Frontier Chemical – Pendleton Site
6844 Town Line Road
Town of Pendleton
Niagara County, New York
Site No. 932043

Pendleton Site PRP Group

Operation, Maintenance & Monitoring (OM&M) Manual

September 2014

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Site Description:

The Frontier Chemical-Pendleton Site is located on Town Line Road in the Town of Pendleton, Niagara County, New York. The total site comprises approximately 22 acres of the 75-acre former Frontier Chemical property. An Operation, Maintenance & Monitoring (OM&M) Manual was developed in March 1997. The Pendleton Site PRP Group is responsible for OM&M activities under NYSDEC Order on Consent #B9-0270-89-05, March 24, 1994. This OM&M Manual was revised March 22, 2013 to meet the substantive requirements to operate, maintain and monitor the Site.

The principal water bearing strata beneath the Site are considered to be the shallow fill materials and upper fractured clay, the lacustrine sand and silt horizon and the upper bedrock. The lacustrine clay sequence, below the apparent 14 to 18 ft deep fractured portion, is considered to form an aquitard separation the groundwater flow system within the fill material from the deeper lacustrine sand and silt aquifer. The upper bedrock is also considered to be a water bearing horizon constituting a deep but somewhat variable aquifer.

Summary of OM&M Activities:

This OM&M Manual is applicable to the following closure components of the Frontier Chemical - Pendleton Site:

- Low-permeability capping system
- Groundwater collection, conveyance, and pre-treatment system
- Surface water runoff facilities
- Constructed wetlands
- Perimeter berm, containment berm, and outlet weir
- Groundwater monitoring system
- Access road
- Six-foot high chain link fence immediately surrounding the capped area and pump station.

Post-Closure OM&M Activities:

Post-closure OM&M activities to be performed by the Group include:

- Routine inspection and maintenance of constructed features, including the capped area, groundwater collection and conveyance system, surface water runoff facilities, constructed wetlands, access road, perimeter and containment berms, and outlet weir
- Operation and maintenance of the groundwater pre-treatment system
- Performance of a ground water monitoring program to monitor groundwater conditions at the site and to verify the inward hydraulic gradient within the capped area
- Evaluation of operation, maintenance, and monitoring activities and identification of proposed changes to the OM&M Manual or site procedures and policies which would provide a safer and/or more cost-effective operation
- Recordkeeping and reporting.

Requirements for Updating the OM&M Manual:
This OM&M Manual may require modifications or enhancements as a result of data generated, changing site conditions, or when more cost effective or better procedures are identified.

The recommended change will be sent to NYSDEC for approval. NYSDEC approved changes/revisions shall then become operational requirements.

Post Closure Site OM&M Activities:

Capped Areas:
Inspection and Maintenance Requirements of Capped Areas:
Routine inspection of the capped area and immediately adjacent areas will be performed semi-annually. The inspector will observe the condition of the vegetative cover for areas of settlement, erosion, slope instability, or any other damage to the capped area. If such features are noted, appropriate active actions will be implemented *(Attachment A).*

Deep rooting shrubs, brush, or trees will not be allowed to establish on the cover. Mowing will be performed annual after August 15th or as required to prevent the establishment of woody plants (trees) that may penetrate the flexible membrane cover. Routine cover inspection will also note any problems with thinning of vegetation. Areas which appear to be thinning out over time will require over-seeding to keep the vegetative cover uniform.

Groundwater Collection, Conveyance and Pre-Treatment System:
The pre-treatment system will be operated in accordance with a current Niagara County Sewer District #1 (NCSD) Discharge Permit. During operation of the pre-treatment system, effluent samples will be collected and analyzed in accordance with the Discharge Permit. The Group will be responsible for renewing/revising the Discharge Permit with the NCSD, as required.

Routine OM&M of Pre-Treatment System:
Routine OM&M of the pre-treatment system will be performed by the Group. A Process and Instrumentation Diagram is attached. In addition to the sampling and monitoring identified in the NCSD Discharge Permit, routine OM&M will consist of the following:

- Perform normal operating procedures *(Attachment B)*
- Respond to system failure alarm indicators *(Attachment C)*
- Perform routine equipment maintenance/lubrication/repair/service as required
- Complete Pre-treatment System Operator's Log each time the pre-treatment system is attended *(Attachment D).*
- Address routine operational problems.
- Assess non-routine operational problems encountered to address the problem.

- Perform granular activated carbon (GAC) and bag filter change-outs as needed.

Inspection and Maintenance of Groundwater Collection, Conveyance and Pre-Treatment System:

The inspection and maintenance requirements associated with the groundwater collection, conveyance and pre-treatment system are as follows:

The groundwater collection and conveyance system will be inspected semi-annually for the buildup of hard or soft scale-like deposits. The inspections will be performed concurrently with inspection of the final cover. The inspections will be performed by measuring the water levels in the manholes (MH-1, MH-2, and MH-3) and monitoring the flow rate of water being pumped to the pre-treatment system from the wet well (MH-3) to observe if there is any buildup in the groundwater collection trench piping.

Surface Water Runoff System:
Inspection and Maintenance Requirements:
Inspection of surface water drainage facilities will be conducted semi-annually. The inspection will be performed concurrently with inspection of the capped area. Drainage facilities will be inspected for accumulation of debris, which may inhibit flow, and for excessive scouring. Should debris accumulation be noted, it will be promptly removed to maintain flow capacity. If excessive scouring is noted, channel protection consisting of rip-rap or geosynthetic protection may be required to maintain the integrity of the storm water ditch.

Constructed Wetlands:
Inspection and Maintenance Requirements:
Inspections will be conducted at the same frequency as inspection of the final cover. Corrective actions to wetland areas affected by the work of this project due to the actions of the Group will be performed in consultation with the NYSDEC.

Perimeter Berm, Containment Berm and Outlet Weir:
Inspection and Maintenance Requirements:
Inspection of the perimeter berm, containment berm, and outlet weir will be performed at the same frequency as inspection of the final cover. The condition of the berms and the outlet weir will be observed. Should areas of erosion, settlement, slope instability, or other damage to the berms or outlet weir be noted, the berms and outlet weir will be re-graded or reconstructed in those areas, as required.

Groundwater Monitoring System:
Inspection and Maintenance Requirements:
During each semi-annual monitoring event, groundwater monitoring wells and piezometers will be inspected for signs of damage *(Attachment E).* If damage is detected, or if routine sampling indicates a problem with one or more of the groundwater monitoring wells or piezometers, any action to be taken will be discussed with the NYSDEC.

Access Road:

Maintenance Requirements:

The access road will be inspected at the same frequency as inspection of the final cover. During routine inspections following closure, the access road will be observed for rutting, potholes or settlement. Should these conditions be observed, conditions will be corrected by filling with appropriate material. During the winter, the road will be plowed as needed to facilitate access to the pre-treatment system and for routine sampling of groundwater monitoring wells. Snow banks resulting from plowing will be arranged to promote off-site drainage when thawing occurs.

Physical Site Security:

Inspection and Maintenance Requirements:

The integrity of the six-foot high chain link fence immediately surrounding the capped area and pump station shall be inspected at the same frequency as the inspection of the final cover. The structural integrity of the fencing system will be verified and breaches or weaknesses shall be repaired. To maintain the security of the capped area and pump station, the access gates should be kept locked while the site is unattended.

Recordkeeping and Reporting Requirements:

OM&M activities will be performed for an estimated period of 30 years. Copies of records, reports, or other information relative to maintenance and monitoring activities at the Frontier Chemical-Pendleton Site are provided to the NYSDEC annually with the Periodic Review Report

Long-Term Monitoring:

Groundwater Monitoring:

A groundwater monitoring program will be conducted to monitor groundwater conditions at the site and to verify the inward hydraulic gradient within the capped area. Data collection strategy, sampling methodologies, and sample collection and analysis procedures are described in the Data Collection Quality Assurance Plan.

The groundwater monitoring system includes ten groundwater 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). Five piezometers are located within the capped area, and three piezometers are located outside the capped area. The standpipe is located within the groundwater 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. A Piezometer and Well Location Map and the groundwater sampling logs are located in *Attachment F.*

Analyses and Frequency:

Groundwater samples are collected on a biennial basis for carbon disulfide, arsenic, chromium, and potassium, total suspended solids (TSS), cyanide, and phenols.

Ground water elevations will be measured at each groundwater monitoring well (URS-14I, URS-14D, URS-9I, URS-9D, 85-5R, URS-5D, 85-7R, URS-7D, 88-12C and 88-12D), piezometer (P-1 through P-8), standpipe (SP-1), and Quarry Lake in conjunction with groundwater sampling activities.

Recordkeeping and Reporting Requirements:
The Annual Periodic Review Report will be submitted to the NYSDEC.

The report will include the following information:

- Summary of activities performed (including any additional tasks)
- Depth to groundwater measurements and static water elevations
- Tabular presentation of analytical results (including previous results)
- Analytical data package
- Groundwater Sampling Logs
- Evaluation of hazardous constituent results versus the established GA standards

Modification of the Post Closure OM&M activities will be made only with the concurrence of the NYSDEC. The results of groundwater sampling and analysis will be summarized in the annual Periodic Review Report. In accordance with the Order on Consent (#B9-0270-89-05) as subsequently modified in discussion with the NYSDEC, copies of all reports related to monitoring activities at the Frontier Chemical-Pendleton Site will be provided to the following:

Mr. Brian Sadowski
Division of Environmental Remediation
New York State Department of Environmental Conversation
270 Michigan Avenue
Buffalo, New York 14203-2915

Contingency Plan:
The following contingency plan will be implemented in the event that any component of the implemented remedy fails to operate in accordance with the Remedial Design.

Freezing Conditions:
If freeze/thaw activity causes heaving that may impact the integrity of the final cover, the heaved area should be scarified, re-compacted, topsoil reinstalled, and the area reseeded. Freeze/thaw activity could also cause excessive rutting or pothole formation in the site access road. If this occurs, the damaged portion of the road would be filled with a suitable granular material.

Heavy Rains:
Repeated heavy rainfall could cause erosion of the final cover, prior to establishment of a vegetative cover. If this occurs, the eroded area would be scarified and additional cover material added, if necessary, and re-compacted. Topsoil would then be applied and reseeded. Areas of persistent erosion may require utilization of an erosion control fabric or ditching and rip-rap.

Seepage:
The low-permeability cover installed over the fill material and the extension of the FMC into the underlying clay silty/clay layer and surface water controls will limit the infiltration of water into the area beneath the cap. Any groundwater contained within the capped area will be collected by the groundwater collection trench and conveyed to the pre-treatment system. However, if routine inspections or water quality monitoring identify the presence of seeps through the cover, the point at which the seep starts would be located by visual observation and excavation, if necessary, and the seep eliminated. This may be accomplished by removing and reinstalling the cover as required to stop the flow of the seep. As an additional measure, the seep may be piped directly to the groundwater collection system. Erosion of the side slopes which may result from the seep would also be repaired by re-grading, filling, and reseeding. If a seep is persistent, an investigation would be undertaken to determine the cause of the seep and an appropriate plan and schedule would be developed for permanently controlling the seep.

Groundwater Quantities:
In the event that quantities of groundwater collected increase to the point where the groundwater collection, conveyance, and pre-treatment system is being overwhelmed, an evaluation would be performed to identify the source of the groundwater quantities being collected, including the contribution of groundwater to the system.

In the event that quantities of groundwater collected drop to levels that inhibit operation of the pre-treatment system, appropriate modifications should be proposed. Appropriate modifications may include the on-site storage of collected groundwater until sufficient quantities are generated, with subsequent treatment (as required) or off-site disposal.

Groundwater Collection, Conveyance and Pre-Treatment System:
In the event that the groundwater collection system piping becomes clogged, cleaning of the pipes will be necessary to maintain the flow capacities in the ground water collection and conveyance system. If any component of the pumping station or pre-treatment system becomes damaged or malfunctions, it will be replaced.

Surface Water Control Channels:
Should flow in the surface water control channels become inhibited by the displacement of fine stone filling or the accumulation of excessive debris or soils from the erosion of the adjacent embankments, appropriate measures would be taken to repair or clean the channel to maintain flow capacities. Areas of persistent channel erosion may require additional improvements including re-grading, filling or placement of rip-rap.

Groundwater Contamination:
Potential impacts on groundwater quality will be monitored by routine sampling and analysis of site groundwater monitoring wells. The NYSDEC will be provided with the results of sampling and analyses. If the routine sampling indicates that groundwater quality is worsening, additional sampling and analyses should be performed to verify the initial results. If warranted by the initial data evaluation and the verification sampling, an evaluation will be performed to evaluate if any further action could be necessary to determine the cause of and solution to the problem.

Emergency Contacts:

Michael Walker
Sevenson Environmental Services, Inc.
716-583-4460 (cell)
716-284-0431 (office)

Curt Richards
Olin Corporation
423-336-4007 office

The NYSDEC may also be contacted as necessary:

Mr. Brian Sadowski
Project Manager
Division of Environmental Remediation
New York State Department of Environmental Conversation
270 Michigan Avenue
Buffalo, New York 14203-2915
(716) 851-7220

Mr. Gregory Sutton
Regional Hazardous Waste Engineer
Division of Environmental Remediation
New York State Department of Environmental Conversation
270 Michigan Avenue
Buffalo, New York 14203-2915
(716) 851-7220

ATTACHMENT A

Frontier Chemical – Pendleton
Site No. 932043

Semi-Annual Inspection Checklist

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

Date: Time In: Time Out:

Inspector:
Inspector Signature

Weather:	

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? b. MH-2 c. MH-3? d. Quarry Lake?			
	3. Closed and opened pinch valve?			

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Site No. 932043
Semi-Annual Inspection Checklist

	4. Leakage, degradation or corrosion of valves, pipes or appurtenances?			
	5. Areas of damage?			
Ground Water Pre-Treatment System (including Dry Vault and Wet Well):	Perform Inspection in accordance with Pre-Treatment System Operations Plan			
Surface Water Runoff Facilities:	Visually Inspect Ditches and Culverts			
	1. Accumulation of debris?			
	2. Excessive scouring?			
	3. Areas of damage?			
Perimeter Berm, Containment Berm, and Outlet Weir:	Visually Inspect Condition			
	1. Erosion problems?			
	2. Areas of settlement?			
	3. Areas of slope instability?			
	4. Areas of damage?			
Ground Water Monitoring Wells and Piezometers:	Visually Inspect Condition			
	1. Casings secured and locked?			
	2. Areas of damage?			
Access Road:	Visually Inspect Surface Condition			
	1. Rutting?			
	2. Potholes?			
	3. Settlement?			
	4. Areas of damage?			

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Semi-Annual Inspection Checklist

Physical Site Security:	Visually Inspect Fences and Gates			
	1. Signs intact?			
	2. Fence breached?			
	3. Access gates locked?			
	4. Areas of damage?			
Note any additional comments:				

ATTACHMENT B

Frontier Chemical – Pendleton
Site No. 932043

Normal Operating Procedures

Frontier Chemical – Pendleton
Site No. 932043
Normal Operating Procedures

Well Pumps (Progressive Cavity Pumps):

- ✓ HOA Selector switch in auto mode

  Note: Pumps will alternate in operation after every use, via an alternating relay in the control panel.

  Note: Pumps run automatically based on wet well level transmitter level control set points:

  Elevation 562.87 ft pump off automatic alternation
  Elevation 563.37 ft lead pump on
  Elevation 564.57 ft standby pump on (if lead pump fails)
  Elevation 572.07 ft high wet well level; autodialer alarm

- ✓ Operator checks pump running status using local indicator run lights and flowrate indicator

  Note: Once a pump is called on-line by water reaching the "lead pump on" elevation in the wet well (the first unit to see influent), it may take up to 45 to 60 seconds for the pump to prime and begin pumping at the design flow rate.

- ✓ Flow rate adjustments, if required, by manual diaphragm valve throttling.

  Note: 10 gpm maximum flow rate

Dry Vault Sump Pumps:

Note: Sump pumps will alternate in operation via an alternating relay in the control box mounted on the wall in the vault.

Note: Standing water elevation below float activation levels for both pumps

Note: High sump alarm set above pump on float level for both pumps

- ✓ Check operation of both sump pumps periodically (monthly) by diverting process water to sump and observing pump performance

Bag Fillers:

Note: Differential pressure on each bag filter below high differential pressure set point (start with 10 psig)
Note: Autodialer alarm at 10 psig differential pressure indicates bag filler change-out required

- ✓ Either isolate bag filler to be changed from system while system is on line or take pre-treatment system off-line
- ✓ Close isolation valves on either side of bag filter
- ✓ Relieve pressure at bag filter through drain valve
- ✓ Remove bag and drain bag at sump
- ✓ Discard bag into 55-gallon drum located in the dry vault

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Normal Operating Procedures

Note: The wastes will be stored, handled and disposed of in accordance with 6NYCRR Part 372 and any other applicable local, state, and federal regulations

- ✓ Install new bag, tighten cover screws, close drain valve, open isolation valves are energize system
- ✓ Record clean bag filter differential pressure

Granular Activated Carbon Units:

Note: Pressure gauges are installed such that differential pressure across each vessel can be monitored

- ✓ Units should be valved for lead/lag series operation, down flow
  Note: Once carbon change out is required, the lead unit (the first unit to see influent) is changed out
- ✓ Change valve positions so current lag unit becomes lead unit and vessel with clean carbon becomes lag unit

Carbon change outs:

- ✓ Shut-down influent pumps
- ✓ Close influent and effluent valves to subject GAC unit
- ✓ Relieve line pressure of unit to be changed out by draining excess water to the wet well sump
- ✓ Vacuum out carbon, inspect vessel and influent header seal vessel
- ✓ Set valving so vessel with new carbon is lag unit and former lag unit is now lead unit
- ✓ Energize influent pumps (hand mode) long enough to fill GAC vessel
- ✓ Bleed entrained air from petcocks installed at system high point(s)
- ✓ Close bleeder valve
- ✓ Reestablish automatic operation
- ✓ Re-bleed residual air and close bleed valves

Secondary Containment Pipe Leak Sensor:

- ✓ The "V pet" petcock passing from the secondary containment pipe housing the treated discharge pipe should be open and free to drain into the catch pan containing the secondary containment leak alarm float switch
- ✓ The catch pan should be dry except for some minor condensation which may occur in the annulus between the carrier pipe and the secondary containment pipe
- ✓ The three "V pet" petcocks between the wet well and dry vault primal}' and secondary containment piping should be normally closed, but opened routinely (once/month) to assure that leakage is not occurring between the annulus

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Site No. 932043
Normal Operating Procedures

Strip Chart Recorder:

- ✓ Change charts monthly
- ✓ Identify begin time on chart when installing
- ✓ Identify end time on chart when removing
- ✓ Replace chart pens as required

Autodialer:

Note: Opening the control panel door will initiate autodialer callout in thirty seconds unless the key switch is set in the "disable" position

- ✓ Therefore, upon entering the site, the control panel should first be opened and the key switch be turned to prevent the autodialer from initiating the dial out sequence
  Note: This disables the autodialer
- ✓ Prior to leaving the site, the operator should check that the vault hatch must be closed
- ✓ The key switch should be reset to the armed position and the control panel immediately closed and locked thereafter

ATTACHMENT C

Frontier Chemical – Pendleton
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System Failure Alarm Indicators and Responses

Frontier Chemical – Pendleton
Site No. 932043
System Failure Alarm Indicators and Responses

Alarm: ***High Differential Pressure Across Either Bag Filter***

Note: The high differential pressure should be set upon a rising differential pressure of 10 psig across each bag filter

Reason:

✓ Bag filter plugging due to solids capture

Note: Bag filter needs to be replaced

Response:

- Go to site and evaluate cause of alarm and rectify

Alarm: ***Dry Vault Hatch or Control Panel Intrusion***

Reasons:

✓ Site attended by operations personnel who forgot to deactivate alarm

✓ Unauthorized access

Response:

- Go to site and investigate reason for alarm
- Proceed cautiously
- If unauthorized, illegal entry is suspected call police and investigate reason for alarm with police
- If possible rectify cause

Alarm: ***High Dry Vault Sump***

Reasons:

✓ Dry-vault sump pumps have both failed to remove automatic composite sampler purge water directed to the well

✓ Water is entering the dry vault sump faster than it can be pumped out

Note: This would indicate that there is a one breakage or some other major leak in the dry vault

Response:

- Go to the site and investigate reason for alarm
- Prior to entering dry vault, check to see if flooding has occurred
- If flooding has occurred above the pumps then open the main breaker at panel board PP-1 prior to entering dry vault
- Rectify problem

Alarm: *Treated Discharge Pipe Secondary Containment Leak Detection System*

Reasons:

- ✓ Condensation through time has caused water buildup in the sump where the secondary containment leak sensor is located

- ✓ The treated discharge pipe has started to leak

  Note: High ground water or inflow/infiltration during a storm event has caused water buildup in the buried discharge pipe and the secondary containment pipe is leaking

Response:

- Go to the site and investigate the cause for the alarm

  Note: If no flow is emerging from the "V-per, suspect condensation unless it is known that the box which the leak detection probe was located was empty of water the last time the site was visited

- If continuous flow is emerging from the "V-pet". It is likely that there is a pipe leak

  Note: With the pre- treatment system off, see if flow continues over time; if it continues, suspect that the secondly containment pipe is leaking

- Open a drain port and evacuate the treated discharge pipe to the dry vault sump

  Note: The sump pump may need to be energized to evacuate water collected

- With the treated discharge force main empty, if flow through the "V-per continues, suspect that the secondary containment pipe is leaking

  Note: If flow stops when the treated discharge pipe is evacuated, then suspect that the treated discharge pipe is leaking

- At that point, energize the pre-treatment system

  Note: If the flow rate to the "V-pet" increases, it is likely that the primary carrier pipe is leaking

- Once it is discerned that one of the pipelines is leaking, close the "V-pet" valve and tum off the PD pumps

- The dry well sump pumps should remain powered up

Alarm: *Progressive Cavity Positive Displacement (PD) Pump Failure*

Reasons:

Note: Upon powering up one of the PD pumps a 45-second time delay relay,TR-1 for pump 1and TR-2 for pump 2 are activated to allow the selected pump time to prime

Frontier Chemical – Pendleton
Site No. 932043
System Failure Alarm Indicators and Responses

Note: If no flow is registered on the flow meter during priming time, the pump will go into the failure mode. Inadequate priming is indicative of plugging or leakage of the suction line or pump or motor failure.

Note: If the pump is normally operating and excessive pressure is built up downstream of the pump, the pressure relief valve located immediately downstream of the running pump will open and flow through the pre-treatment system will be reduced.

Note: If the flow rate falls to less than 5% of the full range (1.5 gpm for the 30 gpm full scale flow meter provided), then the pump will go into the failure mode.

Response:

- Go to the site and investigate the cause of the alarm, troubleshoot and rectify

  Note: Pump and motor troubleshooting information should be found in the installation, operation and maintenance manuals provided with the pumps by the pump manufacturer

  Note, the PD pumps are not designed to operate dry for more than about 60 seconds or so as heat generated by the rotor rubbing against the viton stator will cause the stator to being melting or otherwise self-destruct

Alarm: *High Wet Well Level:*

Reason:

Note: High wet well water level (at or above elevation 572.07 ft) will cause an autodialer alarm

Note: This is caused either by ground water entering the collection trench faster than ft is being pumped out or it is an indication of loss of pump performance due to excessive pressure buildup in the pre-treatment system or failure of the operating pump

Note: The PD pumps selected for this project are capable of pumping from 8 to 10 gpm against total discharge pressures of 50 psig to 0 psig, respectively; they are not rated over a working pressure of 50 psig

Response:

- Call the autodialer and discern the wet well water level and the instantaneous flow rate of the water passing through the flow meter

  Note: If the pump's pumping in the 8 to 10 gpm range, the cause is likely that water is entering the wet well faster than it is leaving through the PO pump

  Note: If the pump is not pumping in the 8 to 10 gpm range, the likely causes are excessive system pressure or pump "degradation"

- The site must be visited to determine if the pump is failing or there is excessive system pressure

  Note: If excessive system pressure is the problem, then putting the second pump on line will result in roughly the same flow rate as that which resulted while the first pump on line

  Note: If the flow rate through the system increases with the second pump on line, then the first pump performance is the likely problem

- Troubleshooting of the pump should be performed using vender suppliers' installation, operation and maintenance manuals

ATTACHMENT D

Frontier Chemical – Pendleton
Site No. 932043

Pre-Treatment System Operator's Log

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

Date: **Time In:** **Time Out:**

Operator:
Operator Signature

Weather:	
Precipitation, Inches:	
Temperature, ºF:	
Purpose for Visit:	

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:

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):		
#7 Pump # 2 Fail (Yes/No):		
#8 Bag Filter Differential Pressure High Alarm:		
#9 Wet Well Level (Actual Measure Spoken):		
#10 Flow Rate:		

ATTACHMENT E

Frontier Chemical – Pendleton
Site No. 932043

Monitoring Well Integrity Checklist

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

Date:

Inspector:
Inspector Signature

Well Identification:

WELL SPECIFICATIONS:

Protective Casing	_____	Above Ground	_____	Flush Mounted
Well Construction	_____	PVC	_____	Stainless Steel
Well Diameter	_____	2-Inch	_____	4-Inch
Depth to Ground Water	_____	FT		
Well Depth	_____	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 solls 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:

ATTACHMENT F

Frontier Chemical – Pendleton
Site No. 932043

Piezometer and Well Location Map
Groundwater Sampling Log

Olin

OLIN CORPORATION

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

SCALE: NOTED	DRAWN BY: JRH	DATE: 7-7-2014
	CHKD. BY: ABC	DATE: 7-15-2014

OLIN CORPORATION
FRONTIER CHEMICAL PENDLETON SITE
PENDLETON, NY

SITE MAP
MONITORING WELL/PEIZOMETER LOCATIONS
JULY 2014

FIG. NO. 1

SCALE: 1 INCH = 200 FEET

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

Frontier Chemical – Pendleton
Site No. 932043
Groundwater Sampling Log

Date: Operator: Operator Signature

Weather:

Well # Evacuation Method: Bailer Sampling Method: Remove 3X Volume and Sample

Well Information *Measurements taken from: Well Casing

Depth of Well*	Ft	Water Volume/Ft. For:
Depth to Water*	Ft	X 2" Diameter Well = 0.163 X LWC
Length of Water Column	Ft	___ 4" Diameter Well = 0.653 x LWC
Volume of Water In Well	Gal.(s)	___ 6" Diameter Well = 1.469 X LWC
3X Volume of Water In Well	Gal.(s)	Volume removed before sampling: Gals.

Did well go dry? _____

Instrument Calibration:

pH Buffer Readings		Conductivity Standard Readings	
4.0 Standard		84 S Standard	
7.0 Standard		1413 S Standard	
10.0 Standard			

Water Parameters

Initial	Gallons Removed	Initial	Temperature Readings	Initial	PH Readings	Initial	Conductivity Readings uS/cm	Initial	Turbidity Readings Ntu

Water Sample
Time Collected: _____

Physical Appearance at Start		Physical Appearance at Sampling	
Color		Color	
Odor		Odor	
Turbidity (> 100 NTU)		Turbidity (>100 NTU)	
Sheen/Free Product		Sheen/Free Product	

Samples Collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
40 ml	Glass	3	No	1:1 HCL	
Liter	Plastic	1	Not If < 50 ntu	HNO3	
Pint	Plastic	1	No	NaOH	

NOTES: