

**MONTHLY PROGRESS REPORT #328
FOR JULY 2024**

EPA REGION I ADMINISTRATIVE ORDERS SDWA 1-97-1019 and 1-2000-0014

**JOINT BASE CAPE COD (JBCC)
TRAINING RANGE AND IMPACT AREA**

The following summary of progress is for the period from 01 to 31 July 2024.

1. SUMMARY OF REMEDIATION ACTIONS

Remediation Actions (RA) Underway at Camp Edwards as of 26 July 2024:

Demolition Area 1 Comprehensive Groundwater RA

The Demolition Area 1 Comprehensive Groundwater RA consists of the removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. Extraction, treatment, and recharge (ETR) systems at Frank Perkins Road, Base Boundary, and the Leading Edge include extraction wells, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater, and injection wells to return treated water to the aquifer.

The Frank Perkins Road Treatment Facility has been optimized as part of the Environmental and System Performance Monitoring (ESPM) program at Demolition Area 1. The treatment facility continues to operate at a flow rate of 175 gallons per minute (gpm), with over 3.107 billion gallons of water treated and re-injected as of 26 July 2024. The following Frank Perkins Road system shutdowns occurred in July:

- 1230 on 08 July 2024 to replace the fiber optic box at the EW-501 well vault and was restarted at 1430 on 08 July 2024.
- 0750 on 17 July 2024 due to a power interruption and was restarted at 0750 on 17 July 2024.
- 0645 on 31 July 2024 due to a power interruption and was restarted at 0935 on 31 July 2024.

The Base Boundary Mobile Treatment Unit (MTU) continues to operate at a flow rate of 65 gpm. As of 26 July 2024, over 406.6 million gallons of water were treated and re-injected. The following Base Boundary system shutdowns occurred in July:

- 1000 on 18 July 2024 to install a new 10 HP VFD and was restarted at 1500 on 18 July 2024.
- 0925 on 24 July 2024 to perform a video inspection of the injection gallery and was restarted at 1125 on 24 July 2024.
- 0830 on 25 July 2024 for Satuit Automation to install a new analog output card and was restarted at 0900 on 25 July 2024.

The Leading-Edge system continues to operate at a flow rate of 100 gpm. As of 31 July 2024, over 414.5 million gallons of water were treated and re-injected. No Leading Edge system shutdowns occurred in July.

The Pew Road MTU was turned off with regulatory approval on 08 March 2021 (formerly operated at a flow rate of 65 gpm). Over 672.9 million gallons of water were treated and re-injected during the RA.

J-2 Range Groundwater RA

Northern

The J-2 Range Northern Treatment facility consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. The Extraction, Treatment, and Re-infiltration system includes three extraction wells, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater, and an infiltration basin to return treated water to the aquifer.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 26 July 2024, over 2.225 billion gallons of water have been treated and re-injected. The following MTU E and F system shutdowns occurred in July:

- MTU E at 0116 on 12 June 2024 due to an “Inlet High Pressure” alarm. It was determined that a mouse had likely chewed the fiber optic line at the J2EW0002 vault, severing communications with the treatment plant and causing the VFD to run the pump at 100%. Communication was restored, and when Unit E was restarted, the pressure relief valve on the influent line would not close. The new pressure relief valve was installed, and Unit E was restarted at 1020 on 17 July 2024.
- MTU F at 0830 on 08 July 2024 to replace the fiber optic box at the well vault and was restarted at 1045 on 08 July 2024.
- MTU E and F at 1015 on 22 July 2024 to perform a video inspection of the injection gallery for Unit E and was restarted at 1130 on 22 July 2024.
- MTU E and F at 1000 on 25 July 2024 for Satuit Automation to program an auto shutoff alarm for communication loss and were restarted at 1215 on 25 July 2024.

The Northern Treatment Building G continues to operate at a flow rate of 225 gpm. As of 26 July 2024, over 1.727 billion gallons of water have been treated and re-injected. The following MTU G system shutdowns occurred in July:

- 1145 on 22 July 2024 to perform a video inspection of the injection gallery and was restarted at 1330 on 22 July 2024.
- 1350 on 24 July 2024 to perform a video inspection of the injection gallery and was restarted at 1425 on 24 July 2024.

Eastern

The J-2 Range Eastern Treatment system consists of removal and treatment of groundwater to minimize downgradient migration of explosives compounds and perchlorate. The ETI system includes the following components: three extraction wells in an axial array, an ex-situ treatment process consisting of an ion exchange (IX) resin and granular activated carbon (GAC) media to treat perchlorate and explosives compounds, and three infiltration trenches located along the lateral boundaries of the plume where treated water enters the vadose zone and infiltrates into the aquifer. The J-2 Range Eastern system is running at a combined total flow rate of 495 gpm.

The MTUs H and I continue to operate at a flow rate of 250 gpm. As of 26 July 2024, over 1.851 billion gallons of water have been treated and re-injected. The following MTU H and I system shutdowns occurred in July:

- 0910 on 15 July 2024 to perform carbon exchanges at MTUs H and I and was restarted at 0755 on 17 July 2024.

MTU J typically operates at a flow rate of 120 gpm. As of 26 July 2024, over 875.2 million gallons of water have been treated and re-injected. The following MTU J shutdowns occurred in July:

- 0855 on 15 July 2024 to perform a video inspection of the injection gallery and was restarted at 1350 on 15 July 2024.

MTU K continues to operate at a flow rate of 125 gpm. As of 26 July 2024, over 1.004 billion gallons of water have been treated and re-injected. The following MTU K shutdowns occurred in July:

- 1200 on 17 July 2024 to perform a video inspection of the injection gallery and was restarted at 1430 on 17 July 2024.

J-3 Range Groundwater RA

The J-3 Range Groundwater RA consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. The ETR system includes four extraction wells, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater and utilizes the existing Fuel Spill-12 (FS-12) infiltration gallery to return treated water to the aquifer.

The J-3 system is currently operating at a flow rate of 255 gpm. As of 26 July 2024, over 1.854 billion gallons of water have been treated and re-injected. The following J-3 system shutdowns occurred in July:

- 1115 on 08 July 2024 at EW-IP1 to replace the fiber optic box at the well vault and was restarted at 1220 on 08 July 2024.
- 0740 on 09 July 2024 at 90EW0001 and 90EW0032 to replace the fiber optic boxes at the well vaults and they were restarted at 1100 on 09 July 2024.
- 0358 on 16 July 2024 due to FS-12 being turned off for an energy curtailment and was restarted at 0933 on 16 July 2024.
- 0510 on 17 July 2024 due to FS-12 being turned off for an energy curtailment and was restarted at 0940 on 17 July 2024.
- 1630 on 17 July 2024 due to FS-12 being turned off for an energy curtailment and was restarted at 1030 on 18 July 2024.

J-1 Range Groundwater RA

Southern

The J-1 Range Southern Groundwater RA consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds. The ETR system includes two extraction wells, an ex-situ treatment process to remove explosives compounds from the groundwater, and an infiltration trench to return treated water to the aquifer.

The Southern MTU has been optimized as part of the ESPM program at J-1 Range Southern. The on-base extraction well J1SEW0001 was turned off with regulatory approval on 31 January

2017 (formerly operated at a flow of 35 gpm), and flow was increased from 90 gpm to 125 gpm at the Leading-Edge extraction well J1SEW0002. The Leading-Edge extraction well continues to operate at a flow rate of 125 gpm. As of 26 July 2024, over 810.8 million gallons of water have been treated and re-injected. No J-1 Range Southern MTU shutdowns occurred in July.

Northern

The J-1 Range Northern Groundwater RA consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. The ETR system includes two extraction wells, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater, and an infiltration trench to return treated water to the aquifer.

The Northern MTU continues to operate at a total system flow rate of 250 gpm. As of 26 July 2024, over 1.380 billion gallons of water have been treated and re-injected. The following J-1 Range Northern MTU shutdowns occurred in July:

- 0840 on 22 July 2024 to replace a leaking camlock fitting on the train B influent line. A new fitting was installed, and J1 North was restarted at 1000 on 22 July 2024.

Central Impact Area RA

The Central Impact Area (CIA) Groundwater treatment system consists of removal and treatment of groundwater to minimize downgradient migration of explosives compounds and perchlorate. The ETR system includes the following components: three extraction wells, an ex-situ treatment process consisting of an ion exchange resin and granular activated carbon media to treat explosives compounds, and three infiltration galleries to return treated water to the aquifer. The CIA systems 1, 2, and 3 continue to run at a combined total flow rate of 750 gpm. As of 26 July 2024, over 3.622 billion gallons of water have been treated and re-injected. The following CIA system shutdowns occurred in July:

- 0140 on 17 July 2024 at CIA-2 due to a power interruption and was restarted at 0825 on 17 July 2024.
- 0755 on 18 July 2024 at CIA-1 to install a new 40 HP VFD and was restarted at 1020 on 18 July 2024.
- 0840 on 18 July 2024 at CIA-3 to perform a video inspection of the injection gallery and was restarted at 1115 on 18 July 2024.
- 1150 on 24 July 2024 at CIA-1 to perform a video inspection of the injection gallery and was restarted at 1305 on 24 July 2024.
- 1000 on 23 July 2024 at CIA-2 to drain GAC #2 and #5 for a carbon exchange on 24 July 2024 and installation of a new flange and camlock on the IX#4 vessel, and was restarted at 0755 on 25 July 2024.
- 0645 on 31 July 2024 at CIA-1 due to a power outage and was restarted at 1030 on 31 July 2024.
- 0645 on 31 July 2024 at CIA-2 due to a power outage and was restarted at 1015 on 31 July 2024.

2. SUMMARY OF ACTIONS TAKEN

Operable Unit (OU) Activity as of 26 July 2024:

CIA

- Source Area investigations
 - Conducted intrusive investigation in P4A3 grids
 - Conducted intrusive investigation in P4A4 grids
 - Routine visual check of CSS soil cover and surface area around the perimeter of the CSS
 - Carbon exchange at GAC vessels #2 and #5 at CIA-2 on 24 July 2024

Demolition Area 1

- Bag filters changed on 17 July 2024.

Demolition Area 2

- No activity.

J-1 Range

- Bag filters changed at J1 South on 11 July 2024
- Bag filters changed at J1 North on 22 July 2024

J-2 Range

- Groundwater sampling within the J2 East SPM Program.
- Carbon exchange at GAC Vessels #1 and #2 at MTU H and GAC Vessels #1 and #2 at MTU I on 15 July 2024
- Bag filters were changed at J2 East Unit J on 19 July 2024.

J-3 Range

- Groundwater hydraulic monitoring synoptic event within the J3 Range SPM
- Bag filters changed on 29 July 2024
- Groundwater sampling within the J3 Range SPM Program

L Range

- Groundwater sampling within the L-Range LTM Program

Small Arms Ranges

- No activity

Northwest Corner

- No activity

Training Areas

- No activity

Impact Area Roads

- No activity

Other

- Collected process water samples from Central Impact Area, Demolition Area 1, J-1 Range Northern, J-1 Range Southern, J-2 Range Eastern, J-2 Range Northern, and J-3 Range treatment systems

JBCC Impact Area Groundwater Study Program (IAGWSP) Tech Update Meeting Minutes for 25 July 2024Project and Fieldwork Update

Mr. Darrin Smith (USACE) stated that the groundwater sampling team began sampling J-3 Range wells on 6/27/24 for the J-3 Annual System Performance Monitoring (SPM) event (65 screens, hydro 62 screens). That should be completed this week. The L Range semi-annual long-term monitoring sampling (5 screens) and the J-2 East Annual SPM sampling (66 screens) will be next.

Mr. Smith (USACE) reported that the July monthly treatment plant process water sampling was conducted from 7/1 through 7/11, with the exception of J2N E mid, which could not be sampled due the system shutdown. It will be sampled in August. Based on the June monthly treatment plant process water sampling performed 6/3/24 through 6/11/24, the granular activated carbon (GAC) was changed out at J-2E H&I on 7/16/24 (4,000 lbs. total). RDX exceeded the action limit (AL) at J-2E H&I, (0.25 and 0.27 µg/L respectively). The GAC was changed out at CIA-2 on 7/24 (5,000 lbs. total). RDX exceeded AL at CIA-2 mid (0.25 µg/L).

Mr. Smith (USACE) reported that J-2 North E&F tripped on 6/12 and, when unit E was restarted, the pressure relief valve wouldn't close. A new relief valve was installed on 7/17. Total downtime for unit E was ~849 hours (~35 days). J-2E H&I was turned off on 7/15 for carbon changeout on 7/16 and restarted on 7/17. Total downtime was ~47 hrs. CIA-2 was shut off on 7/23 for carbon exchange and it will be restarted today (7/25).

Ms. Gina Kaso (USACE) stated that the follow-on contract for long-term monitoring has been awarded to KGS, which will allow for seamless continuity from one contract to the next. She reported that four teams are working in grids for Phase IV, area IV. Next week, the crews will demobilize for one week due to the Guard's summer training. Crews will return to work on August 11th and will begin demolition operations on August 12th. Bob Lim (EPA) asked if the agencies typically observe the demo operations. Ms. Kaso (USACE) explained that almost all of the items are destroyed in the Buried Explosive Module (BEM) and subsequently buried so there is not much to see. She noted that there would be more to observe on a day that white phosphorous items are destroyed since that operation is done on top of the soil. Ms. Kaso (USACE) will share the schedule and the agencies can decide what they would like to observe.

Document and Project Tracking

Mr. Dvorak (USACE) reviewed the list of deliverables (provided in advance of the meeting).

J-1 Range Southern Data Presentation

Chris Kilbridge (USACE) introduced the J-1 Range South (J-1S) data presentation for the Environmental Monitoring Report (EMR) covering the period of January 2023 to December 2023. He noted that the J-1S plume shell, which was updated in 2021, was used for the annual report. A picture of the site, an aerial view, and a picture of crews installing a monitoring well were shown. Mr. Kilbridge (USACE) pointed out the location of the J-1 Range on a figure. A plume map comparison showing historical maximum detections and then concentrations as of August 2023 was also shown. Mr. Kilbridge (USACE) noted that both the extent and the core concentrations of the plume have reduced dramatically.

Mr. Kilbridge (USACE) reminded the group that infiltration gallery J1SEW0001 was installed in 2007 and J1SEW0002 was installed in December 2012. In the fall of 2022, surface water run-off was reported near the mobile treatment unit (MTU) and water was observed ponding over the trench and determined to be due to roots in the piping of the infiltration gallery blocking the effluent flow. From December 2022 through May 2023, the MTU ran at a reduced flow (50 gpm) during planning & design of new gallery, which was installed with plastic infiltrators in May 2023.

As of June 2023, the MTU flow was restored to full capacity (125 gpm). Mr. Kilbridge (USACE) noted that the second piece of significant work was installation of a monitoring well at Checkerberry Lane. It was predicted that not all of the leading edge RDX plume would be captured (less than 2 µg/L), so the well was installed to monitor the leading edge near Checkerberry Lane. An aerial figure was shown. It was estimated that the plumelet of contamination would cross into that area in 2024 or 2025 at less than 2.0 µg/L. The plume itself is expected to attenuate fully below 0.6 µg/L by 2027. Due to logistics of drilling on the residential road, the well was installed to the right of the plumelet, where the model predicted concentrations would be at between 0.6 and 0.8 µg/L. In actuality, the concentrations were lower at 0.33 µg/L.

Mr. Kilbridge (USACE) reviewed a summary is system performance and operations. He noted that the plume is essentially broken into small plumelets now and RDX is the only contaminant of concern. Mr. Kilbridge (USACE) reported that there was a carbon changeout in early January 2023 even though breakthrough had not yet occurred. This was done at the IAGWSP's discretion, due to the age of the carbon. He noted that 42 million gallons of groundwater were treated during this reporting period (791 million gallons to date since system start up) and 0.04 pounds of RDX (6.31 pounds since system startup) were removed during the reporting period. Graphs showing influent concentrations and contaminant mass removal were displayed and discussed.

Crews completed groundwater profiling on Checkerberry Lane at 10 ft intervals in July 2023. There were four samples with detections of RDX between -50 ft to -85 ft msl; only two exceeded risk-based concentration (RBC) 0.6 µg/L. The maximum profile RDX detection was 1.6 µg/L in the sample at 222 – 227 ft bgs (-80 to -85 ft msl). In August 2023, two new 10 ft well screens were installed (MW-733M1 & MW-733M2). Samples collected in October 2023 had a maximum detection of RDX at 0.33J µg/L in MW-733M1.

The J-1 Range Southern groundwater treatment system performance history was reviewed and discussed. Mr. Kilbridge (USACE) reiterated that there was no breakthrough during the reporting period but carbon changeout was performed in January 2023 for vessels 1, 2, 3, 4. Mr. Kilbridge (USACE) showed a figures and trend plot for the chemical monitoring network. He

noted that the high concentration mass has either been extracted or attenuated. There were 54 well screens sampled (29 semi-annual) and RDX concentrations ranged from ND to 1.8 µg/L at DP-379, which was the first detection above the laboratory reporting limit since 2009. None of those screens was greater than 2.0 µg/L (Lifetime Health Advisory); three screens were greater than 0.97 µg/L (Regional Screening Level): DP-379, MW-721M1 (Jun 2023), and MW-360M2. Four screens were greater than 0.06 µg/L (Risk-Based Concentration): DP-379, MW-721M1 (Jun/Oct 2023), and MW-360M2. All of these are on base.

Trend plots were also reviewed. RDX plume cross-sections were displayed. Mr. Kilbridge (USACE) reiterated that the plume has been broken up by the extraction wells and concentrations are declining and are predicted to attenuate over the next few years.

Mr. Kilbridge (USACE) reviewed the hydraulic monitoring and capture zone analysis was reviewed and discussed. He said there was one synoptic water level round in November 2023 and noted hydraulic measurements were generally consistent with past results. Water levels from the top of the mound decreased by approximately -0.55 feet from last year. The capture zones were developed manually and by model. Mr. Kilbridge (USACE) displayed a comparison figure showing the 2021 model-predicted concentrations (1.61 µg/L) vs. the 2023 sampling data (1.8 µg/L at DP-379). He pointed out that most of plume is captured, except for a low concentration plumelet upgradient of Checkerberry Lane.

For RDX mass removal, the model had predicted that 0.0 lbs. would be removed for J1SEW0001, which was the case. For J1SEW0002, the model predicted that 0.5 lbs. would be removed and the measured amount was 0.12 lbs.

The Decision Document (DD) predicted cleanup timelines were discussed. The DD timeline was based on the 2009 plume shell. The May 2011 DD cleanup timeline (less than 0.6 µg/L) was 2024 but the September 2011 project note that located the leading-edge extraction well predicted 2032. Predictions based on the 2021 plume shell estimate that concentrations upgradient of J1SEW0001 will be less than 0.6 µg/L in 2029; upgradient of J1SEW0002 will be below 0.6 µg/L in 2036, and less than 2µg/L was achieved in 2022. Downgradient of J1SEW0002 was below 2 µg/L in 2021 and is predicted to be less than 0.6 µg/L in 2035. Mr. Kilbridge (USACE) noted that the maximum downgradient migration of contamination is approximately 150 downgradient of Checkerberry Lane and the plume never reaches Route 130.

Mr. Kilbridge (USACE) summarized the recommendations for the future monitoring/sampling program. He stated that the existing sampling network includes 52 screens and two extraction wells. Reduced sampling at two screens is recommended (from annual to biennial), along with the removal of 90MW0052 and 90WT0010 (14 screens) from monitoring network. It is also recommended that two screens be added (MW-733M1 and M2). The optimized network would be 40 screens and two extraction wells. A figure was displayed to illustrate the optimization. No changes were recommended for plant operations, plume shells, or wellfield extraction rates. The next plume shell update is planned for 2026.

Len Pinaud (MassDEP) asked for clarification on the area of the contamination and confirmation that the area is served by town water. Pamela Richardson (IAGWSP) confirmed that was the correct. Mr. Pinaud (MassDEP) said that MassDEP is currently reviewing the report and

suggested it might be time to consider monitored natural attenuation (MNA) and land-use controls for this plume. IAGWSP agreed. Mr. Pinaud (MassDEP) asked if turning off the extraction wells would change the trajectory of the plume(s). If that were to be the case, then the plan for future monitoring might need to be changed. Mr. Lim (EPA) asked about the well with the predicted highest concentration of 1.6 µg/L and if that was in the current monitoring well network. Mr. Kilbridge (USACE) noted that the actual sample result was extremely close to that (1.8 µg/L). Mr. Kulbersh (USACE) noted that the concentrations are not expected to go any higher and there is a declining trend at the other southeast ranges. Mr. Lim (EPA) asked if this would be part of the capture zone and Mr. Kilbridge (USACE) confirmed that it is. Elliot Jacobs (MassDEP) will consider Mr. Pinaud's (MassDEP) suggestion. He would like to see one more round of annual sampling to confirm that is the appropriate course of action. EPA will discuss this further among their team members.

JBCC Cleanup Team Meeting

The next JBCC Cleanup Team (JBCCCT) has yet to be scheduled (previous meeting was 17 July 2024). Meeting details and presentation materials from previous meetings can be found on the IAGWSP web site at <http://jbcc-iagwsp.org/community/impact/presentations/>. The Cleanup Team meeting discusses late breaking news and responses to action items, as well as updates from the IAGWSP and the Installation Restoration Program (IRP). The JBCCCT meetings provide a forum for community input regarding issues related to both the IRP and the IAGWSP.

3. SUMMARY OF DATA RECEIVED

Table 1 summarizes sampling for all media from 01 to 31 July 2024. Table 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 01 to 31 July 2024. These results are compared to the Maximum Contaminant Levels/Health Advisory (MCL/HA) values for respective analytes. Explosives and perchlorate are the primary contaminants of concern (COC) at Camp Edwards. Table 3 summarizes the validated detections of per- and polyfluoroalkyl substances (PFAS) for influent and groundwater results analyzed by EPA draft Method 1633 and received from 01 to 31 July 2024. Table 3 PFAS results are compared to the Regional Screening Levels (RSLs) published by EPA in November 2023. No PFAS validation was completed during July 2024, therefore, Table 3 is not included.

The operable units (OUs) under investigation and cleanup at Camp Edwards are the Central Impact Area, Demolition Area 1, Demolition Area 2, J-1 Range, J-2 Range, J-3 Range, L Range, Northwest Corner, Small Arms Ranges, and Training Areas. Environmental monitoring reports for each OU are generated each year to evaluate the current year groundwater results. These reports are available on the site Environmental Data Management System (EDMS) and at the project document repositories (IAGWSP office and Jonathan Bourne Library).

4. SUBMITTED DELIVERABLES

Deliverables submitted during the reporting period include the following:

- Final J-3 Range Annual Environmental Monitoring Report for September 2021 through August 2022 11 July 2024
- Monthly Progress Report No. 327 for June 2024 12 July 2024
- Draft L Range Environmental Monitoring Report for March 2023 through February 2024 12 July 2024
- Draft J-2 Range Northern Environmental Monitoring Report for November 2022 through October 2023 19 July 2024
- Final J-2 Range Eastern Optimization at J2EW0005 Project Note 19 July 2024
- Draft Sitewide Plume Book 31 July 2024

5. SCHEDULED ACTIONS

The following actions and/or documents are being prepared in July 2024.

- Response to Comments on the Five-Year Review
- Final J-1 Range North Environmental Monitoring Report for January 2021 – December 2022 with Plume Shell Technical Memorandum
- Final Central Impact Area Environmental Monitoring Report for July 2022 – June 2023
- Response to Comments on the J-3 Range Environmental Monitoring Report for September 2022 – August 2023 with Plume Shell Technical Memorandum
- IAGWSP Comprehensive PFAS Report
- Responses to Comments on the Central Impact Area 2023 Source Removal Report
- Responses to Comments on the Draft J-2 Range Eastern Environmental Monitoring Report for November 2022 – October 2023
- Responses to Comments on the Draft J-2 Range Northern Environmental Monitoring Report for November 2022 – October 2023
- Draft J-1 Range South Environmental Monitoring Report for January 2023 through December 2023

TABLE 1
Sampling Progress: 01 to 31 July 2024

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Lima Range	MW-242M1	MW-242M1_F24	N	07/29/2024	Ground Water	235	245
Lima Range	MW-651M1	MW-651M1_F24	N	07/29/2024	Ground Water	242.3	252.3
Lima Range	MW-595M2	MW-595M2_F24	N	07/29/2024	Ground Water	205.3	215.3
Lima Range	MW-595M1	MW-595M1_F24	N	07/29/2024	Ground Water	255.3	265.3
Lima Range	MW-595M1	MW-595M1_F24D	FD	07/29/2024	Ground Water	255.3	265.3
Lima Range	MW-596M1	MW-596M1_F24	N	07/29/2024	Ground Water	231.1	241.1
J3 Range	MW-232M1	MW-232M1_F24	N	07/25/2024	Ground Water	77.5	82.5
J3 Range	MW-232M1	MW-232M1_F24D	FD	07/25/2024	Ground Water	77.5	82.5
J3 Range	MW-243M2	MW-243M2_F24	N	07/25/2024	Ground Water	84.5	94.5
J3 Range	MW-243M1	MW-243M1_F24	N	07/25/2024	Ground Water	114.5	124.5
J3 Range	MW-232M2	MW-232M2_F24	N	07/24/2024	Ground Water	61	66
J3 Range	MW-295M2	MW-295M2_F24	N	07/24/2024	Ground Water	117	127
J3 Range	MW-295M1	MW-295M1_F24	N	07/24/2024	Ground Water	145	155
J3 Range	MW-359M2	MW-359M2_F24	N	07/24/2024	Ground Water	148.62	158.62
J3 Range	90PLT01006	90PLT01006_F24	N	07/24/2024	Process Water	0	0
J3 Range	MW-329M2	MW-329M2_F24	N	07/23/2024	Ground Water	150.05	160.05
J3 Range	MW-329M2	MW-329M2_F24D	FD	07/23/2024	Ground Water	150.05	160.05
J3 Range	MW-329M1	MW-329M1_F24	N	07/23/2024	Ground Water	179.96	189.96
J3 Range	MW-247M3	MW-247M3_F24	N	07/23/2024	Ground Water	95	105
J3 Range	MW-247M2	MW-247M2_F24	N	07/23/2024	Ground Water	125	135
J3 Range	MW-247M1	MW-247M1_F24	N	07/23/2024	Ground Water	180	190
J3 Range	J3-MW-1-B	J3-MW-1-B_F24	N	07/22/2024	Ground Water	175.61	185.61
J3 Range	J3-MW-1-C	J3-MW-1-C_F24	N	07/22/2024	Ground Water	203.61	213.61
J3 Range	MW-701M2	MW-701M2_F24	N	07/22/2024	Ground Water	147.5	157.5
J3 Range	MW-701M1	MW-701M1_F24	MS	07/22/2024	Ground Water	177	187
J3 Range	MW-701M1	MW-701M1_F24	N	07/22/2024	Ground Water	177	187
J3 Range	MW-701M1	MW-701M1_F24	SD	07/22/2024	Ground Water	177	187
J3 Range	MW-144M2	MW-144M2_F24	N	07/18/2024	Ground Water	130	140
J3 Range	MW-143M3	MW-143M3_F24	N	07/18/2024	Ground Water	107	112
J3 Range	MW-143M2	MW-143M2_F24	N	07/18/2024	Ground Water	117	122
J3 Range	MW-143M1	MW-143M1_F24	N	07/18/2024	Ground Water	144	154
J3 Range	MW-636M2	MW-636M2_F24	N	07/17/2024	Ground Water	110.5	120.5
J3 Range	MW-636M1	MW-636M1_F24	N	07/17/2024	Ground Water	141.6	151.6
J3 Range	MW-653M2	MW-653M2_F24	N	07/17/2024	Ground Water	59.3	69.3
J3 Range	MW-653M1	MW-653M1_F24	N	07/17/2024	Ground Water	147.5	157.5
J3 Range	MW-142M2	MW-142M2_F24	N	07/16/2024	Ground Water	140	150
J3 Range	MW-576M3	MW-576M3_F24	N	07/16/2024	Ground Water	98.9	108.9
J3 Range	MW-576M2	MW-576M2_F24	N	07/16/2024	Ground Water	133.9	143.9
J3 Range	MW-576M1	MW-576M1_F24	N	07/16/2024	Ground Water	173.9	183.9
J3 Range	MW-155M1	MW-155M1_F24	N	07/15/2024	Ground Water	124	134
J3 Range	MW-227M3	MW-227M3_F24	N	07/15/2024	Ground Water	65	75
J3 Range	MW-227M2	MW-227M2_F24	N	07/15/2024	Ground Water	110	120
J3 Range	MW-227M2	MW-227M2_F24D	FD	07/15/2024	Ground Water	110	120
J3 Range	MW-227M1	MW-227M1_F24	N	07/15/2024	Ground Water	130	140
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-190A	N	07/11/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-190A	N	07/11/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-190A	N	07/11/2024	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-190A	N	07/11/2024	Process Water	0	0
J3 Range	MW-157M3	MW-157M3_F24	N	07/11/2024	Ground Water	70	80
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-190A	N	07/11/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-190A	N	07/11/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-190A	N	07/11/2024	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-190A	N	07/11/2024	Process Water	0	0
J3 Range	MW-157M2	MW-157M2_F24	N	07/11/2024	Ground Water	110	120
J3 Range	MW-157M1	MW-157M1_F24	N	07/11/2024	Ground Water	154	164
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-190A	N	07/11/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-190A	N	07/11/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-190A	N	07/11/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-190A	N	07/11/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-190A	N	07/11/2024	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 01 to 31 July 2024

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Eastern	J2E-INF-I	J2E-INF-I-190A	N	07/11/2024	Process Water	0	0
J3 Range	90MW0054	90MW0054_F24	N	07/11/2024	Ground Water	107	112
J3 Range	90MW0054	90MW0054_F24D	FD	07/11/2024	Ground Water	107	112
J1 Range Northern	J1N-EFF	J1N-EFF-129A	N	07/11/2024	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-129A	N	07/11/2024	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-129A	N	07/11/2024	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-129A	N	07/11/2024	Process Water	0	0
J3 Range	MW-218M3	MW-218M3_F24	N	07/11/2024	Ground Water	78	83
J3 Range	MW-193M1	MW-193M1_F24	N	07/10/2024	Ground Water	57.5	62.5
J3 Range	MW-198M4	MW-198M4_F24	N	07/10/2024	Ground Water	70	75
J3 Range	MW-198M3	MW-198M3_F24	N	07/10/2024	Ground Water	100	105
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-214A	N	07/10/2024	Process Water	0	0
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-214A	N	07/10/2024	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-214A	N	07/10/2024	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-214A	N	07/10/2024	Process Water	0	0
J3 Range	MW-198M2	MW-198M2_F24	N	07/10/2024	Ground Water	120	125
J2 Range Northern	J2N-EFF-F	J2N-EFF-F-214A	N	07/10/2024	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-214A	N	07/10/2024	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-214A	N	07/10/2024	Process Water	0	0
J2 Range Northern	J2N-INF-F	J2N-INF-F-214A	N	07/10/2024	Process Water	0	0
J3 Range	MW-198M1	MW-198M1_F24	N	07/10/2024	Ground Water	150	155
Central Impact Area	CIA2-EFF	CIA2-EFF-126A	N	07/09/2024	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-126A	N	07/09/2024	Process Water	0	0
J3 Range	MW-637M3	MW-637M3_F24	N	07/09/2024	Ground Water	174.1	184.1
Central Impact Area	CIA2-MID1	CIA2-MID1-126A	N	07/09/2024	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-126A	N	07/09/2024	Process Water	0	0
J3 Range	MW-637M2	MW-637M2_F24	N	07/09/2024	Ground Water	214.1	224.1
J3 Range	MW-637M1	MW-637M1_F24	N	07/09/2024	Ground Water	236.1	246.1
Central Impact Area	CIA1-EFF	CIA1-EFF-126A	N	07/09/2024	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-126A	N	07/09/2024	Process Water	0	0
Central Impact Area	CIA1-MID1	CIA1-MID1-126A	N	07/09/2024	Process Water	0	0
Central Impact Area	CIA1-INF	CIA1-INF-126A	N	07/09/2024	Process Water	0	0
J3 Range	MW-343M2	MW-343M2_F24	N	07/09/2024	Ground Water	166.8	171.8
Central Impact Area	CIA3-EFF	CIA3-EFF-97A	N	07/09/2024	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-97A	N	07/09/2024	Process Water	0	0
Central Impact Area	CIA3-MID1	CIA3-MID1-97A	N	07/09/2024	Process Water	0	0
J3 Range	MW-343M1	MW-343M1_F24	N	07/09/2024	Ground Water	214.8	224.8
Central Impact Area	CIA3-INF	CIA3-INF-97A	N	07/09/2024	Process Water	0	0
J3 Range	MW-250M3	MW-250M3_F24	N	07/08/2024	Ground Water	95	105
J3 Range	MW-250M2	MW-250M2_F24	MS	07/08/2024	Ground Water	145	155
J3 Range	MW-250M2	MW-250M2_F24	N	07/08/2024	Ground Water	145	155
J3 Range	MW-250M2	MW-250M2_F24	SD	07/08/2024	Ground Water	145	155
J3 Range	MW-250M1	MW-250M1_F24	N	07/08/2024	Ground Water	185	195
J3 Range	90MP0059B	90MP0059B_F24	N	07/08/2024	Ground Water	116.4	118.9
Demolition Area 1	D1LE-EFF	D1LE-EFF-96A	N	07/01/2024	Process Water	0	0
Demolition Area 1	D1LE-MID2	D1LE-MID2-96A	N	07/01/2024	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-96A	N	07/01/2024	Process Water	0	0
Demolition Area 1	D1LE-INF	D1LE-INF-96A	N	07/01/2024	Process Water	0	0
J3 Range	MW-163S	MW-163S_F24	N	07/01/2024	Ground Water	38	48
J3 Range	MW-163S	MW-163S_F24D	FD	07/01/2024	Ground Water	38	48
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-220A	N	07/01/2024	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-220A	N	07/01/2024	Process Water	0	0
J3 Range	MW-193S	MW-193S_F24	N	07/01/2024	Ground Water	32.5	37.5
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-220A	N	07/01/2024	Process Water	0	0
Demolition Area 1	FPR-2-INF	FPR-2-INF-220A	N	07/01/2024	Process Water	0	0
Demolition Area 1	D1-EFF	D1-EFF-168A	N	07/01/2024	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-168A	N	07/01/2024	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-168A	N	07/01/2024	Process Water	0	0
J3 Range	MW-197M3	MW-197M3_F24	N	07/01/2024	Ground Water	60.2	65.2
Demolition Area 1	D1-INF	D1-INF-168A	N	07/01/2024	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 01 to 31 July 2024

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J3 Range	MW-197M2	MW-197M2_F24	N	07/01/2024	Ground Water	80.2	85.2
J3 Range	J3-EFF	J3-EFF-214A	N	07/01/2024	Process Water	0	0
J3 Range	J3-MID-2	J3-MID-2-214A	N	07/01/2024	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-214A	N	07/01/2024	Process Water	0	0
J3 Range	J3-INF	J3-INF-214A	N	07/01/2024	Process Water	0	0
J3 Range	MW-197M1	MW-197M1_F24	MS	07/01/2024	Ground Water	120	125
J3 Range	MW-197M1	MW-197M1_F24	N	07/01/2024	Ground Water	120	125
J3 Range	MW-197M1	MW-197M1_F24	SD	07/01/2024	Ground Water	120	125
J1 Range Southern	J1S-EFF	J1S-EFF-200A	N	07/01/2024	Process Water	0	0
J1 Range Southern	J1S-MID	J1S-MID-200A	N	07/01/2024	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-200A	N	07/01/2024	Process Water	0	0

**TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received July 2024**

Area of Concern	Location ID	Field Sample ID	Top Depth (ft bgs)	Bottom Depth (ft bgs)	Date Sampled	Test Method	Analyte	Result Value	Qualifier	Units	MCL/HA	> MCL/HA	MDL	RL
Demolition Area 1	MW-604M1	MW-604M1_S24	111	121	06/26/2024	SW6850	Perchlorate	0.076	J	µg/L	2.0		0.039	0.20
Demolition Area 1	MW-602M2	MW-602M2_S24	27	37	06/26/2024	SW6850	Perchlorate	0.088	J	µg/L	2.0		0.039	0.20
Demolition Area 1	MW-602M1	MW-602M1_S24R	109	119	06/26/2024	SW6850	Perchlorate	4.7		µg/L	2.0	X	0.039	0.20
Demolition Area 1	MW-602M1	MW-602M1_S24R	109	119	06/26/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.15	J	µg/L	0.60		0.043	0.20
J1 Range Southern	MW-669M1	MW-669M1_S24	223.7	233.7	06/06/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.38		µg/L	0.60		0.043	0.20
J1 Range Southern	MW-669M1	MW-669M1_S24D	223.7	233.7	06/06/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.33		µg/L	0.60		0.043	0.20
J1 Range Southern	MW-591M1	MW-591M1_S24	200	210	06/05/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.087	J	µg/L	0.60		0.043	0.20
J1 Range Southern	MW-721M1	MW-721M1_S24	168.1	178.1	05/30/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.5		µg/L	0.60	X	0.043	0.20
J1 Range Southern	MW-721M1	MW-721M1_S24	168.1	178.1	05/30/2024	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.19	J	µg/L	400		0.091	0.20
J1 Range Southern	MW-524M1	MW-524M1_S24	148	158	05/29/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.12	J	µg/L	0.60		0.043	0.20
J1 Range Southern	MW-524M1	MW-524M1_S24D	148	158	05/29/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.13	J	µg/L	0.60		0.043	0.20
J1 Range Southern	MW-733M2	MW-733M2_S24	190	200	05/29/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.045	J	µg/L	0.60		0.043	0.20
J1 Range Southern	MW-733M1	MW-733M1_S24	212	222	05/29/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.45		µg/L	0.60		0.043	0.20
J1 Range Southern	MW-592M1	MW-592M1_S24	201	211	05/28/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.076	J	µg/L	0.60		0.043	0.20

J = Estimated Result
MDL = Method Detection Limit
RL = Reporting Limit
ND = Non-Detect