MONTHLY PROGRESS REPORT #281
FOR AUGUST 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 August to 31 August 2020.

1. SUMMARY OF REMEDIATION ACTIONS

Remediation Actions (RA) Underway at Camp Edwards as of 28 August 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 2.759 billion gallons of water treated and re-injected as of 28 August 2020. No Frank Perkins Road Treatment Facility shutdowns occurred in August.

The Pew Road Mobile Treatment Unit (MTU) continues to operate at a flow rate of 65 GPM. As of 28 August 2020, over 656.4 million gallons of water was treated and re-injected. The following Pew Road MTU shutdowns occurred in August:

- 0426 on 06 August 2020 due to a power supply interruption caused by a faulty power supply (replaced), and was restarted at 1347 on 06 August 2020.

The Base Boundary MTU continues to operate at a flow rate of 65 gpm. As of 28 August 2020, over 273.5 million gallons of water was treated and re-injected. No Base Boundary MTU shutdowns occurred in August.

The Leading Edge system continues to operate at a flow rate of 100 gpm. As of 28 August 2020, over 212.2 million gallons of water was treated and re-injected. The following Leading Edge system shutdowns occurred in August:

- 0305 on 27 August 2020 due to a “Pump motor fault” caused by a power supply interruption, and was restarted at 0735 on 27 August 2020.

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 28 August 2020, over 1.276 billion gallons of water have been treated and re-injected. The following Northern Treatment Building G shutdowns occurred in August:

- 1345 on 25 August 2020 due to a power supply interruption, and was restarted at 1435 on 25 August 2020.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 28 August 2020, over 1.734 billion gallons of water have been treated and re-injected. The following J-2 Range Northern MTU shutdowns occurred in August:

- MTU F shut down at 1700 on 04 August 2020 due to a power outage caused by strong winds, and was restarted at 1300 on 05 August 2020.
- 1345 on 25 August 2020 due to a power supply interruption, and were restarted at 1447 on 25 August 2020.

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 August 2020, over 1.387 billion gallons of water have been treated and re-injected. The following MTU H and I shutdowns occurred in August:

- MTUs H and I shut down at 1830 on 04 August 2020 due to a power outage caused by strong winds, and were restarted at 0740 on 05 August 2020.

MTU J continues to operate at a flow rate of 120 gpm. As of 28 August 2020, over 639.9 million gallons of water have been treated and re-injected. The following MTU J shutdowns occurred in August:

- MTU Unit J shut down at 1830 on 04 August 2020 due to a power outage caused by strong winds, and was restarted at 0750 on 05 August 2020.

MTU K continues to operate at a flow rate of 125 gpm. As of 28 August 2020, over 759.3 million gallons of water have been treated and re-injected. The following MTU K shutdowns occurred in August:

- MTU Unit K shut down at 1830 on 04 August 2020 due to a power outage caused by strong winds, and was restarted at 0729 on 05 August 2020.

<u>J-3 Range Groundwater RA</u>

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 28 August 2020, over 1.393 billion gallons of water have been treated and re-injected. The following J-3 Range system shutdowns occurred in August:

- 1806 on 04 August 2020 due to a power outage caused by strong winds, and was restarted at 0955 on 05 August 2020.
- FS-12 shutdown at 1602 on 11 August 2020 and was restarted at 0741 on 12 August 2020.

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 August 2020, over 618.3 million gallons of water have been treated and re-injected. No J-1 Range Southern system shutdowns occurred in August.

Northern Plant

The J-1 Range Northern Groundwater RA consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. The ETR system includes two extraction wells, ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater, and an infiltration trench to return treated water to the aquifer.

The Northern MTU continues to operate at a total system flow rate of 250 gpm. As of 28 August 2020, over 871.7 million gallons of water have been treated and re-injected. The following J-1 Range Northern MTU shutdowns occurred in August:

- Extraction well J1NEW0002 shut down at 1345 on 25 August 2020 due to a power supply interruption, and was restarted at 1501 on 25 August 2020.

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 August 2020, over 2.18 billion gallons of water have been treated and re-injected. The following CIA system shutdowns occurred in August:

- CIA 2 shut down at 0832 on 01 August 2020 due to a “Communication Lost” alarm from a power interruption, and was restarted at 0932 on 03 August 2020.
- CIA 1 was turned off at 1100 on 05 August 2020 to perform a carbon exchange on GAC Vessels #2 and #5, and was restarted at 0740 on 07 August 2020.
- CIA2 shut down at 0350 on 10 August 2020 due to a power supply interruption without an alarm, and restarted at 0740 on 10 August 2020.

2. SUMMARY OF ACTIONS TAKEN

Operable Unit (OU) Activity as of 31 August 2020

CIA
- Demobilized all personnel 07 to 25 August due to range firing
- Groundwater sampling within the CIA SPM program
- Performed DGM and MM data collection
- Performed routine inspections of BEM cover to ensure cover is secure and intact
- Routine MD Processing

Demolition Area 1
- Pew Road MTU bag filters were exchanged on 20 August

Demolition Area 2
- No activity

J-1 Range
- No activity

J-2 Range
- Groundwater sampling within the J2 North SPM program
- Vegetation clearance and analog MEC removal in confirmation investigation grids
- Analog MEC removal in confirmation investigation grids

J-3 Range
- Groundwater sampling within the J3 Range SPM program

L Range
- No activity

Small Arms Ranges
- No activity

Training Areas
- Intrusive investigation in Former E Range geophysical investigation grids

Other
- Collected process water samples from the Central Impact Area (Systems 1 ,2, and 3), Demolition Area 1, J1 Range Northern, J1 Range Southern, J2 Range Eastern, J2 Range Northern, and J3 Range treatment systems
- Groundwater sampling within the Northwest Corner LTM program
- Performed stone/gravel installation and compaction on Barlow, Turpentine, and Wood roads

JBCC IAGWSP Tech Update Meeting Minutes 13 August 2020

Project and Fieldwork Update

All treatment systems are up and running. There were a couple of minor outages due to power interruptions, but none resulted in significant downtime. A carbon change out was performed at CIA 1 without issue. Long-term monitoring sampling crews are performing annual sampling in J-2 Range North then they will move to the J-3 and J2 East Ranges. Sampling in the Southeast Ranges will last through October. Contractors are working on yearly maintenance tasks e.g. minor road repairs and mowing in utility right-of-ways and near reinjection galleries.

Dawson has temporarily moved from the 20-acre investigation at the Former E Range due to range firing. They will resume at Former E in early September once range firing is done. Nine grids/partial grids have been completed and five grids/partial grids are in progress. To date, six MEC items have been found: three 3.5” rockets, two 20mm projectiles and one 60mm fuze. During this time, they have moved to the J-2 Range to investigate two acres. They have completed vegetation clearance and intrusive investigations are underway. To date, three MEC items have been found: one 30mm projectile and two 81mm mortars. KGS completed gravel installation, including rolling and compacting on Wood, Barlow and Turpentine Roads on August 12.

In the Central Impact Area, the Parsons team has demobilizing as all of their work areas are encompassed by firing fans. To date they have completed all DGM surveys, and have completed advanced geophysical classification surveys on 6A, 6B and 7A and are approximately halfway finished with 7B. They also began intrusive investigations and are 50% complete at 6A and 81% complete at 6B. They will return August 25.

Action Items

The action items were discussed and updated.

JBCC CT Meeting Planning

A discussion was held on the need for a JBCC CT meeting. It was suggested that the programs try to hold a meeting virtually on October 14th. It was noted that there are some limitations for DoD users for hosting and participating in virtual meetings. EPA will research the platforms available to them for webinars and get back to the group. At the next tech meeting, possible agenda topics will be discussed.

JBCC IAGWSP Tech Update Meeting Minutes 27 August 2020

Project and Fieldwork Update

All treatment systems are up and running. There were no breakthroughs in the last month. There were a couple of minor outages due to power interruptions, but none resulted in significant downtime. Long-term monitoring sampling crews are performing annual sampling in J-2 Range North then they will move to the J2 East Range. Sampling in the Southeast Ranges that will last through the end of September. They also began collecting PFAS samples. Contractors completed maintenance tasks e.g. minor road repairs and mowing in utility right-of-ways and near reinjection galleries.

Dawson resumed the 20-acre investigation at the Former E Range on August 20. Investigation of discrete targets has been completed in 13 grids, discrete grids/polygons/obstructions have been completed in nine grids and eight grids are in progress. To date, seven MEC items have been found: four 3.5" rockets, two 20mm projectiles and one 60mm fuze. Work at the J-2 Range is completed and is currently undergoing QA/QC. Fourteen MEC items were found: twelve 30mm projectiles, one 57 mm mortar and one 81mm mortars. A 2x2x1' grid was excavated around cracked and leaking items. KGS completed gravel installation, including rolling and compacting on Wood, Barlow and Turpentine Roads on August 12 and have demobed from the site.

In the Central Impact Area, the Parsons team has remobilized to the site this week. To date they have completed all DGM surveys, and have completed advanced geophysical classification surveys on 6A, 6B and 7A and are approximately halfway finished with 7B. They are currently digging in grids 6A and 6B. They are still on schedule to complete their activities and will increase the number of dig teams when additional digs become available. It was noted that for fire safety purposes, Parsons would recut vegetation at the storage bunker located at the five corners area.

Action Items

The action items were discussed and updated.

JBCC CT Meeting Planning

A discussion was held on the planning for a JBCC CT meeting. Options for a virtual meeting were discussed and IAGWSP will continue to work with their contractor to set up an account with a platform that will be accessible to the public and DoD users. IAGWSP will work with AFCEC to develop a draft agenda and sent it to the group for review. An update on platforms and the draft agenda will be discussed at the next tech meeting.

JBCC Cleanup Team Meeting

The next meeting of the JBCC Cleanup Team (JBCCCT) has been tentatively scheduled for October 14, 2020. The meeting will be held virtually and information on how to participate will be published soon. . Meeting materials from previous meetings can be found on the IAGWSP web site at https://jbcc-iagwsp.org/iagwsp/community/impact/presentations/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.

3. SUMMARY OF DATA RECEIVED

Table 1 summarizes sampling for all media from 1 August to 31 August 2020. Table 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 1 August to 31 August 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.

The twelve OUs under investigation and cleanup at Camp Edwards are the 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).

4. SUBMITTED DELIVERABLES

Deliverables submitted during the reporting period include the following:

- Monthly Progress Report No. 280 for July 2020 — 10 August 2020

5. SCHEDULED ACTIONS

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

- CIA and J-2 Range IRA Plan for BEM rocket disposal
- Demo Area 2 2020 Annual Environmental Monitoring Report
- J-1 Ranges 2019 Annual Environmental Monitoring Report
- L Range 2020 Annual Environmental Monitoring Report
- Land Use Controls Monitoring Report
- Northwest Corner Demonstration of Compliance Report and Project Note
- Small Arms Ranges Completion of Work Report

TABLE 1
Sampling Progress: 1 August to 31 August 2020

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Northern	MW-588M2	MW-588M2_F20	N	08/27/2020	Ground Water	198	208
J2 Range Northern	MW-588M2	MW-588M2_F20	N	08/27/2020	Ground Water	198	208
J2 Range Northern	MW-588M1	MW-588M1_F20	N	08/27/2020	Ground Water	238	248
J2 Range Northern	MW-588M1	MW-588M1_F20	N	08/27/2020	Ground Water	238	248
J2 Range Northern	MW-302M2	MW-302M2_F20	N	08/27/2020	Ground Water	194.35	204.43
J2 Range Northern	MW-302M2	MW-302M2_F20	N	08/27/2020	Ground Water	194.35	204.43
J2 Range Northern	MW-293M2	MW-293M2_F20	N	08/27/2020	Ground Water	196.42	206.42
J2 Range Northern	MW-293M2	MW-293M2_F20	N	08/27/2020	Ground Water	196.42	206.42
J2 Range Northern	MW-293M2	MW-293M2_F20D	FD	08/27/2020	Ground Water	196.42	206.42
J2 Range Northern	MW-621M2	MW-621M2_F20	N	08/26/2020	Ground Water	219.4	229.4
J2 Range Northern	MW-621M2	MW-621M2_F20	N	08/26/2020	Ground Water	219.4	229.4
J2 Range Northern	MW-621M1	MW-621M1_F20	N	08/26/2020	Ground Water	249.4	259.4
J2 Range Northern	MW-621M1	MW-621M1_F20	N	08/26/2020	Ground Water	249.4	259.4
J2 Range Northern	MW-631M2	MW-631M2_F20	N	08/26/2020	Ground Water	200.1	210.1
J2 Range Northern	MW-631M2	MW-631M2_F20	N	08/26/2020	Ground Water	200.1	210.1
J2 Range Northern	MW-631M1	MW-631M1_F20	N	08/26/2020	Ground Water	233.1	243.1
J2 Range Northern	MW-631M1	MW-631M1_F20	N	08/26/2020	Ground Water	233.1	243.1
J2 Range Northern	MW-634M3	MW-634M3_F20	N	08/25/2020	Ground Water	170.6	180.6
J2 Range Northern	MW-634M2	MW-634M2_F20	N	08/25/2020	Ground Water	200.6	210.6
J2 Range Northern	MW-634M1	MW-634M1_F20	N	08/25/2020	Ground Water	305.6	315.6
J2 Range Northern	J2EW3-MW1-B	J2EW3-MW1-B_F20	N	08/25/2020	Ground Water	210.66	220.66
J2 Range Northern	J2EW3-MW1-C	J2EW3-MW1-C_F20	N	08/25/2020	Ground Water	245.66	255.66
J2 Range Northern	MW-612M2	MW-612M2_F20	N	08/24/2020	Ground Water	267	277
J2 Range Northern	MW-612M1	MW-612M1_F20	N	08/24/2020	Ground Water	297	307
J2 Range Northern	MW-630M1	MW-630M1_F20	N	08/24/2020	Ground Water	217	227
J2 Range Northern	MW-296M2	MW-296M2_F20	N	08/24/2020	Ground Water	214.98	224.98
J2 Range Northern	MW-296M1	MW-296M1_F20	N	08/24/2020	Ground Water	255.08	265.08
J2 Range Northern	MW-345M2	MW-345M2_F20	N	08/20/2020	Ground Water	236.62	246.62
J2 Range Northern	MW-330M2	MW-330M2_F20	N	08/20/2020	Ground Water	238.01	248.04
J2 Range Northern	MW-330M1	MW-330M1_F20	N	08/20/2020	Ground Water	313.1	323.1
J2 Range Northern	MW-331M2	MW-331M2_F20	N	08/20/2020	Ground Water	195.27	205.27
J2 Range Northern	MW-331M1	MW-331M1_F20	N	08/20/2020	Ground Water	235.41	245.41
J2 Range Northern	MW-613M2	MW-613M2_F20	N	08/19/2020	Ground Water	246.1	256.1
J2 Range Northern	MW-613M1	MW-613M1_F20	N	08/19/2020	Ground Water	267.1	277.1
J2 Range Northern	MW-130S	MW-130S_F20	N	08/19/2020	Ground Water	103	113
J2 Range Northern	MW-234M2	MW-234M2_F20	N	08/19/2020	Ground Water	110	120
J2 Range Northern	MW-234M2	MW-234M2_F20D	FD	08/19/2020	Ground Water	110	120
J2 Range Northern	MW-234M1	MW-234M1_F20	N	08/19/2020	Ground Water	130	140
Northwest Corner	RSNW06	RSNW06_S20	N	08/18/2020	Ground Water	0	0
Northwest Corner	RSNW06	RSNW06_S20	N	08/18/2020	Ground Water	0	0
J2 Range Northern	MW-230M1	MW-230M1_F20	N	08/18/2020	Ground Water	130	140
J2 Range Northern	MW-289S	MW-289S_F20	N	08/18/2020	Ground Water	105	115
J2 Range Northern	MW-289M2	MW-289M2_F20	N	08/18/2020	Ground Water	162	172
J2 Range Northern	MW-289M2	MW-289M2_F20D	FD	08/18/2020	Ground Water	162	172
J2 Range Northern	MW-289M1	MW-289M1_F20	N	08/18/2020	Ground Water	305	315
J2 Range Northern	MW-585M3	MW-585M3_F20	N	08/17/2020	Ground Water	198.5	208.5
J2 Range Northern	MW-585M3	MW-585M3_F20D	FD	08/17/2020	Ground Water	198.5	208.5
J2 Range Northern	MW-585M2	MW-585M2_F20	N	08/17/2020	Ground Water	218.5	228.5
J2 Range Northern	MW-585M1	MW-585M1_F20	N	08/17/2020	Ground Water	240	250
J2 Range Northern	J2EW2-MW3-B	J2EW2-MW3-B_F20	N	08/17/2020	Ground Water	212.65	222.65
J2 Range Northern	J2EW2-MW3-C	J2EW2-MW3-C_F20	N	08/17/2020	Ground Water	246	256
J2 Range Northern	MW-619M2	MW-619M2_F20	N	08/13/2020	Ground Water	234.1	244.1
J2 Range Northern	MW-619M1	MW-619M1_F20	N	08/13/2020	Ground Water	255.1	265.1
J2 Range Northern	MW-313M3	MW-313M3_F20	N	08/13/2020	Ground Water	195.07	205.57
J2 Range Northern	MW-313M2	MW-313M2_F20	N	08/13/2020	Ground Water	215.46	225.49

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 August to 31 August 2020

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Northern	MW-313M1	MW-313M1_F20	N	08/13/2020	Ground Water	255.42	265.42
J2 Range Northern	MW-313M1	MW-313M1_F20D	FD	08/13/2020	Ground Water	255.42	265.42
J2 Range Northern	MW-318M2	MW-318M2_F20	N	08/12/2020	Ground Water	205.8	215.82
J2 Range Northern	MW-318M1	MW-318M1_F20	N	08/12/2020	Ground Water	305.79	315.81
J2 Range Northern	MW-635M1	MW-635M1_F20	N	08/12/2020	Ground Water	265.4	275.4
J2 Range Northern	MW-702M2	MW-702M2_F20	N	08/12/2020	Ground Water	208.1	218.1
J2 Range Northern	MW-702M1	MW-702M1_F20	N	08/12/2020	Ground Water	277.5	287.5
J2 Range Northern	J2EW1-MW1-B	J2EW1-MW1-B_F20	N	08/11/2020	Ground Water	205.82	215.82
J2 Range Northern	J2EW1-MW1-C	J2EW1-MW1-C_F20	N	08/11/2020	Ground Water	240.8	250.8
J2 Range Northern	J2EW1-MW1-C	J2EW1-MW1-C_F20D	FD	08/11/2020	Ground Water	240.8	250.8
Central Impact Area	CIA2-EFF	CIA2-EFF-79A	N	08/11/2020	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-79A	N	08/11/2020	Process Water	0	0
J3 Range	MW-250M3	MW-250M3_F20	N	08/11/2020	Ground Water	95	105
Central Impact Area	CIA2-MID1	CIA2-MID1-79A	N	08/11/2020	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-79A	N	08/11/2020	Process Water	0	0
J3 Range	MW-250M2	MW-250M2_F20	N	08/11/2020	Ground Water	145	155
J3 Range	MW-250M2	MW-250M2_F20D	FD	08/11/2020	Ground Water	145	155
Central Impact Area	CIA1-EFF	CIA1-EFF-79A	N	08/11/2020	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-79A	N	08/11/2020	Process Water	0	0
Central Impact Area	CIA1-MID1	CIA1-MID1-79A	N	08/11/2020	Process Water	0	0
Central Impact Area	CIA1-INF	CIA1-INF-79A	N	08/11/2020	Process Water	0	0
J3 Range	MW-250M1	MW-250M1_F20	N	08/11/2020	Ground Water	185	195
Central Impact Area	CIA3-EFF	CIA3-EFF-50A	N	08/11/2020	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-50A	N	08/11/2020	Process Water	0	0
Central Impact Area	CIA3-MID1	CIA3-MID1-50A	N	08/11/2020	Process Water	0	0
Central Impact Area	CIA3-INF	CIA3-INF-50A	N	08/11/2020	Process Water	0	0
J3 Range	MW-227M3	MW-227M3_F20	N	08/10/2020	Ground Water	65	75
J3 Range	MW-227M2	MW-227M2_F20	N	08/10/2020	Ground Water	110	120
J3 Range	MW-227M2	MW-227M2_F20D	FD	08/10/2020	Ground Water	110	120
J3 Range	MW-227M1	MW-227M1_F20	N	08/10/2020	Ground Water	130	140
J1 Range Southern	J1S-EFF	J1S-EFF-153A	N	08/10/2020	Process Water	0	0
J1 Range Southern	J1S-MID	J1S-MID-153A	N	08/10/2020	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-153A	N	08/10/2020	Process Water	0	0
J3 Range	MW-636M2	MW-636M2_F20	N	08/10/2020	Ground Water	110.5	120.5
J3 Range	MW-636M1	MW-636M1_F20	N	08/10/2020	Ground Water	141.6	151.6
J3 Range	J3-EFF	J3-EFF-167A	N	08/10/2020	Process Water	0	0
J3 Range	J3-MID-2	J3-MID-2-167A	N	08/10/2020	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-167A	N	08/10/2020	Process Water	0	0
J3 Range	J3-INF	J3-INF-167A	N	08/10/2020	Process Water	0	0
J3 Range	MW-144M2	MW-144M2_F20	N	08/06/2020	Ground Water	130	140
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-143A	N	08/06/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-143A	N	08/06/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-143A	N	08/06/2020	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-143A	N	08/06/2020	Process Water	0	0
J3 Range	MW-576M3	MW-576M3_F20	N	08/06/2020	Ground Water	98.9	108.9
J3 Range	MW-576M2	MW-576M2_F20	N	08/06/2020	Ground Water	133.9	143.9
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-143A	N	08/06/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-143A	N	08/06/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-143A	N	08/06/2020	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-143A	N	08/06/2020	Process Water	0	0
J3 Range	MW-576M1	MW-576M1_F20	N	08/06/2020	Ground Water	173.9	183.9
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-143A	N	08/06/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-143A	N	08/06/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-143A	N	08/06/2020	Process Water	0	0
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-143A	N	08/06/2020	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 August to 31 August 2020

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-143A	N	08/06/2020	Process Water	0	0
J2 Range Eastern	J2E-INF-I	J2E-INF-I-143A	N	08/06/2020	Process Water	0	0
J3 Range	MW-653M2	MW-653M2_F20	N	08/05/2020	Ground Water	59.3	69.3
J3 Range	MW-653M1	MW-653M1_F20	N	08/05/2020	Ground Water	147.5	157.5
J3 Range	MW-701M2	MW-701M2_F20	N	08/05/2020	Ground Water	147.5	157.5
J3 Range	MW-701M1	MW-701M1_F20	N	08/05/2020	Ground Water	177	187
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-167A	N	08/04/2020	Process Water	0	0
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-167A	N	08/04/2020	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-167A	N	08/04/2020	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-167A	N	08/04/2020	Process Water	0	0
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-167A	N	08/04/2020	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-167A	N	08/04/2020	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-167A	N	08/04/2020	Process Water	0	0
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-167A	N	08/04/2020	Process Water	0	0
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-167A	N	08/04/2020	Process Water	0	0
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-167A	N	08/04/2020	Process Water	0	0
J1 Range Northern	J1N-EFF	J1N-EFF-82A	N	08/04/2020	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-82A	N	08/04/2020	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-82A	N	08/04/2020	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-82A	N	08/04/2020	Process Water	0	0
J3 Range	MW-142M2	MW-142M2_F20	N	08/03/2020	Ground Water	140	150
Demolition Area 1	PR-EFF	PR-EFF-173A	N	08/03/2020	Process Water	0	0
Demolition Area 1	PR-MID-2	PR-MID-2-173A	N	08/03/2020	Process Water	0	0
Demolition Area 1	PR-MID-1	PR-MID-1-173A	N	08/03/2020	Process Water	0	0
Demolition Area 1	PR-INF	PR-INF-173A	N	08/03/2020	Process Water	0	0
J3 Range	MW-247M3	MW-247M3_F20	N	08/03/2020	Ground Water	95	105
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-173A	N	08/03/2020	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-173A	N	08/03/2020	Process Water	0	0
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-173A	N	08/03/2020	Process Water	0	0
Demolition Area 1	FPR-2-INF	FPR-2-INF-173A	N	08/03/2020	Process Water	0	0
J3 Range	MW-247M2	MW-247M2_F20	N	08/03/2020	Ground Water	125	135
Demolition Area 1	D1LE-EFF	D1LE-EFF-49A	N	08/03/2020	Process Water	0	0
Demolition Area 1	D1LE-MID2	D1LE-MID2-49A	N	08/03/2020	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-49A	N	08/03/2020	Process Water	0	0
Demolition Area 1	D1LE-INF	D1LE-INF-49A	N	08/03/2020	Process Water	0	0
J3 Range	MW-247M1	MW-247M1_F20	N	08/03/2020	Ground Water	180	190
Demolition Area 1	D1-EFF	D1-EFF-121A	N	08/03/2020	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-121A	N	08/03/2020	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-121A	N	08/03/2020	Process Water	0	0
Demolition Area 1	D1-INF	D1-INF-121A	N	08/03/2020	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received August 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-727M1	MW-727M1_R1	145.4	155.4	06/30/2020	SW6850	Perchlorate	0.099	J	µg/L	2.0		0.030	0.20
Central Impact Area	MW-727M1	MW-727M1_R1	145.4	155.4	06/30/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.5		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-725M1	MW-725M1_R1	145.2	155.2	06/30/2020	SW6850	Perchlorate	0.48		µg/L	2.0		0.030	0.20
Central Impact Area	MW-725M1	MW-725M1_R1	145.2	155.2	06/30/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.55		µg/L	400		0.036	0.20
Central Impact Area	MW-725M1	MW-725M1_R1	145.2	155.2	06/30/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.2		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
September 03, 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**
§Sum of All Compounds Collected	**0.00**	**0.00**	**0.00**	**4.86**	**0.00**

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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**
§Sum of All Compounds Collected	**6.70**	**0.00**	**4.79**	**0.00**	**0.00**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
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**
§Sum of All Compounds Collected	**0.00**	**0.00**	**0.00**	**0.880**	**0.730**	**7.40**

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Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
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**
§Sum of All Compounds Collected	**3.20**	**8.70**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
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**
§Sum of All Compounds Collected	**0.00**	**17.4**	**0.00**	**15.0**	**15.4**	**4.90**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
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**
§Sum of All Compounds Collected	**3.05**	**5.08**	**0.00**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
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**
§Sum of All Compounds Collected	**5.12**	**1.50**	**14.8**	**14.2**	**13.9**	**0.540**

PFAS Summary Report – Groundwater
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KGS 2019 PFAS MW&INF
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**
§Sum of All Compounds Collected	**0.710**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2020 J3 Range SPM Fall
J3 Range

Location	MW-143M2	MW-143M3	MW-163S	MW-163S	MW-181S	MW-193M1
Field Sample ID	MW-143M2_F20	MW-143M3_F20	MW-163S_F20	MW-163S_F20D	MW-181S_F20	MW-193M1_F20
Sampling Depth	117.00 - 122.00	107.00 - 112.00	38.00 - 48.00	38.00 - 48.00	32.25 - 42.25	57.50 - 62.50
Sampling Date	07/20/2020	07/21/2020	07/16/2020	07/16/2020	07/21/2020	07/16/2020
SDG	320629171	320629171	320627321	320627321	320629171	320627321
Sample Type	**Normal**	**Normal**	**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	19.0 U	19.0 U	20.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.40 U	9.50 U	9.70 U	9.80 U	9.40 U	9.60 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.40 U	9.50 U	9.70 U	9.80 U	9.40 U	9.60 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.40 U	9.50 U	9.70 U	9.80 U	9.40 U	9.60 U
Perfluoro-1-heptanesulfonate (PFHpS)	0.940 U	0.950 U	0.970 U	0.980 U	0.940 U	0.960 U
Perfluorobutanesulfonic acid (PFBS)	**1.20 J**	**0.620 J**	0.970 U	0.980 U	0.940 U	0.960 U
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	**1.00 J**	**1.00 J**	1.40 U	**0.570 J**
Perfluorodecane sulfonate	1.40 U	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.940 U	0.950 U	0.970 U	0.980 U	0.940 U	0.960 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U
Perfluorohexanesulfonic acid (PFHxS)	**26.0**	**4.20**	1.90 U	2.00 U	1.90 U	1.90 U
Perfluorohexanoic acid (PFHxA)	0.940 U	0.950 U	0.970 U	0.980 U	0.940 U	0.960 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U
Perfluorooctanesulfonamide (FOSA)	2.80 U	2.80 U	2.90 U	2.90 U	2.80 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)	2.80 U	2.80 U	**4.90**	**5.00**	**16.0**	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	**0.840 J**	**0.940 J**	**0.510 J**	1.40 U
Perfluoropentanoic acid (PFPA)	0.940 U	0.950 U	0.970 U	**0.460 J**	0.940 U	**0.490 J**
Perfluorotetradecanoic acid (PFTA)	2.80 U	2.80 U	2.90 U	2.90 U	2.80 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.80 U	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	1.50 U	1.40 U	1.40 U
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**5.74**	**5.94**	**16.5**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**26.0**	**4.20**	**5.74**	**5.94**	**16.5**	**0.00**
§Sum of All Compounds Collected	**27.2**	**4.82**	**6.74**	**7.40**	**16.5**	**1.06**

PFAS Summary Report – Groundwater
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KGS 2020 J3 Range SPM Fall
J3 Range

Location	MW-193S	MW-196M1	MW-196S	MW-197M1	MW-197M2	MW-197M3
Field Sample ID	MW-193S_F20	MW-196M1_F20	MW-196S_F20	MW-197M1_F20	MW-197M2_F20	MW-197M3_F20D
Sampling Depth	32.50 - 37.50	45.00 - 50.00	32.00 - 37.00	120.00 - 125.00	80.20 - 85.20	60.20 - 65.20
Sampling Date	07/16/2020	07/23/2020	07/23/2020	07/20/2020	07/20/2020	07/20/2020
SDG	320627321	320630121	320630121	320629171	320629171	320629171
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**	**Field Duplicate**
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)	18.0 U	18.0 U	18.0 U	19.0 U	19.0 U	18.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.20 U	9.20 U	9.00 U	9.40 U	9.30 U	9.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.20 U	9.20 U	9.00 U	9.40 U	9.30 U	9.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.20 U	9.20 U	9.00 U	9.40 U	9.30 U	9.20 U
Perfluoro-1-heptanesulfonate (PFHpS)	0.920 U	0.920 U	0.900 U	0.940 U	0.930 U	0.920 U
Perfluorobutanesulfonic acid (PFBS)	**2.20**	0.920 U	0.900 U	0.940 U	**1.80 J**	0.920 U
Perfluorobutanoic acid (PFBA)	**1.20 J**	1.80 U	1.80 U	1.40 U	**4.90**	**1.40 J**
Perfluorodecane sulfonate	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.920 U	**0.550 J**	0.900 U	0.940 U	0.930 U	0.920 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	1.40 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.30 U	1.40 U	**4.00**	1.40 U
Perfluorohexanesulfonic acid (PFHxS)	**19.0**	**1.00 J**	0.900 U	1.90 U	**37.0**	1.80 U
Perfluorohexanoic acid (PFHxA)	**0.830 J**	**0.950 J**	**0.510 J**	0.940 U	**8.40**	**0.450 J**
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	1.40 U
Perfluorooctanesulfonamide (FOSA)	2.80 U	2.80 U	2.70 U	2.80 U	2.80 U	2.80 U
Perfluorooctanesulfonic acid (PFOS)	2.80 U	**1.10 J**	**3.80**	2.80 U	**10.0**	2.80 U
Perfluorooctanoic acid (PFOA)	1.40 U	**2.10**	**1.10 J**	**0.550 J**	**3.10**	**1.10 J**
Perfluoropentanoic acid (PFPA)	**1.30 J**	**0.660 J**	**0.440 J**	**0.400 J**	**6.50**	**0.440 J**
Perfluorotetradecanoic acid (PFTA)	2.80 U	2.80 U	2.70 U	2.80 U	2.80 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)	2.80 U	2.80 U	2.70 U	2.80 U	2.80 U	2.80 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	1.40 U
†PFOS + PFOA (EPA)	**0.00**	**3.20**	**4.90**	**0.550**	**13.1**	**1.10**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**19.0**	**4.75**	**4.90**	**0.550**	**54.1**	**1.10**
§Sum of All Compounds Collected	**24.5**	**6.36**	**5.85**	**0.950**	**75.7**	**3.39**

PFAS Summary Report – Groundwater
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KGS 2020 J3 Range SPM Fall
J3 Range

Location	MW-197M3	MW-198M1	MW-198M2	MW-198M3	MW-198M4	MW-232M1
Field Sample ID	MW-197M3_F20	MW-198M1_F20	MW-198M2_F20	MW-198M3_F20	MW-198M4_F20	MW-232M1_F20
Sampling Depth	60.20 - 65.20	150.00 - 155.00	120.00 - 125.00	100.00 - 105.00	70.00 - 75.00	77.50 - 82.50
Sampling Date	07/20/2020	07/15/2020	07/15/2020	07/15/2020	07/15/2020	07/16/2020
SDG	320629171	320627321	320627321	320627321	320627321	320627321
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)	18.0 U	19.0 U	19.0 U	19.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.20 U	9.50 U	9.50 U	9.50 U	9.50 U	9.50 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.20 U	9.50 U	9.50 U	9.50 U	9.50 U	9.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.20 U	9.50 U	9.50 U	9.50 U	9.50 U	9.50 U
Perfluoro-1-heptanesulfonate (PFHpS)	0.920 U	0.950 U	0.950 U	0.950 U	0.950 U	0.950 U
Perfluorobutanesulfonic acid (PFBS)	0.920 U	0.950 U	0.950 U	0.950 U	0.950 U	0.950 U
Perfluorobutanoic acid (PFBA)	**1.50 J**	1.40 U	**0.740 J**	**0.740 J**	**6.50**	**2.20**
Perfluorodecane sulfonate	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.920 U	0.950 U	0.950 U	0.950 U	0.950 U	0.950 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 U	1.40 U	**1.80 J**	1.40 U
Perfluorohexanesulfonic acid (PFHxS)	1.80 U	0.950 U	0.950 U	1.90 U	**4.40**	0.950 U
Perfluorohexanoic acid (PFHxA)	0.920 U	0.950 U	0.950 U	0.950 U	**3.70**	0.950 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorooctanesulfonamide (FOSA)	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)	**1.00 J**	2.80 U	2.90 U	2.80 U	**2.30 J**	2.90 U
Perfluorooctanoic acid (PFOA)	**0.990 J**	1.40 U	1.40 U	1.40 U	**2.30**	**0.640 J**
Perfluoropentanoic acid (PFPA)	**0.430 J**	**0.460 J**	0.950 U	0.950 U	**2.80**	**0.420 J**
Perfluorotetradecanoic acid (PFTA)	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
†PFOS + PFOA (EPA)	**1.99**	**0.00**	**0.00**	**0.00**	**4.60**	**0.640**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**1.99**	**0.00**	**0.00**	**0.00**	**10.8**	**0.640**
§Sum of All Compounds Collected	**3.92**	**0.460**	**0.740**	**0.740**	**23.8**	**3.26**

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Joint Base Cape Cod, IAGWSP
KGS 2020 J3 Range SPM Fall
J3 Range

Location	MW-232M2	MW-30
Field Sample ID	MW-232M2_F20	MW-30_F20
Sampling Depth	61.00 - 66.00	26.00 - 36.00
Sampling Date	07/16/2020	07/21/2020
SDG	320627321	320629171
Sample Type	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	20.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	10.0 U	9.40 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0 U	9.40 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0 U	9.40 U
Perfluoro-1-heptanesulfonate (PFHpS)	1.00 U	0.940 U
Perfluorobutanesulfonic acid (PFBS)	1.00 U	0.940 U
Perfluorobutanoic acid (PFBA)	**3.20**	1.40 U
Perfluorodecane sulfonate	1.50 U	1.40 U
Perfluorodecanoic acid (PFDA)	1.00 U	0.940 U
Perfluorododecanoic acid (PFDoA)	1.50 U	1.40 U
Perfluoroheptanoic acid (PFHpA)	1.50 U	1.40 U
Perfluorohexanesulfonic acid (PFHxS)	1.00 U	0.940 U
Perfluorohexanoic acid (PFHxA)	1.00 U	0.940 U
Perfluorononanoic acid (PFNA)	1.50 U	1.40 U
Perfluorooctanesulfonamide (FOSA)	3.00 U	2.80 U
Perfluorooctanesulfonic acid (PFOS)	3.00 U	**15.0**
Perfluorooctanoic acid (PFOA)	**1.10 J**	**0.790 J**
Perfluoropentanoic acid (PFPA)	**0.520 J**	0.940 U
Perfluorotetradecanoic acid (PFTA)	3.00 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)	3.00 U	2.80 U
Perfluoroundecanoic acid (PFUnA)	1.50 U	1.40 U
†PFOS + PFOA (EPA)	**1.10**	**15.8**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**1.10**	**15.8**
§Sum of All Compounds Collected	**4.82**	**15.8**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP

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

§ Summation of results for all compounds appearing in the report:

- 6:2 Fluorotelomer sulfonate (6:2 FTS)
- 8:2 Fluorotelomer sulfonate (8:2 FTS)
- N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)
- N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)
- Perfluoro-1-heptanesulfonate (PFHpS)
- Perfluorobutanesulfonic acid (PFBS)
- Perfluorobutanoic acid (PFBA)
- Perfluorodecane sulfonate
- Perfluorodecanoic acid (PFDA)
- Perfluorododecanoic acid (PFDoA)
- Perfluoroheptanoic acid (PFHpA)
- Perfluorohexanesulfonic acid (PFHxS)
- Perfluorohexanoic acid (PFHxA)
- Perfluorononanoic acid (PFNA)
- Perfluorooctanesulfonamide (FOSA)
- Perfluorooctanesulfonic acid (PFOS)
- Perfluorooctanoic acid (PFOA)
- Perfluoropentanoic acid (PFPA)
- Perfluorotetradecanoic acid (PFTA)
- Perfluorotridecanoic acid (PFTrDA)
- Perfluoroundecanoic acid (PFUnA)