

**MONTHLY PROGRESS REPORT #261
FOR DECEMBER 2018**

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

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

The following summary of progress is for the period from 1 to 28 December 2018.

1. SUMMARY OF REMEDIATION ACTIONS

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

Demolition Area 1 Comprehensive Groundwater RA

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

The Frank Perkins Road Treatment Facility has been optimized as part of the Environmental and System Performance Monitoring (ESPM) program at Demolition Area 1. The treatment facility continues to operate at a flow rate of 175 gpm, with over 2.614 billion gallons of water treated and re-injected as of 28 December 2018. The following shut downs occurred in the December reporting period:

- Extraction Well MW-431 shut down at 0940 on 03 December 2018 due to a power supply interruption damaging contactor and overloads in the VFD. BetCo was able to replace them and was restarted at 1010 on 06 December 2018.
- 0900 on 28 December 2018 due to a power outage, and was restarted at 1046 on 28 December 2018.

The Pew Road Mobile Treatment Unit (MTU) is operating at a flow rate of 100 gpm (increased from 65 gpm on 18 June 2018), with over 598.0 million gallons of water treated and re-injected as of 28 December 2018. The following Pew Road MTU shut downs occurred in the December reporting period:

- 0938 on 03 December 2018 due to a power supply interruption, and was restarted at 1001 on 03 December 2018.
- 0900 on 28 December 2018 due to a power outage, and was restarted at 1015 on 28 December 2018.

The Base Boundary MTU is operating at a flow rate of 65 gpm with over 219.3 million gallons of water treated and re-injected as of 28 December 2018. No Base Boundary MTU shut downs occurred in the December reporting period.

The Leading Edge system continues to operate at a flow rate of 100 gpm. As of 28 December 2018, over 134.7 million gallons of water treated and re-injected. The following Leading Edge system shut downs occurred in the December reporting period.

- 0920 on 18 December 2018 due to a wind-related power interruption, and was restarted at 1002 on 18 December 2018.

J-2 Range Groundwater RA

Northern Plant

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

The Northern Treatment Building continues to operate at a flow rate of 225 gpm. As of 28 December 2018, over 1.069 billion gallons of water have been treated and re-injected. No Northern Treatment Building shutdown occurred in the December reporting period.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 28 December 2018, over 1.557 billion gallons of water have been treated and re-injected. No J-2 Range Northern MTU E or F shut downs occurred in the December reporting period.

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 December 2018, over 1.158 billion gallons of water have been treated and re-injected. No MTU H and I shutdowns occurred in the December reporting period.

MTU J continues to operate at a flow rate of 120 gpm. As of 28 December 2018, over 534.7 million gallons of water have been treated and re-injected. No MTU J shutdowns occurred in the December reporting period.

MTU K continues to operate at a flow rate of 125 gpm. As of 28 December 2018, over 671.4 million gallons of water have been treated and re-injected. No MTU K shutdowns occurred in the December reporting period.

J-3 Range Groundwater RA

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

The J-3 system is currently operating at a flow rate of 255 gpm (while J3EW0032 is running at 45 gpm instead of 65 gpm). As of 28 December 2018, over 1.188 billion gallons of water have been treated and re-injected. No J-3 Range system shut downs occurred in the December reporting period,

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 December 2018, over 518.5 million gallons of water have been treated and re-injected. The following J-1 Range Southern system shut downs occurred in the December reporting period.

- J1SEW0002 was turned off at 1145 on 30 October 2018 to sample J1SEW0001, and was restarted at 1230 on 30 October 2018.

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 December 2018, over 614.3 million gallons of water have been treated and re-injected. No J-1 Range Northern MTU shut downs occurred in the December reporting period.

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 December 2018, over 1.595 billion gallons of water have been treated and re-injected. The following CIA treatment facility shut downs occurred in the December reporting period:

- System 1 shut down at 0947 on 03 December 2018 due to a power supply interruption, and was restarted at 1015 on 03 December 2018.
- System 1 was shut down on 0900 on 28 December 2018 due to a power outage, and was restarted at 1147 on 28 December 2018.
- System 2 was shut down on 0900 on 28 December 2018 due to a power outage, and was restarted at 1114 on 28 December 2018.
- System 3 was turned off at 0800 on 04 December 2018 for CFS to perform carbon exchange, and was restarted at 0735 n 06 December 2018.

SUMMARY OF ACTIONS TAKEN

CIA

- Performed routine inspections of BEM cover at the CIA to ensure cover is secure and intact, and demo operations.
- Intrusive investigation in Phase 3 Area 1.
- Conducted demolition operations.
- Parsons team demobilized from the site.
- Groundwater sampling within the CIA GW program.

Demolition Area 1

- Groundwater sampling within the Demo 1 GW program.

Small Arms Ranges

- Completed T&D of C Range (10th and 11th lifts), D Range (4th, 5th, and 6th lifts), and Former B Range (10th lift) non-hazardous soil.

J1 Range

- Groundwater sampling within the J1 North SPM program.

J2 Range

- Groundwater sampling within the J2 East GW program.
- Groundwater sampling within the J2 North GW program.

J3 Range

- Groundwater sampling within the J3 Range GW program.

Training Areas

- No Activity.

Other

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

JBCC IAGWSP Tech Update Meeting December 2018

No meeting was held in December

JBCC Cleanup Team Meeting

The next JBCC Cleanup Team (JBCCCT) meeting has yet to be scheduled (previous meeting was 29 August 2018). The Cleanup Team meeting discusses late breaking news and responses to action items, as well as updates from the IAGWSP and the Installation Restoration Program (IRP). The JBCCCT meetings provide a forum for community input regarding issues related to both the IRP and the IAGWSP.

SUMMARY OF DATA RECEIVED

Table 1 summarizes sampling for all media from 1 December to 31 December 2018. Validated detections of explosives compounds and perchlorate for all groundwater results received from 1 December to 31 December 2018. The December treatment system influent summary is not included due to no validated perchlorate or explosives results available at report submittal time. These results are compared to the Maximum Contaminant Levels/Health Advisory (MCL/HA) values for respective analytes. Explosives and perchlorate are the primary contaminants of concern (COC) at Camp Edwards.

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

2. DELIVERABLES SUBMITTED

Deliverables submitted during the reporting period include the following:

- Demolition Area 1 Optimized Hydraulic and Chemical Monitoring Network 10 Dec 18
- Monthly Progress Report No. 260 for November 2018 10 Dec 18
- Draft J-2 Range Eastern and J-2 Range Northern 2018 Environmental Monitoring Report 28 Dec 18
- Draft J-3 Range 2018 Annual Environmental Monitoring Report 28 Dec 18

3. SCHEDULED ACTIONS

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

Training Areas

- Final Training Areas Decision Document

Annual Reports/ Environmental Monitoring Reports/Work Plans

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

Central Impact Area

- 2019 Workplan

Miscellaneous

- Certificates of Compliance
- CIA and J-2 Range rocket disposal recommendations
- Five Year Review Draft report
- J-1 South project note for additional well locations
- J-2 Range geophysical completion of work report and recommended well locations
- J-3 Geophysical and Soil Technical Memorandum
- L Range groundwater model and project note for an active treatment alternative supporting the Decision Document addendum
- PFAS sampling project note

TABLE 1
Sampling Progress: 1 December to 31 December 2018

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Eastern	J2E-INF-I	J2E-INF-I-123A	N	12/03/2018	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-123A	N	12/03/2018	Process Water	0	0
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-123A	N	12/03/2018	Process Water	0	0
J1 Range Northern	MW-688M1	MW-688M1_F18	N	12/03/2018	Ground Water	255.2	265.2
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-123A	N	12/03/2018	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-123A	N	12/03/2018	Process Water	0	0
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-123A	N	12/03/2018	Process Water	0	0
J1 Range Northern	MW-688M2	MW-688M2_F18	N	12/03/2018	Ground Water	227.8	237.8
J2 Range Eastern	J2E-INF-J	J2E-INF-J-123A	N	12/03/2018	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-123A	N	12/03/2018	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-123A	N	12/03/2018	Process Water	0	0
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-123A	N	12/03/2018	Process Water	0	0
J1 Range Northern	MW-689M1	MW-689M1_F18	N	12/03/2018	Ground Water	253.5	263.5
J2 Range Eastern	J2E-INF-K	J2E-INF-K-123A	N	12/03/2018	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-123A	N	12/03/2018	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-123A	N	12/03/2018	Process Water	0	0
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-123A	N	12/03/2018	Process Water	0	0
J1 Range Northern	MW-689M2	MW-689M2_F18	N	12/03/2018	Ground Water	231.4	241.4
J1 Range Northern	MW-606M1	MW-606M1_F18	N	12/03/2018	Ground Water	233.3	243.3
J1 Range Northern	MW-606M2	MW-606M2_F18	N	12/03/2018	Ground Water	193.2	203.2
J1 Range Northern	MW-187D	MW-187D_F18	N	12/04/2018	Ground Water	306	316
J1 Range Northern	MW-187M1	MW-187M1_F18	N	12/04/2018	Ground Water	160	170
J1 Range Northern	MW-306D	MW-306D_F18	N	12/04/2018	Ground Water	291.66	301.66
J1 Range Northern	MW-306M1	MW-306M1_F18	N	12/04/2018	Ground Water	184.88	194.88
J1 Range Northern	MW-306M2	MW-306M2_F18	N	12/04/2018	Ground Water	164.69	174.69
J1 Range Northern	MW-541M1	MW-541M1_F18	N	12/04/2018	Ground Water	210	220
J1 Range Northern	MW-401M1	MW-401M1_F18	N	12/05/2018	Ground Water	256.1	266.1
J1 Range Northern	MW-401M3	MW-401M3_F18	N	12/05/2018	Ground Water	228.5	238.5
J1 Range Northern	MW-430M1	MW-430M1_F18	N	12/05/2018	Ground Water	245.23	255.23
J1 Range Northern	MW-430M2	MW-430M2_F18	N	12/05/2018	Ground Water	188.41	198.41
J1 Range Northern	MW-584M1	MW-584M1_F18	N	12/05/2018	Ground Water	248	258
J1 Range Northern	MW-584M2	MW-584M2_F18	N	12/05/2018	Ground Water	228	238
J1 Range Northern	MW-479M1	MW-479M1_F18	N	12/05/2018	Ground Water	240	250
J2 Range Northern	MW-704M1	MW-704M1_F18	N	12/06/2018	Ground Water	244	254
J2 Range Northern	MW-704M2	MW-704M2_F18	N	12/06/2018	Ground Water	217.8	227.8
J2 Range Northern	MW-703M1	MW-703M1_F18	N	12/07/2018	Ground Water	248	258
J2 Range Northern	MW-703M2	MW-703M2_F18	N	12/07/2018	Ground Water	224.1	234.1
J2 Range Northern	MW-702M1	MW-702M1_F18	N	12/07/2018	Ground Water	277.5	287.5
J2 Range Northern	MW-702M2	MW-702M2_F18	N	12/07/2018	Ground Water	208.1	218.1
J2 Range Eastern	MW-706S	MW-706S_F18	N	12/07/2018	Ground Water	112.7	122.7
J2 Range Eastern	MW-705M1	MW-705M1_F18	N	12/10/2018	Ground Water	209.7	219.7
J2 Range Eastern	MW-705M1	MW-705M1_F18D	FD	12/10/2018	Ground Water	209.7	219.7
J2 Range Eastern	MW-705M2	MW-705M2_F18	N	12/10/2018	Ground Water	185.9	195.9
J2 Range Eastern	MW-707S	MW-707S_F18	N	12/10/2018	Ground Water	110.3	120.3
J2 Range Eastern	MW-708S	MW-708S_F18	N	12/10/2018	Ground Water	107.7	117.7
J2 Range Eastern	MW-709S	MW-709S_F18	N	12/10/2018	Ground Water	106.2	116.2
J3 Range	MW-701M1	MW-701M1_F18	N	12/11/2018	Ground Water	177	187
J3 Range	MW-701M2	MW-701M2_F18	N	12/11/2018	Ground Water	147.5	157.5
Central Impact Area	MW-699M1	MW-699M1_F18	N	12/11/2018	Ground Water	261.5	271.5
Central Impact Area	MW-699M2	MW-699M2_F18	N	12/11/2018	Ground Water	221	231
Central Impact Area	MW-710M1	MW-710M1_F18	N	12/11/2018	Ground Water	247.5	257.5
J1 Range Northern	MW-265M1	MW-265M1_F18	N	12/12/2018	Ground Water	265	275
J1 Range Northern	MW-265M2	MW-265M2_F18	N	12/12/2018	Ground Water	225	235
J1 Range Northern	MW-265M2	MW-265M2_F18D	FD	12/12/2018	Ground Water	225	235
J1 Range Northern	MW-265M3	MW-265M3_F18	N	12/12/2018	Ground Water	200	210
J1 Range Northern	MW-370M1	MW-370M1_F18	N	12/12/2018	Ground Water	245	255
J1 Range Northern	MW-370M1	MW-370M1_F18D	FD	12/12/2018	Ground Water	245	255
J1 Range Northern	MW-370M2	MW-370M2_F18	N	12/12/2018	Ground Water	215.54	225.54
J1 Range Northern	MW-370M3	MW-370M3_F18	N	12/12/2018	Ground Water	174.96	184.96

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 December to 31 December 2018

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J1 Range Northern	J1N-INF1A	J1N-INF1A_F18	N	12/13/2018	Process Water	0	0
J1 Range Northern	J1N-INF1B	J1N-INF1B_F18	N	12/13/2018	Process Water	0	0
J1 Range Northern	MW-590M1	MW-590M1_F18	N	12/13/2018	Ground Water	258	268
J1 Range Northern	MW-590M2	MW-590M2_F18	N	12/13/2018	Ground Water	238	248
J1 Range Northern	MW-566M1	MW-566M1_F18	N	12/13/2018	Ground Water	232	242
J1 Range Northern	MW-315M1	MW-315M1_F18	N	12/17/2018	Ground Water	245.49	255.49
J1 Range Northern	MW-315M2	MW-315M2_F18	N	12/17/2018	Ground Water	195.72	205.72
J1 Range Northern	MW-540M1	MW-540M1_F18	N	12/17/2018	Ground Water	258	268
Demolition Area 1	MW-77M2	MW-77M2_F18	N	12/17/2018	Ground Water	120	130
Demolition Area 1	MW-76M2	MW-76M2_F18	N	12/17/2018	Ground Water	105	115
Demolition Area 1	MW-700M1	MW-700M1_F18	N	12/18/2018	Ground Water	197.9	207.9
Demolition Area 1	MW-700M2	MW-700M2_F18	N	12/18/2018	Ground Water	147.7	157.7
Demolition Area 1	MW-663D	MW-663D_F18	N	12/18/2018	Ground Water	240.6	250.6
Demolition Area 1	MW-663D	MW-663D_F18D	FD	12/18/2018	Ground Water	240.6	250.6
Demolition Area 1	MW-231M1	MW-231M1_F18	N	12/18/2018	Ground Water	210.5	220.5
Demolition Area 1	MW-648M1	MW-648M1_F18	N	12/18/2018	Ground Water	112	122
Demolition Area 1	MW-19S	MW-19S_F18	N	12/19/2018	Ground Water	52.7	62.7
Demolition Area 1	MW-19S	MW-19S_F18D	FD	12/19/2018	Ground Water	52.7	62.7
Demolition Area 1	MW-73S	MW-73S_F18	N	12/19/2018	Ground Water	52.2	61.7
Demolition Area 1	MW-31M	MW-31M_F18	N	12/19/2018	Ground Water	113	123
Demolition Area 1	MW-31S	MW-31S_F18	N	12/19/2018	Ground Water	98	103
Demolition Area 1	MW-31S	MW-31S_F18D	FD	12/19/2018	Ground Water	98	103
Demolition Area 1	XX9514	XX9514_F18	N	12/20/2018	Ground Water	102	112
Demolition Area 1	XX9514	XX9514_F18D	FD	12/20/2018	Ground Water	102	112
Demolition Area 1	MW-545M1	MW-545M1_F18	N	12/20/2018	Ground Water	162	172
Demolition Area 1	MW-545M2	MW-545M2_F18	N	12/20/2018	Ground Water	142	152
Demolition Area 1	MW-545M3	MW-545M3_F18	N	12/20/2018	Ground Water	101.5	111.5
Demolition Area 1	MW-545M4	MW-545M4_F18	N	12/20/2018	Ground Water	72	82
Demolition Area 1	MW-544M1	MW-544M1_F18	N	12/21/2018	Ground Water	162	172
Demolition Area 1	MW-544M2	MW-544M2_F18	N	12/21/2018	Ground Water	112	122
Demolition Area 1	MW-544M3	MW-544M3_F18	N	12/21/2018	Ground Water	77.5	87.5
Demolition Area 1	MW-341M2	MW-341M2_F18	N	12/27/2018	Ground Water	264.5	269.5
Demolition Area 1	MW-341M3	MW-341M3_F18	N	12/27/2018	Ground Water	209.5	219.5
Demolition Area 1	MW-431	MW-431_F18	N	12/27/2018	Ground Water	88	188
Demolition Area 1	EW-658	EW-658_F18	N	12/27/2018	Ground Water	96	136
Demolition Area 1	MW-659M1	MW-659M1_F18	N	12/27/2018	Ground Water	120	130

N = Normal Sample
 FD = Field Duplicate

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received December 2018

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-524M1	MW-524M1_F18	148	158	11/07/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.42		ug/L	0.60		0.036	0.20
J1 Range Southern	MW-524M1	MW-524M1_F18	148	158	11/07/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.040	J	ug/L	400		0.025	0.20
J1 Range Southern	MW-524M1	MW-524M1_F18D	148	158	11/07/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.41		ug/L	0.60		0.036	0.20
J1 Range Southern	MW-524M1	MW-524M1_F18D	148	158	11/07/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.041	J	ug/L	400		0.025	0.20
Demolition Area 1	PR-MID-1	PR-MID-1-152A	0	0	11/06/2018	SW6850	Perchlorate	0.20		ug/L	2.0		0.012	0.20
Demolition Area 1	PR-INF	PR-INF-152A	0	0	11/06/2018	SW6850	Perchlorate	0.34		ug/L	2.0		0.012	0.20
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-152A	0	0	11/06/2018	SW6850	Perchlorate	0.25		ug/L	2.0		0.012	0.20
Demolition Area 1	FPR-2-INF	FPR-2-INF-152A	0	0	11/06/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.18	J	ug/L	0.60		0.036	0.20
Demolition Area 1	FPR-2-INF	FPR-2-INF-152A	0	0	11/06/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.088	J	ug/L	400		0.025	0.20
Demolition Area 1	D1-INF	D1-INF-100A	0	0	11/06/2018	SW6850	Perchlorate	0.78	J	ug/L	2.0		0.012	0.20
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-122A	0	0	11/01/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.098	J	ug/L	0.60		0.036	0.20
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-122A	0	0	11/01/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.27		ug/L	0.60		0.036	0.20
J2 Range Eastern	J2E-INF-K	J2E-INF-K-122A	0	0	11/01/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.31		ug/L	0.60		0.036	0.20
J2 Range Eastern	J2E-INF-K	J2E-INF-K-122A	0	0	11/01/2018	SW6850	Perchlorate	0.12	J	ug/L	2.0		0.012	0.20
J1 Range Southern	MW-402M1	MW-402M1_F18	190.1	200.1	11/01/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.33		ug/L	0.60		0.036	0.20
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-122A	0	0	11/01/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.16	J	ug/L	400		0.025	0.20
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-122A	0	0	11/01/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.13	J	ug/L	0.60		0.036	0.20
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-122A	0	0	11/01/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.23		ug/L	400		0.025	0.20
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-122A	0	0	11/01/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.13	J	ug/L	0.60		0.036	0.20
J2 Range Eastern	J2E-INF-J	J2E-INF-J-122A	0	0	11/01/2018	SW6850	Perchlorate	0.53		ug/L	2.0		0.012	0.20
J2 Range Eastern	J2E-INF-J	J2E-INF-J-122A	0	0	11/01/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.11	J	ug/L	0.60		0.036	0.20
J2 Range Eastern	J2E-INF-J	J2E-INF-J-122A	0	0	11/01/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.097	J	ug/L	400		0.025	0.20
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-122A	0	0	11/01/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.21		ug/L	0.60		0.036	0.20
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-122A	0	0	11/01/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.25	J	ug/L	0.60		0.036	0.20
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-122A	0	0	11/01/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.037	J	ug/L	400		0.025	0.20
J2 Range Eastern	J2E-INF-I	J2E-INF-I-122A	0	0	11/01/2018	SW6850	Perchlorate	1.3		ug/L	2.0		0.012	0.20
J2 Range Eastern	J2E-INF-I	J2E-INF-I-122A	0	0	11/01/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.095	J	ug/L	400		0.025	0.20
J2 Range Eastern	J2E-INF-I	J2E-INF-I-122A	0	0	11/01/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.27		ug/L	0.60		0.036	0.20
J1 Range Southern	MW-400M1	MW-400M1_F18	192.8	202.8	11/01/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.13	J	ug/L	0.60		0.036	0.20
J2 Range Northern	J2N-INF-G	J2N-INF-G-146A	0	0	10/31/2018	SW6850	Perchlorate	0.40		ug/L	2.0		0.012	0.20
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-146A	0	0	10/31/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.10	J	ug/L	0.60		0.036	0.20
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-146A	0	0	10/31/2018	SW6850	Perchlorate	2.4		ug/L	2.0	X	0.012	0.20
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-146A	0	0	10/31/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.084	J	ug/L	0.60		0.036	0.20
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-146A	0	0	10/31/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.15	J	ug/L	0.60		0.036	0.20
J1 Range Northern	J1N-INF2	J1N-INF2-61A	0	0	10/31/2018	SW6850	Perchlorate	0.73		ug/L	2.0		0.012	0.20
Central Impact Area	CIA2-MID2	CIA2-MID2-58A	0	0	10/30/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.16	J	ug/L	0.60		0.036	0.20
J1 Range Southern	MW-647M1	MW-647M1_F18	211.3	221.3	10/30/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.9		ug/L	0.60	X	0.036	0.20
J1 Range Southern	MW-647M1	MW-647M1_F18D	211.3	221.3	10/30/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.8		ug/L	0.60	X	0.036	0.20
Central Impact Area	CIA2-INF	CIA2-INF-58A	0	0	10/30/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.3		ug/L	0.60	X	0.036	0.20
Central Impact Area	CIA2-INF	CIA2-INF-58A	0	0	10/30/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.060	J	ug/L	400		0.025	0.20
Central Impact Area	CIA2-INF	CIA2-INF-58A	0	0	10/30/2018	SW6850	Perchlorate	0.22		ug/L	2.0		0.012	0.20
J1 Range Southern	J1S-EW2-INF	J1S-EW2-INF_F18	0	0	10/30/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.26		ug/L	0.60		0.036	0.20

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

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received December 2018

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	CIA1-MID2	CIA1-MID2-58A	0	0	10/30/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.16	J	ug/L	0.60		0.036	0.20
Central Impact Area	CIA1-INF	CIA1-INF-58A	0	0	10/30/2018	SW6850	Perchlorate	0.42		ug/L	2.0		0.012	0.20
Central Impact Area	CIA1-INF	CIA1-INF-58A	0	0	10/30/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.71		ug/L	0.60	X	0.036	0.20
Central Impact Area	CIA3-MID2	CIA3-MID2-29A	0	0	10/30/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.27	J	ug/L	0.60		0.036	0.20
Central Impact Area	CIA3-INF	CIA3-INF-29A	0	0	10/30/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.81		ug/L	0.60	X	0.036	0.20
Central Impact Area	MW-695S	MW-695S_F18	130	140	10/29/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.83	J	ug/L	0.60	X	0.036	0.20
Central Impact Area	MW-695S	MW-695S_F18	130	140	10/29/2018	SW8330	2-Amino-4,6-dinitrotoluene	0.33		ug/L	7.3		0.016	0.20
Central Impact Area	MW-695S	MW-695S_F18	130	140	10/29/2018	SW8330	2,4-Dinitrotoluene	0.11	J	ug/L	5.0		0.054	0.20
Central Impact Area	MW-695S	MW-695S_F18	130	140	10/29/2018	SW8330	2,4,6-Trinitrotoluene	0.52		ug/L	2.0		0.027	0.20
Central Impact Area	MW-695S	MW-695S_F18	130	140	10/29/2018	SW8330	4-Amino-2,6-dinitrotoluene	0.28		ug/L	7.3		0.015	0.20
Central Impact Area	MW-695S	MW-695S_F18D	130	140	10/29/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.93	J	ug/L	0.60	X	0.036	0.20
Central Impact Area	MW-695S	MW-695S_F18D	130	140	10/29/2018	SW8330	2,4,6-Trinitrotoluene	0.60		ug/L	2.0		0.027	0.20
Central Impact Area	MW-695S	MW-695S_F18D	130	140	10/29/2018	SW8330	2-Amino-4,6-dinitrotoluene	0.33		ug/L	7.3		0.016	0.20
Central Impact Area	MW-695S	MW-695S_F18D	130	140	10/29/2018	SW8330	2,4-Dinitrotoluene	0.094	J	ug/L	5.0		0.054	0.20
Central Impact Area	MW-695S	MW-695S_F18D	130	140	10/29/2018	SW8330	4-Amino-2,6-dinitrotoluene	0.28		ug/L	7.3		0.015	0.20
J1 Range Southern	J1S-MID	J1S-MID-132A	0	0	10/29/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.18	J	ug/L	0.60		0.036	0.20
J1 Range Southern	J1S-INF-2	J1S-INF-2-132A	0	0	10/29/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.24		ug/L	0.60		0.036	0.20
J1 Range Southern	MW-592M1	MW-592M1_F18	201	211	10/29/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.13	J	ug/L	0.60		0.036	0.20
J1 Range Southern	MW-645M1	MW-645M1_F18	183.5	193.5	10/29/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.61		ug/L	0.60	X	0.036	0.20
J1 Range Southern	MW-645M1	MW-645M1_F18D	183.5	193.5	10/29/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.60		ug/L	0.60		0.036	0.20
J1 Range Southern	MW-482M2	MW-482M2_F18	172.64	182.64	10/24/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.0		ug/L	0.60	X	0.036	0.20
J1 Range Southern	MW-482M2	MW-482M2_F18	172.64	182.64	10/24/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.081	J	ug/L	400		0.025	0.20
J1 Range Southern	MW-482M2	MW-482M2_F18D	172.64	182.64	10/24/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.0		ug/L	0.60	X	0.036	0.20
J1 Range Southern	MW-482M2	MW-482M2_F18D	172.64	182.64	10/24/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.070	J	ug/L	400		0.025	0.20
J1 Range Southern	MW-360M2	MW-360M2_F18	102	112	10/23/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.37		ug/L	400		0.025	0.20
J1 Range Southern	MW-360M2	MW-360M2_F18D	102	112	10/23/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.29		ug/L	400		0.025	0.20
Central Impact Area	MW-441M2	MW-441M2_F18	109.5	119.5	10/18/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.17	J	ug/L	0.60		0.036	0.20
Central Impact Area	MW-616M1	MW-616M1_F18	217.1	227.1	10/18/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.86	J	ug/L	0.60	X	0.036	0.20
Central Impact Area	MW-617M1	MW-617M1_F18	175.8	185.8	10/18/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.5		ug/L	0.60	X	0.036	0.20
Central Impact Area	MW-623M3	MW-623M3_F18	275	285	10/17/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.52		ug/L	0.60		0.036	0.20
Central Impact Area	MW-623M3	MW-623M3_F18	275	285	10/17/2018	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.33		ug/L	400		0.025	0.20
Central Impact Area	MW-623M2	MW-623M2_F18	291.8	301.8	10/17/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.26		ug/L	0.60		0.036	0.20
Central Impact Area	MW-625M1	MW-625M1_F18	260	270	10/16/2018	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.57		ug/L	0.60		0.036	0.20

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