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CP4-ER-0020 FRev. 2	**TITLE**: Control and Use of Pressure-Related Measuring and Test Equipment for the Northwest and Northeast Plume Operations	Page 1 of 10

DOCUMENT CATEGORY: ☐ Administrative ☒ Technical

LEVEL OF USE: ☐ Information Level ☒ Reference Level ☐ Continuous Use

FUNCTIONAL AREA: Environmental Remediation **SUBJECT MATTER AREA:** Northwest and Northeast Plume Pump and Treat Operations	**SUBJECT MATTER EXPERT**: Fraser Johnstone – Technical Support
NUCLEAR SAFETY REVIEW DOCUMENTATION: FRNP-21-0685-X	**APPROVED BY/DATE** (Signature on file): Joe Tarantino –Environmental Remediation Manager 9/29/2021
REQUIRED REVIEW DATE (or expiration date for temporary change): 9/29/2024	**EFFECTIVE DATE**: 9/30/2021

REVISION/CHANGE LOG

Revision/Change Letter	Description of Changes	Pages Affected	Date of Revision/Change
FR0	Initial Bluesheeting	All	10/20/17
FR1	Non-Intent Revision to Incorporate Bluesheeting Changes and Update to Current Form	All	12/5/17
FR2	General revision for document review date.	All	9/29/21

TABLE OF CONTENTS

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure outlines the control and use of Measuring and Test Equipment (M&TE) standards utilized at the Paducah Deactivation Project, Northwest and Northeast Plume (NWNEP) Operations facilities. M&TE standards include, but are **NOT** limited to, calibrated pressure gauges and manometers used to verify the accuracy of Installed Plant Instrumentation (IPI) used at the C-612, C-614, C-765, and C-765-A facilities.

1.2 Scope

This procedure describes steps for the control/use of M&TE standards utilized at the NWNEP facilities to support pressure-related calibration and testing activities identified in CP2-ER-0046, *Paducah Plume Operations Maintenance, Sampling and Analysis, and Calibration and Testing Plan*. These steps include M&TE standard requirements for calibration, pre-use inspection, control, handling, use, and storage requirements as well as corrective action requirements as a result of Out of Tolerance (OOT) IPI conditions.

2.0 REFERENCES

2.1 Use References

- CP2-ER-0012, *Waste Management Plan for the Pump-and-Treat Operations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky.*
- CP2-ER-0046, *Paducah Plume Operations Maintenance, Sampling and Analysis, and Calibration and Testing Plan*
- CP2-WM-0001, *Four Rivers Nuclear Partnership, LLC Paducah Deactivation and Remediation Project Waste Management Plan*
- CP3-RD-0010, *Records Management Process*
- CP3-SM-0017, *Measuring and Test Equipment*
- CP3-SM-0049, *Installed Plant Instrumentation Measuring and Test Equipment*

2.2 Source References

- CP2-QA-1000/FR2A, *Quality Assurance Program Description for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
- CP3-OP-0025, *Document Control Process*
- DOE/LX/07-0339&D1, *Remedial Action Work Plan for the Northwest Plume Interim Remedial Action Optimization at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
- DOE/LX/07-1280&D2/R3/A1, *Remedial Action Work Plan for Optimization of the Northeast Plume Interim Remedial Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
- DOE/OR/07-1253&D4/R7, *Operation and Maintenance Plan for the Northwest Plume Groundwater System Interim Remedial Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
- DOE/OR/07-1535&D3/R8, *Operation and Maintenance Plan for the Northeast Plume Containment System Interim Remedial Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*

- DOE G 414.1-1C, *Management and Independent Assessments Guide*
- JHA-10844, *Maintenance, Operations, and Testing for the Northwest and Northeast Plume and Water Treatment Operations*

3.0 COMMITMENTS

None

4.0 PRECAUTIONS AND LIMITATIONS

4.1 Precautions

4.1.1 Personnel shall be made familiar with the hazards associated with exposure to Trichloroethylene (TCE) and review Safety Data Sheet.

4.1.2 **When** opening **and** closing the Air Stripper Disconnect to be Locked Out, **then** the following shall be followed to protect from Arc Flash:

- Non-Essential personnel will stay clear while disconnect is being opened.
- Only trained and approved personnel will operate disconnect.
- Personnel operating disconnect should **NOT** stand in front of or directly face the disconnect when operating.
- Personnel performing work will wear appropriate Personal Protective Equipment (PPE) according to NFPA 70E, including safety glasses and long sleeves.

4.2 Limitations

4.2.1 The M&TE standards are utilized to verify the accuracy of IPI identified in CP2-ER-0046.

4.2.2 Waste (Spill clean-up residues, pumps , other equipment, PPE) generated through the use of this procedure will be managed according to CP2-WM-0001, *Four Rivers Nuclear Partnership, LLC Paducah Deactivation and Remediation Project Waste Management Plan* and CP2-ER-0012, *Waste Management Plan for the Pump-and-Treat Operations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky.*

5.0 PREREQUISITES

Obtain the following PPE as described:

- Safety Glasses with Side Shields.
- Steel toe safety boots.
- If more than incidental body contact with TCE contaminated liquid or material is expected then Tychem 5000 Apron and Sleeves or Silver Shield Apron and sleeves are required.
- PPE as specified by Radiological Work Permit and/or Radiological Protection/Industrial Hygiene.
- Respiratory Protection as specified by Industrial Hygiene/Radiological Control.
- When handling TCE contaminated pumps, piping, or liquid then wear TCE compatible gloves (as necessary) - Supreno EC Mircoflex Nitrile, Showa 730, or equivalent approved glove from Industrial Hygiene.

6.0 INSTRUCTIONS

6.1 Calibration of Measuring and Test Equipment

Calibration Technician

NOTE:

The method of calibration shall be based on the type of equipment, stability characteristics, required accuracy, intended use, and other conditions affecting performance.

Calibrate M&TE standards at prescribed intervals (for example annually) **and** whenever the accuracy of the M&TE standard is suspect in accordance with CP3-SM-0017, *Measuring and Test Equipment*.

6.2 Control of Measuring and Test Equipment

Operator

6.2.1 Prior to use, verify M&TE standard is **NOT** beyond its labeled calibration due date and inspect for signs of damage.

6.2.2 **If** M&TE standard is overdue for calibration **or** damage is discovered, **then** tag and segregate, **or** remove from service, **and DO NOT** use until it has been recalibrated, or request engineering authorization to continue use until such time as the equipment can be repaired or recalibrated.

6.2.3 Obtain replacement M&TE standard in accordance with CP3-SM-0017.

6.3 Verifying Accuracy of Installed Plant Instrumentation

Operator

NOTE:

Available calibration and testing task forms for NWNEP operations are as follows:

NEPCS First Quarter: CP2-ER-0046-F23, *NEPCS First Quarter Calibration and Testing Tasks*

NEPCS Second Quarter: CP2-ER-0046-F24, *NEPCS Second Quarter Calibration and Testing Tasks*

NEPCS Third Quarter: CP2-ER-0046-F25, *NEPCS Third Quarter Calibration and Testing Tasks*

NEPCS Fourth Quarter: CP2-ER-0046-F26, *NEPCS Fourth Quarter Calibration and Testing Tasks*

NWPGS First Quarter (Even Year): CP2-ER-0046-F30, *NWPGS First Quarter Even Year Quarterly Calibration and Testing Tasks*

NWPGS First Quarter (Odd Year): CP2-ER-0046-F34, *NWPGS First Quarter Odd Year Quarterly Calibration and Testing Tasks*

NWPGS Second Quarter (Even Year): CP2-ER-0046-F31, *NWPGS Second Quarter Even Year Quarterly Calibration and Testing Tasks*

NWPGS Second Quarter (Odd Year): CP2-ER-0046-F35, *NWPGS Second Quarter Odd Year Quarterly Calibration and Testing Tasks*

NWPGS Third Quarter (Even Year): CP2-ER-0046-F32, *NWPGS Third Quarter Even Year Quarterly Calibration and Testing Tasks*

NWPGS Third Quarter (Odd Year): CP2-ER-0046-F36, *NWPGS Third Quarter Odd Year Quarterly Calibration and Testing Tasks*

NWPGS Fourth Quarter (Even Year): CP2-ER-0046-F33, *NWPGS Fourth Quarter Even Year Quarterly Calibration and Testing Tasks*

NWPGS Fourth Quarter (Odd Year): CP2-ER-0046-F37, *NWPGS Fourth Quarter Odd Year Quarterly Calibration and Testing Tasks*

6.3.1 Obtain applicable Northeast Plume Containment System (NEPCS) or Northwest Plume Groundwater System (NWPGS) calibration and testing task form for the current operating quarter.

NOTE:

Inspection of the hand pneumatic pump will be conducted prior to use to ensure no damage is present.

6.3.2 Inspect hand pneumatic pump for damage prior to use. **If** damage to the pump is identified or pump is **NOT** functioning, **then** repair or replace the pump.

6.3.3 Connect the hand pneumatic pump **and** M&TE standard to the IPI device to be tested.

6.3.4 Pressurize the IPI device **and** M&TE standard using the hand pneumatic pump until M&TE standard reaches test pressure **and** compare the values displayed on the IPI device and M&TE standard.

6.3.5 Compare the results of the test to acceptable results identified on the calibration and testing forms referenced in CP2-ER-0046.

6.3.6 Document the results on the calibration and testing forms referenced in CP2-ER-0046.

6.3.7 Document the M&TE number, serial number, calibration due date, and manufacturer of the M&TE standard, utilized during calibration and testing, in the comment section of the calibration and testing form.

NOTE:

Multiple test pressures may be required for the IPI device that is tested.

6.3.8 Repeat Steps **6.3.4** through **6.3.7** until all test points have been completed for the specific IPI device.

6.3.9 Initial **and** date the calibration and testing form referenced in CP2-ER-0046.

6.3.10 Repeat Steps **6.3.3** through **6.3.9** until all IPI devices identified on the calibration and testing form requiring the use of an M&TE standard have been completed.

6.3.11 Provide completed calibration and testing forms to supervisor for review.

6.4 Corrective Action

Operator

6.4.1 **If** IPI devices, tested in accordance with CP2-ER-0046, are damaged **or** found to be OOT, **then** notify supervisor of equipment status.

Performing Group Supervisor

6.4.2 Provide requisite notifications in accordance with CP3-SM-0049, *Installed Plant Instrumentation Measuring and Test Equipment* for each OOT IPI condition.

6.5 Handling and Storage of Measuring and Test Equipment

Operator

6.5.1 Properly store and handle M&TE standards to maintain accuracy in accordance with manufacturer's specifications **or** guidance provided by engineering.

6.5.2 Use M&TE standards in environments that are controlled to the extent necessary to ensure that the required accuracy and precision are maintained.

6.6 Status Indication of Installed Plant Instrumentation

Operator

Label IPI devices to indicate the calibration status **and** establish traceability to calibration records in accordance with CP3-SM-0049.

7.0 ACCEPTANCE CRITERIA

None

8.0 POST PERFORMANCE WORK ACTIVITIES

8.1 Calibration of Measuring and Test Equipment Summary

Facility Manager

8.1.1 Maintain documentation showing the manufacturer, serial number, the date calibrated, calibration due date, **and** the facility performing the calibration for all M&TE utilized by Northeast and Northwest Plume Operations as required by procedure CP3-SM-0049.

NOTE:

Information submitted will include data necessary for interpretation of the calibration results and verification of compliance with applicable requirements.

8.1.2 Submit calibration certificates of M&TE to the Records Manager according to procedure CP3-RD-0010, *Records Management Process*.

9.0 RECORDS

9.1 Records Generated

The following records may be generated by this procedure:

- CP2-ER-0046-F23, *Northeast Plume Containment System First Quarter, Quarterly Calibration and Testing Task*
- CP2-ER-0046-F24, *Northeast Plume Containment System Second Quarter, Quarterly Calibration and Testing Task*
- CP2-ER-0046-F25, *Northeast Plume Containment System Third Quarter, Quarterly Calibration and Testing Task*
- CP2-ER-0046-F26, *Northeast Plume Containment System Fourth Quarter, Quarterly Calibration and Testing Task*
- CP2-ER-0046-F30, *Northwest Plume Containment System First Quarter Even Year, Quarterly Calibration and Testing Task*
- CP2-ER-0046-F31, *Northwest Plume Containment System Second Quarter Even Year, Quarterly Calibration and Testing Task*
- CP2-ER-0046-F32, *Northwest Plume Containment System Third Quarter Even Year, Quarterly Calibration and Testing Task*
- CP2-ER-0046-F33, *Northwest Plume Containment System Fourth Quarter Even Year, Quarterly Calibration and Testing Task*
- CP2-ER-0046-F34, *Northwest Plume Containment System First Quarter Odd Year, Quarterly Calibration and Testing Task*
- CP2-ER-0046-F35, *Northwest Plume Containment System Second Quarter Odd Year, Quarterly Calibration and Testing Task*

- CP2-ER-0046-F36, *Northwest Plume Containment System Third Quarter Odd Year, Quarterly Calibration and Testing Task*
- CP2-ER-0046-F37, *Northwest Plume Containment System Fourth Quarter Odd Year, Quarterly Calibration and Testing Task*

Forms are to be completed in accordance with CP3-OP-0024, Forms Control.

9.2 Records Disposition

The records are to be maintained in accordance with CP3-RD-0010.

Appendix A – Acronyms/Definitions

ACRONYMS

IPI – Installed Plant Instrumentation

M&TE – Measuring and Test Equipment

NEPCS – Northeast Plume Containment System

NWNEP – Northwest Northeast Plumes

NWPGS – Northwest Plume Groundwater System

OOT – Out of Tolerance

PPE – Personal Protective Equipment

TCE – Trichloroethylene

DEFINITIONS

None

CP2-ER-0046-F23
NORTHEAST PLUME CONTAINMENT SYSTEM
FIRST QUARTER YEAR _____ (Year)
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
EW-234								
LT-270	EW Level Transmitter	2-point check using manual water level meter.	Readings should be within ±0.5 feet of manual water level reading.	Test 1=_____ft Test 2=_____ft				
		Inspect desiccant pack. (Performed every quarter)	Desiccant pack acceptable for continued use per manufacturer's specification.					
EW E-STOP #1	Emergency Stop	Perform functional verification. Push E-stop button.	System shutdown occurs and autodialer callout.	Shutdown occur?_____ Autodialer callout?_____				
LSHH-280	EW Sump High-High Level Switch	Turn EW vault sump OFF and manually trip High-High Level Switch	Obtain alarm on C-765 HMI and receive autodialer callout.	Alarm obtained?_____ Autodialer callout?_____				
LSH-280	EW Sump High Level Switch	Turn EW vault sump in AUTO, add water, and verify High Level Switch turns on EW sump pump.	Ensure proper function.					LSH-280 and LSL-280 are tested together.

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
EW-234 (Continued)								
LSL-280	EW Sump Low Level Switch	Turn EW vault sump in AUTO, add water, and verify Low Level Switch turns off EW sump pump.	Ensure proper function.					LSH-280 and LSL-280 are tested together.
PI-290	Pressure Gauge	Check Calibration	Test Point 1: 0 psig + 1 psi Test Point 2: 50 psig ± 3 psi Test Point 3: 100 psig ± 3 psi Test Point 4: 150 psig ± 3 psi Test Point 5: 190 psig ± 3 psi	Test 1 = _____psi Test 2 = _____psi Test 3 = _____psi Test 4 = _____psi Test 5 = _____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
C-765								
PI-1	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765 (Continued)								
PI-2	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
PI-3	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				

CP2-ER-0046-F23
NORTHEAST PLUME CONTAINMENT SYSTEM
FIRST QUARTER YEAR _____ (Year)
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
EW-235								
LT-270	EW Level Transmitter	2-point check using manual water level meter.	Readings should be within ±0.5 feet of manual water level reading.	Test 1=_____ft Test 2=_____ft				
		Inspect desiccant pack. (Performed every quarter)	Desiccant pack acceptable for continued use per manufacturer's specification.					
EW E-STOP #1	Emergency Stop	Perform functional verification. Push E-stop button.	System shutdown occurs and autodialer callout.	Shutdown occur?_____ Autodialer callout?_____				
LSHH-280	EW Sump High-High Level Switch	Turn EW vault sump OFF and manually trip High-High Level Switch	Obtain alarm on C-765-A HMI and receive autodialer callout.	Alarm obtained?_____ Autodialer callout?_____				
LSH-280	EW Sump High Level Switch	Turn EW vault sump in AUTO, add water, and verify High Level Switch turns on EW sump pump.	Ensure proper function.					LSH-280 and LSL-280 are tested together.

CP2-ER-0046-F23
NORTHEAST PLUME CONTAINMENT SYSTEM
FIRST QUARTER YEAR _____ (Year)
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
EW-235 (Continued)								
LSL-280	EW Sump Low Level Switch	Turn EW vault sump in AUTO, add water, and verify Low Level Switch turns off EW sump pump.	Ensure proper function.					LSH-280 and LSL-280 are tested together.
PI-290	Pressure Gauge	Check Calibration	Test Point 1: 0 psig + 1 psi Test Point 2: 50 psig ± 3 psi Test Point 3: 100 psig ± 3 psi Test Point 4: 150 psig ± 3 psi Test Point 5: 190 psig ± 3 psi	Test 1 = _____psi Test 2 = _____psi Test 3 = _____psi Test 4 = _____psi Test 5 = _____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
C-765-A								
PI-1	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765-A (Continued)								
PI-2	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
PI-3	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				

Reviewer_____Date_____

CP2-ER-0046-F24
NORTHEAST PLUME CONTAINMENT SYSTEM
SECOND QUARTER YEAR _____ (Year)
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
EW-234								
LT-270	EW Level Transmitter	Inspect desiccant pack. (Performed every quarter)	Desiccant pack acceptable for continued use per manufacturer's specification.					
N/A	POINT I/O EtherNet/IP Adapter	Turn off main disconnect at extraction well (EW) to interrupt communication with TU.	Obtain alarm on C-765 HMI and receive autodialer callout.	Alarm obtained?_____ Autodialer callout?_____				
C-765								
PI-4	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765 (Continued)								
PI-5	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
PI-6	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
PI-13	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				

CP2-ER-0046-F24
NORTHEAST PLUME CONTAINMENT SYSTEM
SECOND QUARTER YEAR _____ (Year)
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765 (Continued)								
PI-14	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
N/A	Programmable Logic Controller (PLC)	Turn off main disconnect at treatment unit (TU) to interrupt power to the PLC.	Shutdown EW, obtain alarm on C-765 HMI and receive autodialer callout.	EW shutdown? _____ Autodialer callout?_____				
FIT-320	Treatment Unit Influent Flow Meter	Simulate flow from EW until flow rate is outside system operating range and alarm trip points.	EW shutdown and low/high flow alarm on HMI.	EW shutdown? _____ Low and High flow alarm obtained? _____				
TU E-STOP #1	Emergency Stop	Perform functional verification. Push E-stop button.	System shutdown occurs and autodialer callout.	Shutdown occur?_____ Autodialer callout?_____				

CP2-ER-0046-F24
NORTHEAST PLUME CONTAINMENT SYSTEM
SECOND QUARTER YEAR _____ (Year)
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765 (Continued)								
TU E-STOP #2	Emergency Stop	Perform functional verification. Push E-stop button.	System shutdown occurs and autodialer callout.	Shutdown occur? _____ Autodialer callout?_____				
C-765 Air Compressor	Air compressor Tank	Drain condensate from air compressor receiver tank	No liquid remains in receiver tank	N/A				
C-765 Air Stripper Blower B-340	Air Stripper Blower	Lubricate bearings on blower	None	N/A	N/A			

CP2-ER-0046-F24
NORTHEAST PLUME CONTAINMENT SYSTEM
SECOND QUARTER YEAR _____ (Year)
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
EW-235								
LT-270	EW Level Transmitter	Inspect desiccant pack. (Performed every quarter)	Desiccant pack acceptable for continued use per manufacturer's specification.					
N/A	POINT I/O EtherNet/IP Adapter	Turn off main disconnect at extraction well (EW) to interrupt communication with TU.	Obtain alarm on C-765-A HMI and receive autodialer callout.	Alarm obtained?_____ Autodialer callout?_____				
C-765-A								
PI-4	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765-A (Continued)								
PI-5	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
PI-6	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
N/A	Programmable Logic Controller (PLC)	Turn off main disconnect at treatment unit (TU) to interrupt power to the PLC.	Shutdown EW, obtain alarm on C-765-A HMI and receive autodialer callout.	EW shutdown? _____ Autodialer callout?_____				

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765-A (Continued)								
FIT-320	Treatment Unit Influent Flow Meter	Simulate flow from EW until flow rate is below outside system operating range and alarm trip points.	EW shutdown and low/high flow alarm on HMI.	EW shutdown? _____ Low and High flow Alarm obtained? _____				
TU E-STOP #1	Emergency Stop	Perform functional verification. Push E-stop button.	System shutdown occurs and autodialer callout.	Shutdown occur?_____ Autodialer callout?_____				
TU E-STOP #2	Emergency Stop	Perform functional verification. Push E-stop button.	System shutdown occurs and autodialer callout.	Shutdown occur?_____ Autodialer callout?_____				

Reviewer_____Date_____

C-765-A (Continued)

C-765-A Air Compressor	Air compressor tank	Drain condensate from air compressor receiver tank	No liquid remains in receiver tank	N/A			
C-765 Air Stripper Blower B-340	Air Stripper Blower	Lubricate bearings on blower.	None	N/A	N/A		

Reviewer_____Date_____

CP2-ER-0046-F25
NORTHEAST PLUME CONTAINMENT SYSTEM
THIRD QUARTER YEAR _____ (Year)
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
EW-234								
LT-270	EW Level Transmitter	Inspect desiccant pack. (Performed every quarter)	Desiccant pack acceptable for continued use per manufacturer's specification.					
C-765								
PI-7	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
PI-8	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765 (Continued)								
PI-9	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
PT-310	Pressure Transducer	Check Calibration	Test Point 1: 0 psig + 3 psi Test Point 2: 50 psig ± 3 psi Test Point 3: 100psig ±3 psi Test Point 4: 150psig ±3 psi Test Point 5: 190psig ±3 psi	Test 1 = _____psi Test 2 = _____psi Test 3 = _____psi Test 4 = _____psi Test 5 = _____psi				Read point found on treatment unit HMI M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
		Isolate pressure transducer from system and bleed pressure below system alarm trip point.	Obtain alarm on HMI	Alarm obtained? _____				System alarm trip point is found in the "System set-up" menu on the HMI.

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765 (Continued)								
PT-320	Pressure Transducer	Check Calibration	Test Point 1: 0 psig + 3 psi Test Point 2: 50 psig ± 3 psi Test Point 3: 100psig ±3 psi Test Point 4: 150psig ±3 psi Test Point 5: 190psig ±3 psi	Test 1 = _____psi Test 2 = _____psi Test 3 = _____psi Test 4 = _____psi Test 5 = _____psi				Read point found on treatment unit HMI M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
		Isolate pressure transducer from system and add pressure until system alarm trip point.	Obtain High Pressure alarm on HMI. PLC switches bag filter and indicates dirty filter on HMI.	Alarm obtained? _____ Bag filter switch? _____ Dirty filter indicated? _____				System alarm trip point is found in the "System set-up" menu on the HMI. Differential pressure control across bag filters will change during this task.
PT-330	Pressure Transducer	Check Calibration	Test Point 1: 0 psig + 3psi Test Point 2: 50 psig ± 3 psi Test Point 3: 100psig ±3 psi Test Point 4: 150psig ±3 psi Test Point 5: 190psig ±3 psi	Test 1 = _____psi Test 2 = _____psi Test 3 = _____psi Test 4 = _____psi Test 5 = _____psi				Read point found on treatment unit HMI M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765 (Continued)								
PT-360	Pressure Transducer	Check Calibration	Test Point 1: 0 psig + 3psi Test Point 2: 50 psig ± 3 psi Test Point 3: 100psig ±3 psi Test Point 4: 150psig ±3 psi Test Point 5: 190psig ±3 psi	Test 1 = _____psi Test 2 = _____psi Test 3 = _____psi Test 4 = _____psi Test 5 = _____psi				Read point found on treatment unit HMI M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PSH-340	Pressure Switch	Perform functional verification of switch by verifying switch activation against pressure gauge. Adjust setting as necessary.	Stop B-340 Blower at 30 inWC ±5 inWC and generates alarm on HMI .	Blower shutdown pressure? _____inWC Alarm obtained? _____				Maximum pressure applied to switch shall be less than 35 psig. M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

CP2-ER-0046-F25
NORTHEAST PLUME CONTAINMENT SYSTEM
THIRD QUARTER YEAR _____ (Year)
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
EW-235								
LT-270	EW Level Transmitter	Inspect desiccant pack. (Performed every quarter)	Desiccant pack acceptable for continued use per manufacturer's specification.					
C-765-A								
PI-7	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
PI-8	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765-A (Continued)								
PI-9	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
PT-310	Pressure Transducer	Check Calibration	Test Point 1: 0 psig + 3 psi Test Point 2: 50 psig ± 3 psi Test Point 3: 100psig ±3 psi Test Point 4: 150psig ±3 psi Test Point 5: 190psig ±3 psi	Test 1 = _____psi Test 2 = _____psi Test 3 = _____psi Test 4 = _____psi Test 5 = _____psi				Read point found on treatment unit HMI M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
		Isolate pressure transducer from system and bleed pressure below system alarm trip point.	Obtain alarm on HMI	Alarm obtained? _____				System alarm trip point is found in the "System set-up" menu on the HMI.

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765-A (Continued)								
PT-320	Pressure Transducer	Check Calibration	Test Point 1: 0 psig + 3 psi Test Point 2: 50 psig ± 3 psi Test Point 3: 100psig ±3 psi Test Point 4: 150psig ±3 psi Test Point 5: 190psig ±3 psi	Test 1 = _____psi Test 2 = _____psi Test 3 = _____psi Test 4 = _____psi Test 5 = _____psi				Read point found on treatment unit HMI M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
		Isolate pressure transducer from system and add pressure until system alarm trip point.	Obtain High Pressure alarm on HMI. PLC switches bag filter and indicates dirty filter on HMI.	Alarm obtained? _____ Bag filter switch? _____ Dirty filter indicated? _____				System alarm trip point is found in the "System set-up" menu on the HMI. Differential pressure control across bag filters will change during this task.
PT-330	Pressure Transducer	Check Calibration	Test Point 1: 0 psig + 3psi Test Point 2: 50 psig ± 3 psi Test Point 3: 100psig ±3 psi Test Point 4: 150psig ±3 psi Test Point 5: 190psig ±3 psi	Test 1 = _____psi Test 2 = _____psi Test 3 = _____psi Test 4 = _____psi Test 5 = _____psi				Read point found on treatment unit HMI M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765-A (Continued)								
PT-360	Pressure Transducer	Check Calibration	Test Point 1: 0 psig + 3psi Test Point 2: 50 psig ± 3 psi Test Point 3: 100psig ±3 psi Test Point 4: 150psig ±3 psi Test Point 5: 190psig ±3 psi	Test 1 = _____psi Test 2 = _____psi Test 3 = _____psi Test 4 = _____psi Test 5 = _____psi				Read point found on treatment unit HMI M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PSH-340	Pressure Switch	Perform functional verification of switch by verifying switch activation against pressure gauge. Adjust setting as necessary.	Stop B-340 Blower at 30 inWC ±5 inWC and generates alarm on HMI .	Blower shutdown pressure? _____inWC Alarm obtained? _____				Maximum pressure applied to switch shall be less than 35 psig. M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

Reviewer_____Date_____

CP2-ER-0046-F26
NORTHEAST PLUME CONTAINMENT SYSTEM
FOURTH QUARTER YEAR _____ (Year)
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
EW-234								
LT-270	EW Level Transmitter	Inspect desiccant pack. (Performed every quarter)	Desiccant pack acceptable for continued use per manufacturer's specification.					
C-765								
PI-10	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
PI-11	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765 (Continued)								
PI-12	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
PSLL-340	Pressure Switch	Perform functional verification of switch by verifying switch activation against pressure gauge. Adjust setting as necessary.	Stop B-340 Blower at 5 inWC ±2 inWC and generates alarm on HMI .	Blower shutdown pressure? _____inWC Alarm obtained? _____				Maximum pressure applied to switch shall be less than 45 inWC. M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
DPT-340	Differential Pressure Gauge	Check Calibration	Test Point 1: 0 inWC + 2 inWC Test Point 2: 15 inWC ± 2 inWC Test Point 3: 25 inWC ± 2 inWC Test Point 4: 35 inWC ± 2 inWC Test Point 5: 45 inWC ± 2 inWC	Test 1 = _____inWC Test 2 = _____inWC Test 3 = _____inWC Test 4 = _____inWC Test 5 = _____inWC				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765 (Continued)								
DPT-350	Differential Pressure Transmitter	Check Calibration	Test Point 1: 0 inWC + 0.5 inWC Test Point 2: 6 inWC ± 1 inWC Test Point 3: 12 inWC ± 1 inWC Test Point 4: 18 inWC ± 1 inWC Test Point 5: 24 inWC ± 1 inWC	**HMI** Test 1 = _____inWC Test 2 = _____inWC Test 3 = _____inWC Test 4 = _____inWC Test 5 = _____inWC **Local** Test 1 = _____inWC Test 2 = _____inWC Test 3 = _____inWC Test 4 = _____inWC Test 5 = _____inWC				Read point found on treatment unit HMI and field local instrument. Record both values during calibration check. M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
LIT-340	Level Indicator	Check Calibration	Test Point 1: 0 inWC + 1 inWC Test Point 2: 24 inWC ± 3 inWC Test Point 3: 48 inWC ± 3 inWC Test Point 4: 72 inWC ± 3 inWC Test Point 5: 96 inWC ± 3 inWC	Test 1 = _____inWC Test 2 = _____inWC Test 3 = _____inWC Test 4 = _____inWC Test 5 = _____inWC				Read point found on treatment unit HMI. M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765 (Continued)								
LSLL-340	Level Switch	Remove water in air stripper sump until LSLL-340 activates.	Shutdown P-340 and obtain alarm on HMI.	P-340 shutdown? _____ Alarm obtained? _____				
LSHH-340	Level Switch	Add water in air stripper sump until LSHH-340 activates.	Shuts down EW, obtain alarm on HMI, and receive autodialer callout.	EW shutdown? _____ Alarm obtained? _____ Autodialer callout? _____				
LSHH-310	Level Switch	Shutdown treatment unit sump pump and fill sump with water until LSHH-310 activates.	Shuts down EW, obtain alarm on HMI, and receive autodialer callout.	EW shutdown? _____ Alarm obtained? _____ Autodialer callout? _____				Alarm delay is programmed in the PLC. LSHH-310 will not instantaneously alarm.

CP2-ER-0046-F26
NORTHEAST PLUME CONTAINMENT SYSTEM
FOURTH QUARTER YEAR _____ (Year)
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
EW-235								
LT-270	EW Level Transmitter	Inspect desiccant pack. (Performed every quarter)	Desiccant pack acceptable for continued use per manufacturer's specification.					
C-765-A								
PI-10	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
PI-11	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765-A (Continued)								
PI-12	Pressure Gauge	Shutdown system, bleed pressure, and check for zero shift. Remove pressure gauge for testing if necessary. Perform only in odd year	Zero shift less than 5 psig.	Test = _____psig				
PSLL-340	Pressure Switch	Perform functional verification of switch by verifying switch activation against pressure gauge. Adjust setting as necessary.	Stop B-340 Blower at 5 inWC ±2 inWC and generates alarm on HMI .	Blower shutdown pressure? _____inWC Alarm obtained? _____				Maximum pressure applied to switch shall be less than 45 inWC. M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765-A (Continued)								
DPT-340	Differential Pressure Gauge	Check Calibration	Test Point 1: 0 inWC + 0.5 inWC Test Point 2: 6 inWC ± 1 inWC Test Point 3: 12 inWC ± 1 inWC Test Point 4: 18 inWC ± 1 inWC Test Point 5: 24 inWC ± 1 inWC	**HMI** Test 1 = _____inWC Test 2 = _____inWC Test 3 = _____inWC Test 4 = _____inWC Test 5 = _____inWC **Local** Test 1 = _____inWC Test 2 = _____inWC Test 3 = _____inWC Test 4 = _____inWC Test 5 = _____inWC				Read point found on treatment unit HMI and field local instrument. Record both values during calibration check. M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
LIT-340	Level Indicator	Check Calibration	Test Point 1: 0 inWC + 1 inWC Test Point 2: 24 inWC ± 3 inWC Test Point 3: 48 inWC ± 3 inWC Test Point 4: 72 inWC ± 3 inWC Test Point 5: 96 inWC ± 3 inWC	Test 1 = _____inWC Test 2 = _____inWC Test 3 = _____inWC Test 4 = _____inWC Test 5 = _____inWC				Read point found on treatment unit HMI. M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

CP2-ER-0046-F26
NORTHEAST PLUME CONTAINMENT SYSTEM
FOURTH QUARTER YEAR _____ (Year)
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
C-765-A (Continued)								
LSLL-340	Level Switch	Remove water in air stripper sump until LSLL-340 activates.	Shutdown P-340 and obtain alarm on HMI.	P-340 shutdown? _____ Alarm obtained? _____				
LSHH-340	Level Switch	Add water in air stripper sump until LSHH-340 activates.	Shuts down EW, obtain alarm on HMI, and receive autodialer callout.	EW shutdown? _____ Alarm obtained? _____ Autodialer callout? _____				
LSHH-310	Level Switch	Shutdown treatment unit sump pump and fill sump with water until LSHH-310 activates.	Shuts down EW, obtain alarm on HMI, and receive autodialer callout.	EW shutdown? _____ Alarm obtained? _____ Autodialer callout? _____				Alarm delay is programmed in the PLC. LSHH-310 will not instantaneously alarm.

Reviewer_____Date_____

CP2-ER-0046-F30
NORTHWEST PLUME GROUNDWATER SYSTEM
FIRST QUARTER EVEN YEAR _____
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
PRESSURE INDICATING GAUGES								
PI-J003	Pressure Gauge @ EW-230 Well Vault	Check calibration	Test 1 - Low point = 30 psi +/- 5 psi Test 2 - Oper. Point = 60 psi +/- 5 psi Test 3 - High point = 90 psi +/- 5 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-J004	Pressure Gauge @ EW-231 Well Vault	Check calibration	Test 1 - Low point = 30 psi +/- 5 psi Test 2 - Oper. Point = 60 psi +/- 5 psi Test 3 - High point = 90 psi +/- 5 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-J010	Pressure Gauge @ EW-233 Well Vault	Check calibration	Test 1 - Low point = 10 psi +/- 5 psi Test 2 - Oper. Point = 30 psi +/- 5 psi Test 3 - High point = 60 psi +/- 5 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-J011	Pressure Gauge @ EW-233 Well Vault	Check calibration	Test 1 - Low point = 10 psi +/- 5 psi Test 2 - Oper. Point = 30 psi +/- 5 psi Test 3 - High point = 60 psi +/- 5 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-J005	Pressure Indicator @ Equalization Pump	Check calibration	Test 1 - Low point = 30 psi +/- 5 psi Test 2 - Oper. Point = 60 psi +/- 5 psi Test 3 - High point = 90 psi +/- 5 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

Reviewer _____ Date _____

CP2-ER-0046-F30
NORTHWEST PLUME GROUNDWATER SYSTEM
FIRST QUARTER EVEN YEAR _____
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
PI-AJ301	Pressure Indicator @ Air Stripper Blower	Check calibration	Test 1 - Verify/adjust to 0 inH2O Test 2 - High point = 28 inH2O +/- 2 inH2O	Test 1 =____inH2O Test 2 =___ inH2O				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-J306	Pressure Gauge @ Air Stripper Pump	Check calibration	Test 1 - Low point = 30 psi +/- 4 psi Test 2 - Oper. Point = 60 psi +/- 4 psi Test 3 - High point = 90 psi +/- 4 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-GPG-001	Pressure Gauge @ Sand Filter Number 1	Check calibration	Test 1 - Low point = 20 psi +/- 3 psi Test 2 - Oper. Point = 40 psi +/- 3 psi Test 3 - High point = 60 psi +/- 3 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-GPG-002	Pressure Gauge @ Sand Filter Number 1	Check calibration	Test 1 - Low point = 20 psi +/- 3 psi Test 2 - Oper. Point = 40 psi +/- 3 psi Test 3 - High point = 60 psi +/- 3 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

Reviewer _____ Date _____

CP2-ER-0046-F30
NORTHWEST PLUME GROUNDWATER SYSTEM
FIRST QUARTER EVEN YEAR _____
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
PI-GPG-003	Pressure Gauge @ Sand Filter Number 2	Check calibration	Test 1 - Low point = 20 psi +/- 3 psi Test 2 - Oper. Point = 40 psi +/- 3 psi Test 3 - High point = 60 psi +/- 3 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-GPG-004	Pressure Gauge @ Sand Filter Number 2	Check calibration	Test 1 - Low point = 20 psi +/- 3 psi Test 2 - Oper. Point = 40 psi +/- 3 psi Test 3 - High point = 60 psi +/- 3 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-2	Influent Pressure Gauge @ Ion Exchange Vessel A	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-3	Effluent Pressure Gauge @ Ion Exchange Vessel A	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

Reviewer _____ Date _____

CP2-ER-0046-F30
NORTHWEST PLUME GROUNDWATER SYSTEM
FIRST QUARTER EVEN YEAR _____
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
PI-4	Influent Pressure Gauge @ Ion Exchange Vessel B	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-5	Effluent Pressure Gauge @ Ion Exchange Vessel B	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-6	Influent Pressure Gauge @ Ion Exchange Vessel C	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-7	Effluent Pressure Gauge @ Ion Exchange Vessel C	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-8	Influent Pressure Gauge @ Ion Exchange Vessel D	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

Reviewer _____ Date _____

CP2-ER-0046-F30
NORTHWEST PLUME GROUNDWATER SYSTEM
FIRST QUARTER EVEN YEAR _____
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
PI-9	Effluent Pressure Gauge @ Ion Exchange Vessel D	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PRESSURE DIFFERENTIAL GAUGES								
PDIS-E301	Pressure Differential Gauge @ Air Stripper	Perform 2-point calibration	Test 1 - Verify/adjust to 0 inH2O Test 2 - High point = 14 inH2O +/- 2 in H20	Test 1 =___in H2O Test 2 = ___in H2O				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
INTERLOCKS								
I-27	Interlock	Perform functional verification	Test 1 - Upon system shutdown, UV-050 and UV-110 close	Test 1 = Did UV-050 and UV-110 close upon system shutdown? _____				

Reviewer _____ Date _____

CP2-ER-0046-F30
NORTHWEST PLUME GROUNDWATER SYSTEM
FIRST QUARTER EVEN YEAR _____
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
ALARM CONDITIONS								
A-1	Alarm Condition 1	Perform functional verification	Test 1 - Equalization tank pump J-005 stops on system shutdown, alarm appears on PanelView, autodialer calls out	Test 1 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				
A-2	Alarm Condition 2	Perform functional verification	Test 1 - System shuts down when building sump level = 21 inches +/- 2 inches (high-high level switch); alarm appears on PanelView; autodialer calls out. Test 2 - System shuts down when trailer sump is full; alarm appears on PanelView; autodialer calls out.	Tests 1 and 2 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				
A-3	Alarm Condition 3	Perform functional verification	Test 1 - Leak alarm appears on PanelView when sensor is immersed in water; extraction wells shut down; autodialer calls out	Test 1 = Did alarm appear on PanelView when the LSH-008 sensor was immersed in water? _____ Did the autodialer call out? _____				

Reviewer _____ Date _____

CP2-ER-0046-F31
NORTHWEST PLUME GROUNDWATER SYSTEM
SECOND QUARTER EVEN YEAR _____
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
FLOW DEVICES								
FI-301	Flow Indicator @ Air Stripper	Calibrate flow meter	Test 1 - Oper. point = 0.29 inches H_2O +/- 0.02 inches H_2O	Test 1 =____in H_2O				
PRESSURE SAFETY DEVICES								
PSV-A6	Pressure Safety Valve @ Air Compressor Skid	Perform functional verification	Test 1 - Relief valve activates easily when pulled at the operating pressure	Verified at _____psi				
ALARM CONDITIONS								
A-1	Alarm Condition 1	Perform functional verification	Test 1 - Equalization tank pump J-005 stops on system shutdown, alarm appears on PanelView, autodialer calls out	Test 1 = Did alarm appear on Panel View? _____ Did the autodialer call out? _____				

Reviewer _____ Date _____

CP2-ER-0046-F31
NORTHWEST PLUME GROUNDWATER SYSTEM
SECOND QUARTER EVEN YEAR _____
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
A-2	Alarm Condition 2	Perform functional verification	Test 1 - System shuts down when sump level = 21 inches +/- 2 inches (high-high level switch); alarm appears on PanelView; autodialer calls out. Test 2 - System shuts down when trailer sump is full; alarm appears on PanelView; autodialer calls out	Tests 1 and 2 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				
A-3	Alarm Condition 3	Perform functional verification	Test 1 - Leak alarm appears on PanelView when sensor is immersed in water; extraction wells shut down; autodialer calls out	Test 1 = Did alarm appear on PanelView when the LSH-008 sensor was immersed in water? _____ Did the autodialer call out? _____				
A-4	Alarm Condition 4	Perform functional verification	Test 1 - When online analyzer detects effluent with >25 ppb TCE, alarm appears on PanelView; autodialer calls out	Test 1 = Did alarm appear on Panel View? _____ Did the autodialer call out when TCE > 25 ppb? _____				

Reviewer _____ Date _____

CP2-ER-0046-F32
NORTHWEST PLUME GROUNDWATER SYSTEM
THIRD QUARTER EVEN YEAR _____
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
PRESSURE SWITCHES								
PSL/PSH-J003	EW-230 Well Vault Pressure Switch High / Low	Perform functional verification	Test 1 - Low point = 35 psi +/- 5 psi; EW-230 shuts down; fault appears on PanelView Test 2 - High point = 75 psi +/- 5 psi; EW-230 shuts down; fault appears on PanelView	Test 1 =_____psi Test 2 = _____ psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PSL/PSH-J004	EW-231 Well Vault Pressure Switch High / Low	Perform functional verification	Test 1 - Low point = 30 psi +/- 5 psi; EW-231 shuts down; fault appears on PanelView Test 2 - High point = 75 psi +/- 5 psi; EW-231 shuts down; fault appears on PanelView	Test 1 =_____psi Test 2 = _____ psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PSL/PSH-J010	EW-232 Well Vault Pressure Switch High / Low	Perform functional verification	Test 1 - Low point = 10 psi +/- 5 psi; EW-232 shuts down; fault appears on PanelView Test 2 - High point = 60 psi +/- 5 psi; EW-232 shuts down; fault appears on PanelView	Test 1 =_____psi Test 2 = _____ psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PSL/PSH-J011	EW-233 Well Vault Pressure Switch High / Low	Perform functional verification	Test 1 - Low point = 10 psi +/- 5 psi; EW-233 shuts down; fault appears on PanelView Test 2 - High point = 60 psi +/- 5 psi; EW-233 shuts down; fault appears on PanelView	Test 1 =_____psi Test 2 = _____ psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

Reviewer _____ Date _____

CP2-ER-0046-F32
NORTHWEST PLUME GROUNDWATER SYSTEM
THIRD QUARTER EVEN YEAR _____
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
PSL/PSH-AJ301	Air Stripper Blower Pressure Switch High / Low	Perform functional verification	Test 1 - System shuts down when blower discharge pressure (low pressure) = 8 inches H2O +/- 1 inches H2O; alarm appears on PanelView Test 2 - System shuts down when blower discharge pressure (high pressure) = 36 inches H2O +/- 3 inches H2O; alarm appears on PanelView	Test 1 =____in H_2O Test 2 =____in H_2O				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PRESSURE INDICATING GAUGES								
PI-J008	Pressure Gauge @ Backwash/ Sluice Pump	Check calibration	Test 1 - Low point = 15 psi +/- 3 psi Test 2 - Oper. Point = 30 psi +/- 3 psi Test 3 - High point = 45 psi +/- 3 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-J009A	Pressure Gauge @ Resin Dewatering Pump	Check calibration	Test 1 - Low point = 15 psi +/- 3 psi Test 2 - Oper. Point = 30 psi +/- 3 psi Test 3 - High point = 45 psi +/- 3 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-G003	Pressure Gauge @ Filter Press	Replace gauge	N/A	N/A	N/A			

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
PI-J012C	Pressure Indicator @ Air Compressor Skid	Check calibration	Test 1 - Low point = 50 psi +/- 6 psi Test 2 - Oper. Point = 100 psi +/- 4 psi Test 3 - High point = 125 psi +/- 4 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

ALARM CONDITIONS

A-1	Alarm Condition 1	Perform functional verification	Test 1 - Equalization tank pump J-005 stops on system shutdown, alarm appears on PanelView, autodialer calls out	Test 1 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				
A-2	Alarm Condition 2	Perform functional verification	Test 1 - System shuts down when sump level = 21 inches +/- 2 inches (high-high level switch); alarm appears on PanelView; autodialer calls out. Test 2 - System shuts down when tailer sump is full; alarm appears on PanelView: autodialer calls out	Tests 1 and 2 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL	DATE	OPERATOR	COMMENTS
A-3	Alarm Condition 3	Perform functional verification	Test 1 - Leak alarm appears on PanelView when sensor is immersed in water; extraction wells shut down; autodialer calls out	Test 1 = Did alarm appear on PanelView when the LSH-008 sensor was immersed in water? _____ Did the autodialer call out? _____				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
LEVEL DEVICES								
LE-F001	Level Probe @ Equalization Tank	Perform calibration	Test 1 - Low point = 5% +/- 1% Test 2 - High point = 90% +/- 1%	Test 1 =_____% Test 2 = _____%				
LE-E301	Level Probe @ Air Stripper	Perform calibration	Test 1 - Low point = 0% +/- 1% Test 2 - High point = 100% +/- 1%	Test 1 =_____% Test 2 = _____%				
LSH/LSL-E301	Level Switch High/Low @ Air Stripper	Perform functional verification	Test 1 - Alarm appears on PanelView when sump level = 95% +/- 5% Test 2 - Alarm appears on PanelView when sump level = 5% +/- 1%	Test 1 =_____% Test 2 = _____%				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
LSL/LSH-J016	Level Switch Low / High @ Treatment System Sump	Perform functional verification	Test 1 - Sump pump J-016 starts on sump level = 16 inches +/- 2 inches (low level switch) Test 2 - Sump pump J-016 stops on sump level = 5 inches +/- 2 inches (high level switch)	Test 1 =____inches Test 2 =____inches				
LSL/LSH/LSHH-F001	Level Switch Low / High-High @ Equalization Tank	Perform functional verification	Test 1a - Low point = 5% +/- 1% and equalization pump J-005 shuts down Test 1b - Equalization pump J-005 restarts when tank raises to 50% +/- 5% Test 2a - At 80% level in EQ tank, alarm on panel view Test 2b - At 80% level in EQ tank, alarm on panel view, all enabled pumps are turned off and all enabled wells restart at 75% Test 2c - High-high switch activates at 98% +/- 2%; alarm appears on PanelView, and equalization pump J-005 shuts down	Test 1a =_____% Test 1b =_____% Test 2a =_____% Test 2b =_____% Test 2c =_____%				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
LSLL/ LSH/ LSL/ LSHH-F002	Level Switch Low-Low / High / Low / High-High @ Backwash / Sluice Tank	Perform functional verification	Test 1 - Backwash pump J-008 stops when the backwash tank level reaches 5% +/- 2% (low-low switch) Test 2a - UV-50 opens and UV-110 closes when the backwash tank reaches 90% +/- 2% (high switch) Test 2b - UV-050 closes and UV-110 opens when the backwash tank reaches 80% +/- 2% (low switch) Test 3 - System shutdown occurs when the backwash tank reaches 98% +/- 2% (high-high switch); alarm appears on PanelView	Test 1 =_____% Test 2a = _____% Test 2b = _____% Test 3 = _____%				
LSL/LSH/ LSHH-F008	Level Switch Low / High / High-High @ Settling Tank	Perform functional verification	Test 1 - Stop backwash pump J-008 on settling tank level = 95% +/- 2% (high-high level switch)	Test 1 =_____%				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
INTERLOCKS								
I-10	Interlock	Perform functional verification	Test 1 - Equalization tank pump J-005 stops on system shutdown, alarm appears on PanelView, autodialer calls out	Test 1 = Did pump stop when system was shut down? _____ Did autodialer call out? _____				
ALARM CONDITIONS								
A-1	Alarm Condition 1	Perform functional verification	Test 1 - Equalization tank pump J-005 stops on system shutdown, alarm appears on PanelView, autodialer calls out	Test 1 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				
A-2	Alarm Condition 2	Perform functional verification	Test 1 - System shuts down when sump level = 21 inches +/- 2 inches (high-high level switch); alarm appears on PanelView; autodialer calls out. Test 2 - System shuts down when trailer sump is full; alarm appears on PanelView; autodialer calls out	Tests 1 and 2 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
A-3	Alarm Condition 3	Perform functional verification	Test 1 - Leak alarm appears on PanelView when sensor is immersed in water; extraction wells shut down; autodialer calls out	Test 1 = Did alarm appear on PanelView when the LSH-008 sensor was immersed in water? _____ Did the autodialer call out? _____				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
PRESSURE INDICATING GAUGES								
PI-J003	Pressure Gauge @ EW-230 Well Vault	Check calibration	Test 1 - Low point = 30 psi +/- 5 psi Test 2 - Oper. Point = 60 psi +/- 5 psi Test 3 - High point = 90 psi +/- 5 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-J004	Pressure Gauge @ EW-231 Well Vault	Check calibration	Test 1 - Low point = 30 psi +/- 5 psi Test 2 - Oper. Point = 60 psi +/- 5 psi Test 3 - High point = 90 psi +/- 5 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-J010	Pressure Gauge @ EW-232 Well Vault	Check calibration	Test 1 - Low point = 10 psi +/- 5 psi Test 2 - Oper. Point = 30 psi +/- 5 psi Test 3 - High point = 60 psi +/- 5 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-J011	Pressure Gauge @ EW-233 Well Vault	Check calibration	Test 1 - Low point = 10 psi +/- 5 psi Test 2 - Oper. Point = 30 psi +/- 5 psi Test 3 - High point = 60 psi +/- 5 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-J005	Pressure Indicator @ Equalization Pump	Check calibration	Test 1 - Low point = 30 psi +/- 5 psi Test 2 - Oper. Point = 60 psi +/- 5 psi Test 3 - High point = 90 psi +/- 5 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
PI-AJ301	Pressure Indicator @ Air Stripper Blower	Check calibration	Test 1 - Verify/adjust to 0 inH2O Test 2 - High point = 28 inH2O +/- 2 inH2O	Test 1 =____inH2O Test 2 =___ inH2O				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-J306	Pressure Gauge @ Air Stripper Pump	Check calibration	Test 1 - Low point = 30 psi +/- 5 psi Test 2 - Oper. Point = 60 psi +/- 5 psi Test 3 - High point = 90 psi +/- 5 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-GPG-001	Pressure Gauge @ Sand Filter Number 1	Check calibration	Test 1 - Low point = 20 psi +/- 3 psi Test 2 - Oper. Point = 40 psi +/- 3 psi Test 3 - High point = 60 psi +/- 3 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-GPG-002	Pressure Gauge @ Sand Filter Number 1	Check calibration	Test 1 - Low point = 20 psi +/- 3 psi Test 2 - Oper. Point = 40 psi +/- 3 psi Test 3 - High point = 60 psi +/- 3 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
PI-GPG-003	Pressure Gauge @ Sand Filter Number 1	Check calibration	Test 1 - Low point = 20 psi +/- 3 psi Test 2 - Oper. Point = 40 psi +/- 3 psi Test 3 - High point = 60 psi +/- 3 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-GPG-004	Pressure Gauge @ Sand Filter Number 1	Check calibration	Test 1 - Low point = 20 psi +/- 3 psi Test 2 - Oper. Point = 40 psi +/- 3 psi Test 3 - High point = 60 psi +/- 3 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-2	Influent Pressure Gauge @ Ion Exchange Vessel A	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-3	Effluent Pressure Gauge @ Ion Exchange Vessel A	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
PI-4	Influent Pressure Gauge @ Ion Exchange Vessel B	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-5	Effluent Pressure Gauge @ Ion Exchange Vessel B	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-6	Influent Pressure Gauge @ Ion Exchange Vessel C	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-7	Effluent Pressure Gauge @ Ion Exchange Vessel C	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
PI-8	Influent Pressure Gauge @ Ion Exchange Vessel D	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PI-9	Effluent Pressure Gauge @ Ion Exchange Vessel D	Check calibration	Test 1 - Low point = 20 psi +/- 2 psi Test 2 - Oper. Point = 50 psi +/- 2 psi Test 3 - High point = 80 psi +/- 2 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PRESSURE DIFFERENTIAL GAUGES								
PDIS-E301	Pressure Differential Gauge @ Air Stripper	Perform 2-point calibration	Test 1 - Verify/adjust to 0 inH2O Test 2 - High point = 14 inH2O +/- 2 in H20	Test 1 =_____psi Test 2 = _____ psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
INTERLOCKS								
I-11	Interlock	Perform functional verification	Test 1 - Air stripper blower AJ-001 shuts down after 60 seconds +/- 10 seconds after the air stripper pump J-006 stops	Test 1 = _____ sec				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
ALARM CONDITIONS								
A-1	Alarm Condition 1	Perform functional verification	Test 1 - Equalization tank pump J-005 stops on system shutdown, alarm appears on PanelView, autodialer calls out	Test 1 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				
A-2	Alarm Condition 2	Perform functional verification	Test 1 - System shuts down when sump level = 21 inches +/- 2 inches (high-high level switch); alarm appears on PanelView; autodialer calls out. Test 2 - System shuts down when trailer sump is full; alarm appears on PanelView; autodialer calls out.	Tests 1 and 2 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				
A-3	Alarm Condition 3	Perform functional verification	Test 1 - Leak alarm appears on PanelView when sensor is immersed in water; extraction wells shut down; autodialer calls out	Test 1 = Did alarm appear on PanelView when the LSH-008 sensor was immersed in water? _____ Did the autodialer call out? _____				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
PRESSURE SAFETY DEVICES								
PSV-A6	Pressure Safety Valve @ Air Compressor Skid	Perform functional verification	Test 1 - Relief valve activates easily when pulled at the operating pressure	Verified at _____psi				
INTERLOCKS								
I-16	Interlock	Perform functional verification	Test 1 - Air stripper heater AC-001 and air stripper blower AJ-001 shut down 60 seconds +/- 6 seconds after the air stripper pump J-006 shuts down. Verify air stripper heater shuts off with the air stripper blower.	Test 1 = _____ sec				
ALARM CONDITIONS								
A-1	Alarm Condition 1	Perform functional verification	Test 1 - Equalization tank pump J-005 stops on system shutdown, alarm appears on PanelView, autodialer calls out	Test 1 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
A-2	Alarm Condition 2	Perform functional verification	Test 1 - System shuts down when sump level = 21 inches +/- 2 inches (high-high level switch); alarm appears on PanelView; autodialer calls out. Test 2 - System shuts down when trailer sump is full; alarm appears on PanelView; autodialer calls out	Tests 1 and 2 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				
A-3	Alarm Condition 3	Perform functional verification	Test 1 - Leak alarm appears on PanelView when sensor is immersed in water; extraction wells shut down; autodialer calls out	Test 1 = Did alarm appear on PanelView when the LSH-008 sensor was immersed in water? _____ Did the autodialer call out? _____				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
PRESSURE SWITCHES								
PSL/PSH-J010	EW-232 Well Vault Pressure Switch High / Low	Perform functional verification	Test 1 - Low point = 10 psi +/- 5 psi; EW-232 shuts down; fault appears on PanelView Test 2 - High point = 60 psi +/- 5 psi; EW-232 shuts down; fault appears on PanelView	Test 1 =_____psi Test 2 = _____ psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PSL/PSH-J011	EW-233 Well Vault Pressure Switch High / Low	Perform functional verification	Test 1 - Low point = 10 psi +/- 5 psi; EW-233 shuts down; fault appears on PanelView Test 2 - High point = 60 psi +/- 5 psi; EW-233 shuts down; fault appears on PanelView	Test 1 =_____psi Test 2 = _____ psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PSL/PSH-AJ301	Air Stripper Blower Pressure Switch High / Low	Perform functional verification	Test 1 - System shuts down when blower discharge pressure (low pressure) = 8 inH2O +/- 1 inH2O; alarm appears on PanelView Test 2 - System shuts down when blower discharge pressure (high pressure) = 36 inH2O +/- 3 inH2O; alarm appears on PanelView	Test 1 =____in H_2O Test 2 =____in H_2O				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
PRESSURE INDICATING GAUGES								
PI-J008	Pressure Gauge @ Backwash/ Sluice Pump	Check calibration	Test 1 - Low point = 15 psi +/- 3 psi Test 2 - Oper. Point = 30 psi +/- 3 psi Test 3 - High point = 45 psi +/- 3 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
PI-G003	Pressure Gauge @ Filter Press	Replace gauge	N/A	N/A	N/A			
PI-J012C	Pressure Indicator @ Air Compressor Skid	Check calibration	Test 1 - Low point = 50 psi +/- 6 psi Test 2 - Oper. Point = 100 psi +/- 4 psi Test 3 - High point = 125 psi +/- 4 psi	Test 1 =_____psi Test 2 = _____ psi Test 3 =_____psi				M&TE #: Manufacturer: Serial Number: Cal Due Date: Facility:
INTERLOCKS								
I-17	Interlock	Perform functional verification	Test 1 - Upon system shutdown, the air stripper pump J-006 shuts down when the air stripper sump level reaches 10% +/- 2%	Test 1 = Did the J-006 shut down after system shutdown? _____				
I-50	Interlock	Perform functional verification	Test 1 - Upon operation of equalization tank pump J-005, the air stripper blower AJ-001 and air stripper heater AC-001 start running	Test 1 = Did AJ-001 and AC-001 start running when J-005 was operating? _____				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
ALARM CONDITIONS								
A-1	Alarm Condition 1	Perform functional verification	Test 1 - Equalization tank pump J-005 stops on system shutdown, alarm appears on PanelView, autodialer calls out	Test 1 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				
A-2	Alarm Condition 2	Perform functional verification	Test 1 - System shuts down when sump level = 21 inches +/- 2 inches (high-high level switch); alarm appears on PanelView; autodialer calls out. Test 2 - System shuts down when trailer sump is full; alarm appears on Panel View; autodialer calls out	Tests 1 and 2 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				
A-3	Alarm Condition 3	Perform functional verification	Test 1 - Leak alarm appears on PanelView when sensor is immersed in water; extraction wells shut down; autodialer calls out	Test 1 = Did alarm appear on PanelView when the LSH-008 sensor was immersed in water? _____ Did the autodialer call out? _____				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
LEAK DETECTION								
LSH-008	Leak Detector Sensor/ Switch @ Manhole L-008	Perform functional verification	Test 1 - Leak alarm appears on PanelView when sensor is immersed in water; north and south extraction wells shut down; autodialer calls out	Test 1 = Did alarm appear on PanelView when sensor was immersed in water? _____ Did autodialer call out? _____				
LSH-009	Leak Detector Sensor/ Switch @ Manhole L-009	Perform functional verification	Test 1 - Leak alarm appears on PanelView when sensor is immersed in water; south extraction wells shut down; autodialer calls out	Test 1 = Did alarm appear on PanelView when sensor was immersed in water? _____ Did autodialer call out? _____				
LSH-010	Leak Detector Sensor/ Switch @ Manhole L-010	Perform functional verification	Test 1 - Leak alarm appears on PanelView when sensor is immersed in water; south extraction wells shut down; autodialer calls out	Test 1 = Did alarm appear on PanelView when sensor was immersed in water? _____ Did autodialer call out? _____				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
LSH-011	Leak Detector Sensor/ Switch @ Manhole L-011	Perform functional verification	Test 1 - Leak alarm appears on PanelView when sensor is immersed in water; south extraction wells shut down; autodialer calls out	Test 1 = Did alarm appear on PanelView when sensor was immersed in water? _____ Did autodialer call out? _____				
LSH-012	Leak Detector Sensor/ Switch @ Manhole L-012	Perform functional verification	Test 1 - Leak alarm appears on PanelView when sensor is immersed in water; south extraction wells shut down; autodialer calls out	Test 1 = Did alarm appear on PanelView when sensor was immersed in water? _____ Did autodialer call out? _____				

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P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
LEVEL DEVICES								
LSH/LSL-E301	Level Switch High/Low @ Air Stripper	Perform functional verification	Test 1 - Alarm appears on PanelView when sump level = 95% +/- 5% Test 2 - Alarm appears on PanelView when sump level = 5% +/- 1%	Test 1 =_____% Test 2 = _____%				
LSL/LSH-J016	Level Switch Low / High @ Treatment System Sump	Perform functional verification	Test 1 - Sump pump J-016 starts on sump level = 16 inches +/- 2 inches (low level switch) Test 2 - Sump pump J-016 stops on sump level = 5 inches +/- 2 inches (high level switch)	Test 1 =____inches Test 2 =____inches				
LSL/LSH/LSHH-F001	Level Switch Low / High-High @ Equalization Tank	Perform functional verification	Test 1a - Low point = 5% +/- 1% and equalization pump J-005 shuts down Test 1b - Equalization pump J-005 restarts when tank raises to 50% +/- 5% Test 2a - At 80% level in EQ tank, alarm on panel view Test 2b - At 80% level in EQ tank, alarm on panel view, all enabled pumps are turned off and all enabled wells restart at 75% Test 2c - High-high switch activates at 98% +/- 2%; alarm appears on PanelView, and equalization pump J-005 shuts down	Test 1a =_____% Test 1b =_____% Test 2a =_____% Test 2b =_____% Test 2c =_____%				

Reviewer _____ Date _____

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NORTHWEST PLUME GROUNDWATER SYSTEM
FOURTH QUARTER ODD YEAR _____
QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
LSLL/LSH/LSL/LSHH-F002	Level Switch Low-Low / High / Low / High-High @ Backwash / Sluice Tank	Perform functional verification	Test 1 - Backwash pump J-008 stops when the backwash tank level reaches 5% +/- 2% (low-low switch) Test 2a - UV-50 opens and UV-110 closes when the backwash tank reaches 90% +/- 2% (high switch) Test 2b - UV-050 closes and UV-110 opens when the backwash tank reaches 80% +/- 2% (low switch) Test 3 - System shutdown occurs when the backwash tank reaches 98% +/- 2% (high-high switch); alarm appears on PanelView	Test 1 =_____% Test 2a = _____% Test 2b = _____% Test 3 = _____%				
LSL/LSH/LSHH-F008	Level Switch Low / High / High-High @ Settling Tank	Perform functional verification	Test 1 - Backwash pump J-008 stops when settling tank level = 95% +/- 2% (high-high level switch)	Test 1 =_____%				
INTERLOCKS								
I-20	Interlock	Perform functional verification	Test 1 - During the course of a system shutdown, the air stripper pump J-006 shuts down when the air stripper sump level reaches 10% +/- 2%.	Test 1 = _____%				

Reviewer _____ Date _____

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QUARTERLY CALIBRATION AND TESTING TASKS

P&ID	ITEM	TASK	PASS/FAIL CRITERIA	READINGS	PASS/FAIL (YES OR NO)	DATE	OPERATOR	COMMENTS
ALARM CONDITIONS								
A-1	Alarm Condition 1	Perform functional verification	Test 1 - Equalization tank pump J-005 stops on system shutdown, alarm appears on PanelView, autodialer calls out	Test 1 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				
A-2	Alarm Condition 2	Perform functional verification	Test 1 - System shuts down when sump level = 21 inches +/- 2 inches (high-high level switch); alarm appears on PanelView; autodialer calls out. Test 2 - System shuts down when trailer sump is full; alarm appears on PanelView; autodialers calls out	Tests 1 and 2 = Did alarm appear on PanelView? _____ Did the autodialer call out? _____				
A-3	Alarm Condition 3	Perform functional verification	Test 1 - Leak alarm appears on PanelView when sensor is immersed in water; extraction wells shut down; autodialer calls out	Test 1 = Did alarm appear on PanelView when the LSH-008 sensor was immersed in water? _____ Did the autodialer call out? _____				

Reviewer _____ Date _____