

A laboratory duplicate analysis was not performed.

8. **Internal Standards: Acceptable.**

All internal standards were within ± 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50% to 200% of the continuing calibration area counts.

9. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

10. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

11. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050897
Lab ID:	114946-01
Date Received:	7/18/2003
Date Prepared:	7/21/2003
Date Analyzed:	7/21/2003
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 624

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	98.5		88	111
Fluorobenzene	99.8		92	107
Toluene-D8	101		92	107
Ethylbenzene-d10	109		87	109
Bromofluorobenzene	105		85	110
Trifluorotoluene	99.4		89	122

Analyte	Result (ug/L)	PQL	MRL	Flags
Acrylonitrile	ND	5 U	2.5	
1,1-Dichloroethane	ND	1	0.5	
Chloroform	ND	1	0.5	
Trichloroethene	ND	1	0.5	
Chlorobenzene	ND	1	0.5	

MN
10-2003

000006

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 3 water and 5 soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Resource Conservation and Recovery Act (RCRA) metals analyses (EPA 6000/7000 Series Methods) and toxicity characteristic leaching procedure (TCLP) metals analyses (EPA Method 1311 and 6000/7000 series methods) were performed by North Creek Analytical, Beaverton, Oregon.

The samples were numbered:

03050716	03050717	03050718	03050719	03050720
03050721	03050722	03050723		

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were received at 20.5°C, exceeding the QC limits of 4°C ± 2°C; no action was taken for the metals analyses. The samples were collected between June 16 or 20, 2003, and were analyzed between June 24 and August 11, 2003, therefore meeting QC criteria of less than 6 months between collection and analysis (28 days for mercury).

2. Initial and Continuing Calibration: Acceptable.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits of 90% to 110% (± 1%). All AA recoveries were within QC limits of 80% to 120%.

3. Blanks: Acceptable.

A preparation blank was analyzed for each 20 samples or per matrix per concentration

level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results.

4. ICP Interference Check Sample: Acceptable.

Interference Check Sample (ICS) results were within QC limits.

5. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

7. ICP Serial Dilution: Not Performed.

Serial dilution analyses were not performed.

8. Blank Spike/Matrix Spike Analysis: Satisfactory.

Blank spike(BS)/matrix spike (MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits except arsenic (low), barium (high), cadmium (low), chromium (low), lead (low), and selenium (low) in the soil spike sample. Associated results were qualified as estimated quantities (J or UJ) for the low recovery outliers and positive results were qualified as estimated quantities (J) for the high recovery outlier.

9. Duplicate Analysis: Satisfactory.

All duplicate results were within QC limits except mercury associated with the water samples; associated sample results were qualified as estimated quantities (J or UJ).

10. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 16:00

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03 05 0716 (P3F0709-01) Water					Sampled: 06/16/03 Received: 06/20/03				
Arsenic	2.09	0.200	mg/l	20	EPA 6020	06/30/03	07/18/03	3061154	R-03
Barium	0.592	0.200	"	"	"	"	07/08/03	"	R-03
Cadmium	23.8	0.200	"	"	"	"	"	"	R-03
Chromium	9.77	0.200	"	"	"	"	07/10/03	"	R-03
Lead	4.25	0.200	"	"	"	"	07/08/03	"	R-03
Mercury	ND	0.00800 UJ	"	1	EPA 7470A	06/24/03	06/24/03	3060921	R-03
Selenium	ND	0.200 U	"	20	EPA 6020	06/30/03	07/18/03	3061154	R-03
Silver	2.08	0.200	"	"	"	"	07/08/03	"	R-03
03 05 0717 (P3F0709-02) Water					Sampled: 06/16/03 Received: 06/20/03				
Arsenic	ND	0.200	mg/l	20	EPA 6020	06/30/03	07/10/03	3061154	R-03
Barium	ND	0.200	"	"	"	"	"	"	R-03
Cadmium	0.628	0.200	"	"	"	"	"	"	R-03
Chromium	11.8	0.200	"	"	"	"	"	"	R-03
Lead	0.710	0.200	"	"	"	"	"	"	R-03
Mercury	ND	0.000200 UJ	"	1	EPA 7470A	06/24/03	06/24/03	3060921	
Selenium	ND	0.200 U	"	20	EPA 6020	06/30/03	07/18/03	3061154	R-03
Silver	0.202	0.200	"	"	"	"	07/10/03	"	R-03
03 05 0718 (P3F0709-03) Water					Sampled: 06/16/03 Received: 06/20/03				
Arsenic	ND	0.200 U	mg/l	20	EPA 6020	06/30/03	07/18/03	3061154	R-03
Barium	2.05	0.200	"	"	"	"	07/09/03	"	R-03
Cadmium	30.4	0.200	"	"	"	"	"	"	R-03
Chromium	66.8	0.200	"	"	"	"	07/16/03	"	R-03
Lead	17.7	0.200	"	"	"	"	07/09/03	"	R-03
Mercury	0.00586 J	0.000800	"	1	EPA 7470A	06/24/03	06/24/03	3060921	R-03
Selenium	ND	0.200 U	"	20	EPA 6020	06/30/03	07/18/03	3061154	R-03
Silver	2.25	0.200	"	"	"	"	07/09/03	"	R-03

MW 10-30-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 10/10/03 16:00

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03 05 0719 (P3F0709-04) Soil					Sampled: 06/20/03 Received: 06/20/03				
Arsenic	ND	3.20 UJ	mg/kg dry	2	EPA 6020	06/23/03	08/11/03	3060865	
Barium	75.8 J	3.20	"	"	"	"	07/31/03	"	
Cadmium	1650 J	18.0	"	11.2	"	"	07/31/03	"	
Chromium	1290 J	3.20	"	2	"	"	07/31/03	"	
Lead	500 J	3.20	"	"	"	"	08/11/03	"	
Mercury	0.352	0.170	"	1	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	ND	3.20 UJ	"	2	EPA 6020	06/23/03	08/11/03	3060865	
Silver	65.6	3.20	"	"	"	"	07/31/03	"	
03 05 0720 (P3F0709-05) Soil					Sampled: 06/20/03 Received: 06/20/03				
Arsenic	ND	16.7 UJ	mg/kg dry	2	EPA 6020	06/23/03	07/31/03	3060865	
Barium	499 J	16.7	"	"	"	"	"	"	
Cadmium	50300 J	167	"	20	"	"	07/31/03	"	
Chromium	8100 J	16.7	"	2	"	"	07/31/03	"	
Lead	5260 J	16.7	"	"	"	"	"	"	
Mercury	ND	0.615 U	"	1	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	ND	16.7 UJ	"	2	EPA 6020	06/23/03	07/31/03	3060865	
Silver	487	16.7	"	"	"	"	"	"	
03 05 0721 (P3F0709-06) Soil					Sampled: 06/20/03 Received: 06/20/03				
Arsenic	11.0 J	9.61	mg/kg dry	2	EPA 6020	06/23/03	07/31/03	3060865	
Barium	141 J	9.61	"	"	"	"	"	"	
Cadmium	1380 J	9.61	"	"	"	"	"	"	
Chromium	3660 J	9.61	"	"	"	"	"	"	
Lead	727 J	9.61	"	"	"	"	"	"	
Mercury	0.395	0.202	"	1	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	ND	9.61 UJ	"	2	EPA 6020	06/23/03	07/31/03	3060865	
Silver	130	9.61	"	"	"	"	"	"	

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 16:00

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03 05 0722 (P3F0709-07) Soil					Sampled: 06/20/03 Received: 06/20/03				
Arsenic	ND	15.9 UJ	mg/kg dry	2	EPA 6020	06/23/03	07/31/03	3060865	
Barium	9470 J	15.9	"	"	"	"	"	"	
Cadmium	79.7 J	15.9	"	"	"	"	"	"	
Chromium	20200 J	90.1	"	11.4	"	"	07/31/03	"	
Lead	18800 J	90.1	"	"	"	"	"	"	
Mercury	3.43	0.678	"	1	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	ND	15.9 UJ	"	2	EPA 6020	06/23/03	07/31/03	3060865	
Silver	449	15.9	"	"	"	"	"	"	
03 05 0723 (P3F0709-08) Soil					Sampled: 06/20/03 Received: 06/20/03				
Arsenic	20.1 J	1.54	mg/kg dry	2	EPA 6020	06/23/03	07/31/03	3060865	
Barium	135 J	1.54	"	"	"	"	"	"	
Cadmium	3190 J	8.75	"	11.4	"	"	07/31/03	"	
Chromium	2150 J	1.54	"	2	"	"	07/31/03	"	
Lead	451 J	1.54	"	"	"	"	"	"	
Mercury	1.19	0.0481	"	1	EPA 7471A	06/25/03	06/25/03	3060968	
Selenium	ND	1.54 UJ	"	2	EPA 6020	06/23/03	07/31/03	3060865	
Silver	76.2	1.54	"	"	"	"	"	"	

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North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 16:00

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03 05 0716 (P3F0709-01) Water					Sampled: 06/16/03 Received: 06/20/03				
Arsenic	**2.01**	0.500	mg/l	0.5	1311/6020	06/30/03	07/08/03	3070077	
Barium	**2.69**	0.500	"	"	"	"	07/04/03	"	
Cadmium	**7.22**	0.500	"	"	"	"	"	"	
Chromium	**6.95**	0.500	"	"	"	"	"	"	
Lead	**2.32**	0.500	"	"	"	"	07/08/03	"	
Mercury	ND	0.00160 U	"	1	1311/7470A	07/02/03	07/02/03	3070086	
Selenium	ND	0.500 U	"	0.5	1311/6020	06/30/03	07/04/03	3070077	
Silver	**30.3**	3.01	"	3.01	"	"	07/04/03	"	
03 05 0717 (P3F0709-02) Water					Sampled: 06/16/03 Received: 06/20/03				
Arsenic	ND	0.100 U	mg/l	0.5	1311/6020	06/30/03	07/09/03	3070078	
Barium	**0.219**	0.100	"	"	"	"	07/04/03	"	
Cadmium	**0.589**	0.100	"	"	"	"	"	"	
Chromium	**10.9**	0.100	"	"	"	"	"	"	
Lead	**0.652**	0.100	"	"	"	"	"	"	
Mercury	ND	0.00160 U	"	1	1311/7470A	07/02/03	07/02/03	3070087	R-04
Selenium	ND	0.100 U	"	0.5	1311/6020	06/30/03	07/04/03	3070078	
Silver	ND	0.100 U	"	"	"	"	"	"	
03 05 0718 (P3F0709-03) Water					Sampled: 06/16/03 Received: 06/20/03				
Arsenic	ND	1.00 U	mg/l	1	1311/6020	06/30/03	07/08/03	3070077	
Barium	**0.796**	0.500	"	0.5	"	"	07/04/03	"	
Cadmium	ND	0.500 U	"	"	"	"	"	"	
Chromium	**7.78**	0.500	"	"	"	"	"	"	
Lead	ND	1.00 U	"	1	"	"	07/08/03	"	
Mercury	**0.00166**	0.00160	"	"	1311/7470A	07/02/03	07/02/03	3070086	
Selenium	ND	0.500 U	"	0.5	1311/6020	06/30/03	07/04/03	3070077	
Silver	**1.05**	0.500	"	"	"	"	"	"	

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North Creek Analytical - Portland

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 16:00

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03 05 0719 (P3F0709-04) Soil					Sampled: 06/20/03 Received: 06/20/03				
Arsenic	ND	0.200	mg/l	1	1311/6020	06/25/03	06/27/03	3061053	
Barium	**0.565**	0.200	"	"	"	"	06/27/03	"	
Cadmium	**0.662**	0.200	"	"	"	"	"	"	
Chromium	ND	0.200	"	"	"	"	06/27/03	"	
Lead	ND	0.200	"	"	"	"	"	"	
Mercury	ND	0.00800	"	"	1311/7470A	06/26/03	06/26/03	3061049	R-03
Selenium	ND	0.200	"	"	1311/6020	06/25/03	06/27/03	3061053	
Silver	ND	0.200	"	"	"	"	06/27/03	"	
03 05 0720 (P3F0709-05) Soil					Sampled: 06/20/03 Received: 06/20/03				
Arsenic	ND	0.200	mg/l	1	1311/6020	06/25/03	07/01/03	3061053	
Barium	**0.836**	0.200	"	"	"	"	"	"	
Cadmium	**104**	1.00	"	5	"	"	06/28/03	"	
Chromium	**0.344**	0.200	"	1	"	"	07/01/03	"	
Lead	ND	0.200	"	"	"	"	"	"	
Mercury	**0.00113**	0.000200	"	"	1311/7470A	06/26/03	06/26/03	3061049	
Selenium	ND	0.200	"	"	1311/6020	06/25/03	07/01/03	3061053	
Silver	**0.596**	0.200	"	"	"	"	"	"	
03 05 0721 (P3F0709-06) Soil					Sampled: 06/20/03 Received: 06/20/03				
Arsenic	ND	0.200	mg/l	1	1311/6020	06/25/03	07/01/03	3061053	
Barium	**0.934**	0.200	"	"	"	"	06/30/03	"	
Cadmium	**9.08**	0.200	"	"	"	"	"	"	
Chromium	ND	0.200	"	"	"	"	"	"	
Lead	ND	0.200	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	1311/7470A	06/26/03	06/26/03	3061049	
Selenium	ND	0.200	"	"	1311/6020	06/25/03	06/30/03	3061053	
Silver	ND	0.200	"	"	"	"	"	"	

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 16:00

TCLP Metals per EPA 1311/6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03 05 0722 (P3F0709-07) Soil					Sampled: 06/20/03 Received: 06/20/03				
Arsenic	ND	0.200 U	mg/l	1	1311/6020	06/25/03	07/01/03	3061053	
Barium	**0.550**	0.200	"	"	"	"	06/30/03	"	
Cadmium	ND	0.200 U	"	"	"	"	"	"	
Chromium	**5.37**	0.200	"	"	"	"	"	"	
Lead	**8.38**	0.200	"	"	"	"	"	"	
Mercury	**0.000404**	0.000200	"	"	1311/7470A	06/26/03	06/26/03	3061049	
Selenium	ND	0.200 U	"	"	1311/6020	06/25/03	06/30/03	3061053	
Silver	ND	0.200 U	"	"	"	"	"	"	
03 05 0723 (P3F0709-08) Soil					Sampled: 06/20/03 Received: 06/20/03				
Arsenic	ND	0.200 U	mg/l	1	1311/6020	06/25/03	07/01/03	3061053	
Barium	**0.621**	0.200	"	"	"	"	06/30/03	"	
Cadmium	**38.3**	1.00	"	5	"	"	06/27/03	"	
Chromium	**0.245**	0.200	"	1	"	"	06/30/03	"	
Lead	ND	0.200 U	"	"	"	"	"	"	
Mercury	**0.00102**	0.000200	"	"	1311/7470A	06/26/03	06/26/03	3061049	
Selenium	ND	0.200 U	"	"	1311/6020	06/25/03	06/30/03	3061053	
Silver	ND	0.200 U	"	"	"	"	"	"	

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 3 water and 5 soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. PH (EPA Methods 150.1/9040) and cyanide analyses (EPA Methods 335.4/9010) were performed by North Creek Analytical, Inc., Beaverton, Oregon, or Bothell, Washington.

The samples were numbered:

03050716	03050717	03050718	03050719	03050720
03050721	03050722	03050723		

Data Qualifications:

pH

The samples were collected on June 16 (water) or 20 (soil), 2003. The samples were received at 20.5°C, exceeding the QC limits of 4°C ± 2°C; all pH results were qualified as estimated quantities (J). The samples were analyzed on June 23 (water) or June 24 (soil), 2003, therefore exceeding the water QC holding time limits; all results were previously qualified as estimated quantities. The pH 4, 7, and 10 initial calibration efficiency was 99%. The continuing calibration standard check result was within 1% of the true value. The duplicate results were within QC limits.

Cyanide

1. **Sample Holding Times: Satisfactory.**

The samples were received at 20.5°C, exceeding the QC limits of 4°C ± 2°C; no action was taken for the cyanide analyses. The samples were collected on June 18 or 20, 2003, and were analyzed on June 24, 2003 (water) or July 5, 2003 (soil), therefore meeting QC criteria of less than 14 days between collection and analysis for water samples but exceeding the QC criteria for soil samples; all soil results were qualified as estimated quantities (J or UJ).

2. **Initial and Continuing Calibration: Acceptable.**

No reported results were greater than 110% of the highest calibration standard. The initial calibration correlation coefficients were greater than 0.995. All recoveries were within QC limits of 85% to 115%.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. Cyanide was not detected in applicable calibration and/or preparation blanks.

4. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

6. **Matrix Spike Analysis: Acceptable.**

Matrix spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All results were within QC limits.

7. **Duplicate Analysis: Acceptable.**

All spike duplicate results were within QC limits.

8. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/10/03 16:00

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03 05 0716 (P3F0709-01) Water					Sampled: 06/16/03 Received: 06/20/03				
Cyanide (total)	7060	250	mg/l	50000	EPA 335.4	06/24/03	06/25/03	3060919	
pH	12.4 J		pH Units	1	150.1/9040A	06/23/03	06/23/03	3060859	I-05
03 05 0717 (P3F0709-02) Water					Sampled: 06/16/03 Received: 06/20/03				
Cyanide (total)	0.0183	0.00500	mg/l	1	EPA 335.4	06/24/03	06/25/03	3060919	
pH	1.58 J		pH Units	"	150.1/9040A	06/23/03	06/23/03	3060859	I-05
03 05 0718 (P3F0709-03) Water					Sampled: 06/16/03 Received: 06/20/03				
Cyanide (total)	ND	0.00500 U	mg/l	1	EPA 335.4	06/24/03	06/25/03	3060919	
pH	9.95 J		pH Units	"	150.1/9040A	06/23/03	06/23/03	3060859	I-05
03 05 0719 (P3F0709-04) Soil					Sampled: 06/20/03 Received: 06/20/03				
pH	8.40 J		pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	
03 05 0720 (P3F0709-05) Soil					Sampled: 06/20/03 Received: 06/20/03				
pH	8.50 J		pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	
03 05 0721 (P3F0709-06) Soil					Sampled: 06/20/03 Received: 06/20/03				
pH	9.04 J		pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	
03 05 0722 (P3F0709-07) Soil					Sampled: 06/20/03 Received: 06/20/03				
pH	4.04 J		pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	
03 05 0723 (P3F0709-08) Soil					Sampled: 06/20/03 Received: 06/20/03				
pH	7.79 J		pH Units	1	150.1/9040A	06/24/03	06/24/03	3060915	

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Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03 05 0719 (P3F0709-04) Soil					Sampled: 06/20/03 Received: 06/20/03				
Cyanide (total)	321 J	16.0	mg/kg dry	10	EPA 9010B	07/05/03	07/05/03	3G07012	I-02
03 05 0720 (P3F0709-05) Soil					Sampled: 06/20/03 Received: 06/20/03				
Cyanide (total)	3630 J	467	mg/kg dry	100	EPA 9010B	07/05/03	07/05/03	3G07012	I-02
03 05 0721 (P3F0709-06) Soil					Sampled: 06/20/03 Received: 06/20/03				
Cyanide (total)	385 J	23.0	mg/kg dry	10	EPA 9010B	07/05/03	07/05/03	3G07012	I-02
03 05 0722 (P3F0709-07) Soil					Sampled: 06/20/03 Received: 06/20/03				
Cyanide (total)	6670 J	420	mg/kg dry	100	EPA 9010B	07/05/03	07/05/03	3G07012	I-02
03 05 0723 (P3F0709-08) Soil					Sampled: 06/20/03 Received: 06/20/03				
Cyanide (total)	1300 J	34.5	mg/kg dry	100	EPA 9010B	07/05/03	07/05/03	3G07012	I-02

MW
10-30-03

North Creek Analytical - Portland

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

Brian L Cone

Brian Cone, Industrial Services Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 2 liquid samples collected from the Columbia American Plating site located in Portland, Oregon, has been completed. Analysis for Chlorinated Pesticides (Pesticides)/ Polychlorinated Biphenyls (PCBs) (EPA SW-846 Methods 8081/8082) was performed by STL-Seattle, Tacoma, Washington.

The samples were numbered: 03070910 03070911

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected on August 13, 2003, extracted on August 18, 2003, and were analyzed by August 22, 2003, therefore meeting QC criteria of less than 7 days between collection and water sample extraction and less than 40 days between extraction and analysis.

2. **Instrument Performance: Acceptable.**

The surrogate retention time percent difference between the initial calibration standards and the remaining standards and samples was ≤ 0.3% for capillary column analyses.

3. **Initial and Continuing Calibration: Acceptable.**

All initial calibration relative standard deviations (RSDs) were less than 15%. All continuing calibration % differences (% D) were less than 15% and were within QC limits.

4. **Error Determination: Not Provided.**

Samples necessary for bias and precision determination were not provided to the laboratory. All samples were flagged RND (Recovery Not Determined) and PND (Precision Not Determined), although the flags are not found on the Form I's.

5. **Blanks: Acceptable.**

A method blank was prepared at the required frequency of every time samples were extracted for each matrix and for each concentration level, or every 20 samples, whichever is greater, and for each analytical system. No target analytes were detected in any blanks.

6. **Performance Evaluation Samples: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

7. **System Monitoring Compounds (SMCs): Acceptable.**

All recoveries of the SMCs were within the established control limits.

8. **Spikes: Acceptable.**

Recoveries of all spiked analytes were within the appropriate control limits.

9. **Duplicates: Acceptable.**

Relative Percent Differences of all spiked analytes were within the required control limits.

10. **Compound Identification: Acceptable.**

All identification criteria were met.

11. **Target Compound Quantitation and Quantitation Limits: Acceptable.**

Sample results and quantitation limits were correctly calculated.

12. **Laboratory Contact**

No laboratory contact was required.

13. **Overall Assessment**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (EPA 540/R-99/008). Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03-07-0910 3000 GAL TANK
Lab ID:	115509-01
Date Received:	8/14/2003
Date Prepared:	8/18/2003
Date Analyzed:	8/22/2003
% Solids	-
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 608

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Tetrachloro-m-xylene	88.8		52	130
Decachlorobiphenyl	90.9		54	146

Analyte		Result (ug/L)	PQL	MRL	Flags
Aldrin	ND		0.00961	0.0048	
alpha-BHC	ND		0.00961	0.0048	
beta-BHC	ND		0.0192	0.00961	
delta-BHC	ND		0.00961	0.0048	
gamma-BHC (Lindane)		0.00841 J	0.00961	0.0048	~~J02~~ MW
Chlordane (technical)	ND		0.0961	0.048	
4,4'-DDD	ND		0.0192	0.00961	
4,4'-DDE	ND		0.0192	0.00961	
4,4'-DDT	ND		0.0192	0.00961	
Dieldrin	ND		0.0192	0.00961	
Endosulfan I	ND		0.00961	0.0048	
Endosulfan II	ND		0.0192	0.00961	
Endosulfan sulfate	ND		0.0192	0.00961	
Endrin	ND		0.0192	0.00961	
Endrin aldehyde	ND		0.0192	0.00961	
Heptachlor	ND		0.00961	0.0048	
Heptachlor epoxide	ND		0.00961	0.0048	
Toxaphene	ND		0.961	0.48	
alpha-Chlordane	ND		0.00961	0.0048	
gamma-Chlordane	ND		0.00961	0.0048	

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10-20-03

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STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03-07-0911/20,000 GAL TANK
Lab ID:	115509-02
Date Received:	8/14/2003
Date Prepared:	8/18/2003
Date Analyzed:	8/22/2003
% Solids	-
Dilution Factor	1

Organochlorine Pesticides by USEPA Method 608

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Tetrachloro-m-xylene	88.5		52	130
Decachlorobiphenyl	86		54	146

Analyte	Result (ug/L)	PQL	MRL	Flags
Aldrin	ND	0.00959	0.00479	
alpha-BHC	ND	0.00959	0.00479	
beta-BHC	ND	0.0192	0.00959	
delta-BHC	ND	0.00959	0.00479	
gamma-BHC (Lindane)	ND	0.00959	0.00479	
Chlordane (technical)	ND	0.0959	0.0479	
4,4'-DDD	ND	0.0192	0.00959	
4,4'-DDE	ND	0.0192	0.00959	
4,4'-DDT	ND	0.0192	0.00959	
Dieldrin	ND	0.0192	0.00959	
Endosulfan I	ND	0.00959	0.00479	
Endosulfan II	ND	0.0192	0.00959	
Endosulfan sulfate	ND	0.0192	0.00959	
Endrin	ND	0.0192	0.00959	
Endrin aldehyde	ND	0.0192	0.00959	
Heptachlor	ND	0.00959	0.00479	
Heptachlor epoxide	ND	0.00959	0.00479	
Toxaphene	ND	0.959	0.479	
alpha-Chlordane	ND	0.00959	0.00479	
gamma-Chlordane	ND	0.00959	0.00479	

MW 12-20-03

00025

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03-07-0910 3000 GAL TANK
Lab ID:	115509-01
Date Received:	8/14/2003
Date Prepared:	8/18/2003
Date Analyzed:	8/18/2003
% Solids	-
Dilution Factor	1

PCBs by USEPA Method 608

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Tetrachloro-m-xylene	77.9		55	111
Decachlorobiphenyl	88.4		60	133

Analyte	Result (ug/L)	PQL	MDL	Flags
Aroclor 1016	ND	0.0958	0.0479	
Aroclor 1221	ND	0.192	0.0958	
Aroclor 1232	ND	0.0958	0.0479	
Aroclor 1242	ND	0.0958	0.0479	
Aroclor 1248	ND	0.0958	0.0479	
Aroclor 1254	ND	0.0958	0.0479	
Aroclor 1260	ND	0.0958	0.0479	

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10-20-03

00026

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03-07-0911/20,000 GAL TANK
Lab ID:	115509-02
Date Received:	8/14/2003
Date Prepared:	8/18/2003
Date Analyzed:	8/18/2003
% Solids	-
Dilution Factor	1

PCBs by USEPA Method 608

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Tetrachloro-m-xylene	76.8		55	111
Decachlorobiphenyl	73.2		60	133

Analyte	Result (ug/L)	PQL	MDL	Flags
Aroclor 1016	ND	0.0948	0.0474	
Aroclor 1221	ND	0.19	0.0948	
Aroclor 1232	ND	0.0948	0.0474	
Aroclor 1242	ND	0.0948	0.0474	
Aroclor 1248	ND	0.0948	0.0474	
Aroclor 1254	ND	0.0948	0.0474	
Aroclor 1260	ND	0.0948	0.0474	

MW
10-20-03

00027

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 3 liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Volatile Organic Compounds (EPA SW-846 Method 624) was performed by STL-Seattle, Tacoma, Washington.

The samples were numbered: 03070910 03070911 03070912

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected on August 13, 2003, and were analyzed on August 20, 2003, therefore meeting QC criteria of less than 14 days between collection and analysis for preserved liquid samples.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Satisfactory.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limits of 30% except bromomethane; associated positive results were qualified as estimated quantities (J).

4. **Continuing Calibration: Acceptable.**

All RRFs were greater than the QC limit of 0.050. All % differences were less than the QC limit of 25%.

5. **Blanks: Acceptable.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

6. **Surrogates: Satisfactory.**

All surrogate recoveries were within QC limits except SMCs 1 and 2 in sample 030709-10, SMC 2 in sample 03070910 dilution, and toluene-d8 in sample 03070911, all with high recoveries. Associated sample positive results were qualified as estimated quantities (J).

7. **Matrix and Blank Spike Analysis: Acceptable.**

Spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits.

8. **Duplicate Analysis: Acceptable.**

The laboratory duplicate analysis results were within QC limits.

9. **Internal Standards: Acceptable.**

All internal standards were within ± 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50% to 200% of the continuing calibration area counts.

10. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

12. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03-07-0910 3000 GAL TANK
Lab ID:	115509-01
Date Received:	8/14/2003
Date Prepared:	8/20/2003
Date Analyzed:	8/20/2003
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 624

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	112	X9	74.5	109
Fluorobenzene	115	X9	79.9	110
Toluene-D8	108		85.4	112
Ethylbenzene-d10	116		85.7	119
Bromofluorobenzene	105		79.2	113
Trifluorotoluene	108		85.9	123

Analyte	Result (ug/L)	PQL	MRL	Flags
Chloromethane	ND	2 U	1	
Vinyl chloride	ND	1	0.5	
Bromomethane	ND	2.5	1.25	
Chloroethane	3.37 J	1	0.5	
Trichlorofluoromethane	ND	1 U	0.5	
1,1-Dichloroethene	1.88 J	1	0.5	
Acrolein	ND	5 U	2.5	
Methylene chloride	6.4 J	2	1	
trans-1,2-Dichloroethene	ND	1 U	0.5	
Acrylonitrile	85.6 J	5	2.5	
1,1-Dichloroethane	ND	1 U	0.5	
Chloroform	2340 J	1	0.5	EMW
1,1,1-Trichloroethane	ND	1 U	0.5	
Carbon Tetrachloride	2.81 J	1	0.5	
Benzene	ND	1 U	0.5	
1,2-Dichloroethane	ND	1	0.5	
Trichloroethene	ND	1	0.5	
1,2-Dichloropropane	ND	1	0.5	
Bromodichloromethane	80.8 J	1	0.5	
2-Chloroethyl vinyl ether	ND	5 U	2.5	
cis-1,3-Dichloropropene	ND	1	0.5	
Toluene	ND	1	0.5	
trans-1,3-Dichloropropene	ND	1	0.5	
1,1,2-Trichloroethane	ND	1	0.5	
Tetrachloroethene	ND	1	0.5	
Dibromochloromethane	9.59 J	1	0.5	

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STL Seattle

Volatile Organics by USEPA Method 624 data for 115509-01 continued...

Analyte	Result (ug/L)	PQL	MRL	
Chlorobenzene	0.821 J	1	0.5	
Ethylbenzene	ND	1 U	0.5	
m,p-Xylene	ND	2 U	1	
o-Xylene	1.34 J	1	0.5	
Bromoform	0.565 J	1	0.5	
1,1,2,2-Tetrachloroethane	ND	1 U	0.5	
1,3-Dichlorobenzene	ND	1	0.5	
1,4-Dichlorobenzene	ND	1	0.5	
1,2-Dichlorobenzene	ND	1	0.5	

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10-25-03

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STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03-07-0911/20,000 GAL TANK
Lab ID:	115509-02
Date Received:	8/14/2003
Date Prepared:	8/20/2003
Date Analyzed:	8/20/2003
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 624

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	99.1		74.5	109
Fluorobenzene	105		79.9	110
Toluene-D8	114	N	85.4	112
Ethylbenzene-d10	108		85.7	119
Bromofluorobenzene	101		79.2	113
Trifluorotoluene	109		85.9	123

Analyte	Result (ug/L)	PQL	MRL	Flags
Chloromethane	5.22 J	2	1	
Vinyl chloride	ND	1 U	0.5	
Bromomethane	4.36 J	2.5	1.25	
Chloroethane	ND	1 U	0.5	
Trichlorofluoromethane	ND	1	0.5	
1,1-Dichloroethene	ND	1	0.5	
Acrolein	ND	5	2.5	
Methylene chloride	ND	2	1	
trans-1,2-Dichloroethene	ND	1	0.5	
Acrylonitrile	ND	5	2.5	
1,1-Dichloroethane	ND	1	0.5	
Chloroform	ND	1	0.5	
1,1,1-Trichloroethane	ND	1	0.5	
Carbon Tetrachloride	ND	1	0.5	
Benzene	ND	1	0.5	
1,2-Dichloroethane	ND	1	0.5	
Trichloroethene	ND	1	0.5	
1,2-Dichloropropane	ND	1	0.5	
Bromodichloromethane	ND	1	0.5	
2-Chloroethyl vinyl ether	ND	5	2.5	
cis-1,3-Dichloropropene	ND	1	0.5	
Toluene	11.3 J	1	0.5	
trans-1,3-Dichloropropene	ND	1 U	0.5	
1,1,2-Trichloroethane	ND	1	0.5	
Tetrachloroethene	ND	1	0.5	
Dibromochloromethane	ND	1	0.5	

MW 10-25-03

00012

STL Seattle

Volatile Organics by USEPA Method 624 data for 115509-02 continued...

Analyte	Result (ug/L)	PQL	MRL
Chlorobenzene	ND	1 U	0.5
Ethylbenzene	ND	1	0.5
m,p-Xylene	ND	2	1
o-Xylene	84.3 J	1	0.5
Bromoform	ND	1 U	0.5
1,1,2,2-Tetrachloroethane	ND	1	0.5
1,3-Dichlorobenzene	ND	1	0.5
1,4-Dichlorobenzene	ND	1	0.5
1,2-Dichlorobenzene	ND	1	0.5

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10-20-03

00013

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03-07-0912/ TRIP BLANK
Lab ID:	115509-03
Date Received:	8/14/2003
Date Prepared:	8/20/2003
Date Analyzed:	8/20/2003
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 624

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	101		74.5	109
Fluorobenzene	103		79.9	110
Toluene-D8	109		85.4	112
Ethylbenzene-d10	104		85.7	119
Bromofluorobenzene	96.1		79.2	113
Trifluorotoluene	110		85.9	123

Analyte	Result (ug/L)	PQL	MRL	Flags
Chloromethane	ND	2	1	
Vinyl chloride	ND	1	0.5	
Bromomethane	ND	2.5	1.25	
Chloroethane	ND	1	0.5	
Trichlorofluoromethane	ND	1	0.5	
1,1-Dichloroethene	ND	1	0.5	
Acrolein	ND	5	2.5	
Methylene chloride	ND	2	1	
trans-1,2-Dichloroethene	ND	1	0.5	
Acrylonitrile	ND	5	2.5	
1,1-Dichloroethane	ND	1	0.5	
Chloroform	ND	1	0.5	
1,1,1-Trichloroethane	ND	1	0.5	
Carbon Tetrachloride	ND	1	0.5	
Benzene	ND	1	0.5	
1,2-Dichloroethane	ND	1	0.5	
Trichloroethene	ND	1	0.5	
1,2-Dichloropropane	ND	1	0.5	
Bromodichloromethane	ND	1	0.5	
2-Chloroethyl vinyl ether	ND	5	2.5	
cis-1,3-Dichloropropene	ND	1	0.5	
Toluene	ND	1	0.5	
trans-1,3-Dichloropropene	ND	1	0.5	
1,1,2-Trichloroethane	ND	1	0.5	
Tetrachloroethene	ND	1	0.5	
Dibromochloromethane	ND	1	0.5	

MW 10-20-03

00016

STL Seattle

Volatile Organics by USEPA Method 624 data for 115509-03 continued...

Analyte	Result (ug/L)	PQL	MRL
Chlorobenzene	ND	1	0.5
Ethylbenzene	ND	1	0.5
m,p-Xylene	ND	2	1
o-Xylene	ND	1	0.5
Bromoform	ND	1	0.5
1,1,2,2-Tetrachloroethane	ND	1	0.5
1,3-Dichlorobenzene	ND	1	0.5
1,4-Dichlorobenzene	ND	1	0.5
1,2-Dichlorobenzene	ND	1	0.5

MW
10-20-03

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 2 liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Semivolatile Organic Compounds (EPA SW-846 Method 625) was performed by STL-Seattle, Tacoma, Washington.

The samples were numbered: 03070910 03070911

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected on August 13, 2003, and were extracted and analyzed by August 20, 2003, therefore meeting holding time criteria of less than 7 days between collection and extraction and less than 40 days between extraction and analysis.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Satisfactory.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limit of 30% except benzoic acid, acenaphthene, and 2,4-dinitrophenol; no action was taken as there were no detections of these analytes.

4. Continuing Calibration: Satisfactory.

All RRFs were greater than the QC limit of 0.050. All applicable % differences were less than the QC limits of 25% except bis-chloroisopropylether with an increasing response factor; no action was taken as there were no detections of this analyte.

5. Blanks: Acceptable.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any blank.

6. Surrogates: Acceptable.

All surrogate recoveries were within QC limits.

7. Matrix and Blank Spike Analysis: Satisfactory.

All spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits except pyrene with high recoveries in the matrix spike and matrix spike duplicate analyses; no action was taken based on spike outliers alone.

8. Duplicate Analysis: Acceptable.

Spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent.

9. Internal Standards: Acceptable.

All internal standards (IS) were within ± 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

10. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

12. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03-07-0910 3000 GAL TANK
Lab ID:	115509-01
Date Received:	8/14/2003
Date Prepared:	8/19/2003
Date Analyzed:	8/20/2003
% Solids	-
Dilution Factor	0.5

Semivolatile Organics by USEPA Method 625

Surrogate	% Recovery	Flags	Recovery Limits Low	High
2 - Fluorophenol	51.1		18	104
Phenol - d5	38.9		11	73
Nitrobenzene - d5	93.3		57	143
2 - Fluorobiphenyl	86.7		58	128
2,4,6 - Tribromophenol	103		62	139
p - Terphenyl - d14	114		55	148

Analyte		Result (ug/L)	PQL	MRL	Flags
Phenol	ND		0.994	0.497	
bis(2-Chloroethyl)ether	ND		0.994	0.497	
2-Chlorophenol	ND		0.994	0.497	
1,3-Dichlorobenzene	ND		0.994	0.497	
1,4-Dichlorobenzene	ND		0.994	0.497	
1,2-Dichlorobenzene	ND		0.994	0.497	
bis(2-Chloroisopropyl)ether	ND		0.994	0.497	
N-nitroso-di-n-propylamine	ND		0.994	0.497	
Hexachloroethane	ND		0.994	0.497	
Nitrobenzene	ND		0.994	0.497	
Isophorone	ND		0.994	0.497	
2-Nitrophenol	ND		0.994	0.497	
2,4-Dimethylphenol	ND		4.97	2.49	
bis(2-Chloroethoxy)methane	ND		0.994	0.497	
2,4-Dichlorophenol	ND		0.994	0.497	
1,2,4-Trichlorobenzene	ND		0.994	0.497	
Naphthalene		2.37	0.298	0.149	
Hexachlorobutadiene	ND		0.994	0.497	
4-Chloro-3-methylphenol	ND		0.994	0.497	
Hexachlorocyclopentadiene	ND		4.97	2.49	
2,4,6-Trichlorophenol	ND		0.994	0.497	
2-Chloronaphthalene	ND		0.0994	0.0497	
Dimethylphthalate		1.12	0.994	0.497	
Acenaphthylene	ND		0.0994	0.0497	
2,6-Dinitrotoluene	ND		0.994	0.497	
Acenaphthene	ND		0.0994	0.0497	

MW 10-20-03

00020

STL Seattle

Semivolatile Organics by USEPA Method 625 data for 115509-01 continued...

Analyte		Result (ug/L)	PQL	MRL	
2,4-Dinitrophenol	ND		4.97	2.49	
4-Nitrophenol	ND		4.97	2.49	
2,4-Dinitrotoluene	ND		0.994	0.497	
Diethylphthalate	ND		0.994	0.497	
4-Chlorophenylphenylether	ND		0.994	0.497	
Fluorene	ND		0.0994	0.0497	
4,6-Dinitro-2-methylphenol	ND		4.97	2.49	
N-Nitrosodiphenylamine	ND		0.994	0.497	
4-Bromophenylphenylether	ND		0.994	0.497	
Hexachlorobenzene	ND		0.994	0.497	
Pentachlorophenol	ND		3.23	1.62	
Phenanthrene		0.385	0.0994	0.0497	
Anthracene	ND		0.0994	0.0497	
Di-n-butylphthalate	ND		2.49	1.24	
Fluoranthene		0.085	0.0994	0.0497	SMW
Pyrene	ND		0.0994	0.0497	
Butylbenzylphthalate	ND		1.49	0.746	
3,3'-Dichlorobenzidine	ND		4.97	2.49	
Benzo(a)anthracene	ND		0.0994	0.0497	
Chrysene	ND		0.124	0.0621	
bis(2-Ethylhexyl)phthalate	ND		7.46	3.73	
Di-n-octylphthalate	ND		0.994	0.497	
Benzo(a)pyrene	ND		0.0994	0.0497	
Indeno(1,2,3-cd)pyrene	ND		0.0994	0.0497	
Dibenz(a,h)anthracene	ND		0.0994	0.0497	
Benzo(g,h,i)perylene	ND		0.0994	0.0497	
Carbazole	ND		0.994	0.497	
N-nitrosodimethylamine		6.22	4.97	2.49	
Benzidine	ND		4.97	2.49	
1,2-Diphenylhydrazine	ND		0.994	0.497	
Benzofluoranthenes	ND		0.199	0.0994	

MW
10-20-03

00021

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03-07-0911/20,000 GAL TANK
Lab ID:	115509-02
Date Received:	8/14/2003
Date Prepared:	8/19/2003
Date Analyzed:	8/20/2003
% Solids	-
Dilution Factor	0.5

Semivolatile Organics by USEPA Method 625

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	41.6		18	104
Phenol - d5	32.9		11	73
Nitrobenzene - d5	96.1		57	143
2 - Fluorobiphenyl	90.8		58	128
2,4,6 - Tribromophenol	82.6		62	139
p - Terphenyl - d14	106		55	148

Analyte	Result (ug/L)		PQL	MRL	Flags
Phenol	ND		0.949	0.474	
bis(2-Chloroethyl)ether	ND		0.949	0.474	
2-Chlorophenol	ND		0.949	0.474	
1,3-Dichlorobenzene	ND		0.949	0.474	
1,4-Dichlorobenzene	ND		0.949	0.474	
1,2-Dichlorobenzene	ND		0.949	0.474	
bis(2-Chloroisopropyl)ether	ND		0.949	0.474	
N-nitroso-di-n-propylamine	ND		0.949	0.474	
Hexachloroethane	ND		0.949	0.474	
Nitrobenzene	ND		0.949	0.474	
Isophorone	ND		0.949	0.474	
2-Nitrophenol	ND		0.949	0.474	
2,4-Dimethylphenol	ND		4.74	2.37	
bis(2-Chloroethoxy)methane	ND		0.949	0.474	
2,4-Dichlorophenol	ND		0.949	0.474	
1,2,4-Trichlorobenzene	ND		0.949	0.474	
Naphthalene		0.271 J	0.285	0.142	
Hexachlorobutadiene	ND		0.949	0.474	
4-Chloro-3-methylphenol	ND		0.949	0.474	
Hexachlorocyclopentadiene	ND		4.74	2.37	
2,4,6-Trichlorophenol	ND		0.949	0.474	
2-Chloronaphthalene	ND		0.0949	0.0474	
Dimethylphthalate		0.907 J	0.949	0.474	
Acenaphthylene	ND		0.0949	0.0474	
2,6-Dinitrotoluene	ND		0.949	0.474	
Acenaphthene	ND		0.0949	0.0474	

MW 10-20-03

00022

STL Seattle

Semivolatile Organics by USEPA Method 625 data for 115509-02 continued...

Analyte	Result (ug/L)	PQL	MRL
2,4-Dinitrophenol	ND	4.74	2.37
4-Nitrophenol	ND	4.74	2.37
2,4-Dinitrotoluene	ND	0.949	0.474
Diethylphthalate	ND	0.949	0.474
4-Chlorophenylphenylether	ND	0.949	0.474
Fluorene	ND	0.0949	0.0474
4,6-Dinitro-2-methylphenol	ND	4.74	2.37
N-Nitrosodiphenylamine	ND	0.949	0.474
4-Bromophenylphenylether	ND	0.949	0.474
Hexachlorobenzene	ND	0.949	0.474
Pentachlorophenol	ND	3.08	1.54
Phenanthrene	ND	0.0949	0.0474
Anthracene	ND	0.0949	0.0474
Di-n-butylphthalate	ND	2.37	1.19
Fluoranthene	0.0694 J	0.0949	0.0474
Pyrene	0.0485 J	0.0949	0.0474
Butylbenzylphthalate	ND	1.42	0.712
3,3'-Dichlorobenzidine	ND	4.74	2.37
Benzo(a)anthracene	ND	0.0949	0.0474
Chrysene	ND	0.119	0.0593
bis(2-Ethylhexyl)phthalate	ND	7.12	3.56
Di-n-octylphthalate	ND	0.949	0.474
Benzo(a)pyrene	ND	0.0949	0.0474
Indeno(1,2,3-cd)pyrene	ND	0.0949	0.0474
Dibenz(a,h)anthracene	ND	0.0949	0.0474
Benzo(g,h,i)perylene	ND	0.0949	0.0474
Carbazole	ND	0.949	0.474
N-nitrosodimethylamine	ND	4.74	2.37
Benzidine	ND	4.74	2.37
1,2-Diphenylhydrazine	ND	0.949	0.474
Benzofluoranthenes	ND	0.19	0.0949

MW
10-20-03

00023

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 2 liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Total Petroleum Hydrocarbons (TPH - EPA Method 1664) and Total Sulfide (EPA Method 376.2) was performed by STL-Seattle, Tacoma, Washington.

The samples were numbered: 03070910 03070911

Data Qualifications:

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected on August 13, 2003.

TPH
The samples were analyzed on August 22, 2003. There were no detections in the method blank. The blank spike and blank spike duplicate results were within QC limits.

Total Sulfides
The sample was analyzed on August 20, 2003. There were no detections in the method blank. The blank spike and blank spike duplicate results were within QC limits. The initial calibration correlation coefficient was 0.995.

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004) and the analytical methods. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Project Name	Columbia American Plating, Oregon
Date Received	08-14-03

General Chemistry Parameters

Client Sample ID	03-07-0910 3000 GAL TANK
Lab ID	115509-01

Parameter	Method	Date Analyzed	Units	Result	PQL
Sulfide	EPA 376.2	08-20-03	mg/L	ND	0.005
TPH (SGT-HEM)	EPA 1664	08-22-03	mg/L	ND	5

MW 10-20-03

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of six liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Cyanide analyses (EPA Method 335.2) were performed by North Creek Analytical, Inc., Bothell, Washington.

The samples were numbered:

03050765 03050769 03050773 03050777 03050781 03050785

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were received at 9.6°C, exceeding the QC limits of 4°C ± 2°C; no action was for cyanide analysis. The samples were collected between July 8 and 10, 2003, and were analyzed by July 22, 2003, therefore meeting QC criteria of less than 28 days between collection and analysis.

2. **Initial and Continuing Calibration: Acceptable.**

No reported results were greater than 110% of the highest calibration standard. The initial calibration correlation coefficient was 0.999. All recoveries were within QC limits of 85% to 115%.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks.

4. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

6. Matrix Spike Analysis: Acceptable.

Matrix spike(MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent.

7. Duplicate Analysis: Acceptable.

All duplicate and blank spike duplicate results were within QC limits.

8. Laboratory Control Sample Analysis: Acceptable.

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS and LCS duplicate results were within the established control limits.

9. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

www.ncalabs.com

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503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/01/03 16:26

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0305765 (P3G0363-01) Water					Sampled: 07/08/03 Received: 07/10/03				
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/20/03	07/21/03	3G21010	
0305769 (P3G0363-02) Water					Sampled: 07/09/03 Received: 07/10/03				
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/22/03	07/22/03	3G22048	
0305773 (P3G0363-03) Water					Sampled: 07/09/03 Received: 07/10/03				
Cyanide (total)	0.0170	0.0100	mg/l	1	EPA 335.2	07/22/03	07/22/03	3G22048	
0305777 (P3G0363-04) Water					Sampled: 07/09/03 Received: 07/10/03				
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/22/03	07/22/03	3G22048	
0305781 (P3G0363-08) Water					Sampled: 07/09/03 Received: 07/10/03				
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/22/03	07/22/03	3G22048	
0305785 (P3G0363-09) Water					Sampled: 07/10/03 Received: 07/10/03				
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/22/03	07/22/03	3G22048	

MW 10-20-03

North Creek Analytical - Portland

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

Brian L Cone

Brian Cone, Industrial Services Manager

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of six liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Resource Conservation and Recovery Act (RCRA) metals analyses (EPA Methods 6020 and 7470) were performed by North Creek Analytical, Inc., Beaverton, Oregon.

The samples were numbered:

03050765	03050769	03050773	03050777	03050781	03050785

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were received at 9.6°C, exceeding the QC limits of 4°C ± 2°C; no action was taken for these inorganic analyses. The samples were collected between July 8 and 10, 2003, and were analyzed by July 27, 2003, therefore meeting QC criteria of less than 6 months between collection and analysis (28 days for mercury).

2. Initial and Continuing Calibration: Satisfactory.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All applicable ICP recoveries were within the QC limits of 90% to 110% (± 1%) except barium with a high recovery in the ICV (associated sample results were qualified as estimated quantities [J]) and selenium with low recoveries in several CCVs (associated sample results were qualified as estimated quantities [J or UJ]). All applicable AA recoveries were within QC limits of 80% to 120%.

3. **Blanks: Satisfactory.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results except selenium (6.5 ug/L); associated sample results less than five times the blank result were qualified as not detected (U).

4. **ICP Interference Check Sample: Acceptable.**

Interference Check Sample (ICS) solution AB recoveries were within QC limits.

5. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

7. **ICP Serial Dilution: Not Performed.**

Serial dilution analyses were not performed; no action was taken.

8. **Blank and Matrix Spike Analysis: Acceptable.**

Matrix spike(MS) and blank spike (BS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. MS and BS recoveries were within the QC limits.

9. **Duplicate Analysis: Acceptable.**

All duplicate results were within QC limits.

10. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/01/03 16:26

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0305765 (P3G0363-01) Water					Sampled: 07/08/03	Received: 07/10/03			
Arsenic	**0.00628**	0.00100	mg/l	1	EPA 6020	07/18/03	07/27/03	3070682	
Barium	**0.0449** J	0.00100	"	"	"	"	07/26/03	"	
Cadmium	ND	0.00100 U	"	"	"	"	"	"	
Chromium	**0.00341**	0.00100	"	"	"	"	"	"	
Lead	**0.00207**	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 U	"	"	EPA 7470A	07/11/03	07/11/03	3070417	
Selenium	**0.00133** UJ	0.00100	"	"	EPA 6020	07/18/03	07/26/03	3070682	
Silver	ND	0.00100 U	"	"	"	"	"	"	
0305769 (P3G0363-02) Water					Sampled: 07/09/03	Received: 07/10/03			
Arsenic	**0.00209**	0.00100	mg/l	1	EPA 6020	07/18/03	07/27/03	3070682	
Barium	**0.0608**	0.00100	"	"	"	"	07/26/03	"	
Cadmium	ND	0.00100 U	"	"	"	"	"	"	
Chromium	**0.00793**	0.00100	"	"	"	"	"	"	
Lead	**0.00255**	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 U	"	"	EPA 7470A	07/11/03	07/11/03	3070417	
Selenium	ND	0.00100	"	"	EPA 6020	07/18/03	07/26/03	3070682	
Silver	ND	0.00100 U	"	"	"	"	"	"	
0305773 (P3G0363-03) Water					Sampled: 07/09/03	Received: 07/10/03			
Arsenic	**0.00505**	0.00100	mg/l	1	EPA 6020	07/18/03	07/27/03	3070682	
Barium	**0.0605**	0.00100	"	"	"	"	07/26/03	"	
Cadmium	**0.00563**	0.00100	"	"	"	"	"	"	
Chromium	**0.0131**	0.00100	"	"	"	"	"	"	
Lead	**0.00372**	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 U	"	"	EPA 7470A	07/11/03	07/11/03	3070417	
Selenium	**0.00366**	0.00100	"	"	EPA 6020	07/18/03	07/26/03	3070682	
Silver	ND	0.00100 U	"	"	"	"	"	"	

MW 10-20-03

North Creek Analytical - Portland

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

Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/01/03 16:26

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0305777 (P3G0363-04) Water					Sampled: 07/09/03 Received: 07/10/03				
Arsenic	**0.00720**	0.00100	mg/l	1	EPA 6020	07/18/03	07/27/03	3070682	
Barium	**0.0472** J	0.00100	"	"	"	"	07/26/03	"	
Cadmium	ND	0.00100 U	"	"	"	"	"	"	
Chromium	**0.00424**	0.00100	"	"	"	"	"	"	
Lead	ND	0.00100 U	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	EPA 7470A	07/11/03	07/11/03	3070417	
Selenium	ND	0.00100 J	"	"	EPA 6020	07/18/03	07/26/03	3070682	
Silver	ND	0.00100	"	"	"	"	"	"	
0305781 (P3G0363-08) Water					Sampled: 07/09/03 Received: 07/10/03				
Arsenic	**0.00339**	0.00100	mg/l	1	EPA 6020	07/18/03	07/27/03	3070682	
Barium	**0.0779** J	0.00100	"	"	"	"	07/26/03	"	
Cadmium	ND	0.00100 U	"	"	"	"	"	"	
Chromium	**0.0107**	0.00100	"	"	"	"	"	"	
Lead	**0.00235**	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 U	"	"	EPA 7470A	07/11/03	07/11/03	3070417	
Selenium	**0.00215** UJ	0.00100	"	"	EPA 6020	07/18/03	07/26/03	3070682	
Silver	ND	0.00100 U	"	"	"	"	"	"	
0305785 (P3G0363-09) Water					Sampled: 07/10/03 Received: 07/10/03				
Arsenic	ND	0.00100 U	mg/l	1	EPA 6020	07/18/03	07/27/03	3070682	
Barium	**0.00436** J	0.00100	"	"	"	"	07/26/03	"	
Cadmium	**0.00155**	0.00100	"	"	"	"	"	"	
Chromium	**0.00258**	0.00100	"	"	"	"	"	"	
Lead	**0.00246**	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 U	"	"	EPA 7470A	07/11/03	07/11/03	3070417	
Selenium	**0.00104** UJ	0.00100	"	"	EPA 6020	07/18/03	07/26/03	3070682	
Silver	ND	0.00100 U	"	"	"	"	"	"	

MW 10-2-03

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Brian L Cone

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 1 liquid and 4 soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Volatile Organic Compounds (EPA SW-846 Method 8260) was performed by North Creek Analytical, Bothell, Washington.

The samples were numbered:		Water	03050765	
Soil	03050778	03050779	03050780	03050781

Data Qualifications:

1. **Sample Holding Times: Satisfactory.**

The samples were received at 9.6°C, slightly above the QC limits of 4°C ± 2°C; all sample results were qualified as estimated quantities (J or UJ). The samples were collected between July 8 and 10, 2003, and were analyzed on July 14, 2003, therefore meeting QC criteria of less than 14 days between collection and analysis for soil and preserved liquid samples.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Acceptable.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limits of 30%.

4. **Continuing Calibration: Satisfactory.**

All RRFs were greater than the QC limit of 0.050. All % differences were less than the QC limit of 25% except bromomethane with a decreasing response factor; associated sample results were qualified as estimated quantities (J or UJ).

5. **Blanks: Acceptable.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

6. **Surrogates: Acceptable.**

All surrogate recoveries were within QC limits except outliers in method blanks.

7. **Matrix and Blank Spike Analysis: Acceptable.**

Spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits.

8. **Duplicate Analysis: Acceptable.**

The laboratory duplicate analysis results were within QC limits.

9. **Internal Standards: Acceptable.**

All internal standards were within $\pm$ 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50% to 200% of the continuing calibration area counts.

10. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

12. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/01/03 16:26

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0305765 (P3G0363-01) Water					Sampled: 07/08/03	Received: 07/10/03			
Acetone	ND	25.0	ug/l	1	EPA 8260B	07/13/03	07/13/03	3070429	
Benzene	ND	1.00	"	"	"	"	"	"	
Bromobenzene	ND	1.00	"	"	"	"	"	"	
Bromochloromethane	ND	1.00	"	"	"	"	"	"	
Bromodichloromethane	ND	1.00	"	"	"	"	"	"	
Bromoform	ND	1.00	"	"	"	"	"	"	
Bromomethane	ND	5.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.00	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.00	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	10.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroethane	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Chloromethane	ND	5.00	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.00	"	"	"	"	"	"	
Dibromochloromethane	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
Dibromomethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.00	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	**8.05**	1.00	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

10-20-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/01/03 16:26

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0305765 (P3G0363-01) Water					Sampled: 07/08/03 Received: 07/10/03				
Hexachlorobutadiene	ND	2.00	µg/l	1	EPA 8260B	07/13/03	07/13/03	3070429	
2-Hexanone	ND	10.0	"	"	"	"	"	"	
Isopropylbenzene	ND	2.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	2.00	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.00	"	"	"	"	"	"	
Methylene chloride	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	2.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
Tetrachloroethene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	**2.00** J	1.00	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
Vinyl chloride	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surr: 4-BFB	*92.5 %*	*80-120*							
Surr: 1,2-DCA-d4	*104 %*	*77-135*							
Surr: Dibromofluoromethane	*101 %*	*80-122*							
Surr: Toluene-d8	*100 %*	*80-120*							

MW 10-2003

North Creek Analytical - Portland

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	10/01/03 16:26

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
)305778 (P3G0363-05) Soil					Sampled: 07/09/03	Received: 07/10/03			
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/11/03	07/14/03	3070394	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

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Brian L Cone

Brian Cone, Industrial Services Manager

10-2-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/01/03 16:26

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
3305778 (P3G0363-05) Soil					Sampled: 07/09/03 Received: 07/10/03				
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/11/03	07/14/03	3070394	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*82.5 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*120 %*	*57.3-144*							
Surr: Dibromofluoromethane	*98.1 %*	*45.5-130*							
Surr: Toluene-d8	*107 %*	*42.1-144*							

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/01/03 16:26

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
1305779 (P3G0363-06) Soil					Sampled: 07/09/03 Received: 07/10/03				
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/11/03	07/14/03	3070394	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/01/03 16:26

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0305779 (P3G0363-06) Soil					Sampled: 07/09/03	Received: 07/10/03			
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/11/03	07/14/03	3070394	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*85.8 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*118 %*	*57.3-144*							
Surr: Dibromofluoromethane	*99.1 %*	*45.5-130*							
Surr: Toluene-d8	*108 %*	*42.1-144*							

MW 10-20-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 10/01/03 16:26

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0305780 (P3G0363-07) Soil					Sampled: 07/09/03	Received: 07/10/03			
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/11/03	07/14/03	3070394	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

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Brian L Cone

10-20-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/01/03 16:26

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
305780 (P3G0363-07) Soil					Sampled: 07/09/03 Received: 07/10/03				
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/11/03	07/14/03	3070394	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
4-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*68.5 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*95.7 %*	*57.3-144*							
Surr: Dibromofluoromethane	*81.4 %*	*45.5-130*							
Surr: Toluene-d8	*87.1 %*	*42.1-144*							

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/01/03 16:26

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0305781 (P3G0363-08) Water					Sampled: 07/09/03 Received: 07/10/03				
Acetone	ND	25.0	ug/l	1	EPA 8260B	07/13/03	07/13/03	3070429	
Benzene	ND	1.00	"	"	"	"	"	"	
Bromobenzene	ND	1.00	"	"	"	"	"	"	
Bromochloromethane	ND	1.00	"	"	"	"	"	"	
Bromodichloromethane	ND	1.00	"	"	"	"	"	"	
Bromoform	ND	1.00	"	"	"	"	"	"	
Bromomethane	ND	5.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.00	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.00	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	10.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroethane	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Chloromethane	ND	5.00	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.00	"	"	"	"	"	"	
Dibromochloromethane	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
Dibromomethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.00	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	**23.4**	1.00	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	

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10-20-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 10/01/03 16:26

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
0305781 (P3G0363-08) Water					Sampled: 07/09/03 Received: 07/10/03				
Hexachlorobutadiene	ND	2.00	ug/l	1	EPA 8260B	07/13/03	07/13/03	3070429	
2-Hexanone	ND	10.0	"	"	"	"	"	"	
Isopropylbenzene	ND	2.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	2.00	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.00	"	"	"	"	"	"	
Methylene chloride	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	2.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
Tetrachloroethene	4.28 J	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	12.5 J	1.00	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
Vinyl chloride	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surr: 4-BFB	*106 %*	*80-120*							
Surr: 1,2-DCA-d4	*124 %*	*77-135*							
Surr: Dibromofluoromethane	*120 %*	*80-122*							
Surr: Toluene-d8	*116 %*	*80-120*							

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Brian L Cone

Brian Cone, Industrial Services Manager

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 7 solid and 4 liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Semivolatile Organic Compounds (EPA SW-846 Method 8270) was performed by STL-Seattle, Tacoma, Washington.

The samples were numbered:

03050898	03050899	03050900	03050901	03050905
03050906	03050892	03050893	03050894	03050896
03050895				

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected on July 17 or 18, 2003, were extracted on July 22, 2003, and were analyzed by July 27, 2003, therefore meeting holding time criteria of less than 7 days (14 for soils) between collection and extraction and less than 40 days between extraction and analysis.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Satisfactory.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limit of 30% except benzoic acid, 4,6-dinitro-2-methylphenol, and 2,4-dinitrophenol in the calibration; no action was taken as none of these analytes were detected in any samples.

4. **Continuing Calibration: Satisfactory.**

All RRFs were greater than the QC limit of 0.050. All applicable % differences were less than the QC limits of 25% except benzoic acid; results for the outlier were qualified as estimated quantities (J or UJ).

5. **Blanks: Acceptable.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any blank.

6. **Surrogates: Satisfactory.**

All surrogate recoveries were within QC limits except phenol in sample 03050901 with a recovery less than 10%; associated acid fraction results in that sample were qualified as estimated quantities (J) or rejected (R).

7. **Blank Spike Analysis: Acceptable.**

All spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits.

8. **Duplicate Analysis: Satisfactory.**

Spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All results were within QC limits except two spike duplicate outliers; no action was taken based on these outliers alone.

9. **Internal Standards: Acceptable.**

All internal standards (IS) were within ± 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

10. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

12. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

R - The sample result is rejected.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050898
Lab ID:	114949-01
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	92.71
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	High
2 - Fluorophenol	99.2		35	144
Phenol - d5	100		39	140
Nitrobenzene - d5	99		37	156
2 - Fluorobiphenyl	92.6		39	145
2,4,6 - Tribromophenol	90		25	148
p - Terphenyl - d14	95.1		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	104	51.8	
bis(2-Chloroethyl)ether	ND	104	51.8	
2-Chlorophenol	ND	104	51.8	
1,3-Dichlorobenzene	ND	104	51.8	
1,4-Dichlorobenzene	ND	104	51.8	
Benzyl Alcohol	ND	130	64.8	
1,2-Dichlorobenzene	ND	104	51.8	
2-Methylphenol	ND	104	51.8	
bis(2-Chloroisopropyl)ether	ND	104	51.8	
3-&4-Methylphenol	ND	207	104	
N-nitroso-di-n-propylamine	ND	104	51.8	
Hexachloroethane	ND	104	51.8	
Nitrobenzene	ND	104	51.8	
Isophorone	ND	104	51.8	
2-Nitrophenol	ND	104	51.8	
2,4-Dimethylphenol	ND	104	51.8	
Benzoic Acid	ND	518	259	
bis(2-Chloroethoxy)methane	ND	104	51.8	
2,4-Dichlorophenol	ND	104	51.8	
1,2,4-Trichlorobenzene	ND	104	51.8	
Naphthalene	ND	25.9	5.18	
4-Chloroaniline	ND	104	51.8	
Hexachlorobutadiene	ND	104	51.8	
4-Chloro-3-methylphenol	ND	104	51.8	
2-Methylnaphthalene	ND	25.9	13	
Hexachlorocyclopentadiene	ND	104	51.8	

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Semivolatile Organics by USEPA Method 8270 data for 114949-01 continued...

Analyte	Result (ug/kg)	PQL	MRL
2,4,6-Trichlorophenol	ND	104	51.8
2,4,5-Trichlorophenol	ND	104	51.8
2-Chloronaphthalene	ND	25.9	13
2-Nitroaniline	ND	104	51.8
Dimethylphthalate	ND	104	51.8
Acenaphthylene	ND	25.9	13
2,6-Dinitrotoluene	ND	104	51.8
3-Nitroaniline	ND	104	51.8
Acenaphthene	ND	25.9	13
2,4-Dinitrophenol	ND	518	259
4-Nitrophenol	ND	660	330
Dibenzofuran	ND	104	51.8
2,4-Dinitrotoluene	ND	104	51.8
Diethylphthalate	ND	104	51.8
4-Chlorophenylphenylether	ND	104	51.8
Fluorene	ND	25.9	13
4-Nitroaniline	ND	104	51.8
4,6-Dinitro-2-methylphenol	ND	518	259
N-Nitrosodiphenylamine	ND	104	51.8
4-Bromophenylphenylether	ND	104	51.8
Hexachlorobenzene	ND	104	51.8
Pentachlorophenol	ND	104	51.8
Phenanthrene	ND	25.9	13
Anthracene	ND	25.9	13
Di-n-butylphthalate	ND	104	51.8
Fluoranthene	ND	25.9	13
Pyrene	ND	25.9	13
Butylbenzylphthalate	ND	130	64.8
3,3'-Dichlorobenzidine	ND	207	104
Benzo(a)anthracene	ND	25.9	13
Chrysene	ND	25.9	13
bis(2-Ethylhexyl)phthalate	ND	104	51.8
Di-n-octylphthalate	ND	104	51.8
Benzofluoranthenes	ND	25.9	13
Benzo(a)pyrene	ND	25.9	13
Indeno(1,2,3-cd)pyrene	ND	25.9	13
Dibenz(a,h)anthracene	ND	25.9	13
Benzo(g,h,i)perylene	ND	25.9	13

MW 10-27-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050899
Lab ID:	114949-02
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	92.85
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	100		35	144
Phenol - d5	99.7		39	140
Nitrobenzene - d5	99.8		37	156
2 - Fluorobiphenyl	89.6		39	145
2,4,6 - Tribromophenol	90.7		25	148
p - Terphenyl - d14	90.6		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	106	52.8	
bis(2-Chloroethyl)ether	ND	106	52.8	
2-Chlorophenol	ND	106	52.8	
1,3-Dichlorobenzene	ND	106	52.8	
1,4-Dichlorobenzene	ND	106	52.8	
Benzyl Alcohol	ND	132	66	
1,2-Dichlorobenzene	ND	106	52.8	
2-Methylphenol	ND	106	52.8	
bis(2-Chloroisopropyl)ether	ND	106	52.8	
3-&4-Methylphenol	ND	211	106	
N-nitroso-di-n-propylamine	ND	106	52.8	
Hexachloroethane	ND	106	52.8	
Nitrobenzene	ND	106	52.8	
Isophorone	ND	106	52.8	
2-Nitrophenol	ND	106	52.8	
2,4-Dimethylphenol	ND	106	52.8	
Benzoic Acid	ND	528	264	
bis(2-Chloroethoxy)methane	ND	106	52.8	
2,4-Dichlorophenol	ND	106	52.8	
1,2,4-Trichlorobenzene	ND	106	52.8	
Naphthalene	ND	26.4	5.28	
4-Chloroaniline	ND	106	52.8	
Hexachlorobutadiene	ND	106	52.8	
4-Chloro-3-methylphenol	ND	106	52.8	
2-Methylnaphthalene	ND	26.4	13.2	
Hexachlorocyclopentadiene	ND	106	52.8	

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STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114949-02 continued...

Analyte	Result (ug/kg)	PQL	MRL
2,4,6-Trichlorophenol	ND	106 U	52.8
2,4,5-Trichlorophenol	ND	106	52.8
2-Chloronaphthalene	ND	26.4	13.2
2-Nitroaniline	ND	106	52.8
Dimethylphthalate	ND	106	52.8
Acenaphthylene	22.3 J	26.4	13.2
2,6-Dinitrotoluene	ND	106 U	52.8
3-Nitroaniline	ND	106	52.8
Acenaphthene	ND	26.4	13.2
2,4-Dinitrophenol	ND	528	264
4-Nitrophenol	ND	674	337
Dibenzofuran	ND	106	52.8
2,4-Dinitrotoluene	ND	106	52.8
Diethylphthalate	ND	106	52.8
4-Chlorophenylphenylether	ND	106	52.8
Fluorene	ND	26.4	13.2
4-Nitroaniline	ND	106	52.8
4,6-Dinitro-2-methylphenol	ND	528	264
N-Nitrosodiphenylamine	ND	106	52.8
4-Bromophenylphenylether	ND	106	52.8
Hexachlorobenzene	ND	106	52.8
Pentachlorophenol	ND	106	52.8
Phenanthrene	281	26.4	13.2
Anthracene	27.2	26.4	13.2
Di-n-butylphthalate	ND	106 U	52.8
Fluoranthene	739	26.4	13.2
Pyrene	1090	26.4	13.2
Butylbenzylphthalate	ND	132 U	66
3,3'-Dichlorobenzidine	ND	211 U	106
Benzo(a)anthracene	285	26.4	13.2
Chrysene	399	26.4	13.2
bis(2-Ethylhexyl)phthalate	ND	106 U	52.8
Di-n-octylphthalate	ND	106 U	52.8
Benzofluoranthenes	714	26.4	13.2
Benzo(a)pyrene	563	26.4	13.2
Indeno(1,2,3-cd)pyrene	342	26.4	13.2
Dibenz(a,h)anthracene	117	26.4	13.2
Benzo(g,h,i)perylene	597	26.4	13.2

JMW
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STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050900
Lab ID:	114949-03
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	79.07
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	High
2 - Fluorophenol	87		35	144
Phenol - d5	86.2		39	140
Nitrobenzene - d5	79.9		37	156
2 - Fluorobiphenyl	56.4		39	145
2,4,6 - Tribromophenol	76.9		25	148
p - Terphenyl - d14	66.6		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	125	62.5	
bis(2-Chloroethyl)ether	ND	125	62.5	
2-Chlorophenol	ND	125	62.5	
1,3-Dichlorobenzene	ND	125	62.5	
1,4-Dichlorobenzene	ND	125	62.5	
Benzyl Alcohol	ND	156	78.1	
1,2-Dichlorobenzene	ND	125	62.5	
2-Methylphenol	ND	125	62.5	
bis(2-Chloroisopropyl)ether	ND	125	62.5	
3-&4-Methylphenol	ND	250	125	
N-nitroso-di-n-propylamine	ND	125	62.5	
Hexachloroethane	ND	125	62.5	
Nitrobenzene	ND	125	62.5	
Isophorone	ND	125	62.5	
2-Nitrophenol	ND	125	62.5	
2,4-Dimethylphenol	ND	125	62.5	
Benzoic Acid	ND	625	313	
bis(2-Chloroethoxy)methane	ND	125	62.5	
2,4-Dichlorophenol	ND	125	62.5	
1,2,4-Trichlorobenzene	ND	125	62.5	
Naphthalene	ND	31.3	6.25	
4-Chloroaniline	ND	125	62.5	
Hexachlorobutadiene	ND	125	62.5	
4-Chloro-3-methylphenol	ND	125	62.5	
2-Methylnaphthalene	ND	31.3	15.6	
Hexachlorocyclopentadiene	ND	125	62.5	

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STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114949-03 continued...

Analyte	Result (ug/kg)	PQL	MRL	
2,4,6-Trichlorophenol	ND	125 U	62.5	
2,4,5-Trichlorophenol	ND	125	62.5	
2-Chloronaphthalene	ND	31.3	15.6	
2-Nitroaniline	ND	125	62.5	
Dimethylphthalate	ND	125	62.5	
Acenaphthylene	ND	31.3	15.6	
2,6-Dinitrotoluene	ND	125	62.5	
3-Nitroaniline	ND	125	62.5	
Acenaphthene	ND	31.3	15.6	
2,4-Dinitrophenol	ND	625	313	
4-Nitrophenol	ND	797	399	
Dibenzofuran	ND	125	62.5	
2,4-Dinitrotoluene	ND	125	62.5	
Diethylphthalate	ND	125	62.5	
4-Chlorophenylphenylether	ND	125	62.5	
Fluorene	ND	31.3	15.6	
4-Nitroaniline	ND	125	62.5	
4,6-Dinitro-2-methylphenol	ND	625	313	
N-Nitrosodiphenylamine	ND	125	62.5	
4-Bromophenylphenylether	ND	125	62.5	
Hexachlorobenzene	ND	125	62.5	
Pentachlorophenol	ND	125	62.5	
Phenanthrene	26 J	31.3	15.6	JMW
Anthracene	ND	31.3 U	15.6	
Di-n-butylphthalate	ND	125 U	62.5	
Fluoranthene	55.1	31.3	15.6	
Pyrene	80.5	31.3	15.6	
Butylbenzylphthalate	ND	156 U	78.1	
3,3'-Dichlorobenzidine	ND	250 U	125	
Benzo(a)anthracene	26.7 J	31.3	15.6	JMW
Chrysene	33.2	31.3	15.6	
bis(2-Ethylhexyl)phthalate	ND	125 U	62.5	
Di-n-octylphthalate	ND	125 U	62.5	
Benzofluoranthenes	59.8	31.3	15.6	
Benzo(a)pyrene	72.3	31.3	15.6	
Indeno(1,2,3-cd)pyrene	24 J	31.3	15.6	JMW
Dibenz(a,h)anthracene	ND	31.3 U	15.6	
Benzo(g,h,i)perylene	38.2	31.3	15.6	

JMW
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00033

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050901
Lab ID:	114949-04
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	-
Dilution Factor	0.5

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	14		10	112
Phenol - d5	0	X9	10	85
Nitrobenzene - d5	72.5		41	155
2 - Fluorobiphenyl	68.2		34	148
2,4,6 - Tribromophenol	68.2		29	159
p - Terphenyl - d14	74.3		33	172

Analyte	Result (ug/L)	PQL	MRL	Flags
Phenol	~~ND~~	~~1.02~~ U mR	0.511	
bis(2-Chloroethyl)ether	ND	1.02 U	0.511	
2-Chlorophenol	~~ND~~	~~1.02~~ mR	0.511	
1,3-Dichlorobenzene	ND	1.02 U	0.511	
1,4-Dichlorobenzene	ND	1.02 U	0.511	
Benzyl Alcohol	~~ND~~	~~1.02~~ mR	0.511	
1,2-Dichlorobenzene	ND	1.02 U	0.511	
2-Methylphenol	~~ND~~	~~1.02~~ mR	0.511	
bis(2-Chloroisopropyl)ether	ND	1.02 U	0.511	
3-&4-Methylphenol	~~ND~~	~~2.04~~ mR	1.02	
N-nitroso-di-n-propylamine	ND	1.02 U	0.511	
Hexachloroethane	ND	1.02	0.511	
Nitrobenzene	ND	1.02	0.511	
Isophorone	ND	1.02	0.511	
2-Nitrophenol	~~ND~~	~~1.02~~ mR	0.511	
2,4-Dimethylphenol	~~ND~~	~~5.11~~ mR	2.56	
Benzoic Acid	~~ND~~	~~5.11~~ mR	2.56	
bis(2-Chloroethoxy)methane	ND	1.02 U	0.511	
2,4-Dichlorophenol	~~ND~~	~~1.02~~ mR	0.511	
1,2,4-Trichlorobenzene	ND	1.02 U	0.511	
Naphthalene	ND	0.307	0.153	
4-Chloroaniline	ND	1.53	0.767	
Hexachlorobutadiene	ND	1.02	0.511	
4-Chloro-3-methylphenol	~~ND~~	~~1.02~~ mR	0.511	
2-Methylnaphthalene	ND	0.256 U	0.128	
Hexachlorocyclopentadiene	ND	5.11 U	2.56	

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STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114949-04 continued...

Analyte	Result (ug/L)	PQL	MRL
2,4,6-Trichlorophenol	~~ND~~	~~1.02~~	0.511
2,4,5-Trichlorophenol	~~ND~~	~~1.02~~	0.511
2-Chloronaphthalene	ND	0.102	0.0511
2-Nitroaniline	ND	1.02	0.511
Dimethylphthalate	ND	1.02	0.511
Acenaphthylene	ND	0.102	0.0511
2,6-Dinitrotoluene	ND	1.02	0.511
3-Nitroaniline	ND	1.02	0.511
Acenaphthene	ND	0.102	0.0511
2,4-Dinitrophenol	~~ND~~	~~5.11~~	2.56
4-Nitrophenol	~~ND~~	~~5.11~~	2.56
Dibenzofuran	ND	1.02	0.511
2,4-Dinitrotoluene	ND	1.02	0.511
Diethylphthalate	ND	1.02	0.511
4-Chlorophenylphenylether	ND	1.02	0.511
Fluorene	ND	0.102	0.0511
4-Nitroaniline	ND	1.02	0.511
4,6-Dinitro-2-methylphenol	~~ND~~	~~5.11~~	2.56
N-Nitrosodiphenylamine	ND	1.02	0.511
4-Bromophenylphenylether	ND	1.02	0.511
Hexachlorobenzene	ND	1.02	0.511
Pentachlorophenol	~~ND~~	~~3.32~~	1.66
Phenanthrene	0.211	0.102	0.0511
Anthracene	ND	0.102	0.0511
Di-n-butylphthalate	ND	1.02	0.511
Fluoranthene	0.154	0.102	0.0511
Pyrene	0.203	0.102	0.0511
Butylbenzylphthalate	ND	1.53	0.767
3,3'-Dichlorobenzidine	ND	5.11	2.56
Benzo(a)anthracene	ND	0.102	0.0511
Chrysene	ND	0.128	0.0639
bis(2-Ethylhexyl)phthalate	23.8	7.67	3.83
Di-n-octylphthalate	ND	1.02	0.511
Benzofluoranthenes	ND	0.204	0.102
Benzo(a)pyrene	ND	0.102	0.0511
Indeno(1,2,3-cd)pyrene	ND	0.102	0.0511
Dibenz(a,h)anthracene	ND	0.102	0.0511
Benzo(g,h,i)perylene	ND	0.102	0.0511

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STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050905
Lab ID:	114949-05
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	-
Dilution Factor	0.5

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	40.6		10	112
Phenol - d5	26.6		10	85
Nitrobenzene - d5	71.9		41	155
2 - Fluorobiphenyl	66.3		34	148
2,4,6 - Tribromophenol	85.9		29	159
p - Terphenyl - d14	74.5		33	172

Analyte	Result (ug/L)	PQL	MRL	Flags
Phenol	ND	1.13	0.566	
bis(2-Chloroethyl)ether	ND	1.13	0.566	
2-Chlorophenol	ND	1.13	0.566	
1,3-Dichlorobenzene	ND	1.13	0.566	
1,4-Dichlorobenzene	ND	1.13	0.566	
Benzyl Alcohol	ND	1.13	0.566	
1,2-Dichlorobenzene	ND	1.13	0.566	
2-Methylphenol	ND	1.13	0.566	
bis(2-Chloroisopropyl)ether	ND	1.13	0.566	
3-&4-Methylphenol	ND	2.26	1.13	
N-nitroso-di-n-propylamine	ND	1.13	0.566	
Hexachloroethane	ND	1.13	0.566	
Nitrobenzene	ND	1.13	0.566	
Isophorone	ND	1.13	0.566	
2-Nitrophenol	ND	1.13	0.566	
2,4-Dimethylphenol	ND	5.66	2.83	
Benzoic Acid	ND	5.66	2.83	
bis(2-Chloroethoxy)methane	ND	1.13	0.566	
2,4-Dichlorophenol	ND	1.13	0.566	
1,2,4-Trichlorobenzene	ND	1.13	0.566	
Naphthalene	ND	0.339	0.17	
4-Chloroaniline	ND	1.7	0.848	
Hexachlorobutadiene	ND	1.13	0.566	
4-Chloro-3-methylphenol	ND	1.13	0.566	
2-Methylnaphthalene	ND	0.283	0.141	
Hexachlorocyclopentadiene	ND	5.66	2.83	

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STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114949-05 continued...

Analyte		Result (ug/L)	PQL	MRL	
2,4,6-Trichlorophenol	ND		1.13	0.566	
2,4,5-Trichlorophenol	ND		1.13	0.566	
2-Chloronaphthalene	ND		0.113	0.0566	
2-Nitroaniline	ND		1.13	0.566	
Dimethylphthalate	ND		1.13	0.566	
Acenaphthylene	ND		0.113	0.0566	
2,6-Dinitrotoluene	ND		1.13	0.566	
3-Nitroaniline	ND		1.13	0.566	
Acenaphthene	ND		0.113	0.0566	
2,4-Dinitrophenol	ND		5.66	2.83	
4-Nitrophenol	ND		5.66	2.83	
Dibenzofuran	ND		1.13	0.566	
2,4-Dinitrotoluene	ND		1.13	0.566	
Diethylphthalate	ND		1.13	0.566	
4-Chlorophenylphenylether	ND		1.13	0.566	
Fluorene	ND		0.113	0.0566	
4-Nitroaniline	ND		1.13	0.566	
4,6-Dinitro-2-methylphenol	ND		5.66	2.83	
N-Nitrosodiphenylamine	ND		1.13	0.566	
4-Bromophenylphenylether	ND		1.13	0.566	
Hexachlorobenzene	ND		1.13	0.566	
Pentachlorophenol	ND		3.68	1.84	
Phenanthrene	ND		0.113	0.0566	
Anthracene	ND		0.113	0.0566	
Di-n-butylphthalate	ND		1.13	0.566	
Fluoranthene	ND		0.113	0.0566	
Pyrene	ND		0.113	0.0566	
Butylbenzylphthalate	ND		1.7	0.848	
3,3'-Dichlorobenzidine	ND		5.66	2.83	
Benzo(a)anthracene	ND		0.113	0.0566	
Chrysene	ND		0.141	0.0707	
bis(2-Ethylhexyl)phthalate		85.7	8.48	4.24	D10 MG
Di-n-octylphthalate	ND		1.13	0.566	
Benzofluoranthenes	ND		0.226	0.113	
Benzo(a)pyrene	ND		0.113	0.0566	
Indeno(1,2,3-cd)pyrene	ND		0.113	0.0566	
Dibenz(a,h)anthracene	ND		0.113	0.0566	
Benzo(g,h,i)perylene	ND		0.113	0.0566	

MW 10-27-03

00037

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050906
Lab ID:	114949-06
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	93.56
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	84.2		35	144
Phenol - d5	85.1		39	140
Nitrobenzene - d5	85.2		37	156
2 - Fluorobiphenyl	75.9		39	145
2,4,6 - Tribromophenol	74.7		25	148
p - Terphenyl - d14	83.2		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	106	53	
bis(2-Chloroethyl)ether	ND	106	53	
2-Chlorophenol	ND	106	53	
1,3-Dichlorobenzene	ND	106	53	
1,4-Dichlorobenzene	ND	106	53	
Benzyl Alcohol	ND	133	66.3	
1,2-Dichlorobenzene	ND	106	53	
2-Methylphenol	ND	106	53	
bis(2-Chloroisopropyl)ether	ND	106	53	
3-&4-Methylphenol	ND	212	106	
N-nitroso-di-n-propylamine	ND	106	53	
Hexachloroethane	ND	106	53	
Nitrobenzene	ND	106	53	
Isophorone	ND	106	53	
2-Nitrophenol	ND	106	53	
2,4-Dimethylphenol	ND	106	53	
Benzoic Acid	ND	530 J	265	
bis(2-Chloroethoxy)methane	ND	106	53	
2,4-Dichlorophenol	ND	106	53	
1,2,4-Trichlorobenzene	ND	106	53	
Naphthalene	ND	26.5	5.3	
4-Chloroaniline	ND	106	53	
Hexachlorobutadiene	ND	106	53	
4-Chloro-3-methylphenol	ND	106	53	
2-Methylnaphthalene	ND	26.5	13.3	
Hexachlorocyclopentadiene	ND	106	53	

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Semivolatile Organics by USEPA Method 8270 data for 114949-06 continued...

Analyte	Result (ug/kg)	PQL	MRL
2,4,6-Trichlorophenol	ND	106	53
2,4,5-Trichlorophenol	ND	106	53
2-Chloronaphthalene	ND	26.5	13.3
2-Nitroaniline	ND	106	53
Dimethylphthalate	ND	106	53
Acenaphthylene	ND	26.5	13.3
2,6-Dinitrotoluene	ND	106	53
3-Nitroaniline	ND	106	53
Acenaphthene	ND	26.5	13.3
2,4-Dinitrophenol	ND	530	265
4-Nitrophenol	ND	676	338
Dibenzofuran	ND	106	53
2,4-Dinitrotoluene	ND	106	53
Diethylphthalate	ND	106	53
4-Chlorophenylphenylether	ND	106	53
Fluorene	ND	26.5	13.3
4-Nitroaniline	ND	106	53
4,6-Dinitro-2-methylphenol	ND	530	265
N-Nitrosodiphenylamine	ND	106	53
4-Bromophenylphenylether	ND	106	53
Hexachlorobenzene	ND	106	53
Pentachlorophenol	ND	106	53
Phenanthrene	ND	26.5	13.3
Anthracene	ND	26.5	13.3
Di-n-butylphthalate	ND	106	53
Fluoranthene	ND	26.5	13.3
Pyrene	ND	26.5	13.3
Butylbenzylphthalate	ND	133	66.3
3,3'-Dichlorobenzidine	ND	212	106
Benzo(a)anthracene	ND	26.5	13.3
Chrysene	ND	26.5	13.3
bis(2-Ethylhexyl)phthalate	ND	106	53
Di-n-octylphthalate	ND	106	53
Benzofluoranthenes	ND	26.5	13.3
Benzo(a)pyrene	ND	26.5	13.3
Indeno(1,2,3-cd)pyrene	ND	26.5	13.3
Dibenz(a,h)anthracene	ND	26.5	13.3
Benzo(g,h,i)perylene	ND	26.5	13.3

JMW
10-27-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050892
Lab ID:	114949-07
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	91.66
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	High
2 - Fluorophenol	83.4		35	144
Phenol - d5	83.3		39	140
Nitrobenzene - d5	82.8		37	156
2 - Fluorobiphenyl	70.5		39	145
2,4,6 - Tribromophenol	73.1		25	148
p - Terphenyl - d14	78.9		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	108	53.8	
bis(2-Chloroethyl)ether	ND	108	53.8	
2-Chlorophenol	ND	108	53.8	
1,3-Dichlorobenzene	ND	108	53.8	
1,4-Dichlorobenzene	ND	108	53.8	
Benzyl Alcohol	ND	135	67.3	
1,2-Dichlorobenzene	ND	108	53.8	
2-Methylphenol	ND	108	53.8	
bis(2-Chloroisopropyl)ether	ND	108	53.8	
3-&4-Methylphenol	ND	215	108	
N-nitroso-di-n-propylamine	ND	108	53.8	
Hexachloroethane	ND	108	53.8	
Nitrobenzene	ND	108	53.8	
Isophorone	ND	108	53.8	
2-Nitrophenol	ND	108	53.8	
2,4-Dimethylphenol	ND	108	53.8	
Benzoic Acid	ND	538	269	
bis(2-Chloroethoxy)methane	ND	108	53.8	
2,4-Dichlorophenol	ND	108	53.8	
1,2,4-Trichlorobenzene	ND	108	53.8	
Naphthalene	ND	26.9	5.38	
4-Chloroaniline	ND	108	53.8	
Hexachlorobutadiene	ND	108	53.8	
4-Chloro-3-methylphenol	ND	108	53.8	
2-Methylnaphthalene	ND	26.9	13.5	
Hexachlorocyclopentadiene	ND	108	53.8	

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STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114949-07 continued...

Analyte	Result (ug/kg)	PQL	MRL
2,4,6-Trichlorophenol	ND	108	53.8
2,4,5-Trichlorophenol	ND	108	53.8
2-Chloronaphthalene	ND	26.9	13.5
2-Nitroaniline	ND	108	53.8
Dimethylphthalate	ND	108	53.8
Acenaphthylene	ND	26.9	13.5
2,6-Dinitrotoluene	ND	108	53.8
3-Nitroaniline	ND	108	53.8
Acenaphthene	ND	26.9	13.5
2,4-Dinitrophenol	ND	538	269
4-Nitrophenol	ND	687	343
Dibenzofuran	ND	108	53.8
2,4-Dinitrotoluene	ND	108	53.8
Diethylphthalate	ND	108	53.8
4-Chlorophenylphenylether	ND	108	53.8
Fluorene	ND	26.9	13.5
4-Nitroaniline	ND	108	53.8
4,6-Dinitro-2-methylphenol	ND	538	269
N-Nitrosodiphenylamine	ND	108	53.8
4-Bromophenylphenylether	ND	108	53.8
Hexachlorobenzene	ND	108	53.8
Pentachlorophenol	ND	108	53.8
Phenanthrene	ND	26.9	13.5
Anthracene	ND	26.9	13.5
Di-n-butylphthalate	ND	108	53.8
Fluoranthene	ND	26.9	13.5
Pyrene	ND	26.9	13.5
Butylbenzylphthalate	ND	135	67.3
3,3'-Dichlorobenzidine	ND	215	108
Benzo(a)anthracene	ND	26.9	13.5
Chrysene	ND	26.9	13.5
bis(2-Ethylhexyl)phthalate	ND	108	53.8
Di-n-octylphthalate	ND	108	53.8
Benzofluoranthenes	ND	26.9	13.5
Benzo(a)pyrene	ND	26.9	13.5
Indeno(1,2,3-cd)pyrene	ND	26.9	13.5
Dibenz(a,h)anthracene	ND	26.9	13.5
Benzo(g,h,i)perylene	ND	26.9	13.5

MW
10-27-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050893
Lab ID:	114949-08
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	91.73
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	110		35	144
Phenol - d5	110		39	140
Nitrobenzene - d5	110		37	156
2 - Fluorobiphenyl	106		39	145
2,4,6 - Tribromophenol	110		25	148
p - Terphenyl - d14	114		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	109	54.5	
bis(2-Chloroethyl)ether	ND	109	54.5	
2-Chlorophenol	ND	109	54.5	
1,3-Dichlorobenzene	ND	109	54.5	
1,4-Dichlorobenzene	ND	109	54.5	
Benzyl Alcohol	ND	136	68.1	
1,2-Dichlorobenzene	ND	109	54.5	
2-Methylphenol	ND	109	54.5	
bis(2-Chloroisopropyl)ether	ND	109	54.5	
3-&4-Methylphenol	ND	218	109	
N-nitroso-di-n-propylamine	ND	109	54.5	
Hexachloroethane	ND	109	54.5	
Nitrobenzene	ND	109	54.5	
Isophorone	ND	109	54.5	
2-Nitrophenol	ND	109	54.5	
2,4-Dimethylphenol	ND	109	54.5	
Benzoic Acid	ND	545	272	
bis(2-Chloroethoxy)methane	ND	109	54.5	
2,4-Dichlorophenol	ND	109	54.5	
1,2,4-Trichlorobenzene	ND	109	54.5	
Naphthalene	ND	27.2	5.45	
4-Chloroaniline	ND	109	54.5	
Hexachlorobutadiene	ND	109	54.5	
4-Chloro-3-methylphenol	ND	109	54.5	
2-Methylnaphthalene	ND	27.2	13.6	
Hexachlorocyclopentadiene	ND	109	54.5	

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STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114949-08 continued...

Analyte	Result (ug/kg)		PQL	MRL	
2,4,6-Trichlorophenol	ND		109	54.5	
2,4,5-Trichlorophenol	ND		109	54.5	
2-Chloronaphthalene	ND		27.2	13.6	
2-Nitroaniline	ND		109	54.5	
Dimethylphthalate	ND		109	54.5	
Acenaphthylene	ND		27.2	13.6	
2,6-Dinitrotoluene	ND		109	54.5	
3-Nitroaniline	ND		109	54.5	
Acenaphthene	ND		27.2	13.6	
2,4-Dinitrophenol	ND		545	272	
4-Nitrophenol	ND		694	347	
Dibenzofuran	ND		109	54.5	
2,4-Dinitrotoluene	ND		109	54.5	
Diethylphthalate	ND		109	54.5	
4-Chlorophenylphenylether	ND		109	54.5	
Fluorene	ND		27.2	13.6	
4-Nitroaniline	ND		109	54.5	
4,6-Dinitro-2-methylphenol	ND		545	272	
N-Nitrosodiphenylamine	ND		109	54.5	
4-Bromophenylphenylether	ND		109	54.5	
Hexachlorobenzene	ND		109	54.5	
Pentachlorophenol	ND		109	54.5	
Phenanthrene	ND		27.2	13.6	
Anthracene	ND		27.2	13.6	
Di-n-butylphthalate	ND		109	54.5	
Fluoranthene		16.1	27.2	13.6	J
Pyrene		21.6	27.2	13.6	J
Butylbenzylphthalate	ND		136	68.1	
3,3'-Dichlorobenzidine	ND		218	109	
Benzo(a)anthracene		17	27.2	13.6	J
Chrysene		22.8	27.2	13.6	J
bis(2-Ethylhexyl)phthalate	ND		109	54.5	
Di-n-octylphthalate	ND		109	54.5	
Benzofluoranthenes		24.8	27.2	13.6	J
Benzo(a)pyrene	ND		27.2	13.6	
Indeno(1,2,3-cd)pyrene	ND		27.2	13.6	
Dibenz(a,h)anthracene	ND		27.2	13.6	
Benzo(g,h,i)perylene	ND		27.2	13.6	

MW
10-27-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050894
Lab ID:	114949-09
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	77.02
Dilution Factor	1

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	High
2 - Fluorophenol	81.4		35	144
Phenol - d5	81.4		39	140
Nitrobenzene - d5	77.3		37	156
2 - Fluorobiphenyl	52		39	145
2,4,6 - Tribromophenol	70.9		25	148
p - Terphenyl - d14	56.5		39	158

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Phenol	ND	125	62.5	
bis(2-Chloroethyl)ether	ND	125	62.5	
2-Chlorophenol	ND	125	62.5	
1,3-Dichlorobenzene	ND	125	62.5	
1,4-Dichlorobenzene	ND	125	62.5	
Benzyl Alcohol	ND	156	78.1	
1,2-Dichlorobenzene	ND	125	62.5	
2-Methylphenol	ND	125	62.5	
bis(2-Chloroisopropyl)ether	ND	125	62.5	
3-&4-Methylphenol	ND	250	125	
N-nitroso-di-n-propylamine	ND	125	62.5	
Hexachloroethane	ND	125	62.5	
Nitrobenzene	ND	125	62.5	
Isophorone	ND	125	62.5	
2-Nitrophenol	ND	125	62.5	
2,4-Dimethylphenol	ND	125	62.5	
Benzoic Acid	ND	625 J	312	
bis(2-Chloroethoxy)methane	ND	125	62.5	
2,4-Dichlorophenol	ND	125	62.5	
1,2,4-Trichlorobenzene	ND	125	62.5	
Naphthalene	ND	31.2	6.25	
4-Chloroaniline	ND	125	62.5	
Hexachlorobutadiene	ND	125	62.5	
4-Chloro-3-methylphenol	ND	125	62.5	
2-Methylnaphthalene	ND	31.2	15.6	
Hexachlorocyclopentadiene	ND	125	62.5	

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STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114949-09 continued...

Analyte	Result (ug/kg)	PQL	MRL
2,4,6-Trichlorophenol	ND	125	62.5
2,4,5-Trichlorophenol	ND	125	62.5
2-Chloronaphthalene	ND	31.2	15.6
2-Nitroaniline	ND	125	62.5
Dimethylphthalate	ND	125	62.5
Acenaphthylene	ND	31.2	15.6
2,6-Dinitrotoluene	ND	125	62.5
3-Nitroaniline	ND	125	62.5
Acenaphthene	ND	31.2	15.6
2,4-Dinitrophenol	ND	625	312
4-Nitrophenol	ND	796	398
Dibenzofuran	ND	125	62.5
2,4-Dinitrotoluene	ND	125	62.5
Diethylphthalate	ND	125	62.5
4-Chlorophenylphenylether	ND	125	62.5
Fluorene	ND	31.2	15.6
4-Nitroaniline	ND	125	62.5
4,6-Dinitro-2-methylphenol	ND	625	312
N-Nitrosodiphenylamine	ND	125	62.5
4-Bromophenylphenylether	ND	125	62.5
Hexachlorobenzene	ND	125	62.5
Pentachlorophenol	ND	125	62.5
Phenanthrene	ND	31.2	15.6
Anthracene	ND	31.2	15.6
Di-n-butylphthalate	ND	125	62.5
Fluoranthene	ND	31.2	15.6
Pyrene	ND	31.2	15.6
Butylbenzylphthalate	ND	156	78.1
3,3'-Dichlorobenzidine	ND	250	125
Benzo(a)anthracene	ND	31.2	15.6
Chrysene	ND	31.2	15.6
bis(2-Ethylhexyl)phthalate	ND	125	62.5
Di-n-octylphthalate	ND	125	62.5
Benzofluoranthenes	ND	31.2	15.6
Benzo(a)pyrene	ND	31.2	15.6
Indeno(1,2,3-cd)pyrene	ND	31.2	15.6
Dibenz(a,h)anthracene	ND	31.2	15.6
Benzo(g,h,i)perylene	ND	31.2	15.6

MN
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00045

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050896
Lab ID:	114949-10
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	-
Dilution Factor	0.5

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	37.5		10	112
Phenol - d5	24.5		10	85
Nitrobenzene - d5	70.6		41	155
2 - Fluorobiphenyl	69.3		34	148
2,4,6 - Tribromophenol	86.8		29	159
p - Terphenyl - d14	81.2		33	172

Analyte	Result (ug/L)	PQL	MRL	Flags
Phenol	ND	0.953	0.477	
bis(2-Chloroethyl)ether	ND	0.953	0.477	
2-Chlorophenol	ND	0.953	0.477	
1,3-Dichlorobenzene	ND	0.953	0.477	
1,4-Dichlorobenzene	ND	0.953	0.477	
Benzyl Alcohol	ND	0.953	0.477	
1,2-Dichlorobenzene	ND	0.953	0.477	
2-Methylphenol	ND	0.953	0.477	
bis(2-Chloroisopropyl)ether	ND	0.953	0.477	
3-&4-Methylphenol	ND	1.91	0.953	
N-nitroso-di-n-propylamine	ND	0.953	0.477	
Hexachloroethane	ND	0.953	0.477	
Nitrobenzene	ND	0.953	0.477	
Isophorone	ND	0.953	0.477	
2-Nitrophenol	ND	0.953	0.477	
2,4-Dimethylphenol	ND	4.77	2.38	
Benzoic Acid	ND	4.77	2.38	
bis(2-Chloroethoxy)methane	ND	0.953	0.477	
2,4-Dichlorophenol	ND	0.953	0.477	
1,2,4-Trichlorobenzene	ND	0.953	0.477	
Naphthalene	ND	0.286	0.143	
4-Chloroaniline	ND	1.43	0.715	
Hexachlorobutadiene	ND	0.953	0.477	
4-Chloro-3-methylphenol	ND	0.953	0.477	
2-Methylnaphthalene	ND	0.238	0.119	
Hexachlorocyclopentadiene	ND	4.77	2.38	

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STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114949-10 continued...

Analyte	Result (ug/L)	PQL	MRL
2,4,6-Trichlorophenol	ND	0.953	0.477
2,4,5-Trichlorophenol	ND	0.953	0.477
2-Chloronaphthalene	ND	0.0953	0.0477
2-Nitroaniline	ND	0.953	0.477
Dimethylphthalate	ND	0.953	0.477
Acenaphthylene	ND	0.0953	0.0477
2,6-Dinitrotoluene	ND	0.953	0.477
3-Nitroaniline	ND	0.953	0.477
Acenaphthene	ND	0.0953	0.0477
2,4-Dinitrophenol	ND	4.77	2.38
4-Nitrophenol	ND	4.77	2.38
Dibenzofuran	ND	0.953	0.477
2,4-Dinitrotoluene	ND	0.953	0.477
Diethylphthalate	ND	0.953	0.477
4-Chlorophenylphenylether	ND	0.953	0.477
Fluorene	ND	0.0953	0.0477
4-Nitroaniline	ND	0.953	0.477
4,6-Dinitro-2-methylphenol	ND	4.77	2.38
N-Nitrosodiphenylamine	ND	0.953	0.477
4-Bromophenylphenylether	ND	0.953	0.477
Hexachlorobenzene	ND	0.953	0.477
Pentachlorophenol	ND	3.1	1.55
Phenanthrene	ND	0.0953	0.0477
Anthracene	ND	0.0953	0.0477
Di-n-butylphthalate	ND	0.953	0.477
Fluoranthene	ND	0.0953	0.0477
Pyrene	ND	0.0953	0.0477
Butylbenzylphthalate	ND	1.43	0.715
3,3'-Dichlorobenzidine	ND	4.77	2.38
Benzo(a)anthracene	ND	0.0953	0.0477
Chrysene	ND	0.119	0.0596
bis(2-Ethylhexyl)phthalate	ND	7.15	3.57
Di-n-octylphthalate	ND	0.953	0.477
Benzofluoranthenes	ND	0.191	0.0953
Benzo(a)pyrene	ND	0.0953	0.0477
Indeno(1,2,3-cd)pyrene	ND	0.0953	0.0477
Dibenz(a,h)anthracene	ND	0.0953	0.0477
Benzo(g,h,i)perylene	ND	0.0953	0.0477

MK 10-27-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050895
Lab ID:	114949-11
Date Received:	7/18/2003
Date Prepared:	7/22/2003
Date Analyzed:	7/27/2003
% Solids	-
Dilution Factor	0.5

Semivolatile Organics by USEPA Method 8270

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2 - Fluorophenol	27.8		10	112
Phenol - d5	17.7		10	85
Nitrobenzene - d5	78		41	155
2 - Fluorobiphenyl	76.7		34	148
2,4,6 - Tribromophenol	71.3		29	159
p - Terphenyl - d14	83.3		33	172

Analyte	Result (ug/L)	PQL	MRL	Flags
Phenol	ND	1.03	0.514	
bis(2-Chloroethyl)ether	ND	1.03	0.514	
2-Chlorophenol	ND	1.03	0.514	
1,3-Dichlorobenzene	ND	1.03	0.514	
1,4-Dichlorobenzene	ND	1.03	0.514	
Benzyl Alcohol	ND	1.03	0.514	
1,2-Dichlorobenzene	ND	1.03	0.514	
2-Methylphenol	ND	1.03	0.514	
bis(2-Chloroisopropyl)ether	ND	1.03	0.514	
3-&4-Methylphenol	ND	2.06	1.03	
N-nitroso-di-n-propylamine	ND	1.03	0.514	
Hexachloroethane	ND	1.03	0.514	
Nitrobenzene	ND	1.03	0.514	
Isophorone	ND	1.03	0.514	
2-Nitrophenol	ND	1.03	0.514	
2,4-Dimethylphenol	ND	5.14	2.57	
Benzoic Acid	ND	5.14	2.57	
bis(2-Chloroethoxy)methane	ND	1.03	0.514	
2,4-Dichlorophenol	ND	1.03	0.514	
1,2,4-Trichlorobenzene	ND	1.03	0.514	
Naphthalene	ND	0.308	0.154	
4-Chloroaniline	ND	1.54	0.771	
Hexachlorobutadiene	ND	1.03	0.514	
4-Chloro-3-methylphenol	ND	1.03	0.514	
2-Methylnaphthalene	ND	0.257	0.128	
Hexachlorocyclopentadiene	ND	5.14	2.57	

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STL Seattle

Semivolatile Organics by USEPA Method 8270 data for 114949-11 continued...

Analyte		Result (ug/L)	PQL	MRL	
2,4,6-Trichlorophenol	ND		1.03	0.514	
2,4,5-Trichlorophenol	ND		1.03	0.514	
2-Chloronaphthalene	ND		0.103	0.0514	
2-Nitroaniline	ND		1.03	0.514	
Dimethylphthalate	ND		1.03	0.514	
Acenaphthylene	ND		0.103	0.0514	
2,6-Dinitrotoluene	ND		1.03	0.514	
3-Nitroaniline	ND		1.03	0.514	
Acenaphthene	ND		0.103	0.0514	
2,4-Dinitrophenol	ND		5.14	2.57	
4-Nitrophenol	ND		5.14	2.57	
Dibenzofuran	ND		1.03	0.514	
2,4-Dinitrotoluene	ND		1.03	0.514	
Diethylphthalate	ND		1.03	0.514	
4-Chlorophenylphenylether	ND		1.03	0.514	
Fluorene	ND		0.103	0.0514	
4-Nitroaniline	ND		1.03	0.514	
4,6-Dinitro-2-methylphenol	ND		5.14	2.57	
N-Nitrosodiphenylamine	ND		1.03	0.514	
4-Bromophenylphenylether	ND		1.03	0.514	
Hexachlorobenzene	ND		1.03	0.514	
Pentachlorophenol	ND		3.34	1.67	
Phenanthrene	ND		0.103	0.0514	
Anthracene	ND		0.103	0.0514	
Di-n-butylphthalate	ND		1.03	0.514	
Fluoranthene	ND		0.103	0.0514	
Pyrene	ND		0.103	0.0514	
Butylbenzylphthalate	ND		1.54	0.771	
3,3'-Dichlorobenzidine	ND		5.14	2.57	
Benzo(a)anthracene	ND		0.103	0.0514	
Chrysene	ND		0.128	0.0642	
bis(2-Ethylhexyl)phthalate		70.2	7.71	3.85	D10
Di-n-octylphthalate	ND		1.03	0.514	
Benzofluoranthenes	ND		0.206	0.103	
Benzo(a)pyrene	ND		0.103	0.0514	
Indeno(1,2,3-cd)pyrene	ND		0.103	0.0514	
Dibenz(a,h)anthracene	ND		0.103	0.0514	
Benzo(g,h,i)perylene	ND		0.103	0.0514	

MN 10-27-03

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 4 liquid and 7 solid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Resource Conservation and Recovery Act (RCRA) metals analyses (EPA 6000/7000 Series Methods) were performed by North Creek Analytical, Beaverton, Oregon.

The samples were numbered:

03050898	03050899	03050900	03050901	03050905
03050906	03050892	03050893	03050894	03050896
03050895				

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected between July 17 and 18, 2003, and were analyzed by July 24, 2003, therefore meeting QC criteria of less than 6 months between collection and analysis (28 days for mercury).

2. Initial and Continuing Calibration: Acceptable.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits of 90% to 110% (± 1%). All AA recoveries were within QC limits of 80% to 120%.

3. Blanks: Satisfactory.

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results except arsenic, lead, and silver in the soil samples. Sample results were qualified as not detected (U) if less than five times the positive blank results and as estimated quantities (J or UJ)

if less than five times the absolute value of the negative blank result.

4. ICP Interference Check Sample: Acceptable.

Interference Check Sample (ICS) results were within QC limits.

5. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

7. ICP Serial Dilution: Satisfactory.

Serial dilution results were within QC limits except barium and chromium in the soil analysis; associated results were qualified as estimated quantities (J or UJ).

8. Blank Spike/Matrix Spike Analysis: Acceptable.

Blank spike(BS)/matrix spike (MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits.

9. Duplicate Analysis: Acceptable.

All duplicate results were within QC limits.

10. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050898
Lab ID:	114949-01
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/22/03
Dilution Factor	1
% Solids	92.71

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	4.01 U	2.04	0.368	~~B1~~ MW
Barium	66.1 J	1.02	0.0409	
Cadmium	ND	1.02 U	0.0204	
Chromium	11.6 J	2.04	0.0204	~~B2~~ MW
Lead	3.07 J	2.04	0.675	
Selenium	ND	10.2 U	2.37	
Silver	0.221 J	2.04	0.102	~~J~~ MW

MW
10-28-03

00648

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050898
Lab ID:	114949-01
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	92.71

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.222	0.0198	0.00526	~~B2~~ MW

MW
10-28-03

00649

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050899
Lab ID:	114949-02
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/22/03
Dilution Factor	1
% Solids	92.85

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	3.43 U	2.13	0.384	~~B1~~ MW
Barium	77.2 J	1.07	0.0427	
Cadmium	ND	1.07 U	0.0213	
Chromium	14.1 J	2.13	0.0213	~~B2~~ MW
Lead	9.2	2.13	0.704	
Selenium	ND	10.7 U	2.48	
Silver	ND	2.13 UJ	0.107	

MW
10-28-03

00650

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050899
Lab ID:	114949-02
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	92.85

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.213	0.0178	0.00472	~~B2~~ MW

MW
10-28-03

00651

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050900
Lab ID:	114949-03
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/22/03
Dilution Factor	1
% Solids	79.07

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	3.04 J	2.42	0.435	~~B1~~ Mo
Barium	91.1 J	1.21	0.0483	
Cadmium	ND	1.21 U	0.0242	
Chromium	12.2 J	2.42	0.0242	~~B2~~ Mo
Lead	2.91 J	2.42	0.798	
Selenium	ND	12.1 U	2.8	
Silver	ND	2.42 U J	0.121	

MW 10-28-03

00652

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050900
Lab ID:	114949-03
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	79.07

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.261	0.0187	0.00497	~~B2~~ MW

MW
10-28-03

00653

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050906
Lab ID:	114949-06
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/22/03
Dilution Factor	1
% Solids	93.56

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	3.08 U	2.04	0.368	~~B1~~ MW
Barium	96.8 J	1.02	0.0409	
Cadmium	2.87	1.02	0.0204	
Chromium	11 J	2.04	0.0204	~~B2~~ M
Lead	3.57	2.04	0.674	
Selenium	ND	10.2 U	2.37	
Silver	ND	2.04 UJ	0.102	

MW 10-28-03

00654

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050906
Lab ID:	114949-06
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	93.56

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.343	0.0195	0.00517	~~B2~~

MW
10-28-03

00655

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050892
Lab ID:	114949-07
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/22/03
Dilution Factor	1
% Solids	91.66

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	3.33 U	2.08	0.375	~~B1~~ MW
Barium	75 J	1.04	0.0417	
Cadmium	ND	1.04 U	0.0208	
Chromium	13 J	2.08	0.0208	~~B2~~ MW
Lead	2.65 J	2.08	0.688	
Selenium	ND	10.4 U	2.42	
Silver	ND	2.08 UJ	0.104	

MW
10-28-03

00656

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050892
Lab ID:	114949-07
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	91.66

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.254	0.0206	0.00547	B2 MW

MW
10-28-03

00657

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050893
Lab ID:	114949-08
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/22/03
Dilution Factor	1
% Solids	91.73

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	3.34 U	2.1	0.378	~~B1~~ MW
Barium	169 J	1.05	0.042	
Cadmium	ND	1.05 U	0.021	
Chromium	16.9 J	2.1	0.021	~~B2~~ MW
Lead	2.68 J	2.1	0.692	
Selenium	ND	10.5 U	2.43	
Silver	ND	2.1 UJ	0.105	

MW
10-28-03

00658

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050893
Lab ID:	114949-08
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	91.73

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.207	0.0187	0.00495	B2 MW

MW
10-28-03

00659

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050894
Lab ID:	114949-09
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/22/03
Dilution Factor	1
% Solids	77.02

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	2.5 U	2.48	0.446	~~B1~~ MW
Barium	79.9 J	1.24	0.0495	
Cadmium	ND	1.24 U	0.0248	
Chromium	24.7 J	2.48	0.0248	~~B2~~ MW
Lead	2.36 J	2.48	0.817	~~J~~ MW
Selenium	ND	12.4 U	2.87	
Silver	ND	2.48 UJ	0.124	

MW
10-28-03

00660

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050894
Lab ID:	114949-09
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	77.02

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.266	0.021	0.00558	~~B2~~ Mu

MW
10-28-03

00661

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050908
Lab ID:	114949-12
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/22/03
Dilution Factor	1
% Solids	85.64

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	3.01 U	2.25	0.406	~~B1~~ MW
Barium	88.3 J	1.13	0.0451	
Cadmium	5.92	1.13	0.0225	
Chromium	149 J	2.25	0.0225	~~B2~~ MW
Lead	27.4	2.25	0.744	
Selenium	ND	11.3 U	2.61	
Silver	ND	2.25 UJ	0.113	

MW
10-28-03

00662

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050908
Lab ID:	114949-12
Date Received:	7/18/03
Date Prepared:	7/22/03
Date Analyzed:	7/24/03
Dilution Factor	1
% Solids	85.64

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.243	0.0208	0.0055	~~B2~~ MW

MW
10-28-03

00663

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050901
Lab ID:	114949-04
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	MDL	Flags
Arsenic	0.00659	0.01	0.0018	J MU
Barium	0.0903 J	0.005	0.0002	B2 MU
Cadmium	ND	0.005	0.0001	
Chromium	0.0124 J	0.01	0.0001	B2 MU
Lead	0.00588	0.01	0.0033	J MU
Selenium	ND	0.05	0.0116	
Silver	ND	0.01	0.0005	

JMW
10-28-03

00742

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050901
Lab ID:	114949-04
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MDL	Flags
Mercury	0.00301	0.0002	0.000053	~~B2~~ MM

MM 10-28-03

00743

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050905
Lab ID:	114949-05
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	MDL	Flags
Arsenic	0.0124	0.01	0.0018	
Barium	0.193	0.005	0.0002	~~B2~~ MW
Cadmium	ND	0.005 V	0.0001	
Chromium	0.055	0.01	0.0001	~~B2~~ MV
Lead	0.0147	0.01	0.0033	
Selenium	ND	0.05 V	0.0116	
Silver	ND	0.01 V	0.0005	

MW
10-28-03

00744

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050905
Lab ID:	114949-05
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MDL	Flags
Mercury	0.0028	0.0002	0.000053	~~B2~~ MM

MM 10-28-03

00745

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050896
Lab ID:	114949-10
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	MDL	Flags
Arsenic	ND	0.01 U	0.0018	
Barium	0.000840 U	0.005	0.0002	~~J B1~~
Cadmium	ND	0.005 U	0.0001	
Chromium	0.000649 U	0.01	0.0001	~~J B1~~
Lead	ND	0.01 U	0.0033	
Selenium	ND	0.05 U	0.0116	
Silver	0.000965 U	0.01	0.0005	~~J B1~~

MW
10-28-03

00746

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050896
Lab ID:	114949-10
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MDL	Flags
Mercury	0.00285	0.0002	0.000053	~~B2~~ MU

MW
10-28-03

00747

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050895
Lab ID:	114949-11
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	MDL	Flags
Arsenic	ND	0.01	0.0018	
Barium	0.043	0.005	0.0002	~~B2~~ MY
Cadmium	ND	0.005	0.0001	
Chromium	0.00729 J	0.01	0.0001	~~J B1~~ MW
Lead	0.00445 J	0.01	0.0033	~~J~~ MW
Selenium	ND	0.05	0.0116	
Silver	0.00150 J	0.01	0.0005	~~J B1~~ MW

MW
10-28-03

00748

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050895
Lab ID:	114949-11
Date Received:	7/18/03
Date Prepared:	7/23/03
Date Analyzed:	7/24/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MDL	Flags
Mercury	0.00313	0.0002	0.000053	~~B2~~ MU

MW 10-28-03

00749

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 7 solid and 4 liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Volatile Organic Compounds (EPA SW-846 Method 8260) was performed by STL-Seattle, Tacoma, Washington.

The samples were numbered:

03050898	03050899	03050900	03050901	03050905
03050906	03050892	03050893	03050894	03050896
03050895				

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected on July 18 or 19, 2003, and were analyzed by July 29, 2003, therefore meeting QC criteria of less than 14 days between collection and analysis.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Satisfactory.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050 except chloroethane in the July 23 calibration; associated sample quantitation limits were rejected (R). All Relative Standard Deviations (RSDs) were less than the QC limits of 30%.

4. **Continuing Calibration: Satisfactory.**

All RRFs were greater than the QC limit of 0.050. All % differences were less than the QC limit of 25% except 2,2-dichloropropane in the July 29 calibration; no action was taken as the analyte was not detected in any associated samples.

recycled paper

5. Blanks: Acceptable.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

6. Surrogates: Acceptable.

All surrogate recoveries were within QC limits.

7. Matrix and Blank Spike Analysis: Satisfactory.

Spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits except 1,1-dichloroethane with a high recovery in the blank spike sample; no action was taken as it was not detected in any sample.

8. Duplicate Analysis: Satisfactory.

The laboratory duplicate analysis results were within QC limits except some outliers in the solid matrix spike duplicate; no action was taken based on these outliers alone.

9. Internal Standards: Acceptable.

All internal standards were within $\pm$ 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50% to 200% of the continuing calibration area counts.

10. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

12. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

R - The sample result is rejected.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050898
Lab ID:	114949-01
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/23/2003
% Solids	92.71
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	High
Dibromofluoromethane	93		75	125
Fluorobenzene	97.3		75	125
Toluene-D8	101		75	125
Ethylbenzene-d10	106		75	125
Bromofluorobenzene	102		75	125
Trifluorotoluene	112		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	419	209	
Chloromethane	ND	1050	523	
Vinyl chloride	ND	419	209	
Bromomethane	ND	837	419	
Chloroethane	~~ND~~	~~419~~	~~209~~ mm R	
Trichlorofluoromethane	ND	419	209	
1,1-Dichloroethene	ND	419	209	
Methylene chloride	ND	419	209	
trans-1,2-Dichloroethene	ND	419	209	
1,1-Dichloroethane	ND	419	209	
2,2-Dichloropropane	ND	419	209	
cis-1,2-Dichloroethene	ND	419	209	
Bromochloromethane	ND	419	209	
Chloroform	ND	419	209	
1,1,1-Trichloroethane	ND	419	209	
Carbon Tetrachloride	ND	419	209	
1,1-Dichloropropene	ND	419	209	
Benzene	ND	419	209	
1,2-Dichloroethane	ND	419	209	
Trichloroethene	ND	419	209	
1,2-Dichloropropane	ND	419	209	
Dibromomethane	ND	419	209	
Bromodichloromethane	ND	419	209	
cis-1,3-Dichloropropene	ND	419	209	
Toluene	ND	419	209	
trans-1,3-Dichloropropene	ND	419	209	

MW 10-22-03

00006

STL Seattle

Volatile Organics by USEPA Method 5035\8260B data for 114949-01 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	419	209
Tetrachloroethene	ND	419	209
1,3-Dichloropropane	ND	419	209
Dibromochloromethane	ND	419	209
1,2-Dibromoethane	ND	419	209
Chlorobenzene	ND	419	209
Ethylbenzene	ND	419	209
1,1,1,2-Tetrachloroethane	ND	419	209
m,p-Xylene	ND	837	419
o-Xylene	ND	419	209
Styrene	ND	419	209
Bromoform	ND	419	209
Isopropylbenzene	ND	419	209
Bromobenzene	ND	419	209
n-Propylbenzene	ND	419	209
1,1,2,2-Tetrachloroethane	ND	419	209
1,2,3-Trichloropropane	ND	419	209
2-Chlorotoluene	ND	419	209
1,3,5-Trimethylbenzene	ND	419	209
4-Chlorotoluene	ND	419	209
t-Butylbenzene	ND	419	209
1,2,4-Trimethylbenzene	ND	419	209
sec-Butylbenzene	ND	419	209
1,3-Dichlorobenzene	ND	419	209
4-Isopropyltoluene	ND	419	209
1,4-Dichlorobenzene	ND	419	209
n-Butylbenzene	ND	419	209
1,2-Dichlorobenzene	ND	419	209
1,2-Dibromo-3-chloropropane	ND	837	419
1,2,4-Trichlorobenzene	ND	419	209
Hexachlorobutadiene	ND	419	209
Naphthalene	ND	419	209
1,2,3-Trichlorobenzene	ND	419	209

MW
10-27-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050899
Lab ID:	114949-02
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/23/2003
% Solids	92.85
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	High
Dibromofluoromethane	96		75	125
Fluorobenzene	99.1		75	125
Toluene-D8	103		75	125
Ethylbenzene-d10	103		75	125
Bromofluorobenzene	93.8		75	125
Trifluorotoluene	108		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	429	215	
Chloromethane	ND	1070	537	
Vinyl chloride	ND	429	215	
Bromomethane	ND	859	429	
Chloroethane	~~ND~~	~~429~~	~~215~~ MWR	
Trichlorofluoromethane	ND	429	215	
1,1-Dichloroethene	ND	429	215	
Methylene chloride	ND	429	215	
trans-1,2-Dichloroethene	ND	429	215	
1,1-Dichloroethane	ND	429	215	
2,2-Dichloropropane	ND	429	215	
cis-1,2-Dichloroethene	ND	429	215	
Bromochloromethane	ND	429	215	
Chloroform	ND	429	215	
1,1,1-Trichloroethane	ND	429	215	
Carbon Tetrachloride	ND	429	215	
1,1-Dichloropropene	ND	429	215	
Benzene	ND	429	215	
1,2-Dichloroethane	ND	429	215	
Trichloroethene	ND	429	215	
1,2-Dichloropropane	ND	429	215	
Dibromomethane	ND	429	215	
Bromodichloromethane	ND	429	215	
cis-1,3-Dichloropropene	ND	429	215	
Toluene	ND	429	215	
trans-1,3-Dichloropropene	ND	429	215	

MW 10-27-03

00008

STL Seattle

Volatile Organics by USEPA Method 5035\8260B data for 114949-02 continued...

Analyte		Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND		429	215
Tetrachloroethene	ND		429	215
1,3-Dichloropropane	ND		429	215
Dibromochloromethane	ND		429	215
1,2-Dibromoethane	ND		429	215
Chlorobenzene	ND		429	215
Ethylbenzene	ND		429	215
1,1,1,2-Tetrachloroethane	ND		429	215
m,p-Xylene	ND		859	429
o-Xylene	ND		429	215
Styrene	ND		429	215
Bromoform	ND		429	215
Isopropylbenzene	ND		429	215
Bromobenzene	ND		429	215
n-Propylbenzene	ND		429	215
1,1,2,2-Tetrachloroethane	ND		429	215
1,2,3-Trichloropropane	ND		429	215
2-Chlorotoluene	ND		429	215
1,3,5-Trimethylbenzene	ND		429	215
4-Chlorotoluene	ND		429	215
t-Butylbenzene	ND		429	215
1,2,4-Trimethylbenzene	ND		429	215
sec-Butylbenzene	ND		429	215
1,3-Dichlorobenzene	ND		429	215
4-Isopropyltoluene	ND		429	215
1,4-Dichlorobenzene	ND		429	215
n-Butylbenzene	ND		429	215
1,2-Dichlorobenzene	ND		429	215
1,2-Dibromo-3-chloropropane	ND		859	429
1,2,4-Trichlorobenzene	ND		429	215
Hexachlorobutadiene	ND		429	215
Naphthalene	ND		429	215
1,2,3-Trichlorobenzene	ND		429	215

MW
10-27-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050900
Lab ID:	114949-03
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/23/2003
% Solids	79.07
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	80.3		75	125
Fluorobenzene	86.1		75	125
Toluene-D8	94.8		75	125
Ethylbenzene-d10	91.7		75	125
Bromofluorobenzene	87.2		75	125
Trifluorotoluene	107		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	488	244	
Chloromethane	ND	1220	610	
Vinyl chloride	ND	488	244	
Bromomethane	ND	977	488	
Chloroethane	~~ND~~	~~488~~	~~244~~	
Trichlorofluoromethane	ND	488	244	
1,1-Dichloroethene	ND	488	244	
Methylene chloride	ND	488	244	
trans-1,2-Dichloroethene	ND	488	244	
1,1-Dichloroethane	ND	488	244	
2,2-Dichloropropane	ND	488	244	
cis-1,2-Dichloroethene	ND	488	244	
Bromochloromethane	ND	488	244	
Chloroform	ND	488	244	
1,1,1-Trichloroethane	ND	488	244	
Carbon Tetrachloride	ND	488	244	
1,1-Dichloropropene	ND	488	244	
Benzene	ND	488	244	
1,2-Dichloroethane	ND	488	244	
Trichloroethene	ND	488	244	
1,2-Dichloropropane	ND	488	244	
Dibromomethane	ND	488	244	
Bromodichloromethane	ND	488	244	
cis-1,3-Dichloropropene	ND	488	244	
Toluene	ND	488	244	
trans-1,3-Dichloropropene	ND	488	244	

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STL Seattle

Volatile Organics by USEPA Method 5035\8260B data for 114949-03 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	488	244
Tetrachloroethene	ND	488	244
1,3-Dichloropropane	ND	488	244
Dibromochloromethane	ND	488	244
1,2-Dibromoethane	ND	488	244
Chlorobenzene	ND	488	244
Ethylbenzene	ND	488	244
1,1,1,2-Tetrachloroethane	ND	488	244
m,p-Xylene	ND	977	488
o-Xylene	ND	488	244
Styrene	ND	488	244
Bromoform	ND	488	244
Isopropylbenzene	ND	488	244
Bromobenzene	ND	488	244
n-Propylbenzene	ND	488	244
1,1,2,2-Tetrachloroethane	ND	488	244
1,2,3-Trichloropropane	ND	488	244
2-Chlorotoluene	ND	488	244
1,3,5-Trimethylbenzene	ND	488	244
4-Chlorotoluene	ND	488	244
t-Butylbenzene	ND	488	244
1,2,4-Trimethylbenzene	ND	488	244
sec-Butylbenzene	ND	488	244
1,3-Dichlorobenzene	ND	488	244
4-Isopropyltoluene	ND	488	244
1,4-Dichlorobenzene	ND	488	244
n-Butylbenzene	ND	488	244
1,2-Dichlorobenzene	ND	488	244
1,2-Dibromo-3-chloropropane	ND	977	488
1,2,4-Trichlorobenzene	ND	488	244
Hexachlorobutadiene	ND	488	244
Naphthalene	ND	488	244
1,2,3-Trichlorobenzene	ND	488	244

MW
10-27-03

00011

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050901
Lab ID:	114949-04
Date Received:	7/18/2003
Date Prepared:	7/29/2003
Date Analyzed:	7/29/2003
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 5030/8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	99.6		80	120
Fluorobenzene	101		80	120
Toluene-D8	101		80	120
Ethylbenzene-d10	104		80	120
Bromofluorobenzene	104		80	120
Trifluorotoluene	82.5		80	120

Analyte	Result (ug/L)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	1	0.5	
Chloromethane	ND	2	1	
Vinyl chloride	ND	1	0.5	
Bromomethane	ND	2.5	1.25	
Chloroethane	~~ND~~	~~1~~	~~0.5~~	
Trichlorofluoromethane	ND	1	0.5	
1,1-Dichloroethene	ND	1	0.5	
Methylene chloride	ND	2	1	
trans-1,2-Dichloroethene	ND	1	0.5	
1,1-Dichloroethane	ND	1	0.5	
2,2-Dichloropropane	ND	1	0.5	
cis-1,2-Dichloroethene	ND	1	0.5	
Bromochloromethane	ND	1	0.5	
Chloroform	ND	1	0.5	
1,1,1-Trichloroethane	ND	1	0.5	
Carbon Tetrachloride	ND	1	0.5	
1,1-Dichloropropene	ND	1	0.5	
Benzene	ND	1	0.5	
1,2-Dichloroethane	3.8	1	0.5	
Trichloroethene	ND	1	0.5	
1,2-Dichloropropane	ND	1	0.5	
Dibromomethane	ND	1	0.5	
Bromodichloromethane	ND	1	0.5	
cis-1,3-Dichloropropene	ND	1	0.5	
Toluene	ND	1	0.5	
trans-1,3-Dichloropropene	ND	1	0.5	

MW 10-27-03

STL Seattle

Volatile Organics by USEPA Method 5030/8260B data for 114949-04 continued...

Analyte	Result (ug/L)	PQL	MRL
1,1,2-Trichloroethane	ND	1	0.5
Tetrachloroethene	ND	1	0.5
1,3-Dichloropropane	ND	1	0.5
Dibromochloromethane	ND	1	0.5
1,2-Dibromoethane	ND	1	0.5
Chlorobenzene	ND	1	0.5
Ethylbenzene	ND	1	0.5
1,1,1,2-Tetrachloroethane	ND	1	0.5
m,p-Xylene	ND	2	1
o-Xylene	ND	1	0.5
Styrene	ND	1	0.5
Bromoform	ND	1	0.5
Isopropylbenzene	ND	1	0.5
Bromobenzene	ND	1	0.5
n-Propylbenzene	ND	1	0.5
1,1,2,2-Tetrachloroethane	ND	1	0.5
1,2,3-Trichloropropane	ND	1	0.5
2-Chlorotoluene	ND	1	0.5
1,3,5-Trimethylbenzene	ND	1	0.5
4-Chlorotoluene	ND	1	0.5
t-Butylbenzene	ND	1	0.5
1,2,4-Trimethylbenzene	ND	1	0.5
sec-Butylbenzene	ND	1	0.5
1,3-Dichlorobenzene	ND	1	0.5
4-Isopropyltoluene	ND	1	0.5
1,4-Dichlorobenzene	ND	1	0.5
n-Butylbenzene	ND	1	0.5
1,2-Dichlorobenzene	ND	1	0.5
1,2-Dibromo-3-chloropropane	ND	1	0.5
1,2,4-Trichlorobenzene	ND	1	0.5
Hexachlorobutadiene	ND	1	0.5
Naphthalene	ND	2	1
1,2,3-Trichlorobenzene	ND	1	0.5

MW
10-27-03

00013

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050905
Lab ID:	114949-05
Date Received:	7/18/2003
Date Prepared:	7/29/2003
Date Analyzed:	7/29/2003
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 5030/8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	High
Dibromofluoromethane	97.5		80	120
Fluorobenzene	99.1		80	120
Toluene-D8	98.7		80	120
Ethylbenzene-d10	102		80	120
Bromofluorobenzene	106		80	120
Trifluorotoluene	98.2		80	120

Analyte	Result (ug/L)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	1	0.5	
Chloromethane	ND	2	1	
Vinyl chloride	ND	1	0.5	
Bromomethane	ND	2.5	1.25	
Chloroethane	~~ND~~	~~1~~	~~0.5~~ MR	
Trichlorofluoromethane	ND	1	0.5	
1,1-Dichloroethene	ND	1	0.5	
Methylene chloride	ND	2	1	
trans-1,2-Dichloroethene	ND	1	0.5	
1,1-Dichloroethane	ND	1	0.5	
2,2-Dichloropropane	ND	1	0.5	
cis-1,2-Dichloroethene	ND	1	0.5	
Bromochloromethane	ND	1	0.5	
Chloroform	ND	1	0.5	
1,1,1-Trichloroethane	ND	1	0.5	
Carbon Tetrachloride	ND	1	0.5	
1,1-Dichloropropene	ND	1	0.5	
Benzene	ND	1	0.5	
1,2-Dichloroethane	1.7	1	0.5	
Trichloroethene	2.42	1	0.5	
1,2-Dichloropropane	ND	1	0.5	
Dibromomethane	ND	1	0.5	
Bromodichloromethane	ND	1	0.5	
cis-1,3-Dichloropropene	ND	1	0.5	
Toluene	ND	1	0.5	
trans-1,3-Dichloropropene	ND	1	0.5	

MW 10-27-03

00014

STL Seattle

Volatile Organics by USEPA Method 5030/8260B data for 114949-05 continued...

Analyte	Result (ug/L)	PQL	MRL	
1,1,2-Trichloroethane	ND	1	0.5	
Tetrachloroethene	0.512	1	0.5	J
1,3-Dichloropropane	ND	1	0.5	
Dibromochloromethane	ND	1	0.5	
1,2-Dibromoethane	ND	1	0.5	
Chlorobenzene	ND	1	0.5	
Ethylbenzene	ND	1	0.5	
1,1,1,2-Tetrachloroethane	ND	1	0.5	
m,p-Xylene	ND	2	1	
o-Xylene	ND	1	0.5	
Styrene	ND	1	0.5	
Bromoform	ND	1	0.5	
Isopropylbenzene	ND	1	0.5	
Bromobenzene	ND	1	0.5	
n-Propylbenzene	ND	1	0.5	
1,1,2,2-Tetrachloroethane	ND	1	0.5	
1,2,3-Trichloropropane	ND	1	0.5	
2-Chlorotoluene	ND	1	0.5	
1,3,5-Trimethylbenzene	ND	1	0.5	
4-Chlorotoluene	ND	1	0.5	
t-Butylbenzene	ND	1	0.5	
1,2,4-Trimethylbenzene	ND	1	0.5	
sec-Butylbenzene	ND	1	0.5	
1,3-Dichlorobenzene	ND	1	0.5	
4-Isopropyltoluene	ND	1	0.5	
1,4-Dichlorobenzene	ND	1	0.5	
n-Butylbenzene	ND	1	0.5	
1,2-Dichlorobenzene	ND	1	0.5	
1,2-Dibromo-3-chloropropane	ND	1	0.5	
1,2,4-Trichlorobenzene	ND	1	0.5	
Hexachlorobutadiene	ND	1	0.5	
Naphthalene	ND	2	1	
1,2,3-Trichlorobenzene	ND	1	0.5	

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050906
Lab ID:	114949-06
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/23/2003
% Solids	93.56
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	High
Dibromofluoromethane	94.8		75	125
Fluorobenzene	102		75	125
Toluene-D8	98.5		75	125
Ethylbenzene-d10	106		75	125
Bromofluorobenzene	99.3		75	125
Trifluorotoluene	107		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	403	201	
Chloromethane	ND	1010	504	
Vinyl chloride	ND	403	201	
Bromomethane	ND	806	403	
Chloroethane	~~ND~~	~~403~~	~~201~~ R	
Trichlorofluoromethane	ND	403	201	
1,1-Dichloroethene	ND	403	201	
Methylene chloride	ND	403	201	
trans-1,2-Dichloroethene	ND	403	201	
1,1-Dichloroethane	ND	403	201	
2,2-Dichloropropane	ND	403	201	
cis-1,2-Dichloroethene	ND	403	201	
Bromochloromethane	ND	403	201	
Chloroform	ND	403	201	
1,1,1-Trichloroethane	ND	403	201	
Carbon Tetrachloride	ND	403	201	
1,1-Dichloropropene	ND	403	201	
Benzene	ND	403	201	
1,2-Dichloroethane	ND	403	201	
Trichloroethene	ND	403	201	
1,2-Dichloropropane	ND	403	201	
Dibromomethane	ND	403	201	
Bromodichloromethane	ND	403	201	
cis-1,3-Dichloropropene	ND	403	201	
Toluene	ND	403	201	
trans-1,3-Dichloropropene	ND	403	201	

MW 10-27-03

00016

STL Seattle

Volatile Organics by USEPA Method 5035\8260B data for 114949-06 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	403	201
Tetrachloroethene	ND	403	201
1,3-Dichloropropane	ND	403	201
Dibromochloromethane	ND	403	201
1,2-Dibromoethane	ND	403	201
Chlorobenzene	ND	403	201
Ethylbenzene	ND	403	201
1,1,1,2-Tetrachloroethane	ND	403	201
m,p-Xylene	ND	806	403
o-Xylene	ND	403	201
Styrene	ND	403	201
Bromoform	ND	403	201
Isopropylbenzene	ND	403	201
Bromobenzene	ND	403	201
n-Propylbenzene	ND	403	201
1,1,2,2-Tetrachloroethane	ND	403	201
1,2,3-Trichloropropane	ND	403	201
2-Chlorotoluene	ND	403	201
1,3,5-Trimethylbenzene	ND	403	201
4-Chlorotoluene	ND	403	201
t-Butylbenzene	ND	403	201
1,2,4-Trimethylbenzene	ND	403	201
sec-Butylbenzene	ND	403	201
1,3-Dichlorobenzene	ND	403	201
4-Isopropyltoluene	ND	403	201
1,4-Dichlorobenzene	ND	403	201
n-Butylbenzene	ND	403	201
1,2-Dichlorobenzene	ND	403	201
1,2-Dibromo-3-chloropropane	ND	806	403
1,2,4-Trichlorobenzene	ND	403	201
Hexachlorobutadiene	ND	403	201
Naphthalene	ND	403	201
1,2,3-Trichlorobenzene	ND	403	201

MW 10-27-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050892
Lab ID:	114949-07
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/23/2003
% Solids	91.66
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	90.3		75	125
Fluorobenzene	98		75	125
Toluene-D8	102		75	125
Ethylbenzene-d10	99.2		75	125
Bromofluorobenzene	97.5		75	125
Trifluorotoluene	110		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	421	211	
Chloromethane	ND	1050	527	
Vinyl chloride	ND	421	211	
Bromomethane	ND	843	421	
Chloroethane	~~ND~~	~~421~~	~~211~~ MR	
Trichlorofluoromethane	ND	421	211	
1,1-Dichloroethene	ND	421	211	
Methylene chloride	ND	421	211	
trans-1,2-Dichloroethene	ND	421	211	
1,1-Dichloroethane	ND	421	211	
2,2-Dichloropropane	ND	421	211	
cis-1,2-Dichloroethene	ND	421	211	
Bromochloromethane	ND	421	211	
Chloroform	ND	421	211	
1,1,1-Trichloroethane	ND	421	211	
Carbon Tetrachloride	ND	421	211	
1,1-Dichloropropene	ND	421	211	
Benzene	ND	421	211	
1,2-Dichloroethane	ND	421	211	
Trichloroethene	ND	421	211	
1,2-Dichloropropane	ND	421	211	
Dibromomethane	ND	421	211	
Bromodichloromethane	ND	421	211	
cis-1,3-Dichloropropene	ND	421	211	
Toluene	ND	421	211	
trans-1,3-Dichloropropene	ND	421	211	

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STL Seattle

Volatile Organics by USEPA Method 5035\8260B data for 114949-07 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	421	211
Tetrachloroethene	ND	421	211
1,3-Dichloropropane	ND	421	211
Dibromochloromethane	ND	421	211
1,2-Dibromoethane	ND	421	211
Chlorobenzene	ND	421	211
Ethylbenzene	ND	421	211
1,1,1,2-Tetrachloroethane	ND	421	211
m,p-Xylene	ND	843	421
o-Xylene	ND	421	211
Styrene	ND	421	211
Bromoform	ND	421	211
Isopropylbenzene	ND	421	211
Bromobenzene	ND	421	211
n-Propylbenzene	ND	421	211
1,1,2,2-Tetrachloroethane	ND	421	211
1,2,3-Trichloropropane	ND	421	211
2-Chlorotoluene	ND	421	211
1,3,5-Trimethylbenzene	ND	421	211
4-Chlorotoluene	ND	421	211
t-Butylbenzene	ND	421	211
1,2,4-Trimethylbenzene	ND	421	211
sec-Butylbenzene	ND	421	211
1,3-Dichlorobenzene	ND	421	211
4-Isopropyltoluene	ND	421	211
1,4-Dichlorobenzene	ND	421	211
n-Butylbenzene	ND	421	211
1,2-Dichlorobenzene	ND	421	211
1,2-Dibromo-3-chloropropane	ND	843	421
1,2,4-Trichlorobenzene	ND	421	211
Hexachlorobutadiene	ND	421	211
Naphthalene	ND	421	211
1,2,3-Trichlorobenzene	ND	421	211

MW
10-27-03

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050893
Lab ID:	114949-08
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/23/2003
% Solids	91.73
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	High
Dibromofluoromethane	95.3		75	125
Fluorobenzene	106		75	125
Toluene-D8	104		75	125
Ethylbenzene-d10	96.9		75	125
Bromofluorobenzene	92.1		75	125
Trifluorotoluene	108		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	411	206	
Chloromethane	ND	1030	514	
Vinyl chloride	ND	411	206	
Bromomethane	ND	822	411	
Chloroethane	~~ND~~	~~411~~	~~206~~ MV R	
Trichlorofluoromethane	ND	411	206	
1,1-Dichloroethene	ND	411	206	
Methylene chloride	ND	411	206	
trans-1,2-Dichloroethene	ND	411	206	
1,1-Dichloroethane	ND	411	206	
2,2-Dichloropropane	ND	411	206	
cis-1,2-Dichloroethene	ND	411	206	
Bromochloromethane	ND	411	206	
Chloroform	ND	411	206	
1,1,1-Trichloroethane	ND	411	206	
Carbon Tetrachloride	ND	411	206	
1,1-Dichloropropene	ND	411	206	
Benzene	ND	411	206	
1,2-Dichloroethane	ND	411	206	
Trichloroethene	ND	411	206	
1,2-Dichloropropane	ND	411	206	
Dibromomethane	ND	411	206	
Bromodichloromethane	ND	411	206	
cis-1,3-Dichloropropene	ND	411	206	
Toluene	ND	411	206	
trans-1,3-Dichloropropene	ND	411	206	

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Volatile Organics by USEPA Method 5035\8260B data for 114949-08 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	411	206
Tetrachloroethene	ND	411	206
1,3-Dichloropropane	ND	411	206
Dibromochloromethane	ND	411	206
1,2-Dibromoethane	ND	411	206
Chlorobenzene	ND	411	206
Ethylbenzene	ND	411	206
1,1,1,2-Tetrachloroethane	ND	411	206
m,p-Xylene	ND	822	411
o-Xylene	ND	411	206
Styrene	ND	411	206
Bromoform	ND	411	206
Isopropylbenzene	ND	411	206
Bromobenzene	ND	411	206
n-Propylbenzene	ND	411	206
1,1,2,2-Tetrachloroethane	ND	411	206
1,2,3-Trichloropropane	ND	411	206
2-Chlorotoluene	ND	411	206
1,3,5-Trimethylbenzene	ND	411	206
4-Chlorotoluene	ND	411	206
t-Butylbenzene	ND	411	206
1,2,4-Trimethylbenzene	ND	411	206
sec-Butylbenzene	ND	411	206
1,3-Dichlorobenzene	ND	411	206
4-Isopropyltoluene	ND	411	206
1,4-Dichlorobenzene	ND	411	206
n-Butylbenzene	ND	411	206
1,2-Dichlorobenzene	ND	411	206
1,2-Dibromo-3-chloropropane	ND	822	411
1,2,4-Trichlorobenzene	ND	411	206
Hexachlorobutadiene	ND	411	206
Naphthalene	ND	411	206
1,2,3-Trichlorobenzene	ND	411	206

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00021

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050894
Lab ID:	114949-09
Date Received:	7/18/2003
Date Prepared:	7/23/2003
Date Analyzed:	7/23/2003
% Solids	77.02
Dilution Factor	1

Volatile Organics by USEPA Method 5035\8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	High
Dibromofluoromethane	84.1		75	125
Fluorobenzene	89.5		75	125
Toluene-D8	90.9		75	125
Ethylbenzene-d10	92.1		75	125
Bromofluorobenzene	89		75	125
Trifluorotoluene	108		75	125

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	490	245	
Chloromethane	ND	1220	612	
Vinyl chloride	ND	490	245	
Bromomethane	ND	979	490	
Chloroethane	~~ND~~	~~490~~	~~245~~	
Trichlorofluoromethane	ND	490	245	
1,1-Dichloroethene	ND	490	245	
Methylene chloride	ND	490	245	
trans-1,2-Dichloroethene	ND	490	245	
1,1-Dichloroethane	ND	490	245	
2,2-Dichloropropane	ND	490	245	
cis-1,2-Dichloroethene	ND	490	245	
Bromochloromethane	ND	490	245	
Chloroform	ND	490	245	
1,1,1-Trichloroethane	ND	490	245	
Carbon Tetrachloride	ND	490	245	
1,1-Dichloropropene	ND	490	245	
Benzene	ND	490	245	
1,2-Dichloroethane	ND	490	245	
Trichloroethene	ND	490	245	
1,2-Dichloropropane	ND	490	245	
Dibromomethane	ND	490	245	
Bromodichloromethane	ND	490	245	
cis-1,3-Dichloropropene	ND	490	245	
Toluene	ND	490	245	
trans-1,3-Dichloropropene	ND	490	245	

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Volatile Organics by USEPA Method 5035\8260B data for 114949-09 continued...

Analyte	Result (ug/kg)	PQL	MRL
1,1,2-Trichloroethane	ND	490	245
Tetrachloroethene	ND	490	245
1,3-Dichloropropane	ND	490	245
Dibromochloromethane	ND	490	245
1,2-Dibromoethane	ND	490	245
Chlorobenzene	ND	490	245
Ethylbenzene	ND	490	245
1,1,1,2-Tetrachloroethane	ND	490	245
m,p-Xylene	ND	979	490
o-Xylene	ND	490	245
Styrene	ND	490	245
Bromoform	ND	490	245
Isopropylbenzene	ND	490	245
Bromobenzene	ND	490	245
n-Propylbenzene	ND	490	245
1,1,2,2-Tetrachloroethane	ND	490	245
1,2,3-Trichloropropane	ND	490	245
2-Chlorotoluene	ND	490	245
1,3,5-Trimethylbenzene	ND	490	245
4-Chlorotoluene	ND	490	245
t-Butylbenzene	ND	490	245
1,2,4-Trimethylbenzene	ND	490	245
sec-Butylbenzene	ND	490	245
1,3-Dichlorobenzene	ND	490	245
4-Isopropyltoluene	ND	490	245
1,4-Dichlorobenzene	ND	490	245
n-Butylbenzene	ND	490	245
1,2-Dichlorobenzene	ND	490	245
1,2-Dibromo-3-chloropropane	ND	979	490
1,2,4-Trichlorobenzene	ND	490	245
Hexachlorobutadiene	ND	490	245
Naphthalene	ND	490	245
1,2,3-Trichlorobenzene	ND	490	245

MW
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00023

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050896
Lab ID:	114949-10
Date Received:	7/18/2003
Date Prepared:	7/29/2003
Date Analyzed:	7/29/2003
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 5030/8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Dibromofluoromethane	96.4		80	120
Fluorobenzene	98.7		80	120
Toluene-D8	102		80	120
Ethylbenzene-d10	110		80	120
Bromofluorobenzene	108		80	120
Trifluorotoluene	94.3		80	120

Analyte	Result (ug/L)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	1	0.5	
Chloromethane	ND	2	1	
Vinyl chloride	ND	1	0.5	
Bromomethane	ND	2.5	1.25	
Chloroethane	ND	1	0.5	
Trichlorofluoromethane	ND	1	0.5	
1,1-Dichloroethene	ND	1	0.5	
Methylene chloride	ND	2	1	
trans-1,2-Dichloroethene	ND	1	0.5	
1,1-Dichloroethane	ND	1	0.5	
2,2-Dichloropropane	ND	1	0.5	
cis-1,2-Dichloroethene	ND	1	0.5	
Bromochloromethane	ND	1	0.5	
Chloroform	ND	1	0.5	
1,1,1-Trichloroethane	ND	1	0.5	
Carbon Tetrachloride	ND	1	0.5	
1,1-Dichloropropene	ND	1	0.5	
Benzene	ND	1	0.5	
1,2-Dichloroethane	1.75	1	0.5	
Trichloroethene	ND	1	0.5	
1,2-Dichloropropane	ND	1	0.5	
Dibromomethane	ND	1	0.5	
Bromodichloromethane	ND	1	0.5	
cis-1,3-Dichloropropene	ND	1	0.5	
Toluene	ND	1	0.5	
trans-1,3-Dichloropropene	ND	1	0.5	

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00024

STL Seattle

Volatile Organics by USEPA Method 5030/8260B data for 114949-10 continued...

Analyte	Result (ug/L)	PQL	MRL
1,1,2-Trichloroethane	ND	1	0.5
Tetrachloroethene	ND	1	0.5
1,3-Dichloropropane	ND	1	0.5
Dibromochloromethane	ND	1	0.5
1,2-Dibromoethane	ND	1	0.5
Chlorobenzene	ND	1	0.5
Ethylbenzene	ND	1	0.5
1,1,1,2-Tetrachloroethane	ND	1	0.5
m,p-Xylene	ND	2	1
o-Xylene	ND	1	0.5
Styrene	ND	1	0.5
Bromoform	ND	1	0.5
Isopropylbenzene	ND	1	0.5
Bromobenzene	ND	1	0.5
n-Propylbenzene	ND	1	0.5
1,1,2,2-Tetrachloroethane	ND	1	0.5
1,2,3-Trichloropropane	ND	1	0.5
2-Chlorotoluene	ND	1	0.5
1,3,5-Trimethylbenzene	ND	1	0.5
4-Chlorotoluene	ND	1	0.5
t-Butylbenzene	ND	1	0.5
1,2,4-Trimethylbenzene	ND	1	0.5
sec-Butylbenzene	ND	1	0.5
1,3-Dichlorobenzene	ND	1	0.5
4-Isopropyltoluene	ND	1	0.5
1,4-Dichlorobenzene	ND	1	0.5
n-Butylbenzene	ND	1	0.5
1,2-Dichlorobenzene	ND	1	0.5
1,2-Dibromo-3-chloropropane	ND	1	0.5
1,2,4-Trichlorobenzene	ND	1	0.5
Hexachlorobutadiene	ND	2	1
Naphthalene	ND	1	0.5
1,2,3-Trichlorobenzene	ND		

MN
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00025

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03050895
Lab ID:	114949-11
Date Received:	7/18/2003
Date Prepared:	7/29/2003
Date Analyzed:	7/29/2003
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 5030/8260B

SMC / Surrogate	% Recovery	Flags	Recovery Limits Low	High
Dibromofluoromethane	96.9		80	120
Fluorobenzene	99		80	120
Toluene-D8	102		80	120
Ethylbenzene-d10	110		80	120
Bromofluorobenzene	107		80	120
Trifluorotoluene	104		80	120

Analyte	Result (ug/L)	PQL	MRL	Flags
Dichlorodifluoromethane	ND	1	0.5	
Chloromethane	ND	2	1	
Vinyl chloride	ND	1	0.5	
Bromomethane	ND	2.5	1.25	
Chloroethane	ND	1	0.5	
Trichlorofluoromethane	ND	1	0.5	
1,1-Dichloroethene	ND	1	0.5	
Methylene chloride	ND	2	1	
trans-1,2-Dichloroethene	ND	1	0.5	
1,1-Dichloroethane	ND	1	0.5	
2,2-Dichloropropane	ND	1	0.5	
cis-1,2-Dichloroethene	ND	1	0.5	
Bromochloromethane	ND	1	0.5	
Chloroform	ND	1	0.5	
1,1,1-Trichloroethane	ND	1	0.5	
Carbon Tetrachloride	ND	1	0.5	
1,1-Dichloropropene	ND	1	0.5	
Benzene	ND	1	0.5	
1,2-Dichloroethane	2.69	1	0.5	
Trichloroethene	57.1	1	0.5	
1,2-Dichloropropane	ND	1	0.5	
Dibromomethane	ND	1	0.5	
Bromodichloromethane	ND	1	0.5	
cis-1,3-Dichloropropene	ND	1	0.5	
Toluene	ND	1	0.5	
trans-1,3-Dichloropropene	ND	1	0.5	

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STL Seattle

Volatile Organics by USEPA Method 5030/8260B data for 114949-11 continued...

Analyte	Result (ug/L)	PQL	MRL
1,1,2-Trichloroethane	ND	1	0.5
Tetrachloroethene	7	1	0.5
1,3-Dichloropropane	ND	1	0.5
Dibromochloromethane	ND	1	0.5
1,2-Dibromoethane	ND	1	0.5
Chlorobenzene	ND	1	0.5
Ethylbenzene	ND	1	0.5
1,1,1,2-Tetrachloroethane	ND	1	0.5
m,p-Xylene	ND	2	1
o-Xylene	ND	1	0.5
Styrene	ND	1	0.5
Bromoform	ND	1	0.5
Isopropylbenzene	ND	1	0.5
Bromobenzene	ND	1	0.5
n-Propylbenzene	ND	1	0.5
1,1,2,2-Tetrachloroethane	ND	1	0.5
1,2,3-Trichloropropane	ND	1	0.5
2-Chlorotoluene	ND	1	0.5
1,3,5-Trimethylbenzene	ND	1	0.5
4-Chlorotoluene	ND	1	0.5
t-Butylbenzene	ND	1	0.5
1,2,4-Trimethylbenzene	ND	1	0.5
sec-Butylbenzene	ND	1	0.5
1,3-Dichlorobenzene	ND	1	0.5
4-Isopropyltoluene	ND	1	0.5
1,4-Dichlorobenzene	ND	1	0.5
n-Butylbenzene	ND	1	0.5
1,2-Dichlorobenzene	ND	1	0.5
1,2-Dibromo-3-chloropropane	ND	1	0.5
1,2,4-Trichlorobenzene	ND	1	0.5
Hexachlorobutadiene	ND	1	0.5
Naphthalene	ND	2	1
1,2,3-Trichlorobenzene	ND	1	0.5

MW 10-27-03

00027

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MEMORANDUM

DATE: October 27, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 4 liquid and 7 solid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Cyanide analyses (EPA Methods 9012/9013) were performed by North Creek Analytical, Inc., Bothell, Washington.

The samples were numbered:

03050898	03050899	03050900	03050901	03050905
03050906	03050892	03050893	03050894	03050896
03050895				

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained within the QC limits of 4°C ± 2°C. The samples were collected between July 15 and 17, 2003, and were analyzed on July 24,2003, therefore meeting QC criteria of less than 28 days between collection and analysis.

2. **Initial and Continuing Calibration: Acceptable.**

No reported results were greater than 110% of the highest calibration standard. The initial calibration correlation coefficients were greater than 0.995. All recoveries were within QC limits of 85% to 115%.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. Cyanide was not detected in applicable calibration and/or preparation blanks.

4. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

6. Matrix Spike Analysis: Acceptable.

Matrix spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All results were within QC limits except a low recovery in batch 1191-27; associated sample results were qualified as estimated quantities (J or UJ).

7. Duplicate Analysis: Acceptable.

All duplicate results were within QC limits.

8. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Project Name	Columbia American Plating
Date Received	07-18-03

General Chemistry Parameters

Client Sample ID 03050898
Lab ID 114949-01

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2 U
Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2 U

Client Sample ID 03050899
Lab ID 114949-02

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2 U
Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2 U

Client Sample ID 03050900
Lab ID 114949-03

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2 U
Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2 U

Client Sample ID 03050901
Lab ID 114949-04

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U
Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U

Client Sample ID 03050905
Lab ID 114949-05

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U
Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02 U

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STL Seattle

Client Sample ID	03050906
Lab ID	114949-06

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2
Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2

Client Sample ID	03050892
Lab ID	114949-07

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2
Cyanide	EPA 9012/9013	07-24-03	mg/kg	ND	0.2

Client Sample ID	03050893
Lab ID	114949-08

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	1.1	0.2
Cyanide	EPA 9012/9013	07-24-03	mg/kg	1.5	0.2

Client Sample ID	03050894
Lab ID	114949-09

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	1.1	0.2
Cyanide	EPA 9012/9013	07-24-03	mg/kg	1.7	0.2

Client Sample ID	03050896
Lab ID	114949-10

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02
Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02

Client Sample ID	03050895
Lab ID	114949-11

Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02
Cyanide	EPA 9012/9013	07-24-03	mg/L	ND	0.02

MW 10-27-03

STL Seattle

	Client Sample ID Lab ID		03050908 114949-12		
Parameter	Method	Date Analyzed	Units	Result	PQL
Amenable Cyanide	EPA 9012/9013	07-24-03	mg/kg	6.1	0.2
Cyanide	EPA 9012/9013	07-24-03	mg/kg	6.6	0.2

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10-27-03

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MEMORANDUM

DATE: November 3, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 1 liquid sample collected from the Columbia American Plating site in Portland, Oregon, has been completed. Target Analyte List (TAL) metals analyses (EPA 200 Series Methods) were performed by STL-Seattle, Tacoma, Washington.

The sample was numbered: 03070910

Data Qualifications:

1. Sample Holding Times: Acceptable.

The sample was maintained within the QC limits of 4°C ± 2°C. The sample was collected on August 13, 2003, and was analyzed by August 19, 2003, therefore meeting QC criteria of less than 6 months between collection and analysis (28 days for mercury).

2. Initial and Continuing Calibration: Acceptable.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits of 90% to 110% (± 1%). All AA recoveries were within QC limits of 80% to 120%.

3. Blanks: Satisfactory.

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results.

4. ICP Interference Check Sample: Not Performed.

Interference Check Sample (ICS) analyses were not performed for ICP-MS analyses; no action was taken.

5. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

7. ICP Serial Dilution: Satisfactory.

Serial dilution results were within QC limits except lead; the lead result was qualified as an estimated quantity (J).

8. Blank Spike/Matrix Spike Analysis: Satisfactory.

Blank spike(BS)/matrix spike (MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits except chromium with a high matrix spike recovery; the associated positive result was qualified as an estimated quantity (J).

9. Duplicate Analysis: Acceptable.

All duplicate results were within QC limits.

10. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03-07-0910 3000 GAL TANK
Lab ID:	115509-01
Date Received:	8/14/2003
Date Prepared:	8/18/2003
Date Analyzed:	8/19/2003
Dilution Factor	1

Metals by ICP USEPA Method 200.7

Analyte	Result (mg/L)	PQL	MRL	Flags
Chromium	6.2 J	0.01	0.005	
Copper	0.0955	0.01	0.005	
Molybdenum	0.102	0.01	0.005	
Nickel	0.335	0.01	0.005	
Zinc	0.909	0.01	0.005	

MW
10-30-03

00419

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03-07-0910 3000 GAL TANK
Lab ID:	115509-01
Date Received:	8/14/2003
Date Prepared:	8/18/2003
Date Analyzed:	8/19/2003
Dilution Factor	5

Metals by ICP-MS - USEPA Method 200.8

Analyte	Result (mg/L)	PQL	Flags
Copper	0.0818	0.0025	
Lead	0.00237 J	0.0005	

MW
10-30-03

00420

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MEMORANDUM

DATE: November 19, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 6 water and 12 soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Volatile Organic Compounds (EPA SW-846 Method 8260) was performed by North Creek Analytical, Beaverton, Oregon.

The samples were numbered:

03050827	03050824	03050825	03050826	03050832
03050833	03050834	03050847	03050848	03050849
03050850	03050846	03050854	03050835	03050855
03050851	03050852	03050853		

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were generally maintained within the QC limits of 4°C ± 2°C except some samples which were received at 7.3°C; no action was taken based on these slight QC outliers. The samples were collected between July 11 and 15, 2003, and were analyzed by July 24, 2003, therefore meeting QC criteria of less than 14 days between collection and analysis.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Satisfactory.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limits of 30% except 1,2,4-

trichlorobenzene and 1,2,3-trichlorobenzene associated with the soil samples; associated positive results were qualified as estimated quantities (J).

4. Continuing Calibration: Satisfactory.

All RRFs were greater than the QC limit of 0.050. All % differences were less than the QC limit of 25% except the following with low responses: dichlorodifluoromethane in the 7-23-03 calibration, bromomethane and carbon disulfide in the 7-24-03 (0157) calibration, and 1,1,2,2-tetrachloroethene in the 7-25-03 calibration. Associated positive results and quantitation limits were qualified as estimated quantities (J or UJ).

5. Blanks: Acceptable.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

6. Surrogates: Acceptable.

All surrogate recoveries were within QC limits.

7. Matrix and Blank Spike Analysis: Acceptable.

Spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits.

8. Duplicate Analysis: Acceptable.

The laboratory duplicate analysis results were within QC limits.

9. Internal Standards: Acceptable.

All internal standards were within ± 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50% to 200% of the continuing calibration area counts.

10. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

12. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050827 (P3G0484-03) Water					Sampled: 07/11/03	Received: 07/15/03			
Acetone	ND	25.0	ug/l	1	EPA 8260B	07/22/03	07/23/03	3070803	
Benzene	ND	1.00	"	"	"	"	"	"	
Bromobenzene	ND	1.00	"	"	"	"	"	"	
Bromochloromethane	ND	1.00	"	"	"	"	"	"	
Bromodichloromethane	ND	1.00	"	"	"	"	"	"	
Bromoform	ND	1.00	"	"	"	"	"	"	
Bromomethane	ND	5.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.00	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.00	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	10.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroethane	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Chloromethane	ND	5.00	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.00	"	"	"	"	"	"	
Dibromochloromethane	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
Dibromomethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.00	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	**3.24**	1.00	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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

Brian L Cone

MW 11-19-03

Brian Cone, Industrial Services Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050827 (P3G0484-03) Water					Sampled: 07/11/03	Received: 07/15/03			
Hexachlorobutadiene	ND	2.00	ug/l	1	EPA 8260B	07/22/03	07/23/03	3070803	
2-Hexanone	ND	10.0	"	"	"	"	"	"	
Isopropylbenzene	ND	2.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	2.00	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.00	"	"	"	"	"	"	
Methylene chloride	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	2.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
Tetrachloroethene	**20.9**	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	**61.2**	1.00	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
Vinyl chloride	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surr: 4-BFB	*102 %*	*80-120*							
Surr: 1,2-DCA-d4	*95.0 %*	*77-135*							
Surr: Dibromofluoromethane	*98.0 %*	*80-122*							
Surr: Toluene-d8	*96.0 %*	*80-120*							

North Creek Analytical - Portland

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MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050824 (P3G0484-04) Soil					Sampled: 07/11/03	Received: 07/15/03			
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 11-19-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050824 (P3G0484-04) Soil					Sampled: 07/11/03 Received: 07/15/03				
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*95.3 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*106 %*	*57.3-144*							
Surr: Dibromofluoromethane	*95.3 %*	*45.5-130*							
Surr: Toluene-d8	*104 %*	*42.1-144*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050825 (P3G0484-05) Soil					Sampled: 07/11/03	Received: 07/15/03			
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 11/19/03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050825 (P3G0484-05) Soil					Sampled: 07/11/03	Received: 07/15/03			
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*93.5 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*103 %*	*57.3-144*							
Surr: Dibromofluoromethane	*94.4 %*	*45.5-130*							
Surr: Toluene-d8	*101 %*	*42.1-144*							

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MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050826 (P3G0484-06) Soil					Sampled: 07/11/03	Received: 07/15/03			
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050826 (P3G0484-06) Soil					Sampled: 07/11/03	Received: 07/15/03			
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*84.1 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*92.6 %*	*57.3-144*							
Surr: Dibromofluoromethane	*84.5 %*	*45.5-130*							
Surr: Toluene-d8	*89.9 %*	*42.1-144*							

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11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050832 (P3G0484-11) Soil					Sampled: 07/14/03	Received: 07/15/03			
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

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Brian L Cone

Brian Cone, Industrial Services Manager

11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050832 (P3G0484-11) Soil					Sampled: 07/14/03	Received: 07/15/03			
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*98.1 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*108 %*	*57.3-144*							
Surr: Dibromofluoromethane	*95.8 %*	*45.5-130*							
Surr: Toluene-d8	*102 %*	*42.1-144*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050833 (P3G0484-12) Soil					Sampled: 07/14/03 Received: 07/15/03				
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050833 (P3G0484-12) Soil					Sampled: 07/14/03	Received: 07/15/03			
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*93.9 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*103 %*	*57.3-144*							
Surr: Dibromofluoromethane	*91.1 %*	*45.5-130*							
Surr: Toluene-d8	*101 %*	*42.1-144*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050834 (P3G0484-13) Soil					Sampled: 07/14/03	Received: 07/15/03			
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L. Cone

MW 11-14-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050834 (P3G0484-13) Soil					Sampled: 07/14/03	Received: 07/15/03			
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*85.2 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*92.2 %*	*57.3-144*							
Surr: Dibromofluoromethane	*80.5 %*	*45.5-130*							
Surr: Toluene-d8	*88.3 %*	*42.1-144*							

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 11-11-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050847 (P3G0484-14) Soil					Sampled: 07/14/03	Received: 07/15/03			
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 11-19-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050847 (P3G0484-14) Soil					Sampled: 07/14/03	Received: 07/15/03			
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*94.6 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*102 %*	*57.3-144*							
Surr: Dibromofluoromethane	*89.6 %*	*45.5-130*							
Surr: Toluene-d8	*98.6 %*	*42.1-144*							

North Creek Analytical - Portland

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MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050848 (P3G0484-15) Soil					Sampled: 07/14/03	Received: 07/15/03			
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 11/10/03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050848 (P3G0484-15) Soil					Sampled: 07/14/03	Received: 07/15/03			
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*83.7 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*91.1 %*	*57.3-144*							
Surr: Dibromofluoromethane	*79.8 %*	*45.5-130*							
Surr: Toluene-d8	*89.5 %*	*42.1-144*							

North Creek Analytical - Portland

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050849 (P3G0484-16) Soil					Sampled: 07/14/03	Received: 07/15/03			
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 11/19/03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050849 (P3G0484-16) Soil					Sampled: 07/14/03	Received: 07/15/03			
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*82.4 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*92.2 %*	*57.3-144*							
Surr: Dibromofluoromethane	*81.2 %*	*45.5-130*							
Surr: Toluene-d8	*88.2 %*	*42.1-144*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050850 (P3G0484-17) Water					Sampled: 07/14/03	Received: 07/15/03			
Acetone	ND	25.0	ug/l	1	EPA 8260B	07/22/03	07/24/03	3070803	
Benzene	ND	1.00	"	"	"	"	"	"	
Bromobenzene	ND	1.00	"	"	"	"	"	"	
Bromochloromethane	ND	1.00	"	"	"	"	"	"	
Bromodichloromethane	ND	1.00	"	"	"	"	"	"	
Bromoform	ND	1.00	"	"	"	"	"	"	
Bromomethane	ND	5.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.00	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.00	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	10.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroethane	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Chloromethane	ND	5.00	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.00	"	"	"	"	"	"	
Dibromochloromethane	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
Dibromomethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.00	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	**3.00**	1.00	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**3.39**	1.00	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050850 (P3G0484-17) Water					Sampled: 07/14/03	Received: 07/15/03			
Hexachlorobutadiene	ND	2.00	ug/l	1	EPA 8260B	07/22/03	07/24/03	3070803	
2-Hexanone	ND	10.0	"	"	"	"	"	"	
Isopropylbenzene	ND	2.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	2.00	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.00	"	"	"	"	"	"	
Methylene chloride	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	2.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
Tetrachloroethene	**13.2**	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	**95.7**	1.00	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
Vinyl chloride	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surr: 4-BFB	*98.5 %*	*80-120*							
Surr: 1,2-DCA-d4	*96.5 %*	*77-135*							
Surr: Dibromofluoromethane	*100 %*	*80-122*							
Surr: Toluene-d8	*100 %*	*80-120*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050846 (P3G0484-18RE1) Water					Sampled: 07/14/03	Received: 07/15/03			
Acetone	**32.7**	25.0	ug/l	1	EPA 8260B	07/24/03	07/24/03	3070830	
Benzene	ND	1.00	"	"	"	"	"	"	
Bromobenzene	ND	1.00	"	"	"	"	"	"	
Bromochloromethane	ND	1.00	"	"	"	"	"	"	
Bromodichloromethane	ND	1.00	"	"	"	"	"	"	
Bromoform	ND	1.00	"	"	"	"	"	"	
Bromomethane	ND	5.00	"	"	"	"	"	"	
2-Butanone	**29.5**	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.00	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.00	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	10.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroethane	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Chloromethane	ND	5.00	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.00	"	"	"	"	"	"	
Dibromochloromethane	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
Dibromomethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.00	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

11-19-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050846 (P3G0484-18RE1) Water					Sampled: 07/14/03	Received: 07/15/03			
Hexachlorobutadiene	ND	2.00	ug/l	1	EPA 8260B	07/24/03	07/24/03	3070830	
2-Hexanone	ND	10.0	"	"	"	"	"	"	
Isopropylbenzene	ND	2.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	2.00	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.00	"	"	"	"	"	"	
Methylene chloride	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	2.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
Tetrachloroethene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
Vinyl chloride	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surr: 4-BFB	*102 %*	*80-120*							
Surr: 1,2-DCA-d4	*101 %*	*77-135*							
Surr: Dibromofluoromethane	*101 %*	*80-122*							
Surr: Toluene-d8	*103 %*	*80-120*							

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Brian Cone, Industrial Services Manager

MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050854 (P3G0484-19RE1) Water					Sampled: 07/14/03	Received: 07/15/03			
Acetone	**33.7**	25.0	ug/l	1	EPA 8260B	07/24/03	07/24/03	3070830	
Benzene	ND	1.00	"	"	"	"	"	"	
Bromobenzene	ND	1.00	"	"	"	"	"	"	
Bromochloromethane	ND	1.00	"	"	"	"	"	"	
Bromodichloromethane	ND	1.00	"	"	"	"	"	"	
Bromoform	ND	1.00	"	"	"	"	"	"	
Bromomethane	ND	5.00	"	"	"	"	"	"	
2-Butanone	**29.2**	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.00	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.00	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	10.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroethane	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Chloromethane	ND	5.00	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.00	"	"	"	"	"	"	
Dibromochloromethane	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
Dibromomethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.00	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	**1.95**	1.00	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

JMW 11-19-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050854 (P3G0484-19RE1) Water					Sampled: 07/14/03	Received: 07/15/03			
Hexachlorobutadiene	ND	2.00	ug/l	1	EPA 8260B	07/24/03	07/24/03	3070830	
2-Hexanone	ND	10.0	"	"	"	"	"	"	
Isopropylbenzene	ND	2.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	2.00	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.00	"	"	"	"	"	"	
Methylene chloride	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	2.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
Tetrachloroethene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
Vinyl chloride	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surr: 4-BFB	*95.5 %*	*80-120*							
Surr: 1,2-DCA-d4	*101 %*	*77-135*							
Surr: Dibromofluoromethane	*100 %*	*80-122*							
Surr: Toluene-d8	*99.0 %*	*80-120*							

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050835 (P3G0484-23RE1) Water					Sampled: 07/14/03	Received: 07/15/03			
Acetone	ND	25.0	ug/l	1	EPA 8260B	07/24/03	07/24/03	3070830	
Benzene	ND	1.00	"	"	"	"	"	"	
Bromobenzene	ND	1.00	"	"	"	"	"	"	
Bromochloromethane	ND	1.00	"	"	"	"	"	"	
Bromodichloromethane	ND	1.00	"	"	"	"	"	"	
Bromoform	ND	1.00	"	"	"	"	"	"	
Bromomethane	ND	5.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.00	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.00	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	10.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroethane	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Chloromethane	ND	5.00	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.00	"	"	"	"	"	"	
Dibromochloromethane	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
Dibromomethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.00	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	**2.51**	1.00	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	

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MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050835 (P3G0484-23RE1) Water					Sampled: 07/14/03	Received: 07/15/03			
Hexachlorobutadiene	ND	2.00	ug/l	1	EPA 8260B	07/24/03	07/24/03	3070830	
2-Hexanone	ND	10.0	"	"	"	"	"	"	
Isopropylbenzene	ND	2.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	2.00	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.00	"	"	"	"	"	"	
Methylene chloride	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	2.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
Tetrachloroethene	**13.7**	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	**77.9**	1.00	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
Vinyl chloride	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surr: 4-BFB	*97.5 %*	*80-120*							
Surr: 1,2-DCA-d4	*99.5 %*	*77-135*							
Surr: Dibromofluoromethane	*98.0 %*	*80-122*							
Surr: Toluene-d8	*95.0 %*	*80-120*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050855 (P3G0484-25) Water					Sampled: 07/15/03	Received: 07/15/03			
Acetone	ND	25.0	ug/l	1	EPA 8260B	07/22/03	07/24/03	3070803	
Benzene	ND	1.00	"	"	"	"	"	"	
Bromobenzene	ND	1.00	"	"	"	"	"	"	
Bromochloromethane	ND	1.00	"	"	"	"	"	"	
Bromodichloromethane	ND	1.00	"	"	"	"	"	"	
Bromoform	ND	1.00	"	"	"	"	"	"	
Bromomethane	ND	5.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.00	"	"	"	"	"	"	
sec-Butylbenzene	ND	1.00	"	"	"	"	"	"	
tert-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	10.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroethane	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Chloromethane	ND	5.00	"	"	"	"	"	"	
2-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
4-Chlorotoluene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.00	"	"	"	"	"	"	
Dibromochloromethane	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
Dibromomethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.00	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	**2.23**	1.00	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	"	
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	"	
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050855 (P3G0484-25) Water					Sampled: 07/15/03	Received: 07/15/03			
Hexachlorobutadiene	ND	2.00	ug/l	1	EPA 8260B	07/22/03	07/24/03	3070803	
2-Hexanone	ND	10.0	"	"	"	"	"	"	
Isopropylbenzene	ND	2.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	2.00	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.00	"	"	"	"	"	"	
Methylene chloride	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	2.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	"	
Tetrachloroethene	**5.06**	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	**11.7**	1.00	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
Vinyl chloride	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surr: 4-BFB	*102 %*	*80-120*							
Surr: 1,2-DCA-d4	*96.5 %*	*77-135*							
Surr: Dibromofluoromethane	*95.5 %*	*80-122*							
Surr: Toluene-d8	*94.0 %*	*80-120*							

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 11-18-03

North Creek Analytical, Inc.
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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050851 (P3G0484-26) Soil					Sampled: 07/15/03	Received: 07/15/03			
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050851 (P3G0484-26) Soil					Sampled: 07/15/03 Received: 07/15/03				
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*94.9 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*106 %*	*57.3-144*							
Surr: Dibromofluoromethane	*91.2 %*	*45.5-130*							
Surr: Toluene-d8	*101 %*	*42.1-144*							

North Creek Analytical - Portland

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Brian L Cone

MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050852 (P3G0484-27) Soil					Sampled: 07/15/03	Received: 07/15/03			
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050852 (P3G0484-27) Soil					Sampled: 07/15/03 Received: 07/15/03				
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*92.1 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*105 %*	*57.3-144*							
Surr: Dibromofluoromethane	*97.2 %*	*45.5-130*							
Surr: Toluene-d8	*101 %*	*42.1-144*							

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050853 (P3G0484-28) Soil					Sampled: 07/15/03	Received: 07/15/03			
Acetone	ND	2500	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
Benzene	ND	100	"	"	"	"	"	"	
Bromobenzene	ND	100	"	"	"	"	"	"	
Bromochloromethane	ND	100	"	"	"	"	"	"	
Bromodichloromethane	ND	100	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
Bromomethane	ND	500	"	"	"	"	"	"	
2-Butanone	ND	1000	"	"	"	"	"	"	
n-Butylbenzene	ND	500	"	"	"	"	"	"	
sec-Butylbenzene	ND	100	"	"	"	"	"	"	
tert-Butylbenzene	ND	100	"	"	"	"	"	"	
Carbon disulfide	ND	1000	"	"	"	"	"	"	
Carbon tetrachloride	ND	100	"	"	"	"	"	"	
Chlorobenzene	ND	100	"	"	"	"	"	"	
Chloroethane	ND	100	"	"	"	"	"	"	
Chloroform	ND	100	"	"	"	"	"	"	
Chloromethane	ND	500	"	"	"	"	"	"	
2-Chlorotoluene	ND	100	"	"	"	"	"	"	
4-Chlorotoluene	ND	100	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	500	"	"	"	"	"	"	
Dibromochloromethane	ND	100	"	"	"	"	"	"	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
Dibromomethane	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
1,1-Dichloroethene	ND	100	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	100	"	"	"	"	"	"	
1,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,3-Dichloropropane	ND	100	"	"	"	"	"	"	
2,2-Dichloropropane	ND	100	"	"	"	"	"	"	
1,1-Dichloropropene	ND	100	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 11/19/03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Volatile Organic Compounds per EPA Method 8260B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050853 (P3G0484-28) Soil					Sampled: 07/15/03	Received: 07/15/03			
Hexachlorobutadiene	ND	200	ug/kg dry	1	EPA 8260B	07/16/03	07/18/03	3070563	
2-Hexanone	ND	1000	"	"	"	"	"	"	
Isopropylbenzene	ND	200	"	"	"	"	"	"	
p-Isopropyltoluene	ND	200	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methylene chloride	ND	500	"	"	"	"	"	"	
Naphthalene	ND	200	"	"	"	"	"	"	
n-Propylbenzene	ND	100	"	"	"	"	"	"	
Styrene	ND	100	"	"	"	"	"	"	
~~1,1,1,2-Tetrachloroethane~~	~~ND~~	~~100~~	~~"~~	~~"~~	~~"~~	~~"~~			
1,1,2,2-Tetrachloroethane	ND	100	"	"	"	"	"	"	
Tetrachloroethene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	100	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	100	"	"	"	"	"	"	
Trichloroethene	ND	100	"	"	"	"	"	"	
Trichlorofluoromethane	ND	100	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	100	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	100	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	100	"	"	"	"	"	"	
Vinyl chloride	ND	100	"	"	"	"	"	"	
o-Xylene	ND	100	"	"	"	"	"	"	
m,p-Xylene	ND	200	"	"	"	"	"	"	
Surr: 4-BFB	*88.4 %*	*42.6-130*							
Surr: 1,2-DCA-d4	*99.2 %*	*57.3-144*							
Surr: Dibromofluoromethane	*85.9 %*	*45.5-130*							
Surr: Toluene-d8	*95.9 %*	*42.1-144*							

MW 11-19-03

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MEMORANDUM

DATE: November 19, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 6 water and 7 soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Resource Conservation and Recovery Act (RCRA) metals analyses (EPA 6000/7000 Series Methods) were performed by North Creek Analytical, Beaverton, Oregon.

The samples were numbered:

03050819	03050823	03050831	03050824	03050825
03050826	03050839	03050835	03050840	03050855
03050851	03050852	03050853		

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were generally maintained within the QC limits of 4°C ± 2°C except some samples which were received at 7.3°C; no action was taken based on these slight QC outliers. The samples were collected between July 11 and 15, 2003, and were analyzed between July 17 and August 12, 2003, therefore meeting QC criteria of less than 6 months between collection and analysis (28 days for mercury).

2. Initial and Continuing Calibration: Acceptable.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits of 90% to 110% (± 1%) except arsenic with low recoveries associated with all sample results (all arsenic results were qualified as estimated quantities [J or UJ]) and selenium (low recovery) associated with samples 03050825, 03050826, 03050840, and 03050851 (associated low recovery results were qualified as estimated quantities [J or UJ]). All AA recoveries were within QC limits of 80% to 120%.

3. **Blanks: Satisfactory.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results except lead (2.12 mg/kg) and selenium (0.775 mg/kg) associated with soil batch 3071212; associated sample results were qualified as not detected (U).

4. **ICP Interference Check Sample: Acceptable.**

Interference Check Sample (ICS) results were within QC limits.

5. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

7. **ICP Serial Dilution: Not Performed.**

Serial dilution analyses were not performed.

8. **Blank Spike/Matrix Spike Analysis: Satisfactory.**

Blank spike(BS)/matrix spike (MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits except barium (high), chromium (high), and lead (high) in the water blank spike sample and barium (low) in the soil matrix spike sample. Associated results were qualified as estimated quantities (J or UJ) for the low recovery outliers.

9. **Duplicate Analysis: Satisfactory.**

All duplicate results were within QC limits except mercury associated with the water samples; associated sample results were qualified as estimated quantities (J or UJ).

10. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050819 (P3G0484-01) Water					Sampled: 07/11/03 Received: 07/15/03				
Arsenic	**0.0132** J	0.00100	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	**0.0506**	0.00100	"	"	"	"	07/26/03	"	
Cadmium	ND	0.00100 U	"	"	"	"	"	"	
Chromium	**0.00272**	0.00100	"	"	"	"	"	"	
Lead	**0.00163**	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 U	"	"	EPA 7470A	07/17/03	07/17/03	3070601	
Selenium	ND	0.00100	"	"	EPA 6020	07/19/03	07/26/03	3070697	
Silver	ND	0.00100	"	"	"	"	"	"	
03050823 (P3G0484-02) Water					Sampled: 07/11/03 Received: 07/15/03				
Arsenic	ND	0.00100 UJ	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	**0.0516**	0.00100	"	"	"	"	07/26/03	"	
Cadmium	ND	0.00100 U	"	"	"	"	"	"	
Chromium	**0.00343**	0.00100	"	"	"	"	"	"	
Lead	**0.00125**	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 U	"	"	EPA 7470A	07/17/03	07/17/03	3070601	
Selenium	ND	0.00100	"	"	EPA 6020	07/19/03	07/26/03	3070697	
Silver	ND	0.00100	"	"	"	"	"	"	
03050827 (P3G0484-03) Water					Sampled: 07/11/03 Received: 07/15/03				
Arsenic	**0.00150** J	0.00100	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	**0.112**	0.00100	"	"	"	"	07/27/03	"	
Cadmium	**0.00129**	0.00100	"	"	"	"	"	"	
Chromium	**0.0133**	0.00100	"	"	"	"	"	"	
Lead	**0.00237**	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 U	"	"	EPA 7470A	07/17/03	07/17/03	3070601	
Selenium	ND	0.00100	"	"	EPA 6020	07/19/03	07/27/03	3070697	
Silver	ND	0.00100	"	"	"	"	"	"	

MW 11-19-03

North Creek Analytical - Portland

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050831 (P3G0484-07) Water					Sampled: 07/11/03	Received: 07/15/03			
Arsenic	**0.0148** J	0.00500	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	**0.508**	0.00500	"	"	"	"	07/27/03	"	
Cadmium	ND	0.00500 U	"	"	"	"	"	"	
Chromium	**0.0693**	0.00500	"	"	"	"	"	"	
Lead	**0.0182**	0.00500	"	"	"	"	"	"	
Mercury	ND	0.000200 U	"	"	EPA 7470A	07/17/03	07/17/03	3070601	
Selenium	ND	0.00500	"	"	EPA 6020	07/19/03	07/27/03	3070697	
Silver	ND	0.00500	"	"	"	"	"	"	
03050824 (P3G0484-08) Soil					Sampled: 07/11/03	Received: 07/15/03			
Mercury	ND	0.0714 U	mg/kg dry	1	EPA 7471A	07/17/03	07/17/03	3070628	
03050824 (P3G0484-08RE1) Soil					Sampled: 07/11/03	Received: 07/15/03			
Arsenic	**3.42** J	0.307	mg/kg dry	1	EPA 6020	07/31/03	08/12/03	3071212	
Barium	**124** J	0.307	"	"	"	"	08/02/03	"	
Cadmium	ND	0.307 U	"	"	"	"	"	"	
Chromium	**21.6** J	0.307	"	"	"	"	"	"	
Lead	**3.52** U	0.307	"	"	"	"	"	"	
Selenium	**1.42** U	0.307	"	"	"	"	08/12/03	"	
Silver	ND	0.307 U	"	"	"	"	08/02/03	"	
03050825 (P3G0484-09) Soil					Sampled: 07/11/03	Received: 07/15/03			
Mercury	**0.0598** J	0.0446	mg/kg dry	1	EPA 7471A	07/17/03	07/17/03	3070628	
03050825 (P3G0484-09RE1) Soil					Sampled: 07/11/03	Received: 07/15/03			
Arsenic	**2.67** J	0.424	mg/kg dry	1	EPA 6020	07/31/03	08/12/03	3071212	
Barium	**82.6** J	0.424	"	"	"	"	08/02/03	"	
Cadmium	ND	0.424 U	"	"	"	"	"	"	
Chromium	**15.2** J	0.424	"	"	"	"	"	"	
Lead	**2.43** U	0.424	"	"	"	"	"	"	
Selenium	**1.48** UJ	0.424	"	"	"	"	08/12/03	"	
Silver	ND	0.424 U	"	"	"	"	08/02/03	"	

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050826 (P3G0484-10) Soil					Sampled: 07/11/03	Received: 07/15/03			
Mercury	0.0647 J	0.0463	mg/kg dry	1	EPA 7471A	07/17/03	07/17/03	3070628	
03050826 (P3G0484-10RE1) Soil					Sampled: 07/11/03	Received: 07/15/03			
Arsenic	2.41 J	0.407	mg/kg dry	1	EPA 6020	07/31/03	08/12/03	3071212	
Barium	87.0 J	0.407	"	"	"	"	08/02/03	"	
Cadmium	ND	0.407 U	"	"	"	"	"	"	
Chromium	17.1 J	0.407	"	"	"	"	"	"	
Lead	2.71 U	0.407	"	"	"	"	"	"	
Selenium	1.28 UJ	0.407	"	"	"	"	08/12/03	"	
Silver	ND	0.407 U	"	"	"	"	08/02/03	"	
03050850 (P3G0484-17) Water					Sampled: 07/14/03	Received: 07/15/03			
Arsenic	0.0134 J	0.00100	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	0.0995	0.00100	"	"	"	"	07/27/03	"	
Cadmium	0.00731	0.00100	"	"	"	"	"	"	
Chromium	0.0308	0.00100	"	"	"	"	"	"	
Lead	0.00745	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 U	"	"	EPA 7470A	07/17/03	07/17/03	3070601	
Selenium	ND	0.00100	"	"	EPA 6020	07/19/03	07/27/03	3070697	
Silver	ND	0.00100	"	"	"	"	"	"	
03050846 (P3G0484-18) Water					Sampled: 07/14/03	Received: 07/15/03			
Arsenic	ND	0.00100 U J	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	ND	0.00100	"	"	"	"	07/27/03	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Lead	ND	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	EPA 7470A	07/17/03	07/17/03	3070601	
Selenium	ND	0.00100	"	"	EPA 6020	07/19/03	07/27/03	3070697	
Silver	ND	0.00100	"	"	"	"	"	"	

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050854 (P3G0484-19) Water					Sampled: 07/14/03	Received: 07/15/03			
Arsenic	ND	0.00100 U	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	ND	0.00100	"	"	"	"	07/27/03	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Lead	ND	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	EPA 7470A	07/17/03	07/17/03	3070601	
Selenium	ND	0.00100	"	"	EPA 6020	07/19/03	07/27/03	3070697	
Silver	ND	0.00100	"	"	"	"	"	"	
03050839 (P3G0484-22) Water					Sampled: 07/14/03	Received: 07/15/03			
Arsenic	**0.0140** J	0.00500	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	**0.420**	0.00500	"	"	"	"	07/27/03	"	
Cadmium	**0.0121**	0.00500	"	"	"	"	"	"	
Chromium	**0.0697**	0.00500	"	"	"	"	"	"	
Lead	**0.0172**	0.00500	"	"	"	"	"	"	
Mercury	ND	0.000200 U	"	"	EPA 7470A	07/17/03	07/17/03	3070601	
Selenium	ND	0.00500 U	"	"	EPA 6020	07/19/03	07/27/03	3070697	
Silver	ND	0.00500 U	"	"	"	"	"	"	
03050835 (P3G0484-23) Water					Sampled: 07/14/03	Received: 07/15/03			
Arsenic	**0.00631** J	0.00100	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	**0.0246**	0.00100	"	"	"	"	07/27/03	"	
Cadmium	**0.00483**	0.00100	"	"	"	"	"	"	
Chromium	**0.00247**	0.00100	"	"	"	"	"	"	
Lead	ND	0.00100 U	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	EPA 7470A	07/17/03	07/17/03	3070601	
Selenium	ND	0.00100	"	"	EPA 6020	07/19/03	07/27/03	3070697	
Silver	ND	0.00100	"	"	"	"	"	"	

MW 11/19/03

North Creek Analytical - Portland

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050840 (P3G0484-24) Soil					Sampled: 07/14/03 Received: 07/15/03				
Mercury	**0.0693** J	0.0410	mg/kg dry	1	EPA 7471A	07/17/03	07/17/03	3070628	
03050840 (P3G0484-24RE1) Soil					Sampled: 07/14/03 Received: 07/15/03				
Arsenic	**2.02** J	0.338	mg/kg dry	1	EPA 6020	07/31/03	08/12/03	3071212	
Barium	**131** J	0.338	"	"	"	"	08/02/03	"	
Cadmium	ND	0.338 U	"	"	"	"	"	"	
Chromium	**17.6** J	0.338	"	"	"	"	"	"	
Lead	**3.40** U	0.338	"	"	"	"	"	"	
Selenium	**1.18** UJ	0.338	"	"	"	"	08/12/03	"	
Silver	ND	0.338 U	"	"	"	"	08/02/03	"	
03050855 (P3G0484-25) Water					Sampled: 07/15/03 Received: 07/15/03				
Arsenic	**0.00638** J	0.00100	mg/l	1	EPA 6020	07/19/03	07/27/03	3070697	
Barium	**0.132**	0.00100	"	"	"	"	07/27/03	"	
Cadmium	**0.00201**	0.00100	"	"	"	"	"	"	
Chromium	**0.0466**	0.00100	"	"	"	"	"	"	
Lead	**0.00784**	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200 U	"	"	EPA 7470A	07/17/03	07/17/03	3070601	
Selenium	ND	0.00100 U	"	"	EPA 6020	07/19/03	07/27/03	3070697	
Silver	ND	0.00100 U	"	"	"	"	"	"	
03050851 (P3G0484-26) Soil					Sampled: 07/15/03 Received: 07/15/03				
Mercury	ND	0.0568 UJ	mg/kg dry	1	EPA 7471A	07/17/03	07/17/03	3070628	
03050851 (P3G0484-26RE1) Soil					Sampled: 07/15/03 Received: 07/15/03				
Arsenic	**3.95** J	0.500	mg/kg dry	1	EPA 6020	07/31/03	08/12/03	3071212	
Barium	**108** J	0.500	"	"	"	"	08/02/03	"	
Cadmium	**17.1**	0.500	"	"	"	"	"	"	
Chromium	**79.5** J	0.500	"	"	"	"	"	"	
Lead	**7.07** U	0.500	"	"	"	"	"	"	
Selenium	**1.45** UJ	0.500	"	"	"	"	08/12/03	"	
Silver	ND	0.500 U	"	"	"	"	08/02/03	"	

MW 11/19/03

North Creek Analytical - Portland

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Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 11/10/03 10:58

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050852 (P3G0484-27) Soil					Sampled: 07/15/03	Received: 07/15/03			
Mercury	**0.0611** J	0.0595	mg/kg dry	1	EPA 7471A	07/17/03	07/17/03	3070628	
03050852 (P3G0484-27RE1) Soil					Sampled: 07/15/03	Received: 07/15/03			
Arsenic	**2.80** J	0.417	mg/kg dry	1	EPA 6020	07/31/03	08/12/03	3071212	
Barium	**90.8** J	0.417	"	"	"	"	08/02/03	"	
Cadmium	**1.01**	0.417	"	"	"	"	"	"	
Chromium	**17.1** J	0.417	"	"	"	"	"	"	
Lead	**2.62** U	0.417	"	"	"	"	"	"	
Selenium	**1.33** U	0.417	"	"	"	"	08/12/03	"	
Silver	ND	0.417 U	"	"	"	"	08/02/03	"	
03050853 (P3G0484-28) Soil					Sampled: 07/15/03	Received: 07/15/03			
Mercury	**0.0575** J	0.0455	mg/kg dry	1	EPA 7471A	07/17/03	07/17/03	3070628	
03050853 (P3G0484-28RE1) Soil					Sampled: 07/15/03	Received: 07/15/03			
Arsenic	**2.47** J	0.431	mg/kg dry	1	EPA 6020	07/31/03	08/12/03	3071212	
Barium	**101** J	0.431	"	"	"	"	08/02/03	"	
Cadmium	ND	0.431 U	"	"	"	"	"	"	
Chromium	**16.3** J	0.431	"	"	"	"	"	"	
Lead	**2.50** U	0.431	"	"	"	"	"	"	
Selenium	**2.08** U	0.431	"	"	"	"	08/12/03	"	
Silver	ND	0.431 U	"	"	"	"	08/02/03	"	

MW 11-19-03

North Creek Analytical - Portland

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Brian L Cone

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MEMORANDUM

DATE: November 19, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 11 water and 8 soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Cyanide analyses (EPA Method 335.2) were performed by North Creek Analytical, Inc., Bothell, Washington.

The samples were numbered:

03050819	03050823	03050827	03050824	03050825
03050826	03050831	03050850	03050846	03050854
03050844	03050843	03050839	03050835	03050840
03050855	03050851	03050852	03050853	

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were generally maintained within the QC limits of 4°C ± 2°C except some samples which were received at 7.3°C; no action was taken based on these slight QC outliers. The samples were collected between July 11 and 15, 2003, and were analyzed between July 18 and 21, 2003, therefore meeting QC criteria of less than 14 days between collection and analysis.

2. Initial and Continuing Calibration: Acceptable.

No reported results were greater than 110% of the highest calibration standard. The initial calibration correlation coefficients were greater than 0.995. All recoveries were within QC limits of 85% to 115%.

3. Blanks: Acceptable.

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. Cyanide was not detected in applicable calibration and/or preparation blanks.

4. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

6. **Matrix Spike Analysis: Acceptable.**

Matrix spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All results were within QC limits.

7. **Duplicate Analysis: Satisfactory.**

All duplicate results were within QC limits except the soil (batch 3G20001) result of 82.9% difference; associated sample results were qualified as estimated quantities (J or UJ).

8. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050819 (P3G0484-01) Water						Sampled: 07/11/03	Received: 07/15/03		
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/18/03	07/18/03	3G18042	
03050823 (P3G0484-02) Water						Sampled: 07/11/03	Received: 07/15/03		
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/18/03	07/18/03	3G18042	
03050827 (P3G0484-03) Water						Sampled: 07/11/03	Received: 07/15/03		
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/18/03	07/18/03	3G18042	
03050831 (P3G0484-07) Water						Sampled: 07/11/03	Received: 07/15/03		
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/18/03	07/18/03	3G18042	
03050824 (P3G0484-08) Soil						Sampled: 07/11/03	Received: 07/15/03		
Cyanide (total)	ND	0.500 U	mg/kg dry	1	EPA 9010B	07/19/03	07/19/03	3G20001	
03050825 (P3G0484-09) Soil						Sampled: 07/11/03	Received: 07/15/03		
Cyanide (total)	ND	0.500 U	mg/kg dry	1	EPA 9010B	07/19/03	07/19/03	3G20001	
03050826 (P3G0484-10) Soil						Sampled: 07/11/03	Received: 07/15/03		
Cyanide (total)	ND	0.500 U	mg/kg dry	1	EPA 9010B	07/19/03	07/19/03	3G20001	
03050850 (P3G0484-17) Water						Sampled: 07/14/03	Received: 07/15/03		
Cyanide (total)	**0.0330**	0.0100	mg/l	1	EPA 335.2	07/18/03	07/18/03	3G18042	
03050846 (P3G0484-18) Water						Sampled: 07/14/03	Received: 07/15/03		
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/18/03	07/18/03	3G18042	

North Creek Analytical - Portland

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Brian L Cone

MW 11/14/03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050854 (P3G0484-19) Water					Sampled: 07/14/03	Received: 07/15/03			
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/18/03	07/18/03	3G18042	
03050844 (P3G0484-20) Soil					Sampled: 07/14/03	Received: 07/15/03			
Cyanide (total)	**774** J	50.0	mg/kg wet	100	EPA 9010B	07/19/03	07/19/03	3G20001	
03050843 (P3G0484-21) Water					Sampled: 07/14/03	Received: 07/15/03			
Cyanide (total)	**0.464**	0.0400	mg/l	4	EPA 335.2	07/20/03	07/21/03	3G21010	
Cyanide (total)	**0.464**	0.0400	"	"	EPA 9010B	"	"	"	
03050839 (P3G0484-22) Water					Sampled: 07/14/03	Received: 07/15/03			
Cyanide (total)	**0.274**	0.0200	mg/l	2	EPA 335.2	07/20/03	07/21/03	3G21010	
03050835 (P3G0484-23) Water					Sampled: 07/14/03	Received: 07/15/03			
Cyanide (total)	**0.0200**	0.0100	mg/l	1	EPA 335.2	07/20/03	07/21/03	3G21010	
03050840 (P3G0484-24) Soil					Sampled: 07/14/03	Received: 07/15/03			
Cyanide (total)	**0.701** J	0.500	mg/kg dry	1	EPA 9010B	07/19/03	07/19/03	3G20001	
03050855 (P3G0484-25) Water					Sampled: 07/15/03	Received: 07/15/03			
Cyanide (total)	ND	0.0100 U	mg/l	1	EPA 335.2	07/20/03	07/21/03	3G21010	
03050851 (P3G0484-26) Soil					Sampled: 07/15/03	Received: 07/15/03			
Cyanide (total)	ND	0.500 U J	mg/kg dry	1	EPA 9010B	07/19/03	07/19/03	3G20001	
03050852 (P3G0484-27) Soil					Sampled: 07/15/03	Received: 07/15/03			
Cyanide (total)	ND	0.500 U J	mg/kg dry	1	EPA 9010B	07/19/03	07/19/03	3G20001	

North Creek Analytical - Portland

Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Conventional Chemistry Parameters by APHA/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050853 (P3G0484-28) Soil					Sampled: 07/15/03	Received: 07/15/03			
Cyanide (total)	ND	0.500 U	mg/kg dry	1	EPA 9010B	07/19/03	07/19/03	3G20001	

MW 11-19-03

North Creek Analytical - Portland

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MEMORANDUM

DATE: November 19, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Organic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 5 water and 12 soil samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Analysis for Semivolatile Organic Compounds (EPA SW-846 Method 8270) was performed by North Creek Analytical, Beaverton, Oregon..

The samples were numbered:

03050827	03050824	03050825	03050826	03050832
03050833	03050834	03050847	03050848	03050849
03050846	03050854	03050835	03050855	03050851
03050852	03050853			

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were generally maintained within the QC limits of 4°C ± 2°C except some samples which were received at 7.3°C; no action was taken based on these slight QC outliers. The samples were collected between July 11 and 15, 2003, were extracted on July 17 or 24, 2003, and were analyzed by July 25, 2003, therefore meeting holding time criteria of less than 7 days between collection and extraction (14 days for soil) and less than 40 days between extraction and analysis.

2. Tuning: Acceptable.

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. Initial Calibration: Acceptable.

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limit of 30%.

4. **Continuing Calibration: Acceptable.**

All RRFs were greater than the QC limit of 0.050. All applicable % differences were less than the QC limits of 25%.

5. **Blanks: Acceptable.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any blank.

6. **Surrogates: Satisfactory.**

All surrogate recoveries were within QC limits except 2 acid and 2 base surrogates in sample 03050827 with low recoveries; all sample results were qualified as estimated quantities (J or UJ).

7. **Blank Spike Analysis: Acceptable.**

All spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits.

8. **Duplicate Analysis: Satisfactory.**

Spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All results were within QC limits except two spike duplicate outliers; no action was taken based on these outliers alone.

9. **Internal Standards: Acceptable.**

All internal standards (IS) were within ± 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

10. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

12. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050827 (P3G0484-03) Water					Sampled: 07/11/03	Received: 07/15/03			X
Acenaphthene	ND	5.00	ug/l	1	EPA 8270C	07/17/03	07/21/03	3070591	
Acenaphthylene	ND	5.00	"	"	"	"	"	"	
Anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) pyrene	ND	5.00	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	5.00	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzoic Acid	ND	50.0	"	"	"	"	"	"	
Benzyl alcohol	ND	10.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	5.00	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	5.00	"	"	"	"	"	"	
4-Chloroaniline	ND	20.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	5.00	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	10.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	5.00	"	"	"	"	"	"	
2-Chlorophenol	ND	5.00	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Chrysene	ND	5.00	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	5.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	5.00	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	5.00	"	"	"	"	"	"	
Dibenzofuran	ND	5.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.00	"	"	"	"	"	"	
Diethyl phthalate	ND	5.00	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	5.00	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	25.0	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	**94.1** J	10.0	"	"	"	"	"	"	
Fluoranthene	ND	5.00	"	"	"	"	"	"	

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Brian Cone, Industrial Services Manager

MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050827 (P3G0484-03) Water					Sampled: 07/11/03	Received: 07/15/03			X
Fluorene	ND	5.00	µg/l	1	EPA 8270C	07/17/03	07/21/03	3070591	
Hexachlorobenzene	ND	5.00	"	"	"	"	"	"	
Hexachlorobutadiene	ND	10.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	10.0	"	"	"	"	"	"	
Hexachloroethane	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	5.00	"	"	"	"	"	"	
Isophorone	ND	5.00	"	"	"	"	"	"	
2-Methylnaphthalene	ND	5.00	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3-,4-Methylphenol	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	5.00	"	"	"	"	"	"	
2-Nitroaniline	ND	5.00	"	"	"	"	"	"	
3-Nitroaniline	ND	10.0	"	"	"	"	"	"	
4-Nitroaniline	ND	10.0	"	"	"	"	"	"	
Nitrobenzene	ND	5.00	"	"	"	"	"	"	
2-Nitrophenol	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	25.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	10.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	5.00	"	"	"	"	"	"	
Phenol	ND	5.00	"	"	"	"	"	"	
Pyrene	ND	5.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*20.7 %*	*26-135*							*S-10*
Surr: 2-Fluorophenol	*8.42 %*	*6-124*							
Surr: Nitrobenzene-d5	*24.0 %*	*23-147*							
Surr: Phenol-d6	*10.7 %*	*11-130*							*S-10*
Surr: p-Terphenyl-d14	*26.5 %*	*38-149*							*S-10*
Surr: 2,4,6-Tribromophenol	*12.8 %*	*19-126*							*S-10*

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050824 (P3G0484-04) Soil					Sampled: 07/11/03	Received: 07/15/03			
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

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Brian L Cone

MW 11-19-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050824 (P3G0484-04) Soil					Sampled: 07/11/03	Received: 07/15/03			
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/23/03	3070592	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*87.9 %*	*44-146*							
Surr: 2-Fluorophenol	*82.5 %*	*42-126*							
Surr: Nitrobenzene-d5	*78.9 %*	*42-126*							
Surr: Phenol-d6	*86.1 %*	*42-131*							
Surr: p-Terphenyl-d14	*86.0 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*87.2 %*	*48-119*							

North Creek Analytical - Portland

Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050825 (P3G0484-05) Soil					Sampled: 07/11/03 Received: 07/15/03				
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/24/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

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Brian L Cone

MW 11-19-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050825 (P3G0484-05) Soil					Sampled: 07/11/03	Received: 07/15/03			
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/24/03	3070592	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*91.8 %*	*44-146*							
Surr: 2-Fluorophenol	*85.2 %*	*42-126*							
Surr: Nitrobenzene-d5	*90.0 %*	*42-126*							
Surr: Phenol-d6	*91.7 %*	*42-131*							
Surr: p-Terphenyl-d14	*91.4 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*91.3 %*	*48-119*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050826 (P3G0484-06) Soil					Sampled: 07/11/03	Received: 07/15/03			
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/24/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L. Cone

Brian Cone, Industrial Services Manager

MW 11-19-03

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Environmental Laboratory Network

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050826 (P3G0484-06) Soil					Sampled: 07/11/03	Received: 07/15/03			
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/24/03	3070592	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*79.8 %*	*44-146*							
Surr: 2-Fluorophenol	*76.9 %*	*42-126*							
Surr: Nitrobenzene-d5	*76.7 %*	*42-126*							
Surr: Phenol-d6	*82.3 %*	*42-131*							
Surr: p-Terphenyl-d14	*81.1 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*87.7 %*	*48-119*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050832 (P3G0484-11) Soil					Sampled: 07/14/03	Received: 07/15/03			
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/24/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L. Cone

MN 11-19-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050832 (P3G0484-11) Soil					Sampled: 07/14/03	Received: 07/15/03			
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/24/03	3070592	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*84.2 %*	*44-146*							
Surr: 2-Fluorophenol	*81.1 %*	*42-126*							
Surr: Nitrobenzene-d5	*77.0 %*	*42-126*							
Surr: Phenol-d6	*86.0 %*	*42-131*							
Surr: p-Terphenyl-d14	*83.8 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*82.8 %*	*48-119*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050833 (P3G0484-12) Soil					Sampled: 07/14/03	Received: 07/15/03			
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/24/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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MW 11-19-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050833 (P3G0484-12) Soil					Sampled: 07/14/03 Received: 07/15/03				
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/24/03	3070592	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*86.2 %*	*44-146*							
Surr: 2-Fluorophenol	*85.1 %*	*42-126*							
Surr: Nitrobenzene-d5	*81.7 %*	*42-126*							
Surr: Phenol-d6	*90.9 %*	*42-131*							
Surr: p-Terphenyl-d14	*87.7 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*89.9 %*	*48-119*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050834 (P3G0484-13) Soil					Sampled: 07/14/03 Received: 07/15/03				
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/25/03	3070592	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 11-19-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050834 (P3G0484-13) Soil					Sampled: 07/14/03	Received: 07/15/03			
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/17/03	07/25/03	3070592	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*89.1 %*	*44-146*							
Surr: 2-Fluorophenol	*79.7 %*	*42-126*							
Surr: Nitrobenzene-d5	*82.5 %*	*42-126*							
Surr: Phenol-d6	*81.9 %*	*42-131*							
Surr: p-Terphenyl-d14	*90.9 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*91.1 %*	*48-119*							

North Creek Analytical - Portland

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Brian L Cone

MW 11-19-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050847 (P3G0484-14) Soil					Sampled: 07/14/03	Received: 07/15/03			
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/24/03	07/25/03	3070887	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050847 (P3G0484-14) Soil					Sampled: 07/14/03	Received: 07/15/03			
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/24/03	07/25/03	3070887	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*77.2 %*	*44-146*							
Surr: 2-Fluorophenol	*71.4 %*	*42-126*							
Surr: Nitrobenzene-d5	*69.6 %*	*42-126*							
Surr: Phenol-d6	*71.7 %*	*42-131*							
Surr: p-Terphenyl-d14	*74.6 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*76.3 %*	*48-119*							

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050848 (P3G0484-15) Soil					Sampled: 07/14/03	Received: 07/15/03			
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/24/03	07/25/03	3070887	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

11-19-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050848 (P3G0484-15) Soil					Sampled: 07/14/03 Received: 07/15/03				
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/24/03	07/25/03	3070887	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*79.1 %*	*44-146*							
Surr: 2-Fluorophenol	*77.7 %*	*42-126*							
Surr: Nitrobenzene-d5	*73.5 %*	*42-126*							
Surr: Phenol-d6	*78.0 %*	*42-131*							
Surr: p-Terphenyl-d14	*79.8 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*79.4 %*	*48-119*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050849 (P3G0484-16) Soil					Sampled: 07/14/03	Received: 07/15/03			
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/24/03	07/25/03	3070887	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 11-19-03

Brian Cone, Industrial Services Manager

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Environmental Laboratory Network

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050849 (P3G0484-16) Soil					Sampled: 07/14/03 Received: 07/15/03				
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/24/03	07/25/03	3070887	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*83.7 %*	*44-146*							
Surr: 2-Fluorophenol	*78.2 %*	*42-126*							
Surr: Nitrobenzene-d5	*74.6 %*	*42-126*							
Surr: Phenol-d6	*80.7 %*	*42-131*							
Surr: p-Terphenyl-d14	*84.0 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*81.3 %*	*48-119*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050846 (P3G0484-18) Water					Sampled: 07/14/03	Received: 07/15/03			
Acenaphthene	ND	5.00	ug/l	1	EPA 8270C	07/17/03	07/21/03	3070591	
Acenaphthylene	ND	5.00	"	"	"	"	"	"	
Anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) pyrene	ND	5.00	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	5.00	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzoic Acid	ND	50.0	"	"	"	"	"	"	
Benzyl alcohol	ND	10.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	5.00	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	5.00	"	"	"	"	"	"	
4-Chloroaniline	ND	20.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	5.00	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	10.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	5.00	"	"	"	"	"	"	
2-Chlorophenol	ND	5.00	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Chrysene	ND	5.00	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	5.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	5.00	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	5.00	"	"	"	"	"	"	
Dibenzofuran	ND	5.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.00	"	"	"	"	"	"	
Diethyl phthalate	ND	5.00	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	5.00	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	25.0	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	5.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 11/19/03

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050846 (P3G0484-18) Water					Sampled: 07/14/03	Received: 07/15/03			
Fluorene	ND	5.00	ug/l	1	EPA 8270C	07/17/03	07/21/03	3070591	
Hexachlorobenzene	ND	5.00	"	"	"	"	"	"	
Hexachlorobutadiene	ND	10.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	10.0	"	"	"	"	"	"	
Hexachloroethane	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	5.00	"	"	"	"	"	"	
Isophorone	ND	5.00	"	"	"	"	"	"	
2-Methylnaphthalene	ND	5.00	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3-,4-Methylphenol	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	5.00	"	"	"	"	"	"	
2-Nitroaniline	ND	5.00	"	"	"	"	"	"	
3-Nitroaniline	ND	10.0	"	"	"	"	"	"	
4-Nitroaniline	ND	10.0	"	"	"	"	"	"	
Nitrobenzene	ND	5.00	"	"	"	"	"	"	
2-Nitrophenol	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	25.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	10.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	5.00	"	"	"	"	"	"	
Phenol	ND	5.00	"	"	"	"	"	"	
Pyrene	ND	5.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*62.4 %*	*26-135*							
Surr: 2-Fluorophenol	*31.3 %*	*6-124*							
Surr: Nitrobenzene-d5	*68.7 %*	*23-147*							
Surr: Phenol-d6	*23.7 %*	*11-130*							
Surr: p-Terphenyl-d14	*74.8 %*	*38-149*							
Surr: 2,4,6-Tribromophenol	*70.7 %*	*19-126*							

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050854 (P3G0484-19) Water					Sampled: 07/14/03	Received: 07/15/03			
Acenaphthene	ND	5.00	ug/l	1	EPA 8270C	07/17/03	07/21/03	3070591	
Acenaphthylene	ND	5.00	"	"	"	"	"	"	
Anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) pyrene	ND	5.00	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	5.00	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzoic Acid	ND	50.0	"	"	"	"	"	"	
Benzyl alcohol	ND	10.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	5.00	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	5.00	"	"	"	"	"	"	
4-Chloroaniline	ND	20.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	5.00	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	10.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	5.00	"	"	"	"	"	"	
2-Chlorophenol	ND	5.00	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Chrysene	ND	5.00	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	5.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	5.00	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	5.00	"	"	"	"	"	"	
Dibenzofuran	ND	5.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.00	"	"	"	"	"	"	
Diethyl phthalate	ND	5.00	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	5.00	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	25.0	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	5.00	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 11-19-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050854 (P3G0484-19) Water					Sampled: 07/14/03	Received: 07/15/03			
Fluorene	ND	5.00	ug/l	1	EPA 8270C	07/17/03	07/21/03	3070591	
Hexachlorobenzene	ND	5.00	"	"	"	"	"	"	
Hexachlorobutadiene	ND	10.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	10.0	"	"	"	"	"	"	
Hexachloroethane	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	5.00	"	"	"	"	"	"	
Isophorone	ND	5.00	"	"	"	"	"	"	
2-Methylnaphthalene	ND	5.00	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3-,4-Methylphenol	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	5.00	"	"	"	"	"	"	
2-Nitroaniline	ND	5.00	"	"	"	"	"	"	
3-Nitroaniline	ND	10.0	"	"	"	"	"	"	
4-Nitroaniline	ND	10.0	"	"	"	"	"	"	
Nitrobenzene	ND	5.00	"	"	"	"	"	"	
2-Nitrophenol	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	25.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	10.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	5.00	"	"	"	"	"	"	
Phenol	ND	5.00	"	"	"	"	"	"	
Pyrene	ND	5.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*64.3 %*	*26-135*							
Surr: 2-Fluorophenol	*22.2 %*	*6-124*							
Surr: Nitrobenzene-d5	*66.4 %*	*23-147*							
Surr: Phenol-d6	*18.1 %*	*11-130*							
Surr: p-Terphenyl-d14	*84.0 %*	*38-149*							
Surr: 2,4,6-Tribromophenol	*70.4 %*	*19-126*							

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050835 (P3G0484-23) Water					Sampled: 07/14/03	Received: 07/15/03			
Acenaphthene	ND	5.00	ug/l	1	EPA 8270C	07/17/03	07/21/03	3070591	
Acenaphthylene	ND	5.00	"	"	"	"	"	"	
Anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) pyrene	ND	5.00	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	5.00	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzoic Acid	ND	50.0	"	"	"	"	"	"	
Benzyl alcohol	ND	10.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	5.00	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	5.00	"	"	"	"	"	"	
4-Chloroaniline	ND	20.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	5.00	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	10.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	5.00	"	"	"	"	"	"	
2-Chlorophenol	ND	5.00	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Chrysene	ND	5.00	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	5.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	5.00	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	5.00	"	"	"	"	"	"	
Dibenzofuran	ND	5.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.00	"	"	"	"	"	"	
Diethyl phthalate	ND	5.00	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	5.00	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	25.0	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	**195**	20.0	"	2	"	"	07/23/03	"	
Fluoranthene	ND	5.00	"	1	"	"	07/21/03	"	

North Creek Analytical - Portland

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GMW 11-19-03

Brian L Cone

Brian Cone, Industrial Services Manager

North Creek Analytical, Inc.
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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050835 (P3G0484-23) Water					Sampled: 07/14/03	Received: 07/15/03			
Fluorene	ND	5.00	ug/l	1	EPA 8270C	07/17/03	07/21/03	3070591	
Hexachlorobenzene	ND	5.00	"	"	"	"	"	"	
Hexachlorobutadiene	ND	10.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	10.0	"	"	"	"	"	"	
Hexachloroethane	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	5.00	"	"	"	"	"	"	
Isophorone	ND	5.00	"	"	"	"	"	"	
2-Methylnaphthalene	ND	5.00	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3-,4-Methylphenol	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	5.00	"	"	"	"	"	"	
2-Nitroaniline	ND	5.00	"	"	"	"	"	"	
3-Nitroaniline	ND	10.0	"	"	"	"	"	"	
4-Nitroaniline	ND	10.0	"	"	"	"	"	"	
Nitrobenzene	ND	5.00	"	"	"	"	"	"	
2-Nitrophenol	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	25.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	10.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	5.00	"	"	"	"	"	"	
Phenol	ND	5.00	"	"	"	"	"	"	
Pyrene	ND	5.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*43.5 %*	*26-135*							
Surr: 2-Fluorophenol	*23.9 %*	*6-124*							
Surr: Nitrobenzene-d5	*46.9 %*	*23-147*							
Surr: Phenol-d6	*20.1 %*	*11-130*							
Surr: p-Terphenyl-d14	*51.1 %*	*38-149*							
Surr: 2,4,6-Tribromophenol	*44.9 %*	*19-126*							

North Creek Analytical - Portland

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Brian L Cone

MW 11-19-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	Reported:
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050855 (P3G0484-25) Water					Sampled: 07/15/03	Received: 07/15/03			R-05
Acenaphthene	ND	10.0	ug/l	2	EPA 8270C	07/17/03	07/22/03	3070591	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzoic Acid	ND	100	"	"	"	"	"	"	
Benzyl alcohol	ND	20.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	10.0	"	"	"	"	"	"	
4-Chloroaniline	ND	40.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	20.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	20.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	10.0	"	"	"	"	"	"	
2-Chlorophenol	ND	10.0	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
Dibenzofuran	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	10.0	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	20.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	20.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	50.0	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	10.0	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	**131**	20.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 11-19-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050855 (P3G0484-25) Water					Sampled: 07/15/03	Received: 07/15/03			R-05
Fluorene	ND	10.0	ug/l	2	EPA 8270C	07/17/03	07/22/03	3070591	
Hexachlorobenzene	ND	10.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	20.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	20.0	"	"	"	"	"	"	
Hexachloroethane	ND	20.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
Isophorone	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	20.0	"	"	"	"	"	"	
3-,4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
2-Nitroaniline	ND	10.0	"	"	"	"	"	"	
3-Nitroaniline	ND	20.0	"	"	"	"	"	"	
4-Nitroaniline	ND	20.0	"	"	"	"	"	"	
Nitrobenzene	ND	10.0	"	"	"	"	"	"	
2-Nitrophenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	50.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	20.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	10.0	"	"	"	"	"	"	
Pentachlorophenol	ND	20.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	10.0	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	10.0	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	10.0	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*39.1 %*	*26-135*							
Surr: 2-Fluorophenol	*23.7 %*	*6-124*							
Surr: Nitrobenzene-d5	*43.3 %*	*23-147*							
Surr: Phenol-d6	*18.7 %*	*11-130*							
Surr: p-Terphenyl-d14	*49.9 %*	*38-149*							
Surr: 2,4,6-Tribromophenol	*42.4 %*	*19-126*							

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050851 (P3G0484-26) Soil					Sampled: 07/15/03	Received: 07/15/03			
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/24/03	07/25/03	3070887	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

MW 11-19-03

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Environmental Quality Management	Project: Columbia American Plating	
6825 216th Street SW, Suite J	Project Number: 030202.0015, PO# 5770	**Reported:**
Lynnwood, WA 98036	Project Manager: Jerry Wade	11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050851 (P3G0484-26) Soil					Sampled: 07/15/03	Received: 07/15/03			
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/24/03	07/25/03	3070887	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*76.4 %*	*44-146*							
Surr: 2-Fluorophenol	*69.8 %*	*42-126*							
Surr: Nitrobenzene-d5	*64.2 %*	*42-126*							
Surr: Phenol-d6	*70.9 %*	*42-131*							
Surr: p-Terphenyl-d14	*80.4 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*73.8 %*	*48-119*							

North Creek Analytical - Portland

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MW 11-19-03

Brian L Cone

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050852 (P3G0484-27) Soil					Sampled: 07/15/03 Received: 07/15/03				
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/24/03	07/25/03	3070887	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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

Brian L Cone

MW 11-19-03

Brian Cone, Industrial Services Manager

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	**Reported:** 11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050852 (P3G0484-27) Soil					Sampled: 07/15/03 Received: 07/15/03				
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/24/03	07/25/03	3070887	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*83.8 %*	*44-146*							
Surr: 2-Fluorophenol	*79.9 %*	*42-126*							
Surr: Nitrobenzene-d5	*78.2 %*	*42-126*							
Surr: Phenol-d6	*82.4 %*	*42-131*							
Surr: p-Terphenyl-d14	*81.2 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*81.9 %*	*48-119*							

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050853 (P3G0484-28) Soil					Sampled: 07/15/03	Received: 07/15/03			
Acenaphthene	ND	0.330	mg/kg dry	1	EPA 8270C	07/24/03	07/25/03	3070887	
Acenaphthylene	ND	0.330	"	"	"	"	"	"	
Anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.330	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.330	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.330	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.330	"	"	"	"	"	"	
Benzoic Acid	ND	1.00	"	"	"	"	"	"	
Benzyl alcohol	ND	0.330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.330	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.330	"	"	"	"	"	"	
4-Chloroaniline	ND	2.00	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.330	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.330	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.330	"	"	"	"	"	"	
2-Chlorophenol	ND	0.330	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.330	"	"	"	"	"	"	
Chrysene	ND	0.330	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.330	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.330	"	"	"	"	"	"	
Dibenzofuran	ND	0.330	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.330	"	"	"	"	"	"	
Diethyl phthalate	ND	0.330	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	1.00	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	1.00	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	2.00	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.500	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	0.330	"	"	"	"	"	"	

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

MW 11-19-03

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Environmental Quality Management 6825 216th Street SW, Suite J Lynnwood, WA 98036	Project: Columbia American Plating Project Number: 030202.0015, PO# 5770 Project Manager: Jerry Wade	Reported: 11/10/03 10:58

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
03050853 (P3G0484-28) Soil					Sampled: 07/15/03 Received: 07/15/03				
Fluorene	ND	0.330	mg/kg dry	1	EPA 8270C	07/24/03	07/25/03	3070887	
Hexachlorobenzene	ND	0.330	"	"	"	"	"	"	
Hexachlorobutadiene	ND	1.00	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	1.00	"	"	"	"	"	"	
Hexachloroethane	ND	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.330	"	"	"	"	"	"	
Isophorone	ND	0.330	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.330	"	"	"	"	"	"	
2-Methylphenol	ND	0.330	"	"	"	"	"	"	
3-,4-Methylphenol	ND	0.330	"	"	"	"	"	"	
Naphthalene	ND	0.330	"	"	"	"	"	"	
2-Nitroaniline	ND	0.330	"	"	"	"	"	"	
3-Nitroaniline	ND	1.00	"	"	"	"	"	"	
4-Nitroaniline	ND	0.330	"	"	"	"	"	"	
Nitrobenzene	ND	0.330	"	"	"	"	"	"	
2-Nitrophenol	ND	0.330	"	"	"	"	"	"	
4-Nitrophenol	ND	1.00	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.330	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	0.330	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.330	"	"	"	"	"	"	
Phenol	ND	0.330	"	"	"	"	"	"	
Pyrene	ND	0.330	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.330	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.330	"	"	"	"	"	"	
Surr: 2-Fluorobiphenyl	*82.4 %*	*44-146*							
Surr: 2-Fluorophenol	*77.8 %*	*42-126*							
Surr: Nitrobenzene-d5	*75.1 %*	*42-126*							
Surr: Phenol-d6	*80.1 %*	*42-131*							
Surr: p-Terphenyl-d14	*85.0 %*	*49-150*							
Surr: 2,4,6-Tribromophenol	*85.2 %*	*48-119*							

MW 11-19-03

North Creek Analytical - Portland

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Brian L Cone

Brian Cone, Industrial Services Manager

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MEMORANDUM

DATE: December 12, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 1 liquid sample collected from the Columbia American Plating site in Portland, Oregon, has been completed. Total metals (EPA Methods 6020 and 7470) and total and amenable cyanide (EPA Methods 9012 and 9013) analyses were performed by STL-Seattle, Tacoma, Washington.

The sample was numbered: 03070915

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The sample was maintained and received within the QC limits of 4°C ± 2°C. The samples were collected on October 28, 2003, and were analyzed by November 11, 2003, therefore meeting QC criteria of less than 6 months between collection and analysis (14 days for cyanide and 28 days for mercury).

2. **Initial and Continuing Calibration: Acceptable.**

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits of 90% to 110% (± 1%). All AA recoveries were within QC limits of 80% to 120%. All cyanide recoveries were with QC limits of 85% to 115%. The mercury initial calibration correlation coefficient was greater than or equal to 0.995.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results.

4. **ICP Interference Check Sample: Acceptable.**

Interference Check Sample (ICS) solution ABI results were within QC limits.

5. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

7. **ICP Serial Dilution: Satisfactory.**

Serial dilution results were within QC limits except arsenic, nickel, and zinc; all arsenic, nickel, and zinc results were qualified as estimated quantities (J).

8. **Blank Spike/Matrix Spike Analysis: Satisfactory.**

Blank spike(BS)/matrix spike (MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits except cadmium (40%), chromium (-147%), cyanide (75%), copper (-52%), mercury (65%), nickel (4%), and zinc (322%). All outliers were qualified as estimated quantities (J).

9. **Duplicate Analysis: Acceptable.**

All duplicate results were within QC limits.

10. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

<u>Data Qualifiers and Definitions</u>

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03070915/BAKER 7282
Lab ID:	117225-01
Date Received:	10/29/03
Date Prepared:	11/7/03
Date Analyzed:	11/10/03
Dilution Factor	20

Metals by ICP-MS - USEPA Method 6020

Analyte	Result (mg/L)	PQL	MRL	Flags
Arsenic	0.0226 J	0.02	0.01	
Cadmium	1.29	0.01	0.005	
Chromium	17.6 J	0.02	0.01	
Copper	8 J	0.02	0.01	
Lead	1.18	0.01	0.005	
Molybdenum	0.912	0.02	0.01	
Nickel	16.8 J	0.02	0.01	
Selenium	0.00588	0.004	0.002	
Silver	0.556	0.01	0.005	
Zinc	27.5 J	0.06	0.03	

MW 12-12-03

00015

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03070915/BAKER 7282
Lab ID:	117225-01
Date Received:	10/29/2003
Date Prepared:	11/3/2003
Date Analyzed:	11/3/2003
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MRL	Flags
Mercury	0.000855 J	0.0002	0.0001	B1

MW 12/2/03

00016

STL Seattle

Client Name	Environmental Quality Management, Inc.
Project Name	Columbia American Plating - Oregon
Date Received	10-29-03

General Chemistry Parameters

Client Sample ID			03070915/Baker 7282		
Lab ID			117225-01		
Parameter	**Method**	**Date Analyzed**	**Units**	**Result**	**PQL**
Amenable Cyanide	EPA 9012/9013	11-04-03	mg/L	3.3 J	0.02
Cyanide	EPA 9012/9013	11-04-03	mg/L	3.4 J	0.08

MW 12-12-03

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MEMORANDUM

DATE: December 12, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 2 liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Total sulfide analyses (EPA Method 376.2) were performed by STL-Seattle, Tacoma, Washington.

The samples were numbered: 03070913 03070914

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

Samples receipt temperatures were not recorded. The samples were collected on September 26, 2003, and were analyzed by September 30, 2003, therefore meeting QC criteria of less than 7 days between collection and analysis.

2. **Initial and Continuing Calibration: Acceptable.**

The initial calibration correlation coefficient was greater than or equal to 0.995.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Total sulfide was not detected in the method blank.

4. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

6. **Blank Spike/Matrix Spike Analysis: Acceptable.**

Blank spike(BS)/matrix spike (MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits.

7. **Duplicate Analysis: Acceptable.**

All duplicate results were within QC limits.

8. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Project Name	Columbia American Plating
Date Received	09-29-03

General Chemistry Parameters

Client Sample ID / **Lab ID**			03070913/SSA 116487-01		
Parameter	**Method**	**Date Analyzed**	**Units**	**Result**	**PQL**
~~Cyanide~~	~~EPA 335.3~~	~~09-30-03~~	~~mg/L~~	~~240~~	~~25~~
Sulfide	EPA 376.2	09-30-03	mg/L	ND	0.1 U

MU

Client Sample ID / **Lab ID**			03070914/NSA 116487-02		
Parameter	**Method**	**Date Analyzed**	**Units**	**Result**	**PQL**
~~Cyanide~~	~~EPA 335.3~~	~~09-30-03~~	~~mg/L~~	~~0.11~~	~~0.05~~
Sulfide	EPA 376.2	09-30-03	mg/L	ND	0.005 U

MU

MW 12-12-03

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MEMORANDUM

DATE: December 12, 2003

TO: Erin Lynch, Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ: **Inorganic Data Quality Assurance Review, Columbia American Plating Site, Portland, Oregon**

REF: TDD: 03-05-0004 PAN: 001281.0276.01RZ

The data quality assurance review of 2 liquid samples collected from the Columbia American Plating site in Portland, Oregon, has been completed. Total metals (EPA Methods 200.7 and 245.2) and cyanide (EPA Method 335.3) analyses were performed by STL-Seattle, Tacoma, Washington.

The samples were numbered: 03070913 03070914

Data Qualifications:

1. Sample Holding Times: Acceptable.

Samples receipt temperatures were not recorded. The samples were collected on September 26, 2003, and were analyzed by September 30, 2003, therefore meeting QC criteria of less than 6 months between collection and analysis (14 days for cyanide and 28 days for mercury).

2. Initial and Continuing Calibration: Acceptable.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No reported results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits of 90% to 110% (± 1%). All AA recoveries were within QC limits of 80% to 120%. All cyanide recoveries were with QC limits of 85% to 115%. The mercury initial calibration correlation coefficient was greater than or equal to 0.995.

3. Blanks: Acceptable.

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. No elements were detected in applicable calibration and/or preparation blanks that affected sample results.

4. **ICP Interference Check Sample: Acceptable.**

Interference Check Sample (ICS) results were within QC limits.

5. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

7. **ICP Serial Dilution: Satisfactory.**

Serial dilution results were within QC limits except copper; all copper results were qualified as estimated quantities (J).

8. **Blank Spike/Matrix Spike Analysis: Acceptable.**

Blank spike(BS)/matrix spike (MS) analyses was performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits.

9. **Duplicate Analysis: Acceptable.**

All duplicate results were within QC limits.

10. **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03070913/SSA
Lab ID:	116487-01
Date Received:	9/29/03
Date Prepared:	9/30/03
Date Analyzed:	9/30/03
Dilution Factor	1

Metals by ICP - USEPA Method 200.7

Analyte	Result (mg/L)	PQL	MRL	Flags
Arsenic	0.668	0.01	0.005	
Cadmium	0.212	0.005	0.0025	
Chromium	2.2	0.01	0.005	
Copper	107 J	0.01	0.005	
Lead	0.0504	0.01	0.005	
Molybdenum	4.48	0.01	0.005	
Nickel	10.3	0.01	0.005	
Selenium	0.22	0.05	0.025	
Silver	0.843	0.01	0.005	
Zinc	13.1	0.01	0.005	

MW 12-12-03

00017

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03070913/SSA
Lab ID:	116487-01
Date Received:	9/29/03
Date Prepared:	9/29/03
Date Analyzed:	9/29/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MRL	Flags
Mercury	0.00249	0.001	0.0005	

MW 12-12-03

00018

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03070914/NSA
Lab ID:	116487-02
Date Received:	9/29/03
Date Prepared:	9/30/03
Date Analyzed:	9/30/03
Dilution Factor	1

Metals by ICP - USEPA Method 200.7

Analyte	Result (mg/L)	PQL	MRL	Flags
Arsenic	ND	0.01 U	0.005	
Cadmium	0.107	0.005	0.0025	
Chromium	0.41	0.01	0.005	
Copper	0.339 J	0.01	0.005	
Lead	0.075	0.01	0.005	
Molybdenum	0.0178	0.01	0.005	
Nickel	0.551	0.01	0.005	
Selenium	ND	0.05 U	0.025	
Silver	0.0383	0.01	0.005	
Zinc	2.08	0.01	0.005	

MW 12-12-03

00019

STL Seattle

Client Name	Environmental Quality Management, Inc.
Client ID:	03070914/NSA
Lab ID:	116487-02
Date Received:	9/29/03
Date Prepared:	9/29/03
Date Analyzed:	9/29/03
Dilution Factor	1

Mercury by CVAA - USEPA Method 7470

Analyte	Result (mg/L)	PQL	MRL	Flags
Mercury	ND	0.0002 U	0.0001	

MW 12-2-03

00020

STL Seattle

Client Name	Environmental Quality Management, Inc.
Project Name	Columbia American Plating
Date Received	09-29-03

General Chemistry Parameters

Client Sample ID	03070913/SSA				
Lab ID	116487-01				
Parameter	**Method**	**Date Analyzed**	**Units**	**Result**	**PQL**
Cyanide	EPA 335.3	09-30-03	mg/L	240	25
~~Sulfide~~	~~EPA 376.2~~	~~09-30-03~~	~~mg/L~~	~~ND~~	~~0.1~~ UMW

Client Sample ID	03070914/NSA				
Lab ID	116487-02				
Parameter	**Method**	**Date Analyzed**	**Units**	**Result**	**PQL**
Cyanide	EPA 335.3	09-30-03	mg/L	0.11	0.05
~~Sulfide~~	~~EPA 376.2~~	~~09-30-03~~	~~mg/L~~	~~ND~~	~~0.005~~ UMW

MW 12-12-03