

VERIF. DATE: _____

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LEVEL OF USE: <input type="checkbox"/> Information Level <input checked="" type="checkbox"/> Reference Level <input type="checkbox"/> Continuous Use		
FUNCTIONAL AREA: Environmental Remediation SUBJECT MATTER AREA: Northwest and Northeast Plume Pump and Treat Operations	SUBJECT MATTER EXPERT: Fraser Johnstone – Regulatory Support Scientist	
NUCLEAR SAFETY REVIEW DOCUMENTATION: N/A per CP3-NS-2001, Step 6.1.5	APPROVED BY/DATE (Signature on file): Joe Tarantino – Environmental Remediation Manager 9/13/2021	
REQUIRED REVIEW DATE: 9/13/2024	EFFECTIVE DATE: 9/13/2021	

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	All	12/14/17
FR2	Added Use Reference and new steps 6.2.2 through 6.2.4	3 & 4	8/29/19
FR2A	Periodic Review has been completed with no changes identified in procedure technical content. Nonintent change to correct SMA, SME, approver and dates has been incorporated per CP3-NS-2001. Date for review cycle has been reset.	All	9/13/2021

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure defines the required equipment and action steps necessary to conduct daily routine operational data collection and maintenance for the Northwest Plume Groundwater System (NWPGS) and Northeast Plume Groundwater Containment Systems (NEPCS). These systems are collectively called the Northwest Northeast Plumes (WNNEP).

1.2 Scope

This procedure applies to all activities associated with daily routine operational data collection for the WNNEP.

2.0 REFERENCES

2.1 Use References

- CP2-ER-0012, *Waste Management Plan for the Paducah Plume Operations Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
- CP3-SM-1101, *Work Package Development*
- CP4-ER-0014, *Normal NW Plume Groundwater Shutdown and Restart*
- Job Hazard Analysis (JHA)-10844, *NW/NE Plumes Water Treatment*

2.2 Source References

- CP2-ER-0067, *Health and Safety Plan for the Paducah Plumes Operations, Paducah, Kentucky*
- DOE/OR/07 1253, *Operations and Maintenance Plan for the Northwest Plume Groundwater System Interim Remedial Action Plan at PGDP Paducah, Kentucky*
- DOE/OR/07 1535, *Operations and Maintenance Plan for the Northeast Plume Groundwater System Interim Remedial Action Plan at PGDP Paducah, Kentucky*

3.0 COMMITMENTS

None

4.0 PRECAUTIONS AND LIMITATIONS

4.1 Precautions

None

4.2 Limitations

None

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5.0 PREREQUISITES

- 5.1 Prior to performing any action steps identified in this procedure for the first time, review this document based upon its level of use in accordance with CP3-OP-0207, *Use of Procedures*.
- 5.2 Prior to daily use, verify that the procedure is current.
- 5.3 Prior to performing any action steps identified in this procedure, complete any required applicable training as per their Training Position Description (TPD).
- 5.4 Prior to using this procedure as a work control document, follow the requirements as defined in CP3-SM-1101, *Activity Level Work Request, Planning, Scheduling and Release*, for the activities being performed.
- 5.5 All forms completed in the performance of this procedure shall be completed in compliance with CP3-OP-0024, *Forms Control*.
- 5.6 Obtain the approval of the NE/NW Pump and Treat Project Manager before executing this procedure.

6.0 INSTRUCTIONS

6.1 Preparation Activities

Technician

- 6.1.1 Don personal protective clothing as specified in the CP2-ER-0067, *Health and Safety Plan for the Paducah Plumes Operations, Paducah, Kentucky* and JHA-10844.
- 6.1.2 Check communications equipment to make sure it is functional.

6.2 Daily Operational Data Collection and Maintenance

NOTE:

Activities required by the data collection and maintenance sheets do **NOT** have to be completed in a specific order.

NOTE:

The inspection and maintenance frequency during bypass of the sand filters is presented in Appendix B, *Increase in Operational Inspections and Maintenance During Sand Filter Bypass*. Additional data collected during bypass of the sand filters will be documented in the “Comments” section of form CP4-ER-0017-F02, *Daily NWNPE Operational Data Collection And Maintenance Form*.

Technician

- 6.2.1 Note significant daily events and observations in the “Comments” section of the data collection sheets.
- 6.2.2 **If** leaks or other minor abnormalities are observed, **then** shut down the system as required according to CP4-ER-0014, *Normal NW Plume Groundwater Shutdown and Restart*.

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- 6.2.3 Manually or using hand/power tools make repairs necessary to correct the minor leaks or abnormalities.
- 6.2.4 Restart the system according to CP4-ER-0014 as required.
- 6.2.5 Complete form CP4-ER-0017-F02, Daily Northwest/Northeast Plumes (NWNEP) Operational Data Collection and Maintenance Form.
- 6.2.6 Complete form CP4-ER-0017-F03, *NWNEP Winterization Checklist*, during the month of October (each year) **and** place in appropriate file.
- 6.2.7 Document all cases where data is outside of normal operating ranges in the “Readings/Comments” block on each form and circle this information in red.
- 6.2.8 Sign the bottom of each page of the data collection forms.

7.0 ACCEPTANCE CRITERIA

None

8.0 POST PERFORMANCE WORK ACTIVITIES

Technician

- 8.1.1 Give all completed data collection sheets to the Northeast/Northwest (NE/NW) Pump and Treat Project Manager.
- 8.1.2 Verbally alert the NE/NW Pump and Treat Project Manager of unusual observations or notes.
- 8.1.3 Verbally alert the NE/NW Pump and Treat Project Manager of all data collected, which is outside normal operating ranges.

9.0 RECORDS

9.1 Records Generated

The following records may be generated by this procedure:

- CP4-ER-0017-F02, *Daily Northwest Northeast Plume Operational Data Collection And Maintenance Form*
- CP4-ER-0017-F03, *Northwest Northeast Plume Winterization Checklist*

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, *Records Management Process*.

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Appendix A – Acronyms/Definitions

ACRONYMS

GWOU – Groundwater Operable Unit

NE/NW – Northeast/Northwest

NEPCS – Northeast Plume Groundwater Containment Systems

NWNEP – Northwest Northeast Plumes

NWPGS – Northwest Plume Groundwater System

TPD – Training Position Description

DEFINITIONS

Technician - The person performing the technical aspects of this procedure. The person performing this work could have job functions including but not limited to the Frontline Supervisor or the Operator/Maintenance Mechanic.

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Appendix B – Increase in Operational Inspections and Maintenance During Sand Filter Bypass

- i. The following table outlines the inspection and maintenance frequency during temporary bypass of the sand filters. Data collected during bypass of the sand filters will be documented on the “comments” line of form CP4-ER-0017-F02, *Daily NWNPE Operational Data Collection and Maintenance Form*.

Inspection or Maintenance Activity	Normal Frequency	Bypass Procedure Frequency
Read Differential Pressure on Ion Exchange Columns	Daily	Twice Daily for first week then back to normal frequency
Read Pump Discharge Pressure (PI-J306) and Tower Differential Pressure (PDIS-E301) on the Air Stripper	Daily	Twice Daily for first week then back to normal frequency
Visually Inspect Air Stripper Trays	Quarterly	Weekly for 1 month, Monthly for 2 months, then back to normal

- ii. A schedule for inspection and maintenance activities will be generated based on the start date of the bypass operation. Specific days for inspection and maintenance activities may be altered to accommodate weekends and holidays.

CP4-ER-0017-F02
Daily NWNPEP Operational Data Collection and Maintenance Form

Date: _____ Outside Temperature (°F): _____ Weather: _____ Barometric Pressure (inches Hg): _____

Notes: _____

Downtime: NWPGS _____ NEPCS _____

NORTHWEST PLUME GROUNDWATER SYSTEM

Part 1. Groundwater Extraction Wells

Extraction Well	Discharge Pressure			Flow Rate				Depth to Groundwater (ft)
	Gauge	Ranges (psig)	Reading (psig)	Flow Meter	Ranges (gpm)	Flow Rate (gpm)	Totalizer Reading (gal)	
EW-230 (stand by)	PI-J003	30-65	n/a	FQI-J003	50-75	n/a	n/a	n/a
EW-231 (stand by)	PI-J004	50-90	n/a	FQI-J004	45-65	n/a	n/a	n/a
EW-232	PI-J010	10-60		FQI-J010	90-210			
EW-233	PI-J011	10-60		FQI-J011	90-210			

Part 2. Equalization Tank

Indicator	Ranges	Units	Reading/Comments
PI-J005	60 - 80	psig	

Part 3. Sand Filters

Indicator	Ranges	Units	Readings/Comments
GPG001	0 - 10	psig	
GPG002			
GPG003	0 - 10	psig	
GPG004			

Part 4. Air Stripping System

Indicator	Ranges	Units	Readings/Comments
PI-J306	35-85	psig	
PI-AJ301	15 - 30	in. water	
PDIS-E301	17 - 25	psig	
FI-301	.10 - .45	in. water	

Signatures: Technician: _____ Date: _____ Reviewer: _____ Date: _____

CP4-ER-0017-F02
Daily NWNPEP Operational Data Collection and Maintenance Form

Part 5. Ion Exchange System

	Indicator	Ranges	Units	Status	Reading/Comments
Ion Exchange System Vessel A Differential Pressure	PI 2	0-10	psi	LEAD LAG DOWN	
	PI 3				
Ion Exchange System Vessel B Differential Pressure	PI 4	0-10	psi	LEAD LAG DOWN	
	PI 5				
Ion Exchange System Vessel C Differential Pressure	PI 6	0-10	psi	LEAD LAG DOWN	
	PI 7				
Ion Exchange System Vessel D Differential Pressure	PI 8	0-10	psi	LEAD LAG DOWN	
	PI 9				

Part 6. Treated Water Discharge System

	Indicator	Ranges	Units	Readings/Comments
Maximum Online Analysis since last data collection	L-005	0-10	ppb	

Part 7. Compressed Air

	Indicator	Ranges	Units	Readings/Comments
Compressed Air Supply Pressure	PI-J012C	110-130	psig	

Part 8. C-612

	Indicator	Ranges	Units	Readings/Comments
Check freezer temperature	N/A	≤ -10	°C	

Part 9. C-612

Performed Calibration/Testing: Yes _____ No _____	Performed Maintenance: Yes _____ No _____
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Comments

Signatures: Technician: _____ Date: _____ Reviewer: _____ Date: _____

CP4-ER-0017-F02
Daily NWNPEP Operational Data Collection and Maintenance Form
NORTHEAST PLUME CONTAINMENT SYSTEM

Part 1. Groundwater Extraction Wells

Extraction Well	Discharge Pressure		Flow Rate			Time	LT-270 Depth to Groundwater (ft)
	Gauge	Range (psig)	Reading (psig)	Flow Meter	Range (gpm)		
EW-234	PI-290	1 - 50		FIT-234	90 - 210		
EW-235	PI-290	1 - 50		FIT-235	65 - 160		

Part 2. Treatment Trailers, Outfall, and Manhole

	Indicator	Range	Units	Readings/Comments	
TU Influent Line Status	PLC / PT-320	1-91	psig	C-765	C-765-A
Pressure Differential Across Bag Filters	PLC / PT-320 PLC / PT-330	0-15	psig	C-765	C-765-A
Bag Filter Skid #1 Status	PLC	N/A	N/A	Open Clean	Open Clean Closed Dirty
Bag Filter Skid #2 Status	PLC	N/A	N/A	Open Clean	Open Clean Closed Dirty
Air Stripper Differential Pressure	PLC / DPT 340	0-25	inches WC	C-765 N/A	C-765-A
Blower Operating Pressure	PLC / DPT 350	0-25	inches WC	C-765	C-765-A N/A
Adjusted Air Stripper Sump Level	PLC	0-20	inches WC	C-765	C-765-A

Signatures: Technician: _____ Date: _____ Reviewer: _____ Date: _____

CP4-ER-0017-F02
Daily NWNPEP Operational Data Collection and Maintenance Form

Part 2. Treatment Trailers, Outfall, and Manhole

Indicator	Range	Units	Readings/Comments
Air Stripper Sump Level	0-50	inches WC	C-765 C-765-A
Air Compressor Status	50-90	psig	C-765 C-765-A
TU Effluent Line Pressure Status	1-30	psig	C-765 C-765-A
TU Inflow Line Flow Status	90 – 210 (C-765) 65 – 160 (C-765-A)	gpm	C-765 C-765-A
TU Effluent Line Flow Status	0-400	gpm	C-765 C-765-A
Flow Total: Yesterday	N/A	Gallons	C-765 C-765-A
Flow Total: Total	N/A	Gallons	C-765 C-765-A

Performed Calibration/Testing: Yes _____ No _____ Performed Maintenance: Yes _____ No _____

Comments

Signatures: Technician: _____ Date: _____ Reviewer: _____ Date: _____

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**CP4-ER-0017-F03
NWNPEP WINTERIZATION CHECKLIST**

	SAT	UNSAT	IF UNSAT WO #
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C-612 – Northwest Plume Groundwater System

- | | | | |
|--|--------------------------|--------------------------|-------|
| <p>1. Ensure that heat tracing is turned on for the piping between the ion exchange trailer and the C-612 Facility by checking power panel inside trailer. Ensure that heat tracing is turned on at extraction wells EW-230, EW-231, EW-232, and EW-233 by checking inside each local control panel.</p> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| <p>Note: Thermostats may need to be adjusted to check operation of the heaters.</p> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| <p>2. Ensure that heaters inside the treatment facility and the ion exchange trailer are working properly and power switches are in the ON position.</p> | | | |
| <p>3. Ensure that louvers for the ventilation fans are closed.</p> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| <p>4. Ensure that the underpinning below the change-out trailer (C-612-T-03) is in place.</p> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |

C-614 – Northeast Plume Containment System

- | | | | |
|--|--------------------------|--------------------------|-------|
| <p>1. Ensure the heat tracing is turned on in the main power panel located on the equipment pad.</p> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| <p>2. Ensure the heat tracing is turned on in the main power panel located on the EW Power Panel (for both EW-331 & EW-332).</p> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |

**CP4-ER-0017-F03
NWNPE WINTERIZATION CHECKLIST**

C-765, C-765-A, EW-234, and EW-235 – Northeast Plume Treatment Unit	SAT	UNSAT	IF UNSAT WO #
1. Ensure the heat tracing is turned on in the main power panel located in TU control room (for both C-765 & C-765-A).	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. Ensure the heat tracing is turned on in the main power panel located on the EW Power Panel (for both EW-234 & EW-235).	<input type="checkbox"/>	<input type="checkbox"/>	_____
3. Ensure that heaters in both the control room and treatment area are on, working properly, and thermostats are adjusted (for both C-765 & C-765-A).	<input type="checkbox"/>	<input type="checkbox"/>	_____
4. Ensure that ventilation fan louvers are closed.	<input type="checkbox"/>	<input type="checkbox"/>	_____
5. Drain/Clean treatment trailer sumps and associated piping (for both C-765 & C-765-A).	<input type="checkbox"/>	<input type="checkbox"/>	_____

Signatures: Technician _____ Date _____ Reviewer _____ Date _____

