

Ms. Ann DiDonato
U.S. EPA Region 3
1650 Arch Street
Mail Code 3HS31
Philadelphia, PA 19103

Arcadis U.S., Inc.
1 Harvard Way
Suite 5
Hillsborough
New Jersey 08844
Tel 908 526 1000
Fax 908 253 3295
www.arcadis.com

Subject:

Quarterly Progress Report: July through September 2018
Precision National Plating Services, Inc.
Clarks Summit, Pennsylvania
Docket No. CERC-03-2012-0031DC

ELECTRONIC MAIL

Dear Ms. DiDonato:

ENVIRONMENT

On behalf of Precision National Plating Services, Inc. (Precision), Arcadis U.S., Inc. (Arcadis) is submitting this progress report to summarize the activities completed between July 1, 2018 and September 30, 2018. This progress report is being submitted in accordance with Section 8.7 of the Administrative Settlement Agreement and Order on Consent (AS) for Removal Response Action (Docket No. CERC-03-2012-0031DC).

Date:
December 31, 2018

Contact:
Lawrence G. Brunt, PE

Phone:
908.526.1000

Email:
Larry.brunt@arcadis.com

Our ref:
BB014215.2018.00004

1. Response actions completed and the actions that have been taken toward achieving compliance with the Settlement Agreement:

General

Precision and Arcadis worked closely with the U.S. Environmental Protection Agency (U.S. EPA) from July through September 2018 to do the following:

- Precision performed quarterly surface water monitoring with the U.S. EPA on July 17, 2018 as approved in the RAP.
- Precision mobilized to the site for a round of supplemental calcium polysulfide injections as proposed and approved by the U.S. EPA in the June 26, 2018 Supplemental In Situ Chemical Reduction Work Plan.
- Precision began calcium polysulfide injections on July 30, 2018 which continued through August and September.
- Precision installed two new groundwater monitoring wells (OMW-44 and MW-44S) south of Ackerly Creek, between the Seep Shed Treatment System and the former Trolley Tracks, on August 22, 2018.
- Precision performed general site maintenance activities.
- Precision also provided the U.S. EPA and PADEP with available sampling information.

Ongoing Administrative Settlement (AS) Activities

Seep Remediation

- Precision continued the operation of the Seep Shed treatment system.
- The influent and effluent of the Seep Shed Treatment System were sampled on July 17, 2018 for hexavalent chromium and total chromium. The midpoints between the resin beds of the system were also sampled for hexavalent and total chromium. At the time of sampling, the pH of the influent was 7.11 su and the temperature was 10.1° C.
- On July 17, 2018, the flow totalizer reading for the Seep Shed Treatment System was 6,040,681 gallons.
- The influent and effluent of the Seep Shed Treatment System were sampled on August 24, 2018 for hexavalent chromium and total chromium. The midpoints between the resin beds of the system were also sampled for hexavalent and total chromium. At the time of sampling, the influent pH was 7.09 su and the temperature was 10.2° C.
- On August 24, 2018, the Seep Shed flow totalizer reading was 6,084,271 gallons.
- The influent and effluent of the Seep Shed Treatment System were sampled on September 20, 2018 for hexavalent chromium and total chromium. The midpoints between the resin beds of the system were also sampled for hexavalent and total chromium. At the time of sampling, the pH of the influent was 6.22 su at a temperature of 19.85° C.
- On September 20, 2018, the flow totalizer reading for the Seep Shed Treatment System was 6,085,992 gallons.

Lagoon Assessment/Remediation Activities

- Precision continued the operation of the Lagoon Treatment System.
- The influent and system effluent of the Lagoon Treatment System were sampled on July 17, 2018 for hexavalent chromium and TAL metals. The effluent of the lead resin bed was also sampled for hexavalent chromium and total chromium. The pH of the lagoon system influent at the time of sampling was 6.57 su and the temperature was 11.8° C.
- By July 17, 2018, the total volume treated by the Lagoon Treatment System was approximately 32,615,829 gallons.
- The influent and system effluent of the Lagoon Treatment System were sampled on August 24, 2018 for hexavalent chromium and TAL metals. The effluent of the lead resin bed was also sampled for hexavalent chromium and total chromium. The pH of the lagoon system influent at the time of sampling was 7.11 su and the temperature was 11.7° C.
- By August 24, 2018 the total volume treated by the Lagoon Treatment System was 32,746,065 gallons.
- The influent and system effluent of the Lagoon Treatment System were sampled on September 20, 2018 for hexavalent chromium and TAL metals. The effluent of the lead resin bed was also

sampled for hexavalent chromium and total chromium. At the time of sampling, the pH of the Lagoon System influent was 6.46 su and the temperature was 21.04° C.

- By September 20, 2018, the total volume treated by the Lagoon Treatment System was 32,948,770 gallons.

Supplemental In Situ Chemical Reduction Monitoring

- As approved in the 2015 Supplemental Injection Work Plan, sampling of the residential wells in the vicinity of the Site was conducted on August 24, 2018 and September 20, 2018 to monitor the injection activities. Samples were analyzed for hexavalent chromium, total chromium, sulfate, and sulfide. Analytical results were received from TestAmerica Laboratories and validated. A summary of the data is attached.
- As approved in the 2018 Supplemental Injection Work Plan, surface water samples were collected from Ackerly Creek on August 24, 2018 and September 20, 2018 to monitor the injection activities. Samples were analyzed for hexavalent chromium, total chromium, sulfate, and sulfide. Analytical results were received from TestAmerica Laboratories and validated. A summary of the data is attached.
- Surface water locations in Ackerly Creek and additional monitoring wells on the Site and in the vicinity of the Site along the Trolley Tracks and Ackerly Creek were also monitored periodically for water quality parameters to assess the progress of the injection activities.

2. Description of all data anticipated and activities scheduled for the next ninety (90) calendar days:

- Operation of the treatment systems will continue at the site.
- Precision will sample the Lagoon and Seep Shed Treatment systems monthly in October, November, and December 2018. Data is anticipated to be received four weeks after each sampling event.
- Quarterly monitoring of surface water as approved in the RAP is scheduled for October 2018.
- Semiannual monitoring of groundwater and residential wells as approved in the RAP is scheduled for October 2018.
- The supplemental in situ chemical reduction injections are planned to continue in October and November 2018. Perimeter air monitoring, groundwater monitoring, and surface water monitoring activities performed in conjunction with the injection activities are also planned to continue.

3. Description of any problems encountered or anticipated:

- None.

4. Any actions taken to prevent or mitigate such problems.

- None.

5. A schedule for completion of such actions:

- Containment and treatment of water in the lagoon will continue as needed.

- Operation of the Seep Shed treatment system will continue as needed.

6. Analytical data received during the reporting period:

- Laboratory data for the July 17, 2018 sampling of the Lagoon Treatment System and Seep Shed Treatment Systems were received from TestAmerica Laboratories and validated. A summary of the data is attached.

Hexavalent chromium was not detected above the laboratory method detection limit in the effluent of the Lagoon Treatment System. Total chromium was detected at an estimated concentration of 7.6 ug/L which does not exceed the MCL of 100 ug/L

Hexavalent chromium was not detected above the laboratory method detection limit in the effluent of the Seep Shed Treatment System. Total chromium was detected at a concentration of 34.1 ug/L which does not exceed the MCL of 100 ug/L.

- Laboratory data for the quarterly surface water samples collected on July 17, 2018 were received from TestAmerica Laboratories and validated. A summary of the data is attached.
- Laboratory data for the August 24, 2018 sampling of the residential potable wells and select Ackerly Creek locations to monitor the progress of the injection activities were received from TestAmerica Laboratories and validated. A summary of the data is attached.
- Laboratory data for the groundwater sample collected from the newly installed overburden monitoring well OMW-44 on September 4, 2018 were received from TestAmerica Laboratories and validated. A summary of the data is attached.
- Laboratory data for the August 24, 2018 sampling of the Lagoon and Seep Shed Treatment Systems were received from TestAmerica Laboratories and validated. A summary of the data is attached.

Hexavalent chromium was not detected above the laboratory method detection limit in the effluent of the Lagoon Treatment System. Total chromium was detected at an estimated concentration of 6.7 ug/L which does not exceed the MCL of 100 ug/L

Hexavalent chromium was not detected above the laboratory method detection limit in the effluent of the Seep Shed Treatment System. Total chromium was detected in the effluent at an estimated concentration of 6.9 ug/L, which does not exceed the MCL of 100 ug/L.

- Laboratory data for the September 20, 2018 sampling of the Lagoon and Seep Shed Treatment Systems were received from TestAmerica Laboratories and validated. A summary of the data is attached.

Hexavalent chromium and total chromium were not detected above the laboratory method detection limits in the effluent of the Lagoon Treatment System.

Hexavalent chromium was not detected above the laboratory method detection limit in the effluent of the Seep Shed Treatment System. Total chromium was detected in the effluent at a concentration of 1,050 ug/L. This concentration was unexpectedly higher than the influent and midpoint concentrations of 621 and 156 ug/L, respectively. This unusual total chromium result was obtained immediately following the replacement of the pump in the Seep Shed Treatment

System. Following the receipt of this result, the influent, midpoint, and effluent locations were sampled again on October 4, 2018. This confirmatory sampling event provided more typical results for total chromium: 1,840 ug/L in the influent, 486 ug/L at the midpoint, and 14.0 ug/L in the effluent. Since these sample results were in compliance with the expected discharge, no further sampling or repair activity was conducted.

- Laboratory data for the September 20, 2018 sampling of the residential potable wells and select Ackerly Creek locations to monitor the progress of the injection activities were received from TestAmerica Laboratories and validated. A summary of the data is attached.

7. Modifications to the response action, RAP, and schedule made in accordance with Section XIV of the Settlement Agreement during this reporting period.

- None.

If you have any questions or require additional information, please call me at 908.526.1000.

Sincerely,

Arcadis U.S., Inc.



Lawrence G. Brunt, P.E.
Principal

Copies:

D. Rood - PADEP

Enclosures

Data Validation Summary

Arcadis U.S., Inc. (Arcadis) performed a level III data validation evaluation of the analytical data collected during the Precision National Plating site investigation. The data evaluation was conducted in accordance with the United States Environmental Protection Agency's (USEPA) Data Validation Functional Guidelines for Evaluating Environmental Analyses, "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," dated October 1999, and "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," dated October 2004 ("the USEPA Guidance"). The following is a summary of the analytical data review for samples collected and analyzed from July through September 2018. The samples were submitted to TestAmerica Laboratories located in Edison, New Jersey for analysis. The TestAmerica sample delivery groups (SDGs) evaluated for this report include: 460-160662-1, 460-160666-1, 460-163225-1, 460-163257-1, 460-163259-1, 460-163800-1, 460-165105-1, and 460-165106-1.

The samples were analyzed using the following methods:

EPA Method 200.7 for metals
EPA Method 245.1 for mercury
EPA Method 7196A for hexavalent chromium
ASTM Method D516-90, 02 for sulfate
Standard Method 4500 S2 F for sulfide

The data were evaluated based on the following parameters according to the USEPA Guidance for Level III data validation:

- data completeness
- holding times
- blanks
- duplicates and ICP serial dilution
- matrix spike/matrix spike duplicate recoveries (MS/MSD)
- laboratory control spike/laboratory control spike duplicate recoveries (LCS/LCSD)

A review of the laboratory reports revealed no issues which caused the data to be qualified.

The sample temperature, hold times, calibrations, laboratory control samples, duplicates, serial dilutions, and laboratory blanks were all within compliance criteria for all samples.

The following items were noted during the data review:

In metals batch 460-538659, which included samples from PNP SDG 460-160666-1, the relative percent difference between the concentration of zinc in the initial result and the duplicate analysis performed along with the batch was greater than 20%. However, the concentrations of zinc in the sample and the duplicate were less than five times the method detection limit, so the criteria for comparison becomes the method detection limit. The difference in results is not greater than the method detection limit. The sample used for the duplicate analysis was not a PNP sample. All of the other QA/QC parameters were in compliance, so the results are not qualified.

Similarly, in metals batch 460-555538, which included samples from PNP SDGs 460-165015-1 and 460-165016, the relative percent difference between the concentration of zinc in the initial result and the duplicate analysis performed along with the batch was greater than 20%. However, the concentrations of zinc in the sample and the duplicate were less than five times the method detection limit, so the criteria for comparison becomes the method detection limit. The difference in results is not greater than the method detection limit. The sample used for the duplicate analysis was not a PNP sample. All of the other QA/QC parameters were in compliance, so the results are not qualified.

Data Validation Summary

Summary of Quality Assurance/Quality Control Evaluation of Data

Based upon the QA/QC review, the project data are valid and available for use in site characterization without qualification.

TREATMENT SYSTEM MONITORING RESULTS

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



THE LEADER IN ENVIRONMENTAL TESTING

SUMMARY OF ANALYTICAL RESULTS: 460-160666-1

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	Lagoon Influent			Lagoon Post Lead			Lagoon Effluent			Seep Shed Influent			Seep Shed Mid			Seep Shed Effluent		
Lab Sample ID	460-160666-1			460-160666-2			460-160666-3			460-160666-4			460-160666-5			460-160666-6		
Sampling Date	07/17/2018 14:00:00			07/17/2018 14:02:00			07/17/2018 14:11:00			07/17/2018 14:20:00			07/17/2018 14:32:00			07/17/2018 14:37:00		
Matrix	Water			Water			Water			Water			Water			Water		
Unit																		
METALS-WATER	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
WATER BY 200.7 REV 4.4(UG/L)																		
Aluminum	128	J	95.7	NR			105	J	95.7	NR			NR			NR		
Antimony	4.1	U	4.1	NR			4.1	U	4.1	NR			NR			NR		
Arsenic	5.2		4.2	NR			4.2	U	4.2	NR			NR			NR		
Barium	32.8	J	10.5	NR			16.4	J	10.5	NR			NR			NR		
Beryllium	1.5	U	1.5	NR			1.5	U	1.5	NR			NR			NR		
Cadmium	2.1	U	2.1	NR			2.1	U	2.1	NR			NR			NR		
Calcium	72500		608	NR			88100		608	NR			NR			NR		
Chromium	46.9		5.9	20.4		5.9	7.6	J	5.9	612		5.9	595		5.9	34.1		5.9
Cobalt	5.5	U	5.5	NR			5.5	U	5.5	NR			NR			NR		
Copper	5.5	U	5.5	NR			5.5	U	5.5	NR			NR			NR		
Iron	1110		111	NR			111	U	111	NR			NR			NR		
Lead	3.8	U	3.8	NR			3.8	U	3.8	NR			NR			NR		
Magnesium	6870		578	NR			8400		578	NR			NR			NR		
Manganese	4610		5.0	NR			868		5.0	NR			NR			NR		
Nickel	7.5	J	6.3	NR			6.3	U	6.3	NR			NR			NR		
Potassium	802	J	207	NR			1280	J	207	NR			NR			NR		
Selenium	4.2	U	4.2	NR			4.2	U	4.2	NR			NR			NR		
Silver	1.3	U	1.3	NR			1.3	U	1.3	NR			NR			NR		
Sodium	31200		846	NR			34900		846	NR			NR			NR		
Thallium	8.7	U	8.7	NR			8.7	U	8.7	NR			NR			NR		
Vanadium	6.0	U	6.0	NR			6.0	U	6.0	NR			NR			NR		
Zinc	18.7	J	5.4	NR			7.1	J	5.4	NR			NR			NR		
WATER BY 245.1(UG/L)																		
Mercury	0.12	U	0.12	NR			0.12	U	0.12	NR			NR			NR		

NR: Not Analyzed

J : Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U : Indicates the analyte was analyzed for but not detected.

Lab Contact:
 Grace Chang
 Project Manager II
 (732)593-2579

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



SUMMARY OF ANALYTICAL RESULTS: 460-160666-1

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	Lagoon Influent			Lagoon Post Lead			Lagoon Effluent			Seep Shed Influent			Seep Shed Mid			Seep Shed Effluent			
Lab Sample ID	460-160666-1			460-160666-2			460-160666-3			460-160666-4			460-160666-5			460-160666-6			
Sampling Date	07/17/2018 14:00:00			07/17/2018 14:02:00			07/17/2018 14:11:00			07/17/2018 14:20:00			07/17/2018 14:32:00			07/17/2018 14:37:00			
Matrix	Water			Water			Water			Water			Water			Water			
WETCHEM-WATER	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL										
WATER BY 7196A																			
Cr (VI) (ug/l)	2.7	U	2.7	2.7	U	2.7	2.7	U	2.7	606		13.7	2.7	U	2.7	2.7	U	2.7	

U : Indicates the analyte was analyzed for but not detected.

Lab Contact: Grace Chang
Project Manager II
(732)593-2579

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



THE LEADER IN ENVIRONMENTAL TESTING

SUMMARY OF ANALYTICAL

RESULTS: 460-163259-1

Job Description: Precision National

Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	Lagoon Influent			Lagoon Post Lead			Lagoon Effluent			Seep Shed Influent			Seep Shed Mid			Seep Shed Effluent		
Lab Sample ID	460-163259-1			460-163259-2			460-163259-3			460-163259-4			460-163259-5			460-163259-6		
Sampling Date	08/24/2018 13:00:00			08/24/2018 13:02:00			08/24/2018 13:04:00			08/24/2018 09:35:00			08/24/2018 09:37:00			08/24/2018 09:39:00		
Matrix	Water			Water			Water			Water			Water			Water		
Unit																		
METALS-WATER	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
WATER BY 200.7 REV 4.4(UG/L)																		
Aluminum	95.7	U	95.7	NR			95.7	U	95.7	NR			NR			NR		
Antimony	4.1	U	4.1	NR			4.1	U	4.1	NR			NR			NR		
Arsenic	4.2	U	4.2	NR			4.2	U	4.2	NR			NR			NR		
Barium	24.0	J	10.5	NR			13.2	J	10.5	NR			NR			NR		
Beryllium	1.5	U	1.5	NR			1.5	U	1.5	NR			NR			NR		
Cadmium	2.1	U	2.1	NR			2.1	U	2.1	NR			NR			NR		
Calcium	59500		608	NR			57300		608	NR			NR			NR		
Chromium	14.2		5.9	8.6	J	5.9	6.7	J	5.9	506		5.9	484		5.9	6.9	J	5.9
Cobalt	5.5	U	5.5	NR			5.5	U	5.5	NR			NR			NR		
Copper	6.9	J	5.5	NR			5.5	U	5.5	NR			NR			NR		
Iron	1200		111	NR			173		111	NR			NR			NR		
Lead	3.8	U	3.8	NR			3.8	U	3.8	NR			NR			NR		
Magnesium	5810		578	NR			5730		578	NR			NR			NR		
Manganese	3490		5.0	NR			3100		5.0	NR			NR			NR		
Nickel	6.7	J	6.3	NR			6.3	U	6.3	NR			NR			NR		
Potassium	1990	J	207	NR			2020	J	207	NR			NR			NR		
Selenium	4.2	U	4.2	NR			4.2	U	4.2	NR			NR			NR		
Silver	1.3	U	1.3	NR			1.3	U	1.3	NR			NR			NR		
Sodium	21600		846	NR			21300		846	NR			NR			NR		
Thallium	8.7	U	8.7	NR			8.7	U	8.7	NR			NR			NR		
Vanadium	6.0	U	6.0	NR			6.0	U	6.0	NR			NR			NR		
Zinc	15.8	J	5.4	NR			9.9	J	5.4	NR			NR			NR		
WATER BY 245.1(UG/L)																		
Mercury	0.12	U	0.12	NR			0.12	U	0.12	NR			NR			NR		

NR: Not Analyzed

J: Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U: Indicates the analyte was analyzed for but not detected.

Lab Contact:

Morgan Merriweather

Project Management Assistant I

(732)549-3900

Grace Chang

Project Manager II

(732)593-2579

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



THE LEADER IN ENVIRONMENTAL TESTING

SUMMARY OF ANALYTICAL RESULTS: 460-163259-1

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	Lagoon Influent			Lagoon Post Lead			Lagoon Effluent			Seep Shed Influent			Seep Shed Mid			Seep Shed Effluent		
Lab Sample ID	460-163259-1			460-163259-2			460-163259-3			460-163259-4			460-163259-5			460-163259-6		
Sampling Date	08/24/2018 13:00:00			08/24/2018 13:02:00			08/24/2018 13:04:00			08/24/2018 09:35:00			08/24/2018 09:37:00			08/24/2018 09:39:00		
Matrix	Water			Water			Water			Water			Water			Water		
WETCHEM-WATER	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
WATER BY 7196A																		
Cr (VI) (ug/l)	2.7	U	2.7	2.7	U	2.7	2.7	U	2.7	464		13.7	2.7	U	2.7	2.7	U	2.7
WATER BY D516-90, 02																		
Sulfate (mg/l)	139		13.6	NR			NR			114		13.6	NR			NR		
WATER BY SM 4500 S2 F																		
Sulfide (mg/l)	0.58	U	0.58	NR			NR			0.58	U	0.58	NR			NR		

NR: Not Analyzed

U : Indicates the analyte was analyzed for but not detected.

Lab Contact:

Morgan Merriweather

Project Management Assistant I

(732)549-3900

Grace Chang

Project Manager II

(732)593-2579

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



SUMMARY OF ANALYTICAL RESULTS: 460-165105-1

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	Lagoon Influent			Lagoon Post Lead			Lagoon Effluent			Seep Shed Influent			Seep Shed Mid			Seep Shed Effluent		
Lab Sample ID	460-165105-1			460-165105-2			460-165105-3			460-165105-4			460-165105-5			460-165105-6		
Sampling Date	09/20/2018 18:27:00			09/20/2018 18:33:00			09/20/2018 18:35:00			09/20/2018 18:50:00			09/20/2018 18:52:00			09/20/2018 18:55:00		
Matrix	Water			Water			Water			Water			Water			Water		
Unit																		
METALS-WATER	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
WATER BY 200.7 REV 4.4(UG/L)																		
Aluminum	95.7	U	95.7	NR			95.7	U	95.7	NR			NR			NR		
Antimony	4.1	U	4.1	NR			4.1	U	4.1	NR			NR			NR		
Arsenic	4.2	U	4.2	NR			4.2	U	4.2	NR			NR			NR		
Barium	13.6	J	10.5	NR			10.5	U	10.5	NR			NR			NR		
Beryllium	1.5	U	1.5	NR			1.5	U	1.5	NR			NR			NR		
Cadmium	2.1	U	2.1	NR			2.1	U	2.1	NR			NR			NR		
Calcium	60200		608	NR			60000		608	NR			NR			NR		
Chromium	17.7		5.9	11.0	5.9		5.9	U	5.9	621	5.9		156	5.9		1050	5.9	
Cobalt	5.5	U	5.5	NR			5.5	U	5.5	NR			NR			NR		
Copper	12.1	J	5.5	NR			5.5	U	5.5	NR			NR			NR		
Iron	723		111	NR			111	U	111	NR			NR			NR		
Lead	3.8	U	3.8	NR			3.8	U	3.8	NR			NR			NR		
Magnesium	5660		578	NR			5670		578	NR			NR			NR		
Manganese	1420		5.0	NR			667		5.0	NR			NR			NR		
Nickel	47.0		6.3	NR			6.3	U	6.3	NR			NR			NR		
Potassium	1690	J	207	NR			1750	J	207	NR			NR			NR		
Selenium	4.2	U	4.2	NR			4.2	U	4.2	NR			NR			NR		
Silver	1.3	U	1.3	NR			1.3	U	1.3	NR			NR			NR		
Sodium	24100		846	NR			23900		846	NR			NR			NR		
Thallium	8.7	U	8.7	NR			8.7	U	8.7	NR			NR			NR		
Vanadium	6.0	U	6.0	NR			6.0	U	6.0	NR			NR			NR		
Zinc	28.7	J	5.4	NR			5.4	U	5.4	NR			NR			NR		
WATER BY 245.1(UG/L)																		
Mercury	0.12	U	0.12	NR			0.12	U	0.12	NR			NR			NR		

NR: Not Analyzed

Highlighted Concentrations shown in bold type face exceed limits

J : Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U : Indicates the analyte was analyzed for but not detected.

Lab Contact:

Grace Chang

Project Manager II

(732)593-2579

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



SUMMARY OF ANALYTICAL RESULTS:

460-165105-1

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	Lagoon Influent			Lagoon Post Lead			Lagoon Effluent			Seep Shed Influent			Seep Shed Mid			Seep Shed Effluent			
Lab Sample ID	460-165105-1			460-165105-2			460-165105-3			460-165105-4			460-165105-5			460-165105-6			
Sampling Date	09/20/2018 18:27:00			09/20/2018 18:33:00			09/20/2018 18:35:00			09/20/2018 18:50:00			09/20/2018 18:52:00			09/20/2018 18:55:00			
Matrix	Water			Water			Water			Water			Water			Water			
WETCHEM-WATER	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	
WATER BY 7196A																			
Cr (VI) (ug/l)	3.0	U	3.0	3.0	U	3.0	3.0	U	3.0	461		15.1	3.0	U	3.0	3.0	U	3.0	
WATER BY D516-90, 02																			
Sulfate (mg/l)	155		24.1	NR			NR			125		24.1	NR			NR			
WATER BY SM 4500 S2 F																			
Sulfide (mg/l)	0.58	U	0.58	NR			NR			0.58	U	0.58	NR			NR			

NR: Not Analyzed

Highlighted Concentrations shown in bold type face exceed limits

U : Indicates the analyte was analyzed for but not detected.

Lab Contact:

Grace Chang

Project Manager II

(732)593-2579

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



SUMMARY OF ANALYTICAL RESULTS:

460-166104-1

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	Seep Shed Influent			Seep Shed Mid			Seep Shed Effluent		
Lab Sample ID	460-166104-1			460-166104-2			460-166104-3		
Sampling Date	10/04/2018 18:50:00			10/04/2018 18:02:00			10/04/2018 18:04:00		
Matrix	Water			Water			Water		
Unit									
METALS-WATER	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
WATER BY 200.7 REV 4.4(UG/L)									
Chromium	1840		5.9	486		5.9	14.0		5.9

Lab Contact:

Grace Chang

Project Manager II

(732)593-2579

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



SUMMARY OF ANALYTICAL RESULTS:

460-166104-1

Job Description: Precision National

Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	Seep Shed Influent			Seep Shed Mid			Seep Shed Effluent		
Lab Sample ID	460-166104-1			460-166104-2			460-166104-3		
Sampling Date	10/04/2018 18:50:00			10/04/2018 18:02:00			10/04/2018 18:04:00		
Matrix	Water			Water			Water		
WETCHEM-WATER	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
WATER BY 7196A									
Cr (VI) (ug/l)	403		15.1	3.0	U	3.0	3.0	U	3.0

U : Indicates the analyte was analyzed for but not detected.

Lab Contact:

Grace Chang

Project Manager II

(732)593-2579

QUARTERLY SURFACE WATER SAMPLING RESULTS

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



SUMMARY OF ANALYTICAL

RESULTS: 460-160662-1

Job Description: Precision

National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	SW-10			SW-14			SW-14BC2			SW-14DE			SW-14G			SW-15			SW-16		
Lab Sample ID	460-160662-1			460-160662-2			460-160662-3			460-160662-4			460-160662-5			460-160662-6			460-160662-7		
Sampling Date	07/17/2018 12:18:00			07/17/2018 12:27:00			07/17/2018 12:31:00			07/17/2018 12:40:00			07/17/2018 12:45:00			07/17/2018 12:50:00			07/17/2018 13:00:00		
Matrix	Water																				
Unit																					
METALS-WATER	Result	Q	MDL																		
WATER BY 200.7 REV 4.4(UG/L)																					
Chromium	5.9	U	5.9																		

U : Indicates the analyte was analyzed for but not detected.

Lab Contact:
 Grace Chang
 Project Manager II
 (732)593-2579

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



SUMMARY OF ANALYTICAL RESULTS:

460-160662-1

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	SW-10			SW-14			SW-14BC2			SW-14DE			SW-14G			SW-15			SW-16		
Lab Sample ID	460-160662-1			460-160662-2			460-160662-3			460-160662-4			460-160662-5			460-160662-6			460-160662-7		
Sampling Date	07/17/2018 12:18:00			07/17/2018 12:27:00			07/17/2018 12:31:00			07/17/2018 12:40:00			07/17/2018 12:45:00			07/17/2018 12:50:00			07/17/2018 13:00:00		
Matrix	Water																				
WETCHEM-WATER	Result	Q	MDL																		
WATER BY 7196A																					
Cr (VI) (ug/l)	2.7	U	2.7	5.0	J	2.7	2.7	U	2.7												

J : Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U : Indicates the analyte was analyzed for but not detected.

Lab Contact: Grace Chang
Project Manager II
(732)593-2579

MONITORING WELL SAMPLING RESULTS

Job Description: Precision National Plating

For:



ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

SUMMARY OF ANALYTICAL RESULTS:

460-163800-1

Job Description: Precision National

Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	OMW-44		
Lab Sample ID	460-163800-1		
Sampling Date	09/04/2018 13:40:00		
Matrix	Water		
Unit			
METALS-WATER	Result	Q	MDL
WATER BY 200.7 REV 4.4(UG/L)			
Chromium	286		5.9

Lab Contact:

Grace Chang

Project Manager II

(732)593-2579

Job Description: Precision National Plating

For:



ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

SUMMARY OF ANALYTICAL RESULTS:

460-163800-1

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	OMW-44		
Lab Sample ID	460-163800-1		
Sampling Date	09/04/2018 13:40:00		
Matrix	Water		
WETCHEM-WATER	Result	Q	MDL
WATER BY 7196A			
Cr (VI) (ug/l)	18.2	J	13.7

J : Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Lab Contact:
 Grace Chang
 Project Manager II
 (732)593-2579

BEDROCK INJECTION PERFORMANCE MONITORING RESULTS

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



SUMMARY OF ANALYTICAL RESULTS:

460-163257-1

Job Description: Precision National

Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	SW-14			SW-14 C2			SW-14 DE			SW-14 G			SW-15			SW-16		
Lab Sample ID	460-163257-1			460-163257-2			460-163257-3			460-163257-4			460-163257-5			460-163257-6		
Sampling Date	08/24/2018 10:00:00			08/24/2018 10:02:00			08/24/2018 10:05:00			08/24/2018 10:07:00			08/24/2018 10:10:00			08/24/2018 10:20:00		
Matrix	Water			Water			Water			Water			Water			Water		
Unit																		
METALS-WATER	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
WATER BY 200.7 REV 4.4(UG/L)																		
Chromium	29.5	U	29.5	29.5	U	29.5	5.9	U	5.9	6.4	J	5.9	5.9	U	5.9	5.9	U	5.9

J : Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U : Indicates the analyte was analyzed for but not detected.

Lab Contact:

Morgan Merriweather

Project Management Assistant I

(732)549-3900

Grace Chang

Project Manager II

(732)593-2579

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



SUMMARY OF ANALYTICAL RESULTS:

460-163257-1

Job Description: Precision National

Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	SW-14			SW-14 C2			SW-14 DE			SW-14 G			SW-15			SW-16		
Lab Sample ID	460-163257-1			460-163257-2			460-163257-3			460-163257-4			460-163257-5			460-163257-6		
Sampling Date	08/24/2018 10:00:00			08/24/2018 10:02:00			08/24/2018 10:05:00			08/24/2018 10:07:00			08/24/2018 10:10:00			08/24/2018 10:20:00		
Matrix	Water																	
WETCHEM-WATER	Result	Q	MDL															
WATER BY 7196A																		
Cr (VI) (ug/l)	3.9	J	2.7	2.8	J	2.7	3.9	J	2.7	3.9	J	2.7	3.9	J	2.7	2.7	U	2.7
WATER BY D516-90, 02																		
Sulfate (mg/l)	10.1		1.4	10.4		1.4	10.3		1.4	10.2		1.4	9.9		1.4	9.4		1.4
WATER BY SM 4500 S2 F																		
Sulfide (mg/l)	0.58	U	0.58															

J : Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U : Indicates the analyte was analyzed for but not detected.

Lab Contact:

Morgan Merriweather

Project Management Assistant I

(732)549-3900

Grace Chang

Project Manager II

(732)593-2579

Job Description: Precision National Plating

For:



ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

SUMMARY OF ANALYTICAL RESULTS:

460-163255-1

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	RES-2		
Lab Sample ID	460-163255-1		
Sampling Date	08/24/2018 09:30:00		
Matrix	Water		
Unit			
METALS-WATER	Result	Q	MDL
WATER BY 200.7 REV 4.4(UG/L)			
Chromium	5.9	U	5.9

U : Indicates the analyte was analyzed for but not detected.

Lab Contact:
Grace Chang
Project Manager II
(732)593-2579

Job Description: Precision National Plating

For:



ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

SUMMARY OF ANALYTICAL RESULTS:

460-163255-1

Job Description: Precision National

Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	RES-2		
Lab Sample ID	460-163255-1		
Sampling Date	08/24/2018 09:30:00		
Matrix	Water		
WETCHEM-WATER	Result	Q	MDL
WATER BY 7196A			
Cr (VI) (ug/l)	2.7	U	2.7

WATER BY D516-90, 02			
Sulfate (mg/l)	12.2		1.4

WATER BY SM 4500 S2 F			
Sulfide (mg/l)	0.58	U	0.58

U : Indicates the analyte was analyzed for but not detected.

Lab Contact:

Grace Chang

Project Manager II

(732)593-2579

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



THE LEADER IN ENVIRONMENTAL TESTING

SUMMARY OF ANALYTICAL RESULTS: 460-165106-

1

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	Res-1			Res-2			SW-14			SW-14BC2			SW-14DE			SW-14G		
Lab Sample ID	460-165106-1			460-165106-2			460-165106-3			460-165106-4			460-165106-5			460-165106-6		
Sampling Date	09/20/2018 13:12:00			09/20/2018 13:02:00			09/20/2018 14:05:00			09/20/2018 14:21:00			09/20/2018 14:28:00			09/20/2018 15:10:00		
Matrix	Water																	
Unit																		
METALS-WATER	Result	Q	MDL															
WATER BY 200.7 REV 4.4(UG/L)																		
Chromium	5.9	U	5.9															

U : Indicates the analyte was analyzed for but not detected.

Lab Contact:
 Grace Chang
 Project Manager II
 (732)593-2579

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



SUMMARY OF ANALYTICAL RESULTS: 4

1

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	SW-15			SW-16		
Lab Sample ID	460-165106-7			460-165106-8		
Sampling Date	09/20/2018 15:14:00			09/20/2018 16:07:00		
Matrix	Water			Water		
Unit						
METALS-WATER	Result	Q	MDL	Result	Q	MDL
WATER BY 200.7 REV 4.4(UG/L)						
Chromium	5.9	U	5.9	5.9	U	5.9

U : Indicates the analyte was analyzed for but not detected.

Lab Contact:
 Grace Chang
 Project Manager II
 (732)593-2579

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



SUMMARY OF ANALYTICAL RESULTS:

460-165106-1

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	Res-1			Res-2			SW-14			SW-14BC2			SW-14DE			SW-14G		
Lab Sample ID	460-165106-1			460-165106-2			460-165106-3			460-165106-4			460-165106-5			460-165106-6		
Sampling Date	09/20/2018 13:12:00			09/20/2018 13:02:00			09/20/2018 14:05:00			09/20/2018 14:21:00			09/20/2018 14:28:00			09/20/2018 15:10:00		
Matrix	Water																	
WETCHEM-WATER	Result	Q	MDL															
WATER BY 7196A																		
Cr (VI) (ug/l)	3.0	U	3.0															
WATER BY D516-90, 02																		
Sulfate (mg/l)	14.7		2.4	12.4		2.4	10.7		2.4	10.6		2.4	10.5		2.4	10		2.4
WATER BY SM 4500 S2 F																		
Sulfide (mg/l)	0.58	U	0.58															

U : Indicates the analyte was analyzed for but not detected.

Lab Contact: Grace Chang
 Project Manager II
 (732)593-2579

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876



SUMMARY OF ANALYTICAL RESULTS:

460-165106-1

Job Description: Precision National Plating

For:

ARCADIS U.S., Inc

35 Columbia Road

Branchburg, New Jersey 08876

Client ID	SW-15			SW-16		
Lab Sample ID	460-165106-7			460-165106-8		
Sampling Date	09/20/2018 15:14:00			09/20/2018 16:07:00		
Matrix	Water			Water		
WETCHEM-WATER						
	Result	Q	MDL	Result	Q	MDL
WATER BY 7196A						
Cr (VI) (ug/l)	3.0	U	3.0	3.0	U	3.0
WATER BY D516-90, 02						
Sulfate (mg/l)	9.6		2.4	8.8		2.4
WATER BY SM 4500 S2 F						
Sulfide (mg/l)	0.58	U	0.58	0.58	U	0.58

U : Indicates the analyte was analyzed for but not detected.

Lab Contact:
 Grace Chang
 Project Manager II
 (732)593-2579