#### MONTHLY PROGRESS REPORT #258 FOR SEPTEMBER 2018

## 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 1 September 2018 to 28 September 2018.

#### 1. SUMMARY OF REMEDIATION ACTIONS

The following is a description of Remediation Actions (RA) underway at Camp Edwards as of September 2018.

#### 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, Pew Road, Base Boundary, and the Leading Edge include extraction wells, ex-situ treatment processes 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 gpm, with over 2.591 billion gallons of water treated and re-injected as of 28 September 2018. No shut downs occurred in September.

The Pew Road Mobile Treatment Unit (MTU) is operating at a flow rate of 100 gpm (increased from 65 gpm on 18 June 2018), with over 585.2 million gallons of water treated and re-injected as of 28 September 2018. The following Pew Road MTU shut downs occurred in September

• 0106 on 24 September 2018 due to a VFD fault, and was restarted at 0735 on 24 September 2018.

The Base Boundary MTU is operating at a flow rate of 65 gpm with over 210.8 million gallons of water treated and re-injected as of 28 September 2018. No Base Boundary MTU shut downs occurred in September.

The Leading Edge system continues to operate at a flow rate of 100 gpm. As of 28 September 2018, over 122.2 million gallons of water treated and re-injected. The following Leading Edge system shut downs occurred in September.

• 1808 on 2 September 2018 due to a "Well Pump Motor Fault" alarm caused by a power supply interruption, and was restarted at 0735 on 4 September 2018.

#### J-2 Range Groundwater RA

#### Northern Plant

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, 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 Treatment Building continues to operate at a flow rate of 225 gpm. As of 28 September 2018, over 1.040 billion gallons of water have been treated and re-injected. The following Northern Treatment Building shutdown occurred in September:

- Building G was turned off at 1150 on 4 September 2018 to install the upgraded bag filter housings, and restarted at 1130 on 7 September 2018.
- Building G was turned off at 0810 on 12 September 2018 to repair a leaking pipe, and restarted at 0800 on 13 September 2018.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 28 September 2018, over 1.545 billion gallons of water have been treated and re-injected. The following J-2 Range Northern MTU E or F shut downs occurred in September:

• 0224 on 23 September 2018 due to a power supply interruption (no alarms), and was restarted at 0754 on 24 September 2018.

## Eastern Plant

The J-2 Range Eastern Treatment facility 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 will enter the vadose zone and infiltrate 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 28 September 2018, over 1.125 billion gallons of water have been treated and re-injected. No MTU H and I shutdowns occurred in September.

MTU J continues to operate at a flow rate of 120 gpm. As of 28 September 2018, over 519 million gallons of water have been treated and re-injected. No MTU J shutdowns occurred in September.

MTU K continues to operate at a flow rate of 125 gpm. As of 28 September 2018, over 655.3 million gallons of water have been treated and re-injected. No MTU K shutdowns occurred in September.

## 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, ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater and use of 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 (while J3EW0032 is running at 45 gpm instead of 65 gpm). As of 28 September 2018, over 1.155 billion gallons of water have been treated and re-injected. The following J-3 Range system shut down occurred in September:

• 1614 on 3 September 2018 due to a "Treatment Facility Storage Tank High Level" alarm from FS-12 being down, and was restarted at 0822 on 4 September 2018.

#### J-1 Range Groundwater RA

#### Southern Plant

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, 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 continues to operate at a flow rate of 125 gpm. As of 28 September 2018, over 502.1 million gallons of water have been treated and re-injected. No J-1 Range Southern system shut downs occurred in September.

#### Northern Plant

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, 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 28 September 2018, over 611.2 million gallons of water have been treated and re-injected. No J-1 Range Northern MTU shut downs occurred in September.

## Central Impact Area RA

The Central Impact Area (CIA) Groundwater treatment facility 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 (IX) resin and granular activated carbon (GAC) 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 28 September 2018, over 1.502 billion gallons of water have been treated and re-injected. No CIA treatment facility shut downs occurred in September.

# SUMMARY OF ACTIONS TAKEN

# <u>CIA</u>

- Performed routine inspections of BEM cover at the CIA to ensure cover is secure and intact, and demo operations.
- Conducted intrusive investigation in Phase 3 Area 1.

#### Small Arms Ranges

- Conducted offsite disposal of approximately 120 CY of Former B Range (8th lift and 9th lift) nonhazardous soil.
- Collected ISM samples in D Range grids DR158E and DR158W.

## <u>J1 Range</u>

J1 South drive point sampling.

#### <u>J2 Range</u>

- Groundwater sampling within the J2 East SPM program.
- Hydraulic monitoring within the J2 North SPM program.

#### <u>J3 Range</u>

• Offsite disposal of approximately 2 CY of non-hazardous soil from excavated cracked open item locations in J-3 Barrage Area.

## Training Areas

• Collected ISM samples in six grids at Former E Range.

## <u>Other</u>

- Process water samples were collected from the Central Impact Area, Demolition Area 1, J1 Range Northern, J1 Range Southern, J2 Range Northern, and J3 Range.
- Groundwater samples collected from J2 Range Eastern and J2 Range Northern.

## JBCC IAGWSP Tech Update Meeting Minutes 13 September 2018

## **Project and Fieldwork Update**

The drive point rig finished Monday September 10th and data should be available soon. Dawson began well development for the wells that were installed earlier this summer. They should be finished in a couple of weeks. The sampling crews is performing long-term monitoring in J-2 North and will move to J-2 East at the end of the month.

In the CIA, the Metal Mapper has completed the collection of cued data. The geophysicists are reviewing the data to determine if any re-collects are needed. Figures showing progress were displayed and discussed. There are three dig teams on site. Two are working in Area B (grids 39-33 and 39-37) and one

in Area A (39-46). The verification grid (39-35) is complete. Area A is about 86% complete and Area B is 70% compete.

In the Training Areas, Dawson completed all the UXO fieldwork. Samples were collected at the KD Range from under the former location of the primary target (an armored personnel carrier). Results should be available soon. At the Former E Range, ISM samples were collected at six grids, data should be available soon. Pyrotechnics sampling results came in however in some results the grinding blank had elevated levels of chromium so the samples are being re-run without grinding. Results are pending. UXO crews are picking up scrap and RRD to go off-site.

At the Small Arms Ranges, approximately 118 cubic yards of soil from Former B Range will be shipped off-site in the next few weeks. The stockpiled soil at C and D Range as well as the additional lifts at C Range, D Range and Former B Range will be handled under a new contract which is currently being prepared.

# Action Items

Action items were discussed and updated.

# **Demolition Area 2 Annual Monitoring Report Presentation**

A presentation was provided on the Demolition Area 2 Annual Monitoring Report. During the reporting period (July 2017 to June 2018), no new field work was conducted. Sampling locations, groundwater monitoring results, and trends were reviewed and discussed. RDX was detected in six of twenty-one monitoring wells sampled and concentrations ranged from 0.20  $\mu$ g/L (MW-573M2 to 0.96  $\mu$ g/L (MW-404M2). Only one location (MW-404M2) exceeded the 0.6  $\mu$ g/L risk-based level. No samples exceeded the 2  $\mu$ g/L EPA and no other explosive compounds were detected during this reporting period.

Figures showing RDX trend plots and the model predicted plumes vs. observed concentrations were displayed. Decision Document cleanup timelines were discussed. The estimates presented in the 2015 Decision Document addendum of below Health Advisory (2  $\mu$ g/L) by 2016, below Risk-Based Level (0.6  $\mu$ g/L) by 2018 and below Background Level (0.25  $\mu$ g/L) by 2025 are still accurate. It was noted that during the reporting period, no monitoring wells exceeded 2  $\mu$ g/L and only MW-404M2 exceeded 0.6  $\mu$ g/L (0.96  $\mu$ g/L). IAGWSP is not recommending any changes to the monitoring network at this time. They propose to continue to monitor downgradient wells MW-654 and MW-655 and establish trends, if any. It was noted that the annual report was submitted to the agencies on August 31st and both EPA and MassDEP indicated they had no comments on the report.

## JBCC IAGWSP Tech Update Meeting Minutes 27 September 2018

All drilling is complete. Data is coming in for the J-1 South drive points and data is expected over the next three weeks for the twelve monitoring wells that were installed earlier this summer. The sampling crews are performing long-term monitoring in J-2 East. All treatment systems are up and running.

In the CIA, the Metal Mapper has completed the collection of cued data. The geophysicists are reviewing the data and creating the dig lists, they have Area D left to complete. Figures showing progress were displayed and discussed. One of the mini excavators is under repair, so Parsons is currently working with 3 dig teams, they will return to 4 dig teams once the repairs are complete. Area A is complete. Area B is approximately 99% gone. In Area C, the polygons are complete and the grids are about 25% done. Area E is 4% done.

#### Monthly Progress Report for September 2018

In the Training Areas, Dawson completed all the UXO fieldwork. Samples were collected at the KD Range from under the former location of the primary target (an armored personnel carrier). Results should be available soon. At the Former E Range, ISM samples were collected at six grids, data should be available soon. The pyrotechnics samples that were re-run without grinding are being validated. Preliminary data from the KD Range showed elevated HMX and RDX under the primary target. Once the results are validated they will be forwarded.

At the Small Arms Ranges, approximately 115 cubic yards of soil from Former B Range was shipped off site as non-hazardous waste. The stockpiled soil at C and D Range as well as the additional lifts at C Range, D Range and Former B Range will be handled under a new contract which is currently being prepared and should be awarded shortly.

## **Action Items**

Action items were discussed and updated.

#### **Central Impact Area 100% QA Grid Presentation**

A presentation was provided on the results of the CIA Phase 3 Area 1 100% dig validation. A figure showing the grid (39-35) selected was displayed and discussed. The group was reminded of the goals set in the Decision Document (remove 75-95% of UXO while maximizing removal of net explosive weight) as well as the goals of the classification (to correctly classify 95% of the targets of interest (TOI) while reducing clutter digs by greater than 70%).

A figure showing the Metal Mapper data was displayed along with the results for grid 39-35. There were 529 EM61 anomaly locations with Metal Mapper cued data collection. Of those, 223 met the dig criteria and 2 of these had multiple dig location resulting in a total of 225 likely TOI digs and a recommended dig rate of 42.1%. The remaining 306 anomalies were dug for QA. Forty-five TOI (UXO or UXO-like items) were recovered. For the classification results, two TOI were missed and 324 clutter items were correctly classified. 33% of the clutter was incorrectly classified as "likely-TOI" therefore not meeting the goal of reduction of clutter digs by 70%. This was caused by the nature of the clutter: large amounts of metal debris throughout the grid overwhelmed the model and the higher than anticipated clutter dig rate was unavoidable due to the conditions of this particular grid. It was noted that a total of six UXO items, 35 UXO-like items and two seed items were correctly classified.

A photo of the misclassified TOI were displayed and discussed. The first item was a QA seed and was too close to another item for reliable classification. The second item was too deep to be accurately selected with the EM61 or modeled with the MetalMapper.

The current status of the project was reviewed. In Phase III Area 1, MetalMapper data collection is mostly completed. Re-shots still need to be finalized and collected in Areas C and D. The Final data analysis and intrusive work is ongoing. And EPA is planning on selecting an additional grid for full intrusive investigation for ongoing validation. EPA noted they should be ready to select a grid next week. A status map showing work conducted as of September 21 was displayed.

## **Demolition Area 1 Annual Monitoring Report Presentation**

A presentation was provided on the Demolition Area 1 Annual Monitoring Report. During the reporting period (July 2017 to June 2018), In Zone 3, IAGWSP installed three profile borings (BH-696 thru BH-698) below existing monitoring wells MW-258/MW-531 (BH-696), MW-248 (BH-697), MW-252 (BH-698) in the western portion of Zone 3 to determine downgradient extent of deeper lobes of contamination observed in wells MW-231M1/MW-663D and MW-225/MW-662D. In addition, IAGWSP installed three wells at depth MW-696M1 (-82 to -92 ft msl), MW-697M1 (-82 to -92 ft msl) and 698M1(-51 to -61 ft msl). In Zone 2, profile boring BH-700 was installed upgradient of MW-341M2.

Treatment system performance, sampling locations, groundwater monitoring results, and trends were reviewed and discussed. For Zone 1 (source to Frank Perkins Road), the maximum RDX concentration was 3.17 ppb (MW-19S) and the maximum perchlorate concentration was 0.3 ppb (MW-165M2). For Zone 2 (Frank Perkins Road to Pew Road), the maximum RDX concentration was 0.75 ppb (MW-341M2) and the maximum perchlorate concentration was 2.37 ppb (MW-341M2). For Zone 3 (Pew Road to Base Boundary), the maximum RDX concentration was 1.54 ppb (MW-258M1) and the maximum perchlorate concentration was 2.13 ppb (MW-663D). For Zone 4 (off-base), RDX was non-detect in all samples and the maximum perchlorate concentration was 2.69 ppb (MW-582M1).

Results of hydraulic monitoring and a capture zone analysis were discussed. For the aquifer hydraulic monitoring, one site-wide synoptic water level round was conducted during the reporting period. Hydraulic monitoring observations were consistent with past reporting periods. For the capture zone analysis, the capture zones were developed manually and later compared to model simulated capture zones. Contamination in Zone 1 (principally RDX) is adequately being captured by D1-EW-4 and D1-EW501. Perchlorate contamination in Zone 2 above the Pew Rd extraction well silt/clay layer is captured by the extraction well. An optimization to the extraction rate is recommended. Perchlorate contamination in Zone 3 west of MW-341M2 and west of MW-663D are outside D1-EW-3 capture zone. An expansion of capture zone via reducing effective screen length or higher pumping rate is recommended. The Zone 4 perchlorate plume is within capture zone of D1-EW-5. Contamination downgradient of the extraction well is predicted to attenuate/discharge to Buzzards Bay within 3-4 years.

Measured vs. model predicted mass removal statistics were reviewed and discussed. The total perchlorate removed for the reporting period for all systems was 0.53 pounds and RDX was 0.32 pounds. Decision Document (DD) cleanup timelines were discussed. The DD estimated perchlorate would clean up in 2025; this was based on the 2013 technical memorandum. Current cleanup predictions using the updated plume shell predicts perchlorate will be below 2 ppb before 2025 consistent with Addendum No. 2 to the DD. The DD estimates RDX will clean up by 2022. Current predictions indicate all plumes are expected to be reduced to below the RBC of 0.6 ppb by 2022 in accordance with timelines outlined in the Decision Document, with the exception of the plume upgradient of D1-EW-501. Based on the updated plume shell this portion of the plume is not expected to be remediated until 2025. However, these are conservative estimates given that RDX is not attenuated after 5 years. Model predicted vs. observed plume figures for RDX and perchlorate were displayed. Figures showing the results of Pew Road and Base Boundary optimization analyses were displayed and discussed.

IAGWSP is recommending reducing the Pew Road flow rate to 65 gpm from 100 gpm. They also recommend packering/installing well sleeve over top 40 feet of the Base Boundary extraction well to expand the capture zone. If possible, a longer term upgrade of the MTU to accommodate 100 gpm system would be recommended. For the hydraulic monitoring network, IAGWSP recommends adding newly installed monitoring wells MW-696M1 through MW-698M1 to the hydraulic monitoring program annual synoptic event. For the chemical monitoring network no changes are proposed for Zone 1. For Zone 2 it is recommended that the perchlorate and explosives analysis at MW-211 MW be reduced to

annual sampling. In Zone 3, adding MW-696M1 through MW-698M1 for annual analysis of perchlorate and explosives and adding MW-531M1 to explosives program on annual basis is recommended. In Zone 4, IAGWSP recommends reducing explosives analysis to annual sampling at MW-659M1. New work is also being recommended in the annual report. IAGWSP recommends the installation of two profile borings in Zone 4. One along County Road north of MW-610 and one north of MW-642 to determine if plume shells are accurate in that portion of the site. It was noted that the groundwater flow model indicates that the contamination west of County Road would discharge into the Pocasset River in three to four years that that contamination downgradient of D1-EW-5 would be below 2 ppb by 2023. The report will be submitted to the agencies for comment soon.

# **JBCC Cleanup Team Meeting**

The next JBCC Cleanup Team (JBCCCT) meeting has yet to be scheduled (previous meeting was 29 August 2018). 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.

## SUMMARY OF DATA RECEIVED

Table 1 summarizes sampling for all media from 1 September to 30 September 2018. Table 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 1 September to 30 September 2018. The September treatment system influent summary is not included due to no validated perchlorate results available at report submittal time. 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.

Twelve operable units (OU) are under investigation and cleanup at Camp Edwards. The OUs include: Central Impact Area, Demolition Area 1, Demolition Area 2, Former A Range, J-1 Range, J-2 Range, J-3 Range, L Range, Northwest Corner, Small Arms Ranges, Training Areas, and Western Boundary. 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).

## 2. DELIVERABLES SUBMITTED

Deliverables submitted during the reporting period include the following:

•	Optimization of J-1 range Northern and Southern Chemical and Hydraulic	10 Sep 18
	Monitoring Well Networks	
•	Monthly Progress Report No. 257 for August 2018	10 Sep 18

- Final Demolition Area 2 2018 Annual Environmental Monitoring Report
   19 Sep 18
- Evaluation of Groundwater Treatment and Groundwater Reuse Technologies for 20 Sep 18 RDX and Perchlorate

# 3. SCHEDULED ACTIONS

The following documents were being prepared or revised during September 2018:

## Training Areas

• Final Training Areas Decision Document

Annual Reports/ Environmental Monitoring Reports/Work Plans

- Draft Demolition Area 1 Annual Monitoring Report
- Final Demolition Area 1 Annual Monitoring Report
- Draft CIA draft Annual Monitoring Report

## Central Impact Area

• 2019 Workplan

# **Miscellaneous**

- Draft Five Year Review report
- J-3 Geophysical and Soil Technical Memorandum
- J-2 Range geophysical completion of work report
- Technology evaluation and attenuation study reports
- Certificates of Compliance
- PFAS sampling project note
- Groundwater model for an active treatment alternative supporting the L Range Decision Document addendum

 TABLE 1

 Sampling Progress:
 1 September to 30 September 2018

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	MW-365M2	MW-365M2_F18	N	09/27/2018	Ground Water	205.52	215.52
J2 Range Eastern	MW-627M1	MW-627M1_F18	N	09/27/2018	Ground Water	269.5	279.5
J2 Range Eastern	MW-57D	MW-57D_F18	N	09/27/2018	Ground Water	213	223
J2 Range Eastern	J2MW-04M2	J2MW-04M2_F18	N	09/27/2018	Ground Water	210	220
J2 Range Eastern	J2MW-04M1	J2MW-04M1_F18	N	09/27/2018	Ground Water	257	267
J2 Range Eastern	MW-685M1	MW-685M1_F18	N	09/26/2018	Ground Water	166.2	176.2
J2 Range Eastern	MW-668M1	MW-668M1_F18	N	09/26/2018	Ground Water	168.7	178.7
J2 Range Eastern	MW-668M1	MW-668M1_F18D	FD	09/26/2018	Ground Water	168.7	178.7
J2 Range Eastern	MW-666M3	MW-666M3_F18	N	09/26/2018	Ground Water	199.8	209.8
J2 Range Eastern	MW-666M2	MW-666M2_F18	N	09/26/2018	Ground Water	219.8	229.8
J2 Range Eastern	MW-666M1	MW-666M1_F18	N	09/26/2018	Ground Water	244.8	254.8
J2 Range Eastern	MW-666M1	MW-666M1_F18D	FD	09/26/2018	Ground Water	244.8	254.8
J2 Range Eastern	J2MW-05M2	J2MW-05M2_F18	N	09/25/2018	Ground Water	185	195
J2 Range Eastern	J2MW-05M1	J2MW-05M1_F18	N	09/25/2018	Ground Water	225	235
J2 Range Eastern	MW-368M3	MW-368M3_F18	N	09/25/2018	Ground Water	155.5	165.5
J2 Range Eastern	MW-368M2	MW-368M2_F18	N	09/25/2018	Ground Water	202.73	212.73
J2 Range Eastern	MW-368M2	MW-368M2_F18D	FD	09/25/2018	Ground Water	202.73	212.73
J2 Range Eastern	MW-368M1	MW-368M1_F18	N	09/25/2018	Ground Water	237.35	247.35
J2 Range Eastern	MW-368M1	MW-368M1_F18D	FD	09/25/2018	Ground Water	237.35	247.35
J2 Range Eastern	MW-436M1	MW-436M1_F18	N	09/24/2018	Ground Water	295.47	305.47
J2 Range Eastern	MW-366M2	MW-366M2_F18	N	09/24/2018	Ground Water	175	185
J2 Range Eastern	MW-366M1	MW-366M1_F18	N	09/24/2018	Ground Water	215	225
J2 Range Eastern	MW-339M2	MW-339M2_F18	N	09/24/2018	Ground Water	213	223
J2 Range Eastern	MW-339M1	MW-339M1_F18	N	09/24/2018	Ground Water	233	243
J2 Range Northern	J2EW0003	J2EW0003_F18	N	09/19/2018	Ground Water	202	232
J2 Range Northern	J2EW0002	J2EW0002_F18	N	09/19/2018	Ground Water	198	233
J2 Range Northern	J2EW0002	J2EW0002_F18D	FD	09/19/2018	Ground Water	198	233
J2 Range Northern	J2EW0001	J2EW0001_F18	N	09/19/2018	Ground Water	179	234
J2 Range Northern	MW-300M3	MW-300M3_F18	N	09/19/2018	Ground Water	135.3	145.3
J2 Range Northern	MW-300M2	MW-300M2_F18	N	09/19/2018	Ground Water	197.2	207.2
J2 Range Northern	MW-300M1	MW-300M1_F18	N	09/19/2018	Ground Water	293	303
J2 Range Northern	MW-230M1	MW-230M1_F18	N	09/18/2018	Ground Water	130	140
J2 Range Northern	MW-322M1	MW-322M1_F18	N	09/18/2018	Ground Water	245.8	255.8
J2 Range Northern	MW-586M2	MW-586M2_F18	N	09/18/2018	Ground Water	211	221
J2 Range Northern	MW-586M1	MW-586M1_F18	N	09/18/2018	Ground Water	237	247
J2 Range Northern	NIN 240M2	MW-360M1_F16D		09/18/2018	Ground Water	237	247
12 Range Northern	NIN 240M1	MW 240M1 E19	N	09/17/2018	Ground Water	215.6	223.1
J2 Range Northern	MW 1305	MW/ 1305 E18	N	09/17/2018	Ground Water	103	113
12 Range Northern	MW-1303	MW-1303_118 MW-293M2_F18	N	09/17/2018	Ground Water	105	206.4
12 Range Northern	MW-233M2	MW-331M2_F18	N	09/13/2018	Ground Water	195.3	205.3
Demolition Area 1	PR-FFF	PR-FFF-150A	N	09/13/2018	Process Water	0	0
Demolition Area 1	PR-MID-2	PR-MID-2-150A	N	09/13/2018	Process Water	0	0
Demolition Area 1	PR-MID-1	PR-MID-1-150A	N	09/13/2018	Process Water	0	0
Demolition Area 1	PR-INF	PR-INF-150A	N	09/13/2018	Process Water	0	0
J2 Range Northern	MW-331M1	MW-331M1 F18	N	09/13/2018	Ground Water	235.4	245.4
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-150A	N	09/13/2018	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-150A	N	09/13/2018	Process Water	0	0
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-150A	N	09/13/2018	Process Water	0	0
Demolition Area 1	FPR-2-INF	FPR-2-INF-150A	N	09/13/2018	Process Water	0	0
Demolition Area 1	D1-EFF	D1-EFF-98A	N	09/13/2018	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-98A	N	09/13/2018	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-98A	N	09/13/2018	Process Water	0	0
Demolition Area 1	D1-INF	D1-INF-98A	N	09/13/2018	Process Water	0	0
J2 Range Northern	MW-313M3	MW-313M3_F18	N	09/13/2018	Ground Water	195.1	205.6
Demolition Area 1	D1LE-EFF	D1LE-EFF-26A	N	09/13/2018	Process Water	0	0
Demolition Area 1	D1LE-MID2	D1LE-MID2-26A	N	09/13/2018	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-26A	N	09/13/2018	Process Water	0	0
J2 Range Northern	MW-313M2	MW-313M2_F18	N	09/13/2018	Ground Water	215.5	225.5
Demolition Area 1	D1LE-INF	D1LE-INF-26A	N	09/13/2018	Process Water	0	0

N = Normal Sample

FD = Field Duplicate

TABLE 1 Sampling Progress: 1 September to 30 September 2018

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	
J2 Range Northern	MW-313M1	MW-313M1_F18	N	09/13/2018	Ground Water	255.4	265.4	
J2 Range Northern	MW-313M1	MW-313M1_F18D	FD	09/13/2018	Ground Water	255.4	265.4	
J2 Range Northern	MW-234M2	MW-234M2_F18	N	09/12/2018	Ground Water	110	120	
J2 Range Northern	MW-234M2	MW-234M2_F18D	FD	09/12/2018	Ground Water	110	120	
J3 Range	J3-EFF	J3-EFF-144A	N	09/12/2018	Process Water	0	0	
J3 Range	J3-MID-2	J3-MID-2-144A	N	09/12/2018	Process Water	0	0	
J3 Range	J3-MID-1	J3-MID-1-144A	N	09/12/2018	Process Water	0	0	
J3 Range	J3-INF	J3-INF-144A	N	09/12/2018	Process Water	0	0	
J2 Range Northern	MW-234M1	MW-234M1_F18	N	09/12/2018	Ground Water	130	140	
J1 Range Southern	J1S-EFF	J1S-EFF-130A	N	09/12/2018	Process Water	0	0	
J1 Range Southern	J1S-MID	J1S-MID-130A	N	09/12/2018	Process Water	0	0	
J1 Range Southern	J1S-INF-2	J1S-INF-2-130A	N	09/12/2018	Process Water	0	0	
J2 Range Northern	MW-327M3	MW-327M3_F18	N	09/12/2018	Ground Water	220.16	230.15	
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-120A	N	09/12/2018	Process Water	0	0	
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-120A	N	09/12/2018	Process Water	0	0	
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-120A	N	09/12/2018	Process Water	0	0	
J2 Range Eastern	J2E-INF-K	J2E-INF-K-120A	N	09/12/2018	Process Water	0	0	
J2 Range Northern	MW-327M2	MW-327M2_F18	N	09/12/2018	Ground Water	265	275	
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-120A	N	09/12/2018	Process Water	0	0	
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-120A	N	09/12/2018	Process Water	0	0	
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-120A	N	09/12/2018	Process Water	0	0	
J2 Range Eastern	J2E-INF-J	J2E-INF-J-120A	N	09/12/2018	Process Water	0	0	
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-120A	N	09/12/2018	Process Water	0	0	
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-120A	N	09/12/2018	Process Water	0	0	
J2 Range Northern	MW-327M1	MW-327M1_F18	N	09/12/2018	Ground Water	296.1	306	
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-120A	N	09/12/2018	Process Water	0	0	
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-120A	N	09/12/2018	Process Water	0	0	
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-120A	N	09/12/2018	Process Water	0	0	
J2 Range Eastern	J2E-INF-I	J2E-INF-I-120A	N	09/12/2018	Process Water	0	0	
J2 Range Northern	MW-305M1	MW-305M1_F18	N	09/11/2018	Ground Water	202.8	212.8	
J2 Range Northern	MW-589M2	MW-589M2_F18	N	09/11/2018	Ground Water	211	221	
J2 Range Northern	MW-589M2	MW-589M2_F18D	FD	09/11/2018	Ground Water	211	221	
J2 Range Northern	MW-589M1	MW-589M1_F18	N	09/11/2018	Ground Water	240	250	
Central Impact Area	CIA2-EFF	CIA2-EFF-56A	N	09/11/2018	Process Water	0	0	
Central Impact Area	CIA2-MID2	CIA2-MID2-56A	N	09/11/2018	Process Water	0	0	
Central Impact Area	CIA2-MID1	CIA2-MID1-56A	N	09/11/2018	Process Water	0	0	
Central Impact Area	CIA2-INF	CIA2-INF-56A	N	09/11/2018	Process Water	0	0	
Central Impact Area	CIA1-EFF	CIA1-EFF-56A	N	09/11/2018	Process Water	0	0	
J2 Range Northern	J2EW1-MW1-B	J2EW1-MW1-B_F18	N	09/11/2018	Ground Water	205.8	215.8	
Central Impact Area	CIA1-MID2	CIA1-MID2-56A	N	09/11/2018	Process Water	0	0	
Central Impact Area	CIA1-MID1	CIA1-MID1-56A	N	09/11/2018	Process Water	0	0	
Central Impact Area	CIA1-INF	CIA1-INF-56A	N	09/11/2018	Process Water	0	0	
J2 Range Northern	J2EW1-MW1-C	J2EW1-MW1-C_F18	N	09/11/2018	Ground Water	240.8	250.8	
Central Impact Area	CIA3-EFF	CIA3-EFF-27A	N	09/11/2018	Process Water	0	0	
Central Impact Area	CIA3-MID2	CIA3-MID2-27A	N	09/11/2018	Process Water	0	0	
Central Impact Area	CIA3-MID1	CIA3-MID1-27A	N	09/11/2018	Process Water	0	0	
Central Impact Area	CIA3-INF	CIA3-INF-27A	N	09/11/2018	Process Water	0	0	
J2 Range Northern	MW-630M1	MVV-630M1_F18	N	09/10/2018	Ground Water	217	227	
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-144A	N	09/10/2018	Process Water	0	0	
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-144A	N	09/10/2018	Process Water	υ	U	
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-144A	N	09/10/2018	Process Water	0	0	
J2 Range Northern	JZN-INF-G	JZIN-INF-G-144A	N	09/10/2018	Process Water	007	077	
J2 Range Northern	WW-612M2	MVV-612M2_F18	N	09/10/2018	Ground Water	207	211	
J2 Range Northern	WW-612M1	MVV-612M1_F18	N	09/10/2018	Ground Water	297	307	
J2 Range Northern	J2EW3-MW1-B	J2EVV3-MW1-B_F18	N	09/10/2018	Ground Water	210.7	220.7	
J∠ rkange Nortnern		JZIN-EFF-EF-144A	IN NI	09/10/2018	Process Water	0	0	
J2 Range Northern			IN N	09/10/2018	Process Water	0	0	
J2 Range Northern			IN N	09/10/2018	Process Water	0	0	
J2 Range Northern		JZIN-INF-EF-144A	IN N	09/10/2018	Process Water	0	0	
J2 Range Northern	JZN-MID-2E	JZN-MID-2E-144A	N	09/10/2018	Process Water	υ	υ	

N = Normal Sample FD = Field Duplicate

 TABLE 1

 Sampling Progress:
 1 September to 30 September 2018

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-144A	N	09/10/2018	Process Water	0	0
J1 Range Northern	J1N-EFF	J1N-EFF-59A	N	09/10/2018	Process Water	0	0
J2 Range Northern	J2EW3-MW1-C	J2EW3-MW1-C_F18	N	09/10/2018	Ground Water	245.7	255.7
J2 Range Northern	J2EW3-MW1-C	J2EW3-MW1-C_F18D	FD	09/10/2018	Ground Water	245.7	255.7
J1 Range Northern	J1N-MID2	J1N-MID2-59A	N	09/10/2018	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-59A	N	09/10/2018	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-59A	N	09/10/2018	Process Water	0	0
J2 Range Northern	MW-620M1	MW-620M1_F18	N	09/06/2018	Ground Water	268.6	278.6
J2 Range Northern	MW-337M1	MW-337M1_F18	N	09/06/2018	Ground Water	243.71	253.71
J2 Range Northern	MW-619M2	MW-619M2_F18	N	09/06/2018	Ground Water	234.1	244.1
J2 Range Northern	MW-619M1	MW-619M1_F18	N	09/06/2018	Ground Water	255.1	265.1
J2 Range Northern	MW-613M2	MW-613M2_F18	N	09/06/2018	Ground Water	246.1	256.1
J2 Range Northern	MW-613M1	MW-613M1_F18	N	09/06/2018	Ground Water	267.1	277.1
J2 Range Northern	MW-632M2	MW-632M2_F18	N	09/05/2018	Ground Water	229.5	239.5
J2 Range Northern	MW-632M1	MW-632M1_F18	N	09/05/2018	Ground Water	254.5	264.5
J2 Range Northern	MW-318M2	MW-318M2_F18	N	09/05/2018	Ground Water	205.8	215.8
J2 Range Northern	MW-318M1	MW-318M1_F18	N	09/05/2018	Ground Water	305.8	315.8

#### TABLE 2 VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS Data Received September 2018

			Top Depth	Bottom Depth		Test		Result				>		
Area of Concern	Location ID	Field Sample ID	(ft bgs)	(ft bgs)	Date Sampled	Method	Analyte	Value	Qualifier	Units	MCL/HA	MCL/HA	MDL	RL
J2 Range Northern	J2EW3-MW-2-C	J2EW3-MW-2-C_F18	251.1	261.1	08/23/2018	SW6850	Perchlorate	0.14	J	ug/L	2.0		0.012	0.20
J2 Range Northern	J2EW2-MW2-B	J2EW2-MW2-B_F18	209.8	219.8	08/23/2018	SW6850	Perchlorate	0.032	J	ug/L	2.0		0.012	0.20
J2 Range Northern	J2EW2-MW2-C	J2EW2-MW2-C_F18	243.8	253.8	08/23/2018	SW6850	Perchlorate	0.079	J	ug/L	2.0		0.012	0.20
J2 Range Northern	MW-289M2	MW-289M2_F18	162	172	08/22/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.5		ug/L	400		0.025	0.20
J2 Range Northern	MW-289M2	MW-289M2_F18	162	172	08/22/2018	SW6850	Perchlorate	2.5		ug/L	2.0	Х	0.012	0.20
J2 Range Northern	MW-289M2	MW-289M2_F18	162	172	08/22/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.2		ug/L	0.60	Х	0.036	0.20
J2 Range Northern	MW-289M2	MW-289M2_F18D	162	172	08/22/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.5		ug/L	400		0.025	0.20
J2 Range Northern	MW-289M2	MW-289M2_F18D	162	172	08/22/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.2		ug/L	0.60	х	0.036	0.20
J2 Range Northern	MW-289M1	MW-289M1_F18	305	315	08/22/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.43		ug/L	400		0.025	0.20
J2 Range Northern	MW-289M1	MW-289M1_F18	305	315	08/22/2018	SW6850	Perchlorate	0.59		ug/L	2.0		0.012	0.20
J2 Range Northern	MW-289M1	MW-289M1_F18	305	315	08/22/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.87		ug/L	0.60	х	0.036	0.20
J2 Range Northern	MW-634M3	MW-634M3_F18	170.6	180.6	08/22/2018	SW6850	Perchlorate	0.30		ug/L	2.0		0.012	0.20
J2 Range Northern	MW-634M2	MW-634M2_F18	200.6	210.6	08/22/2018	SW6850	Perchlorate	1.4		ug/L	2.0		0.012	0.20
J2 Range Northern	MW-634M1	MW-634M1_F18	305.6	315.6	08/22/2018	SW6850	Perchlorate	0.31		ug/L	2.0		0.012	0.20
J2 Range Northern	MW-588M2	MW-588M2_F18	198	208	08/21/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.28	J	ug/L	0.60		0.036	0.20
J2 Range Northern	MW-588M2	MW-588M2_F18	198	208	08/21/2018	SW6850	Perchlorate	2.5		ug/L	2.0	х	0.012	0.20
J2 Range Northern	MW-588M2	MW-588M2_F18D	198	208	08/21/2018	SW6850	Perchlorate	2.4		ug/L	2.0	х	0.012	0.20
J2 Range Northern	MW-588M1	MW-588M1_F18	238	248	08/21/2018	SW6850	Perchlorate	0.036	J	ug/L	2.0		0.012	0.20
J2 Range Northern	MW-585M3	MW-585M3_F18	198.5	208.5	08/21/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.5	J	ug/L	0.60	х	0.036	0.20
J2 Range Northern	MW-585M3	MW-585M3_F18	198.5	208.5	08/21/2018	SW6850	Perchlorate	2.0		ug/L	2.0		0.012	0.20
J2 Range Northern	MW-585M3	MW-585M3_F18	198.5	208.5	08/21/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2.1	J	ug/L	400		0.025	0.20
J2 Range Northern	MW-585M3	MW-585M3_F18D	198.5	208.5	08/21/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.5	J	ug/L	0.60	х	0.036	0.20
J2 Range Northern	MW-585M3	MW-585M3_F18D	198.5	208.5	08/21/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2.1	J	ug/L	400		0.025	0.20
J2 Range Northern	MW-585M2	MW-585M2_F18	218.5	228.5	08/21/2018	SW6850	Perchlorate	0.54		ug/L	2.0		0.012	0.20
J2 Range Northern	MW-585M2	MW-585M2_F18D	218.5	228.5	08/21/2018	SW6850	Perchlorate	0.43		ug/L	2.0		0.012	0.20
J2 Range Northern	MW-585M1	MW-585M1_F18	240	250	08/21/2018	SW6850	Perchlorate	0.057	J	ug/L	2.0		0.012	0.20
J3 Range	MW-227M3	MW-227M3_F18	65	75	08/20/2018	SW6850	Perchlorate	0.21		ug/L	2.0		0.012	0.20
J3 Range	MW-227M2	MW-227M2_F18	110	120	08/20/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.44	J	ug/L	400		0.025	0.20
J3 Range	MW-227M2	MW-227M2_F18	110	120	08/20/2018	SW6850	Perchlorate	7.5		ug/L	2.0	х	0.012	0.20
J3 Range	MW-227M2	MW-227M2_F18D	110	120	08/20/2018	SW6850	Perchlorate	7.7		ug/L	2.0	х	0.012	0.20
J3 Range	MW-227M1	MW-227M1_F18	130	140	08/20/2018	SW6850	Perchlorate	0.031	J	ug/L	2.0		0.012	0.20
J3 Range	90MW0054	90MW0054_F18	107	112	08/16/2018	SW6850	Perchlorate	0.99		ug/L	2.0		0.012	0.20
J3 Range	MW-217M2	MW-217M2_F18	138	143	08/16/2018	SW6850	Perchlorate	0.26		ug/L	2.0		0.012	0.20
J3 Range	MW-217M3	MW-217M3_F18	101	106	08/16/2018	SW6850	Perchlorate	0.054	J	ug/L	2.0		0.012	0.20
J3 Range	MW-247M3	MW-247M3_F18	95	105	08/15/2018	SW6850	Perchlorate	0.054	J	ug/L	2.0		0.012	0.20
J3 Range	MW-247M2	MW-247M2_F18	125	135	08/15/2018	SW6850	Perchlorate	0.059	J	ug/L	2.0		0.012	0.20
J3 Range	MW-193S	MW-193S_F18	32.5	37.5	08/15/2018	SW6850	Perchlorate	0.23		ug/L	2.0		0.012	0.20
J3 Range	MW-193M1	MW-193M1_F18	57.5	62.5	08/15/2018	SW6850	Perchlorate	0.038	J	ug/L	2.0		0.012	0.20
J3 Range	MW-250M3	MW-250M3_F18	95	105	08/14/2018	SW6850	Perchlorate	0.15	J	ug/L	2.0		0.012	0.20
J3 Range	MW-250M3	MW-250M3_F18	95	105	08/14/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.35		ug/L	400		0.025	0.20
J3 Range	MW-250M3	MW-250M3_F18	95	105	08/14/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.2		ug/L	0.60	х	0.036	0.20
J3 Range	MW-250M3	MW-250M3_F18D	95	105	08/14/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.37		ug/L	400		0.025	0.20

J = Estimated Result

MDL = Method Detection Limit

RL = Reporting LImit

#### TABLE 2 VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS Data Received September 2018

			Top	Bottom Depth		Test		Result						
Area of Concern	Location ID	Field Sample ID	(ft bgs)	(ft bgs)	Date Sampled	Method	Analyte	Value	Qualifier	Units	MCL/HA	MCL/HA	MDL	RL
J3 Range	MW-250M3	MW-250M3_F18D	95	105	08/14/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.2		ug/L	0.60	х	0.036	0.20
J3 Range	MW-250M2	MW-250M2_F18	145	155	08/14/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.24		ug/L	0.60		0.036	0.20
J3 Range	MW-250M2	MW-250M2_F18	145	155	08/14/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.39		ug/L	400		0.025	0.20
J3 Range	MW-250M2	MW-250M2_F18	145	155	08/14/2018	SW6850	Perchlorate	2.8		ug/L	2.0	х	0.012	0.20
J3 Range	MW-250M2	MW-250M2_F18D	145	155	08/14/2018	SW6850	Perchlorate	2.8		ug/L	2.0	х	0.012	0.20
J3 Range	MW-157M3	MW-157M3_F18	70	80	08/14/2018	SW6850	Perchlorate	0.071	J	ug/L	2.0		0.012	0.20
J3 Range	MW-142M2	MW-142M2_F18	140	150	08/13/2018	SW6850	Perchlorate	0.089	J	ug/L	2.0		0.012	0.20
J3 Range	RS0011OSNK	RS0011OSNK_F18	0	0	08/08/2018	SW6850	Perchlorate	0.14	J	ug/L	2.0		0.012	0.20
J3 Range	MW-171M2	MW-171M2_F18	81	86	08/08/2018	SW6850	Perchlorate	1.2		ug/L	2.0		0.012	0.20
J3 Range	90PZ0211	90PZ0211_F18	80	110	08/07/2018	SW6850	Perchlorate	0.059	J	ug/L	2.0		0.012	0.20
J3 Range	90PZ0204	90PZ0204_F18	80	85	08/06/2018	SW6850	Perchlorate	0.078	J	ug/L	2.0		0.012	0.20
J3 Range	MW-329M2	MW-329M2_F18	150.05	160.05	08/02/2018	SW6850	Perchlorate	0.76		ug/L	2.0		0.012	0.20
J3 Range	MW-329M1	MW-329M1_F18	179.96	189.96	08/02/2018	SW6850	Perchlorate	0.29		ug/L	2.0		0.012	0.20
J3 Range	J3-MW-1-B	J3-MW-1-B_F18	175.61	185.61	08/02/2018	SW6850	Perchlorate	0.69		ug/L	2.0		0.012	0.20
J3 Range	J3-MW-1-C	J3-MW-1-C_F18	203.61	213.61	08/02/2018	SW6850	Perchlorate	0.23		ug/L	2.0		0.012	0.20
J2 Range Northern	C4-A	C-4S_F18	200	250	08/01/2018	SW6850	Perchlorate	0.018	J	ug/L	2.0		0.012	0.20
J2 Range Northern	MW-330M2	MW-330M2_F18	238	248	08/01/2018	SW6850	Perchlorate	0.022	J	ug/L	2.0		0.012	0.20
L Range	MW-242M1	MW-242M1_F18	235	245	07/31/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.9		ug/L	0.60	х	0.036	0.20
L Range	MW-595M1	MW-595M1_F18	255.3	265.3	07/31/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.2		ug/L	0.60	Х	0.036	0.20
L Range	MW-595M1	MW-595M1_F18D	255.3	265.3	07/31/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.2		ug/L	0.60	Х	0.036	0.20
J3 Range	90MW0104B	90MW0104B_F18	115	120	07/30/2018	SW6850	Perchlorate	0.014	J	ug/L	2.0		0.012	0.20
J3 Range	MW-143M3	MW-143M3_F18	107	112	07/26/2018	SW6850	Perchlorate	0.44		ug/L	2.0		0.012	0.20
J3 Range	MW-143M2	MW-143M2_F18	117	122	07/26/2018	SW6850	Perchlorate	0.055	J	ug/L	2.0		0.012	0.20
J3 Range	MW-143M1	MW-143M1_F18	144	154	07/26/2018	SW6850	Perchlorate	0.58		ug/L	2.0		0.012	0.20
J3 Range	MW-636M2	MW-636M2_F18	110.5	120.5	07/25/2018	SW6850	Perchlorate	0.064	J	ug/L	2.0		0.012	0.20
J3 Range	MW-636M1	MW-636M1_F18	141.6	151.6	07/25/2018	SW6850	Perchlorate	0.024	J	ug/L	2.0		0.012	0.20
J3 Range	MW-343M2	MW-343M2_F18	166.82	171.82	07/25/2018	SW6850	Perchlorate	0.074	J	ug/L	2.0		0.012	0.20
J3 Range	MW-343M1	MW-343M1_F18	214.83	224.83	07/25/2018	SW6850	Perchlorate	0.69		ug/L	2.0		0.012	0.20
J3 Range	J3EWIP1	J3EWIP1_F18	153	193	07/24/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.21		ug/L	0.60		0.036	0.20
J3 Range	J3EWIP1	J3EWIP1_F18	153	193	07/24/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.21		ug/L	400		0.025	0.20
J3 Range	J3EWIP1	J3EWIP1_F18	153	193	07/24/2018	SW6850	Perchlorate	0.77		ug/L	2.0		0.012	0.20
J3 Range	J3EWIP1	J3EWIP1_F18D	153	193	07/24/2018	SW6850	Perchlorate	1.0		ug/L	2.0		0.012	0.20
J3 Range	MW-637M2	MW-637M2_F18	214.1	224.1	07/24/2018	SW6850	Perchlorate	3.2		ug/L	2.0	Х	0.012	0.20
J3 Range	MW-637M2	MW-637M2_F18D	214.1	224.1	07/24/2018	SW6850	Perchlorate	3.2		ug/L	2.0	Х	0.012	0.20
J3 Range	J3EWIP2	J3EWIP2_F18	149.5	169.5	07/23/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.29		ug/L	400		0.025	0.20
J3 Range	J3EWIP2	J3EWIP2_F18	149.5	169.5	07/23/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.42		ug/L	0.60		0.036	0.20
J3 Range	J3EWIP2	J3EWIP2_F18	149.5	169.5	07/23/2018	SW6850	Perchlorate	2.6		ug/L	2.0	х	0.012	0.20
J3 Range	J3EWIP2	J3EWIP2_F18D	149.5	169.5	07/23/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.28		ug/L	400		0.025	0.20
J3 Range	J3EWIP2	J3EWIP2_F18D	149.5	169.5	07/23/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.40		ug/L	0.60		0.036	0.20
J3 Range	J3EWIP2	J3EWIP2_F18D	149.5	169.5	07/23/2018	SW6850	Perchlorate	2.7		ug/L	2.0	х	0.012	0.20
J3 Range	MW-653M1	MW-653M1_F18	147.5	157.5	07/23/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.43		ug/L	400		0.025	0.20
J3 Range	90EW0001	90EW0001_F18	83.1	143.83	07/18/2018	SW6850	Perchlorate	0.23		ug/L	2.0		0.012	0.20

J = Estimated Result

MDL = Method Detection Limit

RL = Reporting Llmit

#### TABLE 2 VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS Data Received September 2018

Area of Concern	Location ID	Field Sample ID	Top Depth (ft bgs)	Bottom Depth	Date Sampleo	Test Method	Analyte	Result Value	Qualifier	Units	MCL/HA	> MCL/HA	MDL	RL
J3 Range	J3EW0032	J3EW0032 F18	102	152	07/18/2018	SW6850	Perchlorate	0.49		ug/L	2.0		0.012	0.20
J3 Range	J3EW0032	 J3EW0032_F18	102	152	07/18/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.70	J	ug/L	0.60	x	0.036	0.20
J3 Range	J3EW0032	J3EW0032_F18D	102	152	07/18/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.70	J	ug/L	0.60	х	0.036	0.20
J3 Range	90MP0059B	90MP0059B_F18	116.39	118.89	07/18/2018	SW6850	Perchlorate	0.72		ug/L	2.0		0.012	0.20
J3 Range	MW-163S	MW-163S_F18	38	48	07/17/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.4		ug/L	0.60	х	0.036	0.20
J3 Range	MW-163S	MW-163S_F18	38	48	07/17/2018	SW6850	Perchlorate	3.3		ug/L	2.0	х	0.012	0.20
J3 Range	MW-163S	MW-163S_F18D	38	48	07/17/2018	SW6850	Perchlorate	3.4		ug/L	2.0	х	0.012	0.20
J3 Range	MW-359M2	MW-359M2_F18	148.62	158.62	07/17/2018	SW6850	Perchlorate	0.099	J	ug/L	2.0		0.012	0.20
J3 Range	MW-198M4	MW-198M4_F18	70	75	07/17/2018	SW6850	Perchlorate	0.68		ug/L	2.0		0.012	0.20
J3 Range	MW-198M4	MW-198M4_F18	70	75	07/17/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.0		ug/L	0.60	х	0.036	0.20
J3 Range	MW-198M4	MW-198M4_F18	70	75	07/17/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2.7		ug/L	400		0.025	0.20
J3 Range	MW-198M4	MW-198M4_F18D	70	75	07/17/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.1		ug/L	0.60	х	0.036	0.20
J3 Range	MW-198M4	MW-198M4_F18D	70	75	07/17/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2.7		ug/L	400		0.025	0.20
J3 Range	MW-198M3	MW-198M3_F18	100	105	07/17/2018	SW6850	Perchlorate	0.67		ug/L	2.0		0.012	0.20
J3 Range	MW-198M2	MW-198M2_F18	120	125	07/17/2018	SW6850	Perchlorate	0.43		ug/L	2.0		0.012	0.20
J3 Range	MW-198M1	MW-198M1_F18	150	155	07/17/2018	SW6850	Perchlorate	0.018	J	ug/L	2.0		0.012	0.20
J3 Range	MW-243M2	MW-243M2_F18	84.5	94.5	07/16/2018	SW6850	Perchlorate	0.073	J	ug/L	2.0		0.012	0.20
J3 Range	MW-243M1	MW-243M1_F18	114.5	124.5	07/16/2018	SW6850	Perchlorate	0.14	J	ug/L	2.0		0.012	0.20
J3 Range	MW-295M2	MW-295M2_F18	117	127	07/16/2018	SW6850	Perchlorate	0.068	J	ug/L	2.0		0.012	0.20
J3 Range	MW-295M1	MW-295M1_F18	145	155	07/16/2018	SW6850	Perchlorate	0.78		ug/L	2.0		0.012	0.20
J3 Range	MW-197M3	MW-197M3_F18	60.2	65.2	07/16/2018	SW6850	Perchlorate	0.16	J	ug/L	2.0		0.012	0.20
J3 Range	MW-197M3	MW-197M3_F18	60.2	65.2	07/16/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.3		ug/L	400		0.025	0.20
J3 Range	MW-197M3	MW-197M3_F18D	60.2	65.2	07/16/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.4		ug/L	400		0.025	0.20
J3 Range	MW-197M2	MW-197M2_F18	80.2	85.2	07/16/2018	SW6850	Perchlorate	0.20		ug/L	2.0		0.012	0.20
J3 Range	MW-232M2	MW-232M2_F18	61	66	07/12/2018	SW6850	Perchlorate	0.069	J	ug/L	2.0		0.012	0.20
J3 Range	MW-232M1	MW-232M1_F18	77.5	82.5	07/12/2018	SW6850	Perchlorate	0.37		ug/L	2.0		0.012	0.20
J3 Range	MW-155M1	MW-155M1_F18	124	134	07/12/2018	SW6850	Perchlorate	0.21		ug/L	2.0		0.012	0.20
J3 Range	MW-576M3	MW-576M3_F18	98.9	108.9	07/12/2018	SW6850	Perchlorate	0.036	J	ug/L	2.0		0.012	0.20
J3 Range	MW-576M2	MW-576M2_F18	133.9	143.9	07/12/2018	SW6850	Perchlorate	1.2		ug/L	2.0		0.012	0.20
J3 Range	MW-576M2	MW-576M2_F18	133.9	143.9	07/12/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2.1		ug/L	400		0.025	0.20
J3 Range	MW-576M2	MW-576M2_F18	133.9	143.9	07/12/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	5.3		ug/L	0.60	х	0.036	0.20
J3 Range	MW-576M2	MW-576M2_F18D	133.9	143.9	07/12/2018	SW6850	Perchlorate	1.2		ug/L	2.0		0.012	0.20
J3 Range	MW-576M2	MW-576M2_F18D	133.9	143.9	07/12/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2.1		ug/L	400		0.025	0.20
J3 Range	MW-576M2	MW-576M2_F18D	133.9	143.9	07/12/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	5.5		ug/L	0.60	х	0.036	0.20
J3 Range	MW-576M1	MW-576M1_F18	173.9	183.9	07/12/2018	SW6850	Perchlorate	0.041	J	ug/L	2.0		0.012	0.20