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January 31, 2019

Mr. Robert Strang, Project Manager
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-7013

Subject: **2018 Annual Site Activities Report**
Primoshield Incorporated Site, Site No. 633027
MACTEC Engineering & Consulting, P.C., Project No. 3612122251

Dear Mr. Strang:

MACTEC Engineering and Consulting, P.C., (MACTEC), under contract to the New York State Department of Environmental Conservation (NYSDEC) is submitting this letter report describing the 2018 site management (SM) activities and observations at the Primoshield Incorporated Site (Site), NYSDEC Site # 633027, located in Utica, New York. This report presents the following:

- Site History
- 2018 Scope of Work
- Institutional Controls / Engineering Controls (IC/ECs)
- Groundwater Collection System Inspections and Operation, Monitoring, and Maintenance (OM&M) Activities
- Long-Term (15 month) Monitoring
- Recommendations for calendar year 2019.

Site History

The Primoshield site, which has a Classification Code of 4 (SM), is a former metal electroplating facility located at 1212 St. Vincent Street (Figure 1). The Site, approximately 2.4 acres in size and bordered by

Conkling Avenue on the Northwest and St. Vincent Street on the south and east, is comprised of four parcels. The City of Utica owns two parcels totaling approximately 0.82 acres; the two parcels are enclosed by a chain link fence. The fenced portion of the Site, designated as 1223 Conkling Avenue (tax map parcel number 41) and as 1212 St. Vincent Street (tax map parcel number 33), is in a mixed commercial/residential area (Figure 2).

The Site's Record of Decision (NYSDEC, 1995) requires a groundwater treatment system to remediate contaminated groundwater by carbon filtration; treated effluent was then discharged to the Publicly Owned Treatment Works (POTW). The remedial system was initially installed for treatment of trichloroethene, 1,1,1-trichloroethane, 1,1-dichloroethane, and chromium in groundwater. Since 2001, however, reported influent concentrations have been below discharge permit levels and carbon filtration treatment is no longer warranted. Currently, water is gravity fed to a collection sump and then pumped and discharged directly to the POTW.

2018 Scope of Work

SM activities conducted in 2018 include: long term groundwater monitoring, semi-annual discharge monitoring, and spring and fall site inspections (MACTEC, 2017). These requirements are summarized in Table 1.

Institutional Controls/ Engineering Controls (IC /EC)

Because contaminated groundwater and soil are present at the site, ICs/ ECs are required to protect human health and the environment. EC systems at the Site include the groundwater collection system (GWCS), site access controls, and groundwater monitoring wells.

Requirements/restrictions (ICs) imposed pursuant to the Site Management Plan (SMP) include:

- access to the site for operation of the GWCS
- prohibition of groundwater extraction for any purpose except for treatment at the GWCS
- prohibition of animal production for human consumption
- prohibition of vegetable gardens onsite unless planted in gardens where soil achieves residential use Soil Cleanup Objectives
- site use is limited to industrial uses only
- site owner(s) must follow the requirements of the SMP

- excavation on the property is prohibited without written permission from the NYSDEC.

The IC/ECs are in place and observations pertaining to them during 2018 are summarized in the following section.

Site Inspections and OM&M Activities

Spring and Fall Inspections

The onsite inspections conducted at the Site on March 28 and on November 28, 2018 are discussed in the March and November 2018 Inspection Reports (MACTEC, 2018b; MACTEC, 2019). Site conditions in 2018 were consistent with observations made in recent years with the exception of the Trench 1 cleanout during the fall inspection. During the November 2018 inspection, the groundwater collection system was found to be in the "off" position upon arrival at the Site. With the collection system inactive shallow groundwater is no longer being captured once the water level in the collection manhole reaches equilibrium with the water table. Once at equilibrium the potential exists for the contaminated groundwater plume on the Site to then migrate and impact the nearest receptors (residences) immediately to the northeast of the Site.

The system was turned to the "auto" mode and allowed to run for one hour prior to discharge sampling. The system was left running for the duration of the inspection visit. However, silty water was observed upwelling near the Trench 1 cleanout on the southwest corner of the Site (Fall Inspection Report Attachment 1 photo log, photos 9 and 10 [MACTEC, 2019]). The cause of the water upwelling was not apparent at the time of the inspection. The system was shut off prior to leaving the Site to prevent surface ponding with potential overland flow to neighboring properties and/or along St. Vincent Street. The issue was further investigated in a subsequent visit in December 2018.

A monitoring well inventory was conducted during the 2018 semi-annual inspections. Monitoring wells were observed to be in generally good condition and functional. Four wells were observed to be in need of repairs; the observation is consistent with previous inspections (MACTEC 2018a).

Spring and Fall 2018 Inspection Findings:

- the northernmost cleanout (Trench 2, Cleanout 5) will not close due to settlement of the protective road-box and surrounding concrete

- the top rail of fence is unattached along the north-central site area where the fence height changes
- monitoring well P-107S is loose and tilting with a cracked and broken concrete collar; monitoring wells P-107D, P-106S, and P-106D are also loose
- loose and/or damaged barbed wire was observed in two areas of the fencing
- vegetation including young trees is encroaching on the perimeter fence in several locations
- silty water was observed upwelling near the Trench 1 cleanout on the southwest corner of the Site during the fall inspection; the cause of the upwelling was not apparent at the time of inspection.

Additional Inspection Activities

Because of the upwelling water observed during the 2018 fall inspection, a follow-up GWCS evaluation was performed during a December 20, 2018 Site visit by representatives from MACTEC and the NYSDEC. During the visit a Site walkthrough was completed to document static conditions with the system off. This evaluation included a visual inspection and measurement of water in the trench collection manhole, the POTW sanitary sewer manhole located in St. Vincent Street, and the collection sump inside the treatment building. Once the initial inspection was completed, the system was reactivated to its 'auto" mode. With the system activated the following were observed:

- lowering of the water level in the building sump and in the collection manhole
- visible discharge of water through the sanitary sewer manhole
- no visible daylighting of water at any of the three collection trenches.

These observations indicated that the system was performing as designed. A sewer tape with an endoscopic camera was advanced into the cleanout at the end of Trench 1. The video taken with the camera was inconclusive as to the condition of the perforated collection pipe entering the cleanout. The sewer tape was then advanced 45 linear feet into the Trench 1 collection pipe and no obstructions were encountered.

The system was observed for three hours under pumping conditions and no further indications of upwelling water were observed on Site. The system was left in its "auto" run mode upon leaving the Site and will be re-assessed during the spring 2019 inspection and/or on an as needed basis. The root cause or duration of the system shutdown between the spring and fall inspection currently remains unknown.

Semiannual Discharge Monitoring

Samples of the treatment system effluent were collected during each of the semiannual Site inspections from the discharge sampling port inside the onsite treatment building. Samples were submitted to ALS laboratory for the following analysis: volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) method 624, metals (cadmium, chromium, copper, nickel, lead, and zinc) by USEPA method 200.7, cyanide by USEPA method 9012B and pH by method 4500. The field data record collection forms, laboratory reports of analysis and chain of custody records are included with the 2018 site inspection reports (MACTEC 2018b; MACTEC, 2019). Results are presented in the following table and demonstrate that concentrations remain below the POTW discharge criteria.

Semiannual Discharge Analytical Results March and November 2018

POLLUTANT/PARAMETER	POTW Limit	March Results	November Results
Totalizer Reading	NA	4,370,492	4,445,400
Total Flow, gal/day	NA	3,871**	306**
pH	5.0-12.5	7.5	7.1
Cadmium, mg/L	1	0.005 U	0.005 U
Chromium, mg/L	5	0.01 U	0.01 U
Copper, mg/L	3	0.02 U	0.02 U
Lead, mg/L	5	0.05 U	0.05 U
Nickel, mg/L	2	0.04 U	0.04 U
Zinc, mg/L	4	0.02 U	0.02 U
Cyanide, mg/L	3	0.01 U	0.01 U
Total VOCs, mg/L	2.0*	**0.0102**	**0.02594**

mg/L = milligrams per liter.
*Total VOCs is the sum of detected VOCs.
Bold results indicate the parameter was detected.
U = not detected; value represents the sample quantitation limit.
** = Average flow based on totalizer reading and days between measurements.

The system was turned off sometime between the spring and fall inspections which resulted in an approximately 12% reduction in the volume of water collected compared to the period between fall 2017 and spring 2018.

Maintenance Activities:

Per the recommendation in the 2017 Periodic Review Report (MACTEC, 2018a), locks were installed on all well casings except for GW-01 which is secured with a road box.

Long Term Monitoring (LTM)

Groundwater Elevation Monitoring

Groundwater elevations were measured in March and November 2018 and compared to historical groundwater elevations (Table 2). Water levels measured were similar to historical measurements and reflected typical seasonal variation for the region.

Long Term Monitoring Sampling and Analysis

Samples were collected from seven monitoring wells during the LTM event in March 2018 in accordance with the sampling and analysis plan summarized in Table 3. The samples were collected using low flow procedures and the field data records are provided in Attachment 1. These samples were submitted to ALS laboratory for VOCs, pH and metals analysis. Samples from selected wells were also analyzed for emerging contaminants 1,4-dioxane and per-and polyfluoroalkyl substances (PFAS) at the request of the NYSDEC and submitted to Test America Laboratory for analysis. 1,4-Dioxane and PFAS samples were collected from three wells (P-105. P-106S and P-106D); GW-01 was also sampled for 1,4-dioxane. The Category A data validation review conducted for the LTM analytical data is provided in Attachment 2. Results for contaminants detected in one or more samples are summarized in Table 4.

Concentrations of trichloroethene and nickel in shallow groundwater collected from monitoring well P-107S exceeded Class GA standards (Figure 3). Presence of three PFAS compounds were detected in P-107S, and presence of one PFAS compound was detected in P-105 and P-106D. The combined concentration of Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) for P-107S were detected below the current USEPA health advisory of 70 parts per thousand (ppt) and the New York State Department of Health proposed Maximum Contaminant Level of 10 ppt. These two compounds were not detected in P-105 or P-106D. All samples collected were non-detect for 1,4-dioxane.

Trend plots (i.e., concentration vs time plots) were prepared for Site contaminants of concern detected in monitoring wells for the period beginning December 2011 and ending November 2018 (Attachment 3).

The next LTM event is scheduled for June 2019.

Conclusions and Recommendations

The Site's groundwater collection system had been turned off at some point between the spring and fall inspections. After the system was restarted during the November fall inspection water was observed upwelling near or at the Trench 1 cleanout prompting shutdown of the system for further evaluation. The evaluation of the system in December did not identify the same problem and it appeared the system was functioning properly. The system was returned to its previous automated operational status upon the conclusion of the December inspection.

Semiannual discharge samples were collected as part of the spring and fall Site inspections and results indicate detectable levels of total VOCs; however, results were below the POTW allowable discharge limits of the permit. Inspections and discharge monitoring are recommended to continue on a semi-annual basis. Fence and well inspections show deterioration, however, they are generally in the same condition as observed in previous inspections.

Based on the inspections conducted in 2018, there has not been a change in property use, and the Site is in compliance with the ICs.

Recommended maintenance activities for 2019 are as follows:

- the system discharge lines should be jetted and flushed to remove sediment or potential blockage
- young trees observed along the fence perimeter should be removed at the roots to prevent further damage.
- other vegetation impinging on the perimeter fences should be removed.
- well casings for P-106S, P-106D, P-107S, and P-107D should be re-grouted to stabilize them in the well pad.
- the top of the northernmost cleanout in Trench 2 should be trimmed down to allow the cover to sit securely.

Additional inspections of the GWCS are recommended prior to the spring inspection to ensure the system is running properly and the upwelling at the cleanout on Trench 1 has not reoccurred.

- the top of the northernmost cleanout in Trench 2 should be trimmed down to allow the cover to sit securely.

Additional inspections of the GWCS are recommended prior to the spring inspection to ensure the system is running properly and the upwelling at the cleanout on Trench 1 has not reoccurred.

Recommended maintenance activities will be coordinated with the spring 2019 inspection.

Please feel free to contact us if you have any questions at 207-775-5401.

Sincerely,

MACTEC Engineering & Consulting, P.C.

Jean Firth, PG
Project Manager

Mark Stelmack, PE
Associate Engineer

Enclosures (10)

Figure 1:	Site Location
Figure 2:	Site Features
Figure 3:	Exceedances of Class GA Groundwater Standards, March 2018
Table 1:	Site Management Requirements
Table 2:	Summary of Groundwater Measurements
Table 3:	Sampling and Analysis Plan
Table 4:	Long Term Monitoring Summary of Compounds Detected – March 2018
Table 5:	Summary of Compounds Detected at GW-01 2015 to 2018
Attachment 1:	Field Data Records – March 2018 LTM
Attachment 2:	Category A Data Validation Report

cc: File

REFERENCES

MACTEC Engineering and Consulting, P.C. (MACTEC), 2017. Site Management Plan Revision 1, Primoshield, Incorporated Site No.: 633027. March 2017.

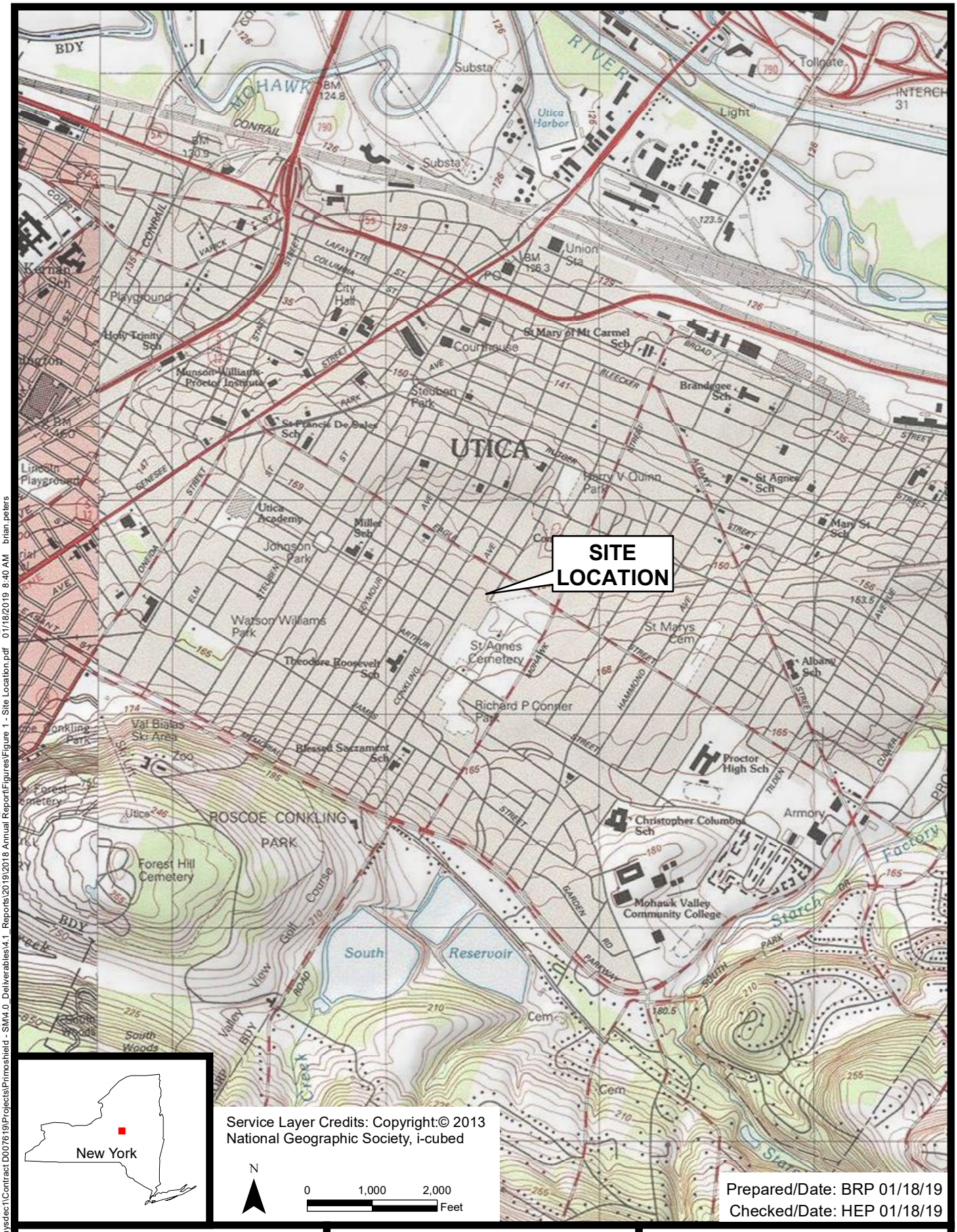
MACTEC, 2018a. 2017 Periodic Review Report, 2018. January 2018.

MACTEC, 2018b. March 2018 Site Inspection Report, Primoshield, Incorporated Site No.: 633027. May 2018.

MACTEC, 2019. November 2018 Site Inspection Report, Primoshield, Incorporated Site No.: 633027. January 2019.

New York State Department of Environmental Conservation (NYSDEC), 1995. Record of Decision, Primoshield Plating Site, Site Number 633027, City of Utica, Oneida County, New York, March 2995.

FIGURES



NYSDEC Site # 633027
PRIMOSHIELD INC.
UTICA, NEW YORK

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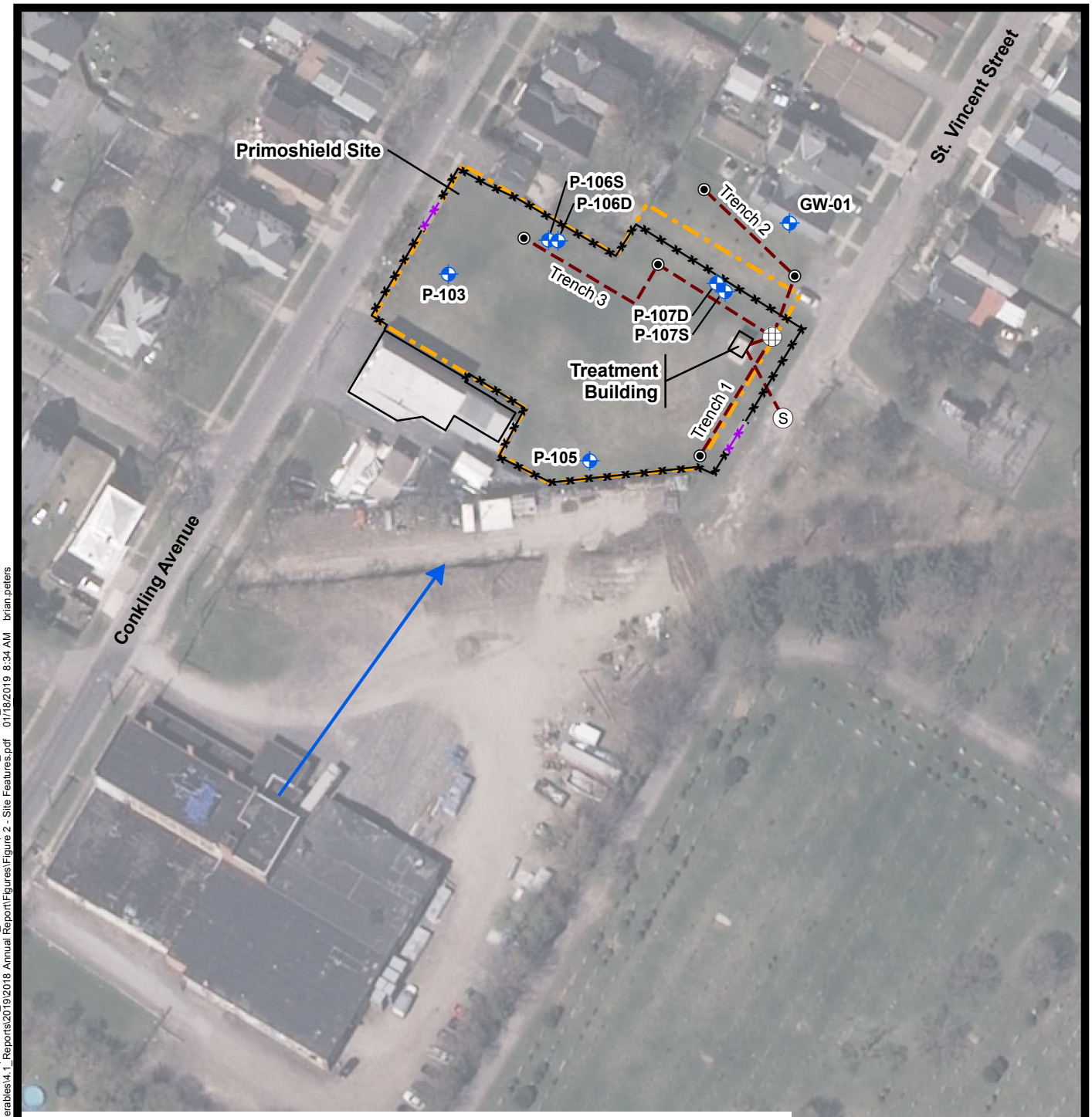
SITE LOCATION

Project 3612122251 Figure 1



Legend

- Cleanout Access Point
- 4-foot diameter manhole
- Discharge to sanitary sewer
- Groundwater Monitoring Well
- Perimeter Fence
- Perimeter Fence Gate
- Approximate GW flow direction
- Underground collection trench
- Site Boundary

N

0 50 100 Feet

Oneida County color digital orthoimagery (2008) from New York State GIS Clearinghouse at: http://www.nysgis.state.ny.us

Prepared/Date: BRP 01/18/19
Checked/Date: JMF 01/18/19

NYSDEC Site # 633027
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UTICA, NEW YORK

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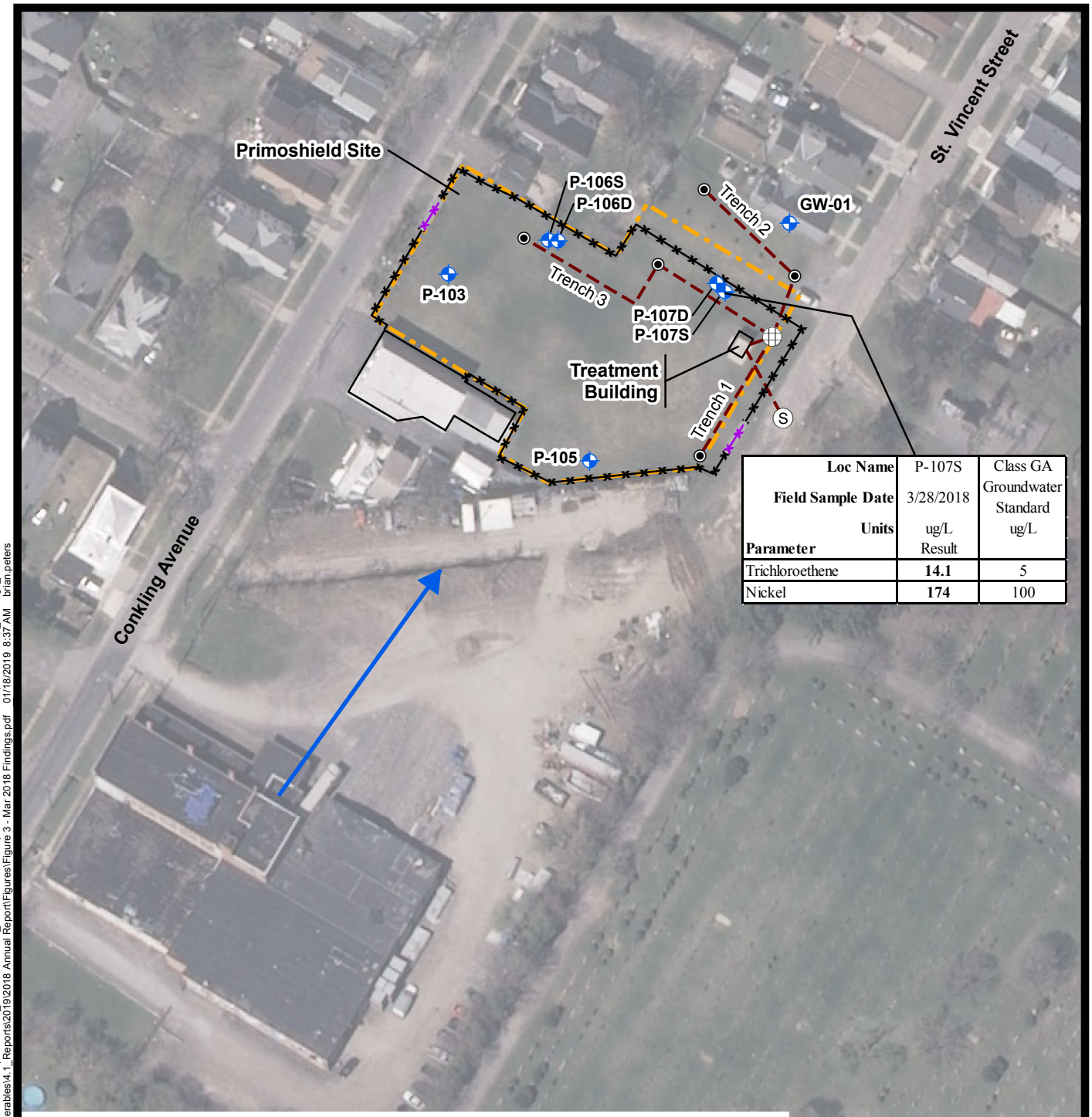
SITE FEATURES

Project 3612122251 Figure 2



Loc Name	P-107S	Class GA Groundwater Standard
Field Sample Date	3/28/2018	
Units	ug/L	ug/L
Parameter	Result	
Trichloroethene	**14.1**	5
Nickel	**174**	100

Legend

- Cleanout Access Point
- 4-foot diameter manhole
- Discharge to Sanitary Sewer
- Groundwater Monitoring Well
- Perimeter Fence
- Perimeter Fence Gate
- Approximate GW flow direction
- Underground collection trench
- Site Boundary

N

0 50 100 Feet

Oneida County color digital orthoimagery (2008) from New York State GIS Clearinghouse at: http://www.nysgis.state.ny.us

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NYSDEC Site # 633027
PRIMOSHIELD INC.
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Exceedances of Class GA Groundwater Standards, March 2018
Project 3612122251 Figure 3

TABLES

Table 1: Site Management Requirements
(Inspection and Long Term Monitoring)

Component	Action	Required Frequency
TREATMENT SYSTEM		
Treatment System	Inspection	Semi-annually in spring and summer
Effluent	Grab sample	Semi-annually in spring and summer
ENVIRONMENTAL MONITORING		
Groundwater Monitoring Program		
7 monitoring locations	Low flow sampling	Every 15 months (June 2019)
Groundwater Monitoring System	Inspection	Every 15 months (June 2019)

Table 2: Summary of Groundwater Measurements

Well ID	Ground Elevation (feet msl)	Estimated Measurement Point Elevation (feet msl)	Stickup on Casing (feet)	TOC to TOR (feet)	Depth to BOW (feet TOR)	12/20/2011 Water Level (feet TOR)	12/20/2011 Water Elevation (feet msl)	12/11/2012 Water Level (feet TOR)	12/11/2012 Water Elevation (feet msl)	3/27/2013 Water Level (feet TOR)	3/27/2013 Water Elevation (feet msl)	6/23/2014 Water Level (feet TOR)	6/23/2014 Water Elevation (feet msl)	9/8/2015 Water Level (feet TOR)	9/8/2015 Water Elevation (feet msl)	12/19/2016 Water Level (feet TOR)	12/19/2016 Water Elevation (feet msl)	10/23/2017 Water Level (feet TOR)	10/23/2017 Water Elevation (feet msl)	3/26/2018 Water Level (feet TOR)	3/26/2018 Water Elevation (feet msl)	11/28/2018 Water Level (feet TOR)	11/28/2018 Water Elevation (feet msl)
P-103	521.8	524.3	2.8	0.34	18.1	7.04	517.22	6.74	517.52	6.77	517.49	7.07	517.19	8.47	515.79	6.7	517.56	8.65	515.61	5.96	518.30	5.95	518.31
P-105	522.7	525.1	2.9	0.48	18.2	4.75	520.37	3.85	521.27	4.35	520.77	4.57	520.55	5.3	519.82	4.21	520.91	4.97	520.15	3.98	521.14	3.81	521.31
P-106-S	521.1	524.8	4.0	0.27	18.5	7.38	517.45	5.81	519.02	6.62	518.21	7.92	516.91	9.98	514.85	6.36	518.47	9.87	514.96	5.78	519.05	5.00	519.83
P-106-D	520.8	524.3	3.9	0.39	77.6	28.81	495.50	29.11	495.20	28.73	495.58	28.97	495.34	29.16	495.15	29.54	494.77	29.15	495.16	29.15	495.16	28.11	496.20
P-107-S	519.4	522.1	2.9	0.21	17.2	6.43	515.66	4.89	517.20	6.43	515.66	8.11	513.98	10.17	511.92	6.06	516.03	10.19	511.90	6.13	515.96	4.39	517.70
P-107-D	519.3	522.0	3.2	0.50	77.7	29.28	492.72	29.57	492.43	29.13	492.87	29.45	492.55	29.56	492.44	30.04	491.96	29.56	492.44	29.65	492.35	28.57	493.43
GW-01	517*	517.0	0	0.41	17.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.56	512.44	5.39	511.61	3.76	513.24	NM	NM

Notes:
1) Ground Elevation from monitoring well logs included in Monitoring Plan for Primoshield Plating January 2004
2) Measurement Point Elevation calculated using the ground elevation and field measurements of casing stickup and the distance from the top of riser to the top of casing; therefore, the water elevations are approximate
3) NM = Not measured
4) NA = Not applicable
5) msl = Mean sea level
6) TOC = Top of casing
7) TOR = Top of riser
8) Ground surface and well measurement point elevations for GW-01 are estimated
*- estimated based on site survey.

Table 3: Sampling and Analysis Plan

Performance Monitoring - Semi-Annual		
Sample Locations	**pH (SM 4500-H+) Metals (200.7)* Cyanide (9012B)**	**VOC (624)**
Effluent	X	X
Monitoring Wells - 15 Month**		
Sample Locations	**Metals (6010B)**	**VOC (8260B)**
P-103	X	X
P-105	X	X
P-106S	X	X
P-106D	X	X
P-107S	X	X
P-107D	X	X
GW-01	X	X

Notes:
*- Cadmium, chromium, copper, lead, nickel and zinc.
An 'X' marked in a column indicates the analysis to be performed for that sample location.
VOCs = Volatile Organic Compounds

**-Samples collected in March 2018; next groundwater monitoring event is June 2019.

Table 4: Long Term Monitoring Summary of Compounds Detected - March 2018

						Location Name	GW-01		P-103		P-105		P-106D		P-106S		P-107D		P-107S	
						Sample Date	3/27/2018		3/27/2018		3/27/2018		3/27/2018		3/27/2018		3/28/2018		3/28/2018	
						Sample ID	663027 - GW01		663027 - P103		663027 - P105		663027 - P106D		663027 - P106S		663027 - P107D		663027 - P107S	
						Qc Code	FS		FS		FS		FS		FS		FS		FS	
Parameter	**HA**	**MCL**	**GA**	**GV**	**Units**		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,4-Dioxane SW8260C-SIM																				
1,4-Dioxane	NS	NS	NS	NS	µg/L		0.4	U			0.4	U	0.4	U	0.4	U				
PFCs Modified 537																				
Perfluorooctanoic acid (PFOA)	70	10	NS	NS	ng/L						2	U	2	U	2	U				
Perfluorooctanesulfonic acid (PFOS)	70	10	NS	NS	ng/L						2	U	2	U	**0.66**	J				
Sum PFOA and PFOS	70	10	NS	NS	ng/L						2	U	2	U	**0.66**	J				
Perfluorobutanesulfonic acid (PFBS)	NS	NS	NS	NS	ng/L						2	U	2	U	**0.38**	J				
Perfluorobutanoic acid (PFBA)	NS	NS	NS	NS	ng/L						**0.55**	J	**0.6**	J	**1**	J				
Volatile Organic Compounds SW8260C																				
1,1,1-Trichloroethane	NS	NS	5	NS	µg/L		**0.5**	J	**2.1**		1	U	1	U	1	U	1	U	**0.44**	J
1,1-Dichloroethane	NS	NS	5	NS	µg/L		1	U	1	U	1	U	1	U	1	U	1	U	**0.32**	J
Trichloroethene	NS	NS	5	NS	µg/L		1	U	**0.84**	J	1	U	1	U	1	U	1	U	**7.1**	
Metals (Total) SW6010C																				
Chromium	NS	NS	50	NS	µg/L				10	U	10	U	**1.7**	J	10	U	10	U	**2.4**	J
Nickel	NS	NS	100	NS	µg/L				40	U	40	U	40	U	40	U	40	U	**174**	

Notes:
Only compounds detected shown
HA = EPA 2016 Revised Health Advisory
MCL = Maximum Contamination Level, proposed by NYSDOH
GA = NYS Class GA groundwater quality standard Part 703
GV = NYS Guidance Value
Shaded = Result exceeds HA, GA, or GV standard
Bold = contaminant detected
J = result estimated
U = not detected
NS= No standard
µg/L = micrograms per liter
ng/L = nanograms per liter
FS = field sample

Table 5: Summary of Compounds Detected at GW-01 2015 to 2018

				Location Name	GW-01		GW-01		GW-01		GW-01		GW-01		GW-01	
				Sample Date	9/10/2015		5/4/2016		6/28/2016		7/20/2016		9/13/2016		12/20/2016		3/27/2018	
				Sample ID	633027GW01		633027GW01		GW-01		GW-01		GW-01		633027GW01		633027 - GW01	
				Qc Code	FS		FS		FS		FS		FS		FS		FS	
Parameter	**HA**	**GA**	**GV**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Volatile Organic Compounds SW8260C																		
1,1,1-Trichloroethane	NS	5	NS	µg/L	1	UJ	**1.4**		**0.36**	J	**0.49**	J	**0.38**	J	**1.4**		**0.5**	J
1,1-Dichloroethane	NS	5	NS	µg/L	1	UJ	**0.63**	J	1	U	1	U	1	U	**0.36**	J	1	U

Notes:
Only compounds detected shown
HA = EPA 2016 Revised Health Advisory
GA = NYS Class GA groundwater quality standard Part 703
GV = NYS Guidance Value
Bold = contaminant detected
J = result estimated
U = not detected
µg/L = micrograms per liter
FS = field sample

ATTACHMENT 1

FIELD DATA RECORDS – MARCH 2018 LTM

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER: 3612122251-04.****

PROJECT: NYSDEC Primoshield Inc.
FIELD SAMPLE NUMBER: 633027-GW01
SITE ID: (MW) P- GW01
SITE TYPE: WELL
DATE: 3/26/18
ACTIVITY: START 18:15 (3/26) END 16:40 (3/27)
SAMPLE TIME: 12:43

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER: 3.76 FT
FINAL DEPTH TO WATER: DRY FT
DRAWDOWN VOLUME: DRY GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})
TOTAL VOL. PURGED: ~~3.47~~ 18 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
[X] TOP OF WELL RISER
[ ] TOP OF PROTECTIVE CASING

WELL DEPTH (TOR): 17.4 FT
SCREEN LENGTH: 10 FT
RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED: DRY —

PROTECTIVE CASING STICKUP (FROM GROUND): NA FT
PID AMBIENT AIR: NM PPM
PID WELL MOUTH: NM PPM
PRESSURE TO PUMP: NA PSI
REFILL SETTING: NA

CASING / WELL DIFFER.: 0.48 FT
WELL DIAM.: 1 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	X		
CASING	X		
LOCKED			X
COLLAR	X		

DISCHARGE SETTING: NA

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCT. (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10	REDOX (mv) (+/- 10 mv)	COMMENTS
18:17	3.76	600	NM	→	→	→	>999	NM	PURGING TO DRY
18:27	WELL	RAN	DRY,	WILL	RETURN	TOMORROW	TO	COLLECT	SAMPLE
12:37	4.19	150	RETURN	TO	WELL TO	STABILIZE	AND	COLLECT	SAMPLES (3/27)
12:42	7.81	150	8.16	0.637	7.09	4.63	888	133.5	VOCs & 1,4 DIOX COLLECTED
12:52	8.25	150	7.96	0.572	7.08	7.00	641	131.4	CONT. PURGE FOR TURB
12:57	8.92	150	7.99	0.544	7.05	7.19	438	131.0	
13:02	9.70	150	8.02	0.537	7.04	7.01	260	131.4	
13:07	11.00	150	7.74	0.541	7.03	7.24	>999	131.8	
13:12	TURBIDITY	INCREASING,	METER	CANT	FIT	DOWN	WELL	W/HDPE,	PAUSE
	FOR	RECHARGE							
16:07	5.98	140	RETURN	TO	CHECK	RECHARGE	TURBIDITY	TO	DETERMINE
	IF IT	CAN	BE	SAMPLED	FOR	PFAS /	METALS		
16:17	8.60	~~8.39~~	8.39	0.572	7.24	8.09	806	96.1	
16:22	9.10	140	8.26	0.524	6.99	8.31	134	94.1	
16:27	9.85	140	7.99	0.513	7.01	8.39	113	96.5	PUMP STALLED, HAD TO INCREASE PURGE RATE
16:32	12.69	180	7.99	0.508	6.99	8.11	657	102.1	
16:37	NM*	180	8.02	0.510	7.03	7.93	975	104.0	
16:38	WELL	RAN	DRY,	TURBIDITY	<50	NEVER	REACHED.	METALS	& PFAS
	WILL	NOT	BE	COLLECTED	IN	THIS	EVENT.		
			8.0	0.510	7.0	7.9	980	100	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP: [X] GEOPUMP (peristaltic) [ ] QED BLADDER
TYPE OF TUBING: [ ] LOW DENSITY POLYETHYLENE [X] OTHER HDPE
TYPE OF PUMP MATERIAL: [ ] STAINLESS STEEL [ ] OTHER
TYPE OF BLADDER MATERIAL: [ ] TEFLON [ ] OTHER

ANALYTICAL PARAMETERS

	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
[X] VOC	8260B	HCl to pH <2	2 x 40ml	[X] NOT SAMPLED
[X] TAL METALS (Cd, Cr, Cu, Pb, Ni, Zn)	6010B/7470A/7141A	HNO3 to pH <2	500 ml poly	[X] Field Filtered
[ ] TAL METALS (Dissolved)	6010B/7470A/7141A	HNO3 to pH <2	500 ml poly	[ ] NOT SAMPLED
[X] PFAS	PFC_1DA-(MOD) 537 PFAS Standard list	4°C	2x250mL	[X]
[X] 1,4 DIOXANE	8260C-SIM(MOD)	4°C, HCl	1x40mL	

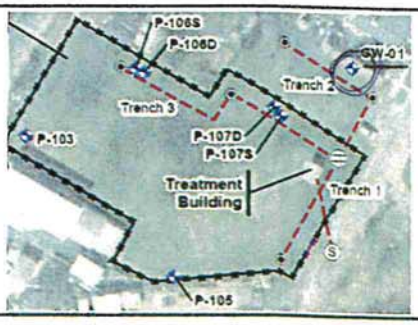
NOTES:

DUE TO TURBIDITY, PFAS & METALS COULD NOT BE COLLECTED
1.5gal → 8:12
1.37gal → 13:12
0.595gal → 16:38

checked by Andy 4/4/18

SIGNATURE:

LOCATION SKETCH



FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER: 3612122251-04.****

PROJECT	NYSDEC Primoshield Inc.	FIELD SAMPLE NUMBER	633027-P103
SITE ID	(MW) P- 103	SITE TYPE	WELL
ACTIVITY	START 10:25 END 11:55	SAMPLE TIME	11:43

DATE: 3/28/18 (28 crossed out, corrected to 27)

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER	5.96 FT	MEASUREMENT POINT	[X] TOP OF WELL RISER [ ] TOP OF PROTECTIVE CASING	PROTECTIVE CASING STICKUP (FROM GROUND)	2.81 FT
FINAL DEPTH TO WATER	7.71 FT	WELL DEPTH (TOR)	18.00 FT	PID AMBIENT AIR	NM PPM
DRAWDOWN VOLUME (initial - final x 0.16 {2-inch} or x 0.65 {4-inch})	0.28 GAL	SCREEN LENGTH	10 FT	PID WELL MOUTH	NM PPM
TOTAL VOL. PURGED (purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)	2.09 GAL	RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED	0.134	PRESSURE TO PUMP	NA PSI
				REFILL SETTING	NA

CASING / WELL DIFFER.: 0.33 FT

WELL DIAM.: 2 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	X		
CASING	X		
LOCKED	X		
COLLAR	X		

DISCHARGE SETTING: NA

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCT. (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10)	REDOX (mv) (+/- 10 mv)	COMMENTS
			NM						Purging to dry
10:32	6.14	115	BEGIN	PURGE					
10:57	7.25	115	6.04	0.462	7.29	6.60	5.09	121.4	
11:02	7.34	115	5.96	0.458	7.27	6.61	2.03	123.6	
11:07	7.42	115	5.96	0.455	7.27	6.48	1.83	124.5	
11:12	7.48	115	5.89	0.453	7.28	6.53	1.42	125.2	
11:17	7.56	115	6.12	0.452	7.28	6.38	2.02	125.5	
11:22	7.45	115	6.12	0.453	7.27	6.44	0.96	126.1	
11:27	7.55	115	5.79	0.456	7.26	6.63	1.45	127.1	
11:32	7.60	115	5.93	0.457	7.26	6.38	1.78	127.7	
11:37	7.66	115	5.97	0.459	7.26	6.36	1.17	128.0	
11:42	7.71	115	6.12	0.462	7.26	6.31	1.21	128.6	
11:43	— WELL STABLE, COLLECT SAMPLES								
			6.0	0.460	7.3	6.3	1.2	130	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP	TYPE OF TUBING	TYPE OF PUMP MATERIAL	TYPE OF BLADDER MATERIAL
[X] GEOPUMP (peristaltic)	[X] LOW DENSITY POLYETHYLENE	[ ] STAINLESS STEEL	[ ] TEFLON
[ ] QED BLADDER	[ ] OTHER ______	[ ] OTHER ______	[ ] OTHER ______

ANALYTICAL PARAMETERS

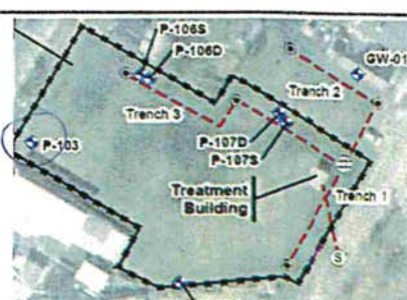
	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
[X] VOC	8260B	HCl to pH <2	3 x 40ml	[X]
[X] TAL METALS (Cd, Cr, Cu, Pb, Ni, Zn)	6010B/7470A/7141A	HNO3 to pH <2	125 ml poly (500 crossed out)	[X]
[ ] TAL METALS (Dissolved)	6010B/7470A/7141A	HNO3 to pH <2	500 ml poly	[ ] Field Filtered
[ ] ______	______	______	______	[ ]
[ ] ______	______	______	______	[ ]

NOTES: ~~Begin @ 10:30~~

Checked by [illegible] 4/4/18

SIGNATURE: [signature]

LOCATION SKETCH



FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER: 3612122251-04.****

PROJECT: NYSDEC Primoshield Inc.
FIELD SAMPLE NUMBER: 633027-P105
SITE ID: (MW) P- 105
SITE TYPE: WELL
DATE: 3/26/18
ACTIVITY: START 16:15 (3/26) END 10:22 (3/27)
SAMPLE TIME: 10:03

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER: 3.98 FT
FINAL DEPTH TO WATER: 7.05 FT
DRAWDOWN VOLUME: 0.491 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})
TOTAL VOL. PURGED: 19.4 ~~19.39~~ (TOTAL) GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT: [X] TOP OF WELL RISER [ ] TOP OF PROTECTIVE CASING
WELL DEPTH (TOR): 18~~4~~0 FT
SCREEN LENGTH: 10 FT
RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED: 0.025

PROTECTIVE CASING STICKUP (FROM GROUND): 3.0 FT
PID AMBIENT AIR: NM PPM
PID WELL MOUTH: NM PPM
PRESSURE TO PUMP: NA PSI
REFILL SETTING: NA

CASING / WELL DIFFER.: 0.48 FT
WELL DIAM.: 2 IN
DISCHARGE SETTING: NA

WELL INTERGRITY:

	YES	NO	N/A
CAP	X		~~X~~ N/A
CASING	X		
LOCKED	X		
COLLAR	X		

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCT. (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10)	REDOX (mv) (+/- 10 mv)	COMMENTS
16:22	3.98	750	NM					→	PURGING TO DRY
16:42	9.85	750	NM			→	3.90	NM	
17:08	12.50	750	NM			→	3.85	NM	
17:32	14.20	750	NM			→	4.52	NM	
17:50	15.00	750	NM	WELL APPEARS TO BE RECHARGING, STOP PURGE					PURGE TURB = 6.63
08:47	4.16	125	RETURN TO WELL, BEGIN NORMAL LOW-FLOW						PROCEDURE (3/27/18)
09:02	5.59	125	4.74	0.863	7.32	3.01	235.5→	6.20	REDOX/TURBIDITY SWITCHED
09:07	5.76	125	4.62	0.850	7.34	3.45	228.0→	6.70	
09:12	5.99	125	5.05	0.853	7.37	3.39	214.7→	8.26	
09:17	6.23	125	5.31	0.854	7.37	2.96	216.7→	7.64	
09:22	6.45	125	5.49	0.853	7.37	2.78	195.1→	7.79	
09:27	6.60	125	5.63	0.852	7.37	2.58	184.2→	6.59	
09:32	6.72	125	5.81	0.851	7.37	2.66	178.5→	7.92	
09:37	6.84	125	5.81	0.853	7.37	2.67	166.0→	5.84	
09:42	6.94	125	5.90	0.853	7.37	2.57	5.35	143.0	FIXED COLUMNS
09:47	6.97	115	6.23	0.854	7.35	2.51	4.49	129.1	DROPPED PURGE RATE, MOVED FLOW THRU FROM SUN
09:52	7.03	115	6.00	0.851	7.37	2.51	4.71	125.0	
09:57	7.01	115	5.98	0.851	7.38	2.48	3.70	120.3	
10:02	7.05	115	6.10	0.849	7.40	2.40	3.38	117.3	
10:03	WELL STABLE, COLLECT SAMPLES								

6 0.850 7.4 2.4 3.4 120

EQUIPMENT DOCUMENTATION

TYPE OF PUMP: [X] GEOPUMP (peristaltic) [ ] QED BLADDER
TYPE OF TUBING: [ ] LOW DENSITY POLYETHYLENE [X] OTHER HDPE
TYPE OF PUMP MATERIAL: [ ] STAINLESS STEEL [ ] OTHER
TYPE OF BLADDER MATERIAL: [ ] TEFLON [ ] OTHER

ANALYTICAL PARAMETERS

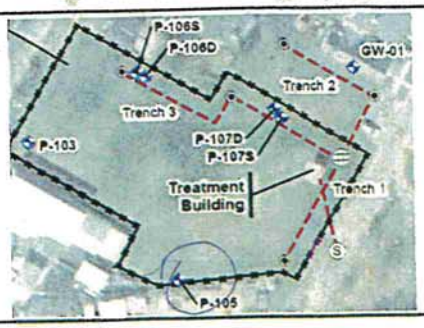
	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
[X] VOC	8260B	HCl to pH <2	3 x 40ml	[X]
[X] TAL METALS (Cd, Cr, Cu, Pb, Ni, Zn)	6010B/7470A/7141A	HNO3 to pH <2	125 ~~500~~ ml poly	[X]
[ ] TAL METALS (Dissolved)	6010B/7470A/7141A	HNO3 to pH <2	500 ml poly	[ ] Field Filtered
[X] PFAS PFL_IDA-(MOD)	537 PFAS Standard list	4°C	~~2~~ x 250mL	[X]
[X] 1,4 Dioxane	8260 C-SIM(MOD)	4°C, HCl	1 x 40mL	[X]

NOTES:

5gal @ 16:50
10gal @ 17:22
17.16 gal PURGED (3/26)
2,236 gal purged (3/27)

SIGNATURE: [signature]

LOCATION SKETCH



4/4/18

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER: 3612122251-04.****

PROJECT: NYSDEC Primoshield Inc.
FIELD SAMPLE NUMBER: 633027-P106S

SITE ID: (MW) P- 106S
SITE TYPE: WELL
DATE: 3/26 - 3/27/18

ACTIVITY: START 3/26/18 1630 END 3/27/18 1445
SAMPLE TIME: 1440

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER: 5.78' FT
FINAL DEPTH TO WATER: 6.36 FT
DRAWDOWN VOLUME: .09 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})
TOTAL VOL. PURGED: 6+2.2=8.2 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
[X] TOP OF WELL RISER
[ ] TOP OF PROTECTIVE CASING

WELL DEPTH (TOR): 18.4' FT
SCREEN LENGTH: 10 FT
RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED: .09/2.2 = 0.04

PROTECTIVE CASING STICKUP (FROM GROUND): 4.1 FT
PID AMBIENT AIR: — PPM
PID WELL MOUTH: — PPM
PRESSURE TO PUMP: — PSI
REFILL SETTING: —

CASING / WELL DIFFER.: 0.28 FT
WELL DIAM.: 2" IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	X		
CASING	X		
LOCKED	X		
COLLAR		X	

DISCHARGE SETTING: —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCT. (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10)	REDOX (mv) (+/- 10 mv)	COMMENTS
1635	5.78	3/26/18	Purged	6 gallons	- dry				Purged dry allowed
1650	17.70								brief recharge and
3/27/18	5.91	Resume	purge with Geopump	1322					purged dry again
1328	6.78	190	6.7	0.455	7.3	9.4	4.1	-38	
1335	6.86	135	6.4	0.446	7.3	9.5	4.6	-18	
1340	6.94	140	6.4	0.443	7.3	9.4	3.8	-12	
1345	6.01	140	6.3	0.441	7.3	9.2	3.1	-1	
1350	6.04	160	6.2	0.440	7.3	9.1	2.6	5	
1355	6.12	130	6.2	0.439	7.3	9.1	3.2	12	
1400	6.21	140	6.1	0.439	7.3	9.1	2.6	19	
1405	6.27	140	6.1	0.437	7.3	9.1	2.3	24	
1410	6.28	130	6.0	0.436	7.3	8.9	2.1	29	
1415	6.33	140	6.0	0.435	7.3	8.8	2.6	33	
1420	6.36	140	6.0	0.434	7.3	8.8	1.8	36	
			6	0.430	7.3	8.8	1.8	40	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
[X] GEOPUMP (peristaltic)
[ ] QED BLADDER

TYPE OF TUBING
[ ] LOW DENSITY POLYETHYLENE
[X] OTHER HDPE

TYPE OF PUMP MATERIAL
[ ] STAINLESS STEEL
[ ] OTHER

TYPE OF BLADDER MATERIAL
[ ] TEFLON
[ ] OTHER

ANALYTICAL PARAMETERS

	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
[X] VOC	8260B	HCl to pH <2	3 x 40ml	[X]
[X] TAL METALS (Cd, Cr, Cu, Pb, Ni, Zn)	6010B/7470A/7141A	HNO3 to pH <2	125 ~~500~~ ml poly	[X]
[X] ~~TAL METALS (Dissolved)~~	6010B/7470A/7141A	HNO3 to pH <2	500 ml poly	[X] ~~Field Filtered~~
[X] PFAS	PFC_IDA-(MOD) ~~2 x 250 ml PPAS~~	4°C	2x250ml	[X]
[X] 1,4-Dioxane	~~1x40 ml~~ Standard List 8270C_SIM (MOD)	HCl	1x40ml	[X]

NOTES:

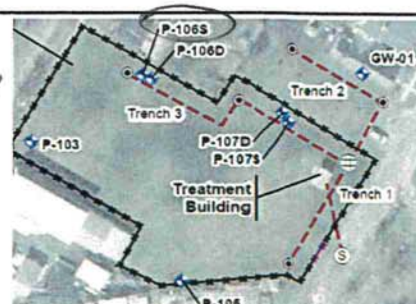
Checked for Rob H Jing

SIGNATURE: Jerry Rauff

LOCATION SKETCH

Casing is a little loose
no visible concrete
collar

4/11/18



FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER: 3612122251-04.****

PROJECT	NYSDEC Primoshield Inc.	FIELD SAMPLE NUMBER	633027-P106D
SITE ID	(MW) P- 106D	SITE TYPE	WELL
ACTIVITY	START 1650 3/26/18 END 1600 3/27/18	SAMPLE TIME	1540 3/27/18

DATE: 3/26 - 3/27/18

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER: 29.15 FT

FINAL DEPTH TO WATER: 74.6 top of pump FT

DRAWDOWN VOLUME: 0.19' GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch}) During Lowflow.

TOTAL VOL. PURGED: 10 + 4.5 = 14.5 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT:
- [x] TOP OF WELL RISER
- [ ] TOP OF PROTECTIVE CASING

WELL DEPTH (TOR): 77.50 FT

SCREEN LENGTH: 10 FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED: 0.19 / 4.5 = 0.04

PROTECTIVE CASING STICKUP (FROM GROUND): 4.0 FT

PID AMBIENT AIR: — PPM

PID WELL MOUTH: — PPM

PRESSURE TO PUMP: 30 — PSI

REFILL SETTING: 13 —

CASING / WELL DIFFER.: 0.39 FT

WELL DIAM.: 2" IN

DISCHARGE SETTING: 7 —

WELL INTERGRITY:

	YES	NO	N/A
CAP	X		
CASING	X		
LOCKED	X		
COLLAR		X	

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCT. (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10	REDOX (mv) (+/- 10 mv)	COMMENTS
1703	29.15	Start purge with Tornado pump							
1712	55.10								5. Gallons
1734	73.00								10 Gallons
1740	Purged to intake of pump (≈75-76')								
	Pulled pump will low flow sample on TVCs with PFC free bladder pump								
	and HDPE tubing.								
3/27/18	28.91	0924 Start purge							
0935	30.80	80	6.1	0.552	8.9	10.2	87	-78	
0945	31.46	200	8.5	0.536	9.1	8.5	103	-118	
0955	31.39	105	7.5	0.522	9.1	7.6	97	-128	
1005	31.54	125	7.5	0.499	9.1	6.2	136	-134	Having trouble stabilizing
1015	31.28	90	6.9	0.486	9.1	5.5	150	-125	rate.
1025	30.85	60	6.3	0.474	9.1	4.3	129	-130	
1035	30.59	50	6.0	0.472	9.1	2.3	123	-131	
1045	30.52	70	6.1	0.473	9.1	2.4	107	-135	
1055	30.34	50	6.2	0.480	9.1	2.2	80	-146	
1105	30.51	75	6.4	0.489	9.1	2.2	67	-146	
1115	30.53	60	7.0	0.493	9.1	2.0	59	-149	
1125	30.64	120	7.3	0.491	9.1	1.9	55	-151	
1135	30.47	50	7.0	0.509	9.0	1.5	52	-153	
1145	30.33	50	7.0	0.504	9.0	1.6	53	-150	
			7.0	0.500	9.0	1.6	50	-150	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
- [ ] GEOPUMP (peristaltic)
- [x] QED BLADDER

TYPE OF TUBING
- [ ] LOW DENSITY POLYETHYLENE
- [x] OTHER HDPE Silastic

TYPE OF PUMP MATERIAL
- [x] STAINLESS STEEL
- [ ] OTHER

TYPE OF BLADDER MATERIAL
- [ ] TEFLON
- [x] OTHER Poly

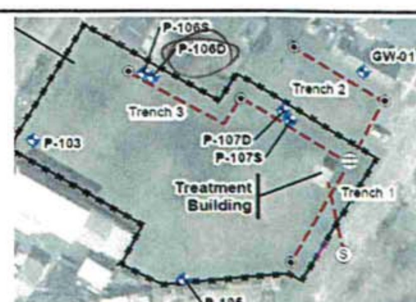
ANALYTICAL PARAMETERS

	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
[x] VOC	8260B	HCl to pH <2	3 x 40ml	X
[x] TAL METALS (Cd, Cr, Cu, Pb, Ni, Zn)	6010B/7470A/7141A	HNO3 to pH <2	125 ~~500~~ ml poly	X
[ ] TAL METALS (Dissolved)	6010B/7470A/7141A	HNO3 to pH <2	500 ml poly	Field Filtered
[x] PFCs	PFC-10A-(mod) PFAS Standard list	4°C	2 x 250ml poly	X
[x] 1-4, Dioxane	8260C-SIM	HCl	1 x 40ml	X

NOTES: Well recharge rate ≈ 100 ml/min ± Turbidity issues.

Reflected by Ruth for 4/4/18

LOCATION SKETCH



SIGNATURE: Jerry Randolph

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER: 3612122251-04.****

Page 2 of 2

PROJECT: NYSDEC Primoshield Inc. | FIELD SAMPLE NUMBER: 683027-P106D

SITE ID: (MW) P-106D | SITE TYPE: WELL | DATE: 3/27/18

ACTIVITY: START 3/26/18 1650 END 1600 3/27/18 | SAMPLE TIME: 1540

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER: 29.15 FT

FINAL DEPTH TO WATER: 74.6 TOP OF PUMP FT

DRAWDOWN VOLUME: 0.19' GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch}) DURING LOW FLOW

TOTAL VOL. PURGED: 10+ 4.5 = 14.5 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT: [X] TOP OF WELL RISER [ ] TOP OF PROTECTIVE CASING

WELL DEPTH (TOR): 77.50 FT

SCREEN LENGTH: 10 FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED: .04 0.19/4.5

PROTECTIVE CASING STICKUP (FROM GROUND): 4.0 FT

PID AMBIENT AIR: — PPM

PID WELL MOUTH: — PPM

PRESSURE TO PUMP: 30 PSI

REFILL SETTING: 13

CASING / WELL DIFFER.: 0.39 FT

WELL DIAM.: 2 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	X		
CASING	X		
LOCKED	X		
COLLAR		X	

DISCHARGE SETTING: 7

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCT. (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10	REDOX (mv) (+/- 10 mv)	COMMENTS
1155	30.29	55	7.0	0.511	9.0	1.6	51	-147	
1205	30.23	50	7.1	0.519	9.0	1.7	43	-145	
1215	30.41	65	7.2	0.525	9.0	1.6	36	-148	
1225	30.48	65	7.5	0.522	9.0	1.4	37	-152	
1235	30.42	55	7.3	0.523	9.0	1.5	41	-149	
1245	30.38	50	7.3	0.521	9.0	1.5	39	-148	
1255	30.38	60	7.3	0.524	9.0	1.5	33	-147	
1305	30.32	50	7.5	0.530	9.0	1.6	30	-148	
1315	30.33	65	7.6	0.541	9.0	1.5	29	-147	
Moving to P-106S Going to let P-106D purge and try to get turbidity below 10NTU									
1450							24		Collecting metals
1505							23		and PFC samples
1512							26		
1520							—		
			7	0.540	9.0	1.5	30	-150	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP: [ ] GEOPUMP (peristaltic) [X] QED BLADDER

TYPE OF TUBING: [ ] LOW DENSITY POLYETHYLENE [X] OTHER HDPE

TYPE OF PUMP MATERIAL: [X] STAINLESS STEEL [X] OTHER Pol

TYPE OF BLADDER MATERIAL: [ ] TEFLON [X] OTHER Poly

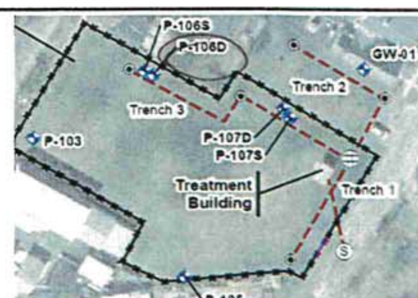
ANALYTICAL PARAMETERS

	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
[X] VOC	8260B	HCl to pH <2	3 ~~2~~ x 40ml	[X]
[X] TAL METALS (Cd, Cr, Cu, Pb, Ni, Zn)	6010B/7470A/7141A	HNO3 to pH <2	250 ~~500~~ ml poly	[X]
[X] ~~TAL METALS (Dissolved)~~ (M)	6010B/7470A/7141A	HNO3 to pH <2	500 ml poly	[ ] Field Filtered
[X] PFAS	PFC-1DA (MOD) PFAS Standard list	4°C	2x 250ml	[X]
[X] 1,4-Dioxane	8260 C-SIM	HCl	1x 40ml	[X]

NOTES: Well recharge ≈ 100 ml/min ±, turbidity issues.

Checked by MLH 4/4/18

LOCATION SKETCH



SIGNATURE: [signature]

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING 633027-P107S

JOB NUMBER 3612122251-04.****

PROJECT NYSDEC Primoshield Inc.

FIELD SAMPLE NUMBER 633027P2075

SITE ID (MW) P- 107S

SITE TYPE WELL

DATE 3/26/18 - 3/28/18

ACTIVITY START 08:40 (3/28) END 09:45 (3/28)

SAMPLE TIME 09:38

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 6.13 FT

FINAL DEPTH TO WATER 4.60 FT

DRAWDOWN VOLUME 0.245 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED 5.145 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
- [x] TOP OF WELL RISER
- [ ] TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) 17.1 FT

SCREEN LENGTH 10 FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED 0.048

PROTECTIVE CASING STICKUP (FROM GROUND) 3.1 FT

PID AMBIENT AIR — PPM

PID WELL MOUTH — PPM

PRESSURE TO PUMP — PSI

REFILL SETTING —

CASING / WELL DIFFER. 0.21 FT

WELL DIAM. 22 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	X		
CASING	X		
LOCKED	X		
COLLAR		X	

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCT. (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10	REDOX (mv) (+/- 10 mv)	COMMENTS
1800	6.13								
1804	16.9	Purged = 3 gallons - purged well dry. will low flow sample resting							
~~3/27/18~~	~~25.82~~								
3/28/18	4.54	150	BEGIN	PURGE @	08:42				
08:52	4.50	150	5.93	0.478	6.93	8.72	24.2	233.5	
08:57	4.57	150	5.84	0.463	7.01	8.57	14.2	224.3	
09:02	4.59	150	5.58	0.448	7.03	8.74	10.9	223.8	
09:07	4.59	150	5.52	0.433	7.03	8.81	8.01	225.9	
09:12	4.60	150	5.21	0.424	7.03	9.04	6.87	223.4	
09:17	4.59	150	5.24	0.416	7.03	9.09	7.25	217.4	
09:22	4.60	150	5.07	0.414	7.04	9.26	6.11	212.1	
09:32	4.60	150	5.01	0.408	7.04	9.26	6.21	206.9	
09:37	4.60	150	5.01	0.406	7.04	9.26	5.13	204.1	
09:38	— WELL STABLE, COLLECT SAMPLES								

5 0.410 7.0 9.3 5.1 204

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
- [x] GEOPUMP (peristaltic)
- [ ] QED BLADDER

TYPE OF TUBING
- [x] LOW DENSITY POLYETHYLENE
- [ ] OTHER _____

TYPE OF PUMP MATERIAL
- [ ] STAINLESS STEEL
- [ ] OTHER _____

TYPE OF BLADDER MATERIAL
- [ ] TEFLON
- [ ] OTHER _____

ANALYTICAL PARAMETERS

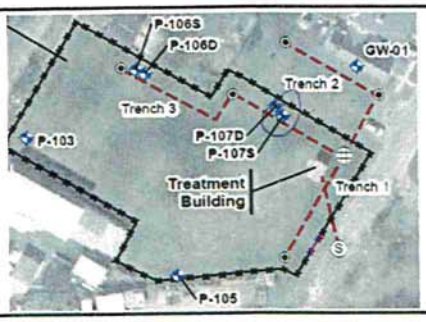
	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
[x] VOC	8260B	HCl to pH <2	~~3~~ 2 x 40ml	[x]
[x] TAL METALS (Cd, Cr, Cu, Pb, Ni, Zn)	6010B/7470A/7141A	HNO3 to pH <2	125 ~~500~~ ml poly	[x]
[ ] TAL METALS (Dissolved)	6010B/7470A/7141A	HNO3 to pH <2	500 ml poly	[ ] Field Filtered
[ ] _____	_____	_____	_____	[ ]
[ ] _____	_____	_____	_____	[ ]

NOTES:
3gal (3/26)
214gal (3/28)

Checked by Amber for 4/4/18

SIGNATURE: _____

LOCATION SKETCH



FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER: 3612122251-04.****

PROJECT: NYSDEC Primoshield Inc.
FIELD SAMPLE NUMBER: 633027-P107D
SITE ID: (MW) P-107D
SITE TYPE: WELL
DATE: 3/28/18
ACTIVITY: START 0830 END 1035
SAMPLE TIME: 1015

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER: 28.95 FT
FINAL DEPTH TO WATER: 29.19 FT
DRAWDOWN VOLUME: .038 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})
TOTAL VOL. PURGED: 1.3 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
[X] TOP OF WELL RISER
[ ] TOP OF PROTECTIVE CASING

WELL DEPTH (TOR): 77.6' FT
SCREEN LENGTH: 10' FT
RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED: .03

PROTECTIVE CASING STICKUP (FROM GROUND): 3.2 FT
PID AMBIENT AIR: — PPM
PID WELL MOUTH: — PPM
PRESSURE TO PUMP: 35 PSI
REFILL SETTING: 16

CASING / WELL DIFFER.: 0.44 FT
WELL DIAM.: 2" IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	X		
CASING	X		
LOCKED	X		
COLLAR		X	

DISCHARGE SETTING: 4

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCT. (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10	REDOX (mv) (+/- 10 mv)	COMMENTS
0848	28.95	Start purge.							
0856	29.16	105	6.2	0.405	10.7	6.0	61	116	
0905	29.18	80	6.3	0.369	10.5	3.4	32	19	
0915	29.20	80	6.7	0.358	10.4	1.4	17	-44	
0920	29.21	90	6.8	0.356	10.4	1.1	15	-63	
0925	29.25	90	6.8	0.354	10.4	1.0	18	-78	
0930	29.20	65	6.8	0.354	10.4	0.9	16	-90	
0935	29.17	55	6.5	0.354	10.4	0.9	17	-99	
0940	29.18	55	6.3	0.354	10.4	1.0	18	-106	
0945	29.18	55	5.9	0.353	10.3	0.8	19	-109	
0950	29.18	55	5.9	0.351	10.3	0.9	24	-114	
0955	29.19	55	5.9	0.350	10.4	0.9	27	-119	
	All parameters stable except turbidity increasing - going to grab								
	sample before turbidity increases too much.								
1018	(After sample turbidity						34		
			6	0.350	10.4	0.9	30	120	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
[ ] GEOPUMP (peristaltic)
[X] QED BLADDER

TYPE OF TUBING
[X] LOW DENSITY POLYETHYLENE
[ ] OTHER _____

TYPE OF PUMP MATERIAL
[X] STAINLESS STEEL
[ ] OTHER _____

TYPE OF BLADDER MATERIAL
[ ] TEFLON
[X] OTHER Poly

ANALYTICAL PARAMETERS

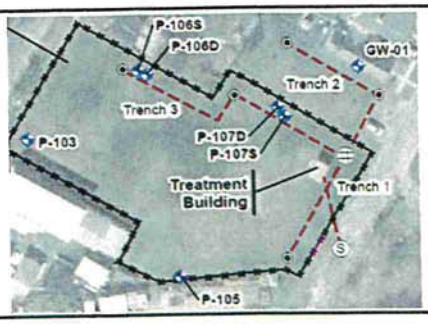
	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
[X] VOC	8260B	HCl to pH <2	3 x 40ml	[X]
[X] TAL METALS (Cd, Cr, Cu, Pb, Ni, Zn)	6010B/7470A/7141A	HNO3 to pH <2	250 ml poly	[X]
[ ] TAL METALS (Dissolved)	6010B/7470A/7141A	HNO3 to pH <2	500 ml poly	[ ] Field Filtered
[ ] _____	_____	_____	_____	[ ]
[ ] _____	_____	_____	_____	[ ]

NOTES: Turbidity increasing even after being very careful installing pump and purging at a very low rate.

Checked by Rachel H 4/4/18

SIGNATURE: Jerry Rudloff

LOCATION SKETCH



ATTACHMENT 2

CATEGORY A DATA VALIDATION REPORT

CATEGORY A REVIEW
MARCH 2018 GROUNDWATER SAMPLING PROGRAM
PRIMOSHIELD INCORPORATED SITE
UTICA, NEW YORK

1.0 INTRODUCTION

Groundwater samples were collected in March 2018 at the Primoshield Incorporated Site in Utica, New York, and shipped to ALS Environmental in Rochester, New York, and Test America Laboratories (TAL) in Amherst, New York, for analysis. Analyses for volatile organic compounds (VOCs) and metals were performed by ALS, and analyses for 1,4-dioxane and per- and polyfluorinated alkyl substances (PFAS) were performed by TAL. Samples were analyzed by one or more of the following methods:

- Volatile Organic Compounds (VOCs) by USEPA Method 8260C
- Metals (select list) by USEPA Method 6010C
- 1,4-Dioxane by USEPA Method 8260C-Selected Ion Monitoring (SIM)
- PFAS by USEPA Method 537 (Modified)

Results were reported in the following sample delivery groups (SDGs):

- R1802717
- 480-133240-1

Sample data included in this chemistry review is presented in the following tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Qualification Actions

Laboratory deliverables included:

- Category B deliverable as defined in the New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocols (NYSDEC, 2005)

The Category A review included the following evaluations. Data review checklists are provided as Attachment A.

- Lab Report Narrative Review
- Data Package Completeness and COC records (Table 1 verification)
- Sample Preservation and Holding Times
- QC Blanks
- Matrix Spike and Matrix Spike Duplicate (MS/MSD) Evaluation
- Reporting Limits
- Electronic Data Qualification and Verification

The following laboratory data qualifiers or data review qualifiers are used in the final data presentation:

U = target analyte is not detected at or above the reporting limit
J = concentration is estimated

2.0 POTENTIAL DATA LIMITATIONS

Based on the Category A Review conducted the data meets the data quality objectives; however, the following potential limitations were identified:

- Results for acetone, cadmium, and perfluorohexanesulfonic adicd (PFHxS) in a subset of samples were qualified non-detect (U) based on blank contamination.

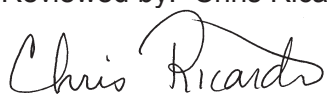
Reference:

New York State Department of Environmental Conservation (NYSDEC), 2005. "Analytical Services Protocols"; July 2005.

Data Validator: Julie Ricardi

Date: 5/16/2018

Reviewed by: Chris Ricardi, NRCC-EAC



Date: 5/23/2018

TABLE 1 - SUMMARY OF SAMPLES AND ANALYTICAL METHODS
CATEGORY A REVIEW
MARCH 2018 GROUNDWATER SAMPLING PROGRAM
PRIMOSHIELD INCORPORATED SITE
UTICA, NEW YORK

					Method Class	VOCs	1,4-Dioxane	PFCs	Metals
					Analysis Method	SW8260C	SW8260C-SIM	537 Modified	SW6010C
					Fraction	N	N	N	T
SDG	**Location**	**Sample ID**	**Sample Date**	**Media**	**Qc Code**	Param_Count	Param_Count	Param_Count	Param_Count
480-133240-1	GW-01	633027-GW01	3/27/2018	GW	FS		1		
480-133240-1	P-105	633027-P105	3/27/2018	GW	FS		1	18	
480-133240-1	P-106D	633027-P106D	3/27/2018	GW	FS		1	18	
480-133240-1	P-106S	633027-P106S	3/27/2018	GW	FS		1	18	
480-133240-1	QC	TRIP BLANK	3/27/2018	BW	TB		1		
R1802717	GW-01	633027 - GW01	3/27/2018	GW	FS	35			
R1802717	P-103	633027 - P103	3/27/2018	GW	FS	35			6
R1802717	P-105	633027 - P105	3/27/2018	GW	FS	35			6
R1802717	P-106D	633027 - P106D	3/27/2018	GW	FS	35			6
R1802717	P-106S	633027 - P106S	3/27/2018	GW	FS	35			6
R1802717	P-107D	633027 - P107D	3/28/2018	GW	FS	35			6
R1802717	P-107S	633027 - P107S	3/28/2018	GW	FS	35			6
R1802717	QC	633027 - EB1	3/28/2018	BW	EB	35			6
R1802717	QC	TRIP BLANK	3/27/2018	BW	TB	35			

N, T = total
FS = field sample
TB = trip blank
EB = equipment blank
GW = groundwater
BW = blank water

Prepared by: BJS 5/14/18
Checked by: JAR 5/16/18

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
CATEGORY A REVIEW
MARCH 2018 GROUNDWATER SAMPLING PROGRAM
PRIMOSHIELD INCORPORATED SITE
UTICA, NEW YORK

			SDG	480-133240-1		480-133240-1		480-133240-1	
			Location	GW-01		P-105		P-106D	
			Sample Date	3/27/2018		3/27/2018		3/27/2018	
			Sample ID	633027-GW01		633027-P105		633027-P106D	
			Qc Code	FS		FS		FS	
Method	**Class**	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
537 Modified	PFAS	Perfluorobutanesulfonic acid	ng/l			2	U	2	U
537 Modified	PFAS	Perfluorobutanoic acid	ng/l			0.55	J	0.6	J
537 Modified	PFAS	Perfluorodecanesulfonic acid	ng/l			2	U	2	U
537 Modified	PFAS	Perfluorodecanoic acid	ng/l			2	U	2	U
537 Modified	PFAS	Perfluorododecanoic acid	ng/l			2	U	2	U
537 Modified	PFAS	Perfluoroheptanesulfonic acid	ng/l			2	U	2	U
537 Modified	PFAS	Perfluoroheptanoic acid	ng/l			2	U	2	U
537 Modified	PFAS	Perfluorohexane sulfonic acid	ng/l			2	U	2	U
537 Modified	PFAS	Perfluorohexanoic acid	ng/l			2	U	2	U
537 Modified	PFAS	Perfluorononanoic acid	ng/l			2	U	2	U
537 Modified	PFAS	Perfluorooctane sulfonamide	ng/l			2	U	2	U
537 Modified	PFAS	Perfluorooctanesulfonic acid (PFOS)	ng/l			2	U	2	U
537 Modified	PFAS	Perfluorooctanoic acid (PFOA)	ng/l			2	U	2	U
537 Modified	PFAS	Perfluoropentanoic acid	ng/l			2	U	2	U
537 Modified	PFAS	Perfluorotetradecanoic acid	ng/l			2	U	2	U
537 Modified	PFAS	Perfluorotridecanoic acid	ng/l			2	U	2	U
537 Modified	PFAS	Perfluoroundecanoic acid	ng/l			2	U	2	U
537 Modified	PFAS	Sum PFOA and PFOS	ng/l			2	U	2	U
SW8260C-SIM	1,4-Dioxane	1,4-Dioxane	ug/l	0.4	U	0.4	U	0.4	U

ug/l = microgram per liter
ng/l = nanogram per liter
U = not detected
J = estimated value

Prepared by: BJS 5/16/18
Checked by: JAR 5/16/18

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
CATEGORY A REVIEW
MARCH 2018 GROUNDWATER SAMPLING PROGRAM
PRIMOSHIELD INCORPORATED SITE
UTICA, NEW YORK

		SDG	480-133240-1		480-133240-1	
		Location	P-106S		QC	
		Sample Date	3/27/2018		3/27/2018	
		Sample ID	633027-P106S		TRIP BLANK	
		Qc Code	FS		TB	
Method	**Class**	**Parameter**	**Units**	Result Qualifier	Result	Qualifier
537 Modified	PFAS	Perfluorobutanesulfonic acid	ng/l	0.38 J		
537 Modified	PFAS	Perfluorobutanoic acid	ng/l	1 J		
537 Modified	PFAS	Perfluorodecanesulfonic acid	ng/l	2 U		
537 Modified	PFAS	Perfluorodecanoic acid	ng/l	2 U		
537 Modified	PFAS	Perfluorododecanoic acid	ng/l	2 U		
537 Modified	PFAS	Perfluoroheptanesulfonic acid	ng/l	2 U		
537 Modified	PFAS	Perfluoroheptanoic acid	ng/l	2 U		
537 Modified	PFAS	Perfluorohexane sulfonic acid	ng/l	2 U		
537 Modified	PFAS	Perfluorohexanoic acid	ng/l	2 U		
537 Modified	PFAS	Perfluorononanoic acid	ng/l	2 U		
537 Modified	PFAS	Perfluorooctane sulfonamide	ng/l	2 U		
537 Modified	PFAS	Perfluorooctanesulfonic acid (PFOS)	ng/l	0.66 J		
537 Modified	PFAS	Perfluorooctanoic acid (PFOA)	ng/l	2 U		
537 Modified	PFAS	Perfluoropentanoic acid	ng/l	2 U		
537 Modified	PFAS	Perfluorotetradecanoic acid	ng/l	2 U		
537 Modified	PFAS	Perfluorotridecanoic acid	ng/l	2 U		
537 Modified	PFAS	Perfluoroundecanoic acid	ng/l	2 U		
537 Modified	PFAS	Sum PFOA and PFOS	ng/l	0.66 J		
SW8260C-SIM	1,4-Dioxane	1,4-Dioxane	ug/l	0.4 U	0.4	U

ug/l = microgram per liter
ng/l = nanogram per liter
U = not detected
J = estimated value

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
CATEGORY A REVIEW
MARCH 2018 GROUNDWATER SAMPLING PROGRAM
PRIMOSHIELD INCORPORATED SITE
UTICA, NEW YORK

			SDG	R1802717		R1802717		R1802717		R1802717	
			Location	GW-01		P-103		P-105		P-106D	
			Sample Date	3/27/2018		3/27/2018		3/27/2018		3/27/2018	
			Sample ID	633027 - GW01		633027 - P103		633027 - P105		633027 - P106D	
			Qc Code	FS		FS		FS		FS	
Method	**Class**	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260C	VOCs	1,1,1-Trichloroethane	ug/l	0.5	J	2.1		1	U	1	U
SW8260C	VOCs	1,1,2,2-Tetrachloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	1,1,2-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	1,1-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	1,1-Dichloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	1,2-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	1,2-Dichloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	2-Butanone	ug/l	5	U	5	U	5	U	5	U
SW8260C	VOCs	2-Hexanone	ug/l	5	U	5	U	5	U	5	U
SW8260C	VOCs	4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U
SW8260C	VOCs	Acetone	ug/l	5	U	5	U	5	U	5	U
SW8260C	VOCs	Benzene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Bromodichloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Bromoform	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Bromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Carbon disulfide	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Carbon tetrachloride	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Chlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Chloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Chloroform	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Chloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Cis-1,2-Dichloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Cis-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Dibromochloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Ethylbenzene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Methylene chloride	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Styrene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Tetrachloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Toluene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	trans-1,2-Dichloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	trans-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Trichloroethene	ug/l	1	U	0.84	J	1	U	1	U
SW8260C	VOCs	Vinyl chloride	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Xylene, o	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Xylenes (m&p)	ug/l	2	U	2	U	2	U	2	U
SW6010C	Metals	Cadmium	ug/l			5	U	5	U	5	U
SW6010C	Metals	Chromium	ug/l			10	U	10	U	1.7	J
SW6010C	Metals	Copper	ug/l			20	U	20	U	20	U
SW6010C	Metals	Lead	ug/l			50	U	50	U	50	U
SW6010C	Metals	Nickel	ug/l			40	U	40	U	40	U
SW6010C	Metals	Zinc	ug/l			20	U	20	U	20	U

ug/l = microgram per liter
U = not detected
J = estimated value

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
CATEGORY A REVIEW
MARCH 2018 GROUNDWATER SAMPLING PROGRAM
PRIMOSHIELD INCORPORATED SITE
UTICA, NEW YORK

			SDG	R1802717		R1802717		R1802717		R1802717	
			Location	P-106S		P-107D		P-107S		QC	
			Sample Date	3/27/2018		3/28/2018		3/28/2018		3/27/2018	
			Sample ID	633027 - P106S		633027 - P107D		633027 - P107S		TRIP BLANK	
			Qc Code	FS		FS		FS		TB	
Method	**Class**	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260C	VOCs	1,1,1-Trichloroethane	ug/l	1	U	1	U	0.44	J	1	U
SW8260C	VOCs	1,1,2,2-Tetrachloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	1,1,2-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	1,1-Dichloroethane	ug/l	1	U	1	U	0.32	J	1	U
SW8260C	VOCs	1,1-Dichloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	1,2-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	1,2-Dichloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	2-Butanone	ug/l	5	U	5	U	5	U	5	U
SW8260C	VOCs	2-Hexanone	ug/l	5	U	5	U	5	U	5	U
SW8260C	VOCs	4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U
SW8260C	VOCs	Acetone	ug/l	5	U	5	U	5	U	3.5	J
SW8260C	VOCs	Benzene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Bromodichloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Bromoform	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Bromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Carbon disulfide	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Carbon tetrachloride	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Chlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Chloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Chloroform	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Chloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Cis-1,2-Dichloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Cis-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Dibromochloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Ethylbenzene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Methylene chloride	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Styrene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Tetrachloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Toluene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	trans-1,2-Dichloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	trans-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Trichloroethene	ug/l	1	U	1	U	7.1		1	U
SW8260C	VOCs	Vinyl chloride	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Xylene, o	ug/l	1	U	1	U	1	U	1	U
SW8260C	VOCs	Xylenes (m&p)	ug/l	2	U	2	U	2	U	2	U
SW6010C	Metals	Cadmium	ug/l	5	U	5	U	5	U		
SW6010C	Metals	Chromium	ug/l	10	U	10	U	2.4	J		
SW6010C	Metals	Copper	ug/l	20	U	20	U	20	U		
SW6010C	Metals	Lead	ug/l	50	U	50	U	50	U		
SW6010C	Metals	Nickel	ug/l	40	U	40	U	174			
SW6010C	Metals	Zinc	ug/l	20	U	20	U	20	U		

ug/l = microgram per liter
U = not detected
J = estimated value

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
CATEGORY A REVIEW
MARCH 2018 GROUNDWATER SAMPLING PROGRAM
PRIMOSHIELD INCORPORATED SITE
UTICA, NEW YORK

			SDG	R1802717	
			Location	QC	
			Sample Date	3/28/2018	
			Sample ID	633027 - EB1	
			Qc Code	EB	
Method	**Class**	**Parameter**	**Units**	Result	Qualifier
SW8260C	VOCs	1,1,1-Trichloroethane	ug/l	1	U
SW8260C	VOCs	1,1,2,2-Tetrachloroethane	ug/l	1	U
SW8260C	VOCs	1,1,2-Trichloroethane	ug/l	1	U
SW8260C	VOCs	1,1-Dichloroethane	ug/l	1	U
SW8260C	VOCs	1,1-Dichloroethene	ug/l	1	U
SW8260C	VOCs	1,2-Dichloroethane	ug/l	1	U
SW8260C	VOCs	1,2-Dichloropropane	ug/l	1	U
SW8260C	VOCs	2-Butanone	ug/l	5.7	
SW8260C	VOCs	2-Hexanone	ug/l	5	U
SW8260C	VOCs	4-Methyl-2-pentanone	ug/l	5	U
SW8260C	VOCs	Acetone	ug/l	39	
SW8260C	VOCs	Benzene	ug/l	1	U
SW8260C	VOCs	Bromodichloromethane	ug/l	1	U
SW8260C	VOCs	Bromoform	ug/l	1	U
SW8260C	VOCs	Bromomethane	ug/l	1	U
SW8260C	VOCs	Carbon disulfide	ug/l	1	U
SW8260C	VOCs	Carbon tetrachloride	ug/l	1	U
SW8260C	VOCs	Chlorobenzene	ug/l	1	U
SW8260C	VOCs	Chloroethane	ug/l	1	U
SW8260C	VOCs	Chloroform	ug/l	1	U
SW8260C	VOCs	Chloromethane	ug/l	1	U
SW8260C	VOCs	Cis-1,2-Dichloroethene	ug/l	1	U
SW8260C	VOCs	Cis-1,3-Dichloropropene	ug/l	1	U
SW8260C	VOCs	Dibromochloromethane	ug/l	1	U
SW8260C	VOCs	Ethylbenzene	ug/l	1	U
SW8260C	VOCs	Methylene chloride	ug/l	1	U
SW8260C	VOCs	Styrene	ug/l	1	U
SW8260C	VOCs	Tetrachloroethene	ug/l	1	U
SW8260C	VOCs	Toluene	ug/l	1	U
SW8260C	VOCs	trans-1,2-Dichloroethene	ug/l	1	U
SW8260C	VOCs	trans-1,3-Dichloropropene	ug/l	1	U
SW8260C	VOCs	Trichloroethene	ug/l	1	U
SW8260C	VOCs	Vinyl chloride	ug/l	1	U
SW8260C	VOCs	Xylene, o	ug/l	1	U
SW8260C	VOCs	Xylenes (m&p)	ug/l	2	U
SW6010C	Metals	Cadmium	ug/l	5	U
SW6010C	Metals	Chromium	ug/l	10	U
SW6010C	Metals	Copper	ug/l	20	U
SW6010C	Metals	Lead	ug/l	50	U
SW6010C	Metals	Nickel	ug/l	40	U
SW6010C	Metals	Zinc	ug/l	20	U

ug/l = microgram per liter
U = not detected
J = estimated value

TABLE 3 - SUMMARY OF QUALIFICATION ACTIONS
CATEGORY A REVIEW
MARCH 2018 GROUNDWATER SAMPLING PROGRAM
PRIMOSHIELD INCORPORATED SITE
UTICA, NEW YORK

SDG	Analysis Method	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
480-133240-1	537 Modified	480-133240-1	633027-P105	Perfluorohexane sulfonic acid	0.3	J B	2	U	BL1	ng/l
480-133240-1	537 Modified	480-133240-2	633027-P106S	Perfluorohexane sulfonic acid	0.52	J B	2	U	BL1	ng/l
480-133240-1	537 Modified	480-133240-3	633027-P106D	Perfluorohexane sulfonic acid	0.31	J B	2	U	BL1	ng/l
R1802717	SW6010C	R1802717-006	633027 - P107S	Cadmium	2.1	J	5	U	BL1	ug/l
R1802717	SW8260C	R1802717-001	633027 - P105	Acetone	1.6	J	5	U	BL2	ug/l
R1802717	SW8260C	R1802717-002	633027 - GW01	Acetone	2.7	J	5	U	BL2	ug/l
R1802717	SW8260C	R1802717-003	633027 - P103	Acetone	2.3	J	5	U	BL2	ug/l
R1802717	SW8260C	R1802717-006	633027 - P107S	Acetone	1.8	J	5	U	BL2	ug/l

BL1 = method blank contamination
BL2 = trip or equipment blank contamination

Prepared by: BJS 5/16/18
Checked by: JAR 5/16/18

ATTACHMENT A

PFAS

NYSDEC PROJECT CATEGORY A REVIEW RECORD
Project: Primoshield
Method : Modified 537
Laboratory and SDG(s): TAL SAC **SDG#** 480-133240-1
Date: 5/14/18
Reviewer: Julie Ricardi
Review Level [X] CATEGORY A

1. ☑ **Case Narrative Review and Data Package Completeness** COMMENTS
Were all the samples on the COC analyzed for the requested analyses? (YES) NO (circle one)

Are Field Sample IDs and Locations assigned correctly? (YES) NO (circle one)

See attached narrative for comments re decanting PIOS & PIO6D due to excess sediment.

2. ☑ **Holding time and Sample Collection**
Were all water samples extracted within the 14 day holding time, and extracts analyzed within 28 days? (YES) NO (circle one)

3. ☑ **QC Blanks**
Are method blanks free of contamination? ~~YES~~ (NO) (circle one)
See attached for quals
Are field reagent blanks free of contamination? YES NO (NA) (circle one)

4. ☑ **Matrix Spike** (water & soil limits: lab limits)
Were MS/MSDs submitted/analyzed? YES (NO)

Were all results were within limits? YES NO (NA) (circle one)

5. ☑ **Field Duplicates** (RPD limits = water:50, soil:100)
Were Field Duplicates submitted/analyzed? YES (NO)

Were RPDs within criteria. YES NO (NA) (circle one)

6. ☑ **Reporting Limits:** Were samples analyzed at a dilution? YES (NO) (circle one)

7. ☑ **Electronic Data Review and Edits**: Does the EDD match the Form I's? (YES) NO (circle one)

8. **Table Review**
Table 1 (Samples and Analytical Methods)
Table 2 (Analytical Results)
Table 3 (Qualification Actions)
Were all tables produced and reviewed? (YES) NO (circle one)

Surrogates / Isotope Dilution: All w/in lab limits (25-150)
(actual recoveries 69 to 100)

LCS/D: OK

Case Narrative

Client: AMEC Foster Wheeler E & I, Inc
Project/Site: NYSDEC Primoshield

TestAmerica Job ID: 480-133240-1

Job ID: 480-133240-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-133240-1

Comments
No additional comments.

Receipt
The samples were received on 3/28/2018 10:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.7° C and 2.9° C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

LCMS
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-216477.

Method(s) 3535: The following samples: 633027-P105 (480-133240-1) and 633027-P106D (480-133240-3) was/were decanted prior to extraction, due to containing excess sediment which had the potential to clog the solid-phase column.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

note in report

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

JN 5/14/18

Detection Summary

Client: AMEC Foster Wheeler E & I, Inc
Project/Site: NYSDEC Primoshield

TestAmerica Job ID: 480-133240-1

Client Sample ID: 633027-P105 — Lab Sample ID: 480-133240-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.55	J	2.0	0.35	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	~~0.30~~	~~J B~~ 2.0 U	2.0	0.17	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 633027-P106S — Lab Sample ID: 480-133240-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.0	J	2.0	0.35	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.38	J	2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	~~0.52~~	~~J B~~ 2.0 U	2.0	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.66	J	2.0	0.54	ng/L	1		537 (modified)	Total/NA
Total PFOA and PFOS	0.66	J ~~B~~	2.0	0.54	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 633027-P106D — Lab Sample ID: 480-133240-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.60	J	2.0	0.34	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	~~0.31~~	~~J B~~ 2.0 U	2.0	0.17	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 633027-GW01 — Lab Sample ID: 480-133240-4

No Detections.

JA 5/14/18

Client Sample ID: TRIP BLANK — Lab Sample ID: 480-133240-5

No Detections.

This Detection Summary does not include radiochemical test results.

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 460-508115/9
Matrix: Water
Analysis Batch: 508115

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.40	0.20	ug/L			04/03/18 18:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*71 - 144*		*04/03/18 18:12*	*1*
4-Bromofluorobenzene	*104*		*72 - 133*		*04/03/18 18:12*	*1*

Lab Sample ID: LCS 460-508115/4
Matrix: Water
Analysis Batch: 508115

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	5.00	5.01		ug/L		100	66 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*71 - 144*
4-Bromofluorobenzene	*106*		*72 - 133*

Lab Sample ID: LCSD 460-508115/5
Matrix: Water
Analysis Batch: 508115

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	5.00	4.85		ug/L		97	66 - 135	3	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*71 - 144*
4-Bromofluorobenzene	*104*		*72 - 133*

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-216477/1-A
Matrix: Water
Analysis Batch: 216860

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 216477

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.0	0.35	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.49	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluorooctanoic acid (PFOA)	1.35	J 5x = 6.75	2.0	0.85	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluorodecanoic acid (PFDA)	ND	PFOA ND	2.0	0.31	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluoroundecanoic acid (PFUnA)	ND	all	2.0	1.1	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluorododecanoic acid (PFDoA)	ND	samples;	2.0	0.55	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	1.3	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluorobutanesulfonic acid (PFBS)	ND	no quals	2.0	0.20	ng/L		04/05/18 12:06	04/07/18 14:53	1

JM 5/14/18

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-216477/1-A
Matrix: Water
Analysis Batch: 216860

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 216477

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	0.240	J	2.0	0.17	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.19	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.32	ng/L		04/05/18 12:06	04/07/18 14:53	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.35	ng/L		04/05/18 12:06	04/07/18 14:53	1
Total PFOA and PFOS	1.35	J	2.0	0.54	ng/L		04/05/18 12:06	04/07/18 14:53	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*63*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*
13C4 PFBA	*69*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*
13C2 PFHxA	*67*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*
13C4 PFOA	*73*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*
13C5 PFNA	*78*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*
13C2 PFDA	*81*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*
13C2 PFUnA	*78*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*
13C2 PFDoA	*79*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*
18O2 PFHxS	*71*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*
13C4 PFOS	*74*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*
13C4-PFHpA	*73*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*
13C5 PFPeA	*70*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*
13C3-PFBS	*69*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*
13C2-PFTeDA	*76*		*25 - 150*	*04/05/18 12:06*	*04/07/18 14:53*	*1*

Lab Sample ID: LCS 320-216477/2-A
Matrix: Water
Analysis Batch: 216860

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 216477

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	39.0		ng/L		97	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	34.8		ng/L		87	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	37.1		ng/L		93	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	36.1		ng/L		90	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	35.7		ng/L		89	64 - 124
Perfluorononanoic acid (PFNA)	40.0	36.7		ng/L		92	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	39.0		ng/L		97	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	37.9		ng/L		95	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	36.2		ng/L		91	71 - 131
Perfluorotridecanoic Acid (PFTriA)	40.0	36.7		ng/L		92	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	36.9		ng/L		92	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	33.6		ng/L		95	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.6		ng/L		90	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	34.2		ng/L		90	68 - 128

No quals
9-5116/18

VOCs 1,4-Dioxane

PROJECT CATEGORY A REVIEW RECORD
Project: Pinoshield
Method : SW-846 8260B
Laboratory: TAL Edison **SDG(s):** 480-133240-1
Date: 5/14/18
Reviewer: Julie Ricardi
Review Level [X] CATEGORY A

1. ☑ **Case Narrative Review and COC/Data Package Completeness** COMMENTS
   Were problems noted? No

   Were all the samples on the COC analyzed for the requested analyses? (YES) NO (circle one)

   Are Field Sample IDs and Locations assigned correctly? (YES) NO (circle one)

2. ☑ **Holding time and Sample Collection**
   All samples were analyzed within the 14 day holding time. (YES) NO (circle one)

3. ☑ **QC Blanks**
   Are method blanks free of contamination? (YES) NO (circle one)

   Are Trip blanks free of contamination? (YES) NO (circle one)

   Are Rinse blanks free of contamination? YES NO (NA) (circle one)

4. ☑ **Matrix Spike** - Region II limits (water and soil 70-130%, water RPD 20, soil RPD 35)
   Were MS/MSDs submitted/analyzed? YES (NO)

   Were all results were within the Region II limits? YES NO (NA) (circle one)

5. ☑ **Field Duplicates** - Region II Limits (water RPD 50, soil RPD 100)
   Were Field Duplicates submitted/analyzed? YES (NO)

   Were all results were within Region II Limits? YES NO (NA) (circle one)

6. ☑ **Reporting Limits:** Were samples analyzed at a dilution? YES (NO) (circle one)

7. ☑ **Electronic Data Review and Edits**
   Does the EDD match the Form Is? (YES) NO (circle one)

8. ☑ **Table Review**
   Table 1 (Samples and Analytical Methods)
   Table 2 (Analytical Results)
   Table 3 (Qualification Actions)
   Were all tables produced and reviewed? (YES) NO (circle one)

   Table 4 (TICs) Did lab report TICs? YES (NO) (circle one)

Surrogates: All OK

LCS/D: OK

PROJECT CATEGORY A REVIEW RECORD
Project: Prmoshidd
Method : SW-846 8260B
Laboratory: ALS Rochester **SDG(s):** R1802717
Date: 5/14/18
Reviewer: Julie Ricardi
Review Level [X] CATEGORY A

1. ☑ **Case Narrative Review and COC/Data Package Completeness** COMMENTS
   Were problems noted? CCAL & LCS noted; see attached; no quals

   Were all the samples on the COC analyzed for the requested analyses? (YES) NO (circle one)

   Are Field Sample IDs and Locations assigned correctly? (YES) NO (circle one)

2. ☑ **Holding time and Sample Collection**
   All samples were analyzed within the 14 day holding time. (YES) NO (circle one)

3. ☑ **QC Blanks**
   Are method blanks free of contamination? (YES) NO (circle one)

   Are Trip blanks free of contamination? YES (NO) (circle one) > See attached for acetone

   Are Rinse blanks free of contamination? YES (NO) NA (circle one) quals

4. ☑ **Matrix Spike** - Region II limits (water and soil 70-130%, water RPD 20, soil RPD 35)
   Were MS/MSDs submitted/analyzed? YES (NO)

   Were all results were within the Region II limits? YES NO (NA) (circle one)

5. ☑ **Field Duplicates** - Region II Limits (water RPD 50, soil RPD 100)
   Were Field Duplicates submitted/analyzed? YES (NO)

   Were all results were within Region II Limits? YES NO (NA) (circle one)

6. ☑ **Reporting Limits:** Were samples analyzed at a dilution? YES (NO) (circle one)

7. ☑ **Electronic Data Review and Edits**
   Does the EDD match the Form Is? (YES) NO (circle one)

8. ☑ **Table Review**
   Table 1 (Samples and Analytical Methods)
   Table 2 (Analytical Results)
   Table 3 (Qualification Actions)
   Were all tables produced and reviewed? (YES) NO (circle one)

   Table 4 (TICs) Did lab report TICs? YES (NO) (circle one)

Surrogates: OK

LCS: See attached; no quals

ALS Environmental

Client: AMEC Foster Wheeler E & I (MACTEC)
Project: Primoshield
Sample Matrix: Water

Service Request: R1802717
Date Received: 03/29/2018

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV, validation deliverables including all summary forms and associated raw data. Analytical procedures performed by the lab are validated in accordance with NELAC standards. Any parameters that are not included in the lab's NELAC accreditation are identified on a "Non-Certified Analytes" report in the Miscellaneous Forms Section of this report. Individual analytical results requiring further explanation are flagged with qualifiers and/or discussed below. The flags are explained in the Report Qualifiers and Definitions page in the Miscellaneous Forms section of this report.

Sample Receipt:

Nine water samples were received for analysis at ALS Environmental on 03/29/2018. Any discrepancies noted upon initial sample inspection are noted on the cooler receipt and preservation form included in this data package. The samples were received in good condition and consistent with the accompanying chain of custody form. Samples are refrigerated at 6°C upon receipt at the lab except for aqueous samples designated for metals analyses, which are stored at room temperature.

Metals:

No significant anomalies were noted with this analysis.

Volatiles by GC/MS:

Method 8260C, : The lower control limit was exceeded for one or more analytes in the Continuing Calibration Verification (CCV). Since there were no detections of the analyte(s) in the associated field samples, the quantitation is not affected. The data quality was not significantly affected and no further corrective action was taken. low bias; no lab qual; no action*
Method 8260C, : The upper control limit was exceeded for one or more analytes in the Continuing Calibration Verification (CCV). The field samples analyzed in this sequence did not contain the analyte(s) in question above the Method Reporting Limit (MRL). Since the exceedance equates to a potential high bias, the data quality was not significantly affected and no further corrective action was taken. samples ND; OK no action
Method 8260C, 04/04/2018: The upper control criterion was exceeded for one or more analytes in the Laboratory Control Sample (LCS). There were no detections of the analyte(s) in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

samples ND;
OK no action

JA
5/14/18

* since other QC (LCS) is in control or has high bias w/ analytes ND

Approved by _____ Date 04/09/2018

ALS Environmental

SAMPLE DETECTION SUMMARY

CLIENT ID: 633027 - P105 — **Lab ID: R1802717-001**

Analyte	Results	Flag	MDL	PQL	Units	Method
Acetone 5.0 ~~2.0~~ U	~~1.6~~	~~J~~	1.3	5.0	ug/L	8260C

CLIENT ID: 633027 - GW01 — **Lab ID: R1802717-002**

Analyte	Results	Flag	MDL	PQL	Units	Method
1,1,1-Trichloroethane (TCA)	0.50	J	0.36	1.0	ug/L	8260C
Acetone 5.0 U	~~2.7~~	~~J~~	1.3	5.0	ug/L	8260C

CLIENT ID: 633027 - P103 — **Lab ID: R1802717-003**

Analyte	Results	Flag	MDL	PQL	Units	Method
1,1,1-Trichloroethane (TCA)	2.1		0.36	1.0	ug/L	8260C
Acetone 5.0 U	~~2.3~~	~~J~~	1.3	5.0	ug/L	8260C
Trichloroethene (TCE)	0.84	J	0.22	1.0	ug/L	8260C

CLIENT ID: 633027 - P107S — **Lab ID: R1802717-006**

Analyte	Results	Flag	MDL	PQL	Units	Method
Cadmium, Total	2.1	J	0.6	5.0	ug/L	6010C
Chromium, Total	2	J	2	10	ug/L	6010C
Nickel, Total	174		3	40	ug/L	6010C
1,1,1-Trichloroethane (TCA)	0.44	J	0.36	1.0	ug/L	8260C
1,1-Dichloroethane (1,1-DCA)	0.32	J	0.20	1.0	ug/L	8260C
Acetone 5.0 U	~~1.8~~	~~J~~	1.3	5.0	ug/L	8260C
Trichloroethene (TCE)	7.1		0.22	1.0	ug/L	8260C

CLIENT ID: 633027 - EB1 — **Lab ID: R1802717-008**

Analyte	Results	Flag	MDL	PQL	Units	Method
2-Butanone (MEK) (ND) no quals	(5.7) 5x = 28.5		0.81	5.0	ug/L	8260C
Acetone (U) subset, else ND	(39) 10x = 390		1.3	5.0	ug/L	8260C

CLIENT ID: Trip Blank — **Lab ID: R1802717-009**

Analyte	Results	Flag	MDL	PQL	Units	Method
Acetone (U) subset, else ND	(3.5) 10x = 35	J	1.3	5.0	ug/L	8260C

jr 5/16/18

QA/QC Report

Client: AMEC Foster Wheeler E & I (MACTEC)
Project: Primoshield/3612122251.03
Sample Matrix: Water

Service Request: R1802717
Date Analyzed: 04/03/18

Duplicate Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Units:ug/L
Basis:NA

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ1803056-03			RQ1803056-04					
Analyte Name	Analytical Method	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
1,1,1-Trichloroethane (TCA)	8260C	19.9	20.0	100	20.4	20.0	102	74-120	2	30
1,1,2,2-Tetrachloroethane	8260C	19.0	20.0	95	18.8	20.0	94	78-122	1	30
1,1,2-Trichloroethane	8260C	18.8	20.0	94	18.3	20.0	91	82-118	3	30
1,1-Dichloroethane (1,1-DCA)	8260C	19.9	20.0	100	20.1	20.0	101	78-117	<1	30
1,1-Dichloroethene (1,1-DCE)	8260C	17.5	20.0	87	17.9	20.0	89	74-135	2	30
1,2-Dichloroethane	8260C	22.9	20.0	115	22.3	20.0	112	71-127	3	30
1,2-Dichloropropane	8260C	19.2	20.0	96	19.9	20.0	100	80-119	3	30
2-Butanone (MEK)	8260C	23.1	20.0	115	22.9	20.0	114	61-137	1	30
2-Hexanone (ND)	8260C	25.4	20.0	127 *	24.0	20.0	120	63-124	6	30
4-Methyl-2-pentanone (ND)	8260C	25.1	20.0	126 *	24.4	20.0	122	66-124	3	30
Acetone	8260C	24.9	20.0	125	25.3	20.0	126	40-161	1	30
Benzene	8260C	19.3	20.0	96	19.5	20.0	97	76-118	1	30
Bromodichloromethane	8260C	18.4	20.0	92	18.5	20.0	93	78-126	<1	30
Bromoform	8260C	20.7	20.0	104	20.6	20.0	103	71-136	<1	30
Bromomethane	8260C	13.7	20.0	69	14.2	20.0	71	42-166	3	30
Carbon Disulfide	8260C	16.0	20.0	80	15.8	20.0	79	65-127	1	30
Carbon Tetrachloride	8260C	21.7	20.0	108	21.3	20.0	106	68-125	2	30
Chlorobenzene	8260C	18.0	20.0	90	18.5	20.0	93	80-121	3	30
Chloroethane	8260C	14.3	20.0	72	15.1	20.0	75	70-127	5	30
Chloroform	8260C	19.1	20.0	95	19.4	20.0	97	76-120	1	30
Chloromethane	8260C	20.1	20.0	101	20.3	20.0	101	69-145	<1	30
Dibromochloromethane	8260C	19.3	20.0	97	19.0	20.0	95	77-128	2	30
Dichloromethane	8260C	18.6	20.0	93	18.7	20.0	94	73-122	<1	30
Ethylbenzene	8260C	18.6	20.0	93	18.9	20.0	94	76-120	2	30
Styrene	8260C	18.9	20.0	95	19.4	20.0	97	80-124	2	30
Tetrachloroethene (PCE)	8260C	18.2	20.0	91	19.7	20.0	98	78-124	8	30
Toluene	8260C	18.7	20.0	94	19.5	20.0	97	77-120	4	30
Trichloroethene (TCE)	8260C	18.1	20.0	90	18.3	20.0	91	78-123	1	30
Vinyl Chloride	8260C	18.1	20.0	90	18.9	20.0	95	69-133	5	30
cis-1,2-Dichloroethene	8260C	17.4	20.0	87	17.7	20.0	88	80-121	2	30
cis-1,3-Dichloropropene	8260C	19.8	20.0	99	19.6	20.0	98	74-126	<1	30
m,p-Xylenes	8260C	38.1	40.0	95	38.3	40.0	96	78-123	<1	30
o-Xylene	8260C	19.0	20.0	95	19.3	20.0	96	80-120	1	30

METALS Cd, Cr, Cu, Pb, Ni, Zn

NYSDEC CATEGORY A REVIEW RECORD
Project: Primoshield
Method : 6010C
Laboratory and SDG(s): ALS Global - Rochester
Date: 5/14/18
Reviewer: Julie Ricerelli

Review Level [X] CATEGORY A

1. [✓] **Case Narrative Review and Data Package Completeness** COMMENTS
Were all the samples on the COC analyzed for the requested analyses? (YES) NO (circle one)

Are Field Sample IDs and Locations assigned correctly? (YES) NO (circle one)
No narrative problems noted

2. [✓] **Holding time and Sample Collection**
Were all samples prepared and analyzed with the holding time (6 months)? (YES) NO

3. [✓] **QC Blanks**
Are method blanks free of contamination? (YES) NO (circle one)
CCB have hits for Ni and Cd; see attached for Cd (qual else ND or >
Are Rinse blanks free of contamination? YES (NO) NA (circle one)

4. [✓] **Matrix Spike**
Were MS/MSDs submitted/analyzed? YES (NO)

Were all results were within 75-125% limits? YES NO (NA) (circle one)

5. [✓] **Field Duplicates**
Were Field Duplicates submitted/analyzed? YES (NO)

Aqueous RPD within limit? (20) YES NO (NA) (circle one)
Soil RPD within limit? (35) YES NO (NA) (circle one)

6. [✓] **Reporting Limits:** Were samples analyzed at a dilution? YES (NO) (circle one)

7. [✓] **Electronic Data Review and Edits:** Does the EDD match the Form Is? (YES) NO (circle one)

8. [✓] **Table Review:**
Table 1 (Samples and Analytical Methods)
Table 2 (Analytical Results)
Table 3 (Qualification Actions)
Were all tables produced and reviewed? (YES) NO (circle one)

LCS : OK

METALS

-3-

BLANKS

Contract: R1802717

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: 633027 - P10

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	C	Continuing Calibration Blank ug/L 1	C	2	C	3	C	Preparation Blank	C	M
Cadmium	0.59	U	0.70	J	0.59	U	0.59	U	0.590	U	P
Chromium	1.40	U	1.40	U	1.40	U	1.40	U	1.400	U	P
Copper	6.30	U	6.30	U	6.30	U	6.30	U	6.300	U	P
Lead	2.50	U	2.50	U	2.50	U	2.50	U	2.500	U	P
Nickel	2.60	U	3.10	J	2.60	U	2.60	U	2.600	U	P
Zinc	9.40	U	9.40	U	9.40	U	9.40	U	9.400	U	P

JR 5/14/18

5x

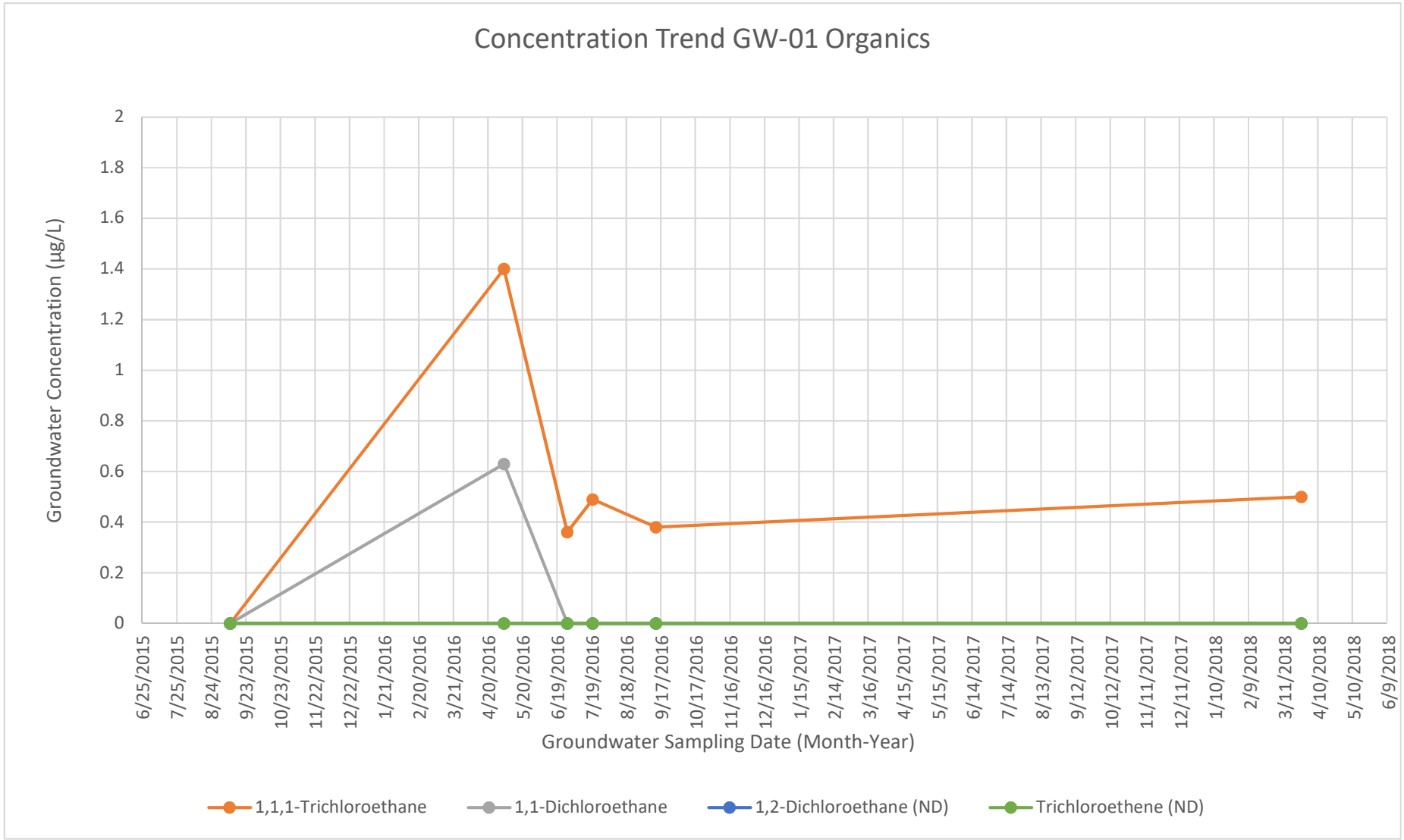
Cd 3.5 (U) P1075

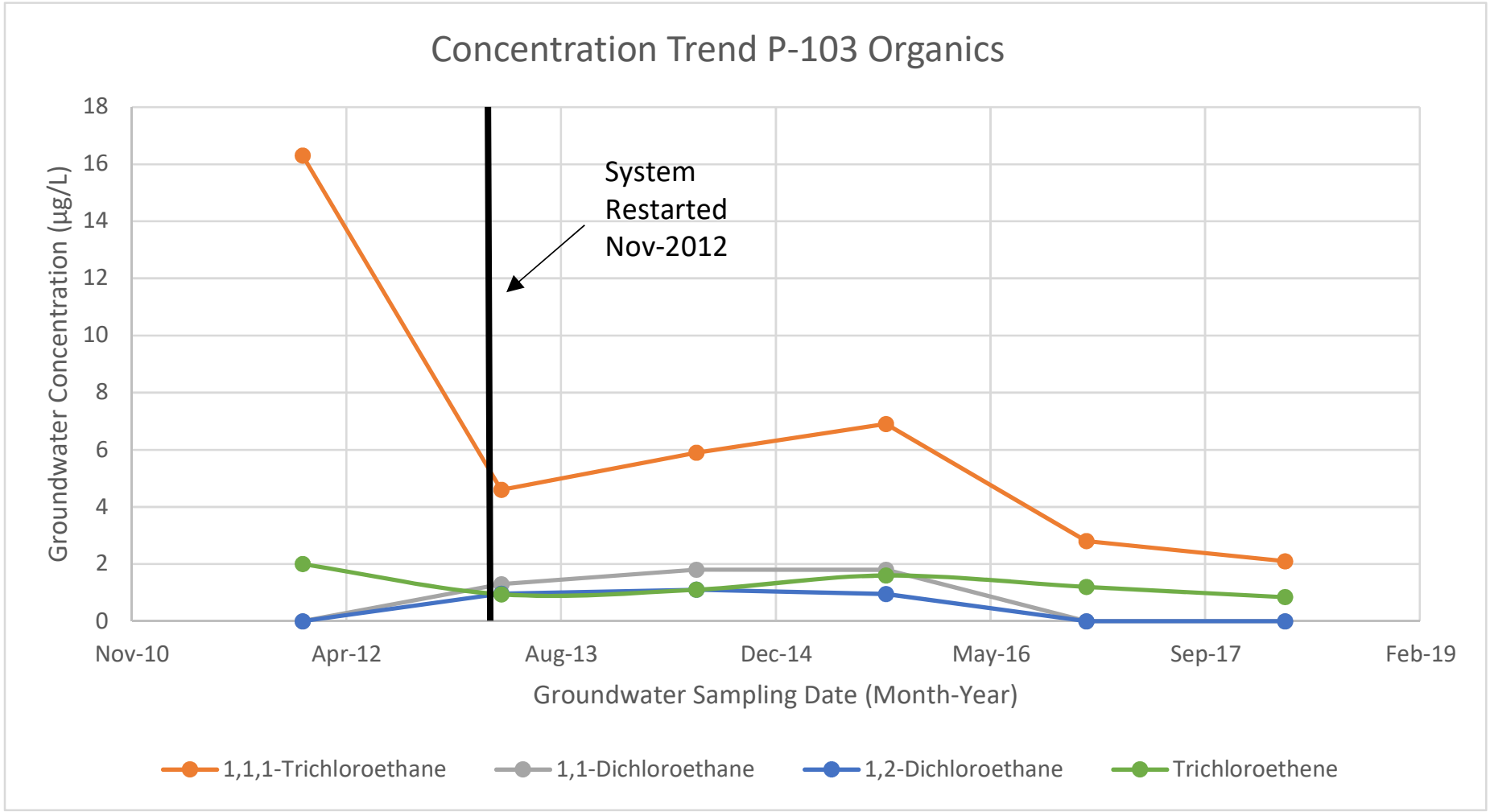
Ni 15.5 >

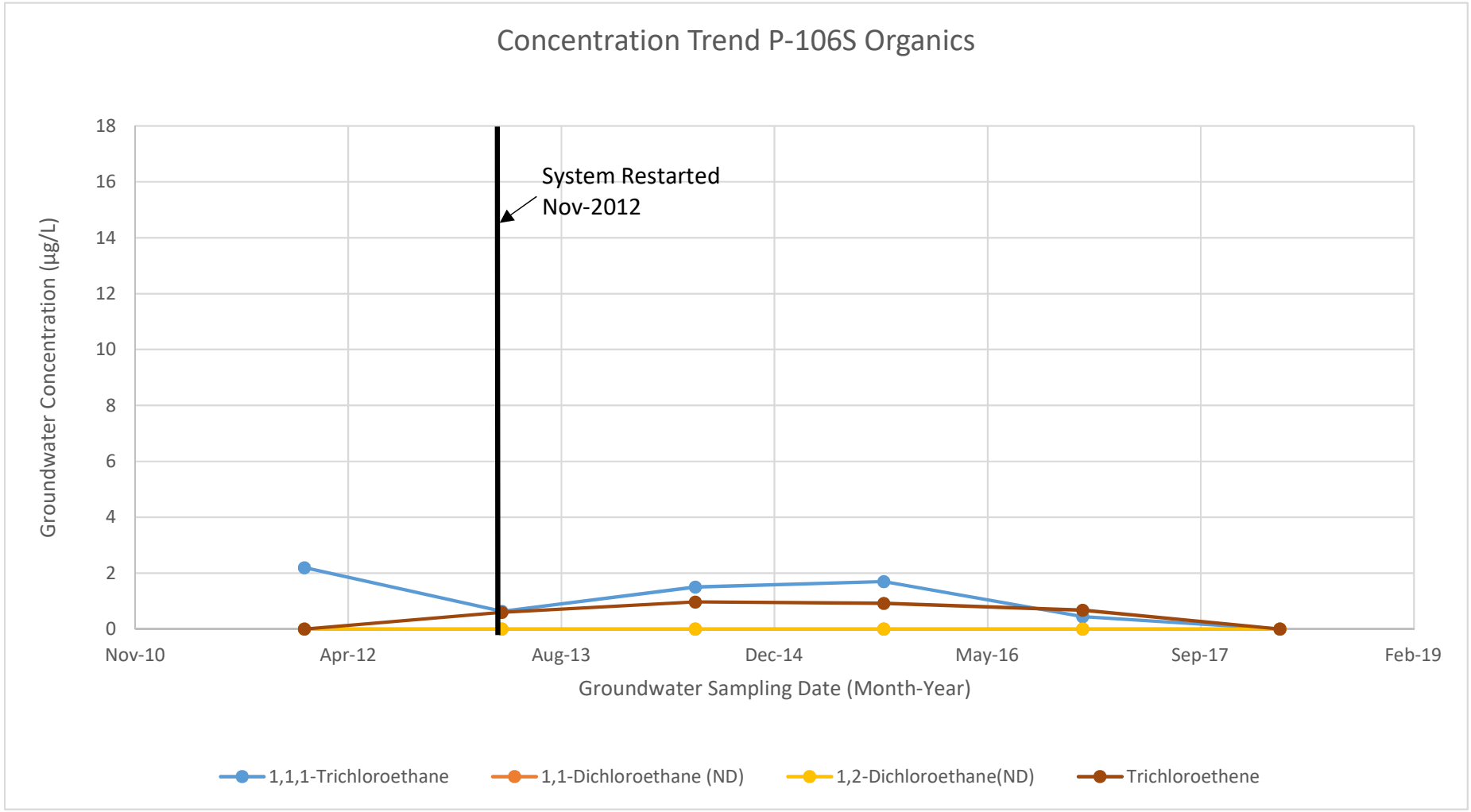
Comments:

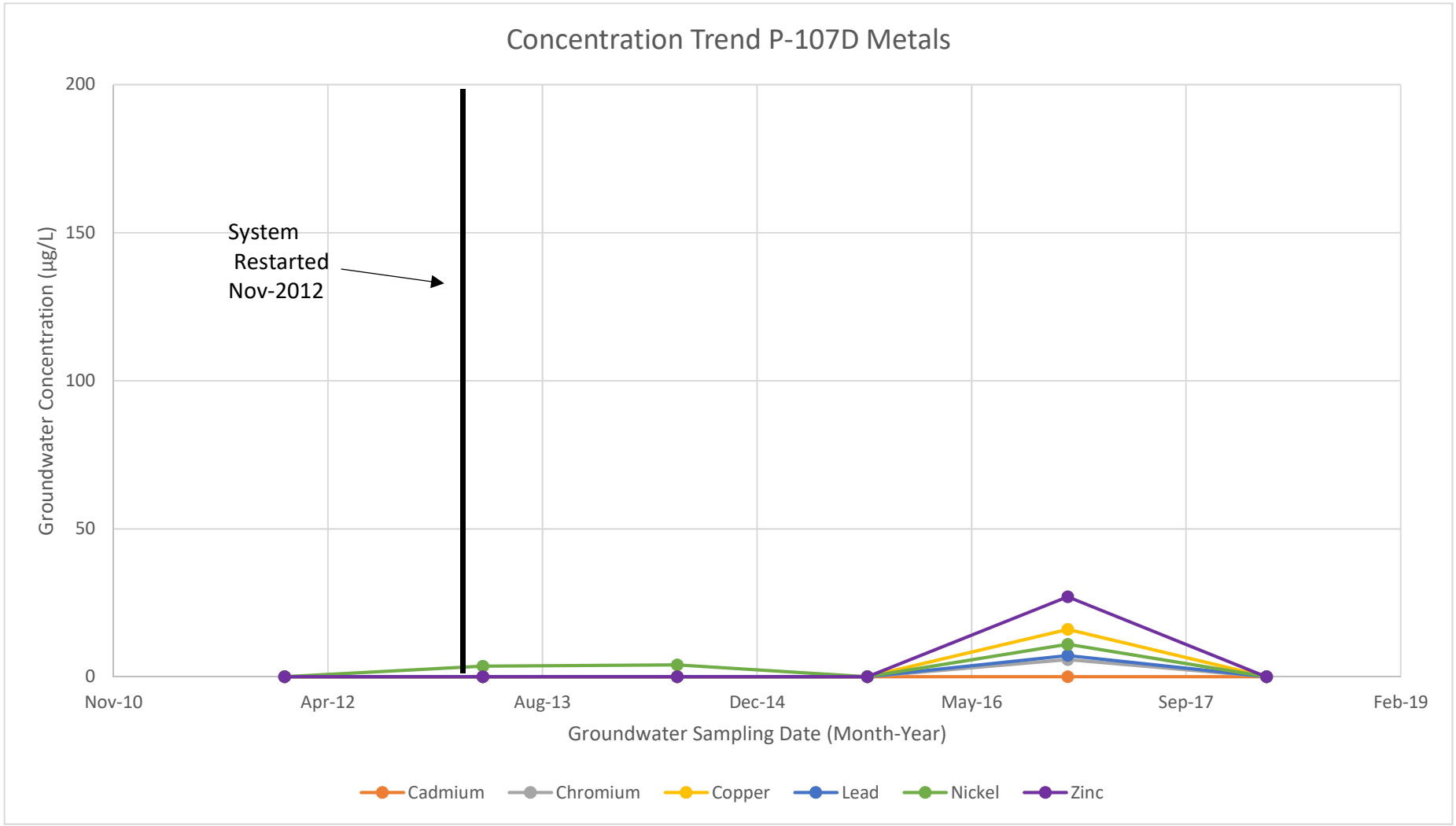
ATTACHMENT 3

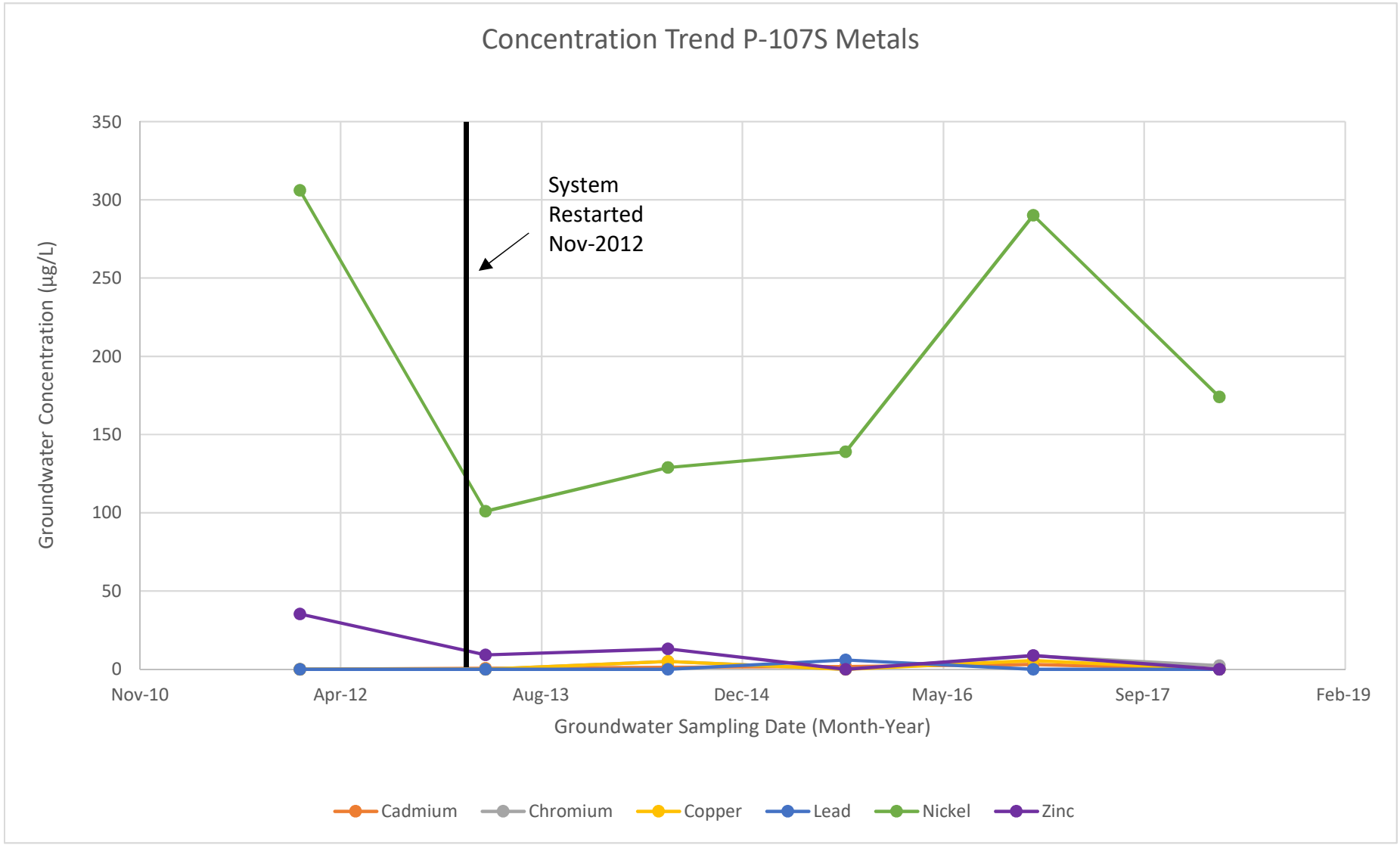
GROUNDWATER CONCENTRATION TREND PLOTS

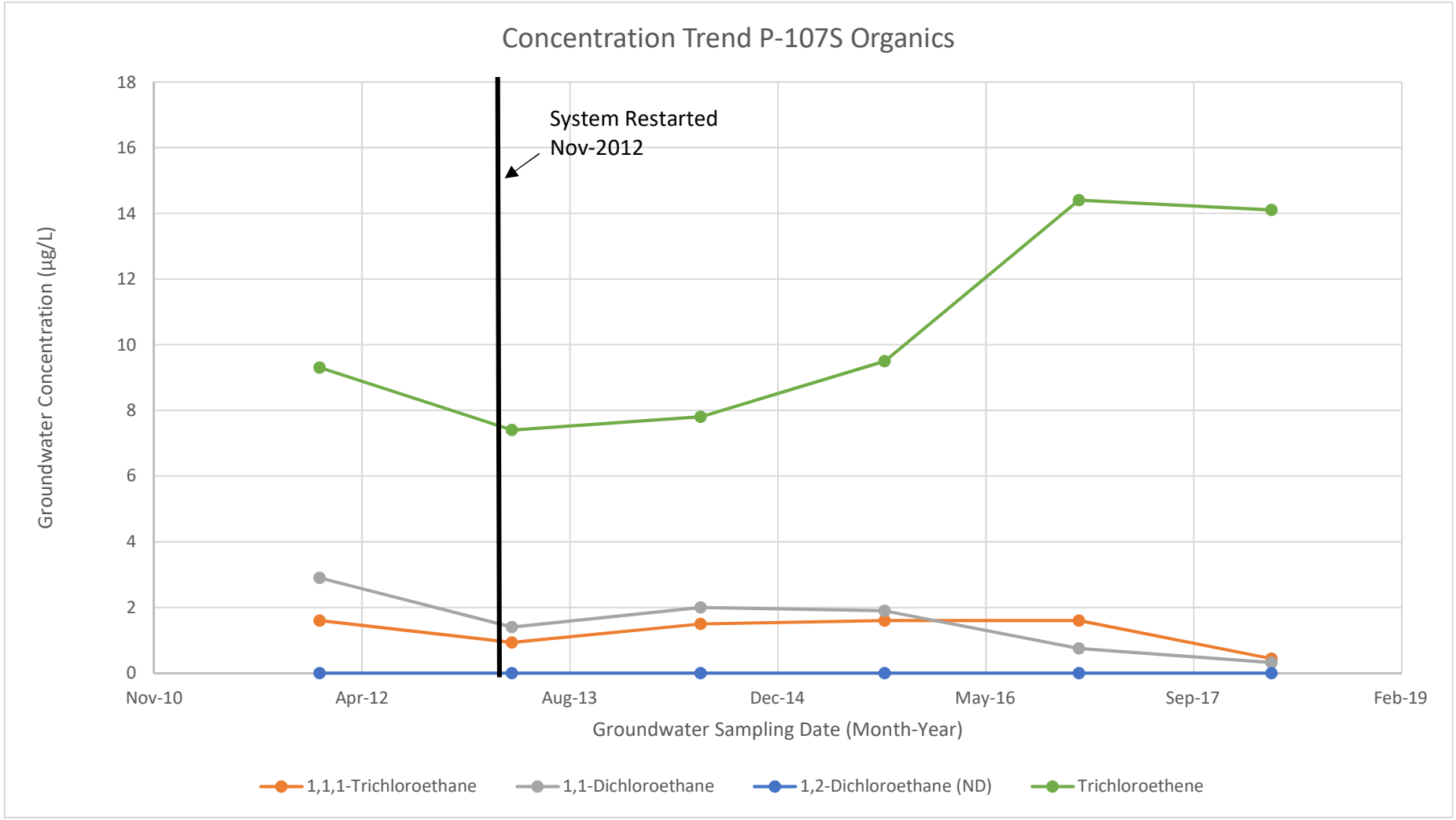

Concentration Trend GW-01 Organics
Groundwater Concentration (µg/L)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
6/25/2015
7/25/2015
8/24/2015
9/23/2015
10/23/2015
11/22/2015
12/22/2015
1/21/2016
2/20/2016
3/21/2016
4/20/2016
5/20/2016
6/19/2016
7/19/2016
8/18/2016
9/17/2016
10/17/2016
11/16/2016
12/16/2016
1/15/2017
2/14/2017
3/16/2017
4/15/2017
5/15/2017
6/14/2017
7/14/2017
8/13/2017
9/12/2017
10/12/2017
11/11/2017
12/11/2017
1/10/2018
2/9/2018
3/11/2018
4/10/2018
5/10/2018
6/9/2018
Groundwater Sampling Date (Month-Year)
1,1,1-Trichloroethane
1,1-Dichloroethane
1,2-Dichloroethane (ND)
Trichloroethene (ND)


Concentration Trend P-103 Organics
Groundwater Concentration (µg/L)
18
16
14
12
10
8
6
4
2
0
System
Restarted
Nov-2012
Nov-10
Apr-12
Aug-13
Dec-14
May-16
Sep-17
Feb-19
Groundwater Sampling Date (Month-Year)
1,1,1-Trichloroethane
1,1-Dichloroethane
1,2-Dichloroethane
Trichloroethene


Concentration Trend P-106S Organics
Groundwater Concentration (µg/L)
18
16
14
12
10
8
6
4
2
0
System Restarted
Nov-2012
Nov-10
Apr-12
Aug-13
Dec-14
May-16
Sep-17
Feb-19
Groundwater Sampling Date (Month-Year)
1,1,1-Trichloroethane
1,1-Dichloroethane (ND)
1,2-Dichloroethane(ND)
Trichloroethene


Concentration Trend P-107D Metals
200
150
100
50
0
Groundwater Concentration (µg/L)
System
Restarted
Nov-2012
Nov-10
Apr-12
Aug-13
Dec-14
May-16
Sep-17
Feb-19
Groundwater Sampling Date (Month-Year)
Cadmium
Chromium
Copper
Lead
Nickel
Zinc


Concentration Trend P-107S Metals
Groundwater Concentration (µg/L)
350
300
250
200
150
100
50
0
System
Restarted
Nov-2012
Nov-10
Apr-12
Aug-13
Dec-14
May-16
Sep-17
Feb-19
Groundwater Sampling Date (Month-Year)
Cadmium
Chromium
Copper
Lead
Nickel
Zinc


Concentration Trend P-107S Organics
Groundwater Concentration (µg/L)
18
16
14
12
10
8
6
4
2
0
System Restarted
Nov-2012
Nov-10
Apr-12
Aug-13
Dec-14
May-16
Sep-17
Feb-19
Groundwater Sampling Date (Month-Year)
1,1,1-Trichloroethane
1,1-Dichloroethane
1,2-Dichloroethane (ND)
Trichloroethene