Frontier Chemical – Pendleton Site PRP Group
c/o Olin Corporation
3855 North Ocoee Street, Suite 200
Cleveland, TN 37312

SENT VIA OVERNIGHT CARRIER/EMAIL

October 1, 2019

Mr. Brian Sadowski
Division of Environmental Remediation
New York State Department of Environmental Conservation
270 Michigan Avenue
Niagara Falls, NY 14203-2999

Subject: Frontier Chemical – Pendleton Site, Pendleton, New York
Order on Consent (#B9-0270-89-05)
Annual Periodic Review Report – 2019
Post Closure Operation, Maintenance, and Monitoring Activities

Dear Mr. Sadowski:

On behalf of the Pendleton PRP Group, Olin hereby submits an email link containing a PDF of the 2019 Annual Periodic Review Report on the Post-Closure Operation, Maintenance, and Monitoring activities for the Frontier Chemical-Pendleton Site. The annual certification is attached as hard copy and as part of the PDF.

Please contact me with any questions at 423-336-4057 or by e-mail at abcarringer@olin.com.

Sincerely,

Pendleton PRP Group

Adam B. Carringer
Trustee

Enclosure 2

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Site Management Periodic Review Report Notice

Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. 932043

Site Name Frontier Chemical - Pendleton

Site Address: Townline Road Zip Code: 14120
City/Town: North Tonawanda
County: Niagara
Site Acreage: 11.000

Reporting Period: September 01, 2018 to September 01, 2019

	YES	NO
1. Is the information above correct?	☑	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☑
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☑
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☑
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	☐	☑

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Closed Landfill	☑	☐
7. Are all ICs/ECs in place and functioning as designed?	☑	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

SITE NO. 932043

Box 3

Description of Institutional Controls

Parcel	Owner	Institutional Control
164.00-3-36	Frontier Chem PRP Group, c/o Olin Co	
		Monitoring Plan
		O&M Plan

Record of Decision (ROD); March 2, 1992.

Order on Consent (#B9-0270-89-05); March 1994.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
164.00-3-36	Groundwater Treatment System
	Cover System
	Groundwater Containment
	Leachate Collection
	Fencing/Access Control
	Monitoring Wells

1. Waste consolidation and stabilization including contaminated sediments dredged from Quarry Lake.

2. Capping of waste under a low-permeability cap system.

3. Installation of surface water system.

4. Installation of a 60-mil. HDPE geomembrane over the western side of the collection trench as a water barrier from Quarry Lake.

5. Installation of a groundwater collection system within the contained area to maintain inward gradients.

6. Onsite treatment of groundwater collected with subsequent discharge to Municipal POTW.

7. Creation of new wetlands.

8. Installation of a perimeter berm, containment berm, and outlet weir.

9. Installation of a monitoring system to monitor the effectiveness of the remedy.

10. Installation of a chain link fence around the capped area and pump station to limit access.

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☑	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☑	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

IC CERTIFICATIONS
SITE NO. 932043

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Adam B. Carringer (print name) at 3855 N. Ocoee St., Suite 200 Cleveland, TN 37312 (print business address),

am certifying as Frontier Chemical Group Trustee (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

Adam B Carringer — 9/16/19

Signature of Owner, Remedial Party, or Designated Representative Rendering Certification — Date

IC/EC CERTIFICATIONS

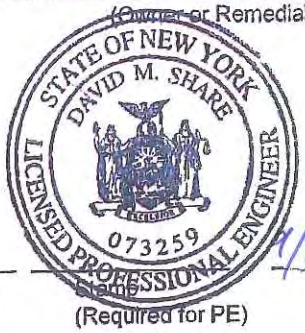
Box 7

Professional Engineer Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I David M. Share at 3855 N. Ocoee St., Suite 200 Cleveland, TN 37312,
print name print business address

am certifying as a Professional Engineer for the Frontier Chemical PRP Group
(~~Owner~~ or Remedial Party)



Signature of Professional Engineer, for the Owner or Remedial Party, Rendering Certification

Name (Required for PE)

4/26/19
Date

PERIODIC REVIEW REPORT
FRONTIER CHEMICAL-PENDLETON SITE

Olin Corporation
Frontier Pendleton PRP Group
Frontier Chemical-Pendleton Site
Pendleton, New York

Table of Contents

LIST OF ATTACHMENTS
(Following Report)

1 Introduction

1.1 Brief Summary, Nature and Extent, Remedial History.

The Frontier Chemical – Pendleton Site PRP Group is responsible for the operation, maintenance and monitoring of the closure components of the Site. The site is being maintained according to the approved O&M Plan. The Site occupies approximately 11 acres of the 75-acres operated by Frontier Chemical Waste Process, Inc. Frontier Chemical operated the site as an industrial waste treatment facility from 1958 to 1974. Plating wastes, pickle liquors and other liquid acid wastes from plating and metal finishing industries were treated at the site, with residuals from the waste treatment process being discharged into Quarry Lake. Much of the former Process Area was filled and graded following termination of waste treatment operations. In March 1994, the PRP Group entered into an Order on Consent (#B9-0270-89-05) with NYSDEC to implement the RD/RA Work Plan. Site remediation consisted of removal of lake sediments and placement in an onsite landfill. The site remediation project was designed in 1993 and 1994, the construction was completed in 1995 and 1996 by Sevenson Environmental Services, Inc., and O&M activities began in 1997.

1.2 Effectiveness of Remedial Program.

The isolation of ground water within the capped area has been established and is being maintained by current operation and maintenance activities. The ground water elevation data indicates that ground water within the capped area is migrating to the west toward the ground water collection trench. Review of the ground water elevation data indicates that inward hydraulic gradients were observed between piezometers within the capped area and piezometers outside of the capped area. The absence of carbon disulfide detected at concentrations above the New York State Class GA standards in the monitoring wells surrounding the capped area provide evidence that contaminants are not migrating from beneath the cap. The remedial program is achieving the objectives of containing groundwater flow and maintaining groundwater quality standards.

1.3 Compliance.

There are no areas of non-compliance.

1.4 Recommendations.

The Operation and Maintenance program data show conditions are stable, and the remedy remains effective. There are no recommendations at this time.

2 Site Overview

2.1 Site Description and Nature/Extent Prior to Remediation.

A map showing the site features is included in **Attachment A**. The Site occupies approximately 22 acres. The site consists of the capped landfill, with the adjacent quarry lake having been remediated. Plating wastes, pickle liquors and other liquid acid wastes from plating and metal finishing industries were treated at the site, with residuals from the waste treatment process being discharged into Quarry Lake which occupies approximately 15 acres of the Site. Much of the former Process Area was filled and graded following termination of waste treatment operations. Site remediation consisted of removal of lake sediments and placement in an onsite landfill.

2.2 Remediation Chronology.

In March 1994, the PRP Group entered into an Order on Consent (#B9-0270-89-05) with NYSDEC to implement the RD/RA Work Plan. Site remediation consisted of removal of lake sediments and placement in an onsite landfill. The site remediation project was designed in 1993 and 1994, the construction was completed in 1995 and 1996 by Sevenson Environmental Services, Inc., and O&M activities began in 1997.

Constructed features for the Site include the capped area, ground water collection and conveyance system, surface water runoff facilities, constructed wetlands, perimeter and containment berms, and outlet weir, ground water monitoring system, access road, and site security. Each of the construction features is described briefly in the following paragraphs.

The low-permeability capped system at the Site is a multi-component system designed to isolate the contaminants in the landfill. The 60-mil thick textured high-density polyethylene (HDPE) geomembrane is the component that covers and isolates the contaminants in the landfill. A 2-foot thick soil barrier layer was installed to protect the HPDE geomembrane cover. An 18-inch thick layer of soil barrier protection layer was placed over the HDPE geomembrane to protect the HDPE geomembrane from external forces. A 6-inch thick layer of topsoil was added to bring the soil barrier protection layer to a thickness of 2-feet. The soil barrier protection layer supports the vegetative cover that minimizes erosion.

The ground water collection system installed along the southern perimeter of the capped area and eastern edge of Quarry Lake is approximately 1,594 feet in length. The southern perimeter collection system is a perforated 6-inch diameter HDPE pipe approximately 420 feet in length sloped to discharge to manhole MH-1 of the eastern edge of Quarry Lake collection system. The collection system along the eastern edge of Quarry Lake is a perforated 6-inch pipe approximately 1,174 feet in length.

The surface water runoff control facilities at the Site are designed to protect the toe of the capped area from run on and to convey runoff away from the capped area during a 25-year, 24-hour storm or a seasonal thaw event. Wetlands are constructed in Quarry Lake between the lake and the reconstructed perimeter berm, north of the capped area, and south of the capped area. The perimeter berm constructed at a top elevation of

approximately 580.5 feet and with a slope of 1V:3H provides containment for 25-year, 24-hour event while maintaining two feet of freeboard.

The access road from Townline Road allows access to the perimeter of the capped area and ground water collection, conveyance and pre-treatment system for inspection and maintenance purposes. Site access is controlled by a vehicle access gate at Town Line Road.

3 Remedial Performance, Effectiveness, and Protectiveness

3.1 Effectiveness of Remedial Goals.

The isolation of groundwater within the capped area has been established and is being maintained by current operation and maintenance activities. The ground water elevation data indicates that ground water within the capped area is migrating to the west toward the ground water collection trench. Review of the ground water elevation data indicate that acceptable hydraulic gradients were observed between piezometers within the capped area and piezometers outside of the capped area. **Attachment B** shows the most recent graphs and tables for piezometric data demonstrating inward gradient. The absence of carbon disulfide detected at concentrations above the New York State Class GA standards in the monitoring wells surrounding the capped area provide further evidence that contaminants are not migrating from beneath the cap. **Attachment C** includes the analytical data during this reporting period. The performance of the pre-treatment system has met the discharge criteria of the permit since startup in 1997.

4 IC/EC Plan (not applicable)

4.1 IC/EC Requirements.

A fence is in place around the landfill, effectively restricting access.

Clean soil cover is in place on the landfill, restricting infiltration and promoting runoff.

A water treatment system is in place, treating and discharging groundwater in accordance with local discharge permit.

A vapor mitigation system is in place on the landfill, the exhaust fan from the treatment system vault effectively vents vapors.

A hydraulic control system is in place, effectively controlling groundwater flow direction.

4.2 Certification.

The certification is attached.

5 Monitoring Plan Compliance Report

5.1 Components of Monitoring Plan.

Operation, maintenance, and monitoring activities to be performed by the Group include:

In accordance with the Operation and Maintenance Manual NYSDEC approval dated March 17, 1997, during the first year of monitoring, groundwater samples were to be collected semi-annually for target compound list (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs)/pesticides, and target analyte list (TAL) metals during the second through fifth years of monitoring. After five years the sampling frequency was reduced to an annual basis while the SVOCs and PCBs were no longer required.

From 2003-2013 sampling was conducted on an annual basis. On January 9, 2014, NYSDEC approved a reduction in the sampling frequency from annually to biennially.
In addition to the 2014 approved reduction in frequency, a reduction in parameters was also granted.

The TCL for VOCs went from the 34-parameter full suite to carbon disulfide.

The twenty-four compounds listed in the TAL for metals was reduced to arsenic, chromium, and potassium.

In accordance with the NYSDEC approval dated January 9, 2014, groundwater analytical sampling is conducted on a bi-ennial basis. In 2018, groundwater sampling was required and performed. Groundwater sampling will occur again in 2020 in accordance with the approved schedule. Groundwater level measurements will continue to be obtained on a semi-annual basis.

The ground water monitoring system includes ten ground water monitoring wells (URS-14I, URS-14D, URS-9I, URS-9D, 85-5R, URS-5D, 85-7R, URS-7D, 88-12C, and 88-12D), eight piezometers (P-1 through P-8), and one standpipe (SP-1). The ground water monitoring wells are located outside the limits of the capped area and serve to monitor the elevation of the ground water table as well as to collect samples of ground water to be analyzed. Five piezometers are located within the capped area, and three piezometers are located outside the capped area. The standpipe is located within the ground water collection trench. The surface water elevation in Quarry Lake is measured along with water elevations from the eight piezometers, and the standpipe in the collection trench to monitor the establishment of an inward hydraulic gradient at the perimeter of the capped area.

5.2 Summary and Comparison to Remedial Objectives.

The isolation of ground water within the capped area has been established and is being maintained by current operation and maintenance activities. The ground water elevation data indicates that ground water within the capped area is migrating to the west toward

the ground water collection trench. Review of the ground water elevation data indicate that acceptable hydraulic gradients were observed between piezometers within the capped area and piezometers outside of the capped area.

The absence of carbon disulfide detected at concentrations above the New York State Class GA standards in the monitoring wells surrounding the capped area provide further evidence that contaminants are not migrating from beneath the cap. The performance of the pre-treatment system has met the discharge criteria of the permit since startup in 1997.

The water level in the wetlands to the north of Quarry Lake is higher than the Quarry Lake outlet weir, at 578.46 ft-msl. The spill level at the outlet weir for Quarry Lake is approximately 578 feet. The weir was constructed to maintain a design water level in Quarry Lake and to provide a discharge point for rainfall runoff from the capped area. The perimeter berm for Quarry Lake is approximately 580.50 feet. This elevated water level has not adversely impacted any components of the site. The surface control features function as designed and comply with the O&M Plan.

The water elevation data collected from the piezometers and ground water wells was used to determine whether an inward hydraulic gradient exists was made by comparing water level measurements within the capped area to those measured outside the capped area.

An inward hydraulic gradient was established when water levels in piezometers outside of the capped area (P-1, P-5, P-8) and Quarry Lake are higher than water levels in piezometers within the capped area (P-2, P-3, P-4, P-6, P-7). There are four pairs of piezometer placed around the perimeter of the capped landfill to determine attainment of an inward gradient.

The Hydrographs showing groundwater elevation trends are shown in **Attachment B**. Levels for piezometer pair, P-1 and P-2, located in the eastern portion of the capped area that borders the abandoned ROW, indicate that an inward gradient has been maintained for this pair of piezometers. The ground water levels were checked for the piezometer pair, P-5 and P-6, located in the southern portion of the capped area. An inward gradient has been maintained for this pair of piezometers. The ground water levels were checked for the piezometer pair, P-7 and P-8, located in the northern portion of the capped area. An inward gradient has been maintained for this pair of piezometers.

The ground water elevation in the standpipe (SP-1) in the ground water collection trench is dry, i.e. indicating that it is lower than the surface water elevation of Quarry Lake. This indicates that Quarry Lake is isolated from the capped area.

The ground water elevation data indicate that ground water within the capped area is migrating to the west toward the ground water collection trench. **Attachment D** contains a well location map and tabulated groundwater elevations for the September 2018 and April 2019 monitoring episodes.

5.3 Deficiencies.

There are no deficiencies.

5.4 Recommendations for Change.

The groundwater monitoring program has shown consistent results throughout this monitoring period. There are no recommendations at this time.

6 Operation and Maintenance (OM&M) Plan Compliance Report

6.1 Components of the O&M Plan.

Routine inspection and maintenance of constructed features, including the capped area, ground water collection and conveyance system, surface water runoff facilities, constructed wetlands, access road, perimeter and containment berms, and outlet weir.

Operation and maintenance of the ground water pre-treatment system.

Evaluation of operation, maintenance, and monitoring activities and identification of proposed changes to the O&M Manual or site procedures and policies which would provide a safer and/or more cost-effective operation.

6.2 OM&M Summary.

The ground water collection system is inspected semi-annually for the buildup of hard or soft scale-like deposits. The inspection is performed concurrently with inspection of the capped area. The dry vault and wet well components are visually inspected monthly for leakage or corrosion of valves, pipes and appurtenances, and for proper operation. A leak is repaired when found. If a component of the ground water collection, conveyance, or pre-treatment system is found to be damaged or malfunctioning, it is repaired or replaced. The semi-annual and monthly inspection checklist is contained in **Attachment E**.

Water from the pre-treatment system is discharged from the dry vault via a dual contained force main to the Niagara County Sewer District #1 interceptor system at manhole MH-16. The flow rate and volume of ground water pumped from the wet well is measured using a magnetic-type flowmeter. The flowmeter is the measurement device used in reporting discharge flow from the Site to MH-16. A sump is installed within the dry vault to recycle spills and leaks inside the dry vault back into the wet well. A sump pump with a float switch pumps spills and leaks from the floor of the dry vault back into the wet well for treatment.

The capped area is mowed on a regular basis to prevent establishment of woody vegetation during this reporting period. The capped area functions as designed and complies with the O&M Plan.

The pre-treatment system was designed for continuous operation capable of treating approximately 15,000 gallons per day at a rate of 10 gallons per minute. The water level sensor in the wet well can be set at various levels but is currently set to activate the pumping system when the wet well sump begins to back up water in the ground water collection piping.

PRE-TREATMENT PROCESSING, AVERAGE FLOW RATE		
PROCESS FLOW RATES	**DESIGN**	**ACTUAL**
Gallons Per Day	15,000	365
Gallons Per Minute	10	0.25

Under current conditions, the pumping system is always on-line but normally operates six to eight times per 24-hour period. Each time a pump is activated by the level sensor, approximately 60 gallons of water is pumped into the pre-treatment system. Based upon the volume of the pre-treatment system, it takes at least a day for the ground water to pass through the pre-treatment system and be discharged to Manhole #16. A ten-year summary of the pre-treatment flow volume by year is shown in the table below.

PRE-TREATMENT FLOW SUMMARY BY OPERATING YEAR		
DATE	**GALLONS PER YEAR**	**GALLONS PER DAY**
2008	88,710	242
2009	140,867	385
2010	74,506	204
2011	40,653	111
2012	35,830	98
2013	37,125	102
2014	61,744	169
2015	41,568	114
2016	41,046	112
2017	124,159	341
2018	149,642	410
2019 (through August)	120,935	331

Calendar-year flows by day for September 2017 through August 2018 are presented in **Attachment F**.

The permit to discharge from the pre-treatment system to Manhole #16 of the Niagara County Sewer District #1 is currently granted by District Permit # 18-11. The permit was effective August 28, 2018 and expires August 28, 2021. The permit is included in **Attachment G.** Semi-annual reporting to Niagara County Sewer District #1 includes the volume and chemical characteristics of the water being discharge from the Site.

Maintenance for the pre-treatment system is recorded in the Pre-Treatment System Operator Log. Information on the Pre-treatment System Operator Log includes the

purpose of the visit, local time and conditions, status of the process, details of the visit, planned action, and recommendations to prevent future problems. A log sheet is filled out during each visit to record site conditions and actions taken by the technician. Site visits are normally monthly unless alarm conditions, call by neighbors, data request, etc., require additional visits.

Regular inspections are currently conducted monthly. These inspections are a part of the pre-treatment systems operating log. The Pre-Treatment Operator's Logs for this reporting period are included in **Attachment H.**

Solids resulting from ground water collection system cleaning and equipment decontamination activities are stored, handled, and disposed of in accordance with the New York State Hazardous Waste Manifest System Regulations 6NYCRR Part 372 and any other applicable local, state, and federal regulations.

The access road was inspected at the same frequency as inspection of the final cover for rutting, potholes or settlement. No repairs were needed. The access road functions as designed and complies with the O&M Plan.

6.3 Evaluation of Remedial Systems.

All components are performing as designed.

6.4 OM&M Deficiencies.

There are no deficiencies.

6.5 Conclusions.

The OM&M system is being run and maintained properly and does not require additions or modifications at this time.

7 Overall PRR Conclusions and Recommendations

7.1 Compliance with SMP.

Based on the operations and maintenance documentation listed above, the system requirements are being met. There are no new exposure pathways. Additional plans and modifications are not necessary.

7.2 Remedy Effectiveness.

Based on the data developed to date, the remedy has been effective in attaining the remedial objectives:

The isolation of ground water within the capped area has been established and is being maintained by current operation and maintenance activities.

The ground water elevation data indicates that ground water within the capped area is migrating to the west toward the ground water collection trench.

Review of the ground water elevation data indicate that inward hydraulic gradients were observed between piezometers within the capped area and piezometers outside of the capped area.

7.3 Future Submittals.

Future submittals of this report will be done on an annual basis.

Olin™

ATTACHMENT A

Site Features Map

Olin

OLIN CORPORATION

Environmental Remediation Group
3855 N. Ocoee St., Ste. 200
Cleveland, tennessee 37312
423/336-4000

SCALE: NOTED	DRAWN BY: JRH	DATE: 8-29-2019
	CHKD. BY: ABC	DATE: 9-5-2019

OLIN CORPORATION
FRONTIER CHEMICAL PENDLETON SITE
PENDLETON, NY

SITE MAP
MONITORING WELL/PEIZOMETER LOCATIONS
APRIL 2019

FIG. NO. 1

SCALE: 1 INCH = 200 FEET

- PIEZOMETER WELL
- MONITORING WELL
- SITE BOUNDRY
- MH = MANHOLE
- SP = STAND PIPE

Olin™

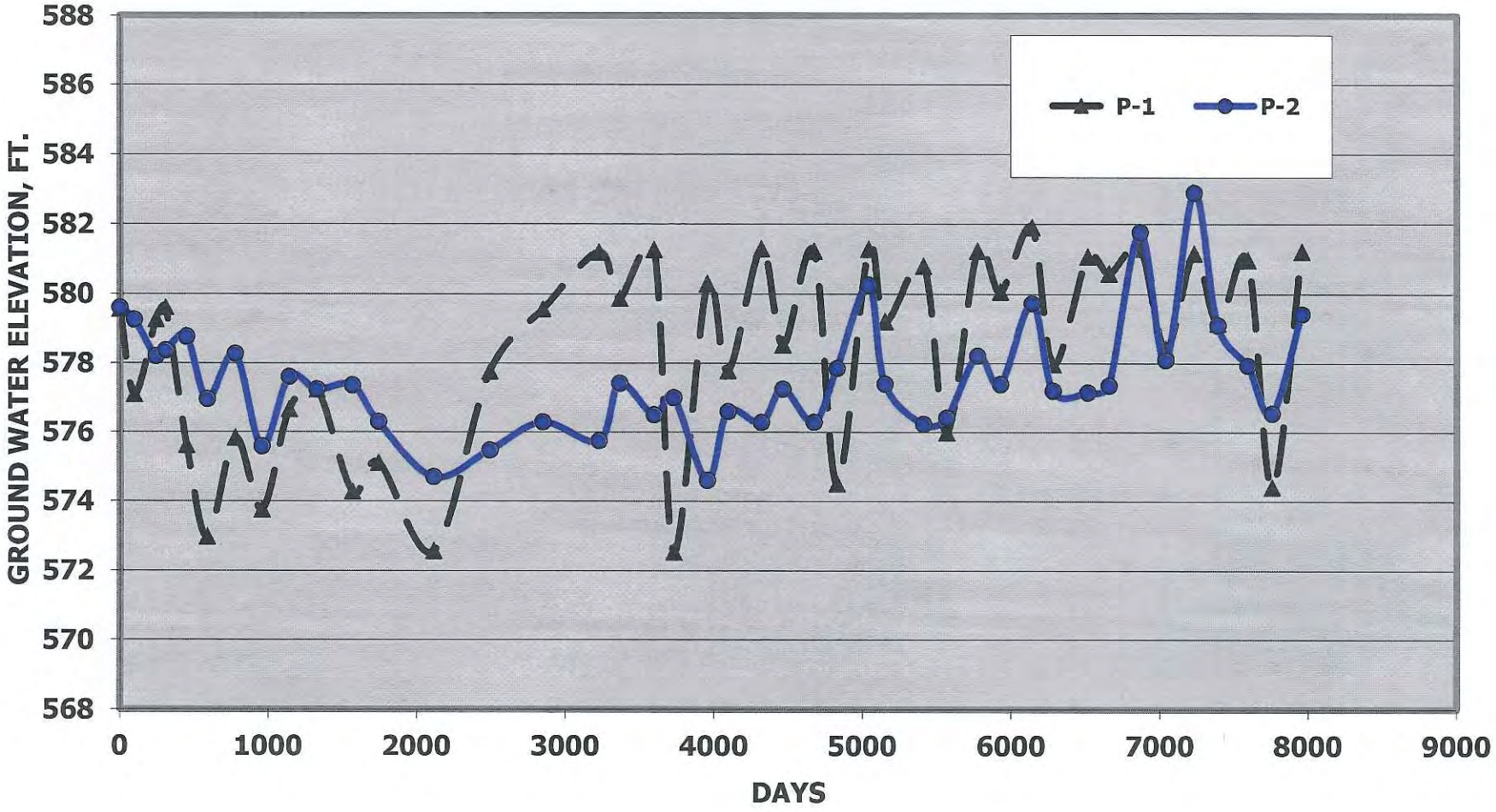
ATTACHMENT B

Piezometer Tables, Graphs, and Potentiometric Surface Maps

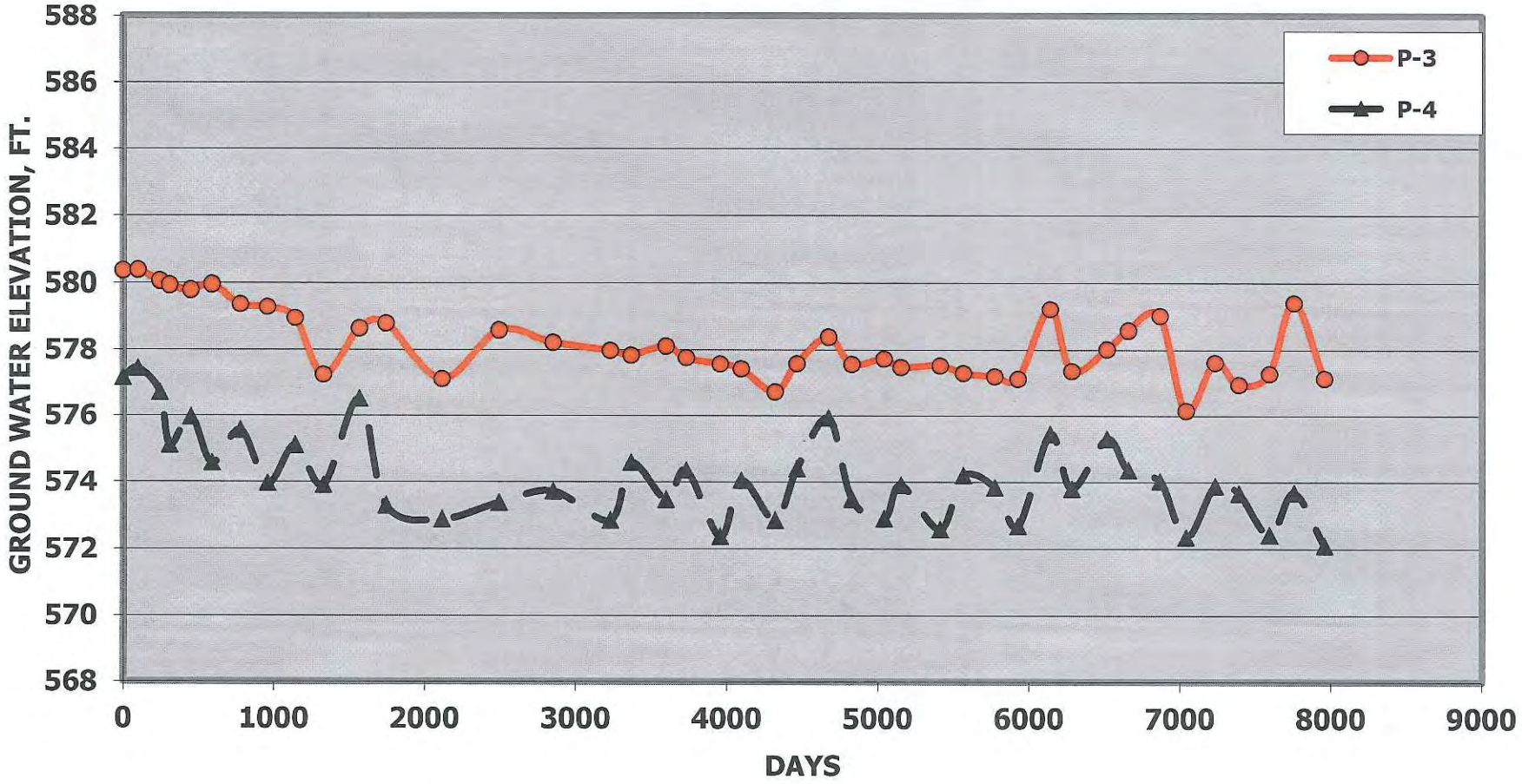
ATTACHMENT B
FRONTIER CHEMICAL - PENDLETON SITE
PIEZOMETER GROUND WATER ELEVATION SUMMARY 2018-2019

PIEZOMETER	POSITION	LOCATION	TOP OF RISER ELEVATION, FEET	DEPTH TO WATER	SCREENED ELEVATION, FEET	7756 9/20/18	7958 4/10/19
P-1	(O)	EASTERN PORTION OF CAPPED AREA	583.21	2.01	576.8 - 566.8	574.40	581.20
P-2	(I)		582.90	3.49	577.2 - 567.2	576.55	579.41
P-3	(I)	CENTER OF CAPPED AREA	606.33	29.20	586.6 - 566.6	579.42	577.13
P-4	(I)	ADJACENT TO QUARRY LAKE	582.31	10.21	576.7 - 566.7	573.68	572.10
SP-1	(T)		579.86		BOP = 564.9	564.90	564.90
P-5	(O)	SOUTHERN PORTION OF CAPPED AREA	583.05	3.25	577.6 - 567.6	572.43	579.80
P-6	(I)		584.45	10.48	578.3 - 568.3	575.03	573.97
P-7	(I)	NORTHERN PORTION OF CAPPED AREA	580.97	6.99	575.0 - 565.0	575.25	573.98
P-8	(O)		582.83	2.40	575.5 - 565.5	575.85	580.43

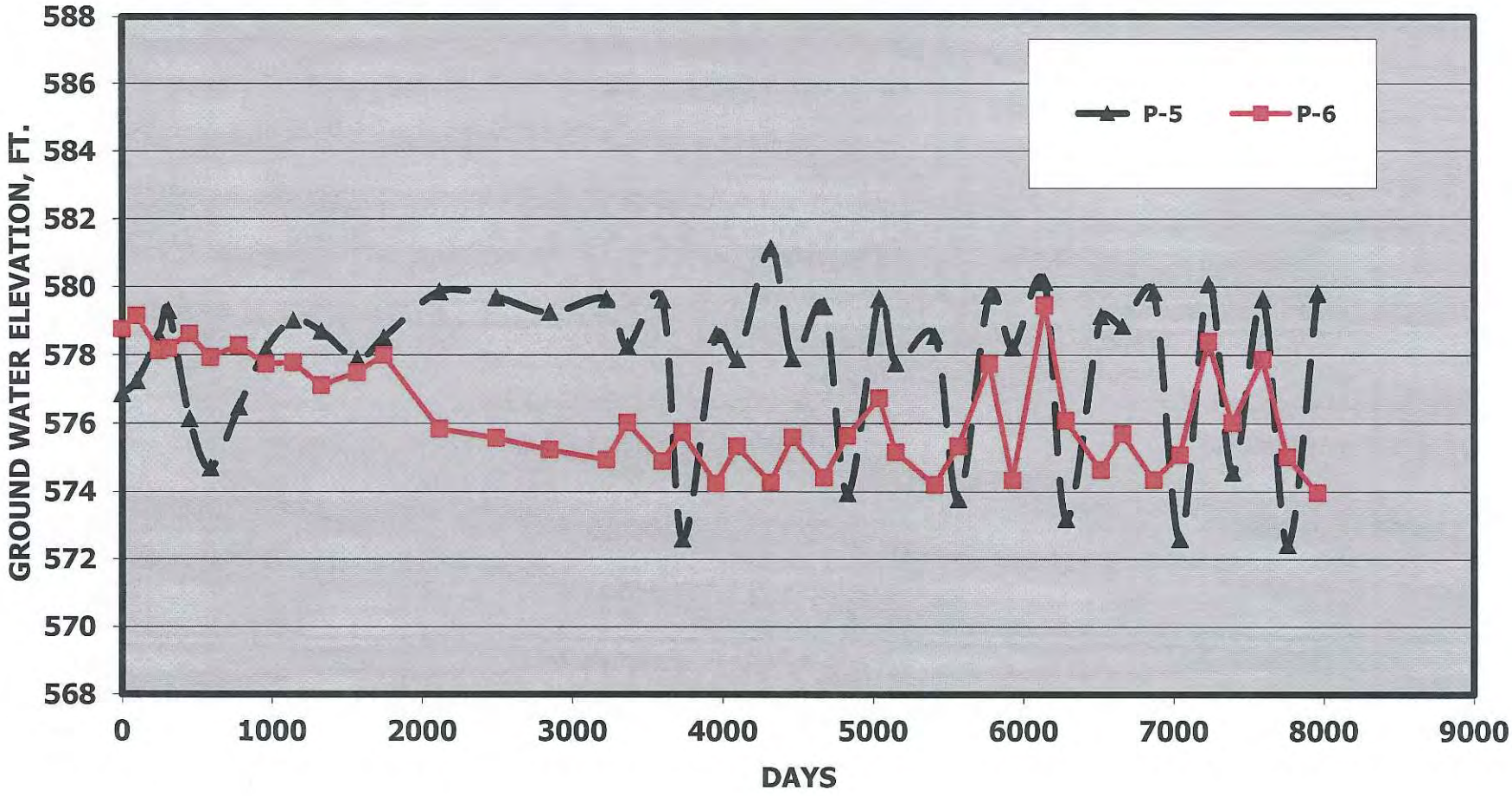
FRONTIER CHEMICAL - PENDLETON SITE
EASTERN PORTION OF CAPPED AREA



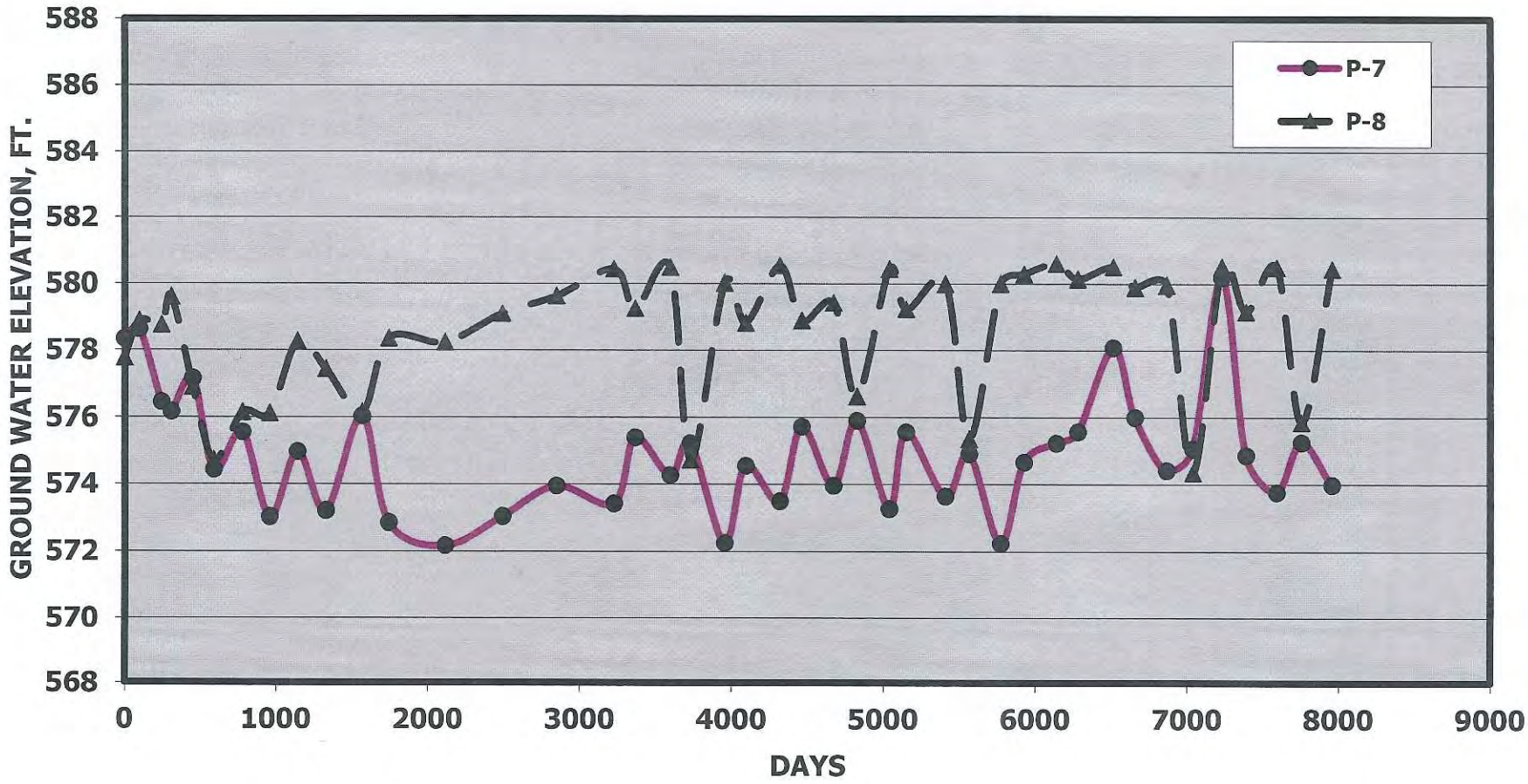
FRONTIER CHEMICAL - PENDLETON SITE
CENTER OF CAPPED AREA AND ADJACENT TO QUARRY LAKE



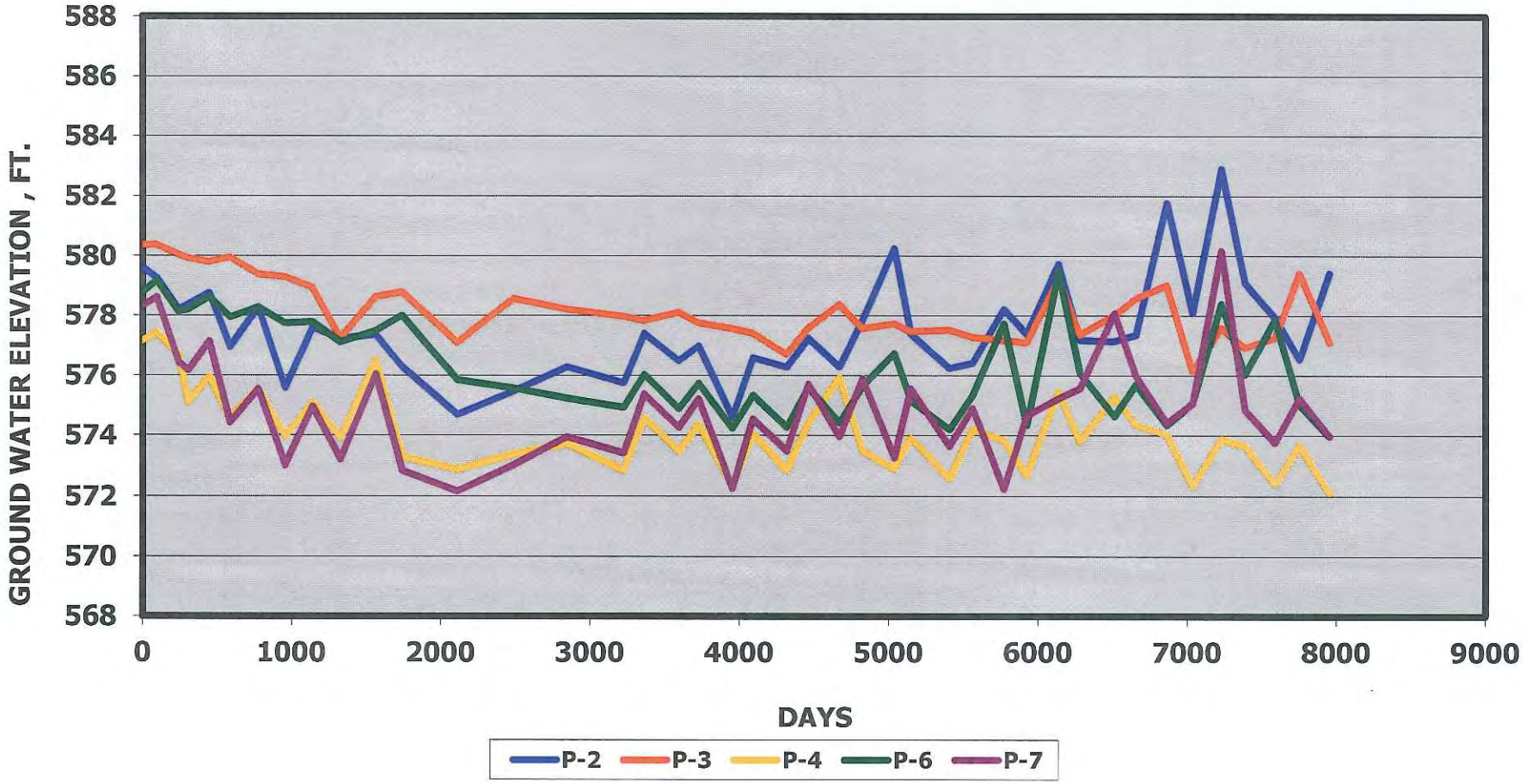
FRONTIER CHEMICAL - PENDLETON SITE
SOUTHERN PORTION OF CAPPED AREA



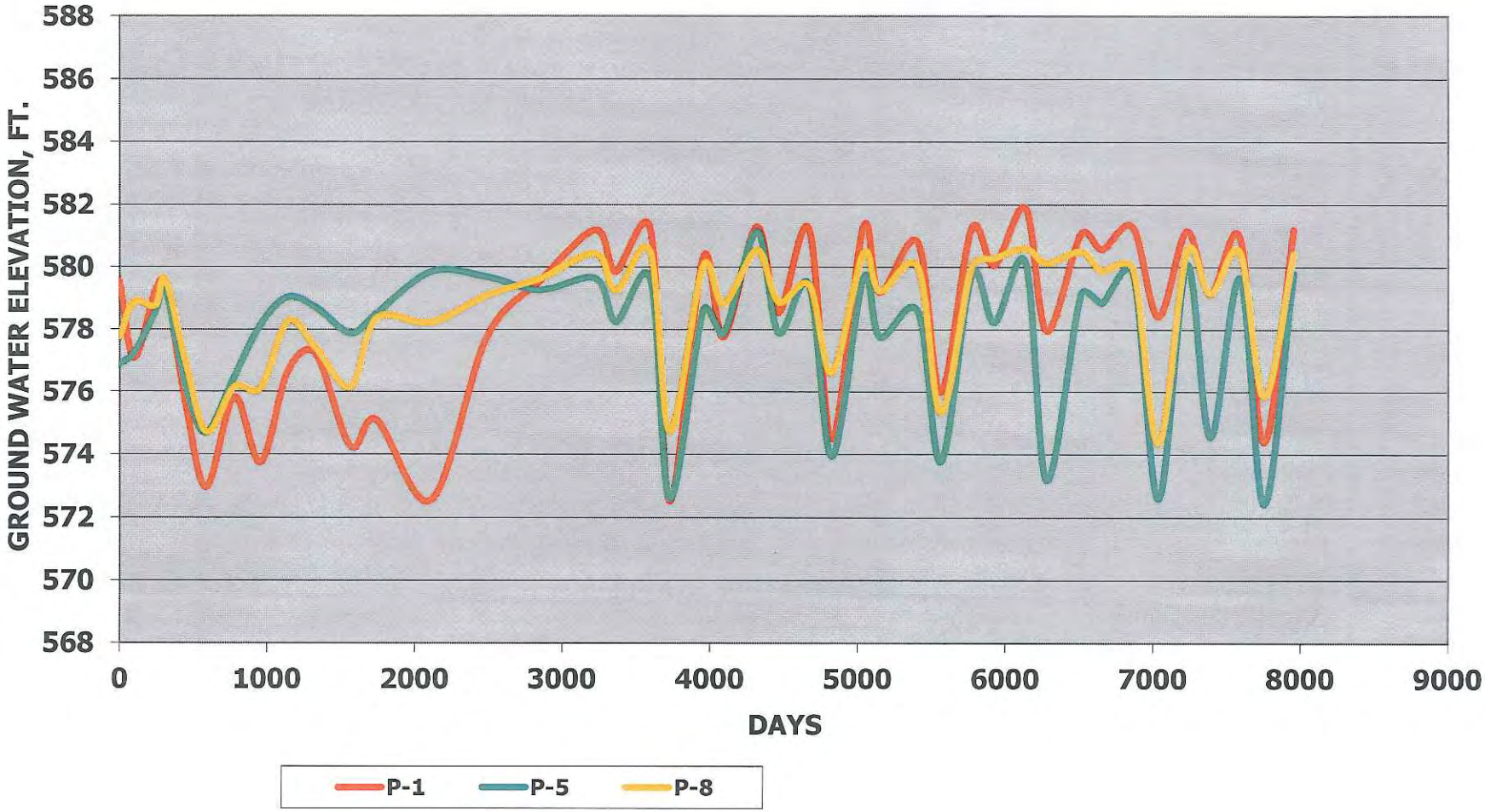
FRONTIER CHEMICAL - PENDLETON SITE
NORTHERN PORTION OF CAPPED AREA



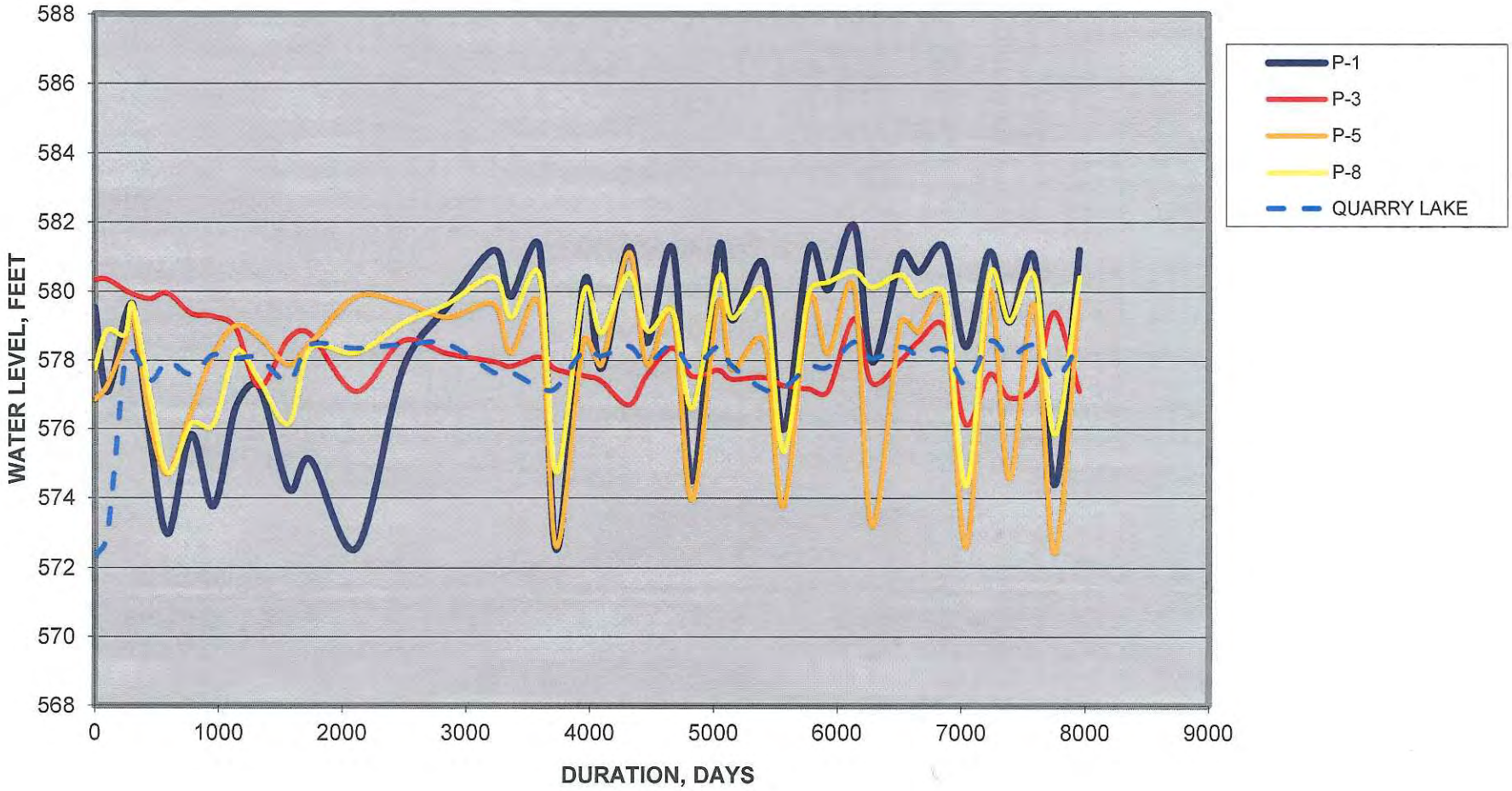
FRONTIER CHEMICAL - PENDLETON SITE
PIEZOMETERS - INSIDE CAPPED AREA



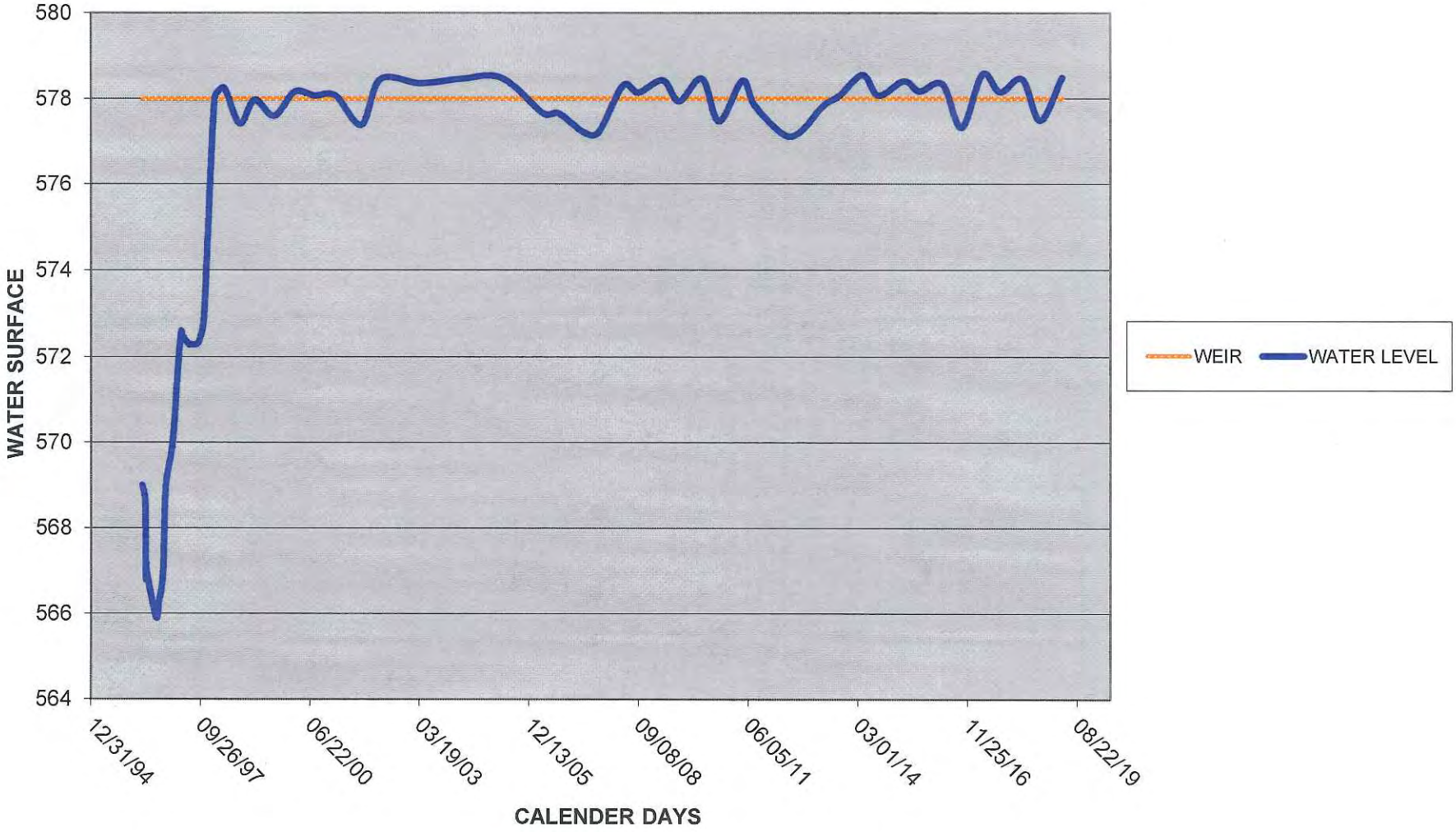
FRONTIER CHEMICAL - PENDLETON SITE
PIEZOMETERS - OUTSIDE CAPPED AREA



FRONTIER CHEMICAL - PENDLETON SITE
GROUND WATER GRADIENT



QUARRY LAKE
WATER LEVEL VS. TIME



Olin

OLIN CORPORATION

Environmental Remediation Group
3855 N. Ocoee St., Ste. 200
Cleveland, tennessee 37312
423/336-4000

SCALE: NOTED	DRAWN BY: JRH	DATE: 7-31-2019
	CHKD. BY: ABC	DATE: 9-6-2019

OLIN CORPORATION
FRONTIER CHEMICAL PENDLETON SITE
PENDLETON, NY

POTENTIOMETRIC SURFACE MAP
PEIZOMETER WELLS
APRIL 11, 2019

FIG. NO. 2

N

SCALE: 1 INCH = 200 FEET

PIEZOMETER WELL

Olin

OLIN CORPORATION

Environmental Remediation Group
3855 N. Ocoee St., Ste. 200
Cleveland, tennessee 37312
423/336-4000

SCALE: NOTED	DRAWN BY: JRH	DATE: 8-29-2019
	CHKD. BY: ABC	DATE: 9-5-2019

OLIN CORPORATION
FRONTIER CHEMICAL PENDLETON SITE
PENDLETON, NY

POTENTIOMETRIC SURFACE MAP
DEEP MONITORING WELLS
APRIL 11, 2019

FIG. NO. 4

SCALE: 1 INCH = 200 FEET

MONITORING WELL

Olin

OLIN CORPORATION

Environmental Remediation Group
3855 N. Ocoee St., Ste. 200
Cleveland, tennessee 37312
423/336-4000

SCALE: NOTED	DRAWN BY: JRH	DATE: 8-29-2019
	CHKD. BY: ABC	DATE: 9-5-2019

OLIN CORPORATION
FRONTIER CHEMICAL PENDLETON SITE
PENDLETON, NY

POTENTIOMETRIC SURFACE MAP
SANDY SILT MONITORING WELLS (C, I, & R)
APRIL 11, 2019

FIG. NO. 3

SCALE: 1 INCH = 200 FEET

MONITORING WELL

ATTACHMENT C

Analytical Data

April 26, 2019

Service Request No:R1903267

Mr. Dave Share
Olin Corporation
3855 North Ocoee Street
Suite 200
Cleveland, TN 37312

Laboratory Results for: Olin - Pendleton Site

Dear Mr.Share,

Enclosed are the results of the sample(s) submitted to our laboratory April 12, 2019
For your reference, these analyses have been assigned our service request number **R1903267.**

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Janice Jaeger
Project Manager

CC: Adam Carringer

ADDRESS 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
PHONE +1 585 288 5380 | FAX +1 585 288 8475
ALS Group USA, Corp.
dba ALS Environmental

ALS Environmental
ALS Group USA, Corp
1565 Jefferson Road, Building 300, Suite 360
Rochester, NY 14623
T : +1 585 288 5380
F : +1 585 288 8475
www.alsglobal.com

Table of Contents

Table of Contents (continued)

Table of Contents (continued)

Table of Contents (continued)

ALS Environmental

Narrative Documents

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

1565 Jefferson Rd, Building 300, Rochester, NY 14623 | 585-288-5380 | www.alsglobal.com

ALS Environmental

Client: Olin Corporation
Project: Olin - Pendleton Site
Sample Matrix: Water

Service Request: R1903267
Date Received: 04/12/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Four water samples were received for analysis at ALS Environmental on 04/12/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Volatiles by GC/MS:

No significant anomalies were noted with this analysis.

SMO:

No significant anomalies were noted with this analysis.

Approved by _____ Date 04/26/2019

Sample Receipt Information

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: Olin Corporation **Service Request:**R1903267
Project: Olin - Pendleton Site/1209

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
R1903267-001	PSTW-041119	4/11/2019	1235
R1903267-002	PSTW-041119 Dup	4/11/2019	1008
R1903267-003	Field Blank	4/11/2019	
R1903267-004	Trip Blank	4/11/2019	

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM 56550

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax)

Project Name: OLIN - PENDLETON SITE	Project Number: 1209
Project Manager: ADAM CARLINGER	Report CC: ADAM CARLINGER - OLIN
Company/Address: OLIN CORP 3855 NORTH OCOEE RD CLEVELAND TN 37312	
Phone #: 423 336 4057	Email: ABCarlinger@olin.com
Sampler's Signature:	Sampler's Printed Name: CHRIS JONES

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE: 0 | 2 | 3 | 0 | 0 | 0

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs • 8260 • 624 • CLP	GC/MS SVOAs • 8270 • 625	GC VOAs • 8021 • 601/602	PESTICIDES • 8081 • 608	PCBs • 8082 • 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	PHENOL	TSS	CYANIDE	LOW LEVEL MERCURY				REMARKS/ ALTERNATE DESCRIPTION
PSTW-041119		4/11/19	1008	GW	1										1					
PSTW-041119 DUP			1008		1										1					DUP FOR LOW LEVEL
PSTW-041119			1232		1								1							COMPED IN FIELD
PSTW-041119			1234		1									1						COMPED IN FIELD
PSTW-041119			1235		1						1									COMPED IN FIELD
PSTW-041119			1010		1	1														GRAB IN FIELD
PSTW-041119			1110		1	1														GRAB IN FIELD
PSTW-041119			1210		1	1														GRAB IN FIELD
PSTW-041119			1010		1									1						COMP IN LAB *
PSTW-041119			1110		1									1						COMP IN LAB *
PSTW-041119			1210		1									1						COMP IN LAB *

Preservative Key: 0. NONE; 1. HCL; 2. HNO_3; 3. H_2SO_4; 4. NaOH; 5. Zn. Acetate; 6. MeOH; 7. $NaHSO_4$; 8. Other _____

SPECIAL INSTRUCTIONS/COMMENTS

Metals ANTIMONY, BORON, CHROMIUM

(On samples to be Composited in lab

FIELD BLANK WAS PROVIDED FOR LOW LEVEL MERCURY

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED NY

TURNAROUND REQUIREMENTS

____ RUSH (SURCHARGES APPLY)

____ 1 day ____ 2 day ____ 3 day

____ 4 day ____ 5 day

☒ Standard (10 business days-No Surcharge)

REQUESTED REPORT DATE: STANDARD

REPORT REQUIREMENTS

____ I. Results Only

☒ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

Edata ____ Yes ____ No

INVOICE INFORMATION

PO # REFN 003

BILL TO: OLIN CORP

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature	Signature: Gary Bohan	Signature: Gary Bohan	Signature	Signature	Signature
Printed Name: CHRIS JONES	Printed Name: Gary Bohan	Printed Name: Gary Bohan	Printed Name: Daniel Wade	Printed Name	Printed Name
Firm: SES	Firm: ALS	Firm: ALS	Firm: ALS	Firm	Firm
Date/Time: 4/12/19 1110	Date/Time: 4/12/19 1110	Date/Time: 4/12/19 1250	Date/Time: 4/12/19 1252	Date/Time	Date/Time

R1903267 5

Olin Corporation
Olin - Pendleton Site

Distribution: White - Lab Copy; Yellow - Return to Originator

Cooler Receipt and Preservation Check Form

R1903267 **5**
Olin Corporation
Olin - Pendleton Site

Project/Client _____ Folder Number _____

Cooler received on 4/12/19 by: DM

COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	Y NA	5a	**Perchlorate** samples have required headspace?	Y N NA
2	**Custody papers** properly completed (ink, signed)?	Y N	5b	Did VOA vials, Alk, or Sulfide have sig* **bubbles**?	Y N NA
3	Did all bottles arrive in good **condition** (unbroken)?	Y N	6	Where did the bottles originate?	ALS/ROC CLIENT
4	Circle: **Wet Ice** **Dry Ice** **Gel packs** present?	Y N	7	Soil VOA received as:	Bulk Encore 5035set NA

3. Temperature Readings Date: 4/12/19 Time: 1300 ID: IR#7 IR#10 From: Temp Blank Sample Bottle

Observed Temp (°C)	1.3°	0.3°					
Correction Factor (°C)	±0.0°	±0.0°					
Corrected Temp (°C)	1.3°	0.3°					
Temp from: Type of bottle							
Within 0-6°C?	Y N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R002 by DM on 4/12/19 at 1300
5035 samples placed in storage location: _____ by _____ on _____ at _____

Cooler Breakdown/Preservation Check**: Date: 4/12/19 Time: 2000 by: DM

9. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? YES NO
10. Did all bottle labels and tags agree with custody papers? YES NO
11. Were correct containers used for the tests indicated? YES NO
12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO NA
13. Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized Tedlar® Bags Inflated NA

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
≥12	220617	NaOH	✓		193395	10/19				
≤2	↓	HNO_3	✓		1117101					
≤2		H_2SO_4	✓		190877	3/20				
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522	✓		If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	-			**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).			
		HCl	**	**	1111764					

Bottle lot numbers: S-039-001, 1111438, 18-11-05, 092418-13MC
Explain all Discrepancies/ Other Comments:

CLRES	BULK
DO	FLDT
HPROD	HGFB
HTR	LL3541
PH	SUB
SO3	MARRS
ALS	REV

Labels secondary reviewed by: JL
PC Secondary Review: _____

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

ALS Group USA, Corp.
dba ALS Environmental

Internal Chain of Custody Report

Client: Olin Corporation **Service Request:** R1903267
Project: Olin - Pendleton Site/1209

Bottle ID	Methods	Date	Time	Sample Location / User	Disposed On
R1903267-001.01					
	200.7,200.7,200.7				
		4/12/2019	1959	SMO / GLAFORCE	
		4/15/2019	1054	In Lab / KMCLAEN	
		4/15/2019	1557	R-A01 / KMCLAEN	
R1903267-001.02					
	SM 4500-CN-E-2001(2011)				
		4/12/2019	1959	SMO / GLAFORCE	
		4/13/2019	1026	RT000562 / DWARD	
		4/13/2019	1026	R-015 / DWARD	
R1903267-001.03					
	1631E				
		4/12/2019	1959	SMO / GLAFORCE	
		4/18/2019	1348	In Lab / CKUTZER	
		4/23/2019	0940	R-LTS / CKUTZER	
R1903267-001.04					
	624				
		4/12/2019	1959	SMO / GLAFORCE	
		4/13/2019	1224	In Lab / FNAEGLER	
		4/13/2019	1333	R-001-S08 / FNAEGLER	
R1903267-001.05					
		4/12/2019	1959	SMO / GLAFORCE	
R1903267-001.06					
		4/12/2019	1959	SMO / GLAFORCE	
R1903267-001.07					
	420.4				
		4/12/2019	1959	SMO / GLAFORCE	
		4/13/2019	1025	RT000562 / DWARD	
		4/13/2019	1026	R-015 / DWARD	
R1903267-001.08					
	SM 2540 D-1997(2011)				
		4/12/2019	1959	SMO / GLAFORCE	
		4/18/2019	1003	In Lab / KAWONG	
		4/18/2019	1230	R-Dumpster / KAWONG	
R1903267-001.09					
		4/15/2019	1112	SMO / JJAEGER	
R1903267-002.01					

ALS Group USA, Corp.
dba ALS Environmental

Internal Chain of Custody Report

Client: Olin Corporation **Service Request:** R1903267
Project: Olin - Pendleton Site/1209

Bottle ID	Methods	Date	Time	Sample Location / User	Disposed On
	1631E				
		4/12/2019	1959	SMO / GLAFORCE	
		4/18/2019	1349	In Lab / CKUTZER	
		4/23/2019	0940	R-LTS / CKUTZER	
R1903267-003.01					
	1631E				
		4/12/2019	1959	SMO / GLAFORCE	
		4/18/2019	1349	In Lab / CKUTZER	
		4/23/2019	0940	R-LTS / CKUTZER	
R1903267-004.04					
	624				
		4/15/2019	1236	SMO / DWARD	
		4/15/2019	1237	R-001 / DWARD	
		4/17/2019	1149	In Lab / DLIPANI	
		4/17/2019	1842	R-001-S10 / DLIPANI	
R1903267-004.05					
		4/15/2019	1236	SMO / DWARD	
		4/15/2019	1237	R-001 / DWARD	
R1903267-004.06					
		4/15/2019	1236	SMO / DWARD	
		4/15/2019	1237	R-001 / DWARD	

Miscellaneous Forms

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

General Chemistry

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

ALS Environmental

REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

Rochester Lab ID # for State Certifications[1]

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: Olin Corporation **Service Request:** R1903267
Project: Olin - Pendleton Site/1209

Non-Certified Analytes

Certifying Agency: New York Department of Health

Method	Matrix	Analyte
624.1	Water	2-Butanone (MEK)
624.1	Water	2-Hexanone
624.1	Water	Carbon Disulfide

Client:	Olin Corporation	**Service Request:**	R1903267
Project:	Olin - Pendleton Site/1209		

Sample Name:	PSTW-041119	**Date Collected:**	04/11/19
Lab Code:	R1903267-001	**Date Received:**	04/12/19
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
1631E		CKUTZER
200.7	KMCLAEN	CKUTZER
420.4		BBOWE
624		FNAEGLER
SM 2540 D-1997(2011)		KAWONG
SM 4500-CN-E-2001(2011)	MROGERSON	GNITAJOUPPI

Sample Name:	PSTW-041119 Dup	**Date Collected:**	04/11/19
Lab Code:	R1903267-002	**Date Received:**	04/12/19
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
1631E		CKUTZER

Sample Name:	Field Blank	**Date Collected:**	04/11/19
Lab Code:	R1903267-003	**Date Received:**	04/12/19
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
1631E		CKUTZER

Sample Name:	Trip Blank	**Date Collected:**	04/11/19
Lab Code:	R1903267-004	**Date Received:**	04/12/19
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
624		DLIPANI

INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9014 Cyanide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Acid Soluble	9030B
9056A Bomb (Halogens)	5050A
9066 Manual Distillation	9065
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7196A	3060A
7199	3060A
9056A Halogens/Halides	5050
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction

For analytical methods not listed, the preparation method is the same as the analytical method reference.

Sample Results

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Volatile Organic Compounds by GC/MS

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client:	Olin Corporation	**Service Request:**	R1903267
Project:	Olin - Pendleton Site/1209	**Date Collected:**	04/11/19 12:35
Sample Matrix:	Water	**Date Received:**	04/12/19 12:50
Sample Name:	PSTW-041119	**Units:**	ug/L
Lab Code:	R1903267-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS, Unpreserved

Analysis Method: 624.1
Prep Method: EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1-Trichloroethane (TCA)	ND U	1.00	0.210	1	04/13/19 14:16	
1,1,2,2-Tetrachloroethane	ND U	1.00	0.200	1	04/13/19 14:16	
1,1,2-Trichloroethane	ND U	1.00	0.200	1	04/13/19 14:16	
1,1-Dichloroethane (1,1-DCA)	**0.927 J**	1.00	0.200	1	04/13/19 14:16	
1,1-Dichloroethene (1,1-DCE)	ND U	1.00	0.250	1	04/13/19 14:16	
1,2-Dichloroethane	ND U	1.00	0.200	1	04/13/19 14:16	
1,2-Dichloropropane	ND U	1.00	0.200	1	04/13/19 14:16	
2-Butanone (MEK)	ND U	5.00	0.780	1	04/13/19 14:16	
2-Hexanone	ND U	5.00	0.200	1	04/13/19 14:16	
4-Methyl-2-pentanone (MIBK)	ND U	5.00	0.200	1	04/13/19 14:16	
Acetone	ND U	5.00	2.10	1	04/13/19 14:16	
Acrolein	ND U	10.0	0.900	1	04/13/19 14:16	
Acrylonitrile	ND U	10.0	0.900	1	04/13/19 14:16	
Benzene	ND U	1.00	0.200	1	04/13/19 14:16	
Bromodichloromethane	ND U	1.00	0.220	1	04/13/19 14:16	
Bromoform	ND U	1.00	0.250	1	04/13/19 14:16	
Bromomethane	ND U	1.00	0.700	1	04/13/19 14:16	
Carbon Disulfide	ND U	10.0	0.250	1	04/13/19 14:16	
Carbon Tetrachloride	ND U	1.00	0.340	1	04/13/19 14:16	
Chlorobenzene	ND U	1.00	0.200	1	04/13/19 14:16	
Chloroethane	ND U	1.00	0.230	1	04/13/19 14:16	
Chloroform	ND U	1.00	0.240	1	04/13/19 14:16	
Chloromethane	ND U	1.00	0.280	1	04/13/19 14:16	
Dibromochloromethane	ND U	1.00	0.200	1	04/13/19 14:16	
Methylene Chloride	ND U	1.00	0.360	1	04/13/19 14:16	
Ethylbenzene	ND U	1.00	0.200	1	04/13/19 14:16	
Styrene	ND U	1.00	0.200	1	04/13/19 14:16	
Tetrachloroethene (PCE)	ND U	1.00	0.210	1	04/13/19 14:16	
Toluene	ND U	1.00	0.200	1	04/13/19 14:16	
Trichloroethene (TCE)	ND U	1.00	0.200	1	04/13/19 14:16	
Vinyl Chloride	ND U	1.00	0.200	1	04/13/19 14:16	
cis-1,2-Dichloroethene	ND U	1.00	0.230	1	04/13/19 14:16	
cis-1,3-Dichloropropene	ND U	1.00	0.200	1	04/13/19 14:16	
m,p-Xylenes	ND U	2.00	0.200	1	04/13/19 14:16	
o-Xylene	ND U	1.00	0.200	1	04/13/19 14:16	
trans-1,2-Dichloroethene	ND U	1.00	0.200	1	04/13/19 14:16	
trans-1,3-Dichloropropene	ND U	1.00	0.230	1	04/13/19 14:16	

Client:	Olin Corporation	**Service Request:**	R1903267
Project:	Olin - Pendleton Site/1209	**Date Collected:**	04/11/19 12:35
Sample Matrix:	Water	**Date Received:**	04/12/19 12:50
Sample Name:	PSTW-041119	**Units:**	ug/L
Lab Code:	R1903267-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS, Unpreserved

Analysis Method: 624.1
Prep Method: EPA 5030C

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,2-Dichloroethane-d4	101	73 - 125	04/13/19 14:16	
4-Bromofluorobenzene	91	85 - 122	04/13/19 14:16	
Toluene-d8	94	87 - 121	04/13/19 14:16	

Client:	Olin Corporation	**Service Request:**	R1903267
Project:	Olin - Pendleton Site/1209	**Date Collected:**	04/11/19
Sample Matrix:	Water	**Date Received:**	04/12/19 12:50
Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	R1903267-004	**Basis:**	NA

Volatile Organic Compounds by GC/MS, Unpreserved

Analysis Method: 624.1
Prep Method: EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1-Trichloroethane (TCA)	ND U	1.00	0.210	1	04/17/19 13:02	
1,1,2,2-Tetrachloroethane	ND U	1.00	0.200	1	04/17/19 13:02	
1,1,2-Trichloroethane	ND U	1.00	0.200	1	04/17/19 13:02	
1,1-Dichloroethane (1,1-DCA)	ND U	1.00	0.200	1	04/17/19 13:02	
1,1-Dichloroethene (1,1-DCE)	ND U	1.00	0.250	1	04/17/19 13:02	
1,2-Dichloroethane	ND U	1.00	0.200	1	04/17/19 13:02	
1,2-Dichloropropane	ND U	1.00	0.200	1	04/17/19 13:02	
2-Butanone (MEK)	ND U	5.00	0.780	1	04/17/19 13:02	
2-Hexanone	ND U	5.00	0.200	1	04/17/19 13:02	
4-Methyl-2-pentanone (MIBK)	ND U	5.00	0.200	1	04/17/19 13:02	
Acetone	ND U	5.00	2.10	1	04/17/19 13:02	
Acrolein	ND U	10.0	0.900	1	04/17/19 13:02	
Acrylonitrile	ND U	10.0	0.900	1	04/17/19 13:02	
Benzene	ND U	1.00	0.200	1	04/17/19 13:02	
Bromodichloromethane	ND U	1.00	0.220	1	04/17/19 13:02	
Bromoform	ND U	1.00	0.250	1	04/17/19 13:02	
Bromomethane	ND U	1.00	0.700	1	04/17/19 13:02	
Carbon Disulfide	ND U	10.0	0.250	1	04/17/19 13:02	
Carbon Tetrachloride	ND U	1.00	0.340	1	04/17/19 13:02	
Chlorobenzene	ND U	1.00	0.200	1	04/17/19 13:02	
Chloroethane	ND U	1.00	0.230	1	04/17/19 13:02	
Chloroform	ND U	1.00	0.240	1	04/17/19 13:02	
Chloromethane	ND U	1.00	0.280	1	04/17/19 13:02	
Dibromochloromethane	ND U	1.00	0.200	1	04/17/19 13:02	
Methylene Chloride	ND U	1.00	0.360	1	04/17/19 13:02	
Ethylbenzene	ND U	1.00	0.200	1	04/17/19 13:02	
Styrene	ND U	1.00	0.200	1	04/17/19 13:02	
Tetrachloroethene (PCE)	ND U	1.00	0.210	1	04/17/19 13:02	
Toluene	ND U	1.00	0.200	1	04/17/19 13:02	
Trichloroethene (TCE)	ND U	1.00	0.200	1	04/17/19 13:02	
Vinyl Chloride	ND U	1.00	0.200	1	04/17/19 13:02	
cis-1,2-Dichloroethene	ND U	1.00	0.230	1	04/17/19 13:02	
cis-1,3-Dichloropropene	ND U	1.00	0.200	1	04/17/19 13:02	
m,p-Xylenes	ND U	2.00	0.200	1	04/17/19 13:02	
o-Xylene	ND U	1.00	0.200	1	04/17/19 13:02	
trans-1,2-Dichloroethene	ND U	1.00	0.200	1	04/17/19 13:02	
trans-1,3-Dichloropropene	ND U	1.00	0.230	1	04/17/19 13:02	

Client:	Olin Corporation	**Service Request:**	R1903267
Project:	Olin - Pendleton Site/1209	**Date Collected:**	04/11/19
Sample Matrix:	Water	**Date Received:**	04/12/19 12:50
Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	R1903267-004	**Basis:**	NA

Volatile Organic Compounds by GC/MS, Unpreserved

Analysis Method: 624.1
Prep Method: EPA 5030C

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,2-Dichloroethane-d4	99	73 - 125	04/17/19 13:02	
4-Bromofluorobenzene	96	85 - 122	04/17/19 13:02	
Toluene-d8	100	87 - 121	04/17/19 13:02	

Metals

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

METALS
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Olin Corporation
Project No.: R1903267
Project Name:
Matrix: WATER

Service Request: PSTW-041119
Date Collected: 4/11/2019
Date Received: 4/12/2019
Units: ug/L
Basis:

Sample Name: PSTW-041119 **Lab Code:** R1903267-001

Analyte	Analysis Method	PQL	MDL	Dil. Factor	Result	C	Q
Antimony	200.7	60.0	5.4	1.0	60.0	U	
Boron	200.7	200	5.8	1.0	60.2	J	
Chromium	200.7	10.0	0.910	1.0	10.0	U	

% Solids: 0.0

Comments:

Client:	Olin Corporation	**Service Request:**	R1903267
Project:	Olin - Pendleton Site/1209	**Date Collected:**	04/11/19 12:35
Sample Matrix:	Water	**Date Received:**	04/12/19 12:50
Sample Name:	PSTW-041119	**Basis:**	NA
Lab Code:	R1903267-001		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Mercury, Total	1631E	ND U	ng/L	1.0	0.3	1	04/19/19 12:53	

Client:	Olin Corporation	**Service Request:**	R1903267
Project:	Olin - Pendleton Site/1209	**Date Collected:**	04/11/19 10:08
Sample Matrix:	Water	**Date Received:**	04/12/19 12:50
Sample Name:	PSTW-041119 Dup	**Basis:**	NA
Lab Code:	R1903267-002		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Mercury, Total	1631E	ND U	ng/L	1.0	0.3	1	04/19/19 13:01	

Client:	Olin Corporation	**Service Request:**	R1903267
Project:	Olin - Pendleton Site/1209	**Date Collected:**	04/11/19
Sample Matrix:	Water	**Date Received:**	04/12/19 12:50
Sample Name:	Field Blank	**Basis:**	NA
Lab Code:	R1903267-003		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Mercury, Total	1631E	ND U	ng/L	1.0	0.3	1	04/19/19 13:09	

Client:	Olin Corporation	**Service Request:**	R1903267
Project:	Olin - Pendleton Site/1209	**Date Collected:**	04/11/19 12:35
Sample Matrix:	Water	**Date Received:**	04/12/19 12:50
Sample Name:	PSTW-041119	**Basis:**	NA
Lab Code:	R1903267-001		

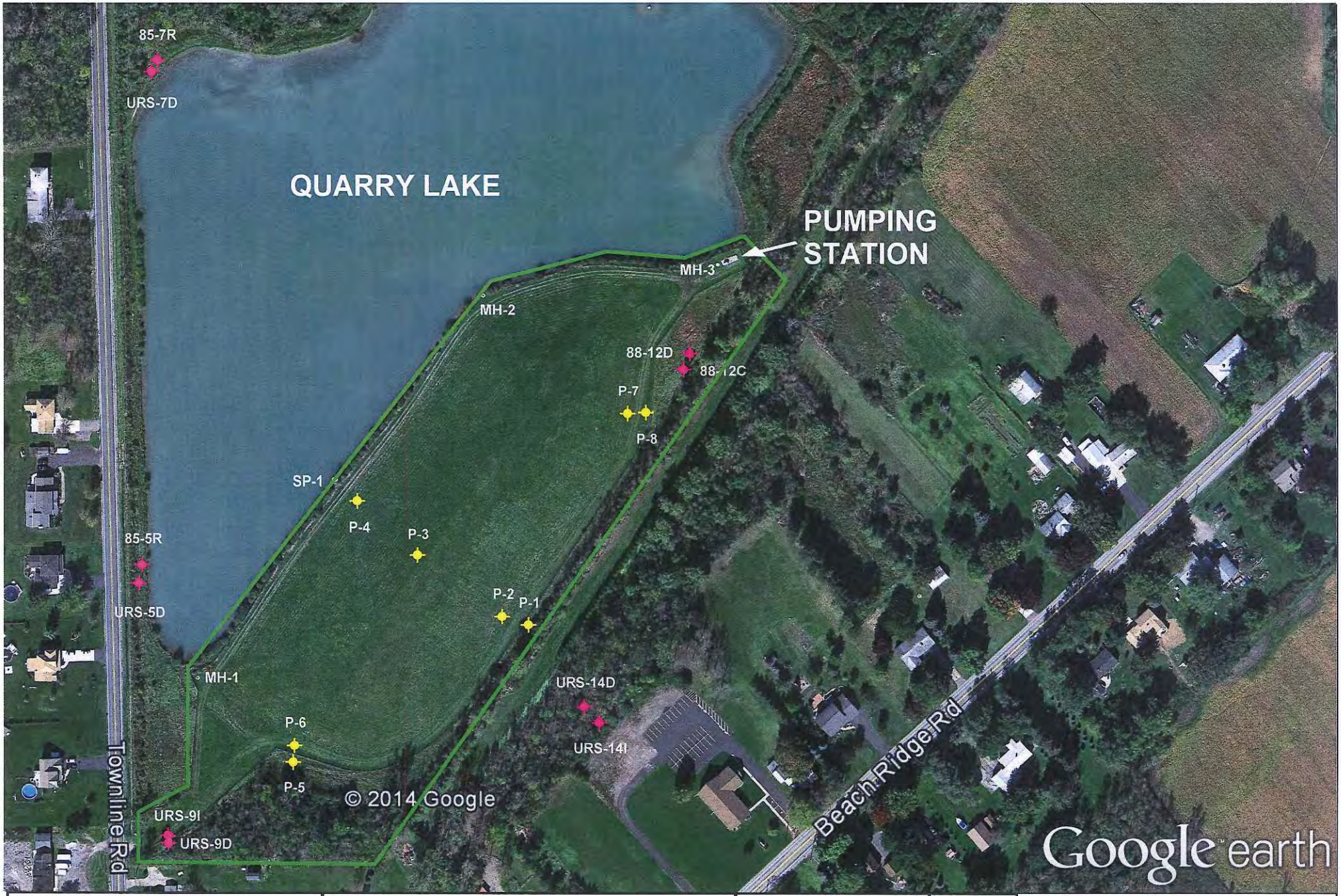
Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Cyanide	SM 4500-CN-E-2001(2011)	ND U	mg/L	0.010	1	04/17/19 10:47	04/16/19	
Phenolics, Total Recoverable	420.4	ND U	mg/L	0.0050	1	04/15/19 13:34	NA	
Solids, Total Suspended (TSS)	SM 2540 D-1997(2011)	ND U	mg/L	1.0	1	04/18/19 10:55	NA	

Olin™

ATTACHMENT D

Well Location Map and Groundwater Elevations



Olin

OLIN CORPORATION

Environmental Remediation Group
3855 N. Ocoee St., Ste. 200
Cleveland, tennessee 37312
423/336-4000

SCALE: NOTED	DRAWN BY: JRH	DATE: 8-29-2019
	CHKD. BY: ABC	DATE: 9-5-2019

OLIN CORPORATION
FRONTIER CHEMICAL PENDLETON SITE
PENDLETON, NY

SITE MAP
MONITORING WELL/PEIZOMETER LOCATIONS
APRIL 2019

FIG. NO. 1

SCALE: 1 INCH = 200 FEET

- PIEZOMETER WELL
- MONITORING WELL
- SITE BOUNDRY
- MH = MANHOLE
- SP = STAND PIPE

Summary of Groundwater Elevations
Fall 2018 and Spring 2019
Pendleton Site

	POSITION	LOCATION	Top of Riser Elevation FT	Depth to Water FT	Water Elevation FT-MSL 7756 9/20/2018	Water Elevation FT-MSL 7958 4/10/2019
P-1	(O)	EASTERN PORTION OF	583.21	2.25	574.4	581.2
P-2	(I)	CAPPED AREA	582.90	4.96	576.55	579.41
P-3	(I)	CENTER OF CAPPED AREA	606.33	29.06	579.42	577.13
P-4	(I)	ADJACENT TO QUARRY	582.31	9.89	573.68	572.1
SP-1	(T)	LAKE	579.86		564.9	564.9
P-5	(O)	SOUTHERN PORTION OF	583.05	3.41	572.43	579.8
P-6	(I)	CAPPED AREA	584.45	6.58	575.03	573.97
P-7	(I)	NORTHERN PORTION OF	580.97	7.21	575.25	573.98
P-8	(O)	CAPPED AREA	582.83	2.35	575.85	580.43
URS-14I		UPGRADIENT WELL NEST	581.14	1.02	580.31	582.76
URS-14D		IN CHURCH PARKING LOT	580.71	8.93	575.91	577.04
URS-9I		SOUTHERN WELL NEST	581.68	6.11	573.67	574.77
URS-9D		ALONG TOWN LINE ROAD	580.80	5.31	573.11	574.55
85-5R		MIDDLE WELL NEST ALONG	580.84	9.85	575.9	577.23
URS-5D		TOWN LINE ROAD	580.60	6.41	573.57	574.54
85-7R		NORTH WELL NEST ALONG	577.90	27.80	573.7	574.57
URS-7D		TOWN LINE ROAD	579.35	39.90	573.8	574.77
88-12C		WELL NEST OUTSIDE	583.12	6.49	573.43	575.37
88-12D		NORTHEAST PORTION OF	582.87	8.55	573.78	575.12
QUARRY LAKE					577.49	578.5

Notes:
Elevation based on USGS Datum.
O = piezometer located outside of capped area.
I = piezometer located inside capped area.
T = standpipe located within the ground water collection trench.

Olin™

ATTACHMENT E

Semi-Annual Field Observation Report and
Monthly Inspection Checklist

FIELD OBSERVATION REPORT

PROJECT NO.:	94-1014-O REPORT NO.: 18-02	DATE: 9/20/18	PAGE: 1 OF 2
PROJECT:	Pendleton – Frontier Chemical Site	DAY: Thursday	
SUBJECT:	Lake Level Survey, Semi-Annual Insp.	PROJECT TIME:	1:30 pm – 3:00 pm
CLIENT:	Sevenson Environmental Services, Inc.	SITE TIME:	1:45 pm – 2:45 pm
WEATHER:	Warm, Cloudy (70°F)	PHOTOS:	Yes X No

- As notified by Mike Walker (Sevenson Environmental), visit the Pendleton site to record the surface water elevation of the lake to coincide with the semi-annual site inspection event.
- Chris Jones (SES) is on site for inspection/maintenance and provides site access. SES will complete monitoring well, sampling and other semi-annual inspection items tomorrow, 9.21.17.
- The Quarry Lake surface water level near the pre-treatment vault is recorded by level survey using the top of the pre-treatment vault benchmark El. 580.50'. The lake water elevation is recorded at El. 577.49'.
- Following are cursory observations made while on site:
  - The capped area is noted to be in good condition, with no sloughing or erosion and no indication of active rodent burrows.
  - The lake level is relatively low and the overflow weir invert is dry.
  - Note heavy brush/vegetative growth in areas outside of perimeter fence
  - Site access roads are in good condition.
- Leave site at approx. 2:45 pm, returning to GGEA's Lockport office to prepare this report.

PERSONNEL ON SITE / CONTACTED:
Chris Jones – Sevenson

DISTRIBUTION:
Mike Walker – Sevenson Environmental
David Share, P.E., Adam Carringer – Pendleton PRP Group

DAILY MANHOURS: 1.5 + report

Jesse E. Grossman, P.E. - Engineering Manager

Mark W. Glynn, P.E.

FIELD OBSERVATION REPORT

PROJECT NO.: 94-1014-O REPORT NO.: 18-02 DATE: 9/20/18 PAGE: 2 OF 2

PROJECT: Pendleton – Frontier Chemical Site DAY: Thursday

SUBJECT: Lake Level Survey, Semi-Annual Insp. PROJECT TIME: 1:30 pm – 3:00 pm

CLIENT: Sevenson Environmental Services, Inc. SITE TIME: 1:45 pm – 2:45 pm

Site Photos:

Lakeside Slope of Capped Area

Overflow Weir (Dry)

East Shore of Lake Wetlands Area

Frontier Chemical – Pendleton
Site No. 932043
Semi-Annual Inspection Checklist

Date: 9/20/18 Time In: 830 Time Out: 1530

Inspector: CHRIS JONES
Inspector Signature

Weather:	70° SUNNY

Item	Task	Response		Comments
		Yes	No	
Low-Permeability Cover:	Visually Inspect Surface Conditions			
	1. Erosion problem?		X	
	2. Lack or thinning of vegetation?		X	
	3. Mowing required?		X	
	4. Drainage problems?		X	
	5. Areas of settlement?		X	
	6. Areas of slope instability?		X	
	7. Areas of damage?		X	
Ground Water Collection and Conveyance System:	Visually Inspect Manholes and Cleanouts			
	1. Buildup of solids/precipitates to the extent that the flow of groundwater is affected?		X	
	2. Measure water levels in manholes and Quarry Lake a. MH-1? 0 b. MH-2 0 c. MH-3? 18.62 d. Quarry Lake? 577.49			
	3. Closed and opened pinch valve?	X		

Upper Area 578.46

Frontier Chemical – Pendleton
Site No. 932043
Semi-Annual Inspection Checklist

Item	Task	Response		Comments
		Yes	No	
	4. Leakage, degradation or corrosion of valves, pipes or appurtenances?		X	
	5. Areas of damage?		X	
Ground Water Pre-Treatment System (including Dry Vault and Wet Well):	Perform Inspection in accordance with Pre-Treatment System Operations Plan	X		
Surface Water Runoff Facilities:	Visually Inspect Ditches and Culverts			
	1. Accumulation of debris?		X	
	2. Excessive scouring?		X	
	3. Areas of damage?		X	
Perimeter Berm, Containment Berm, and Outlet Weir:	Visually Inspect Condition			
	1. Erosion problems?		X	
	2. Areas of settlement?		X	
	3. Areas of slope instability?		X	
	4. Areas of damage?		X	
Ground Water Monitoring Wells and Piezometers:	Visually Inspect Condition			
	1. Casings secured and locked?	X		
	2. Areas of damage?		X	
Access Road:	Visually Inspect Surface Condition			
	1. Rutting?		X	
	2. Potholes?		X	
	3. Settlement?		X	
	4. Areas of damage?		X	

Frontier Chemical – Pendleton
Site No. 932043
Semi-Annual Inspection Checklist

Item	Task	Response		Comments
		Yes	No	
Physical Site Security:	**Visually Inspect Fences and Gates**			
	1. Signs intact?	X		
	2. Fence breached?		X	
	3. Access gates locked?	X		
	4. Areas of damage?		X	

Note any additional comments:

SEVERSON WAS ON SITE TO PERFORM SEMI-ANNUAL SITE INSPECTION. PRE-TREATED WATER WILL BE SAMPLED NEXT THURSDAY.
GLYNN GEOTECHNICAL WAS ONSITE TO SHOOT LAKE LEVEL.

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: CHRIS JONES
Inspector Signature

Well Identification: P-1

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction	A	PVC		Stainless Steel
Well Diameter	2	2-Inch		4-Inch
Depth to Ground Water	8.81	FT		
Well Depth	16.50	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: CHRIS JONES
Inspector Signature CJ

Well Identification: P-2

WELL SPECIFICATIONS:

Protective Casing		Above Ground	✓	Flush Mounted
Well Construction		PVC	✓	Stainless Steel
Well Diameter	✓	2-Inch		4-Inch
Depth to Ground Water	6.35	FT		
Well Depth	15.80	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	✓	
2. Well covers and locks in good condition and secure?	✓	
3. Is the well stand pipe vertically aligned and secure?		
4. Is the concrete pad and surface seal in good condition?	✓	
5. Are soils surrounding the well pad eroded?		✓
6. Is the well casing in good condition?	✓	
7. Is the measuring point on casing well marked?	✓	
8. Is there standing water in the annular space?		✓
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	✓	
11. Is the access down the well impeded or blocked?		✓
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: P3 9/20/18

Inspector: Chris Davis

Inspector Signature

Well Identification: P-3

WELL SPECIFICATIONS:

Protective Casing		Above Ground	X	Flush Mounted
Well Construction	X	PVC		Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	26.91	FT		
Well Depth	39.80	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?		
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: Chris Jones

Inspector Signature

Well Identification: P-4

WELL SPECIFICATIONS:

Protective Casing		Above Ground	X	Flush Mounted
Well Construction	X	PVC		Stainless Steel
Well Diameter	2	2-Inch		4-Inch
Depth to Ground Water	8.63	FT		
Well Depth	17.00	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?		
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: Chris Jones
Inspector Signature

Well Identification: P-5

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction	X	PVC		Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	10.62	FT		
Well Depth	15.60	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: CHRIS JONES
Inspector Signature

Well Identification: P-6

WELL SPECIFICATIONS:

Protective Casing		Above Ground	✓	Flush Mounted
Well Construction	✓	PVC		Stainless Steel
Well Diameter	✓	2-Inch		4-Inch
Depth to Ground Water	9.42	FT		
Well Depth	17.20	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	✓	
2. Well covers and locks in good condition and secure?	✓	
3. Is the well stand pipe vertically aligned and secure?		
4. Is the concrete pad and surface seal in good condition?	✓	
5. Are soils surrounding the well pad eroded?		✓
6. Is the well casing in good condition?	✓	
7. Is the measuring point on casing well marked?	✓	
8. Is there standing water in the annular space?		✓
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	✓	
11. Is the access down the well impeded or blocked?		✓
Explain:		

COMMENTS / RECOMMENDATIONS:

WELL CASING SLUMPED

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: Chris Jones
Inspector Signature

Well Identification: P-7

WELL SPECIFICATIONS:

Protective Casing		Above Ground	✓	Flush Mounted
Well Construction	✓	PVC		Stainless Steel
Well Diameter	✓	2-Inch		4-Inch
Depth to Ground Water	5.72	FT		
Well Depth	16.70	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	✓	
2. Well covers and locks in good condition and secure?	✓	
3. Is the well stand pipe vertically aligned and secure?		
4. Is the concrete pad and surface seal in good condition?	✓	
5. Are soils surrounding the well pad eroded?		✓
6. Is the well casing in good condition?	✓	
7. Is the measuring point on casing well marked?	✓	
8. Is there standing water in the annular space?		✓
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	✓	
11. Is the access down the well impeded or blocked?		✓
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: Chris Jones
Inspector Signature

Well Identification: P-8

WELL SPECIFICATIONS:

Protective Casing		Above Ground		Flush Mounted
Well Construction	X	PVC		Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	6.98	FT		
Well Depth	17.30	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	X
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?	X	X
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: CHRIS JONES
Inspector Signature

Well Identification: URS 9I

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction		PVC	X	Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	8.01	FT		
Well Depth	46.10	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: CHRIS JONES
Inspector Signature

Well Identification: UBS 9D

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction	X	PVC		Stainless Steel
Well Diameter	2	2-Inch		4-Inch
Depth to Ground Water	7.69	FT		
Well Depth	51.00	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: Chris Jones
Inspector Signature

Well Identification: URS-5D

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction		PVC	X	Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	7.03	FT		
Well Depth	45.90	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: Chris Lutes
Inspector Signature

Well Identification: VR57D

WELL SPECIFICATIONS:

Protective Casing	✓	Above Ground		Flush Mounted
Well Construction		PVC	✓	Stainless Steel
Well Diameter	✓	2-Inch		4-Inch
Depth to Ground Water	41.10	FT		
Well Depth	45.55	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	✓	
2. Well covers and locks in good condition and secure?	✓	
3. Is the well stand pipe vertically aligned and secure?	✓	
4. Is the concrete pad and surface seal in good condition?	✓	
5. Are soils surrounding the well pad eroded?		✓
6. Is the well casing in good condition?	✓	
7. Is the measuring point on casing well marked?	✓	
8. Is there standing water in the annular space?		✓
9. Is the stand pipe vented at the base to allow drainage?	✓	
10. Does the total sounded depth correspond to the original well completion depth?	✓	
11. Is the access down the well impeded or blocked?		✓
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: Chris Jones
Inspector Signature

Well Identification: 85-5R

WELL SPECIFICATIONS:

Protective Casing	✓	Above Ground		Flush Mounted
Well Construction	✓	PVC		Stainless Steel
Well Diameter	✓	2-Inch		4-Inch
Depth to Ground Water	4.94	FT		
Well Depth	39.20	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	✓	
2. Well covers and locks in good condition and secure?	✓	
3. Is the well stand pipe vertically aligned and secure?	✓	
4. Is the concrete pad and surface seal in good condition?	✓	
5. Are soils surrounding the well pad eroded?		✓
6. Is the well casing in good condition?	✓	
7. Is the measuring point on casing well marked?	✓	
8. Is there standing water in the annular space?		✓
9. Is the stand pipe vented at the base to allow drainage?	✓	
10. Does the total sounded depth correspond to the original well completion depth?	✓	
11. Is the access down the well impeded or blocked?		✓
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: Chris Jones
Inspector Signature

Well Identification: 85-7R

WELL SPECIFICATIONS:

Protective Casing	∝	Above Ground		Flush Mounted
Well Construction	∝	PVC		Stainless Steel
Well Diameter	2	2-Inch		4-Inch
Depth to Ground Water	4.20	FT		
Well Depth	17.70	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	∝	
2. Well covers and locks in good condition and secure?	∝	
3. Is the well stand pipe vertically aligned and secure?	∝	
4. Is the concrete pad and surface seal in good condition?	∝	
5. Are soils surrounding the well pad eroded?		∝
6. Is the well casing in good condition?	∝	
7. Is the measuring point on casing well marked?	∝	
8. Is there standing water in the annular space?		∝
9. Is the stand pipe vented at the base to allow drainage?	∝	
10. Does the total sounded depth correspond to the original well completion depth?	∝	
11. Is the access down the well impeded or blocked?		∝
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: CHRIS JONES
Inspector Signature CJ

Well Identification: URS 141

WELL SPECIFICATIONS:

Protective Casing		Above Ground	X	Flush Mounted
Well Construction		PVC	X	Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	2.45	FT		
Well Depth	31.10	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?		
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: Chris Jones

Inspector Signature

Well Identification: MW 14D

WELL SPECIFICATIONS:

Protective Casing		Above Ground	X	Flush Mounted
Well Construction		PVC	X	Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	6.81	FT		
Well Depth	41.65	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?		
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: CHRIS JAMES
Inspector Signature CJ

Well Identification: 88-12D

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction		PVC	X	Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	9.05	FT		
Well Depth	51.32 ~~53.90~~	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/20/18

Inspector: CHRIS JONES
Inspector Signature

Well Identification: 88-12C

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction		PVC	X	Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	9.50	FT		
Well Depth	31.30	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

FIELD OBSERVATION REPORT

PROJECT NO.: 94-1014-O REPORT NO.: 19-01 DATE: 4/10/19 PAGE: 1 OF 2

PROJECT: Pendleton – Frontier Chemical Site

DAY: Wednesday

SUBJECT: Lake Level Survey, Semi-Annual Insp.

PROJECT TIME: 1:00 pm – 2:30 pm

CLIENT: Sevenson Environmental Services, Inc.

SITE TIME: 1:15 pm – 2:15 pm

WEATHER: Cool, Overcast (42°F)

PHOTOS: Yes X No

- As notified by Chris Jones (Sevenson Environmental), visit the Pendleton site to record the surface water elevation of the lake to coincide with the semi-annual site inspection event.
- The Quarry Lake surface water level near the pre-treatment vault is recorded by level survey using the top of the pre-treatment vault benchmark El. 580.50'. The lake water elevation is recorded at El. 578.50'.
- Chris Jones (SES) is on site for the semi-annual inspection and to provide site access.
- Following are cursory observations made while on site:
  - The capped area is noted to be in generally good condition with no indication of active rodent burrows.
  - The overflow weir is inundated with approx. 1.3' of water.
  - There is standing water in the Zone "D" wetlands along the northeast side of the site.
  - The site access roads are generally in good condition, though wet and with some localized rutting.
  - SES notes that other annual inspection items (pinch valve operation, cleanout riser inspections, etc.) will be completed as part of this inspection event.
- Leave site at approx. 2:15 pm, returning to GGE's Lockport office to prepare this report.

PERSONNEL ON SITE / CONTACTED:

Chris Jones – Sevenson

DISTRIBUTION:

Mike Walker – Sevenson
David Share, P.E. – Pendleton PRP Group
Adam Carringer – Pendleton PRP Grp

DAILY MANHOURS: 1.5 + report

Jesse E. Grossman, P.E. - Engineering Manager

Mark W. Glynn, P.E.

FIELD OBSERVATION REPORT

PROJECT NO.: 94-1014-O REPORT NO.: 19-01 DATE: 4/10/19 PAGE: 2 OF 2

PROJECT: Pendleton – Frontier Chemical Site DAY: Wednesday

SUBJECT: Lake Level Survey, Semi-Annual Insp. PROJECT TIME: 1:00 pm – 2:30 pm

CLIENT: Sevenson Environmental Services, Inc. SITE TIME: 1:15 pm – 2:15 pm

4.10.19 Site Photos:

Inundated Overflow Weir

North access road

Recording lake water level

Frontier Chemical – Pendleton
Site No. 932043
Semi-Annual Inspection Checklist

Date: 4/10/19 **Time In:** 830 **Time Out:** 1530

Inspector: CHRIS JONES
Inspector Signature

Weather:	32° RAIN/SNOW

Item	Task	Response		Comments
		Yes	No	
Low-Permeability Cover:	Visually Inspect Surface Conditions			
	1. Erosion problem?		✗	
	2. Lack or thinning of vegetation?		✗	
	3. Mowing required?		✗	
	4. Drainage problems?		✗	
	5. Areas of settlement?		✗	
	6. Areas of slope instability?		✗	
	7. Areas of damage?		✗	
Ground Water Collection and Conveyance System:	Visually Inspect Manholes and Cleanouts			
	1. Buildup of solids/precipitates to the extent that the flow of groundwater is affected?		✗	
	2. Measure water levels in manholes and Quarry Lake a. MH-1? 0 b. MH-2 0 c. MH-3? d. Quarry Lake? 578.50			
	3. Closed and opened pinch valve?	✗		

Frontier Chemical – Pendleton
Site No. 932043
Semi-Annual Inspection Checklist

Item	Task	Response		Comments
		Yes	No	
	4. Leakage, degradation or corrosion of valves, pipes or appurtenances?		X	
	5. Areas of damage?		X	
Ground Water Pre-Treatment System (including Dry Vault and Wet Well):	Perform Inspection in accordance with Pre-Treatment System Operations Plan	X		
Surface Water Runoff Facilities:	Visually Inspect Ditches and Culverts			
	1. Accumulation of debris?		X	
	2. Excessive scouring?		X	
	3. Areas of damage?		X	
Perimeter Berm, Containment Berm, and Outlet Weir:	Visually Inspect Condition			
	1. Erosion problems?		X	
	2. Areas of settlement?		X	
	3. Areas of slope instability?		X	
	4. Areas of damage?		X	
Ground Water Monitoring Wells and Piezometers:	Visually Inspect Condition			
	1. Casings secured and locked?	X		
	2. Areas of damage?		X	
Access Road:	Visually Inspect Surface Condition			
	1. Rutting?	X		EAST END OF LANDFILL
	2. Potholes?		X	
	3. Settlement?		X	
	4. Areas of damage?		X	

Frontier Chemical – Pendleton
Site No. 932043
Semi-Annual Inspection Checklist

Item	Task	Response		Comments
		Yes	No	
Physical Site Security:	Visually Inspect Fences and Gates			
	1. Signs intact?	X		
	2. Fence breached?		X	
	3. Access gates locked?	X		
	4. Areas of damage?		X	
Note any additional comments:				

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/10/19

Inspector: C Jones

Inspector Signature

Well Identification: P-8

WELL SPECIFICATIONS:

Protective Casing	✓	Above Ground		Flush Mounted
Well Construction	✓	PVC		Stainless Steel
Well Diameter	✓	2-Inch		4-Inch
Depth to Ground Water	2.40	FT		
Well Depth	17.30	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	✓	
2. Well covers and locks in good condition and secure?	✓	
3. Is the well stand pipe vertically aligned and secure?	✓	
4. Is the concrete pad and surface seal in good condition?		✗
5. Are soils surrounding the well pad eroded?	✓	
6. Is the well casing in good condition?	✓	
7. Is the measuring point on casing well marked?		✗
8. Is there standing water in the annular space?	✓	
9. Is the stand pipe vented at the base to allow drainage?	✗	
10. Does the total sounded depth correspond to the original well completion depth?		✓
11. Is the access down the well impeded or blocked?		
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/10/19

Inspector: C Jones

Inspector Signature CJ

Well Identification: 88.12C

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction		PVC	X	Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	7.56	FT		
Well Depth	31.30	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?		X
5. Are soils surrounding the well pad eroded?	X	
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?		X
8. Is there standing water in the annular space?	X	
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?		X
11. Is the access down the well impeded or blocked?		
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/10/19

Inspector: C JONES
Inspector Signature

Well Identification: 88-12D

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction		PVC	X	Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	7.71	FT		
Well Depth	51.36	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/10/19

Inspector: C JONES
Inspector Signature CJ

Well Identification: P-7

WELL SPECIFICATIONS:

Protective Casing		Above Ground	X	Flush Mounted
Well Construction	X	PVC		Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	6.99	FT		
Well Depth	16.80	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?		
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/10/19

Inspector: C Jones

Inspector Signature

Well Identification: P-1

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction	X	PVC		Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	2.01	FT		
Well Depth	16.50	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/10/19

Inspector: C JONES

Inspector Signature CJ

Well Identification: P-2

WELL SPECIFICATIONS:

Protective Casing		Above Ground	∝	Flush Mounted
Well Construction		PVC	∝	Stainless Steel
Well Diameter	∝	2-Inch		4-Inch
Depth to Ground Water	3.49	FT		
Well Depth	15.80	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	∝	
2. Well covers and locks in good condition and secure?	∝	
3. Is the well stand pipe vertically aligned and secure?		
4. Is the concrete pad and surface seal in good condition?	∝	
5. Are soils surrounding the well pad eroded?		∝
6. Is the well casing in good condition?	∝	
7. Is the measuring point on casing well marked?	∝	
8. Is there standing water in the annular space?		∝
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	∝	
11. Is the access down the well impeded or blocked?		∝
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/10/19

Inspector: C JONES
Inspector Signature

Well Identification: P-5

WELL SPECIFICATIONS: P-5

Protective Casing	x	Above Ground		Flush Mounted
Well Construction	x	PVC		Stainless Steel
Well Diameter	x	2-Inch		4-Inch
Depth to Ground Water	3.25	FT		
Well Depth	15.60	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	x	
2. Well covers and locks in good condition and secure?	x	
3. Is the well stand pipe vertically aligned and secure?	x	
4. Is the concrete pad and surface seal in good condition?	x	
5. Are soils surrounding the well pad eroded?		x
6. Is the well casing in good condition?	x	
7. Is the measuring point on casing well marked?	x	
8. Is there standing water in the annular space?		x
9. Is the stand pipe vented at the base to allow drainage?	x	
10. Does the total sounded depth correspond to the original well completion depth?	x	
11. Is the access down the well impeded or blocked?		x
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/10/19

Inspector: C JONES
Inspector Signature

Well Identification: P-6

WELL SPECIFICATIONS:

Protective Casing		Above Ground	X	Flush Mounted
Well Construction	X	PVC		Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	10.48	FT		
Well Depth	16.30	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?		
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/10/19

Inspector: C Jones
Inspector Signature CJ

Well Identification: P-4

WELL SPECIFICATIONS:

Protective Casing		Above Ground	X	Flush Mounted
Well Construction	X	PVC		Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	10.21	FT		
Well Depth	17.00	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?		
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/12/17

Inspector: C Jones
Inspector Signature

Well Identification: P-3

WELL SPECIFICATIONS:

Protective Casing		Above Ground	X	Flush Mounted
Well Construction	X	PVC		Stainless Steel
Well Diameter	2	2-Inch		4-Inch
Depth to Ground Water	29.26	FT		
Well Depth	39.80	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?		
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 9/11/19

Inspector: C JONES

Inspector Signature

Well Identification: URS 5D

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction		PVC	X	Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	6.06	FT		
Well Depth	49.90	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/11/19

Inspector: C Jones

Inspector Signature

Well Identification: 55 5R

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction	X	PVC		Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	3.61	FT		
Well Depth	37.20	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/11/19

Inspector: C Jones
Inspector Signature

Well Identification: URS 7P

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction		PVC	X	Stainless Steel
Well Diameter	2	2-Inch		4-Inch
Depth to Ground Water	4.58	FT		
Well Depth	39.90	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/11/19

Inspector: C Jones
Inspector Signature

Well Identification: 85-7R

WELL SPECIFICATIONS:

Protective Casing	✓	Above Ground		Flush Mounted
Well Construction		PVC	"	Stainless Steel
Well Diameter	✓	2-Inch		4-Inch
Depth to Ground Water	3.33	FT		
Well Depth	27.80	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	✓	
2. Well covers and locks in good condition and secure?	✓	
3. Is the well stand pipe vertically aligned and secure?	✓	
4. Is the concrete pad and surface seal in good condition?	✓	
5. Are soils surrounding the well pad eroded?		✓
6. Is the well casing in good condition?	✓	
7. Is the measuring point on casing well marked?	✓	
8. Is there standing water in the annular space?	✓	
9. Is the stand pipe vented at the base to allow drainage?	✓	
10. Does the total sounded depth correspond to the original well completion depth?	✓	
11. Is the access down the well impeded or blocked?		✓
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/14/15

Inspector: C Jones

Inspector Signature

Well Identification: URS 9D

WELL SPECIFICATIONS:

Protective Casing	X	Above Ground		Flush Mounted
Well Construction		PVC	X	Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	6.25	FT		
Well Depth	51.00	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?	X	
4. Is the concrete pad and surface seal in good condition?		X
5. Are soils surrounding the well pad eroded?	X	
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?		X
8. Is there standing water in the annular space?	X	
9. Is the stand pipe vented at the base to allow drainage?	X	
10. Does the total sounded depth correspond to the original well completion depth?		X
11. Is the access down the well impeded or blocked?		
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/11/17

Inspector: (illegible)
Inspector Signature

Well Identification: URS 91

WELL SPECIFICATIONS:

Protective Casing	✓	Above Ground		Flush Mounted
Well Construction		PVC	✓	Stainless Steel
Well Diameter	✓	2-Inch		4-Inch
Depth to Ground Water	69	FT		
Well Depth	46.55	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	✓	
2. Well covers and locks in good condition and secure?	✓	
3. Is the well stand pipe vertically aligned and secure?	✓	
4. Is the concrete pad and surface seal in good condition?	✓	
5. Are soils surrounding the well pad eroded?		✓
6. Is the well casing in good condition?	✓	
7. Is the measuring point on casing well marked?	✓	
8. Is there standing water in the annular space?		✓
9. Is the stand pipe vented at the base to allow drainage?	✓	
10. Does the total sounded depth correspond to the original well completion depth?	✓	
11. Is the access down the well impeded or blocked?		✓
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/11/19

Inspector: C Jones
Inspector Signature CJ

Well Identification: UAS 141

WELL SPECIFICATIONS:

Protective Casing		Above Ground	X	Flush Mounted
Well Construction		PVC	X	Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	0 (TOP)	FT		
Well Depth	31.15	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	✓	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?		X
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

Frontier Chemical – Pendleton
Site No. 932043
Monitoring Well Integrity Checklist

Date: 4/11/19

Inspector: C Jones

Inspector Signature C J

Well Identification: UKS 19D

WELL SPECIFICATIONS:

Protective Casing		Above Ground	X	Flush Mounted
Well Construction	X	PVC	X	Stainless Steel
Well Diameter	X	2-Inch		4-Inch
Depth to Ground Water	5.68	FT		
Well Depth	41.50	FT		

WELL INTEGRITY

	Yes	No
1. Well identification clearly marked?	X	
2. Well covers and locks in good condition and secure?	X	
3. Is the well stand pipe vertically aligned and secure?		
4. Is the concrete pad and surface seal in good condition?	X	
5. Are soils surrounding the well pad eroded?		X
6. Is the well casing in good condition?	X	
7. Is the measuring point on casing well marked?	X	
8. Is there standing water in the annular space?		X
9. Is the stand pipe vented at the base to allow drainage?		
10. Does the total sounded depth correspond to the original well completion depth?	X	
11. Is the access down the well impeded or blocked?		X
Explain:		

COMMENTS / RECOMMENDATIONS:

ATTACHMENT F

Pre-Treatment Flows

Pendleton Site Flow Summary
September 2018 - August 2019

	Month	Year	Monthly Flow (gal)	Avg gal/day	Days/month
	January	2018	20,222	652	31
	February	2018	16,108	575	28
	March	2018	17,421	562	31
	April	2018	15,961	532	30
	May	2018	17,300	558	31
	June	2018	10,846	362	30
	July	2018	2,361	76	31
	August	2018	3,066	99	31
Current	September*	2018	1,679	56	30
Report	October	2018	7,024	227	31
	November	2018	18,729	624	30
	December	2018	18,907	610	31
	January	2019	19,279	622	31
	February	2019	18,380	656	28
	March	2019	15,220	491	31
	April	2019	14,411	480	30
	May	2019	22,124	714	31
	June	2019	17,011	567	30
	July*	2019	10,311	333	31
	August	2019	4,199	135	31
Total Current Report			167,274	458	365

*Flow meter for the 1/2" Vault Sump malfuntioned. The recorded monthly flow (gal) for September 2018 and July 2019 were not considered accurate.
The values in the chart for the months in question represent volumes recorded by the 1" Discharge flow meter.

Pendleton Site
September 2018 Flows

Olin/PRP Group Pendleton Site

1" Discharge Flow Meter	1,679 Gallons
1/2" Vault Sump Flow Meter	14,537 Gallons
***Actual Treated Leachate**	**-12,858 Gallons**

Date	Time	1" Discharge Flow Meter	1/2" Vault Sump Flow Meter
9/1/2018	4:04:54	48	12
9/2/2018	4:04:54	46	11
9/3/2018	4:04:57	92	12
9/4/2018	4:04:54	45	13
9/5/2018	4:05:45	93	8
9/6/2018	4:06:47	47	3
9/7/2018	4:04:57	47	6
9/8/2018	4:05:42	47	3
9/9/2018	4:04:50	46	1
9/10/2018	4:04:55	94	3
9/11/2018	4:05:01	93	7
9/12/2018	4:05:00	93	13
9/13/2018	4:04:54	47	12
9/14/2018	4:04:54	46	8
9/15/2018	4:04:54	47	2
9/16/2018	4:05:50	92	247
9/17/2018	4:04:49	48	828
9/18/2018	4:04:59	46	999
9/19/2018	4:04:49	47	1,029
9/20/2018	4:05:50	47	997
9/21/2018	4:05:50	0	971
9/22/2018	4:04:59	47	1,041
9/23/2018	4:05:45	92	1,009
9/24/2018	4:04:54	46	1,034
9/25/2018	4:05:20	47	1,043
9/26/2018	4:04:54	47	1,023
9/27/2018	4:06:31	5	977
9/28/2018	4:04:59	47	1,042
9/29/2018	4:05:47	89	1,070
9/30/2018	4:05:51	48	1,113
Total Discharge for September 2018		**1,679**	
Groundwater through the sump			**14,537**

*The DMR report for September reflects unusual discharge occurrences. On September 16 the values recorded for the 1/2" vault sump discharge begin to increase substantially. The flow meter and recorder, along with the physical flow rate, were checked. A representative for the system has been contacted for proper maintenance.

Pendleton Site
October 2018 Flows

Olin/PRP Group Pendleton Site

1" Discharge Flow Meter	7,024 Gallons
1/2" Vault Sump Flow Meter	0 Gallons
Actual Treated Leachate	**7,024 Gallons**

Date	Time	1" Discharge Flow Meter	1/2" Vault Sump Flow Meter
10/1/2018	4:11:03	45	0
10/2/2018	4:05:20	246	0
10/3/2018	4:07:13	242	0
10/4/2018	4:04:55	287	0
10/5/2018	4:04:55	239	0
10/6/2018	4:04:59	397	0
10/7/2018	4:04:49	493	0
10/8/2018	4:04:54	447	0
10/9/2018	4:05:53	400	0
10/10/2018	4:04:59	251	0
10/11/2018	4:04:54	190	0
10/12/2018	4:04:55	241	0
10/13/2018	4:04:54	142	0
10/14/2018	4:04:54	196	0
10/15/2018	4:04:51	242	0
10/16/2018	4:04:49	145	0
10/17/2018	4:04:50	196	0
10/18/2018	4:04:53	189	0
10/19/2018	4:04:55	192	0
10/20/2018	4:05:00	139	0
10/21/2018	4:04:54	190	0
10/22/2018	4:08:30	190	0
10/23/2018	4:04:49	193	0
10/24/2018	4:04:49	143	0
10/25/2018	4:07:08	142	0
10/26/2018	4:04:49	198	0
10/27/2018	4:04:49	129	0
10/28/2018	4:04:54	287	0
10/29/2018	4:04:59	235	0
10/30/2018	4:05:45	196	0
10/31/2018	4:04:49	202	0
Total Discharge for October 2018		**7,024**	
Groundwater through the sump			**0**

Pendleton Site
November 2018 Flows

Olin/PRP Group Pendleton Site

1" Discharge Flow Meter	20,171	Gallons
1/2" Vault Sump Flow Meter	1,442	Gallons
Actual Treated Leachate	**18,729**	**Gallons**

Date	Time	1" Discharge Flow Meter	1/2" Vault Sump Flow Meter
11/1/2018	4:05:47	719	719
11/2/2018	4:05:51	2,052	141
11/3/2018	4:05:50	704	5
11/4/2018	3:05:46	656	445
11/5/2018	4:11:14	555	6
11/6/2018	4:04:48	602	8
11/7/2018	4:04:53	595	8
11/8/2018	4:05:34	561	5
11/9/2018	4:04:54	550	5
11/10/2018	4:04:55	662	3
11/11/2018	4:04:54	557	3
11/12/2018	4:04:53	557	6
11/13/2018	4:04:53	536	8
11/14/2018	4:05:44	513	5
11/15/2018	4:04:48	510	3
11/16/2018	4:04:53	647	4
11/17/2018	4:04:59	774	3
11/18/2018	4:05:45	614	4
11/19/2018	4:04:48	553	6
11/20/2018	4:04:53	587	7
11/21/2018	4:04:53	563	3
11/22/2018	4:04:48	555	3
11/23/2018	4:04:48	549	5
11/24/2018	4:04:53	547	5
11/25/2018	4:04:58	600	6
11/26/2018	4:04:53	973	7
11/27/2018	4:04:55	834	7
11/28/2018	4:05:50	794	4
11/29/2018	4:05:49	643	4
11/30/2018	4:04:53	609	4
Total Discharge for November 2018		**20,171**	
Groundwater through the sump			**1,442**

Pendleton Site
December 2018 Flows

Olin/PRP Group Pendleton Site

1" Discharge Flow Meter	19,173	Gallons
1/2" Vault Sump Flow Meter	266	Gallons
Actual Treated Leachate	**18,907**	**Gallons**

Date	Time	1" Discharge Flow Meter	1/2" Vault Sump Flow Meter
12/1/2018	4:04:53	599	5
12/2/2018	4:04:54	966	26
12/3/2018	4:04:53	805	9
12/4/2018	4:04:53	600	5
12/5/2018	4:04:54	608	3
12/6/2018	4:04:54	610	6
12/7/2018	4:04:53	557	4
12/8/2018	4:08:55	558	5
12/9/2018	4:04:48	558	6
12/10/2018	4:04:55	607	3
12/11/2018	4:04:53	549	5
12/12/2018	4:04:48	551	5
12/13/2018	4:06:57	549	9
12/14/2018	4:04:58	543	5
12/15/2018	4:04:48	627	5
12/16/2018	4:08:28	624	6
12/17/2018	4:04:53	548	6
12/18/2018	4:08:34	551	6
12/19/2018	4:04:53	559	4
12/20/2018	4:05:45	548	6
12/21/2018	4:08:18	1,261	68
12/22/2018	4:04:48	635	8
12/23/2018	4:05:39	591	7
12/24/2018	4:05:44	595	6
12/25/2018	4:05:44	549	7
12/26/2018	4:04:53	540	7
12/27/2018	4:04:48	541	6
12/28/2018	4:05:00	604	6
12/29/2018	4:04:55	545	9
12/30/2018	4:04:53	596	7
12/31/2018	4:05:45	599	6
Total Discharge for December 2018		**19,173**	
Groundwater through the sump			**266**

Pendleton Site
January 2019 Flows

Olin/PRP Group Pendleton Site

1" Discgarge Flow Meter	19,664	Gallons
1/2" Vault Sump Flow Meter	385	Gallons
Actual Treated Leachate	**19,279**	**Gallons**

Date	Time	1" Discgarge Flow Meter	1/2" Vault Sump Flow Meter
1/1/2019	4:05:00	1,105	6
1/2/2019	4:04:54	597	5
1/3/2019	4:05:51	588	6
1/4/2019	4:04:53	588	8
1/5/2019	4:06:46	549	5
1/6/2019	4:05:45	558	4
1/7/2019	4:05:00	503	3
1/8/2019	4:05:51	601	4
1/9/2019	4:04:56	798	7
1/10/2019	4:04:48	646	4
1/11/2019	4:04:55	554	4
1/12/2019	4:04:53	551	2
1/13/2019	4:05:46	553	6
1/14/2019	4:05:45	540	5
1/15/2019	4:04:53	552	3
1/16/2019	4:05:50	557	4
1/17/2019	4:05:46	509	3
1/18/2019	4:04:53	542	6
1/19/2019	4:04:55	503	5
1/20/2019	4:04:49	502	4
1/21/2019	4:14:21	566	1
1/22/2019	4:04:59	553	4
1/23/2019	4:04:54	730	5
1/24/2019	4:04:53	1,763	232
1/25/2019	4:04:54	730	10
1/26/2019	4:05:00	603	8
1/27/2019	4:05:45	625	8
1/28/2019	4:04:53	567	6
1/29/2019	4:04:54	539	9
1/30/2019	4:05:45	545	5
1/31/2019	4:04:56	547	3
Total Discharge for January 2019		**19,664**	
Groundwater through the sump			**385**

Pendleton Site
February 2019 Flows

Olin/PRP Group Pendleton Site

1" Discharge Flow Meter	19,158 Gallons
1/2" Vault Sump Flow Meter	778 Gallons
Actual Treated Leachate	**18,380 Gallons**

Date	Time	1" Discharge Flow Meter	1/2" Vault Sump Flow Meter
2/1/2019	4:15:42	553	5
2/2/2019	4:04:54	556	3
2/3/2019	4:08:18	591	13
2/4/2019	4:05:45	1,267	18
2/5/2019	4:04:54	1,489	89
2/6/2019	4:05:45	1,136	27
2/7/2019	4:04:48	1,092	70
2/8/2019	4:04:53	837	11
2/9/2019	4:04:49	655	4
2/10/2019	4:04:54	545	9
2/11/2019	4:05:46	543	17
2/12/2019	4:06:51	537	15
2/13/2019	4:05:07	614	14
2/14/2019	4:04:53	568	11
2/15/2019	4:04:58	639	18
2/16/2019	4:04:56	700	12
2/17/2019	4:04:53	595	12
2/18/2019	4:04:55	538	13
2/19/2019	4:04:53	495	8
2/20/2019	4:05:46	549	12
2/21/2019	4:04:58	559	20
2/22/2019	4:05:41	610	16
2/23/2019	4:04:48	545	19
2/24/2019	4:04:53	582	109
2/25/2019	4:04:54	650	160
2/26/2019	4:14:14	601	64
2/27/2019	4:04:53	559	3
2/28/2019	4:04:53	553	6
Total Discharge for February 2019		**19,158**	
Groundwater through the sump			**778**

Pendleton Site
March 2019 Flows

Olin/PRP Group Pendleton Site

1" Discharge Flow Meter	18,571 Gallons
1/2" Vault Sump Flow Meter	3,351 Gallons
Actual Treated Leachate	**15,220 Gallons**

Date	Time	1" Discharge Flow Meter	1/2" Vault Sump Flow Meter
3/1/2019	4:05:44	492	4
3/2/2019	4:04:53	544	1
3/3/2019	4:04:53	452	236
3/4/2019	4:04:48	544	220
3/5/2019	4:04:54	511	199
3/6/2019	4:05:49	502	199
3/7/2019	4:04:53	507	292
3/8/2019	4:05:50	548	329
3/9/2019	4:04:55	500	54
3/10/2019	4:04:54	714	253
3/11/2019	4:07:02	809	4
3/12/2019	4:04:56	661	84
3/13/2019	4:05:45	587	38
3/14/2019	4:04:53	567	49
3/15/2019	4:04:54	817	276
3/16/2019	4:04:53	718	133
3/17/2019	4:05:45	648	149
3/18/2019	4:05:44	527	9
3/19/2019	4:04:49	577	49
3/20/2019	4:04:54	555	28
3/21/2019	4:04:55	553	2
3/22/2019	4:04:54	502	2
3/23/2019	4:04:54	549	129
3/24/2019	4:04:54	553	42
3/25/2019	4:06:47	500	102
3/26/2019	4:04:54	503	132
3/27/2019	4:04:54	505	45
3/28/2019	4:06:46	545	201
3/29/2019	4:04:49	562	21
3/30/2019	4:05:40	505	2
3/31/2019	4:04:54	1,514	67
Total Discharge for March 2019		**18,571**	
Groundwater through the sump			**3,351**

Pendleton Site
April 2019 Flows

Olin/PRP Group Pendleton Site

1" Discharge Flow Meter	19,249	Gallons
1/2" Vault Sump Flow Meter	4,838	Gallons
Actual Treated Leachate	**14,411**	**Gallons**

Date	Time	1" Discharge Flow Meter	1/2" Vault Sump Flow Meter
4/1/2019	4:04:49	802	72
4/2/2019	4:08:29	658	2
4/3/2019	4:04:55	596	2
4/4/2019	4:04:54	554	22
4/5/2019	4:04:59	508	8
4/6/2019	4:04:49	557	3
4/7/2019	4:04:55	505	4
4/8/2019	4:04:54	551	3
4/9/2019	4:04:49	550	2
4/10/2019	4:05:45	279	5
4/11/2019	4:04:54	789	1
4/12/2019	4:04:54	559	4
4/13/2019	4:04:48	501	3
4/14/2019	4:04:54	604	1
4/15/2019	4:04:54	954	6
4/16/2019	4:04:54	703	13
4/17/2019	4:04:54	654	43
4/18/2019	4:05:41	606	9
4/19/2019	4:05:50	595	15
4/20/2019	4:14:05	902	142
4/21/2019	4:04:54	901	180
4/22/2019	4:04:49	699	144
4/23/2019	4:05:20	647	45
4/24/2019	4:04:56	647	215
4/25/2019	4:06:32	599	235
4/26/2019	4:06:01	654	419
4/27/2019	4:04:54	692	727
4/28/2019	4:06:27	692	775
4/29/2019	4:05:19	646	832
4/30/2019	4:04:50	645	906
Total Discharge for April 2019		**19,249**	
Groundwater through the sump			**4,838**

Pendleton Site
May 2019 Flows

Olin/PRP Group Pendleton Site

1" Discharge Flow Meter	23,067	Gallons
1/2" Vault Sump Flow Meter	943	Gallons
Actual Treated Leachate	**22,124**	**Gallons**

Date	Time	1" Discharge Flow Meter	1/2" Vault Sump Flow Meter
5/1/2019	4:06:53	794	776
5/2/2019	4:04:54	989	23
5/3/2019	4:07:39	801	1
5/4/2019	4:04:53	782	2
5/5/2019	4:05:50	697	3
5/6/2019	4:08:28	646	3
5/7/2019	4:05:40	646	2
5/8/2019	4:06:27	653	3
5/10/2019	4:06:21	2,028	79
5/11/2019	4:06:27	899	3
5/12/2019	4:04:54	708	1
5/13/2019	4:06:52	756	1
5/14/2019	4:04:49	801	1
5/15/2019	4:04:54	704	2
5/16/2019	4:04:54	777	3
5/17/2019	4:04:54	1,432	6
5/19/2019	4:05:51	694	4
5/20/2019	4:04:53	682	1
5/21/2019	4:04:54	654	3
5/22/2019	4:04:49	694	2
5/23/2019	4:05:45	652	3
5/24/2019	4:04:59	695	3
5/25/2019	4:06:53	702	3
5/26/2019	4:05:01	740	4
5/27/2019	4:04:54	693	3
5/28/2019	4:04:55	695	2
5/29/2019	4:04:55	705	1
5/30/2019	4:04:54	653	2
5/31/2019	4:04:55	695	3
Total Discharge for May 2019		**23,067**	
Groundwater through the sump			**943**

Pendleton Site
June 2019

Olin/PRP Group Pendleton Site

1" Discharge Flow Meter	18,344	Gallons
1/2" Vault Sump Flow Meter	1,333	Gallons
Actual Treated Leachate	**17,011**	**Gallons**

Date	Time	1" Discharge Flow Meter	1/2" Vault Sump Flow Meter
6/1/2019	4:05:01	646	3
6/2/2019	4:04:55	695	4
6/3/2019	4:04:55	656	3
6/4/2019	4:04:54	653	4
6/5/2019	4:04:53	254	9
6/6/2019	4:04:56	1,124	11
6/7/2019	4:13:32	0	6
6/8/2019	4:04:49	0	7
6/9/2019	4:04:53	0	6
6/10/2019	4:04:55	0	10
6/11/2019	4:04:49	0	5
6/12/2019	10:07:03	3,649	20
6/13/2019	4:06:47	621	27
6/14/2019	4:04:56	563	68
6/15/2019	4:05:41	552	20
6/16/2019	4:04:53	652	56
6/17/2019	4:04:54	603	119
6/18/2019	4:04:54	1,081	38
6/19/2019	4:05:40	297	18
6/20/2019	16:04:58	843	27
6/21/2019	4:04:58	605	70
6/22/2019	4:05:50	550	75
6/23/2019	4:04:54	533	79
6/24/2019	4:05:45	546	163
6/25/2019	4:04:56	598	12
6/26/2019	4:08:25	549	206
6/27/2019	4:04:54	539	171
6/28/2019	4:04:53	497	73
6/29/2019	4:04:54	539	8
6/30/2019	4:04:54	499	15
Total Discharge for June 2019		**18,344**	
Groundwater through the sump			**1,333**

Pendleton Site
July 2019 Flows

Olin/PRP Group Pendleton Site

1" Discharge Flow Meter	10,311 Gallons
1/2" Vault Sump Flow Meter	63,684 Gallons
***Actual Treated Leachate**	-53,373 Gallons

Date	Time	1" Discharge Flow Meter	1/2" Vault Sump Flow Meter
7/1/2019	4:04:54	452	369
7/2/2019	4:04:56	485	15
7/3/2019	4:04:56	482	14
7/4/2019	4:04:54	415	27
7/5/2019	4:04:54	428	33
7/6/2019	4:04:54	489	19
7/7/2019	4:04:56	423	13
7/8/2019	4:04:55	484	467
7/9/2019	4:05:00	419	590
7/10/2019	4:05:50	484	5,227.00
7/11/2019	4:04:54	422	10
7/12/2019	4:04:49	414	183
7/13/2019	4:06:50	469	592
7/14/2019	4:04:54	461	386
7/15/2019	4:04:54	407	2,771.00
7/16/2019	4:04:54	401	32
7/17/2019	4:04:55	260	18
7/18/2019	4:04:55	198	3,743.00
7/19/2019	4:04:54	335	23
7/20/2019	4:06:15	189	2,509.00
7/21/2019	4:04:55	188	5,872.00
7/22/2019	4:05:51	209	292
7/23/2019	4:04:54	209	3,891.00
7/24/2019	4:04:54	209	1,154.00
7/25/2019	4:05:50	207	2,156.00
7/26/2019	4:05:40	211	9,289.00
7/27/2019	4:04:53	166	4,739.00
7/28/2019	4:04:55	213	17
7/29/2019	4:04:59	205	8,042.00
7/30/2019	4:05:50	166	516
7/31/2019	4:04:54	211	10,675.00
Total Discharge for July 2019		**10,311**	
Groundwater through the sump			**63,684**

*The DMR report for July reflects unusual discharge occurrences. The values recorded for the 1/2" vault sump discharge were uncharacteristically high. The system was checked and some repairs were made. The function of the meter will be checked over the month of August.

Pendleton Site
August 2019 Flows

Olin/PRP Group Pendleton Site

1"Discharge Flow Meter	5,439 Gallons
1/2" Vault Sump Flow Meter	1,240 Gallons
Actual Treated Leachate	**4,199 Gallons**

Date	Time	1"Discharge Flow Meter	1/2" Vault Sump Flow Meter
8/1/2019	4:05:45	169	
8/2/2019	4:05:45	354	
8/4/2019	4:04:54	159	
8/5/2019	4:04:54	139	
8/6/2019	4:05:51	190	
8/7/2019	4:04:54	261	
8/8/2019	4:04:54	222	
8/9/2019	4:04:53	209	
8/10/2019	4:04:59	159	
8/11/2019	4:05:45	154	
8/12/2019	4:04:54	193	
8/13/2019	4:04:54	160	
8/14/2019	4:04:49	94	
8/15/2019	4:05:20	143	
8/16/2019	4:04:55	47	
8/17/2019	4:04:54	45	
8/18/2019	4:04:55	47	
8/19/2019	4:04:54	45	
8/20/2019	4:04:54	81	*
8/21/2019	4:04:54	304	56
8/22/2019	4:04:49	297	174
8/23/2019	4:04:53	249	141
8/24/2019	4:04:48	244	128
8/25/2019	4:04:55	197	119
8/26/2019	4:04:54	246	111
8/27/2019	4:06:51	194	108
8/28/2019	4:04:54	245	101
8/29/2019	4:04:53	196	103
8/30/2019	4:04:49	198	100
8/31/2019	4:04:53	198	99
Total Discharge for August 2019		**5,439**	
Groundwater through the sump			**1,240**

*Repairs were made to the sump this month. Sump flow meter back on line after 08/20/19.

ATTACHMENT G

Industrial Wastewater Discharge Permit

Niagara County Sewer District #1

Industrial Waste Permit

Industrial User: Pendleton Site PRP Group
(Permittee)

Division Name (if Applicable): c/o Olin Corporation

Mailing Address: 3855 Ocoee Street, Suite 200
Street or P.O. Box

Cleveland, TN 37312
City, State and Zip Code

Site Address: Pendleton Site, Townline Road
Street Address

Pendleton, New York
City, State

The above Industrial User is authorized to discharge contaminated groundwater to the Niagara County Sewer District #1 sewer system in compliance with the District's Sewer Use Law, Local Law No. 1, Resolution No. 7-94, any applicable provisions of Federal or State law or regulation, and in accordance with discharge points(s), effluent limitations, monitoring requirements, and other conditions set forth herein.

Effective Date: August 28, 2018

Expiration Date: August 28, 2021

(Application for renewal shall be submitted 90 days prior to expiration)

District Permit No. 18-11

Date: 4/12/18 Signed:

(Direct discharge to Niagara County Sewer District #1 manhole. Discharge does not enter Town of Pendleton sewer system.)

Schedule A – Listing of Discharged Wastestreams

Industry Name: Pendleton (Frontier Chemical) Site
Groundwater Remediation

The following wastestreams are discharged to sanitary sewer system tributary of Niagara County Sewer District #1.

Waste-Streams	Nature of Waste	Volume gallons per day	Discharge Point
WS 001	Groundwater Remediation	376 (Avg.)	D 002

PART I – WASTEWATER DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

Industry Name: Pendleton (Frontier Chemical) Site
Sample Point: Sample Point A: Groundwater Pump Station Discharge
Description: Contaminated Groundwater Discharge to NCSD #1 Manhole East of Site
Classification: Non-SIU

Parameter	Discharge Limitations[1]	Monitoring Requirements: Sampling Frequency	Monitoring Requirements: Sample Type
Flow a.) Groundwater Remediation	2500 GPD, Daily Maximum	Continuous	
Pollutants	**Discharge Limit**		
624	0.100 mg/L (Sum of all EPA 624 cmpds.)	Semi-Annual	24C[2]
Antimony	0.1 mg/L	Semi-Annual	24C
Boron	4.0 mg/L	Semi-Annual	24C
Chromium	5.33 mg/L	Semi-Annual	24C
Cyanide (T)	2.0 mg/L	Semi-Annual	4 Grabs[3]
Total Phenolics (4AAP)	Surveillance Only	Semi-Annual	
Total Suspended Solids	300 mg/L	Semi-Annual	24C
Low Level Mercury by USEPA method 1631	0.001 mg/L	Once annually, no later than Sept 30 of each year	Grab

These Limitations shall be effective immediately.

Notes:

(1) All other limitations as set forth in the District's Sewer Use Law shall also apply.

(2) 24-hour composite samples for volatile (624) organics to consist of a minimum of four (4) grabs within a 24-hour period. (See Sampling Measurement & Analytical Guidelines, Section 9, Paragraph 2.)

(3) Cyanide will be analyzed from 4 grabs collected over the 24 hour period using the appropriate containers/preservatives and lab composited.

PART II – SPECIAL CONDITIONS/COMPLIANCE SCHEDULE

1. Compliance Schedules: If additional pretreatment and/or operation and maintenance are required to meet discharge limitation and/or Pretreatment Regulations, the User will immediately advise District of the shortest schedule by which the User provide such additional pretreatment or reduction in flow discharged. The completion date in this schedule shall not be later than the compliance date established for any applicable Pretreatment Regulations.

PART III – REPORTING REQUIREMENTS

1. The Industrial User shall notify the District immediately upon any accidental or slug discharge to the sanitary sewer system. Formal written notification discussing circumstances of the event and remedies to prevent recurrence shall be submitted to the District within 3 days of occurrence.

2. The Industrial User shall notify the District and apply for a revised permit 30 days prior to the introduction of new wastewater or pollutants or any substantial change in the volume or characteristics of the wastewater being introduced into the POTW from the User's industrial processes.

3. Any upset experienced by the Industrial User of its treatment that places it in a temporary state of non-compliance with wastewater discharge limitations contained in this permit or other limitations specified in the District's Sewer Use Law shall be reported to the District within 24 hours of first awareness of the commencement of the upset. A detailed report shall be filed within 5 days.

4. Self-monitoring reports are due at the NCSD #1 office no greater than 60 days after the date of sampling. When reporting results, the following information shall be provided:

   a.) 1. The date, exact place, and time of sampling or measurements;
   2. The individual(s) who performed the sampling or measurements;
   3. The date(s) analyses were performed;
   4. The individual(s) who performed the analyses;
   5. The analytical techniques or methods used;
   6. The results of such analyses

   b.) A copy of the original lab report(s) as provided by the certified testing lab(s), including properly completed chain(s) of custody.

   c.) The original data from the lab report shall be transcribed into a table comparing the permit requirements to the obtained results. In cases where the permit contains requirements for daily maximum and maximum monthly average, columns for both of these shall be included in the table. When a single value applies to both daily max. and max. mo. avg. (because monitoring was only performed once during a month), separate columns shall still be included in the table, clearly indicating that the value is both the daily maximum and the monthly average.

   d.) All daily flows obtained since the previous reporting period, as well as the maximum and average daily flow for each month.

   e.) A certification statement as to whether the Industrial User is in compliance with the permit limitations. If the permit contains limitations for both daily max. and max. mo. avg., the statement must specify whether the User is in compliance with both limitations.

   f.) A certification statement that all normally operated (applicable) processes were operating (and discharging) during the monitoring period. Any processes not in operation shall be cited together with a listing of pollutants which might normally be present in said process discharge.

5. Additional Monitoring by Permittee - If the permittee monitors any pollutants at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified herein, the results of such monitoring shall be included in the calculation and reporting of values required under Part I. Such increased frequency shall also be indicated.

PART III – REPORTING REQUIREMENTS (cont'd)

6. All self-monitoring reports prepared shall be submitted to:

Chief Operator
Niagara County Sewer District #1 Water Pollution Control Center
7346 Liberty Drive
Niagara Falls, New York 14304

7. Signatory Requirements - All reports required by this permit shall be signed by an authorized representative of the Industrial User.

8. If sampling performed by the Industrial User indicates a violation, the Industrial User is required to repeat the sampling and analysis and submit the results to the District within thirty (30) days after becoming aware of the violation.

Additionally, applicable quality control is mandatory in cases where the Industrial User is conducting additional self-monitoring as a result of non-compliance. (See Sampling Measurement and Analytical Guidelines, Item #19 "Quality Control.")

9. Toxic Organic Management Plan - For Industrial Users who are required to monitor for Total Toxic Organics (TTO), and who are implementing a District-Approved, Toxic Organic Management Plan in lieu of this monitoring, the following certification shall be included with each self-monitoring report:

> "Based on my inquiry of the person or persons directly responsible for managing compliance with the permit limitation for total toxic organics, I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewaters has occurred since filing of the last discharge monitoring report. I further certify that this facility is implementing the toxic organic management plan submitted to the control authority."

PART IV - STANDARD CONDITIONS

1. PROHIBITED DISCHARGES

The Industrial User shall comply with all the general prohibitive discharge standards.

2. INSPECTION/RIGHT-OF-ENTRY

The administrator and/or other duly authorized employees of the District, NYSDEC and/or USEPA, bearing proper credentials and identification, shall be permitted to enter all industrial properties without advance notice for the purpose of inspection, observation, measurement, sampling, monitoring, and testing in accordance with the provisions of its Sewer Use Law. The District shall also have the right to inspect and copy records pertaining to the Industry's self-monitoring procedures.

3. RECORDS RETENTION

The Industrial User shall retain and preserve for no less than (3) years any records, books, documents, memoranda, reports, correspondence, records of calibration and maintenance of instrumentation, recordings from continuous monitoring instrumentation, and any summaries thereof, relating to monitoring, sampling and chemical analysis made by or in behalf of the user in connection with its discharge. All records that pertain to matters that are the subject of special orders, or any other enforcement or litigation activities brought by the District, shall be retained and observed by the Industrial User until all enforcement activities have concluded and all periods of limitation with respect to any and all appeals have expired.

4. CONFIDENTIAL INFORMATION

Except for data determined to be confidential under Section 5.15 of the District's Sewer Use Law, all reports required by this permit shall be available for public inspection at the office of the Pretreatment Administrator, 7346 Liberty Drive, Niagara Falls, New York 14304.

5. DILUTION

No Industrial User shall increase the use of potable or process water or, in any way, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in this permit.

6. PROPER DISPOSAL OF PRETREATMENT SLUDGES AND SPENT CHEMICALS

The disposal of sludges and spent chemicals generated shall be done in a manner such as to prevent the pollutants from such material from entering the NCSD #1 sewer system. Said disposal shall also conform to all applicable State/Federal regulations.

7. REVOCATION OF PERMIT

The permit issued to the Industrial User by the District may be revoked when after inspection, monitoring or analysis, it is determined that the discharge of wastewater to the sanitary sewer is in violation of Federal, State, or local laws, ordinances, or regulations. Additionally, falsification or intentional misrepresentation of data or statements pertaining to the permit application or any other required reporting form, shall be cause for permit revocation, revocation of sewer discharges privileges, and/or imposition of criminal penalties.

8. LIMITATION ON PERMIT TRANSFER

Wastewater discharge permits are issued to a specific user for a specific operation and are not assignable to another user or transferrable to any other location without the prior written approval of the District. Sale of a facility by a User shall obligate the purchaser to seek prior written approval of the District for continued discharge to the sewerage system.

9. PERMIT AVAILABILITY

The original signed permit must be available upon request at all times for review at the Industrial User's address stated on the first page of this permit.

10. MODIFICATION OR REVISION OF THE PERMIT

a. The terms and conditions of this permit may be subject to modification by the District at any time as limitations or requirements, as identified in the District Sewer Use Law, are modified or other just cause exists.

b. This permit may also be modified to incorporate special conditions resulting from the issuance of a special order by NYSDEC or EPA .

c. The terms and conditions may be modified as a result of EPA promulgating a new federal pretreatment standard. If a pretreatment standard or prohibition (including Schedule of Compliance specified in such pretreatment standard or prohibition) is established under Section 807 (b) of the Act for a pollutant which is present, the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in permit, this permit shall be revised or modified in accordance with such pretreatment standard or prohibition.

d. The terms and conditions of this permit shall remain in effect until the permit is terminated or replaced by a subsequent permit.

11. DUTY TO REAPPLY

Ninety (90) days prior to expiration, the User shall reapply for reissuance of the permit. Application forms are available from the District upon request.

12. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

13. ENFORCEMENT AND PENALTIES

Any violation of Section 2 or 3 of the Niagara County Sewer Use Law (adopted January 18, 1994) is declared a violation except as otherwise provided by law. Any violation of Section 4, 5 or 6 of the Niagara County Sewer Use Law is thereby a misdemeanor except as otherwise provided by law. A User who is found to have violated any provision of the Niagara County Sewer Use Law (or permits and orders issued thereunder) and/or applicable pretreatment standards and requirements, shall be subject to applicable civil and criminal penalties including but not limited to fines not to exceed five thousand dollars ($5,000) per violation per day for each day on which non-compliance shall occur or continue.

14. CLARIFICATION OF TERMS: SAMPLING/REPORTING INTERVALS

Monthly-unless otherwise stated, monthly means each calendar month.

Quarterly-unless otherwise stated, quarterly means occurring in each quarter of a calendar year.

Each quarter of a calendar year is defined as follows:

1st quarter-January through March;
2nd quarter-April through June;
3rd quarter-July through September;
4th quarter-October through December;

Semi-annual-unless otherwise stated, semi-annual means twice per calendar year.

Annual or Annually-unless otherwise stated, annual and/or annually means each calendar year.

15. CLARIFICATION OF 24-HOUR COMPOSITING PERIOD

24 hour compositing period (24C period)- The collection of a 24-hour composite does not necessarily have to begin at 12 midnight. It may be collected over any 24-hour interval over which a true and representative sample can be collected, in conjunction with the requirements of this permit. For example, the compositing period may begin at 10:00 AM on Tuesday and end on 10:00 AM Wednesday. Please see the "SAMPLING MEASUREMENT ANDANALYTICAL GUIDELINES" section of this permit for a definition of a composite and additional information.

PART V - SPECIFIC CONDITIONS

NONE

NIAGARA COUNTY SEWER DISTRICT #1

SAMPLING MEASUREMENT AND ANALYTICAL GUIDELINES

1. Prior to implementing the self-monitoring sampling and analyses, the Industrial User must submit the following information to the District.

    a. The name(s) and address(es) of the laboratory or laboratories proposed to perform each of the chemical analyses.
    b. A description of the equipment and test methods proposed for the chemical analyses for each parameter.
    c. A list of the lower level of detectability expected for each parameter.
    d. A description of the overall recovery efficiency of the prepared sample, where applicable.
    e. A description of the quality control procedures used by the laboratory or laboratories to ensure reliable test results.
    f. A description of the sample collection point and sample collection procedures.
    g. A description of the compositing technique and equipment.
    h. A description of the sample preservation methods used for each parameter.

2. At the discretion of the District, Permittee may be required to notify the Niagara County Sewer District #1 Water Pollution Control Center before commencement of any sampling or flow monitoring. When directed by the District, the Permittee or Designee shall notify Niagara County Sewer District #1 Water Pollution Control Center, in writing, at least seventy-two (72) hours in advance. The District will then give a twenty-four (24) hour verbal notification to the firm or designee of whether split sampling will be initiated.

3. Before sampling is done, the sample points must be approved by the District.

4. All discharge lines from one (1) building, or all discharge lines from only one (1) single process must be sampled at the same time.

5. Sampling record must be used and submitted with monitoring reports. The sampling report shall contain the following minimum information:

    a. Date of each sample day.
    b. Exact location of sampling points – attach drawing for reference.
    c. If done manually, time of each grab sample with sampler's initials each time.
    d. Type of auto-sampler used. Size and type of tubing and sampling interval.
    e. Record all physical observation (sight, smell etc.) of the discharge at start-up, during inspections and changing samples.
    f. Note weather conditions.
    g. Signature of immediate sampling supervisor at the bottom of page.

6. If an auto-sampler is used, new tubing must be at least ¼ I.D. If visibly contaminated after sampling, it must be cleaned with detergent or methanol and deionized water each day. Proper refrigeration of the sample must be maintained during entire sampling period, when necessary. The intake hose velocity must be at least 2.0 f.p.s. with a maximum lift of twenty (20) feet.

7. All sampling shall be taken at the highest velocity, greatest turbulence and center of flow.

8. All sampling must be done on normal work days. If there is a process discharge after normal working hours, sampling must continue until no further discharge.

9. "COMPOSITE SAMPLE" "Composite" shall mean a combination of individual (or continuously taken) samples obtained at regular intervals over the entire discharge day. The volume of each sample shall be proportional to the discharge flow rate, when possible. For a continuous discharge, a minimum of forty-eight (48) individual grab samples (at half hour intervals shall be collected and combined to constitute a twenty-four (24) hour composite sample. For intermittent discharges of less than four hours duration, but greater than one hour, grab samples shall be taken at a minimum of fifteen (15) minute intervals.

SAMPLING MEASUREMENT AND ANALYTICAL GUIDELINES (cont'd.)

Composite samples for purgeable halocarbons (Method 601/8010), purgeable aromatics (Method 602/8020), acrolein/acrylonitrile (Method 603), volatile organics (Method 624/8240), or cyanide shall be lab composited from grab samples taken at regular intervals over the entire discharge day utilizing the appropriate special sample containers, preservatives and collection techniques. The number of grabs collected is dependent on the length of the sampling period, and shall be determined the following:

For a discharge period of one hour or less, a single grab sample may be collected for analysis of the above parameters.

For a discharge period between one and 24 hours, a minimum of four (4) grabs will be taken at regular intervals and lab composited for analysis of the above parameters.

Proper sample collection containers and techniques must be used.

"SPLIT SAMPLE" - must be done on site with both parties present before preservatives are added.

"DAILY" - each operating day

"DAILY MAXIMUM" - shall mean the highest allowable discharge of a pollutant and/or flow measured during any twenty-four (24) hour sampling period. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the daily discharge is calculated as the average measurement of the pollutant over the day.

"GRAB" - shall mean an individual sample which is taken from a wastestream on a one (1) time basis with no regard to the flow in the wastestream and without consideration of time.

"MONTHLY" on day each month (the same day each month) and a normal operating day (i.e. the 2nd Tuesday of each month).

"MONTHLY AVERAGE" - discharge limitation means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month, divided by the number of daily discharges measured during that month.

"WEEKLY" - every seventh day (the same day each week) and a normal operating day.

10. Total water consumption shall be recorded for each day's composite using the water meters. Water consumption method must be explained in report.

11. All discharges shall be flow-monitored whenever possible. If flow monitoring cannot be done, flow determination should be a best practical engineering estimate without being economically burdensome to the firm involved. Results and procedure used to determine flow must be included with the analysis report.

12. <u>Sample Collection Techniques for Single Discharge Lines</u>

On single discharge lines (all regulated wastes discharge through one outlet), sample collection for the required parameters will be collected according to the following:

a. The following parameters should only be analyzed on manually taken grab samples:

pH
Temperature
Chlorine Residual
Dissolved Oxygen
Fecal Coliforms
Oil and Grease

SAMPLING MEASUREMENT AND ANALYTICAL GUIDELINES (cont'd.)

Sample Collection Techniques for Single Discharge Lines (cont'd.)

b. The following parameters should only be analyzed on composite samples made from manually collected grab samples:

Purgeable Halocarbons (EPA 601)
Purgeable Aromatics (EPA 602)
Acrolein/Acrylonitrile (EPA 603)
Purgeables (EPA 624)
Cyanide

For a discharge period of one hour or less, a single grab sample may be collected for analysis of the above parameters.

For a discharge period between one and 24 hours, a minimum of four (4) grabs will be taken at regular intervals and lab composited for analysis of the above parameters.

Proper sample collection containers and techniques must be used

c. The following parameters should be analyzed on an automatically collected composite sample or, if an auto sampler is unavailable, a manually collected composite sample:

Metals
Phenol-4AAP
BOD
Total Suspended Solids
Total Phosphorus
TKN/Ammonia
Base/Neutral Acids (EPA 625)
EPA Methods 604-614

(For a continuous discharge, a minimum of forty-eight (48) individual grab samples (at half-hour intervals) shall be collected and combined to constitute a twenty-four (24) hour composite sample. For intermittent discharges of less than four (4) hours duration, grab samples shall be taken at a minimum of fifteen (15) minute intervals.)

13. **Sample Collection Techniques for Multiple Discharge Lines**

For multiple discharge lines (all regulated wastes discharge through more than one outlet), sample collection for the required parameters will be collected according to the following:

a. The following parameters must be analyzed separately from each discharge line's individual grab samples:

pH
Temperature
Chlorine Residual
Dissolved Oxygen
Fecal Coliforms
Oil and Grease

b. For the following parameters, a composite made from manually collected grab samples must be used. A separate composite must be made from each discharge line. The composites from the different discharge lines cannot be combined for analysis.

Purgeable Halocarbons (EPA 601)
Purgeable Aromatics (EPA 602)
Acrolein/Acrylonitrile (EPA 603)
Purgeables (EPA 624)
Cyanide

For a discharge period of one hour or less, a single grab sample may be collected for analysis of the above parameters.

SAMPLING MEASUREMENT AND ANALYTICAL GUIDELINES (cont'd.)

Sample Collection Techniques for Multiple Discharge Lines (cont'd.)

For a discharge period between one hour and 24 hours, a minimum of four (4) grabs will be taken at regular intervals and lab composted for analysis of the above parameters.

Proper sample collection containers and techniques must be used.

c. For the following parameters, composites from each discharge line may be combined proportional to their flow only if physical flow measurement can be done.

Metals
Phenol-4AAP
BOD
Total Suspended Solids
Total Phosphorus
TKN/Ammonia
Base/Neutral Acids (EPA 625)
EPA Methods 604-613

(For a continuous discharge, a minimum of forty-eight (48) individual grab samples (at half-hour intervals) shall be collected from each discharge line and combined to constitute a twenty-four (24) hour composite sample. For intermittent discharges of less than four (4) hours duration, grab samples shall be taken at a minimum of fifteen (15) minute intervals.)

14. A chain of custody log sheet is required to be used for all sampling and analysis of each sample and attached to the report.

15. The handling, storage preservation and analytical procedures for each parameter shall follow Environmental Protection Agency Guidelines published in the Federal Register, pursuant to 40 CFR 136, dated October 26, 1984, or as subsequently revised.

16. The monitoring results report, sampling record(s), and chain of custody log sheet must be sent by the industry to the District and not by the consulting firm.

17. If any exemptions or changes have to be made due to unique situations, the District must be notified immediately for approval. When approved, a written explanation of the change must accompany the analysis sheet.

18. Any split samples that indicate a discrepancy of greater than 20% may be grounds for requiring resampling and analyses.

19. "QUALITY CONTROL" - All additional analyses which were run along with self-monitoring samples as a quality control measure, such as field blanks, duplicates or matrix spikes, etc., must be included in the self-monitoring report submitted to the District. Applicable quality control is mandatory in cases where the industrial user is conducting additional self-monitoring as a result of non-compliance.

20. All applicable analyses of NYSDOH certifiable parameters conducted pursuant to this permit shall be performed by a laboratory certified for said parameters by the New York State Department of Health.

Olin™

ATTACHMENT H

Pre-Treatment Operator's Logs

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Date: 11-14-18 Time In: 12:30 Time Out: 4:30

Operator: Mike Walker
Operator Signature: Mike Walker

Weather:	P/CLOUDY
Precipitation, Inches:	0
Temperature, ºF:	28°F
Purpose for Visit:	MONTHLY INSPECTION NOVEMBER JOBS

Pre-Treatment Process Information	Reading	Units	Time
1" Final Discharge Flow Meter Totalizer Reading:	2413434	GAL	1:00
½" Sump Flow Meter Totalizer Reading:	1244221	GAL	1:00
Flow Rate (during testing) P-1:	8.26	GPM	3:00
Flow Rate (during testing) P-2:	7.12	GPM	3:00
Pump Hour Meter Readings: Pump #1:	3324.0	HOURS	1:00
Pump Hour Meter Readings: Pump #2:	3156.0	HOURS	1:00
Wet Well Level:	< 2	FT	1:00
Pressure Sensor Reading (Bar Graph) (during test):	33.5	PSI	3:00

	Influent Gauge, PSI	Effluent Gauge, PSI	Differential
Bag Filter #1:	33	33	0
Bag Filter #2:	33	27	6
Carbon Vessel #1:	17	14	3
Carbon Vessel #2:	14	10	4

Changed Filter Bags (Check ✓ One):	YES	X	TIME	2:00
	NO			

Notes From Inspection: ARRIVED ONSITE ALL LOCKS + GATES WERE SECURE. NO SIGNS OF DAMAGE OR VANDALISM. PERFORMED MONTHLY INSPECTION TASKS. SYSTEM CHECKS OUT OK.
CHRIS JONES IS ALSO ONSITE TO ASSIST IN CHANGING OUT THE LOCKS ON ALL WELLS + PIEZOMETERS. THE OLD LOCKS WERE STARTING TO FAIL TO HOLD. ALL NEW LOCKS ARE ALSO KEYED ALIKE (2750).

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Planned Action Items:

Recommended Actions to Prevent Future Problems:

Other Relevant Information: HEATERS ARE NOW OPERATING IN THE VAULT
AND THE ABOVE GROUND CONTROL BOX

SYSTEM CHECK LIST (Check ✓ if OK)	Arrival	Departure
#1 Vault Door:	✓	✓
#2 Panel Door:	✓	✓
#3 Vault Sump High Alarm:	✓	✓
#4 Containment Pipe Alarm:	✓	✓
#5 High Wet Well Alarm:	✓	✓
#6 Pump #1 Fail (Yes/No):	NO	NO
#7 Pump # 2 Fail (Yes/No):	NO	NO
#8 Bag Filter Differential Pressure High Alarm:	✓	✓
#9 Wet Well Level (Actual Measure Spoken):	✓	✓
#10 Flow Rate:	—	—

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Date: 12-14-18 **Time In:** 0800 **Time Out:** 1200

Operator: Michael Walker
Operator Signature Michael Walker

Weather:	Cloudy
Precipitation, Inches:	00
Temperature, ºF:	37° F
Purpose for Visit:	MONTHLY INSPECTION, DECEMBER 2018

Pre-Treatment Process Information	Reading	Units	Time
1" Final Discharge Flow Meter Totalizer Reading:	2432348	GAL	900
½" Sump Flow Meter Totalizer Reading:	1244239	GAL	900
Flow Rate (during testing) P-1:	8.17	GPM	1100
Flow Rate (during testing) P-2:	7.88	GPM	1100
Pump Hour Meter Readings: Pump #1:	3343.7	HOURS	900
Pump Hour Meter Readings: Pump #2:	3179.3	HOURS	900
Wet Well Level:	< 2'	FT	900
Pressure Sensor Reading (Bar Graph) (during test):	34.27	PSI	1100

	Influent Gauge, PSI	Effluent Gauge, PSI	Differential
Bag Filter #1:	34	34	0
Bag Filter #2:	34	28	6
Carbon Vessel #1:	18	14	4
Carbon Vessel #2:	14	10	4

Changed Filter Bags (Check ✓ One):	YES	X	TIME	1030
	NO			

Notes From Inspection:
ALL GATES, FENCES AND LOCKS WERE INTACT UPON ARRIVAL. NO VISIBLE DAMAGE FROM WEATHER OR VANDALISM. CHANGED CHART ON FLOW RECORDER, CHANGED FILTER BAGS, TESTED SUMP PUMPS - OK. TESTED SYSTEM FOR LEAKS AND PRESSURES. OK.

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Planned Action Items: NONE AT THIS TIME

Recommended Actions to Prevent Future Problems: NONE AT THIS TIME

Other Relevant Information:

SYSTEM CHECK LIST (Check ✓ if OK)	Arrival	Departure
#1 Vault Door:	✓	✓
#2 Panel Door:	✓	✓
#3 Vault Sump High Alarm:	✓	✓
#4 Containment Pipe Alarm:	✓	✓
#5 High Wet Well Alarm:	✓	✓
#6 Pump #1 Fail (Yes/No):	NO	NO
#7 Pump # 2 Fail (Yes/No):	NO	NO
#8 Bag Filter Differential Pressure High Alarm:	✓	✓
#9 Wet Well Level (Actual Measure Spoken):	—	—
#10 Flow Rate:	—	—

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Date: 1-24-19 **Time In:** 10 00 AM **Time Out:** 2 00 PM

Operator: MICHAEL WALKER
Operator Signature Michael E Walker

Weather:	Cloudy
Precipitation, Inches:	—
Temperature, ºF:	30 °F
Purpose for Visit:	MONTHLY INSPECTION - JANUARY 2019.

Pre-Treatment Process Information	Reading	Units	Time
1" Final Discharge Flow Meter Totalizer Reading:	2458054	GAL	11 00 AM
½" Sump Flow Meter Totalizer Reading:	1244489	GAL	11 00 AM
Flow Rate (during testing) P-1:	8.20	GPM	1 15 PM
Flow Rate (during testing) P-2:	7.06	GPM	1 15 PM
Pump Hour Meter Readings: Pump #1:	3370.2	HOURS	11 00 AM
Pump Hour Meter Readings: Pump #2:	3209.9	HOURS	11 00 AM
Wet Well Level:	< 2"	FT	11 00 AM
Pressure Sensor Reading (Bar Graph) (during test):	46	PSI	1 15 PM

	Influent Gauge, PSI	Effluent Gauge, PSI	Differential
Bag Filter #1:	44	44	0
Bag Filter #2:	44	36	8
Carbon Vessel #1:	24	16	8
Carbon Vessel #2:	16	12	4

Changed Filter Bags (Check ✓ One):	YES	✓	TIME	12 30 PM
	NO			

Notes From Inspection: Site was secured, locks and gates secure upon arrival. Changed chart in Recorder, changed filter bags, tested pumps, tested sump pumps, tested total system for leaks. All ok.

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Planned Action Items:
Ø

Recommended Actions to Prevent Future Problems: Ø

Other Relevant Information: Ø

SYSTEM CHECK LIST (Check ✓ if OK)	Arrival	Departure
#1 Vault Door:	✓	✓
#2 Panel Door:	✓	✓
#3 Vault Sump High Alarm:	✓	✓
#4 Containment Pipe Alarm:	✓	✓
#5 High Wet Well Alarm:	✓	✓
#6 Pump #1 Fail (Yes/No):	NO	NO
#7 Pump # 2 Fail (Yes/No):	NO	NO
#8 Bag Filter Differential Pressure High Alarm:	✓	✓
#9 Wet Well Level (Actual Measure Spoken):	—	—
#10 Flow Rate:	—	—

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Date: 3-15-19 Time In: 8:00 AM Time Out: 12:00

Operator: MICHAEL WALKER
Operator Signature: Michael Walker

Weather:	Cloudy - Windy
Precipitation, Inches:	.05"
Temperature, ºF:	46°F
Purpose for Visit:	MONTHLY INSPECTION, MARCH 2019

Pre-Treatment Process Information	Reading	Units	Time
1" Final Discharge Flow Meter Totalizer Reading:	2490280	GAL	8:30
½" Sump Flow Meter Totalizer Reading:	1246897	GAL	8:30
Flow Rate (during testing) P-1:	8.00	GPM	10:45
Flow Rate (during testing) P-2:	7.21	GPM	
Pump Hour Meter Readings: Pump #1:	3403.6	HOURS	8:30
Pump Hour Meter Readings: Pump #2:	3248.3	HOURS	8:30
Wet Well Level:	< 2'	FT	8:30
Pressure Sensor Reading (Bar Graph) (during test):	46.1	PSI	10:45

	Influent Gauge, PSI	Effluent Gauge, PSI	Differential
Bag Filter #1:	44	44	0
Bag Filter #2:	44	39	5
Carbon Vessel #1:	25	16	9
Carbon Vessel #2:	16	13	3

Changed Filter Bags (Check ✓ One):	YES	X	TIME	9:30
	NO			

Notes From Inspection: SITE LOCKED GOOD ON ARRIVAL. ALL GATES LOCKED AND SECURE. SNOW HAS MELTED CAP LOOKS GOOD. PERIMETER ROADS WET AND MUDDY. CHANGED CHART ON RECORDER, CHANGED FILTER BAGS. TESTED SUMP PUMPS. TESTED EXHAUST FAN. ALL OK

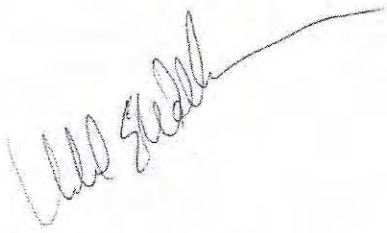
Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Planned Action Items: Ø

Recommended Actions to Prevent Future Problems: Ø

Other Relevant Information: Ø

SYSTEM CHECK LIST (Check ✓ if OK)	Arrival	Departure
#1 Vault Door:	✓	✓
#2 Panel Door:	✓	✓
#3 Vault Sump High Alarm:	✓	✓
#4 Containment Pipe Alarm:	✓	✓
#5 High Wet Well Alarm:	✓	✓
#6 Pump #1 Fail (Yes/No):	NO	NO
#7 Pump # 2 Fail (Yes/No):	NO	NO
#8 Bag Filter Differential Pressure High Alarm:	✓	✓
#9 Wet Well Level (Actual Measure Spoken):	—	—
#10 Flow Rate:	—	—



Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Date: 4-10-19 **Time In:** 9:00 AM **Time Out:**

Operator: Mike Winkler
Operator Signature Mike Winkler

Weather:	Cloudy
Precipitation, Inches:	0
Temperature, ºF:	37°F
Purpose for Visit:	MONTHLY INSPECTION, SPRING SAMPLE EVENT

Pre-Treatment Process Information	Reading	Units	Time
	2506103		9:30
1" Final Discharge Flow Meter Totalizer Reading:	1248229	GAL	9:30
½" Sump Flow Meter Totalizer Reading:		GAL	
Flow Rate (during testing) P-1:	8.16	GPM	
Flow Rate (during testing) P-2:	7.08	GPM	
Pump Hour Meter Readings: Pump #1:	3420.0	HOURS	9:30
Pump Hour Meter Readings: Pump #2:	3267.2	HOURS	9:30
Wet Well Level:		FT	
Pressure Sensor Reading (Bar Graph) (during test):	47	PSI	

	Influent Gauge, PSI	Effluent Gauge, PSI	Differential
Bag Filter #1:	45	45	0
Bag Filter #2:	45	38	7
Carbon Vessel #1:	25	18	7
Carbon Vessel #2:	18	12	6

Changed Filter Bags (Check ✓ One):	**YES**	X	**TIME**	10:30
	NO			

Notes From Inspection: Site was secured & locked upon arrival.
All gates & locks were intact. CAP cover looked good.
Performed Monthly inspection on Pretreatment System
(Changed) Chart in Recorder. Changed bag filters. Tested Pumps.
Tested Sump Pumps. Were OK.
Closed Leachate Valve in wet well in advance of sampling tomorrow.
C. Jones on site to do ~~well~~ Ground water levels around site.
And meet with Blynn Geotechnical Rep. Jesse Grossman

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Planned Action Items:

Recommended Actions to Prevent Future Problems:

Other Relevant Information:

SYSTEM CHECK LIST (Check ✓ if OK)	Arrival	Departure
#1 Vault Door:	✓	✓
#2 Panel Door:	✓	✓
#3 Vault Sump High Alarm:	✓	✓
#4 Containment Pipe Alarm:	✓	✓
#5 High Wet Well Alarm:	✓	✓
#6 Pump #1 Fail (Yes/No):	NO	NO
#7 Pump # 2 Fail (Yes/No):	NO	NO
#8 Bag Filter Differential Pressure High Alarm:	✓	✓
#9 Wet Well Level (Actual Measure Spoken):	—	—
#10 Flow Rate:	—	—

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM 56550

ALS

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE 1 OF 1

Project Name: OLIN - PENDLETON SITE	Project Number: 1259
Project Manager: ADAM CARRINGER	Report CC: ADAM CARRINGER - OLIN
Company/Address: OLIN CORP 3855 NORTH OCOEE RD CLEVELAND TN 37312	
Phone #: 423 336 4057	Email: ABcarringer@olin.com
Sampler's Signature: [signature]	Sampler's Printed Name: CHRIS JONES

ANALYSIS REQUESTED *(Include Method Number and Container Preservative)*

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ▫8260 ▫624 ▫CLP	GC/MS SVOAs ▫8270 ▫625	GC VOAs ▫8021 ▫601/602	PESTICIDES ▫8081 ▫608	PCBs ▫8082 ▫608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	PHENOL	TSS	CYANIDE	LOW LEVEL MERCURY				REMARKS/ ALTERNATE DESCRIPTION
PRESERVATIVE						0					2		3	0	0	0				
PSTW-041119		4/11/19	1008	GW	1											1				
PSTW-041119 DUP		↓	1008	↓	1											1				DUP FOR LOW LEVEL
PSTW-041119			1232		1								1							COMPED IN FIELD
PSTW-041119			1234		1									1						COMPED IN FIELD
PSTW-041119			1235		1						1									COMPED IN FIELD
PSTW-041119			1010		1	1														GRAB IN FIELD
PSTW-041119			1110		1	1														GRAB IN FIELD
PSTW-041119			1210		1	1														GRAB IN FIELD
PSTW-041119			1010		1										1					COMP IN LAB *
PSTW-041119			1110		1										1					COMP IN LAB *
PSTW-041119		↓	1210	↓	1										1					COMP IN LAB *

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other ______

SPECIAL INSTRUCTIONS/COMMENTS
Metals: ANTIMONY, BORON, CHROMIUM
CN samples to be composited in lab
FIELD BLANK WAS PROVIDED FOR LOW LEVEL MERCURY

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED: NY

TURNAROUND REQUIREMENTS
___ RUSH (SURCHARGES APPLY)
___ 1 day ___ 2 day ___ 3 day
___ 4 day ___ 5 day
X Standard (10 business days-No Surcharge)

REQUESTED REPORT DATE: STANDARD

REPORT REQUIREMENTS
___ I. Results Only
✓ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
___ III. Results + QC and Calibration Summaries
___ IV. Data Validation Report with Raw Data

Edata ___ Yes ___ No

INVOICE INFORMATION
PO #: REPN 003
BILL TO: OLIN CORP

	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature	[signature]	[signature]				
Printed Name	CHRIS JONES	Bradley Bohan				
Firm	SES	ALS				
Date/Time	4/12/19 1110	4/12/19 1110				

Distribution: White - Lab Copy; Yellow - Return to Originator

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Date: 5-16-19 Time In: 9:30 AM Time Out: 1:30 PM

Operator: MICHAEL WALKER
Operator Signature: Michael Walker

Weather:	SUNNY
Precipitation, Inches:	0 TODAY, BUT HEAVY RAIN ALL WEEK
Temperature, ºF:	65° F.
Purpose for Visit:	MONTHLY INSPECTION, MAY 2019.

Pre-Treatment Process Information	Reading	Units	Time
1" Final Discharge Flow Meter Totalizer Reading:	2532195	GAL	10:00
½" Sump Flow Meter Totalizer Reading:	1253660	GAL	10:00
Flow Rate (during testing) P-1:	8.09	GPM	11:30
Flow Rate (during testing) P-2:	7.48	GPM	11:30
Pump Hour Meter Readings: Pump #1:	3447.9	HOURS	10:00
Pump Hour Meter Readings: Pump #2:	3298.2	HOURS	10:00
Wet Well Level:	< 2'	FT	10:00
Pressure Sensor Reading (Bar Graph) (during test):	42	PSI	11:30

	Influent Gauge, PSI	Effluent Gauge, PSI	Differential
Bag Filter #1:	40	40	0
Bag Filter #2:	40	35	0
Carbon Vessel #1:	22	17	5
Carbon Vessel #2:	17	14	3

Changed Filter Bags (Check ✓ One):	YES	✓	TIME	11:00
	NO			

Notes From Inspection: SITE LOOKED GOOD UPON ARRIVAL. ALL GATES AND WELLS LOCKED AND SECURE. CAP LOOKED GOOD. ROADS SOMEWHAT RUTTED DUE TO RAIN (MUD). CHANGED CHART IN RECORDER, CHANGED FILTER BAGS, TESTED SYSTEM FOR LEAKS. BACKWASHED CARBON VESSEL #1 DUE TO HIGH DIFFERENTIAL PRESSURE.

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Planned Action Items: Ø

Recommended Actions to Prevent Future Problems: Ø

Other Relevant Information: Ø

SYSTEM CHECK LIST (Check ✓ if OK)	Arrival	Departure
#1 Vault Door:	✓	✓
#2 Panel Door:	✓	✓
#3 Vault Sump High Alarm:	✓	✓
#4 Containment Pipe Alarm:	✓	✓
#5 High Wet Well Alarm:	✓	✓
#6 Pump #1 Fail (Yes/No):	NO	NO
#7 Pump # 2 Fail (Yes/No):	NO	NO
#8 Bag Filter Differential Pressure High Alarm:	✓	✓
#9 Wet Well Level (Actual Measure Spoken):	—	—
#10 Flow Rate:	—	—

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Date: 6-11-19 Time In: 11^00 AM Time Out: 3^00 PM

Operator: Michael Walton
Operator Signature: Michael Walton

Weather:	Sunny 67°
Precipitation, Inches:	0
Temperature, ºF:	67° F
Purpose for Visit:	Monthly Inspection - June 2019

Pre-Treatment Process Information	Reading	Units	Time
1" Final Discharge Flow Meter Totalizer Reading:	2546937	GAL	11:30
½" Sump Flow Meter Totalizer Reading:	1253669	GAL	11:30
Flow Rate (during testing) P-1:	7.31	GPM	2:00
Flow Rate (during testing) P-2:	7.35	GPM	2:00
Pump Hour Meter Readings: Pump #1:	3464.5	HOURS	11:30
Pump Hour Meter Readings: Pump #2:	3314.2	HOURS	11:30
Wet Well Level:	< 2'	FT	11:30
Pressure Sensor Reading (Bar Graph) (during test):	38	PSI	2:00

	Influent Gauge, PSI	Effluent Gauge, PSI	Differential
Bag Filter #1:	36	36	0
Bag Filter #2:	36	30	6
Carbon Vessel #1:	17	12	5
Carbon Vessel #2:	12	8	4

Changed Filter Bags (Check ✓ One):	YES	✓	TIME	12:45
	NO			

Notes From Inspection: Site was secure upon arrival. All gates locked. No damage to cap or treatment system was evident. Tested pretreatment system, changed chart in recorder. Changed filter bags, tested sump pumps. Backwashed GAC unit #1 to increase flow and decrease Δ pressures.

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Planned Action Items: Ø

Recommended Actions to Prevent Future Problems: Ø

Other Relevant Information: Pump 2 FAIL LIGHT WAS ON UPON ARRIVAL. NOT SURE WHY, I PUSHED THE RESET BUTTON AND IT STARTED RIGHT UP, I PURGED AIR OUT OF THE LINES AFTER STARTUP AND THE SYSTEM OPERATED NORMALLY.

SYSTEM CHECK LIST (Check ✓ if OK)	Arrival	Departure
#1 Vault Door:	✓	✓
#2 Panel Door:	✓	✓
#3 Vault Sump High Alarm:	✓	✓
#4 Containment Pipe Alarm:	✓	✓
#5 High Wet Well Alarm:	✓	✓
#6 Pump #1 Fail (Yes/No):	✓	✓
#7 Pump # 2 Fail (Yes/No):	YES	NO
#8 Bag Filter Differential Pressure High Alarm:	✓	✓
#9 Wet Well Level (Actual Measure Spoken):	—	—
#10 Flow Rate:	—	—

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Date: 7-19-19 Time In: 0800 Time Out: 1400

Operator: MICHAEL WALKER
Operator Signature: Chl Walk

Weather:	HOT, HAZY
Precipitation, Inches:	0
Temperature, ºF:	89°
Purpose for Visit:	MONTHLY INSPECTION, JULY 2019

Pre-Treatment Process Information	Reading	Units	Time
1" Final Discharge Flow Meter Totalizer Reading:	2568474	GAL	0945
½" Sump Flow Meter Totalizer Reading:	1268958	GAL	0945
Flow Rate (during testing) P-1:	7.96	GPM	1300
Flow Rate (during testing) P-2:	6.93	GPM	1300
Pump Hour Meter Readings: Pump #1:	3487.2	HOURS	0945
Pump Hour Meter Readings: Pump #2:	3342.2	HOURS	0945
Wet Well Level:	< 2'	FT	0945
Pressure Sensor Reading (Bar Graph) (during test):	42	PSI	1300

	Influent Gauge, PSI	Effluent Gauge, PSI	Differential
Bag Filter #1:	42	44	2
Bag Filter #2:	44	35	9
Carbon Vessel #1:	22	17	5
Carbon Vessel #2:	17	13	4

Changed Filter Bags (Check ✓ One):	YES	X	TIME	1230
	NO			

Notes From Inspection: ALL GATES AND LOCKS WERE SECURE UPON ARRIVAL. GRASS COVER ON CAP IS 3' TALL. CHANGED CHART IN RECORDER, CHANGED BAG FILTERS, BOTH WERE HEAVILY LADEN WITH CLAY TYPE SOLIDS. BACKWASHED GAC #1 DUE TO HIGH ΔP DURING TESTING. RESET LEVEL CONTROL SENSOR ON VAULT SUMP PUMPS SO THEY SHUT OFF A LITTLE SOONER. I DISCOVERED A SMALL CRACK IN A PVC FITTING ON PUMP #2 THAT IS

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

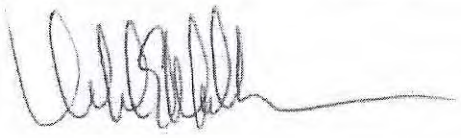
CAUSING A LEAK OF GROUND WATER THAT IS GOING BACK TO THE SUMP. I WILL BUY A NEW "T" AND REPLACE THE CRACKED ONE.

Planned Action Items: BRING MORE 5 MICRON FILTER BAGS NEXT TRIP.

Recommended Actions to Prevent Future Problems:

Other Relevant Information: CAP IS DUE to be cut AFTER AUGUST 15TH. CHECK ON WELL + PIEZ MARKERS TO MAKE SURE NONE HAVE BEEN DAMAGED BY MOWER.

SYSTEM CHECK LIST (Check ✓ if OK)	Arrival	Departure
#1 Vault Door:	✓	✓
#2 Panel Door:	✓	✓
#3 Vault Sump High Alarm:	✓	✓
#4 Containment Pipe Alarm:	✓	✓
#5 High Wet Well Alarm:	✓	✓
#6 Pump #1 Fail (Yes/No):	NO	NO
#7 Pump # 2 Fail (Yes/No):	NO	NO
#8 Bag Filter Differential Pressure High Alarm:	✓	✓
#9 Wet Well Level (Actual Measure Spoken):	—	—
#10 Flow Rate:	—	—



Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Date: 8-5-19 Time In: 10:00 Time Out: 4:00

Operator: MICHAEL WALKER
Operator Signature: [signature]

Weather:	Sunny
Precipitation, Inches:	0
Temperature, ºF:	83° F
Purpose for Visit:	Inspect sump flow meter / REPAIR CRACKED PIPING.

Pre-Treatment Process Information	Reading	Units	Time
1" Final Discharge Flow Meter Totalizer Reading:		GAL	
½" Sump Flow Meter Totalizer Reading:		GAL	
Flow Rate (during testing) P-1:		GPM	
Flow Rate (during testing) P-2:		GPM	
Pump Hour Meter Readings: Pump #1:		HOURS	
Pump Hour Meter Readings: Pump #2:		HOURS	
Wet Well Level:		FT	
Pressure Sensor Reading (Bar Graph) (during test):		PSI	

	Influent Gauge, PSI	Effluent Gauge, PSI	Differential
Bag Filter #1:			
Bag Filter #2:			
Carbon Vessel #1:			
Carbon Vessel #2:			

Changed Filter Bags (Check ✓ One):	YES		TIME	
	NO	✓		

Notes From Inspection: WALKER ON SITE TO INVESTIGATE ERRATIC READ OUT ON THE SUMP FLOW METER. ALSO REPLACE CRACKED FITTING THAT WAS LEAKING ON PUMP # 2.
I COULD NOT DETERMINE WHAT THE CAUSE OF THE FLOWMETER MALFUNCTION IS. I CHECKED THE WIRING AND GROUNDS. ALL WERE SOLID. I DID TAKE APART & REPLACE THE "T" FITTING AND NIPPLES ON THE EFFLUENT SIDE OF PUMP 2 TO STOP THE LEAKING.

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Planned Action Items:

Recommended Actions to Prevent Future Problems: while inspecting the sump flow meter, I discovered the pipe that goes into the sump floor was loose and not making a complete seal any more. I will talk to ADAMC. about REPAIR options for this.

Other Relevant Information:

SYSTEM CHECK LIST (Check ✓ if OK)	Arrival	Departure
#1 Vault Door:	✓	✓
#2 Panel Door:	✓	✓
#3 Vault Sump High Alarm:	✓	✓
#4 Containment Pipe Alarm:	✓	✓
#5 High Wet Well Alarm:	✓	✓
#6 Pump #1 Fail (Yes/No):	NO	NO
#7 Pump # 2 Fail (Yes/No):	NO	NO
#8 Bag Filter Differential Pressure High Alarm:	✓	✓
#9 Wet Well Level (Actual Measure Spoken):	✓	✓
#10 Flow Rate:	✓	✓

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

Date: 8-20-19 Time In: 1:00 PM Time Out: 5:00 PM

Operator: Michael Walker

Operator Signature: Michael Walker

Weather:	SUNNY
Precipitation, Inches:	0
Temperature, ºF:	85° F
Purpose for Visit:	MONTHLY INSPECTION, AUGUST 2019

Pre-Treatment Process Information	Reading	Units	Time
1" Final Discharge Flow Meter Totalizer Reading:	2573878	GAL	2:00 PM
½" Sump Flow Meter Totalizer Reading:	—	GAL	* SEE NOTES
Flow Rate (during testing) P-1:	7.87	GPM	4:00 PM
Flow Rate (during testing) P-2:	7.16	GPM	4:00 PM
Pump Hour Meter Readings: Pump #1:	3493.0	HOURS	2:00 PM
Pump Hour Meter Readings: Pump #2:	3349.2	HOURS	2:00 PM
Wet Well Level:	< 2'	FT	2:00 PM
Pressure Sensor Reading (Bar Graph) (during test):	44	PSI	4:00 PM

	Influent Gauge, PSI	Effluent Gauge, PSI	Differential
Bag Filter #1:	42	42	0
Bag Filter #2:	42	35	7
Carbon Vessel #1:	21	17	4
Carbon Vessel #2:	17	12	5

Changed Filter Bags (Check ✓ One):	YES	X	TIME	3:30 pm
	NO			

Notes From Inspection: SITE LOOKED GOOD UPON ARRIVAL. ALL GATES LOCKED AND SECURE. GRASS ON CAP HAS BEEN CUT TO 4" HEIGHT. CAP LOOKS GOOD, NO DAMAGE VISIBLE.
CHANGED BAGS IN BAG FILTER HOUSINGS, CHANGED THE CHART IN THE RECORDER. TESTED ALL PUMPS, INCLUDING SUMP PUMPS, ALL OK. CHECKED ON REPAIR TO SUMP FLOOR, STILL WATERTIGHT, OK.
RESTOCKED 5-10 MICRON FILTER BAGS.
BACKWASHED GAC VESSEL #1 FOR 20 MIN. TO LOWER PRESSURES.

Frontier Chemical – Pendleton
Site No. 932043
Pre-Treatment System Operator's Log

* THE USE OF THE ½" SUMP FLOW METER HAS BEEN DISCONTINUED AFTER WE DID REPAIRS TO THE CRACK IN THE SUMP FLOOR.

Planned Action Items:

Recommended Actions to Prevent Future Problems:

Other Relevant Information: Pump #2 SEEMS TO NOT HAVE AS MUCH PRESSURE AS #1, I will MONITOR THIS.

SYSTEM CHECK LIST (Check ✓ if OK)	Arrival	Departure
#1 Vault Door:	✓	✓
#2 Panel Door:	✓	✓
#3 Vault Sump High Alarm:	✓	✓
#4 Containment Pipe Alarm:	✓	✓
#5 High Wet Well Alarm:	✓	✓
#6 Pump #1 Fail (Yes/No):	NO	NO
#7 Pump # 2 Fail (Yes/No):	NO	NO
#8 Bag Filter Differential Pressure High Alarm:	✓	✓
#9 Wet Well Level (Actual Measure Spoken):	—	—
#10 Flow Rate:	—	—