MONTHLY PROGRESS REPORT #277
FOR APRIL 2020

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 2020.

1. SUMMARY OF REMEDIATION ACTIONS

Remediation Actions (RA) underway at Camp Edwards as of 1 May 2020.

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 2.73 billion gallons of water treated and re-injected as of 1 May 2020. No Frank Perkins Road Treatment Facility shutdowns occurred in April.

The Pew Road Mobile Treatment Unit (MTU) continues to operate at a flow rate of 65 GPM, with over 645.6 million gallons of water treated and re-injected as of 1 May 2020. The following Pew Road MTU shutdowns occurred in April.

- 0804 on 07 April 2020 due to a power supply interruption, and was restarted at 0953 on 07 April 2020
- 1705 on 26 April 2020 due to a power supply interruption, and was restarted at 0812 on 27 April 2020.
- 1629 on 29 April 2020 due to a “VFD fault” alarm caused by a power supply interruption, and was restarted at 0735 on 30 April 2020.
- 0815 on 30 April 2020 due to a “VFD fault” alarm caused by a power supply interruption, and was restarted at 1000 h on 30 April 2020.

The Base Boundary MTU continues to operate at a flow rate of 65 gpm, with over 262.4 million gallons of water treated and re-injected as of 1 May 2020. No Base Boundary MTU shutdowns occurred in April.

The Leading Edge system continues to operate at a flow rate of 100 gpm, with over 195.1 million gallons of water treated and re-injected as of 1 May 2020. No Leading Edge system shutdowns 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 G continues to operate at a flow rate of 225 gpm. As of 1 May 2020, over 1.238 billion gallons of water have been treated and re-injected. The following Northern Treatment Building G shutdowns occurred in April:

- 0550 on 15 April 2020 due to a power supply interruption. Boston Electric and Telephone Company (BETCo) and Fernandes Line Company replaced a broken insulator, blown fuse on the power line, and a blown fuse and damaged coil in the VFD panel. The system was restarted at 0940 on 17 April 2020.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 1 May 2020, over 1.691 billion gallons of water have been treated and re-injected. No J-2 Range Northern MTU shutdowns occurred in April.

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 1 May 2020, over 1.346 billion gallons of water have been treated and re-injected. The following MTUs H and I shutdowns occurred in April:

- 0413 on 04 April 2020 due to a power supply interruption. BETCo and Fernandes Line Company replaced a broken insulator, blown fuse, and damaged coil on the power line. The system was restarted at 0845 on 14 April 2020
- 1540 on 17 April 2020 due to a power supply interruption, and was restarted at 1435 on 20 April 2020. Radio rebooted to restore communication with Frank Perkins PLC.

MTU J continues to operate at a flow rate of 120 gpm. As of 1 May 2020, over 619.5 million gallons of water have been treated and re-injected. No MTU J shutdowns occurred in April.

MTU K continues to operate at a flow rate of 125 gpm. As of 1 May 2020, over 738.0 million gallons of water have been treated and re-injected. No MTU K shutdowns 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 is currently operating at 255 gpm. As of 1 May 2020, over 1.353 billion gallons of water have been treated and re-injected. No J-3 Range system shutdowns occurred in April.

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 1 May 2020, over 597.0 million gallons of water have been treated and re-injected. The following J-1 Range Southern system shutdowns occurred in April:

- J1SEW0002 was turned off at 0900 on 22 April 2020 to operate J1SEW0001 for the semi-annual SPM sampling, and was restarted at 0955 h on 22 April 2020.

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 1 May 2020, over 828.8 million gallons of water have been treated and re-injected. No J-1 Range Northern MTU shutdowns 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 1 May 2020, over 2.055 billion gallons of water have been treated and re-injected. The following CIA2 system shutdowns occurred in April:

- Turned off at 0740 on 01 April 2020 to drain GAC Vessels #3 and #6. Carbon Filtration Systems performed the exchange and the vessels were filled to allow an overnight soak on 02 April 2020. CIA2 was restarted at 0735 on 03 April 2020
- Turned off at 0750 on 07 April 2020 to drain GAC Vessels #2 and #5. Carbon Filtration Systems performed the exchange and the vessels were filled to allow an overnight soak on 08 April 2020. The system was restarted at 0740 on 09 April 2020.

SUMMARY OF ACTIONS TAKEN

CIA

- Performed routine inspections of BEM cover to ensure cover is secure and intact.
- Completed source area well drilling, groundwater profile sampling, and screen installations.
- Parsons UXO team mobilized to site.
- Groundwater sampling within the CIA SPM program.

Demolition Area 1
- Hydraulic monitoring within the Demo 1 SPM program.
- Leading Edge MTU bag filters were exchanged on 06 April 2020.
- Pew Road MTU bag filters were exchanged on 24 April 2020.
- Completed the second, focused, post-D1-EW-5 packer hydraulic event on 28 April 2020.

Demolition Area 2
- Groundwater sampling within the Demo 2 SPM program.

J-1 Range
- J1 South bag filters were exchanged on 22 April 2020.
- Groundwater sampling within the J1 South SPM program.

J-2 Range
- No activity.

J-3 Range
- No activity.

L Range
- No activity.

Small Arms Ranges
- No activity.

Training Areas
- No activity.

Other
- Collected process water samples from the Central Impact Area (Systems 1 and 2), Demolition Area 1, J1 Range Northern, J1 Range Southern, J2 Range Eastern, J2 Range Northern, and J3 Range treatment systems.

JBCC IAGWSP Tech Update Meeting Minutes 9 April 2020

Project and Fieldwork Update

A screen setting call was held for the first Central Impact Area well. Drilling is ahead of schedule with one well drilled and installed and two additional wells drilled. Carbon change-outs were completed for CIA 2 on April 2nd and CIA 1 on April 8th. Change-out at CIA 3 required coordination with the Monument Beach Sportsman's Club for a shut down. All treatment systems are up and running with the exception of J-2 East systems H & I. Both systems went down over the weekend during a windstorm. Repair of a broken insulator and damaged fuse will be scheduled as soon as possible. Long term monitoring sampling continues in the Central Impact Area. After completion of CIA, the crews will move to J-1 South, Demolition Area 2 and then Demolition Area 1, which will take up the rest of the spring.

Dawson has completed the EM-61 survey of 20 acres at Former E Range. They are currently processing the data and while there is a little more data than they anticipated, they hope to have a target list with figures by next week. IAGWSP will share the list so targets can be picked and they can start the investigation. At the KD Range, while post-excavation sampling RDX results were below the state

standard, there was an issue with one of the HMX results. IAGWSP proposes to resample using 50 increments. IAGWSP will review the proposal against the current scope of work and will send an email to the group with the plan.

Currently, there is no UXO fieldwork in the Central Impact Area. Crews will return to the site around April 27th. They will set up and perform site training the first week then they will finish the remaining demolition operations from last year. They will then perform vegetation clearance, which is anticipated to take about two weeks before they move to surveys and digs. This should take them into May. At the end of May/first week of June, they will perform BEM management including inspection of the liner.

Action Items

The action items were discussed and updated.

JBCC IAGWSP Tech Update Meeting Minutes 23 April 2020

Project and Fieldwork Update

Drilling is ahead of schedule and are currently set up at the last CIA well location (CIA-5). They are currently at 271' and should be finished today. A screen setting call will be held Tuesday pending receipt of data. After CIA-5 is complete, they will move to develop wells. That should take approximately one week after which they will survey and perform pump installations. All treatment systems are up and running with the exception of J-2 East systems H & I. Both systems went down over the weekend during a windstorm. Long term monitoring sampling continues in J-1 South. Crews will perform sampling next in Demolition Area 2 and then Demolition Area 1, which will take up the rest of the spring.

Dawson has completed the EM-61 survey of 20 acres at Former E Range and one acre at J-3 Range. The J-3 Range target list with anomaly figures will be sent to the group today. The Former E Range data is currently being processed, and a target list with anomaly figures will be provided once complete. Anomaly reacquisition at the J-3 Range is tentatively scheduled to begin on May 12th. A restoration contractor is mobilizing to the site in May to take down two buildings and some fence at the Former Otis Rod and Gun Club.

Currently, there is no UXO fieldwork in the Central Impact Area. Parsons crews will return to the site next week. They will set up and perform site training the first week then they will finish the remaining demolition operations from last year. They will then perform vegetation clearance, which is anticipated to take about two weeks before they move to surveys and digs.

J-1 Range Northern Annual Environmental Monitoring Report Presentation

A presentation was provided on the J-1 Range Northern Annual Environmental Monitoring Report. It was noted that during the reporting period (January 2019 to December 2019), no new work was conducted. The J-1 Range Northern groundwater treatment system performance statistics were reviewed and discussed. During the reporting period, at the J-1 North MTU, 130 million gallons of groundwater were treated; 0.76 pounds of perchlorate and 0.07 pounds of RDX were removed.

Sampling locations, groundwater monitoring results, and trends were reviewed and discussed. For Perchlorate concentrations in Zone 1, there is a slight increase in the trailing edge well at MW-346M1 (14.4 µg/L, Nov 2018 to 19.7 µg/L, Dec 2019), which is the maximum perchlorate concentration plume-wide for 2019. Low concentrations continue in the trailing edge at MW-346M2 (0.13J µg/L, Dec 2019) and a declining trend is seen in the mid-plume at MW-265M2 (9 µg/L, Dec 2019). For RDX, there is a

steady trend in the trailing edge well at MW-303M2 (7.4 µg/L Apr 2019, 5.6 µg/L Nov 2019) and in the mid-plume at MW-346M1 (11.6 µg/L, Nov 209). The maximum RDX concentration was detected at MW-245M2 (29.5 µg/L, April 2019, 19.1 µg/L Nov 2019).

For Perchlorate concentrations in Zone 2, there continues to be a <0.35 µg/L concentration trend in the trailing edge (MW-370M2). Concentrations in the mid-plume wells were slightly lower or steady during this reporting period. At the leading edge, MW-584M1 and MW-590M2 continue to fluctuate above the MMCL. For RDX, there is a continued non-detect in the trailing edge (MW-370M2, since 2014). The first low detections in the deep trailing edge were seen in MW-370M1 (0.39J µg/L Apr 2019, 0.52 µg/L Dec 2019). There is a constant trend between 2.0 – 2.4 µg/L in the mid-plume (MW564M1). The maximum RDX concentration was detected at MW-564M1 (2.4 µg/L, April 2019).

The hydraulic monitoring and capture zone analysis was reviewed and discussed. There was one synoptic water level round in October 2019 and hydraulic measurements were consistent with past results. The capture zones were developed manually and by model. The model predicted and observed capture zones include the entire plumes. The observed capture zone is slightly larger than the model predicted. EPA requested that IAGWSP perform particle back-tracking and modeling for another extraction well in the middle of the hot zone to see if that could cut down on cleanup time in that area. Specifically in the area of the 2000 meter berm.

Decision Document cleanup timelines were discussed. Perchlorate and RDX observed measurements do not indicate any obvious delays in cleanup timeline. Perchlorate concentrations in MW-370M1 above 2.0 µg/L, if sustained, could impact cleanup timelines. Perchlorate concentrations in MW-584M1 and MW-590M2 appear to be captured. IAGWSP recommends making no modifications to treatment system operations or to the hydraulic monitoring network. IAGWSP recommends reducing the sampling frequency from semi-annual to annual for wells MW-370M1/M2 and MW-564M1.

J-1 Range Southern Annual Environmental Monitoring Report Presentation

A presentation was provided on the J-1 Range Southern Annual Environmental Monitoring Report. It was noted that during the reporting period January 2019 to December 2019), a source area drive point program was conducted in Zone 1. The J-1 Range Southern groundwater treatment system performance statistics were reviewed and discussed. During the reporting period, 61.4 million gallons of groundwater was treated and 0.09 pounds of RDX were removed.

Sampling locations, groundwater monitoring results, and trends were reviewed and discussed.
The maximum RDX concentration in Zone 1 (source area to J1SEW0001) is 1.7 µg/L (MW-722M2). The plume above risk-based concentrations is currently interpreted to be east of MW-528M1 and between MW-131S/MW-360 and the base boundary. In Zone 2 (J1SEW0001 to J1SEW0002), the maximum concentration is 1.7 µg/L (MW-647M1) which likely reflects migration from upgradient detections seen at MW-647M1 in 2018. It was noted that all Windsong Road wells were below 0.6 µg/L for the first time, Song Bird Circle well MW-592M1 has consistently been less than 1 µg/L since 2015, and the leading edge eastern lobe wells on Pleasant Wood Drive have been non-detect since 2015.

The hydraulic monitoring and capture zone analysis was reviewed and discussed. There was one synoptic water lever round in October 2019 and hydraulic measurements were generally consistent with past results. Water levels from the top of the mound increased by approximately one foot from last year. The capture zones were developed manually and by model. The United States Geological Survey top of mound well is trending higher to the levels last measured in 2013/2014 (< 72 ft msl). The capture zone is confirmed on eastern boundary (Song Bird Circle) and the capture zone extent horizontally and vertically downgradient of J1SEW0002 is similar to Oct 2018. Most of the leading edge of the plume is captured.

Decision Document cleanup timelines were discussed. The DD timeline was based on the 2009 Plume Shell. The May 2011 DD cleanup timeline (< 0.6 µg/L) was 2024 but the September 2011 project note that located the leading edge extraction well predicted 2032. Predictions based on the 2017 plume shell estimates that upgradient of J1SEW0001 will be < 0.6 µg/L in 2031; upgradient of J1SEW0002 will be < 0.6 µg/L in 2035. Downgradient of J1SEW0002 will be < 0.6 µg/L in 2047.

IAGWSP recommendations no changes to the current treatment system operations. For Zone 1, new monitoring wells MW-720M1/M2 (base boundary), MW-721M1/M2 (eastern extent base boundary), and MW-722M1/M2 (Greenway Road/Longitudinal Axis) should be added to both the chemical and hydraulic monitoring network.

Regulator comments on the annual monitoring report are pending.

Action Items

The action items were discussed and updated.

JBCC Cleanup Team Meeting

The next meeting of the JBCC Cleanup Team (JBCCCT) has not be 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 1 summarizes sampling for all media from 1 April to 30 April 2020. Table 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 1 April to 30 April 2020. 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. Table 3 summarizes sampling of influent and groundwater samples for per- and polyfluoroalkyl substances (PFAS) from 1 June 2019 to present.

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 Area, 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. 276 for March 2020 — 10 April 2020
- Final J2 East and North Ranges 2019 Environmental Monitoring Report — 21 April 2020
- Draft J-1 North/South Ranges Environmental Monitoring Report — 22 April 2020

3. SCHEDULED ACTIONS

The documents below were being prepared or revised in April 2020.

- CIA 2019 Source Removal Annual Report
- Five-Year Review Report
- J-1 Range 2019 Annual Environmental Monitoring Report
- J-2 Range PFAS detections Project Note
- Northwest Corner Demonstration of Compliance Report and Project Note
- Small Arms Ranges Completion of Work Report

TABLE 1
Sampling Progress: 1 April to 30 April 2020

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-406M2	MW-406M2_S20	N	04/27/2020	Ground Water	202.54	212.54
Demolition Area 2	MW-406M1	MW-406M1_S20	N	04/27/2020	Ground Water	224.72	229.72
J1 Range Southern	MW-403M2	MW-403M2_S20	N	04/27/2020	Ground Water	127.26	137.36
J1 Range Southern	MW-403M1	MW-403M1_S20	N	04/27/2020	Ground Water	159.9	169.89
Central Impact Area	BH-728	BH-728-GW-296-301	N	04/23/2020	GW Profile	296	301
Central Impact Area	BH-728	BH-728-GW-286-291	N	04/23/2020	GW Profile	286	291
Central Impact Area	BH-728	BH-728-GW-276-281	N	04/23/2020	GW Profile	276	281
J1 Range Southern	MW-591M2	MW-591M2_S20	N	04/22/2020	Ground Water	165	175
Central Impact Area	BH-728	BH-728-GW-266-271	N	04/22/2020	GW Profile	266	271
J1 Range Southern	MW-591M1	MW-591M1_S20	N	04/22/2020	Ground Water	200	210
Central Impact Area	BH-728	BH-728-GW-256-261	N	04/22/2020	GW Profile	256	261
J1 Range Southern	J1S-EW1-INF	J1S-EW1-INF_S20	N	04/22/2020	Process Water	0	0
J1 Range Southern	J1S-EW2-INF	J1S-EW2-INF_S20	N	04/22/2020	Process Water	0	0
Central Impact Area	BH-728	BH-728-GW-246-251	N	04/22/2020	GW Profile	246	251
Central Impact Area	BH-728	BH-728-GW-236-241	N	04/21/2020	GW Profile	236	241
Central Impact Area	BH-728	BH-728-GW-226-231	N	04/21/2020	GW Profile	226	231
Central Impact Area	BH-728	BH-728-GW-216-221D	FD	04/21/2020	GW Profile	216	221
Central Impact Area	BH-728	BH-728-GW-216-221	N	04/21/2020	GW Profile	216	221
Central Impact Area	BH-728	BH-728-GW-206-211	N	04/21/2020	GW Profile	206	211
Central Impact Area	BH-728	BH-728-GW-196-201	N	04/21/2020	GW Profile	196	201
Central Impact Area	BH-728	BH-728-GW-186-191	N	04/21/2020	GW Profile	186	191
Central Impact Area	BH-728	BH-728-GW-176-181	N	04/20/2020	GW Profile	176	181
Central Impact Area	BH-728	BH-728-GW-166-171	N	04/20/2020	GW Profile	166	171
Central Impact Area	BH-728	BH-728-GW-156-161	N	04/20/2020	GW Profile	156	161
J1 Range Southern	MW-670M2	MW-670M2_S20	N	04/20/2020	Ground Water	198.5	208.5
Central Impact Area	BH-728	BH-728-GW-146-151D	FD	04/20/2020	GW Profile	146	151
Central Impact Area	BH-728	BH-728-GW-146-151	N	04/20/2020	GW Profile	146	151
J1 Range Southern	MW-670M1	MW-670M1_S20	N	04/20/2020	Ground Water	220.5	230.5
Central Impact Area	BH-728	BH-728-GW-136-141	N	04/20/2020	GW Profile	136	141
Central Impact Area	BH-728	BH-728-GW-126-131	N	04/20/2020	GW Profile	126	131
J1 Range Southern	MW-646M2	MW-646M2_S20	N	04/20/2020	Ground Water	168	178
Central Impact Area	BH-728	BH-728-GW-116-121	N	04/20/2020	GW Profile	116	121
J1 Range Southern	MW-646M1	MW-646M1_S20	N	04/20/2020	Ground Water	198	208
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-139A	N	04/16/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-139A	N	04/16/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-139A	N	04/16/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-139A	N	04/16/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-139A	N	04/16/2020	Process Water	0	0
J2 Range Eastern	J2E-INF-I	J2E-INF-I-139A	N	04/16/2020	Process Water	0	0
Central Impact Area	CIA3-EFF	CIA3-EFF-46A	N	04/16/2020	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-46A	N	04/16/2020	Process Water	0	0
Central Impact Area	CIA3-MID1	CIA3-MID1-46A	N	04/16/2020	Process Water	0	0
Central Impact Area	CIA3-INF	CIA3-INF-46A	N	04/16/2020	Process Water	0	0
Central Impact Area	BH-727	BH-727-GW-256-261	N	04/15/2020	GW Profile	256	261
J1 Range Southern	MW-524M1	MW-524M1_S20	N	04/15/2020	Ground Water	148	158
Central Impact Area	BH-727	BH-727-GW-246-251	N	04/15/2020	GW Profile	246	251
J1 Range Southern	MW-647M2	MW-647M2_S20	N	04/15/2020	Ground Water	189.3	199.3
Central Impact Area	BH-727	BH-727-GW-236-241	N	04/15/2020	GW Profile	236	241
J1 Range Southern	MW-647M1	MW-647M1_S20	N	04/15/2020	Ground Water	211.3	221.3
Central Impact Area	BH-727	BH-727-GW-226-231	N	04/14/2020	GW Profile	226	231
J1 Range Southern	MW-402M2	MW-402M2_S20	N	04/14/2020	Ground Water	155.24	165.27
Central Impact Area	BH-727	BH-727-GW-216-221	N	04/14/2020	GW Profile	216	221
J1 Range Southern	MW-402M1	MW-402M1_S20	N	04/14/2020	Ground Water	190.14	200.13
Central Impact Area	BH-727	BH-727-GW-206-211	N	04/14/2020	GW Profile	206	211
J1 Range Southern	MW-400M2	MW-400M2_S20	N	04/14/2020	Ground Water	138.9	148.9
J1 Range Southern	MW-400M1	MW-400M1_S20	N	04/14/2020	Ground Water	192.76	202.75
Central Impact Area	BH-727	BH-727-GW-196-201	N	04/14/2020	GW Profile	196	201
Central Impact Area	BH-727	BH-727-GW-186-191	N	04/13/2020	GW Profile	186	191
J1 Range Southern	MW-669M2	MW-669M2_S20	N	04/13/2020	Ground Water	201.7	211.7

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 April to 30 April 2020

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	MW-669M1	MW-669M1_S20	N	04/13/2020	Ground Water	223.7	233.7
J1 Range Southern	MW-669M1	MW-669M1_S20D	FD	04/13/2020	Ground Water	223.7	233.7
Central Impact Area	BH-727	BH-727-GW-176-181D	FD	04/13/2020	GW Profile	176	181
Central Impact Area	BH-727	BH-727-GW-176-181	N	04/13/2020	GW Profile	176	181
Central Impact Area	BH-727	BH-727-GW-166-171	N	04/13/2020	GW Profile	166	171
J1 Range Southern	MW-592M2	MW-592M2_S20	N	04/13/2020	Ground Water	158	168
Central Impact Area	BH-727	BH-727-GW-156-161	N	04/13/2020	GW Profile	156	161
J1 Range Southern	MW-592M1	MW-592M1_S20	N	04/13/2020	Ground Water	201	211
Central Impact Area	BH-727	BH-727-GW-146-151D	FD	04/13/2020	GW Profile	146	151
Central Impact Area	BH-727	BH-727-GW-146-151	N	04/13/2020	GW Profile	146	151
Central Impact Area	BH-727	BH-727-GW-136-141	N	04/13/2020	GW Profile	136	141
Central Impact Area	MW-270D	MW-270D_S20	N	04/09/2020	Ground Water	132	137
Central Impact Area	MW-614M2	MW-614M2_S20	N	04/09/2020	Ground Water	215	225
Central Impact Area	MW-614M1	MW-614M1_S20	N	04/09/2020	Ground Water	275	285
Central Impact Area	MW-608M4	MW-608M4_S20	N	04/08/2020	Ground Water	185.4	195.4
Central Impact Area	MW-608M3	MW-608M3_S20	N	04/08/2020	Ground Water	220.4	230.4
Central Impact Area	MW-608M2	MW-608M2_S20	N	04/08/2020	Ground Water	253.4	263.4
Central Impact Area	MW-608M2	MW-608M2_S20D	FD	04/08/2020	Ground Water	253.4	263.4
Central Impact Area	MW-608M1	MW-608M1_S20	N	04/08/2020	Ground Water	267.4	277.4
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-139A	N	04/08/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-139A	N	04/08/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-139A	N	04/08/2020	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-139A	N	04/08/2020	Process Water	0	0
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-139A	N	04/08/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-139A	N	04/08/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-139A	N	04/08/2020	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-139A	N	04/08/2020	Process Water	0	0
Central Impact Area	MW-615M2	MW-615M2_S20	N	04/07/2020	Ground Water	200	210
Central Impact Area	MW-615M1	MW-615M1_S20	N	04/07/2020	Ground Water	260	270
Central Impact Area	MW-615M1	MW-615M1_S20D	FD	04/07/2020	Ground Water	260	270
Central Impact Area	CIA2-EFF	CIA2-EFF-75A	N	04/07/2020	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-75A	N	04/07/2020	Process Water	0	0
Central Impact Area	CIA2-MID1	CIA2-MID1-75A	N	04/07/2020	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-75A	N	04/07/2020	Process Water	0	0
Central Impact Area	CIA1-EFF	CIA1-EFF-75A	N	04/07/2020	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-75A	N	04/07/2020	Process Water	0	0
Central Impact Area	MW-50M1	MW-50M1_S20	N	04/07/2020	Ground Water	207	217
Central Impact Area	CIA1-MID1	CIA1-MID1-75A	N	04/07/2020	Process Water	0	0
Central Impact Area	CIA1-INF	CIA1-INF-75A	N	04/07/2020	Process Water	0	0
Central Impact Area	MW-124M1	MW-124M1_S20	N	04/07/2020	Ground Water	234	244
Central Impact Area	BH-729	BH-729-GW-251-256	N	04/07/2020	GW Profile	251	256
Central Impact Area	BH-729	BH-729-GW-241-246	N	04/06/2020	GW Profile	241	246
Central Impact Area	MW-123M2	MW-123M2_S20	N	04/06/2020	Ground Water	236	246
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-169A	N	04/06/2020	Process Water	0	0
Central Impact Area	MW-123M1	MW-123M1_S20	N	04/06/2020	Ground Water	291	301
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-169A	N	04/06/2020	Process Water	0	0
Central Impact Area	BH-729	BH-729-GW-231-236D	FD	04/06/2020	GW Profile	231	236
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-169A	N	04/06/2020	Process Water	0	0
Central Impact Area	BH-729	BH-729-GW-231-236	N	04/06/2020	GW Profile	231	236
Demolition Area 1	FPR-2-INF	FPR-2-INF-169A	N	04/06/2020	Process Water	0	0
Demolition Area 1	PR-EFF	PR-EFF-169A	N	04/06/2020	Process Water	0	0
Demolition Area 1	PR-MID-2	PR-MID-2-169A	N	04/06/2020	Process Water	0	0
Demolition Area 1	PR-MID-1	PR-MID-1-169A	N	04/06/2020	Process Water	0	0
Demolition Area 1	PR-INF	PR-INF-169A	N	04/06/2020	Process Water	0	0
Central Impact Area	BH-729	BH-729-GW-221-226	N	04/06/2020	GW Profile	221	226
Central Impact Area	MW-103M2	MW-103M2_S20	N	04/06/2020	Ground Water	282	292
Demolition Area 1	D1LE-EFF	D1LE-EFF-45A	N	04/06/2020	Process Water	0	0
Demolition Area 1	D1LE-MID2	D1LE-MID2-45A	N	04/06/2020	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-45A	N	04/06/2020	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 April to 30 April 2020

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Demolition Area 1	D1LE-INF	D1LE-INF-45A	N	04/06/2020	Process Water	0	0
Central Impact Area	MW-103M1	MW-103M1_S20	N	04/06/2020	Ground Water	298	308
Demolition Area 1	D1-EFF	D1-EFF-117A	N	04/06/2020	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-117A	N	04/06/2020	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-117A	N	04/06/2020	Process Water	0	0
Demolition Area 1	D1-INF	D1-INF-117A	N	04/06/2020	Process Water	0	0
Central Impact Area	BH-729	BH-729-GW-211-216	N	04/06/2020	GW Profile	211	216
Central Impact Area	BH-729	BH-729-GW-201-206	N	04/03/2020	GW Profile	201	206
Central Impact Area	BH-729	BH-729-GW-191-196	N	04/03/2020	GW Profile	191	196
Central Impact Area	MW-102M2	MW-102M2_S20	N	04/02/2020	Ground Water	237	247
Central Impact Area	MW-102M1	MW-102M1_S20	N	04/02/2020	Ground Water	267	277
Central Impact Area	MW-628M2	MW-628M2_S20	N	04/02/2020	Ground Water	120.8	130.8
Central Impact Area	MW-628M1	MW-628M1_S20	N	04/02/2020	Ground Water	230.8	240.8
J1 Range Southern	J1S-EFF	J1S-EFF-149A	N	04/02/2020	Process Water	0	0
J1 Range Southern	J1S-MID	J1S-MID-149A	N	04/02/2020	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-149A	N	04/02/2020	Process Water	0	0
J3 Range	J3-EFF	J3-EFF-163A	N	04/02/2020	Process Water	0	0
J3 Range	J3-MID-2	J3-MID-2-163A	N	04/02/2020	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-163A	N	04/02/2020	Process Water	0	0
J3 Range	J3-INF	J3-INF-163A	N	04/02/2020	Process Water	0	0
Central Impact Area	MW-209M2	MW-209M2_S20	N	04/01/2020	Ground Water	220	230
Central Impact Area	BH-725	BH-725-GW-316-321	N	04/01/2020	GW Profile	316	321
Central Impact Area	MW-209M1	MW-209M1_S20	N	04/01/2020	Ground Water	240	250
Central Impact Area	MW-209M1	MW-209M1_S20D	FD	04/01/2020	Ground Water	240	250
Central Impact Area	BH-725	BH-725-GW-306-311	N	04/01/2020	GW Profile	306	311
Central Impact Area	MW-51M2	MW-51M2_S20	N	04/01/2020	Ground Water	203	213
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-163A	N	04/01/2020	Process Water	0	0
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-163A	N	04/01/2020	Process Water	0	0
Central Impact Area	BH-725	BH-725-GW-296-301D	FD	04/01/2020	GW Profile	296	301
Central Impact Area	BH-725	BH-725-GW-296-301	N	04/01/2020	GW Profile	296	301
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-163A	N	04/01/2020	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-163A	N	04/01/2020	Process Water	0	0
Central Impact Area	MW-51M1	MW-51M1_S20	N	04/01/2020	Ground Water	234	244
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-163A	N	04/01/2020	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-163A	N	04/01/2020	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-163A	N	04/01/2020	Process Water	0	0
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-163A	N	04/01/2020	Process Water	0	0
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-163A	N	04/01/2020	Process Water	0	0
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-163A	N	04/01/2020	Process Water	0	0
Central Impact Area	MW-51D	MW-51D_S20	N	04/01/2020	Ground Water	264	274
J1 Range Northern	J1N-EFF	J1N-EFF-78A	N	04/01/2020	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-78A	N	04/01/2020	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-78A	N	04/01/2020	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-78A	N	04/01/2020	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received April 2020

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-722M1	MW-722M1_R2	114.2	124.2	03/19/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.90		µg/L	0.60	X	0.034	0.20
J1 Range Southern	MW-722M1	MW-722M1_R2	114.2	124.2	03/19/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.1		µg/L	400		0.036	0.20
J1 Range Southern	MW-722M1	MW-722M1_R2D	114.2	124.2	03/19/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.78		µg/L	0.60	X	0.034	0.20
J1 Range Southern	MW-722M1	MW-722M1_R2D	114.2	124.2	03/19/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.1		µg/L	400		0.036	0.20
Central Impact Area	MW-23M1	MW-23M1_S20	225	235	03/19/2020	SW6850	Perchlorate	0.13	J	µg/L	2.0		0.027	0.20
Central Impact Area	MW-23M1	MW-23M1_S20	225	235	03/19/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.25	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-23D	MW-23D_S20	272	282	03/19/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.53		µg/L	0.60		0.034	0.20
J1 Range Southern	MW-720M2	MW-720M2_R2	126.2	136.2	03/18/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.20		µg/L	0.60		0.034	0.20
J1 Range Southern	MW-720M2	MW-720M2_R2	126.2	136.2	03/18/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.50		µg/L	400		0.036	0.20
J1 Range Southern	MW-720M2	MW-720M2_R2D	126.2	136.2	03/18/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.20		µg/L	0.60		0.034	0.20
J1 Range Southern	MW-720M2	MW-720M2_R2D	126.2	136.2	03/18/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.49		µg/L	400		0.036	0.20
J1 Range Southern	MW-721M1	MW-721M1_R2	168.1	178.1	03/18/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.046	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-176M2	MW-176M2_S20	229	239	03/17/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.17	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-176M1	MW-176M1_S20	270	280	03/17/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.5		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-207M1	MW-207M1_S20	254	264	03/12/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.042	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-609M1	MW-609M1_S20	210.39	220.39	03/12/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.10	J	µg/L	400		0.036	0.20
Central Impact Area	MW-609M1	MW-609M1_S20	210.39	220.39	03/12/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.6		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-609M1	MW-609M1_S20D	210.39	220.39	03/12/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.11	J	µg/L	400		0.036	0.20
Central Impact Area	MW-609M1	MW-609M1_S20D	210.39	220.39	03/12/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.6		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-710M1	MW-710M1_S20	247.5	257.5	03/11/2020	SW6850	Perchlorate	0.085	J	µg/L	2.0		0.027	0.20
Central Impact Area	MW-710M1	MW-710M1_S20	247.5	257.5	03/11/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.34		µg/L	0.60		0.034	0.20
Central Impact Area	MW-699M1	MW-699M1_S20	261.5	271.5	03/11/2020	SW6850	Perchlorate	0.092	J	µg/L	2.0		0.027	0.20
Central Impact Area	MW-699M1	MW-699M1_S20	261.5	271.5	03/11/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.74		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-618M1	MW-618M1_S20	238.5	248.5	03/10/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.034	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-618M1	MW-618M1_S20	238.5	248.5	03/10/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.063	J	µg/L	400		0.036	0.20
Central Impact Area	MW-625M1	MW-625M1_S20	260	270	03/09/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.64		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-441M1	MW-441M1_S20	204.6	214.6	03/09/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.13	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-607M2	MW-607M2_S20	177.4	187.4	03/05/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.3		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-607M2	MW-607M2_S20D	177.4	187.4	03/05/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.3		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-607M1	MW-607M1_S20	207.4	217.4	03/05/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.1		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-607M1	MW-607M1_S20D	207.4	217.4	03/05/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.2		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-323M1	MW-323M1_S20	195	205	03/04/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.34		µg/L	0.60		0.034	0.20
Central Impact Area	MW-338S	MW-338S_S20	72	82	03/04/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.066	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-687M2	MW-687M2_S20	188	198	03/03/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.27		µg/L	0.60		0.034	0.20
Central Impact Area	MW-42M1	MW-42M1_S20	205.8	216	03/03/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.91		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-686M2	MW-686M2_S20	194.3	204.3	03/02/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.3		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-87M1	MW-87M1_S20	194	204	03/02/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.083	J	µg/L	400		0.036	0.20
Central Impact Area	MW-87M1	MW-87M1_S20	194	204	03/02/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.14	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-87M1	MW-87M1_S20	194	204	03/02/2020	SW6850	Perchlorate	0.83		µg/L	2.0		0.027	0.20
Central Impact Area	MW-89M3	MW-89M3_S20	174	184	02/27/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.23		µg/L	0.60		0.034	0.20
Central Impact Area	MW-89M2	MW-89M2_S20	214	224	02/27/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.95		µg/L	400		0.036	0.20
Central Impact Area	MW-89M2	MW-89M2_S20	214	224	02/27/2020	SW6850	Perchlorate	3.6		µg/L	2.0	X	0.027	0.20
Central Impact Area	MW-89M2	MW-89M2_S20	214	224	02/27/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	9.1		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-89M2	MW-89M2_S20D	214	224	02/27/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.94	J	µg/L	400		0.036	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 April 2020

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-89M2	MW-89M2_S20D	214	224	02/27/2020	SW6850	Perchlorate	3.6		µg/L	2.0	X	0.027	0.20
Central Impact Area	MW-89M2	MW-89M2_S20D	214	224	02/27/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	9.1	J	µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-89M1	MW-89M1_S20	234	244	02/27/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.081	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-208M1	MW-208M1_S20	195	205	02/26/2020	SW6850	Perchlorate	0.24		µg/L	2.0		0.027	0.20
Central Impact Area	MW-105M1	MW-105M1_S20	205	215	02/26/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.17	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-88M2	MW-88M2_S20	213	223	02/25/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.24		µg/L	400		0.036	0.20
Central Impact Area	MW-88M2	MW-88M2_S20	213	223	02/25/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.77		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-88M2	MW-88M2_S20	213	223	02/25/2020	SW6850	Perchlorate	2.0		µg/L	2.0		0.027	0.20
Central Impact Area	MW-88M2	MW-88M2_S20D	213	223	02/25/2020	SW6850	Perchlorate	2.0		µg/L	2.0		0.027	0.20
Central Impact Area	MW-88M1	MW-88M1_S20	233	243	02/25/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.31		µg/L	0.60		0.034	0.20
Central Impact Area	MW-179M1	MW-179M1_S20	187	197	02/24/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.46		µg/L	0.60		0.034	0.20
Central Impact Area	MW-91S	MW-91S_S20	124	134	02/24/2020	SW8330	2-Amino-4,6-dinitrotoluene	0.19	J	µg/L	7.3		0.020	0.20
Central Impact Area	MW-91S	MW-91S_S20	124	134	02/24/2020	SW8330	1,3,5-Trinitrobenzene	0.21		µg/L	1090		0.023	0.20
Central Impact Area	MW-91S	MW-91S_S20	124	134	02/24/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.36		µg/L	400		0.036	0.20
Central Impact Area	MW-91S	MW-91S_S20	124	134	02/24/2020	SW8330	4-Amino-2,6-dinitrotoluene	0.37		µg/L	7.3		0.027	0.20
Central Impact Area	MW-91S	MW-91S_S20	124	134	02/24/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.3	J	µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-91S	MW-91S_S20	124	134	02/24/2020	SW8330	2,4,6-Trinitrotoluene	3.7		µg/L	2.0	X	0.041	0.20
Central Impact Area	MW-91S	MW-91S_S20D	124	134	02/24/2020	SW8330	2-Amino-4,6-dinitrotoluene	0.20		µg/L	7.3		0.020	0.20
Central Impact Area	MW-91S	MW-91S_S20D	124	134	02/24/2020	SW8330	1,3,5-Trinitrobenzene	0.22		µg/L	1090		0.023	0.20
Central Impact Area	MW-91S	MW-91S_S20D	124	134	02/24/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.34		µg/L	400		0.036	0.20
Central Impact Area	MW-91S	MW-91S_S20D	124	134	02/24/2020	SW8330	4-Amino-2,6-dinitrotoluene	0.38		µg/L	7.3		0.027	0.20
Central Impact Area	MW-91S	MW-91S_S20D	124	134	02/24/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.4	J	µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-91S	MW-91S_S20D	124	134	02/24/2020	SW8330	2,4,6-Trinitrotoluene	3.7		µg/L	2.0	X	0.041	0.20
Central Impact Area	MW-91M1	MW-91M1_S20	170	180	02/24/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.21		µg/L	400		0.036	0.20
Central Impact Area	MW-91M1	MW-91M1_S20	170	180	02/24/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.0		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-91M1	MW-91M1_S20D	170	180	02/24/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.21		µg/L	400		0.036	0.20
Central Impact Area	MW-91M1	MW-91M1_S20D	170	180	02/24/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.0		µg/L	0.60	X	0.034	0.20
Central Impact Area	OW-1	OW-1_S20	126	136	02/24/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.047	J	µg/L	400		0.036	0.20
Central Impact Area	OW-1	OW-1_S20	126	136	02/24/2020	SW8330	1,3,5-Trinitrobenzene	0.15	J	µg/L	1090		0.023	0.20
Central Impact Area	OW-1	OW-1_S20	126	136	02/24/2020	SW8330	2-Amino-4,6-dinitrotoluene	0.33		µg/L	7.3		0.020	0.20
Central Impact Area	OW-1	OW-1_S20	126	136	02/24/2020	SW8330	4-Amino-2,6-dinitrotoluene	0.45		µg/L	7.3		0.027	0.20
Central Impact Area	OW-1	OW-1_S20	126	136	02/24/2020	SW8330	2,4,6-Trinitrotoluene	1.9		µg/L	2.0		0.041	0.20
Central Impact Area	OW-1	OW-1_S20	126	136	02/24/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.3	J	µg/L	0.60	X	0.034	0.20
Central Impact Area	OW-1	OW-1_S20D	126	136	02/24/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.046	J	µg/L	400		0.036	0.20
Central Impact Area	OW-1	OW-1_S20D	126	136	02/24/2020	SW8330	1,3,5-Trinitrobenzene	0.14	J	µg/L	1090		0.023	0.20
Central Impact Area	OW-1	OW-1_S20D	126	136	02/24/2020	SW8330	2-Amino-4,6-dinitrotoluene	0.31		µg/L	7.3		0.020	0.20
Central Impact Area	OW-1	OW-1_S20D	126	136	02/24/2020	SW8330	4-Amino-2,6-dinitrotoluene	0.43		µg/L	7.3		0.027	0.20
Central Impact Area	OW-1	OW-1_S20D	126	136	02/24/2020	SW8330	2,4,6-Trinitrotoluene	1.9		µg/L	2.0		0.041	0.20
Central Impact Area	OW-1	OW-1_S20D	126	136	02/24/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.2	J	µg/L	0.60	X	0.034	0.20
Central Impact Area	OW-2	OW-2_S20	175	185	02/24/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.27		µg/L	0.60		0.034	0.20
Central Impact Area	MW-95M2	MW-95M2_S20	167	177	02/20/2020	SW6850	Perchlorate	0.084	J	µg/L	2.0		0.027	0.20
Central Impact Area	MW-95M1	MW-95M1_S20	202	212	02/20/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.17	J	µg/L	400		0.036	0.20
Central Impact Area	MW-95M1	MW-95M1_S20	202	212	02/20/2020	SW6850	Perchlorate	1.7		µg/L	2.0		0.027	0.20
Central Impact Area	MW-95M1	MW-95M1_S20	202	212	02/20/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.7		µg/L	0.60	X	0.034	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 April 2020

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-629M2	MW-629M2_S20	186.9	196.9	02/20/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.10	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-629M1	MW-629M1_S20	216.9	226.9	02/20/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.078	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-629M1	MW-629M1_S20	216.9	226.9	02/20/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.33		µg/L	400		0.036	0.20
Central Impact Area	MW-184M1	MW-184M1_S20	186	196	02/19/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.77		µg/L	400		0.036	0.20
Central Impact Area	MW-184M1	MW-184M1_S20	186	196	02/19/2020	SW6850	Perchlorate	1.7		µg/L	2.0		0.027	0.20
Central Impact Area	MW-184M1	MW-184M1_S20	186	196	02/19/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.6		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-184M1	MW-184M1_S20D	186	196	02/19/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.77		µg/L	400		0.036	0.20
Central Impact Area	MW-184M1	MW-184M1_S20D	186	196	02/19/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.6		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-93M2	MW-93M2_S20	145	155	02/19/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.061	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-93M1	MW-93M1_S20	185	195	02/19/2020	SW6850	Perchlorate	0.091	J	µg/L	2.0		0.027	0.20
Central Impact Area	MW-93M1	MW-93M1_S20	185	195	02/19/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.13	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-101M1	MW-101M1_S20	158	168	02/19/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.14	J	µg/L	400		0.036	0.20
Central Impact Area	MW-101M1	MW-101M1_S20	158	168	02/19/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.1		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-101M1	MW-101M1_S20D	158	168	02/19/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.13	J	µg/L	400		0.036	0.20
Central Impact Area	MW-101M1	MW-101M1_S20D	158	168	02/19/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.1		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-100M1	MW-100M1_S20	179	189	02/18/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.14	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-99M1	MW-99M1_S20	195	205	02/18/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.049	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-695S	MW-695S_S20	130	140	02/18/2020	SW8330	Picric acid	0.053	J	µg/L	365		0.022	0.20
Central Impact Area	MW-695S	MW-695S_S20	130	140	02/18/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.087	J	µg/L	400		0.036	0.20
Central Impact Area	MW-695S	MW-695S_S20	130	140	02/18/2020	SW8330	1,3,5-Trinitrobenzene	0.096	J	µg/L	1090		0.023	0.20
Central Impact Area	MW-695S	MW-695S_S20	130	140	02/18/2020	SW6850	Perchlorate	0.097	J	µg/L	2.0		0.027	0.20
Central Impact Area	MW-695S	MW-695S_S20	130	140	02/18/2020	SW8330	2-Amino-4,6-dinitrotoluene	0.33		µg/L	7.3		0.020	0.20
Central Impact Area	MW-695S	MW-695S_S20	130	140	02/18/2020	SW8330	4-Amino-2,6-dinitrotoluene	0.37		µg/L	7.3		0.027	0.20
Central Impact Area	MW-695S	MW-695S_S20	130	140	02/18/2020	SW8330	2,4,6-Trinitrotoluene	0.67		µg/L	2.0		0.041	0.20
Central Impact Area	MW-695S	MW-695S_S20	130	140	02/18/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.3	J	µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-98S	MW-98S_S20	137	147	02/13/2020	SW8330	2-Amino-4,6-dinitrotoluene	0.16	J	µg/L	7.3		0.020	0.20
Central Impact Area	MW-98S	MW-98S_S20	137	147	02/13/2020	SW8330	4-Amino-2,6-dinitrotoluene	0.18	J	µg/L	7.3		0.027	0.20
Central Impact Area	MW-98S	MW-98S_S20	137	147	02/13/2020	SW8330	2,4,6-Trinitrotoluene	0.21		µg/L	2.0		0.041	0.20
Central Impact Area	MW-98M1	MW-98M1_S20	164	174	02/13/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.36		µg/L	0.60		0.034	0.20
Central Impact Area	MW-638M2	MW-638M2_S20	204.2	214.2	02/13/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.12	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-43M1	MW-43M1_S20	223	233	02/12/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.87		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-86S	MW-86S_S20	143	153	02/12/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.082	J	µg/L	400		0.036	0.20
Central Impact Area	MW-86S	MW-86S_S20	143	153	02/12/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.35		µg/L	0.60		0.034	0.20
Central Impact Area	MW-86M2	MW-86M2_S20	158	168	02/12/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.21		µg/L	0.60		0.034	0.20
Central Impact Area	MW-39M1	MW-39M1_S20	220	230	02/11/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.055	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-203M2	MW-203M2_S20	176	186	02/11/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.72		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-204M2	MW-204M2_S20	76	86	02/11/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.27	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-204M1	MW-204M1_S20	141	151	02/11/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.19	J	µg/L	400		0.036	0.20
Central Impact Area	MW-204M1	MW-204M1_S20	141	151	02/11/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.0		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-204M1	MW-204M1_S20D	141	151	02/11/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.19	J	µg/L	400		0.036	0.20
Central Impact Area	MW-204M1	MW-204M1_S20D	141	151	02/11/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.0		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-185M1	MW-185M1_S20	247	257	02/10/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.052	J	µg/L	0.60		0.034	0.20

J = Estimated Result
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MCL/HA= Either the MCL or Lowest Health Advisory Limit
May 06, 2020

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
Demolition Area 1

Location	D1-INF	FPR-2-INF	MW-258M1	MW-663D	PR-INF
Field Sample ID	D1-INF_PFAS19	FPR-2-INF_PFAS19	MW-258M1_PFAS19	MW-663D_PFAS19	PR-INF_PFAS19
Sampling Depth	0.00 - 0.00	0.00 - 0.00	109.00 - 119.00	240.60 - 250.60	0.00 - 0.00
Sampling Date	06/24/2019	06/25/2019	06/19/2019	06/24/2019	06/25/2019
SDG	320517141	320517141	320515981	320517141	320517141
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	19.0 U	20.0 U	20.0 U	20.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.10 U	9.50 U	9.80 U	9.80 U	9.80 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.10 U	9.50 U	9.80 U	9.80 U	9.80 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.10 U	9.50 U	9.80 U	9.80 U	9.80 U
Perfluoro-1-heptanesulfonate (PFHpS)	0.910 U	0.950 U	0.980 U	0.980 U	0.980 U
Perfluorobutanesulfonic acid (PFBS)	0.910 U	0.950 U	0.980 U	0.980 U	0.980 U
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	1.50 U	1.50 U	1.50 U
Perfluorodecane sulfonate	1.40 U	1.40 U	1.50 U	1.50 U	1.50 U
Perfluorodecanoic acid (PFDA)	0.910 U	0.950 U	0.980 U	**2.20**	0.980 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.50 U	1.50 U	1.50 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.50 U	1.50 U	1.50 U
Perfluorohexanesulfonic acid (PFHxS)	0.910 U	0.950 U	0.980 U	0.980 U	2.00 U
Perfluorohexanoic acid (PFHxA)	0.910 U	0.950 U	0.980 U	0.980 U	0.980 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.50 U	**1.00 J**	1.50 U
Perfluorooctanesulfonamide (FOSA)	2.70 U	2.80 U	2.90 U	3.00 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)	2.70 U	2.80 U	2.90 U	3.00 U	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.50 U	1.50 U	1.50 U
Perfluoropentanoic acid (PFPA)	0.910 U	0.950 U	0.980 U	**0.460 J**	0.980 U
Perfluorotetradecanoic acid (PFTA)	2.70 U	2.80 U	2.90 U	3.00 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.70 U	2.80 U	2.90 U	3.00 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.50 U	**1.20 J**	1.50 U
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**0.00**	**0.00**	**0.00**	**3.20**	**0.00**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
J1 Range Northern

Location	J1N-INF2	J1N-INF2	MW-136S	MW-564M1	MW-590M2
Field Sample ID	J1N-INF2_PFAS19	J1N-INF2_PFAS19R	MW-136S_PFAS19	MW-564M1_PFAS19	MW-590M2_PFAS19
Sampling Depth	0.00 - 0.00	0.00 - 0.00	107.00 - 117.00	227.00 - 237.00	238.00 - 248.00
Sampling Date	06/17/2019	07/30/2019	06/24/2019	06/24/2019	06/24/2019
SDG	320514661	320528231	320517141	320517141	320517141
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	19.0 U	20.0 U	18.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.30 U	9.60 U	9.80 U	9.20 U	9.60 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.30 U	9.60 U	9.80 U	9.20 U	9.60 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.30 U	9.60 U	9.80 U	9.20 U	9.60 U
Perfluoro-1-heptanesulfonate (PFHpS)	0.930 U	0.960 U	0.980 U	0.920 U	0.960 U
Perfluorobutanesulfonic acid (PFBS)	0.930 U	0.960 U	0.980 U	0.920 U	0.960 U
Perfluorobutanoic acid (PFBA)	1.90 U	1.40 U	**0.990 J**	1.40 U	1.40 U
Perfluorodecane sulfonate	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.930 U	0.960 U	0.980 U	0.920 U	0.960 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorohexanesulfonic acid (PFHxS)	0.930 U	1.90 U	2.00 U	1.80 U	0.960 U
Perfluorohexanoic acid (PFHxA)	0.930 U	0.960 U	0.980 U	0.920 U	0.960 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorooctanesulfonamide (FOSA)	**1.80 J**	2.90 U	2.90 U	2.80 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)	**4.90**	2.90 U	**1.40 J**	2.80 U	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	**2.40**	1.40 U	1.40 U
Perfluoropentanoic acid (PFPA)	0.930 U	0.960 U	0.980 U	0.920 U	0.960 U
Perfluorotetradecanoic acid (PFTA)	2.80 U	2.90 U	2.90 U	2.80 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.80 U	2.90 U	2.90 U	2.80 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
†PFOS + PFOA (EPA)	**4.90**	**0.00**	**3.80**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**4.90**	**0.00**	**3.80**	**0.00**	**0.00**

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KGS 2019 PFAS MW&INF
J2 Range Eastern

Location	J2E-INF-I	J2E-INF-J	J2E-INF-K	MW-307M3	MW-307M3	MW-368M1
Field Sample ID	J2E-INF-I_PFAS19	J2E-INF-J_PFAS19	J2E-INF-K_PFAS19	MW-307M3_PFAS19	MW-307M3_PFAS19D	MW-368M1_PFAS19
Sampling Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	125.80 - 135.82	125.80 - 135.82	237.35 - 247.35
Sampling Date	06/20/2019	06/20/2019	06/20/2019	06/18/2019	06/18/2019	06/18/2019
SDG	320515981	320515981	320515981	320514662	320514662	320514662
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Field Duplicate**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	19.0 U	20.0 U	18.0 U	19.0 U	17.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.70 U	9.30 U	9.80 U	9.00 U	9.60 U	8.50 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.70 U	9.30 U	9.80 U	9.00 U	9.60 U	8.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.70 U	9.30 U	9.80 U	9.00 U	9.60 U	8.50 U
Perfluoro-1-heptanesulfonate (PFHpS)	0.970 U	0.930 U	0.980 U	0.900 U	0.960 U	0.850 U
Perfluorobutanesulfonic acid (PFBS)	0.970 U	0.930 U	0.980 U	0.900 U	0.960 U	0.850 U
Perfluorobutanoic acid (PFBA)	1.50 U	1.40 U	1.50 U	1.80 U	1.90 U	1.70 U
Perfluorodecane sulfonate	1.50 U	1.40 U	1.50 U	1.30 U	1.40 U	1.30 U
Perfluorodecanoic acid (PFDA)	0.970 U	0.930 U	0.980 U	0.900 U	0.960 U	**1.40 J**
Perfluorododecanoic acid (PFDoA)	1.50 U	1.40 U	1.50 U	1.30 U	1.40 U	**0.450 J**
Perfluoroheptanoic acid (PFHpA)	1.50 U	1.40 U	1.50 U	1.30 U	1.40 U	1.30 U
Perfluorohexanesulfonic acid (PFHxS)	0.970 U	0.930 U	0.980 U	0.900 U	0.960 U	0.850 U
Perfluorohexanoic acid (PFHxA)	0.970 U	0.930 U	0.980 U	0.900 U	0.960 U	0.850 U
Perfluorononanoic acid (PFNA)	1.50 U	1.40 U	1.50 U	**0.880 J**	**0.730 J**	**0.650 J**
Perfluorooctanesulfonamide (FOSA)	2.90 U	2.80 U	2.90 U	2.70 U	2.90 U	2.60 U
Perfluorooctanesulfonic acid (PFOS)	2.90 U	2.80 U	2.90 U	2.70 U	2.90 U	2.60 U
Perfluorooctanoic acid (PFOA)	1.50 U	1.40 U	1.50 U	1.30 U	1.40 U	1.30 U
Perfluoropentanoic acid (PFPA)	0.970 U	0.930 U	0.980 U	0.900 U	0.960 U	0.850 U
Perfluorotetradecanoic acid (PFTA)	2.90 U	2.80 U	2.90 U	2.70 U	2.90 U	2.60 U
Perfluorotridecanoic acid (PFTrDA)	2.90 U	2.80 U	2.90 U	2.70 U	2.90 U	2.60 U
Perfluoroundecanoic acid (PFUnA)	1.50 U	1.40 U	1.50 U	1.30 U	1.40 U	**4.90**
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**0.00**	**0.00**	**0.00**	**0.880**	**0.730**	**2.05**

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J2 Range Eastern

Location	MW-368M2	MW-667M1
Field Sample ID	MW-368M2_PFAS19	MW-667M1_PFAS19
Sampling Depth	202.73 - 212.73	302.30 - 312.30
Sampling Date	06/18/2019	06/17/2019
SDG	320514662	320514661
Sample Type	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	18.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	8.80 U	9.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	8.80 U	9.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	8.80 U	9.00 U
Perfluoro-1-heptanesulfonate (PFHpS)	0.880 U	0.900 U
Perfluorobutanesulfonic acid (PFBS)	0.880 U	0.900 U
Perfluorobutanoic acid (PFBA)	1.30 U	1.80 U
Perfluorodecane sulfonate	1.30 U	1.40 U
Perfluorodecanoic acid (PFDA)	**0.800 J**	**4.30**
Perfluorododecanoic acid (PFDoA)	1.30 U	1.40 U
Perfluoroheptanoic acid (PFHpA)	1.30 U	1.40 U
Perfluorohexanesulfonic acid (PFHxS)	0.880 U	0.900 U
Perfluorohexanoic acid (PFHxA)	0.880 U	0.900 U
Perfluorononanoic acid (PFNA)	1.30 U	**2.80**
Perfluorooctanesulfonamide (FOSA)	2.60 U	2.70 U
Perfluorooctanesulfonic acid (PFOS)	2.60 U	2.70 U
Perfluorooctanoic acid (PFOA)	1.30 U	1.40 U
Perfluoropentanoic acid (PFPA)	0.880 U	0.900 U
Perfluorotetradecanoic acid (PFTA)	2.60 U	2.70 U
Perfluorotridecanoic acid (PFTrDA)	2.60 U	2.70 U
Perfluoroundecanoic acid (PFUnA)	**2.40**	**1.60 J**
†PFOS + PFOA (EPA)	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**0.800**	**7.10**

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J2 Range Northern

Location	J2EW0001	J2EW0002	J2N-INF-E	J2N-INF-F	J2N-INF-F	J2N-INF-G
Field Sample ID	J2EW0001_PFAS19	J2EW0002_PFAS19	J2N-INF-E_PFAS19	J2N-INF-F_PFAS19	J2N-INF-F_PFAS19R	J2N-INF-G_PFAS19
Sampling Depth	179.00 - 234.00	198.00 - 233.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Sampling Date	11/20/2019	11/20/2019	06/18/2019	06/18/2019	07/30/2019	07/30/2019
SDG	320565491	320565491	320514662	320514662	320528231	320528231
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	40.0 U	19.0 U	19.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	19.0 U	20.0 U	9.30 U	9.30 U	9.60 U	9.70 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.60 U	10.0 U	9.30 U	9.30 U	9.60 U	9.70 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.60 U	10.0 U	9.30 U	9.30 U	9.60 U	9.70 U
Perfluoro-1-heptanesulfonate (PFHpS)	0.960 U	**0.370 J**	0.930 U	**0.400 J**	**0.500 J**	0.970 U
Perfluorobutanesulfonic acid (PFBS)	0.960 U	1.00 U	0.930 U	0.930 U	0.960 U	**1.40 J**
Perfluorobutanoic acid (PFBA)	1.40 U	1.50 U	1.40 U	1.90 U	1.40 U	1.50 U
Perfluorodecane sulfonate	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U	1.50 U
Perfluorodecanoic acid (PFDA)	0.960 U	1.00 U	0.930 U	0.930 U	0.960 U	0.970 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U	1.50 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	**1.00 J**	1.40 U	**0.940 J**	**1.00 J**	1.50 U
Perfluorohexanesulfonic acid (PFHxS)	0.960 U	**11.0**	0.930 U	**9.90**	**9.00**	1.90 U
Perfluorohexanoic acid (PFHxA)	0.960 U	**1.30 J**	0.930 U	**1.20 J**	**1.30 J**	**2.30**
Perfluorononanoic acid (PFNA)	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U	1.50 U
Perfluorooctanesulfonamide (FOSA)	2.90 U	3.00 U	2.80 U	2.80 U	2.90 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)	2.90 U	**1.30 J**	2.80 U	2.80 U	**1.10 J**	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	**1.50 J**	1.40 U	**1.70 J**	**1.50 J**	1.50 U
Perfluoropentanoic acid (PFPA)	0.960 U	**0.910 J**	0.930 U	**0.840 J**	**1.00 J**	**1.20 J**
Perfluorotetradecanoic acid (PFTA)	2.90 U	3.00 U	2.80 U	2.80 U	2.90 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.90 U	3.00 U	2.80 U	2.80 U	2.90 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U	1.50 U
†PFOS + PFOA (EPA)	**0.00**	**2.80**	**0.00**	**1.70**	**2.60**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**0.00**	**14.8**	**0.00**	**12.5**	**12.6**	**0.00**

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J2 Range Northern

Location	MW-234M2	MW-313M1	MW-587M2
Field Sample ID	MW-234M2_PFAS19	MW-313M1_PFAS19	MW-587M2_PFAS19
Sampling Depth	110.00 - 120.00	255.40 - 265.40	220.00 - 230.00
Sampling Date	06/17/2019	06/19/2019	06/19/2019
SDG	320514661	320515981	320515981
Sample Type	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	20.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	8.80 U	9.80 U	9.70 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	8.80 U	9.80 U	9.70 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	8.80 U	9.80 U	9.70 U
Perfluoro-1-heptanesulfonate (PFHpS)	0.880 U	0.980 U	0.970 U
Perfluorobutanesulfonic acid (PFBS)	0.880 U	0.980 U	0.970 U
Perfluorobutanoic acid (PFBA)	1.80 U	**0.700 J**	1.50 U
Perfluorodecane sulfonate	1.30 U	1.50 U	1.50 U
Perfluorodecanoic acid (PFDA)	0.880 U	**1.20 J**	0.970 U
Perfluorododecanoic acid (PFDoA)	1.30 U	1.50 U	1.50 U
Perfluoroheptanoic acid (PFHpA)	1.30 U	1.50 U	1.50 U
Perfluorohexanesulfonic acid (PFHxS)	**0.600 J**	0.980 U	0.970 U
Perfluorohexanoic acid (PFHxA)	0.880 U	0.980 U	0.970 U
Perfluorononanoic acid (PFNA)	1.30 U	**1.10 J**	1.50 U
Perfluorooctanesulfonamide (FOSA)	2.60 U	2.90 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)	**1.90 J**	2.90 U	2.90 U
Perfluorooctanoic acid (PFOA)	**0.550 J**	1.50 U	1.50 U
Perfluoropentanoic acid (PFPA)	0.880 U	**0.680 J**	0.970 U
Perfluorotetradecanoic acid (PFTA)	2.60 U	2.90 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.60 U	2.90 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.30 U	**1.40 J**	1.50 U
†PFOS + PFOA (EPA)	**2.45**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**3.05**	**2.30**	**0.00**

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J3 Range

Location	J3-INF	J3-INF	MW-163S	MW-163S	MW-163S	MW-227M2
Field Sample ID	J3-INF_PFAS19	J3-INF_PFAS19D	MW-163S_PFAS19	MW-163S_PFAS19D	MW-163S_PFAS19R	MW-227M2_PFAS19
Sampling Depth	0.00 - 0.00	0.00 - 0.00	38.00 - 48.00	38.00 - 48.00	38.00 - 48.00	110.00 - 120.00
Sampling Date	06/17/2019	06/17/2019	06/18/2019	06/18/2019	07/30/2019	06/19/2019
SDG	320514661	320514661	320514662	320514662	320528231	320515981
Sample Type	**Normal**	**Field Duplicate**	**Normal**	**Field Duplicate**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	18.0 U	17.0 U	17.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.40 U	9.20 U	8.60 U	8.60 U	9.30 U	9.60 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.40 U	9.20 U	8.60 U	8.60 U	9.30 U	9.60 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.40 U	9.20 U	8.60 U	8.60 U	9.30 U	9.60 U
Perfluoro-1-heptanesulfonate (PFHpS)	0.940 U	0.920 U	0.860 U	0.860 U	0.930 U	0.960 U
Perfluorobutanesulfonic acid (PFBS)	0.940 U	0.920 U	0.860 U	0.860 U	0.930 U	0.960 U
Perfluorobutanoic acid (PFBA)	1.90 U	1.80 U	1.70 U	1.70 U	**0.560 J**	1.40 U
Perfluorodecane sulfonate	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.940 U	0.920 U	0.860 U	0.860 U	0.930 U	0.960 U
Perfluorododecanoic acid (PFDoA)	**1.70 J**	1.40 U	1.30 U	1.30 U	1.40 U	1.40 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U	1.40 U
Perfluorohexanesulfonic acid (PFHxS)	**1.50 J**	**1.50 J**	**0.690 J**	**0.610 J**	1.90 U	**0.540 J**
Perfluorohexanoic acid (PFHxA)	0.940 U	0.920 U	**0.410 J**	0.860 U	0.930 U	0.960 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U	1.40 U
Perfluorooctanesulfonamide (FOSA)	2.80 U	2.80 U	2.60 U	2.60 U	2.80 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)	2.80 U	2.80 U	**12.0**	**12.0**	**12.0**	2.90 U
Perfluorooctanoic acid (PFOA)	**0.520 J**	1.40 U	**1.70**	**1.60 J**	**1.30 J**	1.40 U
Perfluoropentanoic acid (PFPA)	0.940 U	0.920 U	0.860 U	0.860 U	0.930 U	0.960 U
Perfluorotetradecanoic acid (PFTA)	2.80 U	2.80 U	2.60 U	2.60 U	2.80 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	**1.40 J**	2.80 U	2.60 U	2.60 U	2.80 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U	1.40 U
†PFOS + PFOA (EPA)	**0.520**	**0.00**	**13.7**	**13.6**	**13.3**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**2.02**	**1.50**	**14.4**	**14.2**	**13.3**	**0.540**

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J3 Range

Location	MW-250M2
Field Sample ID	MW-250M2_PFAS19
Sampling Depth	145.00 - 155.00
Sampling Date	06/20/2019
SDG	320515981
Sample Type	**Normal**
PFAS 21 Cmps	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.70 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.70 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.70 U
Perfluoro-1-heptanesulfonate (PFHpS)	0.970 U
Perfluorobutanesulfonic acid (PFBS)	0.970 U
Perfluorobutanoic acid (PFBA)	**0.710 J**
Perfluorodecane sulfonate	1.40 U
Perfluorodecanoic acid (PFDA)	0.970 U
Perfluorododecanoic acid (PFDoA)	1.40 U
Perfluoroheptanoic acid (PFHpA)	1.40 U
Perfluorohexanesulfonic acid (PFHxS)	0.970 U
Perfluorohexanoic acid (PFHxA)	0.970 U
Perfluorononanoic acid (PFNA)	1.40 U
Perfluorooctanesulfonamide (FOSA)	2.90 U
Perfluorooctanesulfonic acid (PFOS)	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U
Perfluoropentanoic acid (PFPA)	0.970 U
Perfluorotetradecanoic acid (PFTA)	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U
†PFOS + PFOA (EPA)	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**0.00**

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Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated; UJ = estimated non detect

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detection of PFAS above the EPA Lifetime Health Advisory: PFOS + PFOA > 70 ng/L.

Bolded and highlighted results indicate detection of PFAS above the MassDEP and the MassDEP Office of Research and Standards Guideline (ORSG): PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA > 20 ng/L

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ Final PFAS-Related Revisions to the Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000), Massachusetts Department of Environmental Protection, December 27, 2019

‡ PFAS Maximum Contaminant Level (MCL) Proposed Amendment & Public Comment ("MCL", 310 CMR 22.00 PFAS MCL Amendments), Massachusetts Department of Environmental Protection, December 27, 2019

‡ Documentation for Updated Office of Research and Standards Guidelines (ORSG) for Per- and Polyfluoroalkyl Substances (PFAS) in Drinking Water, Massachusetts Department of Environmental Protection, January 27, 2020