MONTHLY PROGRESS REPORT #245
FOR AUGUST 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 August to 31 August 2017.

1. SUMMARY OF REMEDIATION ACTIONS

The following is a description of Remediation Actions (RA) underway at Camp Edwards as of August 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 2.494 billion gallons of water treated and re-injected as of 25 August 2017. No Frank Perkins Road facility shut downs occurred in August.

The Pew Road Mobile Treatment Unit (MTU) continues to operate at a flow rate of 103 gpm with over 536.5 million gallons of water treated and re-injected as of 25 August 2017. No Pew Road MTU shut downs occurred in August.

The Base Boundary RA is operating at a flow rate of 65 gpm with over 173.7 million gallons of water treated and re-injected as of 25 August 2017. No Base Boundary MTU shut downs occurred in August.

The Leading Edge system continues to operate at a flow rate of 100 gpm with over 67.9 million gallons of water treated and re-injected as of 25 August 2017. No Leading Edge system shut downs occurred in August.

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 25 August 2017, over 433.2 million gallons of water have been treated and re-injected. No J-1 Range Southern system shut downs occurred in August.

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 25 August 2017, over 482.6 million gallons of water have been treated and re-injected. No J-1 Range Northern MTU shut downs occurred in August.

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 25 August 2017, over 1.042 billion gallons of water have been treated and re-injected. No J-3 Range system shut downs occurred in August.

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 25 August 2017, over 919.5 million gallons of water have been treated and re-injected. No Northern Treatment Building shut downs occurred in August.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 25 August 2017, over 1.366 billion gallons of water have been treated and re-injected. The following J-2 Range Northern MTU shut down occurred in August:

- MTU F shut down at 2059 on 3 August 2017 due to a power interruption and was restarted at 0753 on 4 August 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 25 August 2017, over 987.0 million gallons of water have been treated and re-injected. No MTU H and I shut downs occurred in August.

MTU J continues to operate at a flow rate of 120 gpm. As of 25 August 2017, over 456.2 million gallons of water have been treated and re-injected. No shut downs of MTU J occurred in August.

MTU K continues to operate at a flow rate of 125 gpm. As of 25 August 2017, over 567.2 million gallons of water have been treated and re-injected. No shut downs of MTU K occurred in August.

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 25 August 2017, over 1.071 billion gallons of water have been treated and re-injected. No CIA treatment facility shut downs occurred in August.

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 CIA, J-2 Range Northern, and J-3 Range.

Aqueous samples were collected from drive points completed in J-1 Range Southern.

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

Performed anomaly investigation in Phase II Area 3 of the CIA.

Performed Phase 2 Post-Decision Document geophysical investigation at the J-2 Range.

JBCC IAGWSP Tech Update Meeting Minutes 10 August 2017

Project and Fieldwork Update

The J-1 Range Southern drive point drilling finished on Friday. Data should be available at the end of the month. When all the data has been received, it will be reviewed and recommendations will be made for permanent wells (to be installed in the fall). USACE completed the design for the CIA2 injection well and will be scheduling the rig to perform installation. The shallow well at the BEM (MW-695) was developed yesterday and will be sampled as soon as possible. USACE is meeting tomorrow with the Bourne Water District to hand over the keys to the monitoring wells that they are taking over from IAGWSP. There are three locations with nine screens. Groundwater sampling crews are performing annual sampling at the J-3 Range and all of the treatment systems are up and running. EPA asked for a list of locations where wells are being considered for the drill rig mobilization this fall.

In the Small Arms Ranges, no new fieldwork has been conducted since the last tech update meeting. USACE is reviewing contract options for completing the remaining work at three ranges.

At the J-2 Range, USACE is performing UXO clearance at the 23 additional grids. They completed the ten girds in the J-2 Extension area. A total of 32 MEC items were found. In the Area 2 grids, there is one grid left to be completed and thirteen MEC items have been found to date in Area 2. All smaller digs should be completed today and then they will have to revisit a few locations with a mini-excavator to remove larger items.

In the Central Impact Area, a new contract is being worked on through USACE's Huntsville district. There was as site visit with representatives from four companies this week. The contract has to be awarded by September 30th and the first task will be to perform the EM-61, Metal Mapper and other work to be determined in the next 10 acres. Currently Dawson is digging in Phase II Area 3 and performing vegetation clearance in Phase III Area 1.

Action Items

The action items were discussed and updated

Small Arms Ranges Annual Monitoring Report

A presentation was provided on the Small Arms Ranges (SARs) Annual Monitoring Report. Annual groundwater sampling results (March 2016 – March 2017; additional and re-sampling through June 2017), comparison to Decision Document criteria and recommendations were covered.

New field work was reviewed and discussed. During the reporting period, a total of approximately 1,200 cubic yards of soil from B Range, Former B Range, C Range, Former C Range, D Range, Former D Range, G Range, and Former N Range were excavated and disposed of off-site. During the March 2016-March 2017 reporting period, fieldwork was continuing at B Range, Former B Range, C Range, Former C Range, D Range, Former D Range and G Range. A new water table well was installed at the GA/GB Range. Four additional wells were sampled on a one-time basis during the annual monitoring effort including: Training Areas MW-52S for total and dissolved chromium, U Range: MW-62S and MW-649S for explosives and perchlorate and IBC: MW-652S for post-installation Round 3 (final round) for explosives and perchlorate. These results will be used to finish the Training Areas Investigation Report.

Hydraulic monitoring results and top of mound trends during the synoptic events were reviewed. Groundwater sampling locations were shown and results were discussed. Tungsten was detected in MW-537M1 (0.38J µg/L unfiltered and 0.30J µg/L filtered). All other wells (9) were non-detect. For metals, detections included antimony in MW-537M1 at 0.58 J µg/L (dissolved), copper in 03MW0709 at 43.4 µg/L (total), lead in 03MW0709 at 7.6 J µg/L (total) and chromium MW-52S (Training Areas) at 4.4 J µg/L (total), ND (filtered). For explosives and perchlorate, no explosives were detected and perchlorate was detected at 0.052J µg/L (MW-62S), 0.098 J µg/L (MW-649S), and 0.095 J µg/L (MW-652S). Tungsten trend plots were displayed and discussed.

For the Long-Term Groundwater Monitoring Program comparison to Decision Document criteria, metals (other than lead) continue to be below cleanup levels and long-term groundwater monitoring will continue.

IAGWSP recommends making no changes to the monitoring well network and continuing annual sampling for three years at the following wells: Bravo Range (MW-72S, MW-490S, MW-537M1, MW-538M1, and MW-539M1), Charlie Range (MW-123S, MW456S, and MW-491S), Golf Range (MW-35S, MW-36S, and MW-470S), GA/GB Range (03MW0709, 03MW0122A, and MW-690S).

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 August to 31 August 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. 244 for July 2017 8/10/2017
- Western Boundary Monitoring Well Abandonment (Off Base) Project Note 7/31/2017
- Final Central Impact Area Extraction Well EW-3 System Startup Report 8/02/2017
- Changes to the L Range Chemical Monitoring Well Network Project Note 8/07/2017
- Draft Small Arms Ranges 2017 Annual Environmental Monitoring Report 8/09/2017
- Final L Range 2017 Annual Environmental Monitoring Report 8/11/2017
- Addendum to the Replacement of Buried Explosion Module Material Project Note Addendum 8/17/2017
- Remedy Selection Plan for the Training Areas 8/31/2017

3. SCHEDULED ACTIONS

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

- Training Areas Draft Investigation Report;
- Training Areas Draft Remedy Selection Plan;
- 2016 CIA Source Removal Annual Report;
- Draft 2016 BIP and Cracked Open Items Summary Report;
- J-3 Range Confirmatory Geophysical and Soil Investigation Report;
- J-1 Range Northern and J-1 Range Southern 2017 Annual Environmental Monitoring Report;
- Five Year Review Report;
- Small Arms Ranges 2017 Annual Environmental Monitoring Report, and
- Demolition Area 2 2017 Annual Environmental Monitoring Report.

TABLE 1
Sampling Progress: 25 July 2017 through 31 August 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	MW-119S	MW-119S_F17	N	08/31/2017	Ground Water	103	113
J2 Range Northern	J2EW0003	J2EW0003_F17	N	08/31/2017	Ground Water	202	232
J2 Range Northern	MW-313M3	MW-313M3_F17	N	08/31/2017	Ground Water	195.1	205.6
J2 Range Northern	MW-313M2	MW-313M2_F17	N	08/31/2017	Ground Water	215.5	225.5
J2 Range Northern	MW-313M1	MW-313M1_F17	N	08/31/2017	Ground Water	255.4	265.4
J2 Range Northern	MW-313M1	MW-313M1_F17D	FD	08/31/2017	Ground Water	255.4	265.4
J2 Range Northern	J2EW2-MW3-B	J2EW2-MW3-B_F17	N	08/30/2017	Ground Water	212.7	222.7
J2 Range Northern	J2EW2-MW3-B	J2EW2-MW3-B_F17D	FD	08/30/2017	Ground Water	212.7	222.7
J2 Range Northern	J2EW2-MW3-C	J2EW2-MW3-C_F17	N	08/30/2017	Ground Water	246	256
J3 Range	RS0011OSNK	RS0011OSNK_F17	N	08/29/2017	Ground Water	0	0
J2 Range Northern	MW-130S	MW-130S_F17	N	08/29/2017	Ground Water	103	113
J2 Range Northern	MW-296M2	MW-296M2_F17	N	08/29/2017	Ground Water	215	225
J2 Range Northern	MW-296M1	MW-296M1_F17	N	08/29/2017	Ground Water	255.1	265.1
J2 Range Northern	MW-230M2	MW-230M2_F17	N	08/29/2017	Ground Water	110	120
J2 Range Northern	MW-230M1	MW-230M1_F17	N	08/29/2017	Ground Water	130	140
J2 Range Northern	MW-234M2	MW-234M2_F17	N	08/28/2017	Ground Water	110	120
J2 Range Northern	MW-234M2	MW-234M2_F17D	FD	08/28/2017	Ground Water	110	120
J2 Range Northern	MW-234M1	MW-234M1_F17	N	08/28/2017	Ground Water	130	140
J2 Range Northern	MW-327M3	MW-327M3_F17	N	08/28/2017	Ground Water	220.2	230.2
J2 Range Northern	MW-327M2	MW-327M2_F17	N	08/28/2017	Ground Water	265	275
J2 Range Northern	MW-327M1	MW-327M1_F17	N	08/28/2017	Ground Water	296.1	306
J2 Range Northern	MW-620M1	MW-620M1_F17	N	08/24/2017	Ground Water	268.6	278.6
J2 Range Northern	MW-337M1	MW-337M1_F17	N	08/24/2017	Ground Water	243.7	253.7
J2 Range Northern	MW-619M2	MW-619M2_F17	N	08/24/2017	Ground Water	234.1	244.1
J2 Range Northern	MW-619M1	MW-619M1_F17	N	08/24/2017	Ground Water	255.1	265.1
J2 Range Northern	MW-289M2	MW-289M2_F17	N	08/24/2017	Ground Water	162	172
J2 Range Northern	MW-289M2	MW-289M2_F17D	FD	08/24/2017	Ground Water	162	172
J2 Range Northern	MW-289M1	MW-289M1_F17	N	08/24/2017	Ground Water	305	315
Central Impact Area	MW-695S	MW-695S_R1	N	08/23/2017	Ground Water	130	140
J2 Range Northern	MW-630M1	MW-630M1_F17	N	08/22/2017	Ground Water	217	227
J2 Range Northern	MW-612M2	MW-612M2_F17	N	08/22/2017	Ground Water	267	277
J2 Range Northern	MW-612M1	MW-612M1_F17	N	08/22/2017	Ground Water	297	307
J2 Range Northern	MW-345M2	MW-345M2_F17	N	08/22/2017	Ground Water	236.6	246.6
J2 Range Northern	MW-613M2	MW-613M2_F17	N	08/22/2017	Ground Water	246.1	256.1
J2 Range Northern	MW-613M1	MW-613M1_F17	N	08/22/2017	Ground Water	267.1	277.1
J2 Range Northern	MW-330M2	MW-330M2_F17	N	08/22/2017	Ground Water	238	248
J2 Range Northern	MW-300M2	MW-300M2_F17	N	08/21/2017	Ground Water	197.2	207.2
J2 Range Northern	MW-340M2	MW-340M2_F17	N	08/21/2017	Ground Water	215.8	225.1
J2 Range Northern	MW-340M1	MW-340M1_F17	N	08/21/2017	Ground Water	255.9	265.9
J2 Range Northern	MW-63M2	MW-63M2_F17	N	08/21/2017	Ground Water	214	224
J2 Range Northern	MW-63M1	MW-63M1_F17	N	08/21/2017	Ground Water	244	254
J2 Range Northern	MW-293M2	MW-293M2_F17	N	08/17/2017	Ground Water	196.4	206.4
J2 Range Northern	MW-586M2	MW-586M2_F17	N	08/17/2017	Ground Water	211	221
J2 Range Northern	MW-586M1	MW-586M1_F17	N	08/17/2017	Ground Water	237	247
J2 Range Northern	MW-587M2	MW-587M2_F17	N	08/17/2017	Ground Water	220	230
J2 Range Northern	MW-587M2	MW-587M2_F17D	FD	08/17/2017	Ground Water	220	230
J2 Range Northern	MW-587M1	MW-587M1_F17	N	08/17/2017	Ground Water	250	260
J2 Range Northern	MW-348M2	MW-348M2_F17	N	08/16/2017	Ground Water	206.5	216.5
J2 Range Northern	MW-588M2	MW-588M2_F17	N	08/16/2017	Ground Water	198	208
J2 Range Northern	MW-588M2	MW-588M2_F17D	FD	08/16/2017	Ground Water	198	208
J2 Range Northern	MW-588M1	MW-588M1_F17	N	08/16/2017	Ground Water	238	248
J2 Range Northern	MW-631M2	MW-631M2_F17	N	08/16/2017	Ground Water	200.1	210.1
J2 Range Northern	MW-631M1	MW-631M1_F17	N	08/16/2017	Ground Water	233.1	243.1
J2 Range Northern	MW-635M1	MW-635M1_F17	N	08/16/2017	Ground Water	265.4	275.4
J2 Range Northern	MW-302M2	MW-302M2_F17	N	08/15/2017	Ground Water	194.4	204.4
J2 Range Northern	MW-331M2	MW-331M2_F17	N	08/15/2017	Ground Water	195.3	205.3
J2 Range Northern	MW-331M1	MW-331M1_F17	N	08/15/2017	Ground Water	235.4	245.4

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 25 July 2017 through 31 August 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	MW-621M2	MW-621M2_F17	N	08/15/2017	Ground Water	219.4	229.4
J2 Range Northern	MW-621M1	MW-621M1_F17	N	08/15/2017	Ground Water	249.4	259.4
J2 Range Northern	MW-322M1	MW-322M1_F17	N	08/14/2017	Ground Water	245.8	255.8
J3 Range	MW-576M3	MW-576M3_F17	N	08/14/2017	Ground Water	98.9	108.9
J3 Range	MW-576M2	MW-576M2_F17	N	08/14/2017	Ground Water	133.9	143.9
J3 Range	MW-576M2	MW-576M2_F17D	FD	08/14/2017	Ground Water	133.9	143.9
J3 Range	MW-576M1	MW-576M1_F17	N	08/14/2017	Ground Water	173.9	183.9
J3 Range	MW-576M1	MW-576M1_F17D	FD	08/14/2017	Ground Water	173.9	183.9
J3 Range	MW-295M2	MW-295M2_F17	N	08/14/2017	Ground Water	117	127
J3 Range	MW-295M1	MW-295M1_F17	N	08/14/2017	Ground Water	145	155
J3 Range	MW-217M2	MW-217M2_F17	N	08/10/2017	Ground Water	138	143
J3 Range	MW-218M3	MW-218M3_F17	N	08/10/2017	Ground Water	78	83
Central Impact Area	CIA2-EFF	CIA2-EFF-43A	N	08/10/2017	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-43A	N	08/10/2017	Process Water	0	0
Central Impact Area	CIA2-MID1	CIA2-MID1-43A	N	08/10/2017	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-43A	N	08/10/2017	Process Water	0	0
J3 Range	MW-653M2	MW-653M2_F17	N	08/10/2017	Ground Water	59.3	69.3
J3 Range	MW-653M2	MW-653M2_F17D	FD	08/10/2017	Ground Water	59.3	69.3
Central Impact Area	CIA1-EFF	CIA1-EFF-43A	N	08/10/2017	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-43A	N	08/10/2017	Process Water	0	0
Central Impact Area	CIA1-MID1	CIA1-MID1-43A	N	08/10/2017	Process Water	0	0
Central Impact Area	CIA1-INF	CIA1-INF-43A	N	08/10/2017	Process Water	0	0
J3 Range	MW-653M1	MW-653M1_F17	N	08/10/2017	Ground Water	147.5	157.5
J3 Range	MW-653M1	MW-653M1_F17D	FD	08/10/2017	Ground Water	147.5	157.5
Central Impact Area	CIA3-EFF	CIA3-EFF-14A	N	08/10/2017	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-14A	N	08/10/2017	Process Water	0	0
Central Impact Area	CIA3-MID1	CIA3-MID1-14A	N	08/10/2017	Process Water	0	0
Central Impact Area	CIA3-INF	CIA3-INF-14A	N	08/10/2017	Process Water	0	0
J3 Range	J3-EFF	J3-EFF-131A	N	08/09/2017	Process Water	0	0
J3 Range	J3-MID-2	J3-MID-2-131A	N	08/09/2017	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-131A	N	08/09/2017	Process Water	0	0
J3 Range	J3-INF	J3-INF-131A	N	08/09/2017	Process Water	0	0
J3 Range	J3EWIP2	J3EWIP2_F17	N	08/09/2017	Ground Water	149.5	169.5
J3 Range	J3EWIP2	J3EWIP2_F17D	FD	08/09/2017	Ground Water	149.5	169.5
J3 Range	90EW0001	90EW0001_F17	N	08/09/2017	Ground Water	83.1	143.8
Demolition Area 1	PR-EFF	PR-EFF-137A	N	08/09/2017	Process Water	0	0
Demolition Area 1	PR-MID-2	PR-MID-2-137A	N	08/09/2017	Process Water	0	0
Demolition Area 1	PR-MID-1	PR-MID-1-137A	N	08/09/2017	Process Water	0	0
Demolition Area 1	PR-INF	PR-INF-137A	N	08/09/2017	Process Water	0	0
J3 Range	J3EW0032	J3EW0032_F17	N	08/09/2017	Ground Water	102	152
J3 Range	J3EW0032	J3EW0032_F17D	FD	08/09/2017	Ground Water	102	152
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-137A	N	08/09/2017	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-137A	N	08/09/2017	Process Water	0	0
J3 Range	90MP0059B	90MP0059B_F17	N	08/09/2017	Ground Water	116.4	118.9
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-137A	N	08/09/2017	Process Water	0	0
Demolition Area 1	FPR-2-INF	FPR-2-INF-137A	N	08/09/2017	Process Water	0	0
Demolition Area 1	D1-EFF	D1-EFF-85A	N	08/09/2017	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-85A	N	08/09/2017	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-85A	N	08/09/2017	Process Water	0	0
Demolition Area 1	D1-INF	D1-INF-85A	N	08/09/2017	Process Water	0	0
Demolition Area 1	D1LE-EFF	D1LE-EFF-13A	N	08/09/2017	Process Water	0	0
Demolition Area 1	D1LE-MID2	D1LE-MID2-13A	N	08/09/2017	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-13A	N	08/09/2017	Process Water	0	0
Demolition Area 1	D1LE-INF	D1LE-INF-13A	N	08/09/2017	Process Water	0	0
J3 Range	MW-217M3	MW-217M3_F17	N	08/08/2017	Ground Water	101	106
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-107A	N	08/08/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-107A	N	08/08/2017	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 25 July 2017 through 31 August 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 Eastern	J2E-MID-1K	J2E-MID-1K-107A	N	08/08/2017	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-107A	N	08/08/2017	Process Water	0	0
J3 Range	MW-636M2	MW-636M2_F17	N	08/08/2017	Ground Water	110.5	120.5
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-107A	N	08/08/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-107A	N	08/08/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-107A	N	08/08/2017	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-107A	N	08/08/2017	Process Water	0	0
J3 Range	MW-636M1	MW-636M1_F17	N	08/08/2017	Ground Water	141.6	151.6
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-107A	N	08/08/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-107A	N	08/08/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-107A	N	08/08/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-107A	N	08/08/2017	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-107A	N	08/08/2017	Process Water	0	0
J2 Range Eastern	J2E-INF-I	J2E-INF-I-107A	N	08/08/2017	Process Water	0	0
J1 Range Southern	J1S-EFF	J1S-EFF-117A	N	08/07/2017	Process Water	0	0
J1 Range Southern	J1S-MID-2	J1S-MID-2-117A	N	08/07/2017	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-117A	N	08/07/2017	Process Water	0	0
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-131A	N	08/07/2017	Process Water	0	0
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-131A	N	08/07/2017	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-131A	N	08/07/2017	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-131A	N	08/07/2017	Process Water	0	0
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-131A	N	08/07/2017	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-131A	N	08/07/2017	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-131A	N	08/07/2017	Process Water	0	0
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-131A	N	08/07/2017	Process Water	0	0
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-131A	N	08/07/2017	Process Water	0	0
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-131A	N	08/07/2017	Process Water	0	0
J1 Range Northern	J1N-EFF	J1N-EFF-46A	N	08/07/2017	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-46A	N	08/07/2017	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-46A	N	08/07/2017	Process Water	0	0
J3 Range	MW-171M2	MW-171M2_F17	N	08/07/2017	Ground Water	81	86
J1 Range Northern	J1N-INF2	J1N-INF2-46A	N	08/07/2017	Process Water	0	0
J1 Range Southern	DPJ1S694	DPJ1S694_138-140	N	08/03/2017	Drill Cuttings, Aqueous Matrix	138	140
J1 Range Southern	DPJ1S694	DPJ1S694_130-132	MS	08/03/2017	Drill Cuttings, Aqueous Matrix	130	132
J1 Range Southern	DPJ1S694	DPJ1S694_130-132	N	08/03/2017	Drill Cuttings, Aqueous Matrix	130	132
J1 Range Southern	DPJ1S694	DPJ1S694_130-132	SD	08/03/2017	Drill Cuttings, Aqueous Matrix	130	132
J1 Range Southern	DPJ1S694	DPJ1S694_120-122	N	08/03/2017	Drill Cuttings, Aqueous Matrix	120	122
J1 Range Southern	DPJ1S694	DPJ1SDUP14_080317	FD	08/03/2017	Drill Cuttings, Aqueous Matrix	120	122
J1 Range Southern	DPJ1S694	DPJ1S694_110-112	N	08/03/2017	Drill Cuttings, Aqueous Matrix	110	112
J1 Range Southern	DPJ1S694	DPJ1S694_100-102	N	08/03/2017	Drill Cuttings, Aqueous Matrix	100	102
J1 Range Southern	DPJ1S693	DPJ1S693_138-140	N	08/02/2017	Drill Cuttings, Aqueous Matrix	138	140
J1 Range Southern	DPJ1S693	DPJ1SDUP13_080217	FD	08/02/2017	Drill Cuttings, Aqueous Matrix	130	132
J1 Range Southern	DPJ1S693	DPJ1S693_130-132	N	08/02/2017	Drill Cuttings, Aqueous Matrix	130	132
J1 Range Southern	DPJ1S693	DPJ1S693_120-122	N	08/01/2017	Drill Cuttings, Aqueous Matrix	120	122
J1 Range Southern	DPJ1S693	DPJ1S693_110-112	N	08/01/2017	Drill Cuttings, Aqueous Matrix	110	112
J1 Range Southern	DPJ1S693	DPJ1S693_100-102	MS	08/01/2017	Drill Cuttings, Aqueous Matrix	100	102
J1 Range Southern	DPJ1S693	DPJ1S693_100-102	N	08/01/2017	Drill Cuttings, Aqueous Matrix	100	102
J1 Range Southern	DPJ1S693	DPJ1S693_100-102	SD	08/01/2017	Drill Cuttings, Aqueous Matrix	100	102
J1 Range Southern	DPJ1S693	DPJ1S693_88-90	N	07/31/2017	Drill Cuttings, Aqueous Matrix	88	90
J1 Range Southern	DPJ1S692	DPJ1S692_140-142	N	07/27/2017	Drill Cuttings, Aqueous Matrix	140	142
J1 Range Southern	DPJ1S692	DPJ1S692_130-132	N	07/27/2017	Drill Cuttings, Aqueous Matrix	130	132
J1 Range Southern	DPJ1S692	DPJ1S692_120-122	N	07/27/2017	Drill Cuttings, Aqueous Matrix	120	122
J1 Range Southern	DPJ1S692	DPJ1S692_110-112	N	07/26/2017	Drill Cuttings, Aqueous Matrix	110	112
J1 Range Southern	DPJ1S692	DPJ1S692_103-105	N	07/26/2017	Drill Cuttings, Aqueous Matrix	103	105
J1 Range Southern	DPJ1S692	DPJ1S692_95-97	N	07/26/2017	Drill Cuttings, Aqueous Matrix	95	97
J1 Range Southern	DPJ1S691	DPJ1S691_160-162	N	07/25/2017	Drill Cuttings, Aqueous Matrix	160	162
J1 Range Southern	DPJ1S691	DPJ1S691_150-152	N	07/25/2017	Drill Cuttings, Aqueous Matrix	150	152

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 25 July 2017 through 31 August 2017

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J1 Range Southern	DPJ1S691	DPJ1S691_140-142	N	07/25/2017	Drill Cuttings, Aqueous Matrix	140	142
J1 Range Southern	DPJ1S691	DPJ1SDUP12_072517	FD	07/25/2017	Drill Cuttings, Aqueous Matrix	130	132
J1 Range Southern	DPJ1S691	DPJ1S691_130-132	N	07/25/2017	Drill Cuttings, Aqueous Matrix	130	132
J1 Range Southern	DPJ1S691	DPJ1S691_123-125	N	07/25/2017	Drill Cuttings, Aqueous Matrix	123	125
J1 Range Southern	DPJ1S691	DPJ1S691_115-117	N	07/25/2017	Drill Cuttings, Aqueous Matrix	115	117

N = Normal Sample
FD = Field Duplicate

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received August 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
J3 Range	90PZ0211	90PZ0211_F17	80	110	07/27/2017	SW6850	Perchlorate	0.058	J	ug/L	2.0		0.019	0.20
J3 Range	90PZ0204	90PZ0204_F17	80	85	07/27/2017	SW6850	Perchlorate	0.067	J	ug/L	2.0		0.019	0.20
L Range	MW-242M1	MW-242M1_F17	235	245	07/26/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.7		ug/L	0.60	X	0.025	0.20
L Range	MW-595M1	MW-595M1_F17	255.3	265.3	07/26/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.3		ug/L	0.60	X	0.025	0.20
L Range	MW-595M1	MW-595M1_F17D	255.3	265.3	07/26/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.3		ug/L	0.60	X	0.025	0.20
J3 Range	MW-243M2	MW-243M2_F17	84.5	94.5	07/25/2017	SW6850	Perchlorate	0.29		ug/L	2.0		0.019	0.20
J3 Range	MW-243M1	MW-243M1_F17	114.5	124.5	07/25/2017	SW6850	Perchlorate	0.23		ug/L	2.0		0.019	0.20
Central Impact Area	MW-629M2	MW-629M2_S17R	186.9	196.9	07/25/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.96		ug/L	400		0.019	0.20
Central Impact Area	MW-629M2	MW-629M2_S17R	186.9	196.9	07/25/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	6.7		ug/L	0.60	X	0.025	0.20
Central Impact Area	MW-629M1	MW-629M1_S17R	216.9	226.9	07/25/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.93		ug/L	0.60	X	0.025	0.20
J3 Range	MW-197M3	MW-197M3_F17	60.2	65.2	07/24/2017	SW6850	Perchlorate	0.30		ug/L	2.0		0.019	0.20
J3 Range	MW-197M3	MW-197M3_F17	60.2	65.2	07/24/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.1		ug/L	400		0.019	0.20
J3 Range	MW-197M3	MW-197M3_F17D	60.2	65.2	07/24/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.0		ug/L	400		0.019	0.20
J3 Range	MW-197M2	MW-197M2_F17	80.2	85.2	07/24/2017	SW6850	Perchlorate	0.19	J	ug/L	2.0		0.019	0.20
J3 Range	MW-198M4	MW-198M4_F17	70	75	07/24/2017	SW6850	Perchlorate	0.32		ug/L	2.0		0.019	0.20
J3 Range	MW-198M4	MW-198M4_F17	70	75	07/24/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	11.2		ug/L	0.60	X	0.025	0.20
J3 Range	MW-198M4	MW-198M4_F17	70	75	07/24/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	6.4		ug/L	400		0.019	0.20
J3 Range	MW-198M4	MW-198M4_F17D	70	75	07/24/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	11.5		ug/L	0.60	X	0.025	0.20
J3 Range	MW-198M4	MW-198M4_F17D	70	75	07/24/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	6.6		ug/L	400		0.019	0.20
J3 Range	MW-198M3	MW-198M3_F17	100	105	07/24/2017	SW6850	Perchlorate	1.2		ug/L	2.0		0.019	0.20
J3 Range	MW-198M2	MW-198M2_F17	120	125	07/24/2017	SW6850	Perchlorate	1.5		ug/L	2.0		0.019	0.20
J3 Range	J3EWIP1	J3EWIP1_F17	153	193	07/19/2017	SW6850	Perchlorate	1.4		ug/L	2.0		0.019	0.20
J3 Range	J3EWIP1	J3EWIP1_F17D	153	193	07/19/2017	SW6850	Perchlorate	1.4		ug/L	2.0		0.019	0.20
J3 Range	90MW0054	90MW0054_F17	107	112	07/19/2017	SW6850	Perchlorate	0.93		ug/L	2.0		0.019	0.20
J3 Range	J3-MW-1-B	J3-MW-1-B_F17	175.6	185.6	07/19/2017	SW6850	Perchlorate	1.1		ug/L	2.0		0.019	0.20
J3 Range	MW-343M2	MW-343M2_F17	166.8	171.8	07/18/2017	SW6850	Perchlorate	0.064	J	ug/L	2.0		0.019	0.20
J3 Range	MW-343M1	MW-343M1_F17	214.8	224.8	07/18/2017	SW6850	Perchlorate	0.33		ug/L	2.0		0.019	0.20
J3 Range	MW-637M2	MW-637M2_F17	214.1	224.1	07/18/2017	SW6850	Perchlorate	2.6		ug/L	2.0	X	0.019	0.20
J3 Range	MW-637M2	MW-637M2_F17D	214.1	224.1	07/18/2017	SW6850	Perchlorate	2.5		ug/L	2.0	X	0.019	0.20
J3 Range	MW-227M1	MW-227M1_F17	130	140	07/18/2017	SW6850	Perchlorate	0.028	J	ug/L	2.0		0.019	0.20
J3 Range	MW-329M2	MW-329M2_F17	150.1	160.1	07/17/2017	SW6850	Perchlorate	0.67		ug/L	2.0		0.019	0.20
J3 Range	MW-329M1	MW-329M1_F17	180	190	07/17/2017	SW6850	Perchlorate	0.32		ug/L	2.0		0.019	0.20
J3 Range	MW-247M3	MW-247M3_F17	95	105	07/17/2017	SW6850	Perchlorate	0.089	J	ug/L	2.0		0.019	0.20
J3 Range	MW-247M2	MW-247M2_F17	125	135	07/17/2017	SW6850	Perchlorate	0.075	J	ug/L	2.0		0.019	0.20
J3 Range	MW-250M3	MW-250M3_F17	95	105	07/13/2017	SW6850	Perchlorate	0.30		ug/L	2.0		0.019	0.20
J3 Range	MW-250M3	MW-250M3_F17	95	105	07/13/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.88		ug/L	400		0.019	0.20
J3 Range	MW-250M3	MW-250M3_F17D	95	105	07/13/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.91		ug/L	400		0.019	0.20
J3 Range	MW-250M2	MW-250M2_F17	145	155	07/13/2017	SW6850	Perchlorate	3.0		ug/L	2.0	X	0.019	0.20
J3 Range	MW-157M3	MW-157M3_F17	70	80	07/13/2017	SW6850	Perchlorate	0.090	J	ug/L	2.0		0.019	0.20
J3 Range	MW-157M3	MW-157M3_F17	70	80	07/13/2017	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.24	J	ug/L	400		0.019	0.20
J3 Range	MW-157M2	MW-157M2_F17	110	120	07/13/2017	SW6850	Perchlorate	0.069	J	ug/L	2.0		0.019	0.20

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

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

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received August 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
J3 Range	MW-157M1	MW-157M1_F17	154	164	07/13/2017	SW6850	Perchlorate	0.041	J	ug/L	2.0		0.019	0.20
J3 Range	MW-359M2	MW-359M2_F17	148.6	158.6	07/12/2017	SW6850	Perchlorate	0.059	J	ug/L	2.0		0.019	0.20
J3 Range	MW-193S	MW-193S_F17	32.5	37.5	07/12/2017	SW6850	Perchlorate	0.079	J	ug/L	2.0		0.019	0.20
J3 Range	MW-227M3	MW-227M3_F17	65	75	07/12/2017	SW6850	Perchlorate	0.044	J	ug/L	2.0		0.019	0.20
J3 Range	MW-227M2	MW-227M2_F17	110	120	07/12/2017	SW6850	Perchlorate	7.3		ug/L	2.0	X	0.019	0.20
J3 Range	MW-163S	MW-163S_F17	38	48	07/11/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.89		ug/L	0.60	X	0.025	0.20
J3 Range	MW-163S	MW-163S_F17	38	48	07/11/2017	SW6850	Perchlorate	4.2		ug/L	2.0	X	0.019	0.20
J3 Range	MW-163S	MW-163S_F17D	38	48	07/11/2017	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.81		ug/L	0.60	X	0.025	0.20
J3 Range	MW-163S	MW-163S_F17D	38	48	07/11/2017	SW6850	Perchlorate	4.2		ug/L	2.0	X	0.019	0.20
J3 Range	MW-232M2	MW-232M2_F17	61	66	07/11/2017	SW6850	Perchlorate	0.46		ug/L	2.0		0.019	0.20
J3 Range	MW-232M1	MW-232M1_F17	77.5	82.5	07/11/2017	SW6850	Perchlorate	0.24		ug/L	2.0		0.019	0.20
J3 Range	MW-193M1	MW-193M1_F17	57.5	62.5	07/11/2017	SW6850	Perchlorate	0.045	J	ug/L	2.0		0.019	0.20
J3 Range	MW-155M1	MW-155M1_F17	124	134	07/11/2017	SW6850	Perchlorate	0.24		ug/L	2.0		0.019	0.20
J3 Range	MW-142M2	MW-142M2_F17	140	150	07/10/2017	SW6850	Perchlorate	0.072	J	ug/L	2.0		0.019	0.20
J3 Range	MW-143M3	MW-143M3_F17	107	112	07/10/2017	SW6850	Perchlorate	0.12	J	ug/L	2.0		0.019	0.20
J3 Range	MW-143M2	MW-143M2_F17	117	122	07/10/2017	SW6850	Perchlorate	0.12	J	ug/L	2.0		0.019	0.20
J3 Range	MW-143M1	MW-143M1_F17	144	154	07/10/2017	SW6850	Perchlorate	1.1		ug/L	2.0		0.019	0.20
Northwest Corner	MW-344M2	MW-344M2_S17	145	155	06/29/2017	SW6850	Perchlorate	1.1		ug/L	2.0		0.019	0.20
Northwest Corner	MW-344M2	MW-344M2_S17D	145	155	06/29/2017	SW6850	Perchlorate	1.1		ug/L	2.0		0.019	0.20
Northwest Corner	MW-278S	MW-278S_S17	80	90	06/29/2017	SW6850	Perchlorate	0.44		ug/L	2.0		0.019	0.20
Northwest Corner	MW-278M2	MW-278M2_S17	97	102	06/29/2017	SW6850	Perchlorate	0.34		ug/L	2.0		0.019	0.20
Northwest Corner	MW-279M2	MW-279M2_S17	83	88	06/28/2017	SW6850	Perchlorate	0.67		ug/L	2.0		0.019	0.20

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

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