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REVISION/CHANGE LOG			
Revision/Change Letter	Description of Changes	Pages Affected	Date of Revision/Change
FR0	Initial Bluesheeting.	All	10/20/2017
FR1	Non-Intent Revision to Incorporate Bluesheeting Changes and Update to Current Form.	All	11/27/2017
FR2	General revision.	All	3/3/2021
FR2A	Periodic Review has been completed with no changes identified in procedure technical content. Nonintent changes have been incorporated per CP3-NS-2001. Date for review cycle has been reset.	All	3/13/2024

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1.0 PURPOSE AND SCOPE

1.1 Purpose

To define the required equipment and action steps necessary to conduct normal shutdown and restart at the Northwest Plume Groundwater System (NWPGS). This procedure is **NOT** to be used to perform a long-term shutdown of the NWPGS, or to restart the C-612 NWPGS following long-term shutdown. Refer to the Deactivation & Remediation (D&R) Contractor procedure CP4-ER-0008, *Startup and Normal Operation of the C-612 Northwest Plume Groundwater System Following Long-Term Shutdown*, for valve configurations concerning long-term shutdown.

1.2 Scope

This procedure applies to normal shutdown and restart at the NWPGS, Building C-612.

2.0 REFERENCES

2.1 Use References

- CP2-ER-0067, *Health and Safety Plan for the Paducah Plumes Operations and C-613 Sediment Basin Paducah, Kentucky*
- CP3-OP-0207, *Use of Procedures*
- CP3-SM-1101, *Work Package Development*
- CP4-ER-0001, *Northwest Groundwater System Startup and Shutdown of the Air Compressors*
- CP4-ER-0017, *Northwest/Northeast Plume Daily Operational Data Collection and Maintenance*
- CP4-ER-0019, *Trichloroethene On-line Analyzer in the Northwest Plume Groundwater System*
- NFPA 70E, *Standard for Electrical Safety in the Workplace*.

2.2 Source References

- CP4-ER-0008, *Startup and Normal Operation of the C-612 Northwest Plume Groundwater System Following Long-Term Shutdown*
- DOE/OR/07-1253, *Operations and Maintenance Plan for the Northwest Plume Groundwater System Interim Remedial Action Plan at PGDP Paducah, Kentucky*
- JHA-10844, *Maintenance, Operations, and Testing for the Northwest and Northeast Plume and Water Treatment Operations*

3.0 COMMITMENTS

None

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4.0 PRECAUTIONS AND LIMITATIONS

4.1 Precautions

4.1.1 Personnel performing work will wear appropriate Personal Protective Equipment (PPE) according to NFPA 70E, *Standard for Electrical Safety in the Workplace* including safety glasses and cotton long sleeves.

4.1.2 Cut resistant or leather gloves shall be worn for handling items with sharp edges or corners.

4.2 Limitations

None

5.0 PREREQUISITES

5.1 Prior to performing the action steps identified in this procedure, users shall have reviewed this document based upon its Level of Use identified above according to CP3-OP-0207, *Use of Procedures*.

5.2 Prior to performing the action steps identified in this procedure, the performer shall have completed the required applicable training.

5.3 Prior to using this procedure as a work control document, follow the requirements as defined in CP3-SM-1101, *Work Package Development* for the activities being performed.

Technician

6.0 INSTRUCTIONS

6.1 Preparation Activities

6.1.1 Don personal protective clothing as specified in CP2-ER-0067, *Health and Safety Plan for the Paducah Plumes Operations and C-613 Sediment Basin Paducah, Kentucky*.

6.2 Normal System Shutdown

6.2.1 Disable the autodialer at the K-100 panel.

6.2.2 Shut down the two extraction well pumps (J-001 and J-002 or J-003 and J-004) at the K-100 Panel.

NOTE:

J-003 refers to EW-232 and J-004 refers to EW-233. EW-232 and EW-233 are normally online. J-001 (EW-230) and J-002 (EW-231) are currently offline, but remain in standby mode.

6.2.3 Wait for the equalization pump (J-005), the air stripper pump and blower to shut down before proceeding to the next step.

6.2.4 **If** conducting a short-term shutdown, **then** proceed to Step 6.2.5 otherwise proceed to Section 6.3 when ready to restart.

6.2.5 Take the On-Line Analyzer out of automatic mode by pressing “Esc” and returning to the main menu on front panel of the CMS5000.

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6.2.6 When the air stripper blower has stopped **and if necessary, then** shut down Air Compressors A1-A and A1-B according to CP4-ER-0001, *Northwest Groundwater System Startup and Shutdown of the Air Compressors*.

6.2.7 If directed by Pump and Treat Project Manager or Engineering, **then** move the following local power switches to the “OFF” position:

- Air Stripper Pump (J-006)
- Blower (AJ-001)
- Heater (AC-001)

6.2.8 If directed by Pump and Treat Project Manager or Engineering, **then** close (or verify closed) the Influent Sample Line valve for the Trichloroethene (TCE) On-Line Analyzer (HV-053).

6.3 Normal System Restart

6.3.1 If the Influent Sample Line valve for the TCE On-Line Analyzer (HW-053) was closed, **then** ensure the Influent Sample Line valve for the TCE On-Line Analyzer (HV-053) is OPEN.

6.3.2 If power switches were moved to the OFF position, **then** move the following local power switches to the “ON” position:

- Air Stripper Pump (J-006)
- Blower (AJ-001)
- Heater (AC-001)

6.3.3 If the Air Compressors were stopped, **then** start Air Compressors A1-A and A1-B according to CP4-ER-0001.

6.3.4 If necessary, **then** start the online analyzer in accordance with CP4-ER-0019, *Trichloroethylene Online Analyzer in the Northwest Plume Groundwater System*.

NOTE:

J-003 refers to EW-232 and J-004 refers to EW-233. EW-232 and EW-233 are normally online. J-001 (EW-230) and J-002 (EW-231) are currently offline, but remain in standby mode.

6.3.5 Start the two extraction well pumps ((J-001 and J-002 or J-003 and J-004) at the K-100 Panel.

6.3.6 Ensure the equalization pump, air stripper pump and one of the discharge valves (UV-110 or UV-050) opens prior to leaving the K-100 panel.

6.3.7 If any of the actions in Step **6.3.5** fail to occur, **then** press the emergency stop button and contact the Pump and Treat Project Manager.

6.3.8 Enable the autodialer at the K-100 panel.

7.0 ACCEPTANCE CRITERIA

None

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8.0 POST PERFORMANCE WORK ACTIVITIES

NOTE:

At a minimum, entries in CP4-ER-0017-F02, *Daily NWNPE Operational Data Collection and Maintenance Form* will include the cause, employee protection measures, and exposure (if applicable).

Record all operational activities according to CP4-ER-0017, *Northwest/Northeast Plume Daily Operational Data Collection and Maintenance*.

9.0 RECORDS

9.1 Records Generated

The following records may be generated by this procedure:

None

Forms are to be completed according to CP3-OP-0024, *Forms Control*.

9.2 Records Disposition

The records are to be maintained according to CP3-RD-0010, *Records Management Process*.

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Appendix A – Acronyms/Definitions

ACRONYMS

D&R – Deactivation & Remediation

NWPGS – Northwest Plume Groundwater System

PPE – Personal Protective Equipment

TCE – Trichloroethene

DEFINITIONS

Long-Term Shutdown – Long-Term Shutdowns are normally shut-downs that will last multiple weeks at a minimum and at the discretion of the Project Management and/or Engineering. These shutdowns normally require additional intervention such as resin pickling or removal to prevent bio-fouling or system winterization. These shut-downs are only used to stabilize the system if it is not to be operational for more than two weeks or special maintenance actions as determined by Engineering. These shut-downs will require substantial operator intervention to balance the system once it is to be restored and may require multiple actions such as valve alignment, backwashing, desiccant removal, system flushing, etc.

Normal Shutdown – Normal shutdowns are usually system or operator induced shutdown for short periods of time due to a system interlock or operations maintenance action. Normal shutdowns usually do **NOT** require any corrective actions to be performed and will allow the system to be restarted without taking additional actions such as valve alignment, winterization, etc.

Short-Term Shutdown – Short-Term Shutdowns usually exceed a day or several days at the discretion of the Project Manager and/or Engineering for certain maintenance actions if needed. Short Term shutdowns are usually for more maintenance intensive operations such as Ion Exchange resin change outs. Depending on the nature of the shutdown and what systems were offline Project Management or Engineering may direct additional measures be taken prior to restart such as checking valve alignment, backwashing, pre-filling vessels, air bleeding, etc. This is normally not an automatic restart but may take careful operator intervention to balance the system following certain maintenance interactions.

Technician – The person performing the steps in this procedure. The person performing this work could have job functions including but **NOT** limited to the Frontline Supervisor, an Operator or Maintenance Mechanic.