MONTHLY PROGRESS REPORT #241
FOR APRIL 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 April to 30 April 2017.

1. SUMMARY OF REMEDIATION ACTIONS

The following is a description of Remediation Actions (RA) underway at Camp Edwards as of April 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 2.480 billion gallons of water treated and re-injected as of 28 April 2017. The following Frank Perkins Road facility shut downs occurred in April:

- Shut down at 1950 on 4 April 2017 due to a power outage and was restarted at 0822 on 5 April 2017; and
- Extraction well EW-658 tripped at 0535 on 18 April 2017 due to a power outage and was restarted at 0727 on 18 April 2017.

The Pew Road Mobile Treatment Unit (MTU) continues to operate at a flow rate of 103 gpm with over 517.3 million gallons of water treated and re-injected as of 28 April 2017. The following Pew Road MTU shut downs occurred in April:

- Shut down at 2001 on 4 April 2017 due to a power outage and was restarted at 0932 on 5 April 2017; and
- Shut down at 0538 on 18 April 2017 due to a power outage and was restarted at 0819 on 18 April 2017.

The Base Boundary RA is operating at a flow rate of 65 gpm with over 162.2 million gallons of water treated and re-injected as of 28 April 2017. No Base Boundary MTU shut downs occurred in April.

The Leading Edge system continues to operate at a flow rate of 100 gpm with over 41.6 million gallons of water treated and re-injected as of 28 April 2017. The following Leading Edge system shut down occurred in April:

- Shut down at 1951 on 4 April 2017 due to a power outage and was restarted at 1235 on 5 April 2017.

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 April 2017, over 396.5 million gallons of water have been treated and re-injected. No J-1 Range Southern system shut downs occurred in April.

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 April 2017, over 397.9 million gallons of water have been treated and re-injected. No J-1 Range Northern MTU shut downs occurred in April.

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 28 April 2017, over 1.004 billion gallons of water have been treated and re-injected. No J-3 Range system shut downs occurred in April.

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 April 2017, over 860.8 million gallons of water have been treated and re-injected. The following Northern Treatment Building shut down occurred in April:

- Shut down at 1954 on 4 April 2017 due to a power outage and was restarted at 1036 on 5 April 2017.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 28 April 2017, over 1.353 billion gallons of water have been treated and re-injected. The following J-2 Range Northern MTU shut down occurred in April:

- MTU E shut down at 1953 on 4 April 2017 due to a power outage and were restarted at 1109 on 5 April 2017.

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 April 2017, over 940.2 million gallons of water have been treated and re-injected. The following MTUs H and I shut down occurred in April:

- MTUs H and I shut down at 1110 on 17 April 2017 due to a leak in the influent pipe. The damaged check valve was replaced and the MTUs were restarted at 1126 on 20 April 2017.

MTU J continues to operate at a flow rate of 120 gpm. As of 28 April 2017, over 425.6 million gallons of water have been treated and re-injected. No shut downs of MTU J occurred in April.

MTU K continues to operate at a flow rate of 125 gpm. As of 28 April 2017, over 535.3 million gallons of water have been treated and re-injected. No shut downs of MTU K occurred in April.

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 April 2017, over 923.0 million gallons of water have been treated and re-injected. The following CIA treatment facility shut downs occurred in April:

- Systems 2 and 3 shut down at 1954 and 1951, respectively, on 4 April 2017 due to power outage and were restarted at 1008 and 0910, respectively, on 5 April 2017; and
- System 2 shut down at 0539 on 18 April 2017 due to a power outage and was restarted at 0855 on 18 April 2017.

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 the CIA, Northwest Corner, J-1 Range Northern, J-1 Range Southern, Demolition Area 1, Demolition Area 2, Small Arms Ranges, and Western Boundary.

Drilled and collected groundwater profile samples at J-1 Range Southern drive points (DP-673, DP-675, DP-677, and DP-684) and J-1 Range Northern (BH-689).

Post-excavation (4th lift) soil samples were collected at U Range.

Completed 4th lift at one U Range grid.

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

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

Performed surface clearance in Ph III Area 1 at the CIA

Continued transportation and disposal of soil from Small Arms Ranges.

Completed 7th lift at one G Range grid.

Completed 2nd lift at D Range Stockpile grid.

Completed 8th lift at one B Range grid.

Completed 6th lift at two Former B Range grids.

JBCC IAGWSP Tech Update Meeting Minutes 13 April 2017

Project and Fieldwork Update

The drill rig completed the boring at MW-689 at J-1 North, reaching a depth of 319 feet. It was noted that a screen setting call is scheduled for 1:00 today however there are some results still pending. The rig installed the well at GA/GB at 100 to 110 feet below ground surface. The drive point rig is finishing the last location in J-1 South along the fence line nearest the base boundary with the Grand Oak neighborhood. The drive point rig will de-mobilize today or tomorrow. With the completion of the four locations done in this round, the scope in the original J-1 South project note has been finished. Data is on a three week turn-around and the contractor will prepare a letter report and recommendations/next steps will be proposed. The telemetry system was reprogrammed with new stronger frequencies. The infiltration gallery for CIA EW-2 is failing again and the contractor will be working on engineering a solution.

In the CIA, the Baltimore USACE metal mapper team is processing cued data in Area 3. Another team is arriving for May. Dawson re-mobbed this week and after training will begin surface clearance for the next ten acres, preparing for robotic vegetation removal. Discussion was held on the areas being proposed for the next ten acres. EPA and MassDEP indicated that they wanted to hold off on the grids near the mortar targets and move to grids along the edges to try and get some sense of drop off. EPA requested a workplan for Phase III rather than a project note, so goals and expectations could be more clearly defined. IAGWSP will revise the figures showing the new agreed upon areas and re-submit to the agencies.

At the Small Arms Ranges, work is ongoing in five of the ten ranges but the number of grids needing excavation and the concentrations of contaminants are both decreasing. At the B Range, there is an 8th lift, Former B Range there is a 6th lift at two grids, C Range has an 8th lift at one grid, D Range requires a 2nd six inch lift at the grid beneath the stockpile, and a the G Range there is a 7th lift at one grid. Dawson is working on the 4th lift at U Range and once that is done, they will resume excavations at the Small Arms Ranges starting at G Range. All soil that failed the TCLP test for lead has been shipped off-site with the exception of 300 cubic yards from the D Range stockpile which will go next week.

Action Items

The action items were discussed and updated.

J-2 Range Plume Shell Update

A presentation was provided on the update to the J-2 Range Plume shells. It was explained that the process begins with by querying EDMS for all the perchlorate and RDX data in the J2E and J2N Ranges. The MODFLOW groundwater model is run in existing steady-state for “average” condition. Simulations are started at the earliest date of groundwater sample collection and end at the present time. Representative groundwater extraction rates are used for the simulation period.
Initiate particles in MODPATH at locations and times of each sample collection point and migrate using results of the MODFLOW groundwater flow model. Then run MODPATH simulation to migrate particles (x, y, and z) to the present time. The model predicted x, y, z, and c values are imported to Excel matched with their respective measured concentrations. It was noted that perchlorate concentrations are not adjusted but RDX concentrations are decayed (Max decay 55% after 5 year) according to a method developed by Jacobs. Finally, values are imported to ArcView to use as a guide to manually develop plume contours representing 10 foot layers. Figures showing the layers were displayed and reviewed. A comparison of measured and predicted concentrations (using the new plume shell) in the extraction wells was displayed and discussed. Animations showing the results were played. USACE will post 3D stills for the agencies to review.

JBCC IAGWSP Tech Update Meeting Minutes 27 April 2017

Project and Fieldwork Update

Drilling has been completed and 5 wells (at locations yet to be determined) have been awarded for fall.

A map of the J-1 S drive point results was reviewed. Elevated levels were detected and could possibly be related to the excavation at the source area several years go. The results for the drive points along the fence line were ND. Four additional drive point locations have been awarded and those will likely be located more downgradient. It was noted that the bats are still a consideration for additional work. IAGWSP will prepare a project note with 4 proposed drive point locations.

EPA asked when the next synoptic water level round would take place. IAGWSP noted that it is done annually and had taken place in October 2016 for J-1. The next round will be in October 2017. This round can be expedited if the agencies would like it to be.

The excavation work at the Training Areas has also been completed, with the completion of the U Range. Sampling results were <100 ppb for perchlorate. Work is ongoing in five of the ten small arms ranges: Completed 8th lift at one B Range grid, completed 2nd lift at the D Range Stockpile grid, and completed 6th lift at two Former B Range grids. At Former B range, 190 cy soil needs to be go off-site to Canada due to lead levels that exceeded the TCLP threshold. This is consistent with previous results.

In the CIA, Metal Mapper is still working in Phase II, Area 3. The rain has slowed progress but they hope to finish by the end of June/July. Dawson is doing some digs in Area 3 and preparing for robotics vegetation clearance. Dawson will then begin sifting soil with the mechanical screener to prepare for BEM.

IAGWSP suggested a meeting to discuss the determining factors for work completion in the CIA. The Revised 2016 Source Report will be provided to the agencies by mid-May and the meeting could be scheduled for the end of May or the beginning of June.

For the Northwest Corner, EPA is going to prepare a memo for the file to explain the decision to move the RDX plume to the CIA sampling program.

USACE asked EPA if there was an update regarding the disposition of items that are being stored in the CDC bunker. At one point in time, EPA was considering an AO amendment to destroy the items in the BEM. USACE noted the costs to bring the CDC to JBCC could be upwards of $300,000. They also noted that a CDC might not be available because the Army does not yet have possession of the equipment. IAGWSP suggested formal approval from EPA to use the BEM.

EPA is going to issue a response to AO2 Modification Request to allow the EMC to oversee the Training Areas.

EPA inquired about the AECOM studies. IAGWSP will provide an update at the next tech meeting.

Action Items

The action items were discussed and updated.

JBCC Cleanup Team Meeting

The next meeting of the JBCC Cleanup Team (JBCCCT), formerly the MMR Cleanup Team (MMRCT) met on April 12, 2017. 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 April to 30 April 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. 240 for March 2017 4/10/2017
- Memorandum of Resolution for the Draft J-2 Range Eastern 2016 Environmental Monitoring Report and J-2 Range Northern 2016 Environmental Monitoring Report 4/20/2017
- Final Small Arms Range Environmental Monitoring Work Plan 4/25/2017

3. SCHEDULED ACTIONS

The following documents are being prepared or revised during May 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-2 Range Eastern and J-2 Range Northern 2016 Environmental Monitoring Report;
- J-1 Range Northern and J-1 Range Southern 2017 Annual Environmental Monitoring Report;
- L Range 2017 Annual Environmental Monitoring Report;
- Land Use Control Monitoring Report;
- Five Year Review Report; and
- Former A Range Demonstration of Compliance Report.

TABLE 1
Sampling Progress: 1 April to 30 April 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 2	MW-311M2	MW-311M2_S17	N	04/28/2017	Ground Water	200	210
Demolition Area 2	MW-311M1	MW-311M1_S17	N	04/28/2017	Ground Water	222	232
Western Boundary	4036000-03G	4036000-03G_17Q1	N	04/28/2017	Ground Water	50	60
Demolition Area 2	MW-161S	MW-161S_S17	N	04/27/2017	Ground Water	145.5	155.5
Demolition Area 2	MW-161S	MW-161S_S17D	FD	04/27/2017	Ground Water	145.5	155.5
Demolition Area 2	MW-160S	MW-160S_S17	N	04/27/2017	Ground Water	137.5	147.5
J1 Range Northern	MW-303M3	MW-303M3_S17	N	04/27/2017	Ground Water	139.7	149.7
J1 Range Northern	MW-303M2	MW-303M2_S17	N	04/27/2017	Ground Water	235.1	245.1
J1 Range Northern	MW-370M2	MW-370M2_S17	N	04/27/2017	Ground Water	215.5	225.5
J1 Range Northern	MW-370M1	MW-370M1_S17	N	04/27/2017	Ground Water	245	255
J1 Range Northern	MW-564M1	MW-564M1_S17	N	04/26/2017	Ground Water	227	237
J1 Range Northern	MW-564M1	MW-564M1_S17D	FD	04/26/2017	Ground Water	227	237
J1 Range Northern	MW-549M2	MW-549M2_S17	N	04/26/2017	Ground Water	187.3	197.3
J1 Range Northern	MW-549M1	MW-549M1_S17	N	04/26/2017	Ground Water	227.4	237.4
J1 Range Northern	MW-541M1	MW-541M1_S17	N	04/26/2017	Ground Water	210	220
J1 Range Northern	MW-430M2	MW-430M2_S17	N	04/26/2017	Ground Water	188.4	198.4
J1 Range Northern	MW-430M1	MW-430M1_S17	N	04/26/2017	Ground Water	245.2	255.2
J1 Range Northern	MW-606M2	MW-606M2_S17	N	04/25/2017	Ground Water	193.2	203.2
J1 Range Northern	MW-606M1	MW-606M1_S17	N	04/25/2017	Ground Water	233.3	243.3
J1 Range Northern	MW-401M3	MW-401M3_S17	N	04/25/2017	Ground Water	228.5	238.5
J1 Range Northern	MW-401M1	MW-401M1_S17	N	04/25/2017	Ground Water	256.1	266.1
J1 Range Northern	MW-540M1	MW-540M1_S17	N	04/25/2017	Ground Water	258	268
J1 Range Northern	J1N-INF1B	J1N-INF1B_S17	N	04/25/2017	Ground Water	200	250
J1 Range Northern	J1N-INF1A	J1N-INF1A_S17	N	04/25/2017	Ground Water	217	257
J1 Range Northern	MW-584M2	MW-584M2_S17	N	04/24/2017	Ground Water	228	238
J1 Range Northern	MW-584M1	MW-584M1_S17	N	04/24/2017	Ground Water	248	258
J1 Range Northern	MW-567M1	MW-567M1_S17	N	04/24/2017	Ground Water	215.5	225.5
J1 Range Northern	MW-567M1	MW-567M1_S17D	FD	04/24/2017	Ground Water	215.5	225.5
J1 Range Northern	MW-605M2	MW-605M2_S17	N	04/24/2017	Ground Water	182.2	192.2
J1 Range Northern	MW-605M1	MW-605M1_S17	N	04/24/2017	Ground Water	220.2	230.2
J1 Range Northern	MW-245M2	MW-245M2_S17	N	04/24/2017	Ground Water	204	214
J1 Range Northern	MW-245M2	MW-245M2_S17D	FD	04/24/2017	Ground Water	204	214
J1 Range Northern	MW-566M1	MW-566M1_S17	N	04/20/2017	Ground Water	232	242
J1 Range Northern	MW-590M2	MW-590M2_S17	N	04/20/2017	Ground Water	238	248
J1 Range Northern	MW-590M1	MW-590M1_S17	N	04/20/2017	Ground Water	258	268
U Range	MW-649S	MW-649S_S17	N	04/19/2017	Ground Water	113.5	123.5
U Range	MW-62S	MW-62S_S17	N	04/19/2017	Ground Water	108	118
B Range	MW-455S	MW-455S_S17	N	04/19/2017	Ground Water	117.6	127.6
Central Impact Area	MW-455S	MW-455S_S17	N	04/19/2017	Ground Water	117.6	127.6
B Range	MW-537M1	MW-537M1_S17	N	04/18/2017	Ground Water	106	116
B Range	MW-72S	MW-72S_S17	N	04/18/2017	Ground Water	106	116
B Range	MW-72S	MW-72S_S17D	FD	04/18/2017	Ground Water	106	116
B Range	MW-490S	MW-490S_S17	N	04/18/2017	Ground Water	108.1	118.1
Central Impact Area	MW-123S	MW-123S_S17	N	04/17/2017	Ground Water	139	149
B Range	MW-539M1	MW-539M1_S17	N	04/17/2017	Ground Water	113	123
Central Impact Area	MW-42M3	MW-42M3_S17	N	04/17/2017	Ground Water	165.8	176
Central Impact Area	MW-42M2	MW-42M2_S17	N	04/17/2017	Ground Water	185.8	196
J1 Range Southern	DPJ1S673	DPJ1S673_110-112	N	04/14/2017	GW Profile	110	112
J1 Range Southern	DPJ1S684	DPJ1S684_170-172	N	04/13/2017	GW Profile	170	172
C Range	MW-456S	MW-456S_S17	N	04/13/2017	Ground Water	150.3	160.3
C Range	MW-491S	MW-491S_S17	N	04/13/2017	Ground Water	146.9	156.9
C Range	MW-491S	MW-491S_S17D	FD	04/13/2017	Ground Water	146.9	156.9
U Range	SSURFL06A	URFL06A_H	FR	04/13/2017	Soil	0	0.25
U Range	SSURFL06A	URFL06A_G	FR	04/13/2017	Soil	0	0.25
U Range	SSURFL06A	URFL06A_F	N	04/13/2017	Soil	0	0.25
J1 Range Southern	DPJ1S684	DPJ1S684_160-162	N	04/13/2017	GW Profile	160	162
Western Boundary	4036000-04G	4036000-04G_17Q1	N	04/13/2017	Ground Water	55	65
Western Boundary	4036000-06G	4036000-06G_17Q1	N	04/13/2017	Ground Water	108	128

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 April to 30 April 2017

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Western Boundary	4036000-01G	4036000-01G_17Q1	N	04/13/2017	Ground Water	38	70
Demolition Area 1	MW-35S	MW-35S_S17	N	04/12/2017	Ground Water	84	94
J1 Range Southern	DPJ1S684	DPJ1S684_150-152	N	04/12/2017	GW Profile	150	152
J1 Range Southern	DPJ1S684	DPJ1S684_140-142	N	04/12/2017	GW Profile	140	142
G Range	MW-470S	MW-470S_S17	N	04/12/2017	Ground Water	76.3	86.3
Demolition Area 1	MW-36S	MW-36S_S17	N	04/12/2017	Ground Water	73	83
J1 Range Southern	DPJ1S684	DPJ1S684_130-132	N	04/12/2017	GW Profile	130	132
J1 Range Southern	DPJ1S684	DPJ1SDUP11_041217	FD	04/12/2017	GW Profile	130	132
J1 Range Southern	DPJ1S684	DPJ1S684_120-122	N	04/12/2017	GW Profile	120	122
J1 Range Southern	DPJ1S684	DPJ1S684_110-112	N	04/12/2017	GW Profile	110	112
Central Impact Area	MW-618M2	MW-618M2_S17	N	04/12/2017	Ground Water	190.5	200.5
Central Impact Area	MW-618M1	MW-618M1_S17	N	04/12/2017	Ground Water	238.5	248.5
J1 Range Southern	MW-670M2	MW-670M2_R2	N	04/11/2017	Ground Water	198.5	208.5
J1 Range Southern	MW-670M1	MW-670M1_R2	N	04/11/2017	Ground Water	220.5	230.5
J1 Range Southern	MW-669M2	MW-669M2_R2	N	04/11/2017	Ground Water	201.7	211.7
J1 Range Southern	MW-669M1	MW-669M1_R2	N	04/11/2017	Ground Water	223.7	233.7
J1 Range Southern	MW-403M2	MW-403M2_S17	N	04/11/2017	Ground Water	127.3	137.4
J1 Range Northern	BH-689	BH-689-GW-306-311	N	04/11/2017	GW Profile	306	311
J1 Range Southern	MW-403M1	MW-403M1_S17	N	04/11/2017	Ground Water	159.9	169.9
J1 Range Northern	BH-689	BH-689-GW-296-301	N	04/10/2017	GW Profile	296	301
J1 Range Southern	DPJ1S677	DPJ1S677_160-162	N	04/10/2017	GW Profile	160	162
J1 Range Southern	MW-524M1	MW-524M1_S17	N	04/10/2017	Ground Water	148	158
J1 Range Southern	MW-524M1	MW-524M1_S17D	FD	04/10/2017	Ground Water	148	158
J1 Range Northern	BH-689	BH-689-GW-286-291	N	04/10/2017	GW Profile	286	291
Demolition Area 1	PR-EFF	PR-EFF-133A	N	04/10/2017	Process Water	0	0
Demolition Area 1	PR-MID-2	PR-MID-2-133A	N	04/10/2017	Process Water	0	0
Demolition Area 1	PR-MID-1	PR-MID-1-133A	N	04/10/2017	Process Water	0	0
Demolition Area 1	PR-INF	PR-INF-133A	N	04/10/2017	Process Water	0	0
J1 Range Southern	MW-402M2	MW-402M2_S17	N	04/10/2017	Ground Water	155.2	165.3
J1 Range Southern	DPJ1S677	DPJ1S677_150-152	N	04/10/2017	GW Profile	150	152
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-133A	N	04/10/2017	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-133A	N	04/10/2017	Process Water	0	0
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-133A	N	04/10/2017	Process Water	0	0
Demolition Area 1	FPR-2-INF	FPR-2-INF-133A	N	04/10/2017	Process Water	0	0
J1 Range Southern	MW-402M1	MW-402M1_S17	N	04/10/2017	Ground Water	190.1	200.1
Demolition Area 1	D1LE-EFF	D1LE-EFF-09A	N	04/10/2017	Process Water	0	0
Demolition Area 1	D1LE-MID2	D1LE-MID2-09A	N	04/10/2017	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-09A	N	04/10/2017	Process Water	0	0
Demolition Area 1	D1LE-INF	D1LE-INF-09A	N	04/10/2017	Process Water	0	0
Central Impact Area	MW-609M2	MW-609M2_S17	N	04/10/2017	Ground Water	182.4	192.4
Demolition Area 1	D1-EFF	D1-EFF-81A	N	04/10/2017	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-81A	N	04/10/2017	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-81A	N	04/10/2017	Process Water	0	0
Demolition Area 1	D1-INF	D1-INF-81A	N	04/10/2017	Process Water	0	0
Central Impact Area	MW-609M1	MW-609M1_S17	N	04/10/2017	Ground Water	210.4	220.4
J1 Range Southern	DPJ1S677	DPJ1S677_140-142	N	04/07/2017	GW Profile	140	142
J1 Range Southern	DPJ1S677	DPJ1S677_132-134	MS	04/07/2017	GW Profile	132	134
J1 Range Southern	DPJ1S677	DPJ1S677_132-134	N	04/07/2017	GW Profile	132	134
J1 Range Southern	DPJ1S677	DPJ1S677_132-134	SD	04/07/2017	GW Profile	132	134
J1 Range Southern	DPJ1S677	DPJ1S677_120-122	N	04/07/2017	GW Profile	120	122
J1 Range Southern	MW-592M2	MW-592M2_S17	N	04/06/2017	Ground Water	158	168
J1 Range Southern	MW-592M1	MW-592M1_S17	N	04/06/2017	Ground Water	201	211
J1 Range Northern	BH-689	BH-689-GW-276-281	N	04/06/2017	GW Profile	266	271
J1 Range Southern	MW-647M2	MW-647M2_S17	N	04/06/2017	Ground Water	189.3	199.3
J1 Range Southern	MW-647M1	MW-647M1_S17	N	04/06/2017	Ground Water	211.3	221.3
J1 Range Southern	MW-647M1	MW-647M1_S17D	FD	04/06/2017	Ground Water	211.3	221.3
J1 Range Northern	BH-689	BH-689-GW-266-271	N	04/06/2017	GW Profile	256	261
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-127A	N	04/06/2017	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 April to 30 April 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-2G	J2N-MID-2G-127A	N	04/06/2017	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-127A	N	04/06/2017	Process Water	0	0
J1 Range Southern	MW-591M2	MW-591M2_S17	N	04/06/2017	Ground Water	165	175
J2 Range Northern	J2N-INF-G	J2N-INF-G-127A	N	04/06/2017	Process Water	0	0
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-127A	N	04/06/2017	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-127A	N	04/06/2017	Process Water	0	0
J1 Range Southern	MW-591M1	MW-591M1_S17	N	04/06/2017	Ground Water	200	210
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-127A	N	04/06/2017	Process Water	0	0
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-127A	N	04/06/2017	Process Water	0	0
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-127A	N	04/06/2017	Process Water	0	0
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-127A	N	04/06/2017	Process Water	0	0
J1 Range Southern	DPJ1S673	DPJ1S673_140-142	N	04/05/2017	GW Profile	140	142
J1 Range Southern	MW-646M2	MW-646M2_S17	N	04/05/2017	Ground Water	168	178
J3 Range	J3-EFF	J3-EFF-127A	N	04/05/2017	Process Water	0	0
J3 Range	J3-MID-2	J3-MID-2-127A	N	04/05/2017	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-127A	N	04/05/2017	Process Water	0	0
J3 Range	J3-INF	J3-INF-127A	N	04/05/2017	Process Water	0	0
J1 Range Southern	MW-646M1	MW-646M1_S17	N	04/05/2017	Ground Water	198	208
J1 Range Northern	J1N-EFF	J1N-EFF-42A	N	04/05/2017	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-42A	N	04/05/2017	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-42A	N	04/05/2017	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-42A	N	04/05/2017	Process Water	0	0
J1 Range Southern	MW-400M2	MW-400M2_S17	N	04/05/2017	Ground Water	138.9	148.9
J1 Range Southern	MW-400M1	MW-400M1_S17	N	04/05/2017	Ground Water	192.8	202.8
J1 Range Southern	DPJ1S673	DPJ1SDUP10_040517	FD	04/05/2017	GW Profile	130	132
J1 Range Southern	DPJ1S673	DPJ1S673_130-132	N	04/05/2017	GW Profile	130	132
J1 Range Southern	DPJ1S673	DPJ1S673_120-122	N	04/05/2017	GW Profile	120	122
Central Impact Area	MW-644M2	MW-644M2_S17	N	04/05/2017	Ground Water	230.9	240.9
Central Impact Area	MW-644M1	MW-644M1_S17	N	04/05/2017	Ground Water	275.9	285.9
Northwest Corner	MW-284M2	MW-284M2_S17	N	04/04/2017	Ground Water	45	55
J1 Range Northern	BH-689	BH-689-GW-246-251D	FD	04/04/2017	GW Profile	246	251
J1 Range Northern	BH-689	BH-689-GW-246-251	N	04/04/2017	GW Profile	246	251
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-103A	N	04/04/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-103A	N	04/04/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-103A	N	04/04/2017	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-103A	N	04/04/2017	Process Water	0	0
Northwest Corner	MW-284M1	MW-284M1_S17	N	04/04/2017	Ground Water	115	125
Northwest Corner	MW-270D	MW-270D_S17	N	04/04/2017	Ground Water	132	137
J1 Range Northern	BH-689	BH-689-GW-236-241	N	04/04/2017	GW Profile	236	241
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-103A	N	04/04/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-103A	N	04/04/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-103A	N	04/04/2017	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-103A	N	04/04/2017	Process Water	0	0
J1 Range Southern	DPJ1S675	DPJ1S675_150-152	N	04/04/2017	GW Profile	150	152
Central Impact Area	MW-108M4	MW-108M4_S17	N	04/04/2017	Ground Water	240	250
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-103A	N	04/04/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-103A	N	04/04/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-103A	N	04/04/2017	Process Water	0	0
Central Impact Area	MW-108M1	MW-108M1_S17	N	04/04/2017	Ground Water	297	307
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-103A	N	04/04/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-103A	N	04/04/2017	Process Water	0	0
J2 Range Eastern	J2E-INF-I	J2E-INF-I-103A	N	04/04/2017	Process Water	0	0
J1 Range Northern	BH-689	BH-689-GW-226-231	N	04/04/2017	GW Profile	226	231
J1 Range Southern	DPJ1S675	DPJ1S675_140-142	N	04/03/2017	GW Profile	140	142
Central Impact Area	MW-89M3	MW-89M3_S17	N	04/03/2017	Ground Water	174	184
J1 Range Southern	DPJ1S675	DPJ1S675_130-132	N	04/03/2017	GW Profile	130	132
Central Impact Area	MW-89M2	MW-89M2_S17	N	04/03/2017	Ground Water	214	224
Central Impact Area	MW-89M2	MW-89M2_S17D	FD	04/03/2017	Ground Water	214	224

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 April to 30 April 2017

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Central Impact Area	CIA2-EFF	CIA2-EFF-39A	N	04/03/2017	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-39A	N	04/03/2017	Process Water	0	0
Central Impact Area	CIA2-MID1	CIA2-MID1-39A	N	04/03/2017	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-39A	N	04/03/2017	Process Water	0	0
Central Impact Area	MW-89M1	MW-89M1_S17	N	04/03/2017	Ground Water	234	244
J1 Range Southern	DPJ1S675	DPJ1S675_120-122	N	04/03/2017	GW Profile	120	122
J1 Range Northern	BH-689	BH-689-GW-216-221	N	04/03/2017	GW Profile	216	221
J1 Range Southern	J1S-EW1-INF	J1S-EW1-INF_S17	N	04/03/2017	Process Water	0	0
J1 Range Southern	J1S-EFF	J1S-EFF-113A	N	04/03/2017	Process Water	0	0
J1 Range Southern	J1S-MID-2	J1S-MID-2-113A	N	04/03/2017	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-113A	N	04/03/2017	Process Water	0	0
J1 Range Southern	J1S-EW2-INF	J1S-EW2-INF_S17	N	04/03/2017	Process Water	0	0
Central Impact Area	CIA1-EFF	CIA1-EFF-39A	N	04/03/2017	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-39A	N	04/03/2017	Process Water	0	0
Central Impact Area	CIA1-MID1	CIA1-MID1-39A	N	04/03/2017	Process Water	0	0
Central Impact Area	CIA1-INF	CIA1-INF-39A	N	04/03/2017	Process Water	0	0
Central Impact Area	MW-626M2	MW-626M2_S17	N	04/03/2017	Ground Water	237.2	247.2
Central Impact Area	CIA3-EFF	CIA3-EFF-10A	N	04/03/2017	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-10A	N	04/03/2017	Process Water	0	0
Central Impact Area	MW-626M1	MW-626M1_S17	N	04/03/2017	Ground Water	282.2	292.2
Central Impact Area	CIA3-MID1	CIA3-MID1-10A	N	04/03/2017	Process Water	0	0
Central Impact Area	CIA3-INF	CIA3-INF-10A	N	04/03/2017	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received April 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-38M4	MW-38M4_S17	132	142	03/09/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.59		ug/L	0.60		0.025	0.20
Central Impact Area	MW-38M3	MW-38M3_S17	170	180	03/09/2017	SW6850	Perchlorate	0.21		ug/L	2.0		0.019	0.20
Central Impact Area	MW-38M3	MW-38M3_S17	170	180	03/09/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.27		ug/L	0.60		0.025	0.20
Central Impact Area	MW-477M2	MW-477M2_S17	145.6	155.6	03/09/2017	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-477M2	MW-477M2_S17	145.6	155.6	03/09/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.0		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-477M2	MW-477M2_S17D	145.6	155.6	03/09/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.22	J	ug/L	400		0.019	0.20
Central Impact Area	MW-477M2	MW-477M2_S17D	145.6	155.6	03/09/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.6		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-485M1	MW-485M1_S17	125.3	135.3	03/08/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.90		ug/L	400		0.019	0.20
Central Impact Area	MW-485M1	MW-485M1_S17	125.3	135.3	03/08/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	7.3		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-485M1	MW-485M1_S17D	125.3	135.3	03/08/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.90		ug/L	400		0.019	0.20
Central Impact Area	MW-485M1	MW-485M1_S17D	125.3	135.3	03/08/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	7.2		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-98S	MW-98S_S17	137	147	03/07/2017	SW8330	2-Amino-4,6-dinitrotoluene	0.25		ug/L	7.3		0.023	0.20
Central Impact Area	MW-98S	MW-98S_S17	137	147	03/07/2017	SW8330	4-Amino-2,6-dinitrotoluene	0.37		ug/L	7.3		0.023	0.20
Central Impact Area	MW-98S	MW-98S_S17	137	147	03/07/2017	SW8330	2,4,6-Trinitrotoluene	0.41		ug/L	2.0		0.028	0.20
Central Impact Area	MW-40M1	MW-40M1_S17	132.5	142.5	03/07/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.22		ug/L	0.60		0.025	0.20
Central Impact Area	MW-37M2	MW-37M2_S17	145	155	03/06/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.35		ug/L	0.60		0.025	0.20
Central Impact Area	MW-01S	MW-01S_S17	114	124	03/06/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.41		ug/L	400		0.019	0.20
Central Impact Area	MW-01S	MW-01S_S17	114	124	03/06/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.6		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-01S	MW-01S_S17D	114	124	03/06/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.42		ug/L	400		0.019	0.20
Central Impact Area	MW-01S	MW-01S_S17D	114	124	03/06/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.6		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-01M2	MW-01M2_S17	160	165	03/06/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.99		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-90S	MW-90S_S17	118	128	03/06/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.8		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-90S	MW-90S_S17D	118	128	03/06/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.8		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-90M1	MW-90M1_S17	145	155	03/02/2017	SW8330	4-Amino-2,6-dinitrotoluene	0.52		ug/L	7.3		0.023	0.20
Central Impact Area	MW-91S	MW-91S_S17	124	134	03/02/2017	SW8330	4-Amino-2,6-dinitrotoluene	0.25		ug/L	7.3		0.023	0.20
Central Impact Area	MW-91S	MW-91S_S17	124	134	03/02/2017	SW8330	2-Amino-4,6-dinitrotoluene	0.30		ug/L	7.3		0.023	0.20
Central Impact Area	MW-91S	MW-91S_S17	124	134	03/02/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.38	J	ug/L	400		0.019	0.20
Central Impact Area	MW-91S	MW-91S_S17	124	134	03/02/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.7	J	ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-91S	MW-91S_S17	124	134	03/02/2017	SW8330	2,4,6-Trinitrotoluene	5.0		ug/L	2.0	X	0.028	0.20
Central Impact Area	MW-91S	MW-91S_S17D	124	134	03/02/2017	SW8330	4-Amino-2,6-dinitrotoluene	0.25		ug/L	7.3		0.023	0.20
Central Impact Area	MW-91S	MW-91S_S17D	124	134	03/02/2017	SW8330	2-Amino-4,6-dinitrotoluene	0.28		ug/L	7.3		0.023	0.20
Central Impact Area	MW-91S	MW-91S_S17D	124	134	03/02/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.35		ug/L	400		0.019	0.20
Central Impact Area	MW-91S	MW-91S_S17D	124	134	03/02/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.7		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-91S	MW-91S_S17D	124	134	03/02/2017	SW8330	2,4,6-Trinitrotoluene	5.0		ug/L	2.0	X	0.028	0.20
Central Impact Area	MW-91M1	MW-91M1_S17	170	180	03/02/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.2		ug/L	0.60	X	0.025	0.20
Central Impact Area	OW-2	OW-2_S17	175	185	03/02/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.40		ug/L	0.60		0.025	0.20
Central Impact Area	MW-93M2	MW-93M2_S17	145	155	03/01/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.42		ug/L	0.60		0.025	0.20
Central Impact Area	MW-93M1	MW-93M1_S17	185	195	03/01/2017	SW6850	Perchlorate	0.10	J	ug/L	2.0		0.019	0.20
Central Impact Area	MW-93M1	MW-93M1_S17	185	195	03/01/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.86		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-487M2	MW-487M2_S17	195.84	205.84	03/01/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.59		ug/L	0.60		0.025	0.20

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

MCL/HA= Either the MCL or Lowest Health Advisory Limit

May 05, 2017