

**MONTHLY PROGRESS REPORT #242  
FOR MAY 2017**

**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 May to 31 May 2017.

**1. SUMMARY OF REMEDIATION ACTIONS**

The following is a description of Remediation Actions (RA) underway at Camp Edwards as of May 2017.

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 2.488 billion gallons of water treated and re-injected as of 26 May 2017. The following Frank Perkins Road facility shut down occurred in May.

- Extraction well EW-658 tripped at 1214 on 31 May 2017 and EW-658 was restarted at 1331 on 31 May 2017

The Pew Road Mobile Treatment Unit (MTU) continues to operate at a flow rate of 103 gpm with over 521.3 million gallons of water treated and re-injected as of 26 May 2017. No Pew Road MTU shut downs occurred in May.

The Base Boundary RA is operating at a flow rate of 65 gpm with over 165.0 million gallons of water treated and re-injected as of 26 May 2017. The following Base Boundary MTU shut down occurred in May:

- Shut down at 0948 on 16 May 2017 due to bag filter change out and restarted at 1012 on 16 May 2017

The Leading Edge system continues to operate at a flow rate of 100 gpm with over 45.6 million gallons of water treated and re-injected as of 26 May 2017. No Leading Edge system shut downs occurred in May.

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 26 May 2017, over 401.7 million gallons of water have been treated and re-injected. No J-1 Range Southern system shut downs occurred in May.

#### 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 26 May 2017, over 407.9 million gallons of water have been treated and re-injected. The following J-1 Range Northern MTU shut down occurred in May:

- Shut down at 0825 on 12 May 2017 due to bag filter change out and restarted at 0840 on 12 May 2017

#### 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 was operating continues to operate at a flow rate of 255 gpm. As of 26 May 2017, over 1.013 billion gallons of water have been treated and re-injected. The following J-3 Range system shut down occurred in May:

- Shut down at 1005 on 8 May 2017 due to FS-12 being turned off to perform electrical work and was restarted at 1400 on 9 May 2017 when electrical work was completed.

#### 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 26 May 2017, over 870.0 million gallons of water have been treated and re-injected. No Northern Treatment Building shut downs occurred in May.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 26 May 2017, over 1.364 billion gallons of water have been treated and re-injected. No J-2 Range Northern MTU shut downs occurred in May.

#### 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 26 May 2017, over 950.2 million gallons of water have been treated and re-injected. No MTUs H and I shut downs occurred in May.

MTU J continues to operate at a flow rate of 120 gpm. As of 26 May 2017, over 430.4 million gallons of water have been treated and re-injected. No shut downs of MTU J occurred in May.

MTU K continues to operate at a flow rate of 125 gpm. As of 26 May 2017, over 540.5 million gallons of water have been treated and re-injected. No shut downs of MTU K occurred in May.

#### 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 26 May 2017, over 953.4 million gallons of water have been treated and re-injected. No CIA treatment facility shut downs occurred in May.

### **SUMMARY OF ACTIONS TAKEN**

Samples collected during the reporting period are summarized in Table 1.

Process water samples were collected at Frank Perkins Road, Pew Road, Base Boundary, Leading Edge, J-1 Range Southern, J-1 Range Northern, J-2 Range Northern, J-2 Range Eastern, J-3 Range, and Central Impact Area (CIA).

Environmental and system performance monitoring groundwater samples were collected at Demolition Area 1, Demolition Area 2, Small Arms Ranges, and J-2 Range Eastern. Surface water samples were collected from J-3 Range.

Performed daily inspection of BEM cover at the CIA to ensure cover is secure and intact.

Performed BEM soil excavation and screening.

Collected cued Metalmapper data and anomaly investigation in Ph II Area 3 at the CIA.

Performed vegetation clearance in Ph III Area 1 at the CIA.

Completed 8<sup>th</sup> lift at one C Range grid.

Collected post-excavation soil samples at the following locations: B Range 8<sup>th</sup> lift at one grid, Former B Range 6<sup>th</sup> lift at two grids, C Range 8<sup>th</sup> lift at one grid, D Range 2<sup>nd</sup> lift at one stockpile grid, and G Range 7<sup>th</sup> lift at one grid.

Continued transportation and disposal (T&D) of excavated soil at the Small Arms Ranges and Training Areas. Completed T&D of excavated soil at the J-2 Range.

## **JBCC IAGWSP Tech Update Meeting Minutes 11 May 2017**

### **Project and Fieldwork Update**

All treatment systems are up and running. The J-3 Range system was down for two days earlier in the week due to electric work being conducted by AFCEC on their FS-12 system. The groundwater sampling crews are working in Demolition Area 1. The team agreed to take the next synoptic water level round for J-1 in July rather than October. Watermark is working on a solution for the problems with the CIA2 infiltration gallery. They will be onsite next week to perform perc tests.

In the Central Impact Area, there is one Metal Mapper Crew operating in Phase II Area 3. It is estimated that they will finish in June. The Mass Guard has many firing events this month which has impacted the number of days the team can work. Dawson is performing digs in Area 3. They will be moving to excavating the BEM soil and working on six acres of fire breaks on Impact Area roads. EPA requested a project note for the BEM soil change out. IAGWSP indicated that they will provide it before the next tech meeting.

In the Small Arms Ranges work is ongoing in five of the ten ranges. Excavations have been completed and we are waiting for post-excavation sampling results. In the meantime, all the soil from the existing stockpile at D Range has been excavated. Of the 4,200 yards, 1,200 was hazardous, 300 was shipped out of state and 2,700 in state. Completed 5<sup>th</sup> lift at Former B range and 2<sup>nd</sup> lift at C Range. A total of 17,000 cy3 has been shipped off-site as part of this Small Arms Range project.

An update was provided on the AECOM projects. USACE is recommending using the new modeling drift function that was recently presented on upcoming plume updates to test it out. Demolition Area 1 and J-1 South are suggested because their data sets will be available early summer. Updates and schedules will be provided at upcoming tech meetings. For the attenuation studies, by the end of the week AECOM is scheduled to submit information on the background research they've compiled as well as a proposal for a field study. Finally they are also looking at innovative technologies, specifically bioremediation and UV treatment, to see where and how it could be applied at JBCC. IAGWSP will continue to provide updates on these projects at upcoming tech meetings.

### **Action Items**

The action items were discussed and updated.

## L Range Annual Environmental Monitoring Report Presentation

A presentation was provided on the L Range Annual Environmental Monitoring Report. A presentation was provided on the L Range Annual Environmental Monitoring Report. During the reporting period (February 2016 to January 2017), no new work was conducted. Sampling locations, groundwater monitoring results and trends were reviewed and discussed. In August 2016, RDX was detected at 2.1 µg/L (MW-242M1) and 4.0 µg/L (MW-595M1). In January 2017, RDX was detected at 3.8 µg/L (MW-242M1), 4.4 µg/L (MW-595M1), 0.44 µg/L (MW-651M1) and 0.28 µg/L (MW-650M1). At EPA's request, samples were collected in September 2016 from 90EW00017. Results were non-detect for RDX and perchlorate.

Groundwater modeling and a comparison between the model predicted and observed plume was reviewed and discussed. The groundwater flow model simulated migration of the November 2015 plume shell to the end of the reporting period. It was noted that the observed and predicted plumes are similar in size and that two small zones of concentrations above 2 µg/L near wells MW-242M1 and MW595M1 are not reflected in the model predicted plume.

Transport model results and time to cleanup goals was discussed. The transport simulations using 2016 revised plume shell (data through November 2015) predicted RDX concentrations below 2.0 µg/L at L Range in 2018, below 0.6 µg/L by 2028. It was noted that due to increases in measured concentrations at MW-242M1 and MW-595M1 during this reporting period, it is unlikely that RDX will have attenuated completely below 2 µg/L by 2018. Based on attenuation rates and distance, the entirety of the RDX plume is still expected to attenuate below the 0.6 µg/L prior to reaching the FS-12 extraction wells.

IAGWSP recommends removing 90WT0013 from the sampling program because the well is located 200 feet east and roughly 350 upgradient of any RDX mass. In addition the well has been sampled 22 consecutive times since 2002 and never had a detection of RDX. EPA and MassDEP will be receiving the annual monitoring report by the end of the week.

## JBCC Cleanup Team Meeting

The next meeting of the JBCC Cleanup Team (JBCCCT), formerly the MMR Cleanup Team (MMRCT) has not been scheduled. 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 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 1 May to 31 May 2017. 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.

There are currently twelve operable units (OU) 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:

- Monthly Progress Report No. 241 for April 2017 5/10/2017
- J-1 Range Southern Supplemental Data Gap Drilling Project Note 5/11/2017
- Revised Draft 2016 Central Impact Area Source Removal Annual Report 5/15/2017
- Draft L Range 2017 Environmental Monitoring Report 5/15/2017
- Final J-2 Range Eastern 2016 Environmental Monitoring Report and J-2 Range Northern 2016 Environmental Monitoring Report 5/19/2017
- Draft J-1 Range Northern 2017 Annual Environmental Monitoring Report and J-1 Range Southern 2017 Annual Environmental Monitoring Report 5/26/2017

## 3. SCHEDULED ACTIONS

The following documents are being prepared or revised during June 2017:

- Training Areas Draft Investigation Report;
- Training Areas Draft Remedy Selection Plan;
- CIA Draft Startup Report;
- 2016 CIA Source Removal Annual Report;
- Draft 2015 BIP Report;
- J-3 Range 2016 Interim Environmental Monitoring Report;
- J-3 Range Startup Report;
- J-3 Range Confirmatory Geophysical and Soil Investigation Report;
- J-1 Range Northern and J-1 Range Southern 2017 Annual Environmental Monitoring Report;
- L Range 2017 Annual Environmental Monitoring Report;
- Five Year Review Report; and
- Former A Range Demonstration of Compliance Report.

**TABLE 1**  
**Sampling Progress: 1 May 2017 through 31 May 2017**

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Demolition Area 1	MW-139M2	MW-139M2_S17	N	05/30/2017	Ground Water	154	164
Demolition Area 1	MW-165M2	MW-165M2_S17	N	05/30/2017	Ground Water	124.5	134.5
Demolition Area 1	MW-165M2	MW-165M2_S17D	FD	05/30/2017	Ground Water	124.5	134.5
Demolition Area 1	MW-165M1	MW-165M1_S17	N	05/30/2017	Ground Water	184.5	194.5
Demolition Area 1	MW-114M2	MW-114M2_S17	N	05/30/2017	Ground Water	120	130
Demolition Area 1	MW-114M1	MW-114M1_S17	N	05/30/2017	Ground Water	177	187
J3 Range	LKSNK0007	LKSNK0007_S17	N	05/30/2017	Surface Water	0	4
J3 Range	LKSNK0006	LKSNK0006_S17	N	05/30/2017	Surface Water	0	1
J3 Range	LKSNK0005	LKSNK0005_S17	N	05/30/2017	Surface Water	0	4
Demolition Area 1	MW-129M3	MW-129M3_S17	N	05/25/2017	Ground Water	96	106
Demolition Area 1	MW-129M2	MW-129M2_S17	N	05/25/2017	Ground Water	116	126
Demolition Area 1	MW-129M1	MW-129M1_S17	N	05/25/2017	Ground Water	136	146
Demolition Area 1	MW-341M3	MW-341M3_S17	N	05/25/2017	Ground Water	209.5	219.5
Demolition Area 1	MW-341M2	MW-341M2_S17	N	05/25/2017	Ground Water	264.5	269.5
Demolition Area 1	MW-341M2	MW-341M2_S17D	FD	05/25/2017	Ground Water	264.5	269.5
Demolition Area 1	MW-341M1	MW-341M1_S17	N	05/25/2017	Ground Water	289.5	299.5
Demolition Area 1	MW-211M2	MW-211M2_S17	N	05/24/2017	Ground Water	175	185
Demolition Area 1	MW-211M1	MW-211M1_S17	N	05/24/2017	Ground Water	200	210
Demolition Area 1	MW-173M2	MW-173M2_S17	N	05/24/2017	Ground Water	208	218
Demolition Area 1	MW-173M1	MW-173M1_S17	N	05/24/2017	Ground Water	243	253
Demolition Area 1	MW-231M2	MW-231M2_S17	N	05/24/2017	Ground Water	165.5	175.5
Demolition Area 1	MW-231M1	MW-231M1_S17	N	05/24/2017	Ground Water	210.5	220.5
Demolition Area 1	MW-231M1	MW-231M1_S17D	FD	05/24/2017	Ground Water	210.5	220.5
Demolition Area 1	MW-221M1	MW-221M1_S17	N	05/23/2017	Ground Water	221	231
Demolition Area 1	MW-240M2	MW-240M2_S17	N	05/23/2017	Ground Water	125	135
Demolition Area 1	MW-240M1	MW-240M1_S17	N	05/23/2017	Ground Water	198	208
Demolition Area 1	MW-225M3	MW-225M3_S17	N	05/23/2017	Ground Water	125	135
Demolition Area 1	MW-225M2	MW-225M2_S17	N	05/23/2017	Ground Water	145	155
Demolition Area 1	MW-225M1	MW-225M1_S17	N	05/23/2017	Ground Water	175	185
Demolition Area 1	MW-664M2	MW-664M2_R2	N	05/22/2017	Ground Water	218.5	228.5
Demolition Area 1	MW-664M1	MW-664M1_R2	N	05/22/2017	Ground Water	248.5	258.5
Demolition Area 1	MW-663D	MW-663D_R2	N	05/22/2017	Ground Water	240.6	250.6
Demolition Area 1	MW-663D	MW-663D_R2D	FD	05/22/2017	Ground Water	240.6	250.6
Demolition Area 1	MW-662D	MW-662D_R2	N	05/22/2017	Ground Water	202.3	212.3
Demolition Area 1	MW-661D	MW-661D_R2	N	05/22/2017	Ground Water	251.6	261.6
Demolition Area 1	MW-543M2	MW-543M2_S17	N	05/17/2017	Ground Water	91.8	101.8
Demolition Area 1	MW-543M1	MW-543M1_S17	N	05/17/2017	Ground Water	127	137
Demolition Area 1	MW-544M3	MW-544M3_S17	N	05/17/2017	Ground Water	77.5	87.5
Demolition Area 1	MW-544M2	MW-544M2_S17	N	05/17/2017	Ground Water	112	122
Demolition Area 1	MW-544M1	MW-544M1_S17	N	05/17/2017	Ground Water	162	172
Demolition Area 1	MW-544M1	MW-544M1_S17D	FD	05/17/2017	Ground Water	162	172
Demolition Area 1	XX9514	XX9514_S17	N	05/17/2017	Ground Water	102	112
Demolition Area 1	MW-73S	MW-73S_S17	N	05/16/2017	Ground Water	52.2	61.7
Demolition Area 1	MW-19S	MW-19S_S17	N	05/16/2017	Ground Water	52.7	62.7
Demolition Area 1	MW-19S	MW-19S_S17D	FD	05/16/2017	Ground Water	52.7	62.7
Demolition Area 1	MW-31S	MW-31S_S17	N	05/15/2017	Ground Water	98	103
Demolition Area 1	MW-31S	MW-31S_S17D	FD	05/15/2017	Ground Water	98	103
Demolition Area 1	MW-31M	MW-31M_S17	N	05/15/2017	Ground Water	113	123
Demolition Area 1	MW-31M	MW-31M_S17D	FD	05/15/2017	Ground Water	113	123
Demolition Area 1	MW-31D	MW-31D_S17	N	05/15/2017	Ground Water	133	138
Demolition Area 1	MW-78M2	MW-78M2_S17	N	05/15/2017	Ground Water	115	125
Demolition Area 1	MW-78M1	MW-78M1_S17	N	05/15/2017	Ground Water	135	145
Demolition Area 1	MW-75M2	MW-75M2_S17	N	05/15/2017	Ground Water	115	125
Demolition Area 1	MW-75M1	MW-75M1_S17	N	05/15/2017	Ground Water	140	150
Central Impact Area	CIA3-EFF	CIA3-EFF-11A	N	05/15/2017	Process Water	0	0
Central Impact Area	CIA3-INF	CIA3-INF-11A	N	05/15/2017	Process Water	0	0

N = Normal Sample  
FD = Field Duplicate

**TABLE 1**  
**Sampling Progress: 1 May 2017 through 31 May 2017**

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Demolition Area 1	MW-648M1	MW-648M1_S17	N	05/11/2017	Ground Water	112	122
Demolition Area 1	MW-76S	MW-76S_S17	N	05/11/2017	Ground Water	85	95
Demolition Area 1	MW-76M2	MW-76M2_S17	N	05/11/2017	Ground Water	105	115
Demolition Area 1	MW-76M2	MW-76M2_S17D	FD	05/11/2017	Ground Water	105	115
Demolition Area 1	MW-76M1	MW-76M1_S17	N	05/11/2017	Ground Water	125	135
Demolition Area 1	MW-77S	MW-77S_S17	N	05/11/2017	Ground Water	83	93
Demolition Area 1	MW-77M2	MW-77M2_S17	N	05/11/2017	Ground Water	120	130
Demolition Area 1	MW-77M2	MW-77M2_S17D	FD	05/11/2017	Ground Water	120	130
Demolition Area 1	MW-77M1	MW-77M1_S17	N	05/11/2017	Ground Water	180	190
C Range	SSCRNGS02	CRNGS02_H	FR	05/10/2017	Soil	0	0.25
C Range	SSCRNGS02	CRNGS02_G	FR	05/10/2017	Soil	0	0.25
C Range	SSCRNGS02	CRNGS02_F	N	05/10/2017	Soil	0	0.25
B Range	SSBRNGSW02	BRNGSW02_S	FR	05/10/2017	Soil	0	0.25
B Range	SSBRNGSW02	BRNGSW02_R	FR	05/10/2017	Soil	0	0.25
B Range	SSBRNGSW02	BRNGSW02_Q	N	05/10/2017	Soil	0	0.25
C Range	SSDR158	DR158_F	FR	05/10/2017	Soil	0	0.25
C Range	SSDR158	DR158_E	FR	05/10/2017	Soil	0	0.25
C Range	SSDR158	DR158_D	N	05/10/2017	Soil	0	0.25
Former B Range	SSFBR140LA	FBR140LA_P	FR	05/10/2017	Soil	0	0.25
Former B Range	SSFBR140LA	FBR140LA_N	FR	05/10/2017	Soil	0	0.25
Former B Range	SSFBR140LA	FBR140LA_M	N	05/10/2017	Soil	0	0.25
Former B Range	SSFBR140QRA	FBR140QRA_E	N	05/10/2017	Soil	0	0.25
G Range	SSGR01A	GR01A_S	FR	05/10/2017	Soil	0	0.25
G Range	SSGR01A	GR01A_R	FR	05/10/2017	Soil	0	0.25
G Range	SSGR01A	GR01A_Q	N	05/10/2017	Soil	0	0.25
J2 Range Eastern	MW-685M1	MW-685M1_R2	N	05/09/2017	Ground Water	166.2	176.2
J2 Range Eastern	MW-668M1	MW-668M1_R2	N	05/09/2017	Ground Water	168.7	178.7
J2 Range Eastern	MW-668M1	MW-668M1_R2D	FD	05/09/2017	Ground Water	168.7	178.7
J2 Range Eastern	MW-665M3	MW-665M3_R2	N	05/09/2017	Ground Water	175.2	185.2
J2 Range Eastern	MW-665M2	MW-665M2_R2	N	05/09/2017	Ground Water	205.2	215.2
J2 Range Eastern	MW-665M2	MW-665M2_R2D	FD	05/09/2017	Ground Water	205.2	215.2
J2 Range Eastern	MW-665M1	MW-665M1_R2	N	05/09/2017	Ground Water	225.2	235.2
J2 Range Eastern	MW-666M3	MW-666M3_R2	N	05/08/2017	Ground Water	199.8	209.8
J2 Range Eastern	MW-666M2	MW-666M2_R2	N	05/08/2017	Ground Water	219.8	229.8
J2 Range Eastern	MW-666M1	MW-666M1_R2	N	05/08/2017	Ground Water	244.8	254.8
J2 Range Eastern	MW-667M2	MW-667M2_R2	N	05/08/2017	Ground Water	277.3	287.3
J2 Range Eastern	MW-667M2	MW-667M2_R2D	FD	05/08/2017	Ground Water	277.3	287.3
J2 Range Eastern	MW-667M1	MW-667M1_R2	N	05/08/2017	Ground Water	302.3	312.3
IBC RANGE	MW-652S	MW-652S_R3	N	05/08/2017	Ground Water	106	116
Demolition Area 2	MW-406M2	MW-406M2_S17	N	05/05/2017	Ground Water	202.5	212.5
Demolition Area 2	MW-406M1	MW-406M1_S17	N	05/05/2017	Ground Water	224.7	229.7
Demolition Area 2	MW-259M1	MW-259M1_S17	N	05/05/2017	Ground Water	189	199
Demolition Area 2	MW-404M2	MW-404M2_S17	N	05/05/2017	Ground Water	200	210
Demolition Area 2	MW-404M1	MW-404M1_S17	N	05/05/2017	Ground Water	219.5	229.5
Demolition Area 2	MW-573M2	MW-573M2_S17	N	05/04/2017	Ground Water	155.4	165.4
Demolition Area 2	MW-573M2	MW-573M2_S17D	FD	05/04/2017	Ground Water	155.4	165.4
J3 Range	J3-EFF	J3-EFF-128A	N	05/04/2017	Process Water	0	0
J3 Range	J3-MID-2	J3-MID-2-128A	N	05/04/2017	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-128A	N	05/04/2017	Process Water	0	0
Demolition Area 2	MW-573M1	MW-573M1_S17	N	05/04/2017	Ground Water	176.4	186.4
J3 Range	J3-INF	J3-INF-128A	N	05/04/2017	Process Water	0	0
Demolition Area 1	PR-EFF	PR-EFF-134A	N	05/04/2017	Process Water	0	0
Demolition Area 1	PR-MID-2	PR-MID-2-134A	N	05/04/2017	Process Water	0	0
Demolition Area 1	PR-MID-1	PR-MID-1-134A	N	05/04/2017	Process Water	0	0
Demolition Area 1	PR-INF	PR-INF-134A	N	05/04/2017	Process Water	0	0
Demolition Area 2	MW-654M1	MW-654M1_S17	N	05/04/2017	Ground Water	154	164

N = Normal Sample  
FD = Field Duplicate



**TABLE 1**  
**Sampling Progress: 1 May 2017 through 31 May 2017**

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-134A	N	05/04/2017	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-134A	N	05/04/2017	Process Water	0	0
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-134A	N	05/04/2017	Process Water	0	0
Demolition Area 2	MW-655M2	MW-655M2_S17	N	05/04/2017	Ground Water	156	166
Demolition Area 1	FPR-2-INF	FPR-2-INF-134A	N	05/04/2017	Process Water	0	0
Demolition Area 1	D1LE-EFF	D1LE-EFF-10A	N	05/04/2017	Process Water	0	0
Demolition Area 2	MW-655M1	MW-655M1_S17	N	05/04/2017	Ground Water	178	188
Demolition Area 1	D1LE-MID2	D1LE-MID2-10A	N	05/04/2017	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-10A	N	05/04/2017	Process Water	0	0
Demolition Area 1	D1LE-INF	D1LE-INF-10A	N	05/04/2017	Process Water	0	0
Demolition Area 2	MW-262M1	MW-262M1_S17	N	05/04/2017	Ground Water	226	236
Demolition Area 1	D1-EFF	D1-EFF-82A	N	05/04/2017	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-82A	N	05/04/2017	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-82A	N	05/04/2017	Process Water	0	0
Demolition Area 1	D1-INF	D1-INF-82A	N	05/04/2017	Process Water	0	0
Demolition Area 2	MW-572M1	MW-572M1_S17	N	05/03/2017	Ground Water	164.9	174.9
J1 Range Southern	J1S-EFF	J1S-EFF-114A	N	05/03/2017	Process Water	0	0
J1 Range Southern	J1S-MID-2	J1S-MID-2-114A	N	05/03/2017	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-114A	N	05/03/2017	Process Water	0	0
Demolition Area 2	MW-16S	MW-16S_S17	N	05/03/2017	Ground Water	125	135
Central Impact Area	CIA2-EFF	CIA2-EFF-40A	N	05/03/2017	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-40A	N	05/03/2017	Process Water	0	0
Central Impact Area	CIA2-MID1	CIA2-MID1-40A	N	05/03/2017	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-40A	N	05/03/2017	Process Water	0	0
Central Impact Area	CIA1-EFF	CIA1-EFF-40A	N	05/03/2017	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-40A	N	05/03/2017	Process Water	0	0
Central Impact Area	CIA1-MID1	CIA1-MID1-40A	N	05/03/2017	Process Water	0	0
Central Impact Area	CIA1-INF	CIA1-INF-40A	N	05/03/2017	Process Water	0	0
Demolition Area 2	MW-435M2	MW-435M2_S17	N	05/03/2017	Ground Water	149.6	159.9
Demolition Area 2	MW-435M1	MW-435M1_S17	N	05/03/2017	Ground Water	169.9	180
Central Impact Area	CIA3-EFF	CIA3-EFF-11A	N	05/03/2017	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-11A	N	05/03/2017	Process Water	0	0
Central Impact Area	CIA3-MID1	CIA3-MID1-11A	N	05/03/2017	Process Water	0	0
Central Impact Area	CIA3-INF	CIA3-INF-11A	N	05/03/2017	Process Water	0	0
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-104A	N	05/02/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-104A	N	05/02/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-104A	N	05/02/2017	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-104A	N	05/02/2017	Process Water	0	0
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-104A	N	05/02/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-104A	N	05/02/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-104A	N	05/02/2017	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-104A	N	05/02/2017	Process Water	0	0
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-104A	N	05/02/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-104A	N	05/02/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-104A	N	05/02/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-104A	N	05/02/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-104A	N	05/02/2017	Process Water	0	0
J2 Range Eastern	J2E-INF-I	J2E-INF-I-104A	N	05/02/2017	Process Water	0	0
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-128A	N	05/01/2017	Process Water	0	0
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-128A	N	05/01/2017	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-128A	N	05/01/2017	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-128A	N	05/01/2017	Process Water	0	0
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-128A	N	05/01/2017	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-128A	N	05/01/2017	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-128A	N	05/01/2017	Process Water	0	0
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-128A	N	05/01/2017	Process Water	0	0

N = Normal Sample  
FD = Field Duplicate

**TABLE 1**  
**Sampling Progress: 1 May 2017 through 31 May 2017**

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-2E	J2N-MID-2E-128A	N	05/01/2017	Process Water	0	0
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-128A	N	05/01/2017	Process Water	0	0
J1 Range Northern	J1N-EFF	J1N-EFF-43A	N	05/01/2017	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-43A	N	05/01/2017	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-43A	N	05/01/2017	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-43A	N	05/01/2017	Process Water	0	0

**TABLE 2**  
**VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS**  
**Data Received May 2017**

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
J1 Range Southern	MW-592M1	MW-592M1_S17	201	211	04/06/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.61		ug/L	0.60	X	0.025	0.20
J1 Range Southern	MW-647M1	MW-647M1_S17	211.3	221.3	04/06/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	6.9		ug/L	0.60	X	0.025	0.20
J1 Range Southern	MW-647M1	MW-647M1_S17D	211.3	221.3	04/06/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	7.0		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-644M1	MW-644M1_S17	275.9	285.9	04/05/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.1		ug/L	0.60	X	0.025	0.20
Northwest Corner	MW-284M2	MW-284M2_S17	45	55	04/04/2017	SW6850	Perchlorate	0.44		ug/L	2.0		0.019	0.20
Northwest Corner	MW-284M1	MW-284M1_S17	115	125	04/04/2017	SW6850	Perchlorate	0.10	J	ug/L	2.0		0.019	0.20
Central Impact Area	MW-108M4	MW-108M4_S17	240	250	04/04/2017	SW6850	Perchlorate	0.17	J	ug/L	2.0		0.019	0.20
Central Impact Area	MW-89M3	MW-89M3_S17	174	184	04/03/2017	SW6850	Perchlorate	0.035	J	ug/L	2.0		0.019	0.20
Central Impact Area	MW-89M3	MW-89M3_S17	174	184	04/03/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.1		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-89M2	MW-89M2_S17	214	224	04/03/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.1		ug/L	400		0.019	0.20
Central Impact Area	MW-89M2	MW-89M2_S17	214	224	04/03/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	11.9		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-89M2	MW-89M2_S17	214	224	04/03/2017	SW6850	Perchlorate	4.7		ug/L	2.0	X	0.019	0.20
Central Impact Area	MW-89M2	MW-89M2_S17D	214	224	04/03/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.2		ug/L	400		0.019	0.20
Central Impact Area	MW-89M2	MW-89M2_S17D	214	224	04/03/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	12.1		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-89M2	MW-89M2_S17D	214	224	04/03/2017	SW6850	Perchlorate	4.8		ug/L	2.0	X	0.019	0.20
Central Impact Area	MW-89M1	MW-89M1_S17	234	244	04/03/2017	SW6850	Perchlorate	0.31		ug/L	2.0		0.019	0.20
Central Impact Area	MW-89M1	MW-89M1_S17	234	244	04/03/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.64		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-626M1	MW-626M1_S17	282.2	292.2	04/03/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	5.7		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-614M2	MW-614M2_S17	215	225	03/29/2017	SW6850	Perchlorate	0.042	J	ug/L	2.0		0.019	0.20
Central Impact Area	MW-25	MW-25_S17	108	118	03/29/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.5		ug/L	0.60	X	0.025	0.20
Central Impact Area	OW-1	OW-1_S17	126	136	03/29/2017	SW8330	2-Amino-4,6-dinitrotoluene	0.35		ug/L	7.3		0.023	0.20
Central Impact Area	OW-1	OW-1_S17	126	136	03/29/2017	SW8330	4-Amino-2,6-dinitrotoluene	0.59		ug/L	7.3		0.023	0.20
Central Impact Area	OW-1	OW-1_S17	126	136	03/29/2017	SW8330	2,4,6-Trinitrotoluene	1.1		ug/L	2.0		0.028	0.20
Central Impact Area	OW-1	OW-1_S17	126	136	03/29/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.3	J	ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-102M2	MW-102M2_S17	237	247	03/28/2017	SW6850	Perchlorate	0.38		ug/L	2.0		0.019	0.20
Central Impact Area	MW-124M1	MW-124M1_S17	234	244	03/27/2017	SW6850	Perchlorate	0.023	J	ug/L	2.0		0.019	0.20
Central Impact Area	MW-615M1	MW-615M1_S17	260	270	03/23/2017	SW6850	Perchlorate	1.7		ug/L	2.0		0.019	0.20
Central Impact Area	MW-615M1	MW-615M1_S17	260	270	03/23/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.5		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-615M1	MW-615M1_S17D	260	270	03/23/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.4		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-51D	MW-51D_S17	264	274	03/23/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.23		ug/L	0.60		0.025	0.20
Central Impact Area	MW-23M1	MW-23M1_S17	225	235	03/22/2017	SW6850	Perchlorate	0.083	J	ug/L	2.0		0.019	0.20
Central Impact Area	MW-23D	MW-23D_S17	272	282	03/22/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.56		ug/L	0.60		0.025	0.20
Central Impact Area	MW-623M3	MW-623M3_S17	275	285	03/21/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.0	J	ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-623M3	MW-623M3_S17D	275	285	03/21/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.25	J	ug/L	400		0.019	0.20
Central Impact Area	MW-623M3	MW-623M3_S17D	275	285	03/21/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.4	J	ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-623M1	MW-623M1_S17	340	350	03/21/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.45	J	ug/L	0.60		0.025	0.20
Central Impact Area	MW-209M2	MW-209M2_S17	220	230	03/21/2017	SW6850	Perchlorate	0.59		ug/L	2.0		0.019	0.20
Central Impact Area	MW-209M1	MW-209M1_S17	240	250	03/21/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.66	J	ug/L	400		0.019	0.20
Central Impact Area	MW-209M1	MW-209M1_S17	240	250	03/21/2017	SW6850	Perchlorate	1.6		ug/L	2.0		0.019	0.20

J = Estimated Result  
 MDL = Method Detection Limit  
 RL = Reporting Limit

**TABLE 2**  
**VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS**  
**Data Received May 2017**

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
Central Impact Area	MW-209M1	MW-209M1_S17	240	250	03/21/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.0	J	ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-176M2	MW-176M2_S17	229	239	03/20/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.8	J	ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-176M1	MW-176M1_S17	270	280	03/20/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.3	J	ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-88M2	MW-88M2_S17	213	223	03/16/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.29	J	ug/L	400		0.019	0.20
Central Impact Area	MW-88M2	MW-88M2_S17	213	223	03/16/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.92		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-88M2	MW-88M2_S17	213	223	03/16/2017	SW6850	Perchlorate	3.6		ug/L	2.0	X	0.019	0.20
Central Impact Area	MW-88M2	MW-88M2_S17D	213	223	03/16/2017	SW6850	Perchlorate	3.7		ug/L	2.0	X	0.019	0.20
Central Impact Area	MW-88M1	MW-88M1_S17	233	243	03/16/2017	SW6850	Perchlorate	0.038	J	ug/L	2.0		0.019	0.20
Central Impact Area	MW-184M1	MW-184M1_S17	186	196	03/16/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.92		ug/L	400		0.019	0.20
Central Impact Area	MW-184M1	MW-184M1_S17	186	196	03/16/2017	SW6850	Perchlorate	1.7		ug/L	2.0		0.019	0.20
Central Impact Area	MW-184M1	MW-184M1_S17	186	196	03/16/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	5.3		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-184M1	MW-184M1_S17D	186	196	03/16/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.92		ug/L	400		0.019	0.20
Central Impact Area	MW-184M1	MW-184M1_S17D	186	196	03/16/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	5.2		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-204M2	MW-204M2_S17	76	86	03/16/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.82		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-204M1	MW-204M1_S17	141	151	03/16/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.4		ug/L	0.60	X	0.025	0.20
Northwest Corner	MW-323M1	MW-323M1_S17	195	205	03/15/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.71		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-625M1	MW-625M1_S17	260	270	03/15/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.49		ug/L	0.60		0.025	0.20

J = Estimated Result  
 MDL = Method Detection Limit  
 RL = Reporting Limit