



Rec 10/16/14
put on BARRTS 11/17/14
October 14, 2014 (43)

Wisconsin Department of Natural Resources

Attn: Mr. Phil Richard
875 South 4th Avenue
Park Falls, WI 54552



Subject:

Site Update
Phillips Plating Corporation
984 North Lake Avenue
Phillips, WI
BRRTS: 02-51-559634

Dear Phil,

The purpose of this letter is to provide you with an update for site investigation activities associated with the above referenced site. The site location is shown on Figure 1.

BACKGROUND

This site is located in the NW ¼, SW ¼, S07, T37N, R01E in the City of Phillips, Price County. A site vicinity map is included as an attachment. The facility is an operating plating facility which specializes in metallic plating of various plastic components.

SUMMARY OF DATES AND WORK COMPLETED

- **October 30, 2013** – REI prepares and submits site investigation report/remedial action plan
- **November 12, 2013** – REI onsite to sample and/or collect field measurements from MW1-MW9 and PZ1
- **February 12, 2014** – REI onsite to sample and / or collect field measurements from MW1-MW9 and PZ1
- **June 2, 2014** – REI onsite to sample and / or collect field measurements from MW1-MW9 and PZ1
- **August 5, 2014** – REI onsite to sample and / or collect field measurements from MW1-MW9 and PZ1

SITE SUMMARY

REI submitted the Site Investigation Report / Remedial Action Plan on October 30, 2013. This report summarized site investigative work conducted at the site including the evaluation of soil and groundwater since October 4, 2012 when the Phase II ESA was completed by REI. The Site Investigation Report concluded that soil and groundwater contamination originating from the Phillips Plating wastewater process is present on and off site. REI presented three (3) alternatives as a part of the Remedial Action Plan including source excavation, chemical injection, and monitored natural attenuation.



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4080 N. 20th Avenue Wausau, WI 54401
715-675-9784 REIengineering.com

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On December 20, 2013, the WDNR responded with a Technical Assistance Review of the Site Investigation Report. The WDNR acknowledged that the requirements for site investigation under ch. NR 716, Wis. Adm. Code had substantially been met. The Department also offered comments and concerns regarding definition of the lateral extent of groundwater contamination and recommended installation of additional wells and sampling pH. The Department expressed concern that there could be additional sources of soil contamination, and the soil impacts under the building are not well defined. The Department also agreed that monitored natural attenuation is an acceptable remedial alternative.

REI has completed four (4) additional groundwater monitoring rounds since the submittal of the Site Investigation / Remedial Action Plan submittal on November 12, 2013, February 12, 2014, June 2, 2014, and August 5, 2014. Groundwater elevation data was collected prior to sampling and summarized on Table 1 and groundwater field monitoring and laboratory analytical results are summarized on Tables 2a-2m. The updated groundwater flow maps with location of all twelve (12) monitoring wells and one (1) piezometer are depicted in Figures 3a-3d.

CONCLUSIONS AND RECOMMENDATIONS

After submitting the Site Investigation Report / Remedial Action Plan and reviewing WDNR comments, REI determined additional groundwater monitoring data was necessary in order to further evaluate the Phillips Plating groundwater contaminant plume. After completing four (4) additional groundwater monitoring rounds, REI has determined installation of additional down gradient groundwater monitoring wells and piezometers is necessary to define the extent of groundwater contamination. REI has attempted to, but not successfully secured permission from the owner of the property to the east/northeast (Former Shamrock Oil site) to place wells on that property. REI will effort to secure permission once again. REI has communicated with Phillips Medisize in the past and previously secured permission for well placement of MW10 and MW11. REI will effort to secure permission from Phillips Medisize for the placement of additional wells.

Upon your review please contact me to discuss what has been presented in this update. Please contact our office at (715) 675-9784 or electronically at bbailey@reiengineering.com to further discuss.

Sincerely,
REI Engineering, Inc.



Brian J. Bailey
Environmental Scientist

Attachments

Table 1 – Groundwater Elevation Summary
Table 2a-2m – Groundwater Analytical Results Summaries
Figure 3a-3d – Groundwater Contour Maps
Figure 4 – Estimated Extent of Groundwater Contamination
Attachment A –Laboratory Analytical Reports

Cc: Mr. Darin Baratka, Phillips Plating Corp., 984 N. Lake Avenue Phillips, WI 54555

TABLE 1
GROUNDWATER ELEVATION SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI

Well	MW1	MW2	MW3	MW4	MW5	MW6	MW7	MW8	MW9	MW10	MW11	MW12	PZ1
TOC Elevation	1459.82	1457.24	1461.33	1459.19	1457.51	1458.16	1453.30	1457.92	1455.91	1450.54	1452.99	1459.5	1457.96
Ground Elevation	1460.22	1457.58	1461.59	1459.52	1457.99	1458.67	1454.02	1458.23	1456.33	1451.11	1453.51	1459.98	1458.36
Top of Screen Elevation	1445.92	1442.94	1446.85	1444.85	1443.86	1448.49	1443.76	1447.86	1445.85	1446.21	1445.75	1449.88	1429.73
Well Depth	23.90	24.30	24.48	24.34	23.65	19.67	19.54	20.06	20.06	14.33	17.24	19.62	33.23
Depth to Water (from TOC)													
12/12/2012	12.76	12.58	15.43	13.79	15.70	NI	NI	NI	NI	NI	NI	NI	NI
1/3/2013	13.06	12.83	15.74	14.02	15.77	16.76	15.04	NI	NI	NI	NI	NI	NI
2/6/2013	13.49	13.24	16.08	14.19	15.84	16.85	15.19	NI	NI	NI	NI	NI	NI
2/19/2013	NC	NC	NC	NC	NC	NC	NC	9.78	17.39	NI	NI	NI	NI
3/5/2013	13.76	13.50	16.33	14.46	15.74	16.76	15.12	9.78	17.37	NI	NI	NI	NI
5/8/2013	10.38	9.83	9.72	9.79	11.38	15.75	13.07	9.39	14.86	NI	NI	NI	NI
7/15/2013	9.39	10.69	10.81	10.51	15.15	16.19	13.96	9.68	15.97	7.8	9.94	13.06	17.05
8/12/2013	9.76	11.09	12.01	11.35	15.31	16.11	14.21	9.57	16.24	8.03	10.28	14.21	17.21
11/12/2013	10.14	11.13	11.37	11.49	15.29	16.3	14.2	9.63	16.34	8.1	10.39	14.61	17.43
2/12/2014	10.99	12.20	14.31	12.95	15.56	16.61	15.13	10.04	17.32	9.04	11.41	16.16	18.27
6/2/2014	8.42	10.03	9.41	9.63	14.38	15.91	13.14	9.41	15.12	7.29	9.11	11.42	16.32
8/5/2014	9.45	10.94	11.28	11.05	15.28	16.27	14.11	9.73	16.13	8.03	10.19	12.95	17.11
Water Elevation													
12/12/2012	1447.06	1444.66	1445.9	1445.4	1441.81	NI	NI	NI	NI	NI	NI	NI	NI
1/3/2013	1446.76	1444.41	1445.59	1445.17	1441.74	1441.40	1438.26	NI	NI	NI	NI	NI	NI
2/6/2013	1446.33	1444.00	1445.25	1445.00	1441.67	1441.31	1438.11	NI	NI	NI	NI	NI	NI
2/19/2013	NC	NC	NC	NC	NC	NC	NC	1448.45	1438.94	NI	NI	NI	NI
3/5/2013	1446.06	1443.74	1445.00	1444.73	1441.77	1441.40	1438.18	1448.14	1438.54	NI	NI	NI	NI
5/8/2013	1449.44	1447.41	1451.61	1449.4	1446.13	1442.41	1440.23	1448.53	1441.05	NI	NI	NI	NI
7/15/2013	1450.43	1446.55	1450.52	1448.68	1442.36	1441.97	1439.34	1448.24	1439.94	1442.74	1443.05	1446.44	1440.91
8/12/2013	1450.06	1446.15	1449.32	1447.84	1442.2	1442.05	1439.09	1448.35	1439.67	1442.51	1442.71	1445.29	1440.75
11/12/2013	1449.68	1446.11	1449.96	1447.7	1442.22	1441.86	1439.1	1448.29	1439.57	1442.44	1442.6	1444.89	1440.53
2/12/2014	1448.83	1445.04	1447.02	1446.24	1441.95	1441.55	1438.17	1447.88	1438.59	1441.5	1441.58	1443.34	1439.69
6/2/2014	1451.4	1447.21	1451.92	1449.56	1443.13	1442.25	1440.16	1448.51	1440.79	1443.25	1443.88	1448.08	1441.64
8/5/2014	1450.37	1446.3	1450.05	1448.14	1442.23	1441.89	1439.19	1448.19	1439.78	1442.51	1442.8	1446.55	1440.85
Average Depth to Water (from Top of Casing)	11.05	11.64	12.95	12.11	15.04	16.35	14.32	9.67	16.30	8.05	10.22	13.74	17.23
Average Elevation of Water (at Groundwater Surface)	1448.77	1445.60	1448.38	1447.08	1442.47	1441.81	1438.98	1448.29	1439.65	1442.49	1442.77	1445.77	1440.73
Minimum Depth to Water (from Top of casing)	8.42	9.83	9.41	9.63	11.38	15.75	13.07	9.39	14.86	7.29	9.11	11.42	16.32

All well elevations referenced to an on site benchmark with an assumed elevation of 1460.00

NI = Not Installed

NC = Not Collected

TABLE 2a
GROUNDWATER ANALYTICAL RESULTS SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI
MW-1

PARAMETER	ES	PAL	12/11/2012	3/5/2013	8/12/2013	11/12/2013	2/12/2014	6/2/2014	8/5/2014
Metals (ug/L)									
Arsenic	10	1	<0.50	<4.4	NA	NA	NA	NA	NA
Barium	2000	400	280	230	NA	NA	NA	NA	NA
Cadmium	5	0.5	<0.10	<i>0.91^J</i>	NA	NA	NA	NA	NA
Total Chromium	100	10	2	<1.2	NA	NA	NA	NA	NA
Chromium, Hexavalent (mg/L)			<0.0017	<0.0034	NA	NA	NA	NA	NA
Lead	15	1.5	<0.10	1.5 ^J	NA	NA	NA	NA	NA
Mercury	2	0.2	<0.025	<0.10	NA	NA	NA	NA	NA
Nickel	100	20	5.5	7.7 ^J	NA	NA	NA	NA	NA
Selenium	50	10	<2.0	<6.6	NA	NA	NA	NA	NA
Silver	50	10	<0.13	<1.4	NA	NA	NA	NA	NA
Field Measurements									
Temperature (°F)			NA	NA	56.26	57.11	44.14	49.97	58.55
Conductivity (ms/cm)			NA	NA	1803	2370	2680	2305	1922
Dissolved Oxygen (mg/L)			NA	NA	4.22	1.03	2.71	3.35	2.19
pH			NA	NA	6.45	6.9	6.19	7.08	7.51
Redox Potential (mV)			NA	NA	139.4	24.1	244.6	-8.9	-70.5

PAL = Preventive Action Limit

ES = Enforcement Standards

BOLD	= Exceeds Enforcement Standard
<i>Italic</i>	= Exceeds Preventative Action Limit

NA - Not Analyzed

< - Concentration less than listed detection limit

J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

TABLE 2b
GROUNDWATER ANALYTICAL RESULTS SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI
MW-2

PARAMETER	ES	PAL	12/11/2012	3/5/2013	8/12/2013	11/12/2013	2/12/2014	6/2/2014	8/5/2014
Metals (ug/L)									
Arsenic	10	1	<0.50	<4.4	NA	NA	NA	NA	NA
Barium	2000	400	180	190	NA	NA	NA	NA	NA
Cadmium	5	0.5	<0.10	0.40 ^J	NA	NA	NA	NA	NA
Total Chromium	100	10	1.4	<1.2	NA	NA	NA	NA	NA
Chromium, Hexavalent (mg/L)			<0.0017	<0.0034	NA	NA	NA	NA	NA
Lead	15	1.5	<0.10	1.3 ^J	NA	NA	NA	NA	NA
Mercury	2	0.2	<0.025	<0.10	NA	NA	NA	NA	NA
Nickel	100	20	9.0	4.5 ^J	NA	NA	NA	NA	NA
Selenium	50	10	<2.0	<6.6	NA	NA	NA	NA	NA
Silver	50	10	<0.13	<1.4	NA	NA	NA	NA	NA
Field Measurements									
Temperature (°F)			NA	NA	58.47	57.95	46.8	44.95	56.7
Conductivity (ms/cm)			NA	NA	458	459	1053	115	154
Dissolved Oxygen (mg/L)			NA	NA	6.44	3.77	5.66	3.81	4.46
pH			NA	NA	5.74	6.87	5.65	7.17	7.82
Redox Potential (mV)			NA	NA	112.0	-32.7	230.1	45.8	-9.8

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J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

TABLE 2c
GROUNDWATER ANALYTICAL RESULTS SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI
MW-3

PARAMETER	ES	PAL	12/11/2012	3/5/2013	8/12/2013	11/12/2013	2/12/2014	6/2/2014	8/5/2014
Metals (ug/L)									
Arsenic	10	1	<0.50	<4.4	NA	NA	NA	NA	NA
Barium	2000	400	25	57.2	NA	NA	NA	NA	NA
Cadmium	5	0.5	<0.10	<0.38	NA	NA	NA	NA	NA
Dis. Total Chromium (filtered)	100	10	2.2	<1.2	<1.2	<1.2	<1.2	<2.1	<2.1
Total Chromium (unfiltered)	100	10	NA	NA	35.1	58.8	41.4	34.7	16.1
Chromium, Hexavalent (mg/L)			<0.0017	<0.0034	<0.0034	<0.0034	<0.034	<0.0039	<0.0097
Lead	15	1.5	<0.10	2.2'	NA	NA	NA	NA	NA
Mercury	2	0.2	<0.025	<0.10	NA	NA	NA	NA	NA
Dissolved Nickel (filtered)	100	20	1.4	1.5'	24.7	1.8'	<0.75	3.4'	1.8'
Nickel (Unfiltered)	100	20	NA	NA	1.4'	47.9	30.5	25.6	12.8
Selenium	50	10	<2.0	<6.6	NA	NA	NA	NA	NA
Silver	50	10	<0.13	<1.4	NA	NA	NA	NA	NA
Dissolved Manganese (filtered)	0.05	0.025	NA	NA	2.1 ^J	2.0 ^J	2.3 ^J	2.1 ^J	<1.4
Manganese (unfiltered)	0.05	0.025	NA	NA	881	1,130	845	493	216
Dissolved Total Iron (filtered)	0.3	0.15	NA	NA	68.9 ^J	28.6 ^J	22.8 ^J	<12.9	16.9 ^J
Total Iron (unfiltered)	0.3	0.15	NA	NA	26,200	42,900	29,500	26,300	10,900
Nitrate Nitrogen (mg/L)	10	2	NA	NA	2.3	3.1	3.4	5	2.1
Sulfate (mg/L)	250	125	NA	NA	8.4	6.7	10.3	9.6	10.7
Field Measurements									
Temperature (°F)			NA	NA	52.73	54.12	48.23	47.91	53.76
Conductivity (ms/cm)			NA	NA	162	221	267	301	216
Dissolved Oxygen (mg/L)			NA	NA	7.63	5.33	8.04	4.73	3.81
pH			NA	NA	6.43	7.41	5.67	6.22	6.83
Redox Potential (mV)			NA	NA	90.6	11.2	273.6	77.2	52.2

PAL = Preventive Action Limit

ES = Enforcement Standards

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NA - Not Analyzed

< - Concentration less than listed detection limit

J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

TABLE 2d
GROUNDWATER ANALYTICAL RESULTS SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI
MW-4

PARAMETER	ES	PAL	12/11/2012	3/5/2013	8/12/2013	11/12/2013	2/12/2014	6/2/2014	8/5/2014
Metals (ug/L)									
Arsenic	10	1	<0.50	<4.4	NA	NA	NA	NA	NA
Barium	2000	400	45	29.2	NA	NA	NA	NA	NA
Cadmium	5	0.5	<0.10	<0.38	NA	NA	NA	NA	NA
Total Chromium	100	10	3.4	1.5 ^J	NA	NA	NA	NA	NA
Chromium, Hexavalent (mg/L)			<0.0017	<0.0034	NA	NA	NA	NA	NA
Lead	15	1.5	<0.10	<1.2	NA	NA	NA	NA	NA
Mercury	2	0.2	<0.025	<0.10	NA	NA	NA	NA	NA
Nickel	100	20	6.8	3.5 ^J	NA	NA	NA	NA	NA
Selenium	50	10	<2.0	<6.6	NA	NA	NA	NA	NA
Silver	50	10	<0.13	<1.4	NA	NA	NA	NA	NA
Field Measurements									
Temperature (°F)			NA	NA	53.04	54.38	49.93	47.78	54.59
Conductivity (ms/cm)			NA	NA	3.71	374	423	381	235
Dissolved Oxygen (mg/L)			NA	NA	4.74	6.02	5.29	1.24	3.21
pH			NA	NA	7.19	7.69	6.4	8.05	8.19
Redox Potential (mV)			NA	NA	-27.2	-43.8	200.0	-7.2	-24.1

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J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

TABLE 2e
GROUNDWATER ANALYTICAL RESULTS SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI
MW-5

PARAMETER	ES	PAL	12/11/2012	1/3/2013	3/5/2013	5/8/2013	8/12/2013	11/12/2013	2/12/2014	6/2/2014	8/5/2014
Metals (ug/L)											
Arsenic	10	1	<0.50	<4.7	<4.4	NA	NA	NA	NA	NA	NA
Barium	2000	400	110	138	<i>686</i>	NA	NA	NA	NA	NA	NA
Cadmium	5	0.5	<0.10	<0.39	<i>1.8^J</i>	18.9	NA	NA	NA	NA	NA
Dis. Total Chromium (filtered)	100	10	430	414	359	<i>49.2</i>	174	254	458	188	360
Total Chromium (unfiltered)	100	10	NA	NA	NA	NA	1,130	1,540	1,680	1,700	1,380
Chromium, Hexavalent (mg/L)			0.59	0.46	0.33	<0.86	0.26	0.34	0.31 ^J	0.39	0.24
Lead	15	1.5	<0.10	<1.4	<i>2.5^J</i>	NA	NA	NA	NA	NA	NA
Mercury	2	0.2	<0.025	<0.10	<0.10	NA	NA	NA	NA	NA	NA
Dissolved Nickel (filtered)	100	20	440	787	6,230	1,420	1,090	368	295	3,870	267
Nickel (Unfiltered)	100	20	NA	NA	NA	NA	974	1,220	1,120	1,920	952
Selenium	50	10	<2.0	<5.8	<6.6	NA	NA	NA	NA	NA	NA
Silver	50	10	<0.13	<2.3	<1.4	NA	NA	NA	NA	NA	NA
Field Measurements											
Temperature (°F)			NA	NA	NA	NA	55.26	57.59	50.02	47.71	55.12
Conductivity (ms/cm)			NA	NA	NA	NA	1498	1753	1215	3866	1996
Dissolved Oxygen (mg/L)			NA	NA	NA	NA	5.03	4.53	6.76	3.89	2.92
pH			NA	NA	NA	NA	5.02	6.94	5.15	5.63	6.01
Redox Potential (mV)			NA	NA	NA	NA	185.2	-11.4	227.1	127.6	61.1

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J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

TABLE 2f
GROUNDWATER ANALYTICAL RESULTS SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI
MW-6

PARAMETER	ES	PAL	1/3/2013	3/5/2013	5/8/2013	8/12/2013	11/12/2013	2/12/2014	6/2/2014	8/5/2014
Metals (ug/L)										
Arsenic	10	1	<4.7	<4.4	NA	NA	NA	NA	NA	NA
Barium	2000	400	225	112	NA	NA	NA	NA	NA	NA
Cadmium	5	0.5	<i>1.6</i>	<i>0.87</i>	<i>0.51</i>	NA	NA	NA	NA	NA
Dis. Total Chromium (filtered)	100	10	323	146	337	1,010	602	858	844	6,230
Total Chromium (unfiltered)	100	10	NA	NA	NA	3,160	4,550	2,840	4,290	8,910
Chromium, Hexavalent (mg/L)			0.14	0.14	<0.086	<0.0034	0.58	0.66	1.1	
Lead	15	1.5	<i>2.5J</i>	<i>2.2J</i>	NA	NA	NA	NA	NA	NA
Mercury	2	0.2	<i>0.28</i>	<i>0.23</i>	NA	NA	NA	NA	NA	NA
Dissolved Nickel (filtered)	100	20	14,100	9,820	3,690	16,700	10,900	6,460	6,870	17,500
Nickel (Unfiltered)	100	20	NA	NA	NA	14,300	11,100	6,010	7,360	17,600
Selenium	50	10	<5.8	<6.6	NA	NA	NA	NA	NA	NA
Silver	50	10	<2.3	<1.4	NA	NA	NA	NA	NA	NA
Dissolved Manganese (filtered)			NA	NA	NA	1,090	982	690	783	NA
Manganese (unfiltered)			NA	NA	NA	1,340	1,690	1,120	1,390	1,720
Dissolved Iron (filtered)	0.3	0.15	NA	NA	NA	<14.0	<14.0	<14	<12.9	<12.9
Iron (unfiltered)	0.3	0.15	NA	NA	NA	22,300	34,600	26,600	32,600	31,600
Nitrate Nitrogen (mg/L)	10	2	NA	NA	NA	14.3	16.1	11.6	10.9	12
Sulfate (mg/L)	250	125	NA	NA	NA	<i>204</i>	<i>208</i>	<i>194</i>	<i>195</i>	<i>266</i>
Field Measurements										
Temperature (°F)			NA	NA	NA	57.42	58.27	55.93	51.79	57.88
Conductivity (ms/cm)			NA	NA	NA	1203	1209	1419	1200	1254
Dissolved Oxygen (mg/L)			NA	NA	NA	0.72	1.07	1.31	0.79	0.89
pH			NA	NA	NA	6.09	7.63	5.49	6.79	7.15
Redox Potential (mV)			NA	NA	NA	167.7	-7.5	196	40.4	114.6

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NA - Not Analyzed

< - Concentration less than listed detection limit

J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

TABLE 2g
GROUNDWATER ANALYTICAL RESULTS SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI
MW-7

PARAMETER	ES	PAL	1/3/2013	3/5/2013	8/12/2013	11/12/2013	2/12/2014	6/2/2014	8/5/2014
Metals (ug/L)									
Arsenic	10	1	<4.7	<4.4	NA	NA	NA	NA	NA
Barium	2000	400	<i>841</i>	<i>661</i>	NA	NA	NA	NA	NA
Cadmium	5	0.5	<0.39	<i>0.58^J</i>	NA	NA	NA	NA	NA
Total Chromium	100	10	<2.4	<1.2	NA	NA	NA	NA	NA
Chromium, Hexavalent (mg/L)			<0.0039	<0.0034	NA	NA	NA	NA	NA
Lead	15	1.5	<1.4	<1.2	NA	NA	NA	NA	NA
Mercury	2	0.2	<0.10	<0.10	NA	NA	NA	NA	NA
Nickel	100	20	<i>6.1^J</i>	<i>4.3^J</i>	NA	NA	NA	NA	NA
Selenium	50	10	<5.8	<6.6	NA	NA	NA	NA	NA
Silver	50	10	<2.3	<i>2.0^J</i>	NA	NA	NA	NA	NA
Field Measurements									
Temperature (°F)			NA	NA	52.35	53.45	48.45	47.88	53.67
Conductivity (ms/cm)			NA	NA	4130	2795	4908	3054	4771
Dissolved Oxygen (mg/L)			NA	NA	5.21	4.62	5.83	5.97	3.71
pH			NA	NA	6.11	7.44	6.31	6.34	6.77
Redox Potential (mV)			NA	NA	135.1	-37.3	278.2	56.7	20.2

PAL = Preventive Action Limit

ES = Enforcement Standards

BOLD	= Exceeds Enforcement Standard
<i>Italic</i>	= Exceeds Preventative Action Limit

NA - Not Analyzed

< - Concentration less than listed detection limit

J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

TABLE 2h
GROUNDWATER ANALYTICAL RESULTS SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI
MW-8

PARAMETER	ES	PAL	2/19/2013	3/5/2013	5/8/2013	8/12/2013	11/12/2013	2/12/2014	6/2/2014	8/5/2014
Metals (ug/L)										
Arsenic	10	1	<4.4	<4.4	NA	NA	NA	NA	NA	NA
Barium	2000	400	50.5	39.5	NA	NA	NA	NA	NA	NA
Cadmium	5	0.5	<0.38	<0.38	0.47 ^J	NA	NA	NA	NA	NA
Dis. Total Chromium (filtered)	100	10	537	507	1,540	2,630	2,570	1,550	2,030	3,320
Total Chromium (unfiltered)	100	10	NA	NA	NA	2,610	2,700	1,910	2,220	3,420
Chromium, Hexavalent (mg/L)			0.53	0.46	1.1	2.7	2.7	1.8	1.8	3.3
Lead	15	1.5	<1.2	1.5 ^J	NA	NA	NA	NA	NA	NA
Mercury	2	0.2	<0.10	<0.10	NA	NA	NA	NA	NA	NA
Dissolved Nickel (filtered)	100	20	278	546	1,060	1,720	1,510	605	1,710	3,420
Nickel (Unfiltered)	100	20	NA	NA	NA	1,860	1,860	1,190	2,070	3,700
Selenium	50	10	<6.6	<6.6	NA	NA	NA	NA	NA	NA
Silver	50	10	<1.4	<1.4	NA	NA	NA	NA	NA	NA
Field Measurements										
Temperature (°F)			NA	NA	NA	59.35	57.67	51	54.9	60.92
Conductivity (ms/cm)			NA	NA	NA	474	330	234	255	398
Dissolved Oxygen (mg/L)			NA	NA	NA	3.58	3.29	3.29	1.2	1.05
pH			NA	NA	NA	5.75	6.19	5.14	5.51	5.52
Redox Potential (mV)			NA	NA	NA	160.9	72.4	235.5	148.1	129.8

PAL = Preventive Action Limit

ES = Enforcement Standards

BOLD	= Exceeds Enforcement Standard
<i>Italic</i>	= Exceeds Preventative Action Limit

NA - Not Analyzed

< - Concentration less than listed detection limit

J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

TABLE 2i
GROUNDWATER ANALYTICAL RESULTS SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI
MW-9

PARAMETER	ES	PAL	2/19/2013	3/5/2013	5/8/2013	8/12/2013	11/12/2013	2/12/2014	6/2/2014	8/5/2014
Metals (ug/L)										
Arsenic	10	1	<4.4	<4.4	NA	NA	NA	NA	NA	NA
Barium	2000	400	214	150	NA	NA	NA	NA	NA	NA
Cadmium	5	0.5	0.63 ^J	15.0	3.0 ^J	NA	NA	NA	NA	NA
Dis. Total Chromium (filtered)	100	10	2,160	862	499	539	1,120	2,580	279	2,770
Total Chromium (unfiltered)	100	10	NA	NA	NA	1,190	1,520	6,000	1,350	2,370
Chromium, Hexavalent (mg/L)			2.3	0.85	<0.086	0.51	2.7	3.4	0.27	1.6
Lead	15	1.5	3.1 ^J	4.8 ^J	NA	NA	NA	NA	NA	NA
Mercury	2	0.2	<0.10	<0.10	NA	NA	NA	NA	NA	NA
Dissolved Nickel (filtered)	100	20	65.8	17.8	1,790	647	273	190	1,290	292
Nickel (Unfiltered)	100	20	NA	NA	NA	723	370	762	1,430	366
Selenium	50	10	<6.6	<6.6	NA	NA	NA	NA	NA	NA
Silver	50	10	<1.4	<1.4	NA	NA	NA	NA	NA	NA
Dissolved Manganese (filtered)			NA	NA	NA	182	152	261	334	87.4
Manganese (unfiltered)			NA	NA	NA	1,020	554	5,190	1,420	518
Dissolved Iron (filtered)	0.3	0.15	NA	NA	NA	16.4 ^J	38.1 ^J	25.9 ^J	28.2 ^J	16.4 ^J
Iron (unfiltered)	0.3	0.15	NA	NA	NA	37,900	15,600	194,000	62,200	20,100
Nitrate Nitrogen (mg/L)	10	2	NA	NA	NA	11.2	9.9	12	8.4	7.7
Sulfate (mg/L)	250	125	NA	NA	NA	85.8	147	161	79.6	91.9
Field Measurements										
Temperature (°F)			NA	NA	NA	53.27	55.25	50.41	51.48	53.67
Conductivity (ms/cm)			NA	NA	NA	3254	2045	2602	6191	2984
Dissolved Oxygen (mg/L)			NA	NA	NA	1.18	1.81	6.90	3.98	2.61
pH			NA	NA	NA	6.25	7.44	4.75	5.45	6.31
Redox Potential (mV)			NA	NA	NA	156.1	2.6	237.6	119.8	52.1

PAL = Preventive Action Limit

ES = Enforcement Standards

BOLD	= Exceeds Enforcement Standard
<i>Italic</i>	= Exceeds Preventative Action Limit

NA - Not Analyzed

< - Concentration less than listed detection limit

* - J qualifier, estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

TABLE 2j
GROUNDWATER ANALYTICAL RESULTS SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI
MW-10

PARAMETER	ES	PAL	Pace 7/15/2013	NLS 7/15/2013	Pace 8/12/2013	Pace 11/12/2013	NLS 11/12/2013	Pace 2/12/2014	NLS 2/12/2014	Pace 6/2/2014	NLS 6/2/2014	Pace 8/5/2014	NLS 8/5/2014
Metals (ug/L)													
Arsenic	10	1	<4.4	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	2000	400	101	110	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	5	0.5	<0.38	<0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dis. Total Chromium (filtered)	100	10	79.2	130	59.6	228	230	124	120	346	290	172	170
Total Chromium (unfiltered)	100	10	NA	NA	120	254	NA	177	190	318	320	493	490
Chromium, Hexavalent (mg/L)			0.14	0.28	0.045	0.13	0.27	0.36	0.23	0.26	0.33	0.096	0.17
Lead	15	1.5	2.5 ^J	<0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	2	0.2	<0.10	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Nickel (filtered)	100	20	38.4	44	22.6	97.2	93.0	19.7	19	110	85	27.4	25
Nickel (Unfiltered)	100	20	NA	NA	79.2	141.0	NA	60.8	61	158	99	215	220
Selenium	50	10	<6.6	<2.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	50	10	<1.4	<0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Manganese (filtered)			NA	NA	40.4	5.7	NA	3.2 ^J	NA	6.8	NA	NA	NA
Manganese (unfiltered)			NA	NA	1,010	825	NA	594	NA	841	NA	NA	NA
Dissolved Iron (filtered)	0.3	0.15	NA	NA	19.8 ^J	31.4 ^J	NA	24.1 ^J	NA	32.5 ^J	NA	27.1 ^J	NA
Iron (unfiltered)	0.3	0.15	NA	NA	21,700	17,500	NA	13,900	NA	23,200	NA	16,700	NA
Nitrate Nitrogen (mg/L)	10	2	NA	NA	4.3	3.4	NA	3.2	NA	2.6	NA	2.4	NA
Sulfate (mg/L)	250	125	NA	NA	41.4	36.8	NA	69.1	NA	52	NA	36.7	NA
Field Measurements													
Temperature (°F)			NA	NA	55.68	52.95		47.61		50.87		55.51	
Conductivity (ms/cm)			NA	NA	1010	408		737		320		469	
Dissolved Oxygen (mg/L)			NA	NA	7.77	4.63		5.91		3.06		3.61	
pH			NA	NA	6.24	7.27		5.68		6.26		6.72	
Redox Potential (mV)			NA	NA	142.5	16.40		225.30		57.40		29.9	

PAL = Preventive Action Limit

ES = Enforcement Standards

BOLD	= Exceeds Enforcement Standard
<i>Italic</i>	= Exceeds Preventative Action Limit

NA - Not Analyzed

< - Concentration less than listed detection limit

J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

Pace = Lab analysis conducted by Pace Analytical Services

NLS = Lab analysis conducted by Northern Lake Service

Values in brackets are NLS version of "J" qualifier

TABLE 2k
GROUNDWATER ANALYTICAL RESULTS SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI
MW-11

PARAMETER	ES	PAL	Pace 7/15/2013	NLS 7/15/2013	Pace 8/12/2013	Pace 11/12/2013	NLS 11/12/2013	Pace 2/12/2014	NLS 2/12/2014	Pace 6/2/2014	NLS 6/2/2014	Pace 8/5/2014	NLS 8/5/2014
Metals (ug/L)													
Arsenic	10	1	<4.4	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	2000	400	331	320	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	5	0.5	<0.38	<0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dis. Total Chromium (filtered)	100	10	<1.2	<0.5	<1.2	<1.2	[0.68]	<1.2	<1.0	<2.1	<0.5	<2.1	<0.5
Total Chromium (unfiltered)	100	10	NA	NA	120	150	NA	46.8	110	<i>63.7</i>	<0.5	<i>78.9</i>	<i>90</i>
Chromium, Hexavalent (mg/L)			<0.0086	<1.7	<0.0034	<0.017	<0.0017	<0.034	[0.0017]	<0.019	<0.0017	<0.039	<0.0017
Lead	15	1.5	<i>4.6^J</i>	<0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	2	0.2	<0.10	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Nickel (filtered)	100	20	<i>2.3^J</i>	2	<i>1.1^J</i>	<i>1.1^J</i>	[1.4]	<0.75	<1.0	<1.4	1.3	<1.4	[0.80]
Nickel (Unfiltered)	100	20	NA	NA	<i>82.4</i>	<i>106.0</i>	NA	32.2	75	<i>42.3</i>	[0.69]	<i>52.6</i>	<i>59</i>
Selenium	50	10	<6.6	<2.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	50	10	<1.4	<0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA
Field Measurements													
Temperature (°F)			NA	NA	58.01	57.33		48.49		44.33		55.7	
Conductivity (ms/cm)			NA	NA	883	738		749		411		935	
Dissolved Oxygen (mg/L)			NA	NA	3.16	2.28		2.71		1.27		1.01	
pH			NA	NA	6.10	7.03		5.55		5.58		6.43	
Redox Potential (mV)			NA	NA	109.1	3.1		247.8		102.1		-7.4	

PAL = Preventive Action Limit

ES = Enforcement Standards

BOLD	= Exceeds Enforcement Standard
<i>Italic</i>	= Exceeds Preventative Action Limit

NA - Not Analyzed

< - Concentration less than listed detection limit

J = qualifier, estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

Pace = Lab analysis conducted by Pace Analytical Services

NLS = Lab analysis conducted by Northern Lake Service

Values in brackets are NLS version of "J" qualifier

TABLE 21
GROUNDWATER ANALYTICAL RESULTS SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI
MW-12

PARAMETER	ES	PAL	7/15/2013	8/12/2013	11/12/2013	2/12/2014	6/2/2014	8/5/2014
Metals (ug/L)								
Arsenic	10	1	<4.4	NA	NA	NA	NA	NA
Barium	2000	400	195	NA	NA	NA	NA	NA
Cadmium	5	0.5	<0.38	NA	NA	NA	NA	NA
Total Chromium	100	10	<1.2	NA	NA	NA	NA	NA
Lead	15	1.5	<1.2	NA	NA	NA	NA	NA
Mercury	2	0.2	<0.10	NA	NA	NA	NA	NA
Nickel	100	20	1.4*	NA	NA	NA	NA	NA
Selenium	50	10	<6.6	NA	NA	NA	NA	NA
Silver	50	10	<1.4	NA	NA	NA	NA	NA
Chromium, Hexavalent (mg/L)			<0.086	NA	NA	NA	NA	NA
Field Measurements								
Temperature (°F)			NA	55.10	55.75	49.27	47.64	57.55
Conductivity (ms/cm)			NA	1277	1451	1898	1234	752
Dissolved Oxygen (mg/L)			NA	6.80	6.11	3.75	5.46	3.32
pH			NA	4.98	6.81	6.16	6.37	6.62
Redox Potential (mV)			NA	170.3	-11.40	259.80	36.7	31.2

PAL = Preventive Action Limit

ES = Enforcement Standards

BOLD	= Exceeds Enforcement Standard
<i>Italic</i>	= Exceeds Preventative Action Limit

NA - Not Analyzed

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* - J qualifier, estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

TABLE 2m
GROUNDWATER ANALYTICAL RESULTS SUMMARY
PHILLIPS PLATING CORPORATION
984 N. LAKE AVENUE, PHILLIPS, WI
PZ1

PARAMETER	ES	PAL	7/15/2013	8/12/2013	11/12/2013	2/12/2014	6/2/2014	8/5/2014
Metals (ug/L)								
Arsenic	10	1	<4.4	NA	NA	NA	NA	NA
Barium	2000	400	101	NA	NA	NA	NA	NA
Cadmium	5	0.5	<0.38	NA	NA	NA	NA	NA
Dis. Total Chromium (filtered)	100	10	5,980	1,590	810	1,310	652	1,640
Total Chromium (unfiltered)	100	10	NA	2,910	1,610	1,490	1,520	1,760
Chromium, Hexavalent (mg/L)			5.6	1.6	1.0	1.1	0.41	1.60
Lead	15	1.5	2.9*	NA	NA	NA	NA	NA
Mercury	2	0.2	<0.10	NA	NA	NA	NA	NA
Dissolved Nickel (filtered)	100	20	4.8	4.1'	3.5'	3.8'	3.1'	2.9'
Nickel (Unfiltered)	100	20	NA	269	108	24.8	87	14.9
Selenium	50	10	<6.6	NA	NA	NA	NA	NA
Silver	50	10	<1.4	NA	NA	NA	NA	NA
Dissolved Manganese (filtered)	300		NA	124	154	61.5	45	14.9
Manganese (unfiltered)	300		NA	4,400	1,900	362	1,320	179
Dissolved Iron (filtered)	0.3	0.15	NA	<14.0	<14.0	<14.0	<12.9	<12.9
Iron (unfiltered)	0.3	0.15	NA	301,000	99,600	27,700	104,000	14,900
Nitrate Nitrogen (mg/L)	10	2	NA	4.3	3.4	3.9	3.1	3.8
Sulfate (mg/L)	250	125	NA	62.8	55.6	58.4	51.9	49.7
Field Measurements								
Temperature (°F)			NA	56.79	58.5	55.4	55.31	56.97
Conductivity (ms/cm)			NA	6.14	595	681	784	747
Dissolved Oxygen (mg/L)			NA	0.61	2.55	4.72	0.38	1.07
pH			NA	6.45	7.79	5.98	7.3	7.62
Redox Potential (mV)			NA	141.1	-27.5	177.0	-11.3	-13.3

PAL = Preventive Action Limit

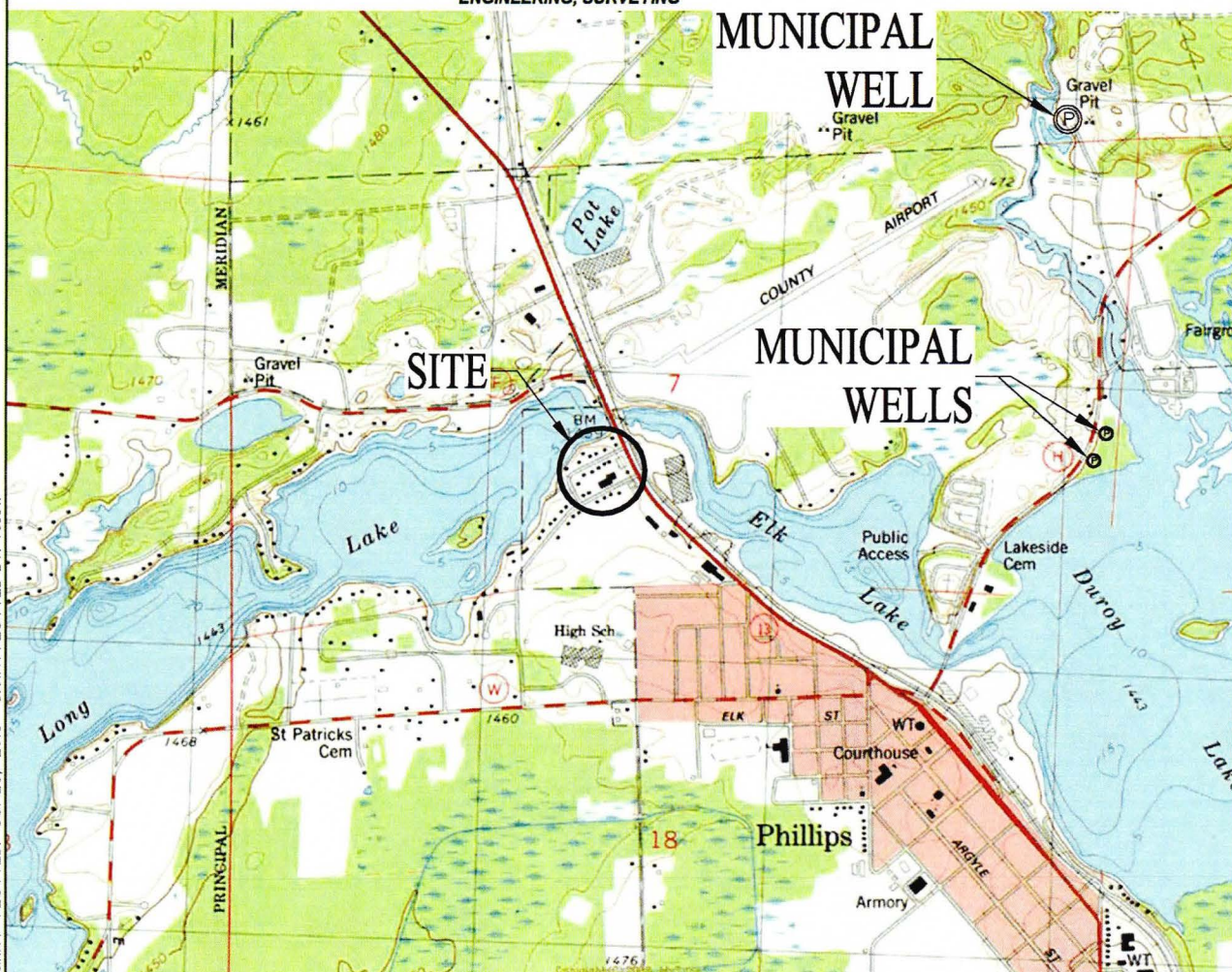
ES = Enforcement Standards

BOLD	= Exceeds Enforcement Standard
<i>Italic</i>	= Exceeds Preventative Action Limit

NA - Not Analyzed

< - Concentration less than listed detection limit

* - J qualifier, estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.



SCALE 1:24 000

1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER



WISCONSIN

QUADRANGLE LOCATION

REI Engineering, INC.

PHILLIPS PLATING CORP.
984 N LAKE AVENUE
PHILLIPS, WISCONSIN

FIGURE 1 : SITE VICINITY MAP

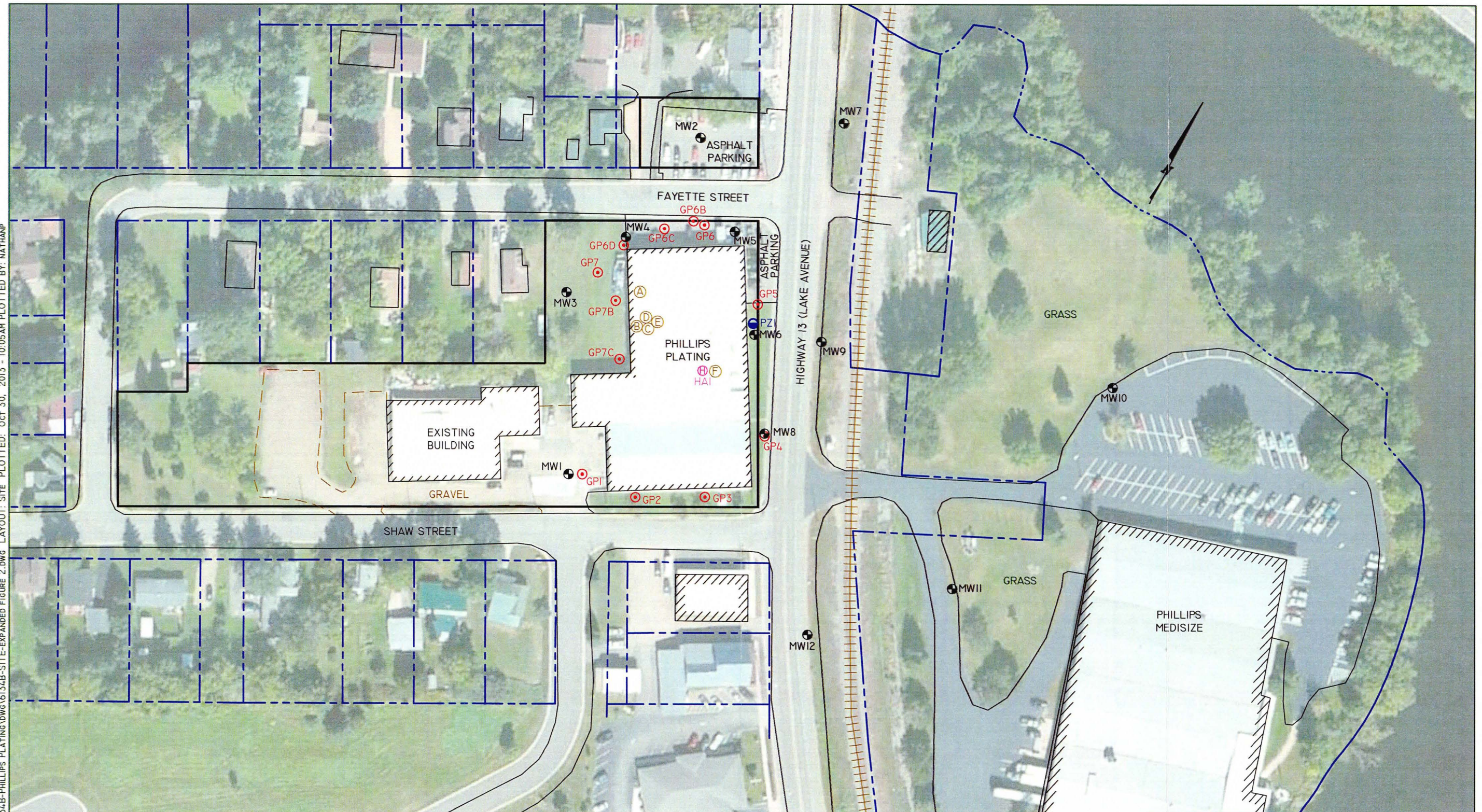
PROJECT NO.	
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6134B

DRAWN BY:
NAP

DATE:
12/13/12

DRAWING FILE: P:\6100-6199\6134B-PHILLIPS PLATING\DWG\6134B-SITE-EXPANDED FIGURE 2.DWG LAYOUT: SITE PLOTTED: OCT 30, 2013 - 10:05AM PLOTTED BY: NATHANP



LEGEND



- GEOPROBE SOIL BORING
- MONITORING WELL
- ⊕ HAND AUGER SOIL BORING

- Ⓐ 550 GALLON SPILL CATCH TANK
- Ⓑ 5500 GALLON WASTE TREATMENT PROCESS TANK (STORAGE TANK)
- Ⓒ 1500 GALLON WASTE TREATMENT PROCESS TANK (WASTE TREATMENT COLLECTION TANK)
- Ⓓ 850 GALLON WASTE TREATMENT PROCESS TANK (SLUDGE DEWATERING TANK)
- Ⓔ 550 GALLON WASTE TREATMENT PROCESS TANK (BATCH TREATMENT TANK)
- Ⓕ 600 GALLON WASTE TREATMENT PROCESS TANK (PLATING LINE COLLECTION TANK)

- PIEZOMETER
- - - PROPERTY BOUNDARY
- PHILLIPS PLATING PROPERTY



PHILLIPS PLATING CORP.
984 N LAKE AVENUE
PHILLIPS, WISCONSIN

FIGURE 2 : SITE MAP

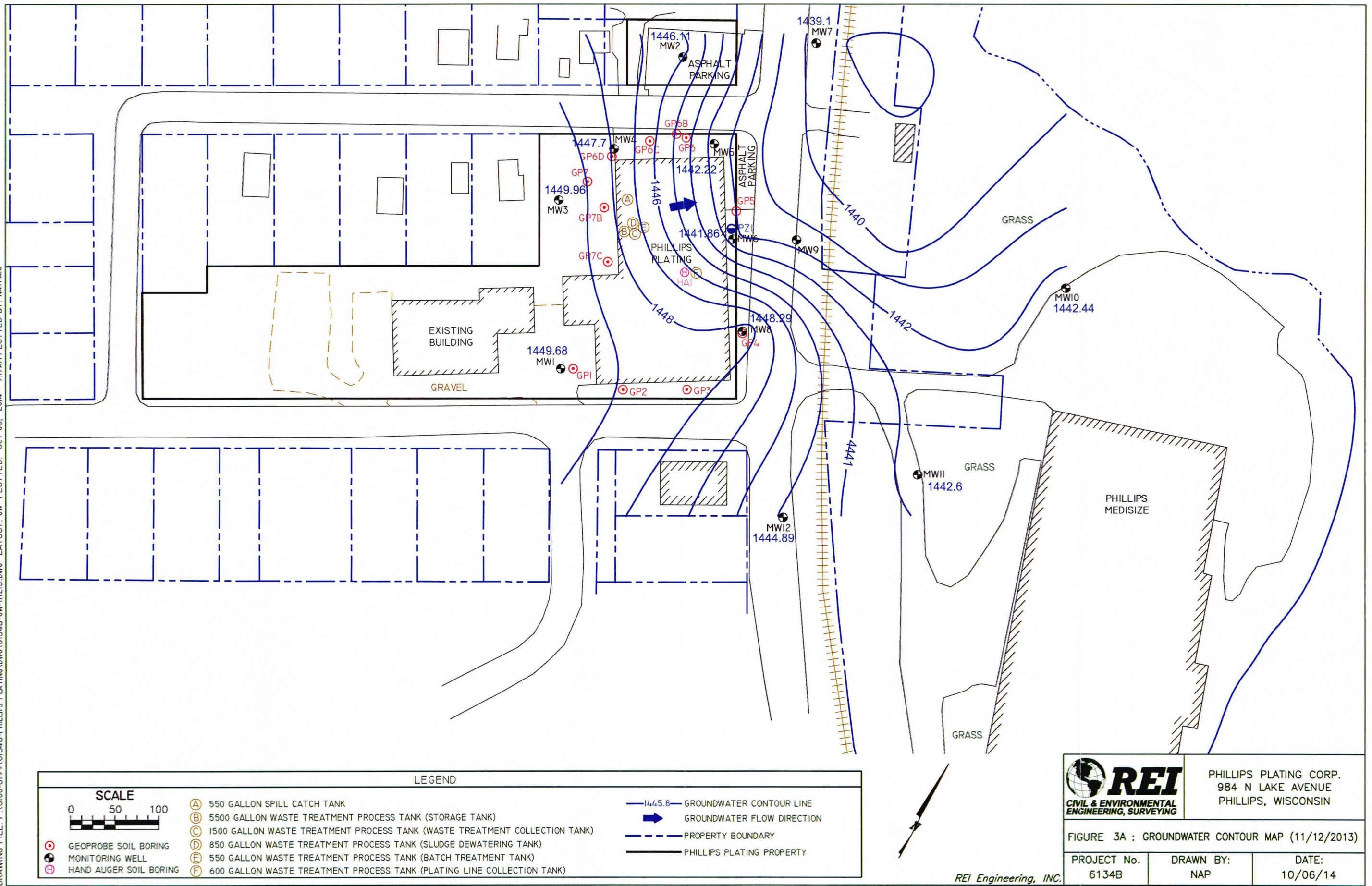
PROJECT No.
6134B

DRAWN BY:
TAW

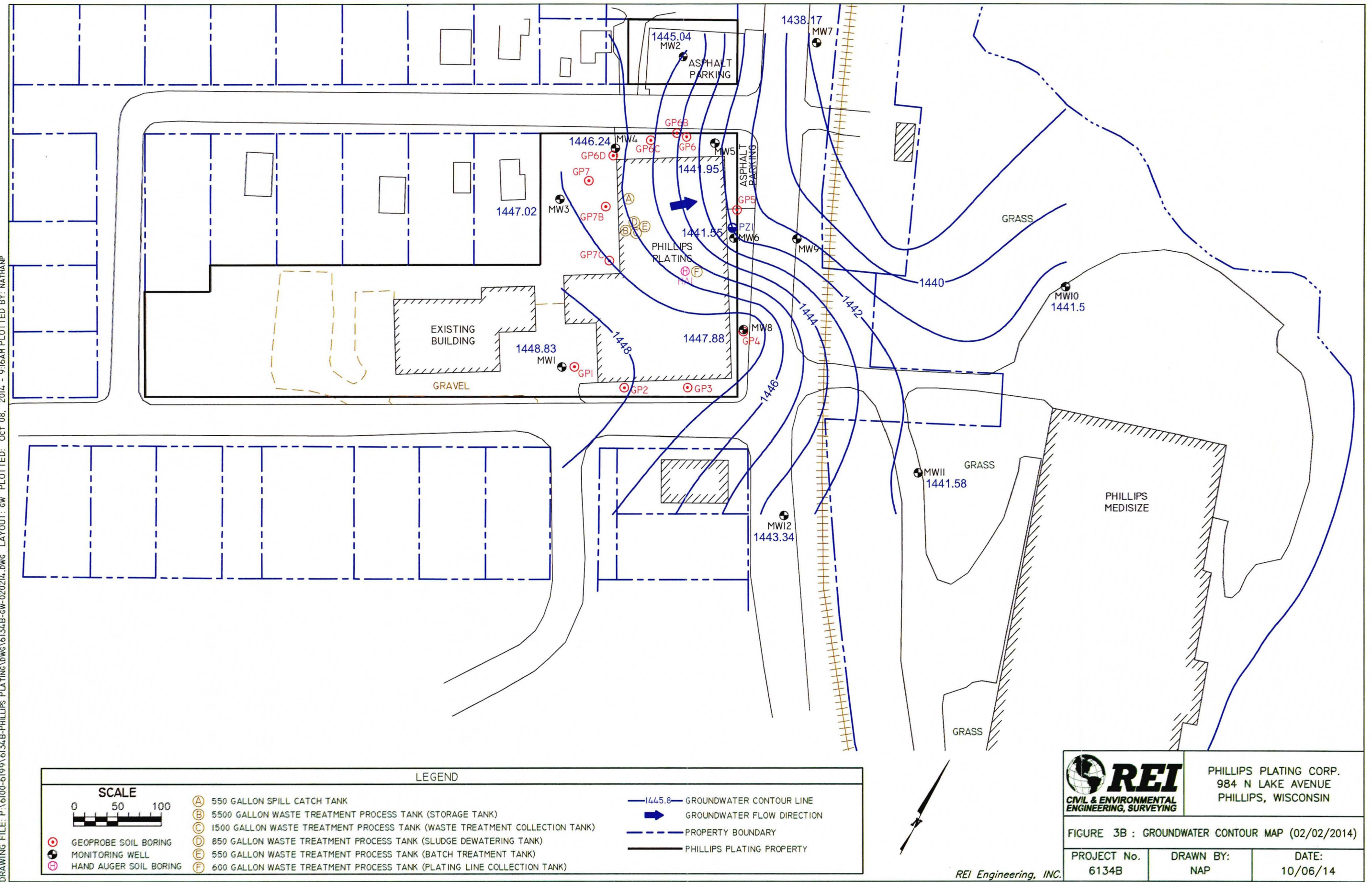
DATE:
7/12/2013

REI Engineering, INC.

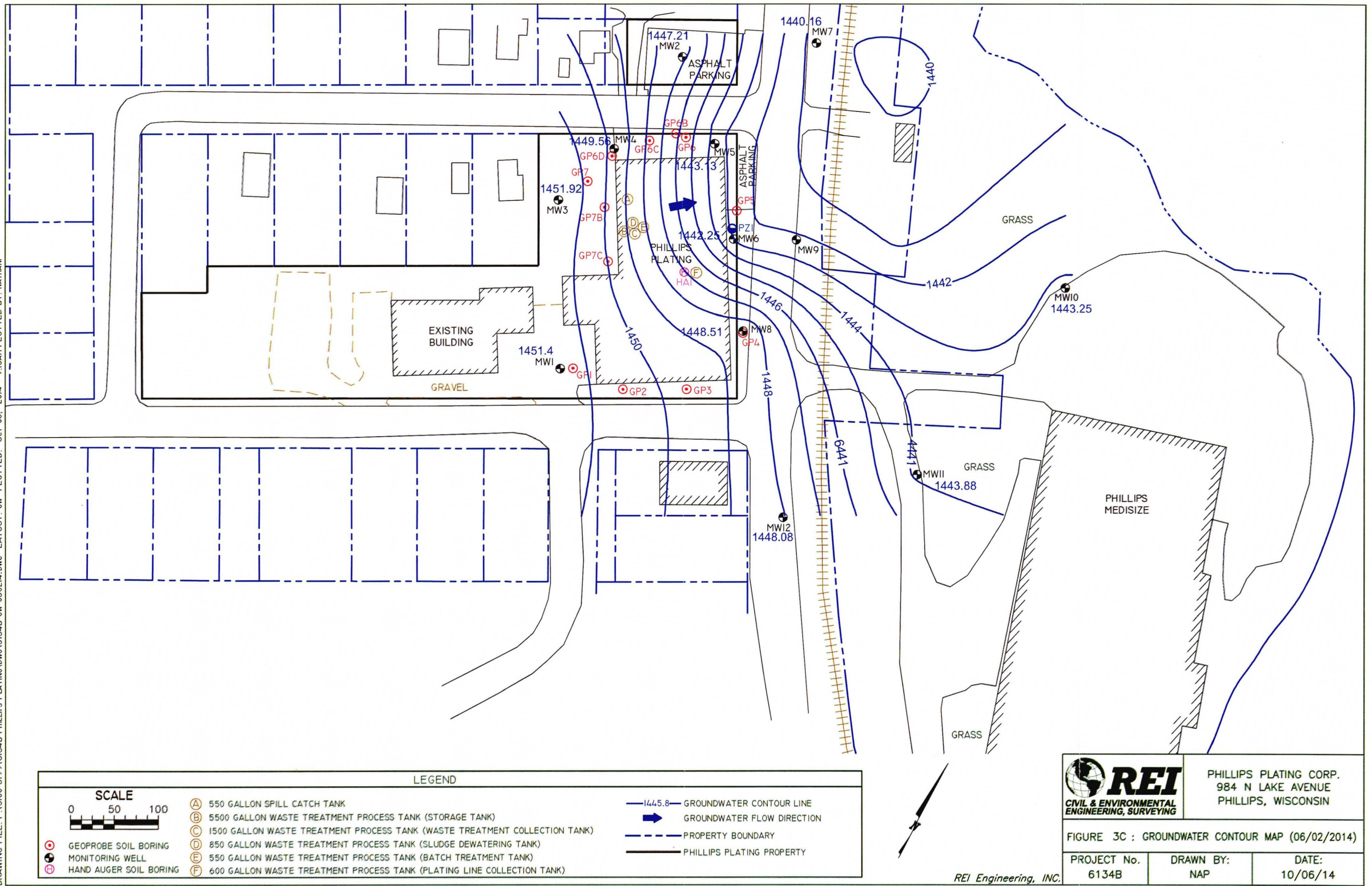
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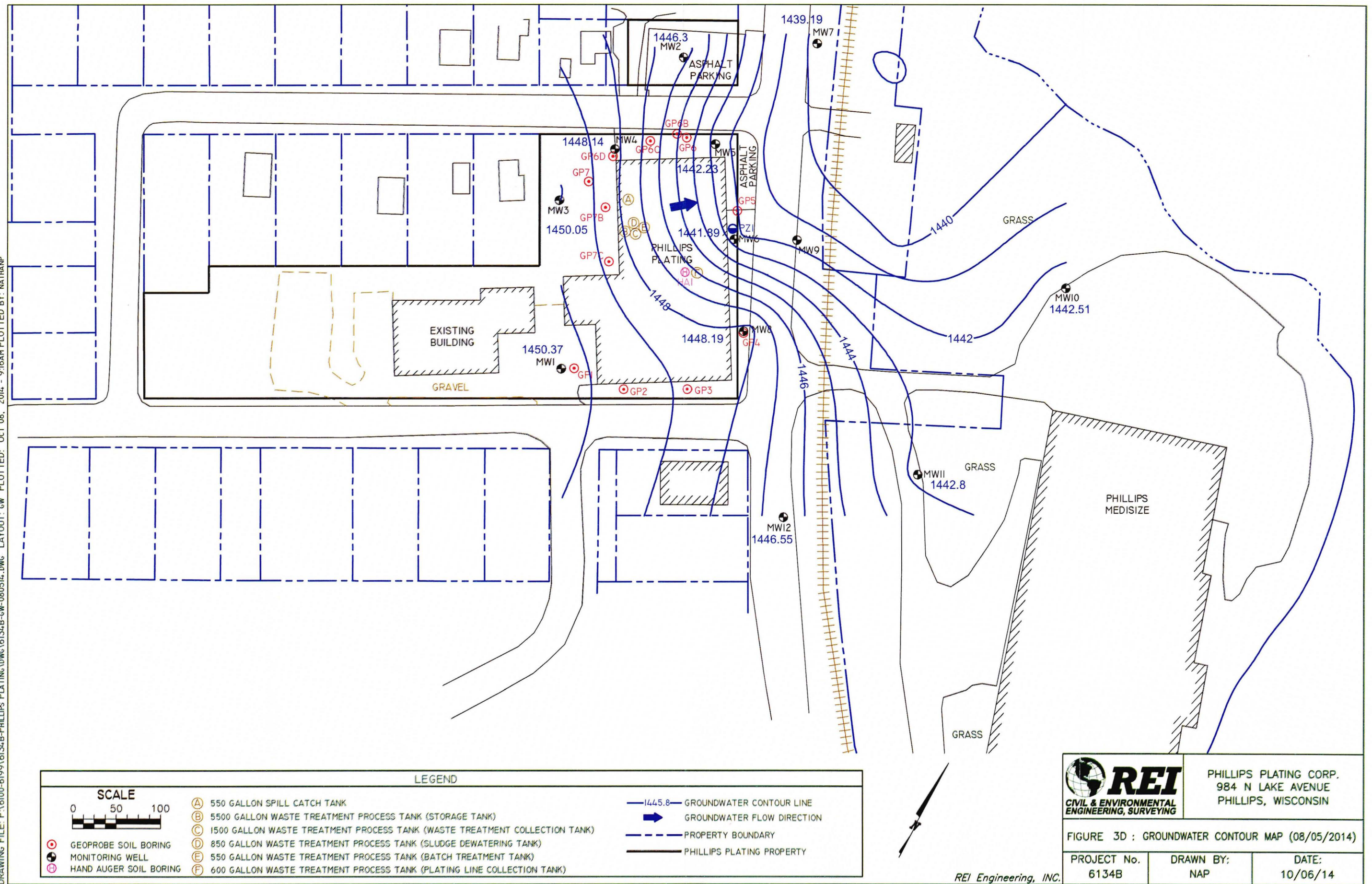
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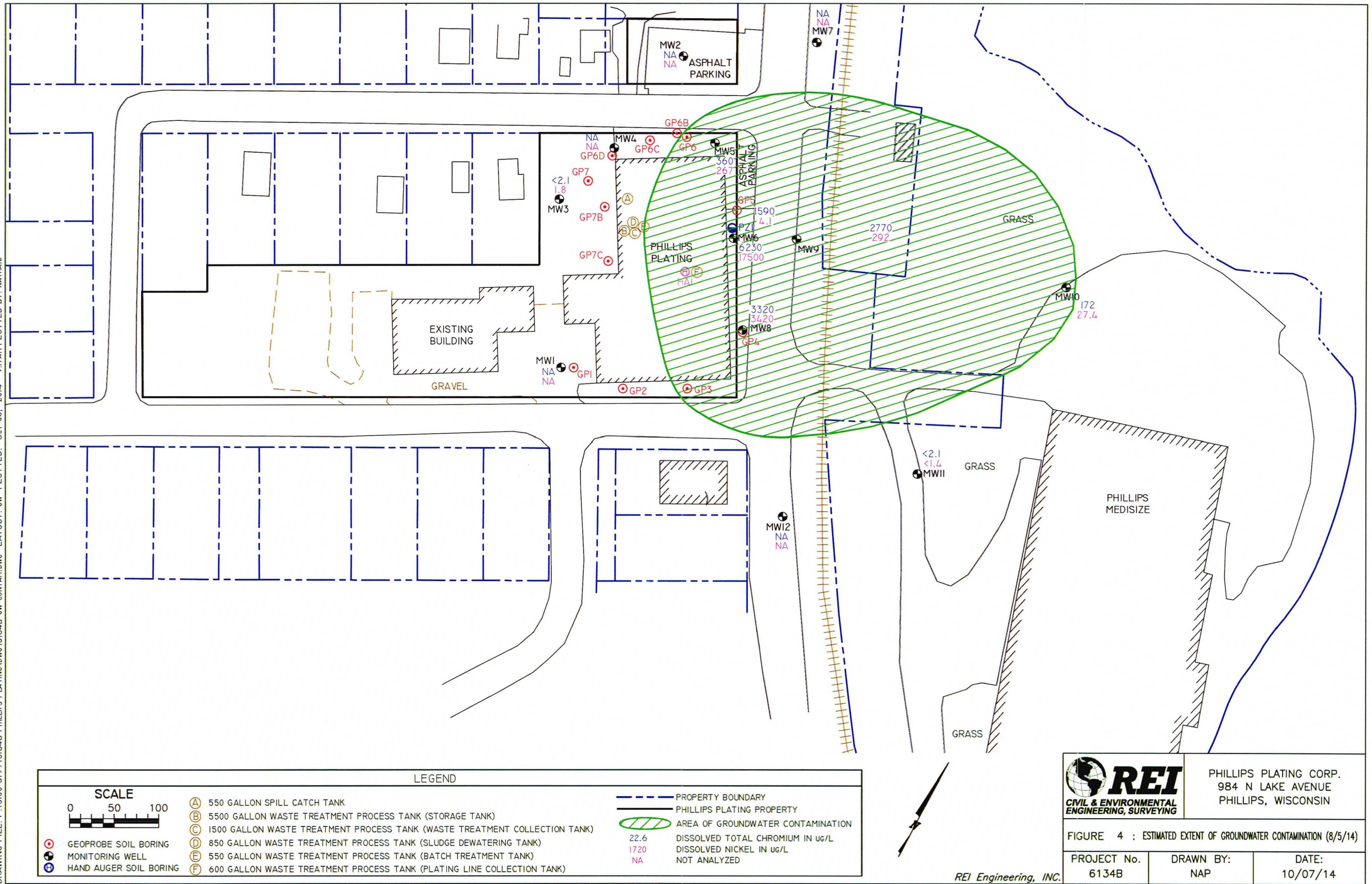
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November 20, 2013

Ken Lassa
REI
4080 North 20th Avenue
Wausau, WI 54401

RE: Project: 6134B PHILLIPS PLATING
Pace Project No.: 4088356

Dear Ken Lassa:

Enclosed are the analytical results for sample(s) received by the laboratory on November 13, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Brian Basten

brian.basten@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4088356

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334

New York Certification #: 11888
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
US Dept of Agriculture #: S-76505
Wisconsin Certification #: 405132750

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4088356

Lab ID	Sample ID	Matrix	Date Collected	Date Received
4088356001	MW3	Water	11/12/13 11:00	11/13/13 08:40
4088356002	MW5	Water	11/12/13 11:30	11/13/13 08:40
4088356003	MW6	Water	11/12/13 14:00	11/13/13 08:40
4088356004	MW9	Water	11/12/13 13:30	11/13/13 08:40
4088356005	MW10	Water	11/12/13 13:00	11/13/13 08:40
4088356006	MW11	Water	11/12/13 12:30	11/13/13 08:40
4088356007	PZ1	Water	11/12/13 14:15	11/13/13 08:40
4088356008	MW8	Water	11/12/13 12:00	11/13/13 08:40

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SAMPLE ANALYTE COUNT

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4088356

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
4088356001	MW3	EPA 6010	DLB	4	PASI-G
		EPA 6010	DLB	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4088356002	MW5	EPA 6010	DLB	2	PASI-G
		EPA 6010	DLB	2	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4088356003	MW6	EPA 6010	DLB	4	PASI-G
		EPA 6010	DLB	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4088356004	MW9	EPA 6010	DLB	4	PASI-G
		EPA 6010	DLB	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4088356005	MW10	EPA 6010	DLB	4	PASI-G
		EPA 6010	DLB	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4088356006	MW11	EPA 6010	DLB	2	PASI-G
		EPA 6010	DLB	2	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4088356007	PZ1	EPA 6010	DLB	4	PASI-G
		EPA 6010	DLB	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4088356008	MW8	EPA 6010	DLB	2	PASI-G
		EPA 6010	DLB	2	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4088356

Sample: MW3		Lab ID: 4088356001	Collected: 11/12/13 11:00	Received: 11/13/13 08:40	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Chromium	58.8 ug/L		5.0	1.4	1	11/15/13 10:30	11/15/13 16:26	7440-47-3	P4
Iron	42900 ug/L		100	23.4	1	11/15/13 10:30	11/15/13 16:26	7439-89-6	
Manganese	1130 ug/L		5.0	0.16	1	11/15/13 10:30	11/15/13 16:26	7439-96-5	
Nickel	47.9 ug/L		10.0	0.61	1	11/15/13 10:30	11/15/13 16:26	7440-02-0	
6010 MET ICP, Dissolved		Analytical Method: EPA 6010							
Chromium, Dissolved	<1.2 ug/L		5.0	1.2	1		11/14/13 14:55	7440-47-3	
Iron, Dissolved	28.6J ug/L		100	14.0	1		11/14/13 14:55	7439-89-6	
Manganese, Dissolved	2.0J ug/L		5.0	0.60	1		11/14/13 14:55	7439-96-5	
Nickel, Dissolved	1.8J ug/L		10.0	0.75	1		11/14/13 14:55	7440-02-0	
300.0 IC Anions		Analytical Method: EPA 300.0							
Nitrate as N	3.1 mg/L		0.60	0.30	2		11/13/13 14:38	14797-55-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Sulfate	6.7 mg/L		4.0	2.0	1		11/13/13 12:29	14808-79-8	
Chromium, Hexavalent		Analytical Method: SM 3500-Cr B (Online)							
Chromium, Hexavalent	<0.0034 mg/L		0.020	0.0034	1		11/13/13 10:15	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4088356

Sample: MW5 Lab ID: 4088356002 Collected: 11/12/13 11:30 Received: 11/13/13 08:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	1540	ug/L	5.0	1.4	1	11/15/13 10:30	11/15/13 16:28	7440-47-3	P4
Nickel	1220	ug/L	10.0	0.61	1	11/15/13 10:30	11/15/13 16:28	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	254	ug/L	5.0	1.2	1		11/14/13 15:01	7440-47-3	
Nickel, Dissolved	368	ug/L	10.0	0.75	1		11/14/13 15:01	7440-02-0	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	0.34	mg/L	0.020	0.0034	1		11/13/13 10:15	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4088356

Sample: MW6 Lab ID: 4088356003 Collected: 11/12/13 14:00 Received: 11/13/13 08:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	4550	ug/L	5.0	1.4	1	11/15/13 10:30	11/15/13 16:30	7440-47-3	P4
Iron	34600	ug/L	100	23.4	1	11/15/13 10:30	11/15/13 16:30	7439-89-6	
Manganese	1690	ug/L	5.0	0.16	1	11/15/13 10:30	11/15/13 16:30	7439-96-5	
Nickel	11100	ug/L	10.0	0.61	1	11/15/13 10:30	11/15/13 16:30	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	602	ug/L	5.0	1.2	1		11/14/13 15:03	7440-47-3	
Iron, Dissolved	<14.0	ug/L	100	14.0	1		11/14/13 15:03	7439-89-6	
Manganese, Dissolved	982	ug/L	5.0	0.60	1		11/14/13 15:03	7439-96-5	
Nickel, Dissolved	10900	ug/L	10.0	0.75	1		11/14/13 15:03	7440-02-0	
300.0 IC Anions									
Analytical Method: EPA 300.0									
Nitrate as N	16.1	mg/L	3.0	1.5	10		11/13/13 15:03	14797-55-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Sulfate	208	mg/L	40.0	20.0	10		11/13/13 15:03	14808-79-8	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	0.58	mg/L	0.10	0.017	5		11/13/13 10:15	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4088356

Sample: MW9 Lab ID: 4088356004 Collected: 11/12/13 13:30 Received: 11/13/13 08:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	1520	ug/L	5.0	1.4	1	11/15/13 10:30	11/15/13 16:37	7440-47-3	P4
Iron	15600	ug/L	100	23.4	1	11/15/13 10:30	11/15/13 16:37	7439-89-6	
Manganese	554	ug/L	5.0	0.16	1	11/15/13 10:30	11/15/13 16:37	7439-96-5	
Nickel	370	ug/L	10.0	0.61	1	11/15/13 10:30	11/15/13 16:37	7440-02-0	
6010 MET ICP, Dissolved Analytical Method: EPA 6010									
Chromium, Dissolved	1120	ug/L	5.0	1.2	1		11/14/13 15:06	7440-47-3	
Iron, Dissolved	38.1J	ug/L	100	14.0	1		11/14/13 15:06	7439-89-6	
Manganese, Dissolved	152	ug/L	5.0	0.60	1		11/14/13 15:06	7439-96-5	
Nickel, Dissolved	273	ug/L	10.0	0.75	1		11/14/13 15:06	7440-02-0	
300.0 IC Anions Analytical Method: EPA 300.0									
Nitrate as N	9.9	mg/L	3.0	1.5	10		11/13/13 15:11	14797-55-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Sulfate	147	mg/L	40.0	20.0	10		11/13/13 15:11	14808-79-8	
Chromium, Hexavalent Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	2.7	mg/L	0.20	0.034	10		11/13/13 10:15	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4088356

Sample: MW10		Lab ID: 4088356005		Collected: 11/12/13 13:00		Received: 11/13/13 08:40		Matrix: Water	
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	254	ug/L	5.0	1.4	1	11/15/13 10:30	11/15/13 16:39	7440-47-3	P4
Iron	17500	ug/L	100	23.4	1	11/15/13 10:30	11/15/13 16:39	7439-89-6	
Manganese	825	ug/L	5.0	0.16	1	11/15/13 10:30	11/15/13 16:39	7439-96-5	
Nickel	141	ug/L	10.0	0.61	1	11/15/13 10:30	11/15/13 16:39	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	228	ug/L	5.0	1.2	1		11/14/13 15:08	7440-47-3	
Iron, Dissolved	31.4J	ug/L	100	14.0	1		11/14/13 15:08	7439-89-6	
Manganese, Dissolved	5.7	ug/L	5.0	0.60	1		11/14/13 15:08	7439-96-5	
Nickel, Dissolved	97.2	ug/L	10.0	0.75	1		11/14/13 15:08	7440-02-0	
300.0 IC Anions									
Analytical Method: EPA 300.0									
Nitrate as N	3.4	mg/L	0.30	0.15	1		11/13/13 13:10	14797-55-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Sulfate	36.8	mg/L	4.0	2.0	1		11/13/13 13:10	14808-79-8	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	0.13	mg/L	0.020	0.0034	1		11/13/13 10:15	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4088356

Sample: MW11 Lab ID: 4088356006 Collected: 11/12/13 12:30 Received: 11/13/13 08:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	150	ug/L	5.0	1.4	1	11/15/13 10:30	11/15/13 16:41	7440-47-3	P4
Nickel	106	ug/L	10.0	0.61	1	11/15/13 10:30	11/15/13 16:41	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	<1.2	ug/L	5.0	1.2	1		11/14/13 15:10	7440-47-3	
Nickel, Dissolved	1.1J	ug/L	10.0	0.75	1		11/14/13 15:10	7440-02-0	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	<0.017	mg/L	0.10	0.017	5		11/13/13 10:15	18540-29-9	D3

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4088356

Sample: PZ1		Lab ID: 4088356007		Collected: 11/12/13 14:15		Received: 11/13/13 08:40		Matrix: Water	
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	1610 ug/L		5.0	1.4	1	11/15/13 10:30	11/15/13 16:43	7440-47-3	P4
Iron	99600 ug/L		100	23.4	1	11/15/13 10:30	11/15/13 16:43	7439-89-6	
Manganese	1900 ug/L		5.0	0.16	1	11/15/13 10:30	11/15/13 16:43	7439-96-5	
Nickel	108 ug/L		10.0	0.61	1	11/15/13 10:30	11/15/13 16:43	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	810 ug/L		5.0	1.2	1		11/14/13 15:52	7440-47-3	
Iron, Dissolved	<14.0 ug/L		100	14.0	1		11/14/13 15:52	7439-89-6	
Manganese, Dissolved	154 ug/L		5.0	0.60	1		11/14/13 15:52	7439-96-5	
Nickel, Dissolved	3.5J ug/L		10.0	0.75	1		11/14/13 15:52	7440-02-0	
300.0 IC Anions									
Analytical Method: EPA 300.0									
Nitrate as N	3.4 mg/L		0.30	0.15	1		11/13/13 13:18	14797-55-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Sulfate	55.6 mg/L		20.0	10.0	5		11/13/13 15:19	14808-79-8	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	1.0 mg/L		0.10	0.017	5		11/13/13 10:15	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4088356

Sample: MW8 Lab ID: 4088356008 Collected: 11/12/13 12:00 Received: 11/13/13 08:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	2700	ug/L	5.0	1.4	1	11/15/13 10:30	11/15/13 16:45	7440-47-3	P4
Nickel	1860	ug/L	10.0	0.61	1	11/15/13 10:30	11/15/13 16:45	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	2570	ug/L	5.0	1.2	1		11/14/13 15:19	7440-47-3	
Nickel, Dissolved	1510	ug/L	10.0	0.75	1		11/14/13 15:19	7440-02-0	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	2.7	mg/L	0.20	0.034	10		11/13/13 10:15	18540-29-9	

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QUALITY CONTROL DATA

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4088356

QC Batch: ICP/8347 Analysis Method: EPA 6010
QC Batch Method: EPA 6010 Analysis Description: ICP Metals, Trace, Dissolved
Associated Lab Samples: 4088356001, 4088356002, 4088356003, 4088356004, 4088356005, 4088356006, 4088356007, 4088356008

METHOD BLANK: 895105 Matrix: Water
Associated Lab Samples: 4088356001, 4088356002, 4088356003, 4088356004, 4088356005, 4088356006, 4088356007, 4088356008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Dissolved	ug/L	<1.2	5.0	11/14/13 14:51	
Iron, Dissolved	ug/L	<14.0	100	11/14/13 14:51	
Manganese, Dissolved	ug/L	<0.60	5.0	11/14/13 14:51	
Nickel, Dissolved	ug/L	<0.75	10.0	11/14/13 14:51	

LABORATORY CONTROL SAMPLE: 895106

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Dissolved	ug/L	500	482	96	80-120	
Iron, Dissolved	ug/L	5000	4610	92	80-120	
Manganese, Dissolved	ug/L	500	487	97	80-120	
Nickel, Dissolved	ug/L	500	502	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 895107 895108

Parameter	Units	4088356001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	<1.2	500	500	517	498	103	99	75-125	4	20	
Iron, Dissolved	ug/L	28.6J	5000	5000	4930	4710	98	94	75-125	4	20	
Manganese, Dissolved	ug/L	2.0J	500	500	524	508	104	101	75-125	3	20	
Nickel, Dissolved	ug/L	1.8J	500	500	542	524	108	104	75-125	4	20	

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QUALITY CONTROL DATA

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4088356

QC Batch: MPRP/9490 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 4088356001, 4088356002, 4088356003, 4088356004, 4088356005, 4088356006, 4088356007, 4088356008

METHOD BLANK: 895719 Matrix: Water
Associated Lab Samples: 4088356001, 4088356002, 4088356003, 4088356004, 4088356005, 4088356006, 4088356007, 4088356008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	ug/L	<1.4	5.0	11/15/13 16:11	
Iron	ug/L	<23.4	100	11/15/13 16:11	
Manganese	ug/L	<0.16	5.0	11/15/13 16:11	
Nickel	ug/L	<0.61	10.0	11/15/13 16:11	

LABORATORY CONTROL SAMPLE: 895720

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	ug/L	500	500	100	80-120	
Iron	ug/L	5000	4900	98	80-120	
Manganese	ug/L	500	499	100	80-120	
Nickel	ug/L	500	527	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 895721 895722

Parameter	Units	4088460001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Chromium	ug/L	<1.4	500	500	502	498	100	99	75-125	1	20
Iron	ug/L	47.0J	5000	5000	4950	4880	98	97	75-125	1	20
Manganese	ug/L	17.5	500	500	518	515	100	100	75-125	1	20
Nickel	ug/L	2.2J	500	500	519	521	103	104	75-125	0	20

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QUALITY CONTROL DATA

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4088356

QC Batch: WETA/20602 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 4088356001, 4088356003, 4088356004, 4088356005, 4088356007

METHOD BLANK: 893120 Matrix: Water
Associated Lab Samples: 4088356001, 4088356003, 4088356004, 4088356005, 4088356007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrate as N	mg/L	<0.15	0.30	11/13/13 09:46	
Sulfate	mg/L	<2.0	4.0	11/13/13 09:46	

LABORATORY CONTROL SAMPLE: 893121

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	2	1.8	92	90-110	
Sulfate	mg/L	20	19.1	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 893122 893123

Parameter	Units	4088297001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Max RPD	Qual
Nitrate as N	mg/L	6.2	40	40	42.0	42.4	90	90	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 893728 893729

Parameter	Units	4088356001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Max RPD	Qual
Nitrate as N	mg/L	3.1	4	4	7.2	7.1	102	100	90-110	1	20	
Sulfate	mg/L	6.7	20	20	26.8	27.3	100	103	90-110	2	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4088356

QC Batch: WETA/20658 Analysis Method: SM 3500-Cr B (Online)
QC Batch Method: SM 3500-Cr B (Online) Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 4088356001, 4088356002, 4088356003, 4088356004, 4088356005, 4088356006, 4088356007, 4088356008

METHOD BLANK: 894751 Matrix: Water
Associated Lab Samples: 4088356001, 4088356002, 4088356003, 4088356004, 4088356005, 4088356006, 4088356007, 4088356008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	<0.0034	0.020	11/13/13 10:15	

LABORATORY CONTROL SAMPLE: 894752

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.3	0.30	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 894753 894754

Parameter	Units	4088356001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Chromium, Hexavalent	mg/L	<0.0034	.3	.3	0.29	0.31	98	103	90-110	5 20	

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QUALIFIERS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4088356

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

P4 Sample field preservation does not meet EPA or method recommendations for this analysis.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4088356

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
4088356001	MW3	EPA 3010	MPRP/9490	EPA 6010	ICP/8355
4088356002	MW5	EPA 3010	MPRP/9490	EPA 6010	ICP/8355
4088356003	MW6	EPA 3010	MPRP/9490	EPA 6010	ICP/8355
4088356004	MW9	EPA 3010	MPRP/9490	EPA 6010	ICP/8355
4088356005	MW10	EPA 3010	MPRP/9490	EPA 6010	ICP/8355
4088356006	MW11	EPA 3010	MPRP/9490	EPA 6010	ICP/8355
4088356007	PZ1	EPA 3010	MPRP/9490	EPA 6010	ICP/8355
4088356008	MW8	EPA 3010	MPRP/9490	EPA 6010	ICP/8355
4088356001	MW3	EPA 6010	ICP/8347		
4088356002	MW5	EPA 6010	ICP/8347		
4088356003	MW6	EPA 6010	ICP/8347		
4088356004	MW9	EPA 6010	ICP/8347		
4088356005	MW10	EPA 6010	ICP/8347		
4088356006	MW11	EPA 6010	ICP/8347		
4088356007	PZ1	EPA 6010	ICP/8347		
4088356008	MW8	EPA 6010	ICP/8347		
4088356001	MW3	EPA 300.0	WETA/20602		
4088356003	MW6	EPA 300.0	WETA/20602		
4088356004	MW9	EPA 300.0	WETA/20602		
4088356005	MW10	EPA 300.0	WETA/20602		
4088356007	PZ1	EPA 300.0	WETA/20602		
4088356001	MW3	EPA 300.0	WETA/20602		
4088356003	MW6	EPA 300.0	WETA/20602		
4088356004	MW9	EPA 300.0	WETA/20602		
4088356005	MW10	EPA 300.0	WETA/20602		
4088356007	PZ1	EPA 300.0	WETA/20602		
4088356001	MW3	SM 3500-Cr B (Online)	WETA/20658		
4088356002	MW5	SM 3500-Cr B (Online)	WETA/20658		
4088356003	MW6	SM 3500-Cr B (Online)	WETA/20658		
4088356004	MW9	SM 3500-Cr B (Online)	WETA/20658		
4088356005	MW10	SM 3500-Cr B (Online)	WETA/20658		
4088356006	MW11	SM 3500-Cr B (Online)	WETA/20658		
4088356007	PZ1	SM 3500-Cr B (Online)	WETA/20658		
4088356008	MW8	SM 3500-Cr B (Online)	WETA/20658		

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Sample Condition Upon Receipt

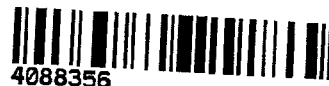
Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: REI

Project # **WO# : 4088356**

Courier: ☐ Fed Ex ☐ UPS ☐ Client ☐ Pace Other: Walter

Tracking #: 447563



Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer Used N/A

Type of Ice: ☒ Wet ☒ Blue ☐ Dry ☐ None

☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: ROF Corr:

Biological Tissue is Frozen: ☐ yes

Temp Blank Present: ☐ yes ☒ no

☐ no

Person examining contents:

Date: 11-13-13

Initials: SLW

Temp should be above freezing to 6°C for all sample except Biota.

Frozen Biota Samples should be received ≤ 0°C.

Comments:

Chain of Custody Present:	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes ☐ No ☐ N/A	3.
Sampler Name & Signature on COC:	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time:	☒ Yes ☐ No ☐ N/A	5.
- VOA Samples frozen upon receipt	☐ Yes ☐ No	Date/Time:
Short Hold Time Analysis (<72hr):	☒ Yes ☐ No ☐ N/A	6. <u>Hex Chrome</u>
Rush Turn Around Time Requested:	☐ Yes ☒ No ☐ N/A	7.
Sufficient Volume:	☒ Yes ☐ No ☐ N/A	8.
Correct Containers Used:	☒ Yes ☐ No ☐ N/A	9.
-Pace Containers Used:	☐ Yes ☒ No ☐ N/A	
-Pace IR Containers Used:	☐ Yes ☐ No ☒ N/A	
Containers Intact:	☒ Yes ☐ No ☐ N/A	10.
Filtered volume received for Dissolved tests	☒ Yes ☐ No ☐ N/A	11.
Sample Labels match COC:	☒ Yes ☐ No ☐ N/A	12.
-Includes date/time/ID/Analysis Matrix:	<u>W</u>	
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☒ Yes ☐ No ☐ N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2, NaOH+ZnAct ≥9, NaOH ≥12)	☒ Yes ☐ No ☐ N/A	☒ HNO3 ☒ H2SO4 ☐ NaOH ☐ NaOH + ZnAct
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	☐ Yes ☒ No	Initial when completed: <u>SLW</u> Lab Std #ID of preservative: Date/Time:
Headspace in VOA Vials (>6mm):	☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present:	☐ Yes ☐ No ☒ N/A	15.
Trip Blank Custody Seals Present	☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution: split volume for 003, 006 + 008 for total metals per

KL 11-13-13

Project Manager Review:

Date: 11-13-13

February 24, 2014

Ken Lassa
REI
4080 North 20th Avenue
Wausau, WI 54401

RE: Project: 6134 PHILLIPS PLATING
Pace Project No.: 4092071

Dear Ken Lassa:

Enclosed are the analytical results for sample(s) received by the laboratory on February 13, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Brian Basten
brian.basten@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 6134 PHILLIPS PLATING
Pace Project No.: 4092071

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334

New York Certification #: 11888
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
US Dept of Agriculture #: S-76505
Wisconsin Certification #: 405132750

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SAMPLE SUMMARY

Project: 6134 PHILLIPS PLATING
Pace Project No.: 4092071

Lab ID	Sample ID	Matrix	Date Collected	Date Received
4092071001	MW3	Water	02/12/14 12:00	02/13/14 10:35
4092071002	MW5	Water	02/12/14 13:30	02/13/14 10:35
4092071003	MW6	Water	02/12/14 15:15	02/13/14 10:35
4092071004	MW8	Water	02/12/14 12:15	02/13/14 10:35
4092071005	MW9	Water	02/12/14 14:50	02/13/14 10:35
4092071006	MW10	Water	02/12/14 12:45	02/13/14 10:35
4092071007	MW11	Water	02/12/14 12:30	02/13/14 10:35
4092071008	PZ1	Water	02/12/14 15:45	02/13/14 10:35

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SAMPLE ANALYTE COUNT

Project: 6134 PHILLIPS PLATING
Pace Project No.: 4092071

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
4092071001	MW3	EPA 6010	MMZ	4	PASI-G
		EPA 6010	MMZ	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	HKV	1	PASI-G
4092071002	MW5	EPA 6010	MMZ	2	PASI-G
		EPA 6010	MMZ	2	PASI-G
		SM 3500-Cr B (Online)	HKV	1	PASI-G
4092071003	MW6	EPA 6010	MMZ	4	PASI-G
		EPA 6010	MMZ	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	HKV	1	PASI-G
4092071004	MW8	EPA 6010	MMZ	2	PASI-G
		EPA 6010	MMZ	2	PASI-G
		SM 3500-Cr B (Online)	HKV	1	PASI-G
4092071005	MW9	EPA 6010	MMZ	4	PASI-G
		EPA 6010	MMZ	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	HKV	1	PASI-G
4092071006	MW10	EPA 6010	MMZ	4	PASI-G
		EPA 6010	MMZ	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	HKV	1	PASI-G
4092071007	MW11	EPA 6010	MMZ	2	PASI-G
		EPA 6010	MMZ	2	PASI-G
		SM 3500-Cr B (Online)	HKV	1	PASI-G
4092071008	PZ1	EPA 6010	MMZ	4	PASI-G
		EPA 6010	MMZ	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	HKV	1	PASI-G

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6134 PHILLIPS PLATING

Pace Project No.: 4092071

Sample: MW3		Lab ID: 4092071001	Collected: 02/12/14 12:00	Received: 02/13/14 10:35	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Chromium	41.4 ug/L		5.0	1.4	1	02/18/14 10:01	02/19/14 12:13	7440-47-3	
Iron	29500 ug/L		100	23.4	1	02/18/14 10:01	02/19/14 12:13	7439-89-6	
Manganese	845 ug/L		5.0	0.16	1	02/18/14 10:01	02/19/14 12:13	7439-96-5	
Nickel	30.5 ug/L		10.0	0.61	1	02/18/14 10:01	02/19/14 12:13	7440-02-0	
6010 MET ICP, Dissolved		Analytical Method: EPA 6010							
Chromium, Dissolved	<1.2 ug/L		5.0	1.2	1		02/18/14 13:25	7440-47-3	
Iron, Dissolved	22.8J ug/L		100	14.0	1		02/18/14 13:25	7439-89-6	
Manganese, Dissolved	2.3J ug/L		5.0	0.60	1		02/18/14 13:25	7439-96-5	
Nickel, Dissolved	<0.75 ug/L		10.0	0.75	1		02/18/14 13:25	7440-02-0	
300.0 IC Anions		Analytical Method: EPA 300.0							
Nitrate as N	3.4 mg/L		0.60	0.30	2		02/14/14 09:58	14797-55-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Sulfate	10.3 mg/L		4.0	2.0	1		02/13/14 13:35	14808-79-8	M0
Chromium, Hexavalent		Analytical Method: SM 3500-Cr B (Online)							
Chromium, Hexavalent	<0.034 mg/L		0.20	0.034	10		02/13/14 11:25	18540-29-9	D3

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ANALYTICAL RESULTS

Project: 6134 PHILLIPS PLATING

Pace Project No.: 4092071

Sample: MW5 Lab ID: 4092071002 Collected: 02/12/14 13:30 Received: 02/13/14 10:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	1680	ug/L	5.0	1.4	1	02/18/14 10:01	02/19/14 12:15	7440-47-3	
Nickel	1120	ug/L	10.0	0.61	1	02/18/14 10:01	02/19/14 12:15	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	458	ug/L	5.0	1.2	1		02/18/14 13:27	7440-47-3	
Nickel, Dissolved	295	ug/L	10.0	0.75	1		02/18/14 13:27	7440-02-0	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	0.31J	mg/L	0.50	0.086	25		02/13/14 11:25	18540-29-9	D3

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ANALYTICAL RESULTS

Project: 6134 PHILLIPS PLATING
Pace Project No.: 4092071

Sample: MW6 Lab ID: 4092071003 Collected: 02/12/14 15:15 Received: 02/13/14 10:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	2840	ug/L	5.0	1.4	1	02/18/14 10:01	02/19/14 12:17	7440-47-3	
Iron	26600	ug/L	100	23.4	1	02/18/14 10:01	02/19/14 12:17	7439-89-6	
Manganese	1120	ug/L	5.0	0.16	1	02/18/14 10:01	02/19/14 12:17	7439-96-5	
Nickel	6010	ug/L	10.0	0.61	1	02/18/14 10:01	02/19/14 12:17	7440-02-0	
6010 MET ICP, Dissolved Analytical Method: EPA 6010									
Chromium, Dissolved	858	ug/L	5.0	1.2	1		02/18/14 13:29	7440-47-3	
Iron, Dissolved	<14.0	ug/L	100	14.0	1		02/18/14 13:29	7439-89-6	
Manganese, Dissolved	690	ug/L	5.0	0.60	1		02/18/14 13:29	7439-96-5	
Nickel, Dissolved	6460	ug/L	10.0	0.75	1		02/18/14 13:29	7440-02-0	1q
300.0 IC Anions Analytical Method: EPA 300.0									
Nitrate as N	11.6	mg/L	3.0	1.5	10		02/13/14 14:10	14797-55-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Sulfate	194	mg/L	40.0	20.0	10		02/13/14 14:10	14808-79-8	
Chromium, Hexavalent Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	0.66	mg/L	0.20	0.034	10		02/13/14 11:25	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134 PHILLIPS PLATING

Pace Project No.: 4092071

Sample: MW8 Lab ID: 4092071004 Collected: 02/12/14 12:15 Received: 02/13/14 10:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	1910	ug/L	5.0	1.4	1	02/18/14 10:01	02/19/14 12:24	7440-47-3	
Nickel	1190	ug/L	10.0	0.61	1	02/18/14 10:01	02/19/14 12:24	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	1550	ug/L	5.0	1.2	1		02/18/14 13:31	7440-47-3	
Nickel, Dissolved	605	ug/L	10.0	0.75	1		02/18/14 13:31	7440-02-0	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	1.8	mg/L	0.20	0.034	10		02/13/14 11:25	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134 PHILLIPS PLATING
Pace Project No.: 4092071

Sample: MW9 Lab ID: 4092071005 Collected: 02/12/14 14:50 Received: 02/13/14 10:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	6000	ug/L	5.0	1.4	1	02/18/14 10:01	02/19/14 12:26	7440-47-3	
Iron	194000	ug/L	100	23.4	1	02/18/14 10:01	02/19/14 12:26	7439-89-6	
Manganese	5190	ug/L	5.0	0.16	1	02/18/14 10:01	02/19/14 12:26	7439-96-5	
Nickel	762	ug/L	10.0	0.61	1	02/18/14 10:01	02/19/14 12:26	7440-02-0	
6010 MET ICP, Dissolved Analytical Method: EPA 6010									
Chromium, Dissolved	2580	ug/L	5.0	1.2	1		02/18/14 13:34	7440-47-3	
Iron, Dissolved	25.9J	ug/L	100	14.0	1		02/18/14 13:34	7439-89-6	
Manganese, Dissolved	261	ug/L	5.0	0.60	1		02/18/14 13:34	7439-96-5	
Nickel, Dissolved	190	ug/L	10.0	0.75	1		02/18/14 13:34	7440-02-0	
300.0 IC Anions Analytical Method: EPA 300.0									
Nitrate as N	12.0	mg/L	3.0	1.5	10		02/13/14 14:21	14797-55-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Sulfate	161	mg/L	40.0	20.0	10		02/13/14 14:21	14808-79-8	
Chromium, Hexavalent Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	3.4	mg/L	0.20	0.034	10		02/13/14 11:25	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134 PHILLIPS PLATING

Pace Project No.: 4092071

Sample: MW10 Lab ID: 4092071006 Collected: 02/12/14 12:45 Received: 02/13/14 10:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	177	ug/L	5.0	1.4	1	02/18/14 10:01	02/19/14 12:28	7440-47-3	
Iron	13900	ug/L	100	23.4	1	02/18/14 10:01	02/19/14 12:28	7439-89-6	
Manganese	594	ug/L	5.0	0.16	1	02/18/14 10:01	02/19/14 12:28	7439-96-5	
Nickel	60.8	ug/L	10.0	0.61	1	02/18/14 10:01	02/19/14 12:28	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	124	ug/L	5.0	1.2	1		02/18/14 13:36	7440-47-3	
Iron, Dissolved	24.1J	ug/L	100	14.0	1		02/18/14 13:36	7439-89-6	
Manganese, Dissolved	3.2J	ug/L	5.0	0.60	1		02/18/14 13:36	7439-96-5	
Nickel, Dissolved	19.7	ug/L	10.0	0.75	1		02/18/14 13:36	7440-02-0	
300.0 IC Anions									
Analytical Method: EPA 300.0									
Nitrate as N	3.2	mg/L	0.30	0.15	1		02/13/14 14:32	14797-55-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Sulfate	69.1	mg/L	20.0	10.0	5		02/14/14 10:31	14808-79-8	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	0.36	mg/L	0.20	0.034	10		02/13/14 11:25	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 6134 PHILLIPS PLATING

Pace Project No.: 4092071

Sample: MW11		Lab ID: 4092071007		Collected: 02/12/14 12:30		Received: 02/13/14 10:35		Matrix: Water	
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Chromium	46.8 ug/L		5.0	1.4	1	02/18/14 10:01	02/19/14 12:30	7440-47-3	
Nickel	32.2 ug/L		10.0	0.61	1	02/18/14 10:01	02/19/14 12:30	7440-02-0	
6010 MET ICP, Dissolved		Analytical Method: EPA 6010							
Chromium, Dissolved	<1.2 ug/L		5.0	1.2	1		02/18/14 13:38	7440-47-3	
Nickel, Dissolved	<0.75 ug/L		10.0	0.75	1		02/18/14 13:38	7440-02-0	
Chromium, Hexavalent		Analytical Method: SM 3500-Cr B (Online)							
Chromium, Hexavalent	<0.034 mg/L		0.20	0.034	10		02/13/14 11:25	18540-29-9	D3

REPORT OF LABORATORY ANALYSIS

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Date: 02/24/2014 01:59 PM

Page 11 of 20

ANALYTICAL RESULTS

Project: 6134 PHILLIPS PLATING

Pace Project No.: 4092071

Sample: PZ1 Lab ID: 4092071008 Collected: 02/12/14 15:45 Received: 02/13/14 10:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	1490	ug/L	5.0	1.4	1	02/18/14 10:01	02/19/14 12:32	7440-47-3	
Iron	27700	ug/L	100	23.4	1	02/18/14 10:01	02/19/14 12:32	7439-89-6	
Manganese	362	ug/L	5.0	0.16	1	02/18/14 10:01	02/19/14 12:32	7439-96-5	
Nickel	24.8	ug/L	10.0	0.61	1	02/18/14 10:01	02/19/14 12:32	7440-02-0	
6010 MET ICP, Dissolved Analytical Method: EPA 6010									
Chromium, Dissolved	1310	ug/L	5.0	1.2	1		02/18/14 13:40	7440-47-3	
Iron, Dissolved	<14.0	ug/L	100	14.0	1		02/18/14 13:40	7439-89-6	
Manganese, Dissolved	61.5	ug/L	5.0	0.60	1		02/18/14 13:40	7439-96-5	
Nickel, Dissolved	3.8J	ug/L	10.0	0.75	1		02/18/14 13:40	7440-02-0	
300.0 IC Anions Analytical Method: EPA 300.0									
Nitrate as N	3.9	mg/L	0.30	0.15	1		02/13/14 14:43	14797-55-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Sulfate	58.4	mg/L	4.0	2.0	1		02/13/14 14:43	14808-79-8	
Chromium, Hexavalent Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	1.1	mg/L	0.20	0.034	10		02/13/14 11:25	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6134 PHILLIPS PLATING
Pace Project No.: 4092071

QC Batch: ICP/8661 Analysis Method: EPA 6010
QC Batch Method: EPA 6010 Analysis Description: ICP Metals, Trace, Dissolved
Associated Lab Samples: 4092071001, 4092071002, 4092071003, 4092071004, 4092071005, 4092071006, 4092071007, 4092071008

METHOD BLANK: 932368 Matrix: Water
Associated Lab Samples: 4092071001, 4092071002, 4092071003, 4092071004, 4092071005, 4092071006, 4092071007, 4092071008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Dissolved	ug/L	<1.2	5.0	02/18/14 12:54	
Iron, Dissolved	ug/L	<14.0	100	02/18/14 12:54	
Manganese, Dissolved	ug/L	<0.60	5.0	02/18/14 12:54	
Nickel, Dissolved	ug/L	<0.75	10.0	02/18/14 12:54	

LABORATORY CONTROL SAMPLE: 932369

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Dissolved	ug/L	500	482	96	80-120	
Iron, Dissolved	ug/L	5000	4920	98	80-120	
Manganese, Dissolved	ug/L	500	483	97	80-120	
Nickel, Dissolved	ug/L	500	502	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 932370 932371

Parameter	Units	4092212001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	<1.2	500	500	491	492	98	98	75-125	0	20	
Iron, Dissolved	ug/L	1100	5000	5000	6130	6150	101	101	75-125	0	20	
Manganese, Dissolved	ug/L	234	500	500	718	722	97	98	75-125	0	20	
Nickel, Dissolved	ug/L	<0.75	500	500	508	510	102	102	75-125	0	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6134 PHILLIPS PLATING
Pace Project No.: 4092071

QC Batch: MPRP/9852 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 4092071001, 4092071002, 4092071003, 4092071004, 4092071005, 4092071006, 4092071007, 4092071008

METHOD BLANK: 932236 Matrix: Water
Associated Lab Samples: 4092071001, 4092071002, 4092071003, 4092071004, 4092071005, 4092071006, 4092071007, 4092071008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	ug/L	<1.4	5.0	02/19/14 11:48	
Iron	ug/L	<23.4	100	02/19/14 11:48	
Manganese	ug/L	<0.16	5.0	02/19/14 11:48	
Nickel	ug/L	<0.61	10.0	02/19/14 11:48	

LABORATORY CONTROL SAMPLE: 932237

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	ug/L	500	508	102	80-120	
Iron	ug/L	5000	5000	100	80-120	
Manganese	ug/L	500	488	98	80-120	
Nickel	ug/L	500	499	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 932238 932239

Parameter	Units	4092002001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	ug/L	<1.4	500	500	512	506	102	101	75-125	1	20	
Iron	ug/L	<23.4	5000	5000	5080	5020	102	100	75-125	1	20	
Manganese	ug/L	1.8J	500	500	497	486	99	97	75-125	2	20	
Nickel	ug/L	<0.61	500	500	502	488	100	98	75-125	3	20	

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QUALITY CONTROL DATA

Project: 6134 PHILLIPS PLATING
Pace Project No.: 4092071

QC Batch: WETA/21859 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 4092071001, 4092071003, 4092071005, 4092071006, 4092071008

METHOD BLANK: 931211 Matrix: Water
Associated Lab Samples: 4092071001, 4092071003, 4092071005, 4092071006, 4092071008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrate as N	mg/L	<0.15	0.30	02/13/14 14:54	
Sulfate	mg/L	<2.0	4.0	02/13/14 14:54	

LABORATORY CONTROL SAMPLE: 931212

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	2	2.0	101	90-110	
Sulfate	mg/L	20	19.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 931213 931214

Parameter	Units	4092071001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Nitrate as N	mg/L	3.4	4	4	7.5	7.6	103	105	90-110	1	20
Sulfate	mg/L	10.3	20	20	33.7	32.6	117	111	90-110	3	20 M0

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QUALITY CONTROL DATA

Project: 6134 PHILLIPS PLATING
Pace Project No.: 4092071

QC Batch: WETA/21861 Analysis Method: SM 3500-Cr B (Online)
QC Batch Method: SM 3500-Cr B (Online) Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 4092071001, 4092071002, 4092071003, 4092071004, 4092071005, 4092071006, 4092071007, 4092071008

METHOD BLANK: 931230 Matrix: Water
Associated Lab Samples: 4092071001, 4092071002, 4092071003, 4092071004, 4092071005, 4092071006, 4092071007, 4092071008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	<0.0034	0.020	02/13/14 11:25	

LABORATORY CONTROL SAMPLE: 931231

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.3	0.32	106	90-110	

LABORATORY CONTROL SAMPLE: 931234

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.3	0.32	108	90-110	

LABORATORY CONTROL SAMPLE: 931235

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.3	0.31	105	90-110	

LABORATORY CONTROL SAMPLE: 931236

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.3	0.32	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 931232 931233

Parameter	Units	4092071001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Chromium, Hexavalent	mg/L	<0.034	3	3	2.9	3.0	97	100	90-110	2	20

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 6134 PHILLIPS PLATING
Pace Project No.: 4092071

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

ANALYTE QUALIFIERS

1q	Dissolved analyte or filtered analyte greater than total analyte: analysis passed QC based on precision criteria.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 6134 PHILLIPS PLATING
Pace Project No.: 4092071

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
4092071001	MW3	EPA 3010	MPRP/9852	EPA 6010	ICP/8664
4092071002	MW5	EPA 3010	MPRP/9852	EPA 6010	ICP/8664
4092071003	MW6	EPA 3010	MPRP/9852	EPA 6010	ICP/8664
4092071004	MW8	EPA 3010	MPRP/9852	EPA 6010	ICP/8664
4092071005	MW9	EPA 3010	MPRP/9852	EPA 6010	ICP/8664
4092071006	MW10	EPA 3010	MPRP/9852	EPA 6010	ICP/8664
4092071007	MW11	EPA 3010	MPRP/9852	EPA 6010	ICP/8664
4092071008	PZ1	EPA 3010	MPRP/9852	EPA 6010	ICP/8664
4092071001	MW3	EPA 6010	ICP/8661		
4092071002	MW5	EPA 6010	ICP/8661		
4092071003	MW6	EPA 6010	ICP/8661		
4092071004	MW8	EPA 6010	ICP/8661		
4092071005	MW9	EPA 6010	ICP/8661		
4092071006	MW10	EPA 6010	ICP/8661		
4092071007	MW11	EPA 6010	ICP/8661		
4092071008	PZ1	EPA 6010	ICP/8661		
4092071001	MW3	EPA 300.0	WETA/21859		
4092071003	MW6	EPA 300.0	WETA/21859		
4092071005	MW9	EPA 300.0	WETA/21859		
4092071006	MW10	EPA 300.0	WETA/21859		
4092071008	PZ1	EPA 300.0	WETA/21859		
4092071001	MW3	EPA 300.0	WETA/21859		
4092071003	MW6	EPA 300.0	WETA/21859		
4092071005	MW9	EPA 300.0	WETA/21859		
4092071006	MW10	EPA 300.0	WETA/21859		
4092071008	PZ1	EPA 300.0	WETA/21859		
4092071001	MW3	SM 3500-Cr B (Online)	WETA/21861		
4092071002	MW5	SM 3500-Cr B (Online)	WETA/21861		
4092071003	MW6	SM 3500-Cr B (Online)	WETA/21861		
4092071004	MW8	SM 3500-Cr B (Online)	WETA/21861		
4092071005	MW9	SM 3500-Cr B (Online)	WETA/21861		
4092071006	MW10	SM 3500-Cr B (Online)	WETA/21861		
4092071007	MW11	SM 3500-Cr B (Online)	WETA/21861		
4092071008	PZ1	SM 3500-Cr B (Online)	WETA/21861		

REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name:	REI
Branch/Location:	Wausau
Project Contact:	Ken Lassa
Phone:	715-675-9784
Project Number:	6134 B
Project Name:	Phillips Plating
Project State:	WI
Sampled By (Print):	Jared Szewc
Sampled By (Sign):	Jared Szewc
PO #:	



CHAIN OF CUSTODY

Preservation Codes
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

 FILTERED?
 (YES/NO)

 PRESERVATION
 (CODE)*

Y/N	Y	N	N	Y	N	N	N
Pick Letter	D	D	A	D	D	A	A
Analyses Requested	Total Cr, Ni (Filtered)	Total Cr, Ni (Unfiltered)	Hex Cr	Total Cr, Ni, Mn, Fe (Filtered)	Total Cr, Ni, Mn, Fe (Unfiltered)	Nitrate	Sulfate

Quote #:	4092071	
Mail To Contact:	REI	
Mail To Company:	Ken Lassa	
Mail To Address:	4080 N 20th Ave Wausau WI 54401	
Invoice To Contact:	SAA	
Invoice To Company:		
Invoice To Address:		
Invoice To Phone:		
CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
	3250mlp ADD	

Data Package Options (billable) ☐ EPA Level III ☐ EPA Level IV	MS/MSD ☐ On your sample (billable) ☐ NOT needed on your sample	Matrix Codes A = Air W = Water B = Biota DW = Drinking Water C = Charcoal GW = Ground Water O = Oil SW = Surface Water S = Soil WW = Waste Water Sl = Sludge WP = Wipe
--	---	---

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
001	MW3	2/12/14	12:00	6W
002	MW5		1:30	
003	MW6		3:15	
004	MW8		12:15	
005	MW9		2:50	
006	MW10		12:45	
007	MW11		12:30	
008	PZ1		3:45	

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge) Date Needed:	Relinquished By: <i>Jared Szewc</i> - REI Date/Time: 2/13/14 10:35AM	Received By: <i>Susan K. Uhlir</i> Date/Time: 2-13-14 1035	PACE Project No. 4092071
Transmit Prelim Rush Results by (complete what you want):	Relinquished By:	Received By:	Receipt Temp = <i>ROT</i> °C
Email #1:	Relinquished By:	Received By:	Sample Receipt pH OK / Adjusted
Email #2:	Relinquished By:	Received By:	Cooler Custody Seal Present / Not Present Intact / Not Intact
Telephone:	Relinquished By:	Received By:	
Fax:	Relinquished By:	Received By:	



Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite
Green Bay, WI 54301

Project #:

WO#: 4092071



4092071

Client Name: REICourier: ☐ Fed Ex ☐ UPS ☒ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ noCustody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ noPacking Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used

NAType of Ice: ☒ Wet ☐ Blue ☐ Dry ☐ None☒ Samples on ice, cooling process has begun

Cooler Temperature

Uncorr: RC1

/Corr: _____

Biological Tissue is Frozen: ☐ yesTemp Blank Present: ☐ yes ☒ no☐ no

Person examining contents:

Date: 2/13/14Initials: WV

Temp should be above freezing to 6°C for all sample except Biota.

Frozen Biota Samples should be received ≤ 0°C.

Comments:

Chain of Custody Present:	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes ☐ No ☐ N/A	3.
Sampler Name & Signature on COC:	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time:	☒ Yes ☐ No ☐ N/A	5.
- VOA Samples frozen upon receipt	☐ Yes ☐ No	Date/Time: _____
Short Hold Time Analysis (<72hr):	☒ Yes ☐ No ☐ N/A	6.
Rush Turn Around Time Requested:	☐ Yes ☒ No ☐ N/A	7.
Sufficient Volume:	☒ Yes ☐ No ☐ N/A	8.
Correct Containers Used:	☒ Yes ☐ No ☐ N/A	9.
-Pace Containers Used:	☐ Yes ☐ No ☐ N/A	
-Pace IR Containers Used:	☐ Yes ☐ No ☒ N/A	
Containers Intact:	☒ Yes ☐ No ☐ N/A	10.
Filtered volume received for Dissolved tests	☒ Yes ☐ No ☐ N/A	11.
Sample Labels match COC:	☒ Yes ☐ No ☐ N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☒ Yes ☐ No ☐ N/A	13. ☒ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH + ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	☒ Yes ☐ No ☐ N/A	
Exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER: _____	☐ Yes ☐ No	Initial when completed <u>MU</u> Lab Std #ID of preservative _____ Date/Time: _____
Headspace in VOA Vials (>6mm):	☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present:	☐ Yes ☐ No ☒ N/A	15.
Trip Blank Custody Seals Present	☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments ☐

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: _____

2-13-14



Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

June 10, 2014

Ken Lassa
REI
4080 North 20th Avenue
Wausau, WI 54401

RE: Project: 6134B PHILLIPS PLATING
Pace Project No.: 4097323

Dear Ken Lassa:

Enclosed are the analytical results for sample(s) received by the laboratory on June 03, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Brian Basten
brian.basten@pacelabs.com
Project Manager

Enclosures



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Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4097323

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334

New York Certification #: 11888
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
US Dept of Agriculture #: S-76505
Wisconsin Certification #: 405132750

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4097323

Lab ID	Sample ID	Matrix	Date Collected	Date Received
4097323001	MW3	Water	06/02/14 11:30	06/03/14 09:34
4097323002	MW5	Water	06/02/14 12:00	06/03/14 09:34
4097323003	MW6	Water	06/02/14 15:00	06/03/14 09:34
4097323004	MW8	Water	06/02/14 12:30	06/03/14 09:34
4097323005	MW9	Water	06/02/14 14:30	06/03/14 09:34
4097323006	MW10	Water	06/02/14 13:30	06/03/14 09:34
4097323007	MW11	Water	06/02/14 13:00	06/03/14 09:34
4097323008	PZ1	Water	06/02/14 15:30	06/03/14 09:34

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SAMPLE ANALYTE COUNT

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4097323

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
4097323001	MW3	EPA 6010	MMZ	4	PASI-G
		EPA 6010	DLB	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4097323002	MW5	EPA 6010	MMZ	2	PASI-G
		EPA 6010	DLB	2	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4097323003	MW6	EPA 6010	MMZ	4	PASI-G
		EPA 6010	DLB	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4097323004	MW8	EPA 6010	MMZ	2	PASI-G
		EPA 6010	DLB	2	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4097323005	MW9	EPA 6010	MMZ	4	PASI-G
		EPA 6010	DLB	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4097323006	MW10	EPA 6010	MMZ	4	PASI-G
		EPA 6010	DLB	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4097323007	MW11	EPA 6010	MMZ	2	PASI-G
		EPA 6010	DLB	2	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
4097323008	PZ1	EPA 6010	MMZ	4	PASI-G
		EPA 6010	DLB	4	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		EPA 300.0	JCJ	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4097323

Sample: MW3 Lab ID: 4097323001 Collected: 06/02/14 11:30 Received: 06/03/14 09:34 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	34.7	ug/L	5.0	1.5	1	06/06/14 09:41	06/09/14 12:00	7440-47-3	
Iron	26300	ug/L	100	15.9	1	06/06/14 09:41	06/09/14 12:00	7439-89-6	
Manganese	493	ug/L	5.0	0.37	1	06/06/14 09:41	06/09/14 12:00	7439-96-5	
Nickel	25.6	ug/L	10.0	1.3	1	06/06/14 09:41	06/09/14 12:00	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	<2.1	ug/L	5.0	2.1	1		06/04/14 17:07	7440-47-3	
Iron, Dissolved	<12.9	ug/L	100	12.9	1		06/04/14 17:07	7439-89-6	
Manganese, Dissolved	2.1J	ug/L	5.0	1.4	1		06/04/14 17:07	7439-96-5	
Nickel, Dissolved	3.4J	ug/L	10.0	1.4	1		06/04/14 17:07	7440-02-0	
300.0 IC Anions									
Analytical Method: EPA 300.0									
Nitrate as N	5.0	mg/L	1.5	0.75	5		06/03/14 17:44	14797-55-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Sulfate	9.6	mg/L	4.0	2.0	1		06/03/14 14:27	14808-79-8	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	<0.0039	mg/L	0.020	0.0039	1		06/03/14 11:00	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4097323

Sample: MW5 Lab ID: 4097323002 Collected: 06/02/14 12:00 Received: 06/03/14 09:34 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	1700	ug/L	5.0	1.5	1	06/06/14 09:41	06/09/14 12:02	7440-47-3	
Nickel	1920	ug/L	10.0	1.3	1	06/06/14 09:41	06/09/14 12:02	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	188	ug/L	5.0	2.1	1		06/04/14 17:13	7440-47-3	
Nickel, Dissolved	3870	ug/L	10.0	1.4	1		06/04/14 17:13	7440-02-0	1q
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	0.39	mg/L	0.020	0.0039	1		06/03/14 11:00	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4097323

Sample: MW6		Lab ID: 4097323003	Collected: 06/02/14 15:00	Received: 06/03/14 09:34	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Chromium	4290	ug/L	5.0	1.5	1	06/06/14 09:41	06/09/14 12:08	7440-47-3	
Iron	32600	ug/L	100	15.9	1	06/06/14 09:41	06/09/14 12:08	7439-89-6	
Manganese	1390	ug/L	5.0	0.37	1	06/06/14 09:41	06/09/14 12:08	7439-96-5	
Nickel	7360	ug/L	10.0	1.3	1	06/06/14 09:41	06/09/14 12:08	7440-02-0	
6010 MET ICP, Dissolved		Analytical Method: EPA 6010							
Chromium, Dissolved	844	ug/L	5.0	2.1	1		06/04/14 17:15	7440-47-3	
Iron, Dissolved	<12.9	ug/L	100	12.9	1		06/04/14 17:15	7439-89-6	
Manganese, Dissolved	783	ug/L	5.0	1.4	1		06/04/14 17:15	7439-96-5	
Nickel, Dissolved	6870	ug/L	10.0	1.4	1		06/04/14 17:15	7440-02-0	
300.0 IC Anions		Analytical Method: EPA 300.0							
Nitrate as N	10.9	mg/L	3.0	1.5	10		06/03/14 18:41	14797-55-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Sulfate	195	mg/L	40.0	20.0	10		06/03/14 18:41	14808-79-8	
Chromium, Hexavalent		Analytical Method: SM 3500-Cr B (Online)							
Chromium, Hexavalent	1.1	mg/L	0.10	0.019	5		06/03/14 11:00	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4097323

Sample: MW8 Lab ID: 4097323004 Collected: 06/02/14 12:30 Received: 06/03/14 09:34 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	2220	ug/L	5.0	1.5	1	06/06/14 09:41	06/09/14 12:11	7440-47-3	
Nickel	2070	ug/L	10.0	1.3	1	06/06/14 09:41	06/09/14 12:11	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	2030	ug/L	5.0	2.1	1		06/04/14 17:17	7440-47-3	
Nickel, Dissolved	1710	ug/L	10.0	1.4	1		06/04/14 17:17	7440-02-0	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	1.8	mg/L	0.20	0.039	10		06/03/14 11:00	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4097323

Sample: MW9		Lab ID: 4097323005	Collected: 06/02/14 14:30	Received: 06/03/14 09:34	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Chromium	1350	ug/L	5.0	1.5	1	06/06/14 09:41	06/09/14 12:13	7440-47-3	
Iron	62200	ug/L	100	15.9	1	06/06/14 09:41	06/09/14 12:13	7439-89-6	
Manganese	1420	ug/L	5.0	0.37	1	06/06/14 09:41	06/09/14 12:13	7439-96-5	
Nickel	1430	ug/L	10.0	1.3	1	06/06/14 09:41	06/09/14 12:13	7440-02-0	
6010 MET ICP, Dissolved		Analytical Method: EPA 6010							
Chromium, Dissolved	279	ug/L	5.0	2.1	1		06/04/14 17:20	7440-47-3	
Iron, Dissolved	28.2J	ug/L	100	12.9	1		06/04/14 17:20	7439-89-6	
Manganese, Dissolved	334	ug/L	5.0	1.4	1		06/04/14 17:20	7439-96-5	
Nickel, Dissolved	1290	ug/L	10.0	1.4	1		06/04/14 17:20	7440-02-0	
300.0 IC Anions		Analytical Method: EPA 300.0							
Nitrate as N	8.4	mg/L	1.5	0.75	5		06/03/14 18:49	14797-55-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Sulfate	79.6	mg/L	20.0	10.0	5		06/03/14 18:49	14808-79-8	
Chromium, Hexavalent		Analytical Method: SM 3500-Cr B (Online)							
Chromium, Hexavalent	0.27	mg/L	0.050	0.0097	2.5		06/03/14 11:00	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4097323

Sample: MW10 Lab ID: 4097323006 Collected: 06/02/14 13:30 Received: 06/03/14 09:34 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	318	ug/L	5.0	1.5	1	06/06/14 09:41	06/09/14 12:15	7440-47-3	
Iron	23200	ug/L	100	15.9	1	06/06/14 09:41	06/09/14 12:15	7439-89-6	
Manganese	841	ug/L	5.0	0.37	1	06/06/14 09:41	06/09/14 12:15	7439-96-5	
Nickel	158	ug/L	10.0	1.3	1	06/06/14 09:41	06/09/14 12:15	7440-02-0	
6010 MET ICP, Dissolved Analytical Method: EPA 6010									
Chromium, Dissolved	346	ug/L	5.0	2.1	1		06/04/14 17:22	7440-47-3	2q
Iron, Dissolved	32.5J	ug/L	100	12.9	1		06/04/14 17:22	7439-89-6	
Manganese, Dissolved	6.8	ug/L	5.0	1.4	1		06/04/14 17:22	7439-96-5	
Nickel, Dissolved	110	ug/L	10.0	1.4	1		06/04/14 17:22	7440-02-0	
300.0 IC Anions Analytical Method: EPA 300.0									
Nitrate as N	2.6	mg/L	0.30	0.15	1		06/03/14 15:08	14797-55-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Sulfate	52.0	mg/L	4.0	2.0	1		06/03/14 15:08	14808-79-8	
Chromium, Hexavalent Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	0.26	mg/L	0.020	0.0039	1		06/03/14 11:00	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4097323

Sample: MW11		Lab ID: 4097323007	Collected: 06/02/14 13:00	Received: 06/03/14 09:34	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Chromium	63.1 ug/L		5.0	1.5	1	06/06/14 09:41	06/09/14 12:17	7440-47-3	
Nickel	42.3 ug/L		10.0	1.3	1	06/06/14 09:41	06/09/14 12:17	7440-02-0	
6010 MET ICP, Dissolved		Analytical Method: EPA 6010							
Chromium, Dissolved	<2.1 ug/L		5.0	2.1	1		06/04/14 17:29	7440-47-3	
Nickel, Dissolved	<1.4 ug/L		10.0	1.4	1		06/04/14 17:29	7440-02-0	
Chromium, Hexavalent		Analytical Method: SM 3500-Cr B (Online)							
Chromium, Hexavalent	<0.019 mg/L		0.10	0.019	5		06/03/14 11:00	18540-29-9	D3

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4097323

Sample: PZ1 Lab ID: 4097323008 Collected: 06/02/14 15:30 Received: 06/03/14 09:34 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	1520	ug/L	5.0	1.5	1	06/06/14 09:41	06/09/14 12:19	7440-47-3	
Iron	104000	ug/L	100	15.9	1	06/06/14 09:41	06/09/14 12:19	7439-89-6	
Manganese	1320	ug/L	5.0	0.37	1	06/06/14 09:41	06/09/14 12:19	7439-96-5	
Nickel	87.0	ug/L	10.0	1.3	1	06/06/14 09:41	06/09/14 12:19	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	652	ug/L	5.0	2.1	1		06/04/14 17:31	7440-47-3	
Iron, Dissolved	<12.9	ug/L	100	12.9	1		06/04/14 17:31	7439-89-6	
Manganese, Dissolved	45.0	ug/L	5.0	1.4	1		06/04/14 17:31	7439-96-5	
Nickel, Dissolved	3.1J	ug/L	10.0	1.4	1		06/04/14 17:31	7440-02-0	
300.0 IC Anions									
Analytical Method: EPA 300.0									
Nitrate as N	3.1	mg/L	0.30	0.15	1		06/03/14 15:17	14797-55-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Sulfate	51.9	mg/L	4.0	2.0	1		06/03/14 15:17	14808-79-8	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	0.41	mg/L	0.10	0.019	5		06/03/14 11:00	18540-29-9	

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QUALITY CONTROL DATA

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4097323

QC Batch: ICP/9127 Analysis Method: EPA 6010
QC Batch Method: EPA 6010 Analysis Description: ICP Metals, Trace, Dissolved
Associated Lab Samples: 4097323001, 4097323002, 4097323003, 4097323004, 4097323005, 4097323006, 4097323007, 4097323008

METHOD BLANK: 984978 Matrix: Water
Associated Lab Samples: 4097323001, 4097323002, 4097323003, 4097323004, 4097323005, 4097323006, 4097323007, 4097323008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Dissolved	ug/L	<2.1	5.0	06/04/14 17:02	
Iron, Dissolved	ug/L	<12.9	100	06/04/14 17:02	
Manganese, Dissolved	ug/L	<1.4	5.0	06/04/14 17:02	
Nickel, Dissolved	ug/L	<1.4	10.0	06/04/14 17:02	

LABORATORY CONTROL SAMPLE: 984979

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Dissolved	ug/L	500	488	98	80-120	
Iron, Dissolved	ug/L	5000	4850	97	80-120	
Manganese, Dissolved	ug/L	500	485	97	80-120	
Nickel, Dissolved	ug/L	500	484	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 984980 984981

Parameter	Units	4097323001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	<2.1	500	500	498	493	99	98	75-125	1	20	
Iron, Dissolved	ug/L	<12.9	5000	5000	4900	4820	98	96	75-125	2	20	
Manganese, Dissolved	ug/L	2.1J	500	500	493	481	98	96	75-125	2	20	
Nickel, Dissolved	ug/L	3.4J	500	500	501	502	99	100	75-125	0	20	

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QUALITY CONTROL DATA

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4097323

QC Batch: MPRP/10341 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 4097323001, 4097323002, 4097323003, 4097323004, 4097323005, 4097323006, 4097323007, 4097323008

METHOD BLANK: 986206 Matrix: Water
Associated Lab Samples: 4097323001, 4097323002, 4097323003, 4097323004, 4097323005, 4097323006, 4097323007, 4097323008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	ug/L	<1.5	5.0	06/09/14 11:47	
Iron	ug/L	19.3J	100	06/09/14 11:47	
Manganese	ug/L	<0.37	5.0	06/09/14 11:47	
Nickel	ug/L	<1.3	10.0	06/09/14 11:47	

LABORATORY CONTROL SAMPLE: 986207

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	ug/L	500	492	98	80-120	
Iron	ug/L	5000	5010	100	80-120	
Manganese	ug/L	500	481	96	80-120	
Nickel	ug/L	500	492	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 986208 986209

Parameter	Units	4097378001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Chromium	ug/L	12.3	500	500	508	511	99	100	75-125	1	20
Iron	ug/L	8320	5000	5000	13500	13500	104	103	75-125	1	20
Manganese	ug/L	109	500	500	600	607	98	100	75-125	1	20
Nickel	ug/L	14.6	500	500	504	503	98	98	75-125	0	20

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QUALITY CONTROL DATA

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4097323

QC Batch: WETA/23517 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 4097323001, 4097323003, 4097323005, 4097323006, 4097323008

METHOD BLANK: 984320 Matrix: Water
Associated Lab Samples: 4097323001, 4097323003, 4097323005, 4097323006, 4097323008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrate as N	mg/L	<0.15	0.30	06/03/14 15:33	
Sulfate	mg/L	<2.0	4.0	06/03/14 15:33	

LABORATORY CONTROL SAMPLE: 984321

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	1.5	1.4	94	90-110	
Sulfate	mg/L	20	19.0	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 984322 984323

Parameter	Units	4097323001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Nitrate as N	mg/L	5.0	7.5	7.5	12.3	12.4	97	97	90-110	0	20
Sulfate	mg/L	9.6	20	20	28.8	28.8	96	96	90-110	0	20

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6134B PHILLIPS PLATING
Pace Project No.: 4097323

QC Batch: WETA/23519 Analysis Method: SM 3500-Cr B (Online)
QC Batch Method: SM 3500-Cr B (Online) Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 4097323001, 4097323002, 4097323003, 4097323004, 4097323005, 4097323006, 4097323007, 4097323008

METHOD BLANK: 984346 Matrix: Water
Associated Lab Samples: 4097323001, 4097323002, 4097323003, 4097323004, 4097323005, 4097323006, 4097323007, 4097323008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	<0.0039	0.020	06/03/14 11:00	

LABORATORY CONTROL SAMPLE: 984347

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.3	0.29	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 984348 984349

Parameter	Units	4097323001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Chromium, Hexavalent	mg/L	<0.0039	.3	.3	0.31	0.30	102	101	90-110	1	20

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4097323

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

ANALYTE QUALIFIERS

1q Dissolved analyte or filtered analyte greater than total analyte: analysis failed QC based on precision criteria. Results confirmed by sample analysis directly from sample containers.

2q Dissolved analyte or filtered analyte greater than total analyte: analysis passed QC based on precision criteria.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 6134B PHILLIPS PLATING

Pace Project No.: 4097323

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
4097323001	MW3	EPA 3010	MPRP/10341	EPA 6010	ICP/9136
4097323002	MW5	EPA 3010	MPRP/10341	EPA 6010	ICP/9136
4097323003	MW6	EPA 3010	MPRP/10341	EPA 6010	ICP/9136
4097323004	MW8	EPA 3010	MPRP/10341	EPA 6010	ICP/9136
4097323005	MW9	EPA 3010	MPRP/10341	EPA 6010	ICP/9136
4097323006	MW10	EPA 3010	MPRP/10341	EPA 6010	ICP/9136
4097323007	MW11	EPA 3010	MPRP/10341	EPA 6010	ICP/9136
4097323008	PZ1	EPA 3010	MPRP/10341	EPA 6010	ICP/9136
4097323001	MW3	EPA 6010	ICP/9127		
4097323002	MW5	EPA 6010	ICP/9127		
4097323003	MW6	EPA 6010	ICP/9127		
4097323004	MW8	EPA 6010	ICP/9127		
4097323005	MW9	EPA 6010	ICP/9127		
4097323006	MW10	EPA 6010	ICP/9127		
4097323007	MW11	EPA 6010	ICP/9127		
4097323008	PZ1	EPA 6010	ICP/9127		
4097323001	MW3	EPA 300.0	WETA/23517		
4097323003	MW6	EPA 300.0	WETA/23517		
4097323005	MW9	EPA 300.0	WETA/23517		
4097323006	MW10	EPA 300.0	WETA/23517		
4097323008	PZ1	EPA 300.0	WETA/23517		
4097323001	MW3	EPA 300.0	WETA/23517		
4097323003	MW6	EPA 300.0	WETA/23517		
4097323005	MW9	EPA 300.0	WETA/23517		
4097323006	MW10	EPA 300.0	WETA/23517		
4097323008	PZ1	EPA 300.0	WETA/23517		
4097323001	MW3	SM 3500-Cr B (Online)	WETA/23519		
4097323002	MW5	SM 3500-Cr B (Online)	WETA/23519		
4097323003	MW6	SM 3500-Cr B (Online)	WETA/23519		
4097323004	MW8	SM 3500-Cr B (Online)	WETA/23519		
4097323005	MW9	SM 3500-Cr B (Online)	WETA/23519		
4097323006	MW10	SM 3500-Cr B (Online)	WETA/23519		
4097323007	MW11	SM 3500-Cr B (Online)	WETA/23519		
4097323008	PZ1	SM 3500-Cr B (Online)	WETA/23519		

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CHAIN OF CUSTODY

*Preservation Codes
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?
(YES/NO)PRESERVATION
(CODE)*

Y/N	Y	N	N	Y	N	N	N
Pick Letter	D	D	A	D	D	A	A
Analyses Requested	Total Cr, Ni (Filtered)	Total Cr, Ni (Unfiltered)	Hex Cr	Total Cr, Ni, Mn, Fe (Filtered)	Total Cr, Ni, Mn, Fe (Unfiltered)	Nitrate	Sulfate

Quote #:	4097323	
Mail To Contact:	REI	
Mail To Company:	Ken Lassa	
Mail To Address:	4080 N 20th Ave Wausau WI 54401	
Invoice To Contact:	SAA	
Invoice To Company:		
Invoice To Address:		
Invoice To Phone:		
CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
3-250ml P100		

(Please Print Clearly)

Company Name: REI

Branch/Location: Wausau

Project Contact: Ken Lassa

Phone: 715-675-9784

Project Number: 6134 B

Project Name: Phillips Plating

Project State: WI

Sampled By (Print): Jared Szwed

Sampled By (Sign): Jared Szwed

PO #:

Regulatory Program:

Data Package Options
(billable)

- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD

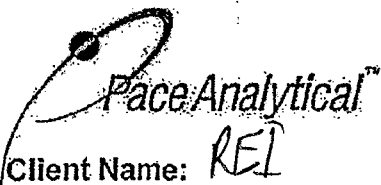
- ☐ On your sample
(billable)
- ☐ NOT needed on
your sample

Matrix Codes

- A = Air W = Water
 B = Biota DW = Drinking Water
 C = Charcoal GW = Ground Water
 O = Oil SW = Surface Water
 S = Soil WW = Waste Water
 SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
001	MW3	6/2/14	11:30	
002	MW5		12:00	
003	MW6		3:00	
004	MW8		12:30	
005	MW9		2:30	
006	MW10		1:30	
007	MW11		1:00	
008	PZ1		3:30	

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge) Date Needed:	Relinquished By: <u>Jared Szwed - REI</u> Date/Time: <u>6/3/14 9:34 AM</u>	Received By: <u>Shawn Lee</u> Date/Time: <u>6/3/14 0934</u>	PACE Project No. 4097323 Receipt Temp = <u>ROT</u> °C Sample Receipt pH <u>OK / Adjusted</u> Cooler Custody Seal Present / Not Present Intact / Not Intact
Transmit Prelim Rush Results by (complete what you want):	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
Email #1:	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
Email #2:	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
Telephone:	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
Fax:	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
Samples on HOLD are subject to special pricing and release of liability	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	



Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #:

WO#: 4097323

Client Name: REICourier: ☐ Fed Ex ☐ UPS ☒ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ noCustody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ noPacking Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other _____Thermometer Used NAType of Ice: ☒ Wet ☐ Blue ☐ Dry ☐ None☒ Samples on ice, cooling process has begun

Cooler Temperature

Uncorr: _____

/Corr: REIBiological Tissue is Frozen: ☐ yesTemp Blank Present: ☐ yes ☒ no☐ no

Person examining contents:

Date: 6/3/14Initials: SB

Temp should be above freezing to 6°C for all sample except Biota.

Frozen Biota Samples should be received ≤ 0°C.

Comments:

Chain of Custody Present:	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes ☐ No ☐ N/A	3.
Sampler Name & Signature on COC:	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time:	☒ Yes ☐ No ☐ N/A	5.
- VOA Samples frozen upon receipt	☐ Yes ☒ No	Date/Time: _____
Short Hold Time Analysis (<72hr):	☒ Yes ☐ No ☐ N/A	6. <u>Hex Cr, Nitrate SB 6/3/14</u>
Rush Turn Around Time Requested:	☐ Yes ☒ No ☐ N/A	7.
Sufficient Volume:	☒ Yes ☐ No ☐ N/A	8.
Correct Containers Used:	☒ Yes ☐ No ☐ N/A	9.
-Pace Containers Used:	☒ Yes ☐ No ☐ N/A	
-Pace IR Containers Used:	☐ Yes ☐ No ☒ N/A	
Containers Intact:	☒ Yes ☐ No ☐ N/A	10.
Filtered volume received for Dissolved tests	☒ Yes ☐ No ☐ N/A	11.
Sample Labels match COC:	☒ Yes ☐ No ☐ N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☒ Yes ☐ No ☐ N/A	13. ☒ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH + ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4, NaOH + ZnAct ≥ 9, NaOH ≥ 12)	☒ Yes ☐ No ☐ N/A	
exceptions: VOA, Coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER: _____	☐ Yes ☒ No	Initial when completed <u>SB</u> Lab Std #/ID of preservative _____ Date/Time: _____
Headspace in VOA Vials (>6mm):	☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present:	☐ Yes ☐ No ☒ N/A	15.
Trip Blank Custody Seals Present	☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments ☐

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: 6-3-14

August 14, 2014

Ken Lassa
REI
4080 North 20th Avenue
Wausau, WI 54401

RE: Project: 6134B PHILLIPS PLATING
Pace Project No.: 40100996

Dear Ken Lassa:

Enclosed are the analytical results for sample(s) received by the laboratory on August 06, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Brian Basten
brian.basten@pacelabs.com
Project Manager

Enclosures



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1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 6134B PHILLIPS PLATING
Pace Project No.: 40100996

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334

New York Certification #: 11888
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
US Dept of Agriculture #: S-76505
Wisconsin Certification #: 405132750

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SAMPLE SUMMARY

Project: 6134B PHILLIPS PLATING
Pace Project No.: 40100996

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40100996001	MW3	Water	08/05/14 11:00	08/06/14 13:00
40100996002	MW5	Water	08/05/14 12:00	08/06/14 13:00
40100996003	MW6	Water	08/05/14 14:30	08/06/14 13:00
40100996004	MW8	Water	08/05/14 11:30	08/06/14 13:00
40100996005	MW9	Water	08/05/14 14:00	08/06/14 13:00
40100996006	MW10	Water	08/05/14 13:30	08/06/14 13:00
40100996007	MW11	Water	08/05/14 12:30	08/06/14 13:00
40100996008	PZ1	Water	08/05/14 15:00	08/06/14 13:00

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SAMPLE ANALYTE COUNT

Project: 6134B PHILLIPS PLATING

Pace Project No.: 40100996

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40100996001	MW3	EPA 6010	MMZ	4	PASI-G
		EPA 6010	MMZ	4	PASI-G
		EPA 300.0	HMB	1	PASI-G
		EPA 300.0	HMB	1	PASI-G
		SM 3500-Cr B (Online)	DDY	1	PASI-G
40100996002	MW5	EPA 6010	MMZ	2	PASI-G
		EPA 6010	MMZ	2	PASI-G
		SM 3500-Cr B (Online)	DDY	1	PASI-G
40100996003	MW6	EPA 6010	MMZ	4	PASI-G
		EPA 6010	MMZ	4	PASI-G
		EPA 300.0	HMB	1	PASI-G
		EPA 300.0	HMB	1	PASI-G
		SM 3500-Cr B (Online)	DDY	1	PASI-G
40100996004	MW8	EPA 6010	MMZ	2	PASI-G
		EPA 6010	MMZ	2	PASI-G
		SM 3500-Cr B (Online)	DDY	1	PASI-G
40100996005	MW9	EPA 6010	MMZ	4	PASI-G
		EPA 6010	MMZ	4	PASI-G
		EPA 300.0	HMB	1	PASI-G
		EPA 300.0	HMB	1	PASI-G
		SM 3500-Cr B (Online)	DDY	1	PASI-G
40100996006	MW10	EPA 6010	MMZ	4	PASI-G
		EPA 6010	MMZ	4	PASI-G
		EPA 300.0	HMB	1	PASI-G
		EPA 300.0	HMB	1	PASI-G
		SM 3500-Cr B (Online)	DDY	1	PASI-G
40100996007	MW11	EPA 6010	MMZ	2	PASI-G
		EPA 6010	MMZ	2	PASI-G
		SM 3500-Cr B (Online)	DDY	1	PASI-G
40100996008	PZ1	EPA 6010	MMZ	4	PASI-G
		EPA 6010	MMZ	4	PASI-G
		EPA 300.0	HMB	1	PASI-G
		EPA 300.0	HMB	1	PASI-G
		SM 3500-Cr B (Online)	DDY	1	PASI-G

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING
Pace Project No.: 40100996

Sample: MW3		Lab ID: 40100996001		Collected: 08/05/14 11:00		Received: 08/06/14 13:00		Matrix: Water	
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	16.1	ug/L	5.0	1.5	1	08/07/14 10:24	08/07/14 16:22	7440-47-3	
Iron	10900	ug/L	100	15.9	1	08/07/14 10:24	08/07/14 16:22	7439-89-6	
Manganese	216	ug/L	5.0	0.37	1	08/07/14 10:24	08/07/14 16:22	7439-96-5	
Nickel	12.8	ug/L	10.0	1.3	1	08/07/14 10:24	08/07/14 16:22	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	<2.1	ug/L	5.0	2.1	1		08/07/14 14:02	7440-47-3	
Iron, Dissolved	16.9J	ug/L	100	12.9	1		08/07/14 14:02	7439-89-6	
Manganese, Dissolved	<1.4	ug/L	5.0	1.4	1		08/07/14 14:02	7439-96-5	
Nickel, Dissolved	1.8J	ug/L	10.0	1.4	1		08/07/14 14:02	7440-02-0	
300.0 IC Anions									
Analytical Method: EPA 300.0									
Nitrate as N	2.1	mg/L	0.30	0.15	1		08/06/14 19:15	14797-55-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Sulfate	10.7	mg/L	4.0	2.0	1		08/06/14 19:15	14808-79-8	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	<0.0097	mg/L	0.050	0.0097	2.5		08/06/14 13:25	18540-29-9	D3,H3

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 40100996

Sample: MW5 Lab ID: 40100996002 Collected: 08/05/14 12:00 Received: 08/06/14 13:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	1380	ug/L	5.0	1.5	1	08/07/14 10:24	08/07/14 16:24	7440-47-3	
Nickel	952	ug/L	10.0	1.3	1	08/07/14 10:24	08/07/14 16:24	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	360	ug/L	5.0	2.1	1		08/07/14 14:04	7440-47-3	
Nickel, Dissolved	267	ug/L	10.0	1.4	1		08/07/14 14:04	7440-02-0	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	0.24	mg/L	0.20	0.039	10		08/06/14 13:25	18540-29-9	H3

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 40100996

Sample: MW6 Lab ID: 40100996003 Collected: 08/05/14 14:30 Received: 08/06/14 13:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	8910	ug/L	5.0	1.5	1	08/07/14 10:24	08/07/14 16:26	7440-47-3	
Iron	31600	ug/L	100	15.9	1	08/07/14 10:24	08/07/14 16:26	7439-89-6	
Manganese	1720	ug/L	5.0	0.37	1	08/07/14 10:24	08/07/14 16:26	7439-96-5	
Nickel	17600	ug/L	10.0	1.3	1	08/07/14 10:24	08/07/14 16:26	7440-02-0	
6010 MET ICP, Dissolved Analytical Method: EPA 6010									
Chromium, Dissolved	6230	ug/L	5.0	2.1	1		08/07/14 14:06	7440-47-3	
Iron, Dissolved	<12.9	ug/L	100	12.9	1		08/07/14 14:06	7439-89-6	
Manganese, Dissolved	1090	ug/L	5.0	1.4	1		08/07/14 14:06	7439-96-5	
Nickel, Dissolved	17500	ug/L	10.0	1.4	1		08/07/14 14:06	7440-02-0	
300.0 IC Anions Analytical Method: EPA 300.0									
Nitrate as N	12.0	mg/L	3.0	1.5	10		08/06/14 21:09	14797-55-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Sulfate	266	mg/L	40.0	20.0	10		08/06/14 21:09	14808-79-8	
Chromium, Hexavalent Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	5.9	mg/L	0.50	0.097	25		08/06/14 13:25	18540-29-9	

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1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING
Pace Project No.: 40100996

Sample: MW8 Lab ID: 40100996004 Collected: 08/05/14 11:30 Received: 08/06/14 13:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	3420	ug/L	5.0	1.5	1	08/07/14 10:24	08/07/14 16:28	7440-47-3	
Nickel	3700	ug/L	10.0	1.3	1	08/07/14 10:24	08/07/14 16:28	7440-02-0	
6010 MET ICP, Dissolved Analytical Method: EPA 6010									
Chromium, Dissolved	3320	ug/L	5.0	2.1	1		08/07/14 14:08	7440-47-3	
Nickel, Dissolved	3420	ug/L	10.0	1.4	1		08/07/14 14:08	7440-02-0	
Chromium, Hexavalent Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	3.3	mg/L	0.50	0.097	25		08/06/14 13:25	18540-29-9	H3

REPORT OF LABORATORY ANALYSIS

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Date: 08/14/2014 10:33 AM

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 40100996

Sample: MW9 Lab ID: 40100996005 Collected: 08/05/14 14:00 Received: 08/06/14 13:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	2370	ug/L	5.0	1.5	1	08/07/14 10:24	08/07/14 16:35	7440-47-3	
Iron	20100	ug/L	100	15.9	1	08/07/14 10:24	08/07/14 16:35	7439-89-6	
Manganese	518	ug/L	5.0	0.37	1	08/07/14 10:24	08/07/14 16:35	7439-96-5	
Nickel	366	ug/L	10.0	1.3	1	08/07/14 10:24	08/07/14 16:35	7440-02-0	
6010 MET ICP, Dissolved Analytical Method: EPA 6010									
Chromium, Dissolved	2770	ug/L	5.0	2.1	1		08/07/14 14:11	7440-47-3	1q
Iron, Dissolved	16.4J	ug/L	100	12.9	1		08/07/14 14:11	7439-89-6	
Manganese, Dissolved	87.4	ug/L	5.0	1.4	1		08/07/14 14:11	7439-96-5	
Nickel, Dissolved	292	ug/L	10.0	1.4	1		08/07/14 14:11	7440-02-0	
300.0 IC Anions Analytical Method: EPA 300.0									
Nitrate as N	7.7	mg/L	3.0	1.5	10		08/06/14 20:28	14797-55-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Sulfate	91.9	mg/L	40.0	20.0	10		08/06/14 20:28	14808-79-8	
Chromium, Hexavalent Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	1.6	mg/L	0.10	0.019	5		08/06/14 13:25	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING
Pace Project No.: 40100996

Sample: MW10 Lab ID: 40100996006 Collected: 08/05/14 13:30 Received: 08/06/14 13:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	493	ug/L	5.0	1.5	1	08/07/14 10:24	08/07/14 16:37	7440-47-3	
Iron	16700	ug/L	100	15.9	1	08/07/14 10:24	08/07/14 16:37	7439-89-6	
Manganese	698	ug/L	5.0	0.37	1	08/07/14 10:24	08/07/14 16:37	7439-96-5	
Nickel	215	ug/L	10.0	1.3	1	08/07/14 10:24	08/07/14 16:37	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	172	ug/L	5.0	2.1	1		08/07/14 14:13	7440-47-3	
Iron, Dissolved	27.1J	ug/L	100	12.9	1		08/07/14 14:13	7439-89-6	
Manganese, Dissolved	3.5J	ug/L	5.0	1.4	1		08/07/14 14:13	7439-96-5	
Nickel, Dissolved	27.4	ug/L	10.0	1.4	1		08/07/14 14:13	7440-02-0	
300.0 IC Anions									
Analytical Method: EPA 300.0									
Nitrate as N	2.4	mg/L	0.30	0.15	1		08/06/14 20:20	14797-55-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Sulfate	36.7	mg/L	4.0	2.0	1		08/06/14 20:20	14808-79-8	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	0.096	mg/L	0.050	0.0097	2.5		08/06/14 13:25	18540-29-9	

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING

Pace Project No.: 40100996

Sample: MW11 Lab ID: 40100996007 Collected: 08/05/14 12:30 Received: 08/06/14 13:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	78.9 ug/L		5.0	1.5	1	08/07/14 10:24	08/07/14 16:39	7440-47-3	
Nickel	52.6 ug/L		10.0	1.3	1	08/07/14 10:24	08/07/14 16:39	7440-02-0	
6010 MET ICP, Dissolved									
Analytical Method: EPA 6010									
Chromium, Dissolved	<2.1 ug/L		5.0	2.1	1		08/07/14 14:15	7440-47-3	
Nickel, Dissolved	<1.4 ug/L		10.0	1.4	1		08/07/14 14:15	7440-02-0	
Chromium, Hexavalent									
Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	<0.039 mg/L		0.20	0.039	10		08/06/14 13:25	18540-29-9	D3,H3

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6134B PHILLIPS PLATING
Pace Project No.: 40100996

Sample: PZ1 Lab ID: 40100996008 Collected: 08/05/14 15:00 Received: 08/06/14 13:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Chromium	1760 ug/L		5.0	1.5	1	08/07/14 10:24	08/07/14 16:41	7440-47-3	
Iron	14900 ug/L		100	15.9	1	08/07/14 10:24	08/07/14 16:41	7439-89-6	
Manganese	179 ug/L		5.0	0.37	1	08/07/14 10:24	08/07/14 16:41	7439-96-5	
Nickel	14.9 ug/L		10.0	1.3	1	08/07/14 10:24	08/07/14 16:41	7440-02-0	
6010 MET ICP, Dissolved Analytical Method: EPA 6010									
Chromium, Dissolved	1640 ug/L		5.0	2.1	1		08/07/14 14:22	7440-47-3	
Iron, Dissolved	<12.9 ug/L		100	12.9	1		08/07/14 14:22	7439-89-6	
Manganese, Dissolved	14.9 ug/L		5.0	1.4	1		08/07/14 14:22	7439-96-5	
Nickel, Dissolved	2.9J ug/L		10.0	1.4	1		08/07/14 14:22	7440-02-0	
300.0 IC Anions Analytical Method: EPA 300.0									
Nitrate as N	3.8 mg/L		0.30	0.15	1		08/06/14 21:50	14797-55-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Sulfate	49.7 mg/L		4.0	2.0	1		08/06/14 21:50	14808-79-8	
Chromium, Hexavalent Analytical Method: SM 3500-Cr B (Online)									
Chromium, Hexavalent	1.6 mg/L		0.20	0.039	10		08/06/14 13:25	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6134B PHILLIPS PLATING
Pace Project No.: 40100996

QC Batch: ICP/9402 Analysis Method: EPA 6010
QC Batch Method: EPA 6010 Analysis Description: ICP Metals, Trace, Dissolved
Associated Lab Samples: 40100996001, 40100996002, 40100996003, 40100996004, 40100996005, 40100996006, 40100996007, 40100996008

METHOD BLANK: 1020379 Matrix: Water
Associated Lab Samples: 40100996001, 40100996002, 40100996003, 40100996004, 40100996005, 40100996006, 40100996007, 40100996008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Dissolved	ug/L	<2.1	5.0	08/07/14 13:34	
Iron, Dissolved	ug/L	<12.9	100	08/07/14 13:34	
Manganese, Dissolved	ug/L	<1.4	5.0	08/07/14 13:34	
Nickel, Dissolved	ug/L	<1.4	10.0	08/07/14 13:34	

LABORATORY CONTROL SAMPLE: 1020380

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Dissolved	ug/L	500	493	99	80-120	
Iron, Dissolved	ug/L	5000	4860	97	80-120	
Manganese, Dissolved	ug/L	500	486	97	80-120	
Nickel, Dissolved	ug/L	500	496	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1020381 1020382

Parameter	Units	40100757001		MS		MSD		MS		MSD		% Rec		Max		Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	% Rec	Limits	RPD	RPD	
Chromium, Dissolved	ug/L	<2.1	500	500	500	477	480	95	96	75-125	1	20				
Iron, Dissolved	ug/L	628	5000	5000	5000	5320	5380	94	95	75-125	1	20				
Manganese, Dissolved	ug/L	471	500	500	500	933	938	92	93	75-125	1	20				
Nickel, Dissolved	ug/L	5.1J	500	500	500	486	488	96	96	75-125	0	20				

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6134B PHILLIPS PLATING
Pace Project No.: 40100996

QC Batch: MPRP/10627 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 40100996001, 40100996002, 40100996003, 40100996004, 40100996005, 40100996006, 40100996007, 40100996008

METHOD BLANK: 1020225 Matrix: Water
Associated Lab Samples: 40100996001, 40100996002, 40100996003, 40100996004, 40100996005, 40100996006, 40100996007, 40100996008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	ug/L	<1.5	5.0	08/07/14 15:47	
Iron	ug/L	<15.9	100	08/07/14 15:47	
Manganese	ug/L	<0.37	5.0	08/07/14 15:47	
Nickel	ug/L	<1.3	10.0	08/07/14 15:47	

LABORATORY CONTROL SAMPLE: 1020226

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	ug/L	500	500	100	80-120	
Iron	ug/L	5000	4940	99	80-120	
Manganese	ug/L	500	501	100	80-120	
Nickel	ug/L	500	515	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1020227 1020228

Parameter	Units	40101007001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	ug/L	<1.5	500	500	500	506	100	101	75-125	1	20	
Iron	ug/L	51.9J	5000	5000	4980	5000	99	99	75-125	0	20	
Manganese	ug/L	17.4	500	500	517	526	100	102	75-125	2	20	
Nickel	ug/L	2.7J	500	500	509	515	101	102	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6134B PHILLIPS PLATING
Pace Project No.: 40100996

QC Batch: WETA/24534 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40100996001, 40100996003, 40100996005, 40100996006, 40100996008

METHOD BLANK: 1019848 Matrix: Water
Associated Lab Samples: 40100996001, 40100996003, 40100996005, 40100996006, 40100996008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrate as N	mg/L	<0.15	0.30	08/06/14 18:18	
Sulfate	mg/L	<2.0	4.0	08/06/14 18:18	

LABORATORY CONTROL SAMPLE: 1019849

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	1.5	1.5	99	90-110	
Sulfate	mg/L	20	19.3	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1019850 1019851

Parameter	Units	40100956001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Nitrate as N	mg/L	<200	1500	1500	1540	1550	103	103	90-110	1	20
Sulfate	mg/L	<2000	20000	20000	20300	20500	92	93	90-110	1	20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1019852 1019853

Parameter	Units	40100996003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Nitrate as N	mg/L	12.0	15	15	27.2	27.1	101	101	90-110	0	20
Sulfate	mg/L	266	200	200	476	473	105	104	90-110	0	20

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QUALITY CONTROL DATA

Project: 6134B PHILLIPS PLATING
Pace Project No.: 40100996

QC Batch: WETA/24543 Analysis Method: SM 3500-Cr B (Online)
QC Batch Method: SM 3500-Cr B (Online) Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 40100996001, 40100996002, 40100996003, 40100996004, 40100996005, 40100996006, 40100996007, 40100996008

METHOD BLANK: 1020368 Matrix: Water
Associated Lab Samples: 40100996001, 40100996002, 40100996003, 40100996004, 40100996005, 40100996006, 40100996007, 40100996008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	<0.0039	0.020	08/06/14 10:10	

LABORATORY CONTROL SAMPLE: 1020369

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.3	0.32	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1020372 1020373

Parameter	Units	40101013002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Chromium, Hexavalent	mg/L	<3.9 ug/L	.3	.3	0.016J	0.017J	5	6	90-110	20	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1022086 1022088

Parameter	Units	40100946001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Chromium, Hexavalent	mg/L	36.5	75	75	113	115	102	104	90-110	1	20

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 6134B PHILLIPS PLATING
Pace Project No.: 40100996

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

LOD - Limit of Detection.

LOQ - Limit of Quantitation.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

ANALYTE QUALIFIERS

1q	Dissolved analyte or filtered analyte greater than total analyte: analysis passed QC based on precision criteria.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
H3	Sample was received or analysis requested beyond the recognized method holding time.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 6134B PHILLIPS PLATING
Pace Project No.: 40100996

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40100996001	MW3	EPA 3010	MPRP/10627	EPA 6010	ICP/9405
40100996002	MW5	EPA 3010	MPRP/10627	EPA 6010	ICP/9405
40100996003	MW6	EPA 3010	MPRP/10627	EPA 6010	ICP/9405
40100996004	MW8	EPA 3010	MPRP/10627	EPA 6010	ICP/9405
40100996005	MW9	EPA 3010	MPRP/10627	EPA 6010	ICP/9405
40100996006	MW10	EPA 3010	MPRP/10627	EPA 6010	ICP/9405
40100996007	MW11	EPA 3010	MPRP/10627	EPA 6010	ICP/9405
40100996008	PZ1	EPA 3010	MPRP/10627	EPA 6010	ICP/9405
40100996001	MW3	EPA 6010	ICP/9402		
40100996002	MW5	EPA 6010	ICP/9402		
40100996003	MW6	EPA 6010	ICP/9402		
40100996004	MW8	EPA 6010	ICP/9402		
40100996005	MW9	EPA 6010	ICP/9402		
40100996006	MW10	EPA 6010	ICP/9402		
40100996007	MW11	EPA 6010	ICP/9402		
40100996008	PZ1	EPA 6010	ICP/9402		
40100996001	MW3	EPA 300.0	WETA/24534		
40100996003	MW6	EPA 300.0	WETA/24534		
40100996005	MW9	EPA 300.0	WETA/24534		
40100996006	MW10	EPA 300.0	WETA/24534		
40100996008	PZ1	EPA 300.0	WETA/24534		
40100996001	MW3	EPA 300.0	WETA/24534		
40100996003	MW6	EPA 300.0	WETA/24534		
40100996005	MW9	EPA 300.0	WETA/24534		
40100996006	MW10	EPA 300.0	WETA/24534		
40100996008	PZ1	EPA 300.0	WETA/24534		
40100996001	MW3	SM 3500-Cr B (Online)	WETA/24543		
40100996002	MW5	SM 3500-Cr B (Online)	WETA/24543		
40100996003	MW6	SM 3500-Cr B (Online)	WETA/24543		
40100996004	MW8	SM 3500-Cr B (Online)	WETA/24543		
40100996005	MW9	SM 3500-Cr B (Online)	WETA/24543		
40100996006	MW10	SM 3500-Cr B (Online)	WETA/24543		
40100996007	MW11	SM 3500-Cr B (Online)	WETA/24543		
40100996008	PZ1	SM 3500-Cr B (Online)	WETA/24543		

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(Please Print Clearly)

Company Name: REI

Branch/Location: Wausau

Project Contact: ~~Wausau~~ Ken Lassa

Phone: 715-675-9784

Project Number: 6134 B

Project Name: Phillips Plating

Project State: WI

Sampled By (Print): Jared Szewcs

Sampled By (Sign): *Jared Szewcs*

PO #:

Regulatory Program:



V56

UPPER MIDWEST REGION

MN: 612-607-1700 WI: 920-469-2436

Page 1 of

40100996

CHAIN OF CUSTODY

*Preservation Codes

A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH

H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?
(YES/NO)

PRESERVATION
(CODE)*

Y/N	Y	N	N	Y	N	N	N
Pick Letter	D	D	A	D	D	A	A
Analyses Requested	Total Cr, Ni (Filtrated)	Total Cr, Ni (Unfiltrated)	Hex Cr	Total Cr, Ni, Mn, Fe (Filtrated)	Total Cr, Ni, Mn, Fe (Unfiltrated)	NO ₃ Nitrate	Sulfate

Data Package Options

- (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD

- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes

A = Air W = Water
B = Biota DW = Drinking Water
C = Charcoal GW = Ground Water
O = Oil SW = Surface Water
S = Soil WW = Waste Water
SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX	Y/N	Y	N	N	Y	N	N	N
		DATE	TIME									
001	MW3	8/5/14	11:00	GW					X	X	X	X
002	MW5		12:00			X	X					
003	MW6		2:30						X	X	X	X
004	MW8		11:30			X	X					
005	MW9		2:00						X	X	X	X
006	MW10		1:30						X	X	X	X
007	MW11		12:30			X	X					
008	PZ1		3:00						X	X	X	X

Quote #: 40100996

Mail To Contact: REI

Mail To Company: Ken Lassa

Mail To Address: 4080 N 20th Ave
Wausau WI 54401

Invoice To Contact: SAA

Invoice To Company:

Invoice To Address:

Invoice To Phone:

CLIENT COMMENTS: 3-250m x P 00A

LAB COMMENTS (Lab Use Only):

Profile #:

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge)

Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:

Email #2:

Telephone:

Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By: *[Signature]* Date/Time: 8/6/14 - 1:00 PM

Relinquished By: Date/Time:

Relinquished By: Date/Time:

Relinquished By: Date/Time:

Relinquished By: Date/Time:

Received By: *[Signature]* Date/Time: 8-6-14 1:00 PM

Received By: Date/Time:

Received By: Date/Time:

Received By: Date/Time:

Received By: Date/Time:

PACE Project No. 40100996

Receipt Temp = *ROZ* °C

Sample Receipt pH *OK* / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Pace Analytical
Client Name: REI

Project #: **WO# : 40100996**



Courier: ☐ Fed Ex ☐ UPS ☒ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other _____

Thermometer Used NA Type of Ice: ☒ Wet ☐ Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: R01 /Corr: _____ Biological Tissue is Frozen: ☐ yes

Temp Blank Present: ☒ yes ☐ no

Person examining contents:

Date: 8/6/14

Initials: SB

Temp should be above freezing to 6°C for all sample except Biota.

Frozen Biota Samples should be received ≤ 0°C.

Comments:

Chain of Custody Present:	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes ☐ No ☐ N/A	3.
Sampler Name & Signature on COC:	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time:	☒ Yes ☐ No ☐ N/A	5. <u>001002, 004, 007 are post hold SB 8/6/14</u>
- VOA Samples frozen upon receipt	☐ Yes ☐ No	Date/Time: <u>run post hold for Client Hex Chrome 8/6/14</u>
Short Hold Time Analysis (<72hr):	☒ Yes ☐ No ☐ N/A	6. <u>History SB 8-6-14</u>
Rush Turn Around Time Requested:	☒ Yes ☐ No ☐ N/A	7.
Sufficient Volume:	☒ Yes ☐ No ☐ N/A	8.
Correct Containers Used:	☒ Yes ☐ No ☐ N/A	9.
-Pace Containers Used:	☒ Yes ☐ No ☐ N/A	
-Pace IR Containers Used:	☐ Yes ☐ No ☒ N/A	
Containers Intact:	☒ Yes ☐ No ☐ N/A	10.
Filtered volume received for Dissolved tests	☒ Yes ☐ No ☐ N/A	11.
Sample Labels match COC:	☒ Yes ☐ No ☐ N/A	12.
-Includes date/time/ID/Analysis Matrix:	<u>W</u>	
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☒ Yes ☐ No ☐ N/A	13. ☒ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH + ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4, NaOH+ZnAct ≥ 9, NaOH ≥ 12)	☒ Yes ☐ No ☐ N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	☐ Yes ☒ No	Initial when completed <u>SB</u> Lab Std #ID of preservative _____ Date/Time: _____
Headspace in VOA Vials (>6mm):	☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present:	☐ Yes ☐ No ☒ N/A	15.
Trip Blank Custody Seals Present	☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: 8-6-14