

**MONTHLY PROGRESS REPORT #286
FOR JANUARY 2021**

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 January to 31 January 2021.

1. SUMMARY OF REMEDIATION ACTIONS

Remediation Actions (RA) Underway at Camp Edwards as of 29 January 2021:

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 gallons per minute (gpm), with over 2.798 billion gallons of water treated and re-injected as of 29 January 2021. The following Frank Perkins Road Treatment Facility shutdowns occurred in January.

- D1-EW-4 (EW-658) was shut down at 2058 on 24 January 2021 due to a power supply interruption and was restarted at 0804 on 25 January 2021.

The Pew Road Mobile Treatment Unit (MTU) continues to operate at a flow rate of 65 GPM. As of 29 January 2021, over 669.4 million gallons of water was treated and re-injected. The following Pew Road MTU shutdowns occurred in January.

- 0126 on 29 January 2021 due to a power supply interruption and was restarted at 0905 on 29 January 2021.

The Base Boundary MTU continues to operate at a flow rate of 65 gpm. As of 29 January 2021, over 288.1 million gallons of water was treated and re-injected. No Base Boundary MTU shutdowns occurred in January.

The Leading Edge system continues to operate at a flow rate of 100 gpm. As of 29 January 2021, over 234.1 million gallons of water was treated and re-injected. No Leading Edge system shutdowns occurred in January.

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 29 January 2021, over 1.327 billion gallons of water have been treated and re-injected. No Northern Treatment Building G shutdowns occurred in January.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 1 January 2021, over 1.787 billion gallons of water have been treated and re-injected. The following Northern MTU shutdowns occurred in January.

- MTU E at 2229 on 09 January 2021 due to a “Bag filter inlet high pressure” alarm and was restarted at 0825 on 11 January 2021.
- MTU E at 0910 on 21 January 2021 due to replacement of a leaking camlock fitting and was restarted at 1019 on 21 January 2021.
- MTUs E and F at 0141 on 29 January 2021 due to a power supply interruption and were restarted at 0733 on 29 January 2021.

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 29 January 2021, over 1.444 billion gallons of water have been treated and re-injected. The following MTU H and I shutdowns occurred in January.

- MTU H at 1120 on 27 January 2021 due to repairs and media maintenance of the carbon and resin vessels and remained off through 29 January 2021.
- MTU I at 0127 on 29 January 2021 due to a power supply interruption and was restarted at 0739 on 29 January 2021.

MTU J continues to operate at a flow rate of 120 gpm. As of 29 January 2021, over 665.3 million gallons of water have been treated and re-injected. No MTU J shutdowns occurred in January.

MTU K continues to operate at a flow rate of 125 gpm. As of 29 January 2021, over 786.2 million gallons of water have been treated and re-injected. The following MTU K shutdowns occurred in January.

- 0127 on 29 January 2021 due to a power supply interruption and was restarted at 0802 on 29 January 2021.

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 29 January 2021, over 1.447 billion gallons of water have been treated and re-injected. No J-3 Range system shutdowns occurred in January.

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 29 January 2021, over 643.9 million gallons of water have been treated and re-injected. No J-1 Range Southern system shutdowns occurred in January.

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 29 January 2021, over 927.6 million gallons of water have been treated and re-injected. No J-1 Range Northern MTU shutdowns occurred in January.

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 29 January 2021, over 2.344 billion gallons of water have been treated and re-injected. The following CIA system shutdowns occurred in January.

- CIA3 MTU at 0800 on 12 January 2021 to perform carbon media exchange and was restarted at 0805 on 14 January 2021.

2. SUMMARY OF ACTIONS TAKEN

Operable Unit (OU) Activity as of 29 January 2021

CIA

- Conduct safety stand down and site-specific training.
- Perform intrusive investigations.
- Perform routine check of the BEM cover.
- Perform routine MD processing.
- CIA SPM program groundwater sampling and hydraulic monitoring
- CIA3 GAC Vessels #3 and #6 carbon media exchange on 13 January 2021

Demolition Area 1

- Frank Perkins Treatment Facility bag filters exchanged on 29 January 2021.
- Pew Road MTU replacement of heat trace on influent and effluent piping on 25 January 2021.

Demolition Area 2

- No activity

J-1 Range

- J1 South MTU bag filters were exchanged on 04 January 2021.

J-2 Range

- J2 East SPM program groundwater sampling and hydraulic monitoring
- J2 North SPM program groundwater sampling
- J2 North MTU E replacement of leaking camlock fitting on the IX vessel's effluent piping
- J2 East MTU H removed all vessels on 28 January 2021, removed carbon media from Vessels #5 and #6, transferred the resin media from Vessel #1 into Vessel #6, installed fresh carbon media in Vessel #5, and placed all the vessels within the MTU to prevent freezing. Vessel #1 taken offsite to repair leak.

J-3 Range

- J3 Range SPM program groundwater sampling.

L Range

- L Range LTM program groundwater sampling

Small Arms Ranges

- Small Arms Ranges LTM program groundwater sampling

Training Areas

- Training Areas LTM program groundwater sampling

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

JBCC IAGWSP Tech Update Meeting Minutes for 14 January 2021Project and Fieldwork Update

All treatment systems are up and running. The J-1 South system had a pipe fitting break but it was replaced immediately with spare parts. There was a carbon change out at CIA-3 on Wednesday. The sampling crews are currently collecting long-term monitoring samples at the Small Arms Ranges. They will move to the Central Impact Area at the end of the month and start with water level sampling. They will begin the long-term monitoring sampling in early February with wells in the CIA proper that will require UXO escort. Sampling in the CIA will continue through mid-April. There will be a small subset of wells that will be in Parsons' exclusion zone which the team will work around by collecting those samples on Fridays when there is no range firing.

Dawson de-mobbed on December 18th. They are approximately fifty percent complete with the 20-acre investigation at the Former E Range. To date, thirty-nine MEC items have been found. The team will return on March 1 and intrusive work will continue until May 2021.

In the Central Impact Area, Parsons returned on January 4th and conducted a safety stand-down and on-site training. There are two dig teams working. Survey Units 8 and 9 are underway and ~25-45% complete, respectively. It is anticipated that they will completed their contracted 2,500 of 3,600 remaining digs in approximately twelve weeks. The new UXO contractor, IE-Weston, will mobilize in early April and begin by completing any remaining Parsons' digs. Parsons completed demolition operations of the 84 IRA items this week. They will complete demolition operations by destroying the items in the CDC bunker and all remaining dig items at the end of their contract in the spring. If during the process of removing the items from the CDC bunker that need to be destroyed they come across items that are unsafe to move, they will have to re-evaluate and Army EOD may need to be called in to destroy the unsafe items. Based on their current understanding of the inventory of items and periodic inspections, the Army Corps believe they will be able to destroy the items. Parsons will return to intrusive work after the 13 and 14 January demolition operations are completed.

Discussion was held on the resolution of two deficiency issues with Parsons. During the review of video of demolition operations, EPA noticed there was substantially more dirt in the kick out compared to previous demolitions. It was determined that the Parsons Senior Unexploded Ordnance Supervisor (SUXOS) made the decision to increase the net explosive weight from 30 to 40 pounds. Parsons admitted that they understood that 30 pounds was the program requirement but decided to use 40 pounds regardless. USACE issued an ENG 6048 (notice of deficiency) and asked for a corrective action report. Their response was accepted by USACE and included the safety stand down and site-specific training as well as replacement of the entire on-site team. EPA requested samples be collected around the BEM structure to confirm that the additional kick out didn't cause any contamination. IAGWSP said they would develop a figure to show where samples are usually collected and any additional samples that would be collected to accommodate this request.

The second issue occurred during demolition operations between 21 and 24 November. The kick out from the detonation of a white phosphorus round caused four small fires. One fire the team was able to put out the other three were addressed by the JBCC Fire Department. It was explained that while the shot was performed properly, the notification processes before and after the fire events were not. USACE issued an ENG 6048 for this incident and they were satisfied with Parsons' response.

A virtual “meet and greet” will be scheduled with the new contractor. They plan to mobilize to the site on April 12.

J-3 Range Annual Environmental Monitoring Report Presentation

A presentation was provided on the J-3 Range Annual Environmental Monitoring Report. It was noted that during the reporting period (September 2019 to August 2020), new work included PFAS analyses from eighteen monitoring wells. The J-3 Range treatment system performance statistics were reviewed and discussed. During the reporting period, 119.8 million gallons of groundwater were treated; 0.58 pounds of perchlorate and 0.19 pounds of RDX were removed.

Sampling locations, groundwater monitoring results, and trends were reviewed and discussed. The maximum perchlorate concentration in Zone 1 (Source Area to Base Boundary) was 1.6 micrograms per liter ($\mu\text{g/L}$) (J3EW-IP2) and the maximum RDX concentration was 2.5 $\mu\text{g/L}$ (MW-232M1). In Zone 2 (downgradient of Base Boundary) the maximum perchlorate concentration was 3.1 $\mu\text{g/L}$ (MW-637M2) and the maximum RDX concentration was 0.97 $\mu\text{g/L}$ (MW-250M3). It was noted that 2020 maximum network concentrations were consistent with past trends. An overview of the hydraulic analysis completed in July 2020 was presented. It was noted that the hydraulic data /hydraulic gradients were consistent with past reporting periods and that water levels were 1.0 to 1.5 feet higher than 2019 synoptic water levels. The top of mound at USGS 537-0107 was 74.26 ft MSL and the flow direction is generally north to south with convergent flow near the extraction wells.

The modeled vs. observed plume comparison was discussed. The groundwater flow model plume shell was updated in August of 2018 using the Drift Function. Notable observations were that in the downgradient area, the observed plumes were consistent with the model predicted plumes. In the source area, the observed perchlorate and RDX detected depict residual contamination that is not in the predicted plumes (perchlorate in MW-163S and RDX in MW-232M1). The capture zone analysis was developed using reverse particle tracking and shows that the existing system appears to be adequately capturing the plumes.

Surface water monitoring of Snake Pond and the J-3 Wetland were discussed. For Snake Pond, there were two sampling events (May and July 2020) and explosives were all non-detect, perchlorate samples were below the reporting limit. The results were consistent with past reporting periods. The J-3 wetland data was also consistent with previous monitoring and there is no evidence of impact from the operation of the J-3 system on wetland water levels. It was noted that potentiometric contours east of MW-637 indicate that wetlands are at the margin of the capture zone (groundwater divide) which suggests weak hydraulic influence by in-plume extraction wells J3EWIP1 & J3EWIP2.

IAGWSP recommends performing an evaluation of optimizing the pumping rates of the two in-plume extraction wells J3EWIP1 and J3EWIP2 to determine if the time to cleanup can be significantly reduced by increasing pumping at J3EWIP2. Any recommendations for modifying the wellfield flow rates would be proposed in a separate project note. In order to gain a more thorough understanding of PFAS contamination at the J-3 Range it is recommended that resampling for PFAS + PFOA and PFAS6 analyses should be conducted at MW-30, MW-143M2, MW-163S, MW-181S, MW-193S, MW-197M2 and MW-198M4. In addition, initial samples for PFAS + PFOA and PFAS6 analyses are recommended at MW-142M2, MW-144M2, MW-157M2/3 and MW-636M2. A proposal remains to discontinue Snake Pond surface water sampling pending Sandwich Board of Health review. Surface water sampling will continue according to the currently approved schedule pending a final decision is made. There are no

recommendations for the fate and transport modeling, as a plume shell update completed August 2018. The next plume shell update is scheduled for 2023.

Action Items

The action items were discussed and updated.

JBCC IAGWSP Tech Update Meeting Minutes for 28 January 2021

Project Fieldwork Update

All treatment systems are up and running with the exception of J-2 North Unit H. It was taken off-line January 27th. Carbon Filtration Systems is onsite and will remove all vessels in the unit in order to take the ion exchange vessel #1 back to their facility to repair it. The vessel was leaking and rusting through at the bottom. They anticipate it will take two weeks to perform the repair. USACE is planning to have the floor fixed during the time that the vessels are out of the unit. For the next two weeks, EW-5 will be running at 125 gpm. The sampling crews are finishing the long-term monitoring samples at the Small Arms Ranges. They completed the Central Impact Area hydraulic sampling. Next week they will move to the CIA and work with UXO escort. They have developed a sampling schedule that will allow them to work in and around the subset wells that fall within Parsons' work area without conflict. Sampling in the CIA will continue through mid-April.

Dawson de-mobbed on December 18th. They are approximately fifty percent complete with the 20-acre investigation at the Former E Range. To date, thirty-nine MEC items have been found. The team will return on March 1 and intrusive work will continue until May 2021. There are plans in the works for road improvements for the ring roads around the perimeter of the Central Impact Area for this summer.

In the Central Impact Area, there are two dig teams working. Survey Units 8 and 9 are underway and ~39-54% complete, respectively. They are still on track to complete their digs by April and then finish with demolition operations, scrap management and field cleanup prior to their final de-mob. The new UXO contractor, IE-Weston, will mobilize April 12. A virtual "meet and greet" is being scheduled for Friday, February 26.

J2 Range Annual Environmental Monitoring Report Presentations

A presentation was provided on the J-2 Range Eastern Annual Environmental Monitoring Report. It was noted that during the reporting period (November 2019 to October 2020), no new work was conducted. The J-2 Range Eastern groundwater treatment system performance statistics were reviewed and discussed. During the reporting period, at MTU J, 0.38 pounds of perchlorate and 0.04 pounds of RDX were removed. At MTUs H and I, 1.09 pounds of perchlorate and 0.21 pounds of RDX were removed and there was a carbon change-out in July. At MTU K, 0.06 pounds of perchlorate and 0.10 pounds of RDX were removed.

Sampling locations, groundwater monitoring results, and trends were reviewed and discussed. Perchlorate concentrations ranged from non-detect to 68 µg/L (MW-368M1) and there were six wells with concentrations above 2 µg/L and 2 wells with concentrations above 15 µg/L. RDX concentrations ranged from non-detect to 8.8 µg/L (MW-368M1) and there were six wells with concentrations above 0.6 µg/L, three wells with concentrations above 2 µg/L, and no wells

greater than 20 µg/L. Trend plots and cross-sections were reviewed. An overview of the hydraulic analyses completed in January 2020 was presented. It was noted that the numerical model indicates that the perchlorate and RDX plumes are being captured and that stagnation points downgradient of each extraction well are creating a disjointed plume. Water levels ranged from 70.22' msl at MW-436M2 (north) to 73.65' msl at MW-128M1 (south) and the horizontal gradient was approximately 0.00043 ft/ft. The measured and predicted perchlorate plumes were displayed and discussed. It was noted that they were created using the September 2017 plume shell and measured groundwater concentrations. The measured and predicted plumes for RDX were created using the September 2017 plume shell and measured groundwater extraction rates.

Decision Document cleanup timelines were discussed. Perchlorate and RDX measurements indicate that the plumes are reasonably well predicted but the expected overall cleanup time is 15 years longer than the Decision Document timeline, likely the result of the mapping of contamination to lower K units that may not be realistic. The Decision Document cleanup time predicted perchlorate below 2.0 µg/L by 2027 and RDX below 0.6 µg/L by 2022. The model predicted cleanup of perchlorate to below 2.0 µg/L by 2037 and RDX below 0.6 µg/L by 2042.

IAGWSP recommends making no modifications to plant operations, the hydraulic or groundwater monitoring programs. No update to the perchlorate or RDX plume shells is recommended at this time.

A presentation was provided on the J-2 Range Northern Annual Environmental Monitoring Report. It was noted that during the reporting period (November 2019 to October 2020), Samples were collected from 26 monitoring wells within the J2EW0002 capture zone for PFAS in August/September 2020. Results in all samples were below the MMCL, with the highest concentration of PFAS6 (12.4 ng/L, duplicate 11.9 ng/L) again measured in J2EW0002.

Results, including J2EW0002, fell below the EPA Lifetime Health Advisory for PFOS/PFOA of 70 ng/L with the highest concentration (40.8 ng/L) measured at MW-293M2 on Wood Road. MassDEP noted that the 70 ng/L result was not accurate as that was not representative of the PFAS-6 compounds but included additional ones. The PFAS sampling results were discussed.

Northern groundwater treatment system performance statistics were reviewed and discussed. During the reporting period, at MTUs E and F (Wood Road) 2.24 pounds of perchlorate and 0.07 pounds of RDX were removed. At MTU G (Jefferson Road), 0.34 pounds of perchlorate and no RDX were removed. There was no breakthrough or change-out during this reporting period.

Sampling locations, groundwater monitoring results, and trends were reviewed and discussed. Perchlorate concentrations ranged from non-detect to 31.6 µg/L (MW-587M1) and there were eight wells with concentrations above 2 µg/L and 1 well with concentrations above 15 µg/L. RDX concentrations ranged from non-detect to 4.3 µg/L (MW-289M2) and there were two wells with concentrations above 0.6 µg/L, one well with concentrations above 2 µg/L and no wells with concentrations above 20 µg/L. An overview of the hydraulic analysis completed in July 2020 was presented. It was noted that the numerical model indicates that the perchlorate plume is being captured and that the smaller plumelets are expected to diminish based on long-term modeling. In addition, stagnation points downgradient of each extraction well are creating a disjointed plume. Water levels ranged from 61.26' msl at MW-55D (north) to 73.86' msl at MW-307M2 (south) and the horizontal gradient was approximately 0.00130 ft/ft.

Decision Document cleanup timelines were discussed. Perchlorate measurements indicate that the plume is reasonably well predicted but expected overall cleanup time is 18 years longer than the Decision Document timeline, likely the result of the mapping of contamination to lower K units that may not be realistic. The Decision Document cleanup time predicted perchlorate below 2.0 µg/L by 2027, the model predicted cleanup of perchlorate to below 2.0 µg/L is by 2045.

IAGWSP recommends making no modifications to plant operations, the hydraulic or groundwater monitoring programs. No update to the perchlorate or RDX plume shells is recommended at this time. It is recommended that groundwater samples continue to be collected for PFAS analysis per the 2020 PN. The PFAS results will be evaluated in the 2021 annual report to determine if adjustments to the monitoring program are needed.

L Range Plume Shell Presentation

A presentation was provided on the L Range plume shell. It was explained that when IAGWSP reviewed the revised plume shell, the model had the plume extending to AFCEC's extraction wells and Snake Pond. It was determined that the reason for this was that the attenuation factor we were using plateaued at 45% and stayed there forever, which wasn't helping us with predicting what was actually happening to the plume. Therefore, USACE ran a sensitivity analysis where the concentrations attenuate down to non-detect to better reflect real world processes.

It was explained that RDX plume shells for IAGWSP sites are updated every five years and the L Range plume shell was last updated with data through November of 2015. To the plume shell the following steps were taken: EDMS was queried for RDX data for L Range. A simulation was started at the earliest date of groundwater sample collection January 1998 and was ended at July 2020. Representative groundwater extraction rates were used for the simulation period. Particles were initiated in MODPATH at locations and times of each sample collection point and migrated using results of the MODFLOW groundwater flow model. MODPATH simulations were run to migrate particles (x, y, and z) to July 31, 2020. The point shapefile created by MODPATH containing final locations of particles was imported into ARC GIS. The applied RDX attenuation factor to measured concentrations was: maximum decay 55% after 4.5 years and then held constant without decay (Jacob Method). This process resulted in unrealistic depiction of plumes being present off-base as a result of no further attenuation due to environmental processes. A sensitivity attenuation curve was developed using data presented in the Jacob's method but allowed to decay over time. This process allowed for continuing decay, and after 20 years approximately 2% versus 45% resides. The sensitivity curve was applied to the L Range data and contours were developed between -80 ft msl to -110 ft msl at 10-foot intervals.

The start date was January 13, 1998 and concentrations ranged from ND to 2.17 µg/L. The number of points migrated was 1427 with 328 (318 were non-detect) captured and 1396 deleted and 31 used for the plume shell. There were 31 points that were outside of the model domain (30 were non-detect).

Figures showing the migrated data points that were retained and deleted as well as the sensitivity decay and quadratic curves were displayed and discussed.

Conclusions and recommendations were discussed. It was explained that after the attenuated data was assessed and contoured, it was evident that the retaining data after 4.5 years from sample collection (and not accounting for further reduction via attenuation) was not realistic. The

plumes continued to be present far downgradient and at higher than expected concentrations. The data used to create the “quadratic attenuation curve” was replotted as a “sensitivity curve” using a decay exponential function. This decay curve allows for continuing attenuation beyond 4.5 years with approximately 2% remaining after 20 years from time of sample collection. The sensitivity curve plumes were more representative of the current conceptual site model for the site: one larger RDX plume emanating from MW-242M1 and some smaller lobes.

Layer-by-layer figures showing the sensitivity case were displayed and discussed. It was noted that revised cleanup times would be determined after the 2D layers are converted into a 3D plume shell and the technical memorandum will be updated with the 3D plume shell information. EPA and MassDEP agreed that the sensitivity case probably provides a better representation of the plume and approved taking the next step to create a 3D plume shell and complete the L Range plume shell update.

Action Items

The action items were discussed and update.

JBCC Cleanup Team Meeting

The next meeting of the JBCC Cleanup Team (JBCCCT) will be conducted virtually on March 24, 2021. The previous meeting was held on October 28, 2020, and the materials 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 January to 31 January 2021. Table 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 1 January to 31 January 2021. 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. 285 for December 2020 14 January 2021
- NW Corner 2020 Demonstration Compliance Report RCL 08 January 2021
- Demo 1 2020 Final Annual EMR 08 January 2021
- J3 Range 2020 Draft Annual EMR 08 January 2021
- J2 Range 2020 Draft Annual EMR 13 January 2021
- CIA 2020 Draft Annual EMR RCL 21 January 2021
- CIA Consolidated Shot Structure Sampling 26 January 2021

5. SCHEDULED ACTIONS

The following actions and/or documents were being prepared or revised in January 2021 and will be in progress in February 2021.

- IRA Status Report once all items have been destroyed
- Response to Comments on J-2 draft Annual Environmental Monitoring Report
- Response to Comments on J-3 draft Annual Environmental Monitoring Report
- Response to Comments on Draft CIA 2019 Annual Report
- MOR to RCL for the draft Northwest Corner Demonstration of Compliance Report
- Response to Comments on Small Arms Ranges Completion of Work Report
- KD Range draft Post-DD Geo. & Soil Inv. Findings once soil T&D is complete
- J-2 Range draft Ph2 Post-DD Geo. & Soil Inv. Findings Addendum
- J-3 Range rev. final Post-DD Geo. & Soil Inv. Findings and RTC

TABLE 1
Sampling Progress: 1 through 31 January 2021

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
B Range	MW-455S	MW-455S_S21	N	01/28/2021	Ground Water	117.57	127.57
Central Impact Area	MW-455S	MW-455S_S21	N	01/28/2021	Ground Water	117.57	127.57
Central Impact Area	MW-123S	MW-123S_S21	N	01/28/2021	Ground Water	139	149
GB Range	03MW0122A	03MW0122A_S21	N	01/28/2021	Ground Water	83.44	93.44
J2 Range Eastern	MW-339M1	MW-339M1_S21	N	01/27/2021	Ground Water	233	243
J2 Range Eastern	MW-368M2	MW-368M2_S21	N	01/27/2021	Ground Water	202.73	212.73
J2 Range Eastern	MW-368M2	MW-368M2_S21D	FD	01/27/2021	Ground Water	202.73	212.73
J2 Range Eastern	MW-324M2	MW-324M2_S21	N	01/27/2021	Ground Water	203.74	214.74
J2 Range Eastern	MW-324M1	MW-324M1_S21	N	01/27/2021	Ground Water	234.85	244.85
G Range	MW-470S	MW-470S_S21	N	01/21/2021	Ground Water	76.32	86.2
G Range	MW-470S	MW-470S_S21	N	01/21/2021	Ground Water	76.32	86.32
G Range	MW-470S	MW-470S_S21D	FD	01/21/2021	Ground Water	76.32	86.32
Demolition Area 1	MW-36S	MW-36S_S21	N	01/21/2021	Ground Water	73	83
Demolition Area 1	MW-35S	MW-35S_S21	N	01/21/2021	Ground Water	84	94
GA Range	03MW0710	03MW0710_S21	N	01/20/2021	Ground Water	73.6	83.3
CS-10 (ARNG)	03MW0709	03MW0709_S21	N	01/20/2021	Ground Water	82.12	87.12
B Range	MW-490S	MW-490S_S21	N	01/19/2021	Ground Water	108.08	118.08
B Range	MW-538M1	MW-538M1_S21	N	01/19/2021	Ground Water	107	117
B Range	MW-72S	MW-72S_S21	N	01/19/2021	Ground Water	106	116
B Range	MW-72S	MW-72S_S21D	FD	01/19/2021	Ground Water	106	116
Central Impact Area	MW-72S	MW-72S_S21	N	01/19/2021	Ground Water	106	116
Central Impact Area	MW-72S	MW-72S_S21D	FD	01/19/2021	Ground Water	106	116
B Range	MW-537M1	MW-537M1_S21	N	01/19/2021	Ground Water	106	116
GA Range	MW-690S	MW-690S_S21	N	01/14/2021	Ground Water	99.2	109.2
B Range	MW-539M1	MW-539M1_S21	N	01/14/2021	Ground Water	113	123
C Range	MW-456S	MW-456S_S21	N	01/14/2021	Ground Water	150.34	160.34
C Range	MW-491S	MW-491S_S21	N	01/14/2021	Ground Water	146.93	156.93
J2 Range Northern	J2EW0001	J2EW0001_S21	N	01/13/2021	Ground Water	179	234
J2 Range Northern	J2EW0003	J2EW0003_S21	N	01/13/2021	Ground Water	202	232
J2 Range Northern	J2EW0002	J2EW0002_S21	N	01/13/2021	Ground Water	198	233
J2 Range Northern	J2EW0002	J2EW0002_S21	N	01/13/2021	Ground Water	198	233
Lima Range	MW-242M1	MW-242M1_S21	N	01/12/2021	Ground Water	235	245
Lima Range	MW-650M1	MW-650M1_S21	N	01/12/2021	Ground Water	260	270
Lima Range	MW-651M1	MW-651M1_S21	N	01/12/2021	Ground Water	242.3	252.3
Lima Range	90MW0031	90MW0031_S21	N	01/12/2021	Ground Water	195.32	200.22
Lima Range	MW-595M2	MW-595M2_S21	N	01/11/2021	Ground Water	205.3	215.3
Lima Range	MW-595M1	MW-595M1_S21	N	01/11/2021	Ground Water	255.3	265.3
Lima Range	MW-595M1	MW-595M1_S21D	FD	01/11/2021	Ground Water	255.3	265.3
Lima Range	MW-596M1	MW-596M1_S21	N	01/11/2021	Ground Water	231.1	241.1
Lima Range	90MW0034	90MW0034_S21	N	01/11/2021	Ground Water	94	99
J3 Range	J3EWIP1	J3EWIP1_S21	N	01/07/2021	Ground Water	153	193
Demolition Area 1	PR-EFF	PR-EFF-178A	N	01/07/2021	Process Water	0	0
Demolition Area 1	PR-MID-2	PR-MID-2-178A	N	01/07/2021	Process Water	0	0
Demolition Area 1	PR-MID-1	PR-MID-1-178A	N	01/07/2021	Process Water	0	0
Demolition Area 1	PR-INF	PR-INF-178A	N	01/07/2021	Process Water	0	0
J3 Range	J3EWIP2	J3EWIP2_S21	N	01/07/2021	Ground Water	149.5	169.5
J3 Range	J3EWIP2	J3EWIP2_S21D	FD	01/07/2021	Ground Water	149.5	169.5
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-178A	N	01/07/2021	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-178A	N	01/07/2021	Process Water	0	0
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-178A	N	01/07/2021	Process Water	0	0
J3 Range	J3EW0032	J3EW0032_S21	N	01/07/2021	Ground Water	102	152
J3 Range	J3EW0032	J3EW0032_S21D	FD	01/07/2021	Ground Water	102	152
Demolition Area 1	FPR-2-INF	FPR-2-INF-178A	N	01/07/2021	Process Water	0	0
Demolition Area 1	D1LE-EFF	D1LE-EFF-54A	N	01/07/2021	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 through 31 January 2021

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-MID2	D1LE-MID2-54A	N	01/07/2021	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-54A	N	01/07/2021	Process Water	0	0
Demolition Area 1	D1LE-INF	D1LE-INF-54A	N	01/07/2021	Process Water	0	0
Demolition Area 1	D1-EFF	D1-EFF-126A	N	01/07/2021	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-126A	N	01/07/2021	Process Water	0	0
J3 Range	90EW0001	90EW0001_S21	N	01/07/2021	Ground Water	83.1	143.83
Demolition Area 1	D1-MID-1	D1-MID-1-126A	N	01/07/2021	Process Water	0	0
Demolition Area 1	D1-INF	D1-INF-126A	N	01/07/2021	Process Water	0	0
J3 Range	MW-637M3	MW-637M3_S21	N	01/06/2021	Ground Water	174.1	184.1
J3 Range	J3-EFF	J3-EFF-172A	N	01/06/2021	Process Water	0	0
J3 Range	J3-MID-2	J3-MID-2-172A	N	01/06/2021	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-172A	N	01/06/2021	Process Water	0	0
J3 Range	J3-INF	J3-INF-172A	N	01/06/2021	Process Water	0	0
J1 Range Southern	J1S-EFF	J1S-EFF-158A	N	01/06/2021	Process Water	0	0
J1 Range Southern	J1S-MID	J1S-MID-158A	N	01/06/2021	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-158A	N	01/06/2021	Process Water	0	0
J3 Range	MW-637M2	MW-637M2_S21	N	01/06/2021	Ground Water	214.1	224.1
J3 Range	MW-637M2	MW-637M2_S21D	FD	01/06/2021	Ground Water	214.1	224.1
J3 Range	MW-637M1	MW-637M1_S21	N	01/06/2021	Ground Water	236.1	246.1
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-148A	N	01/06/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-148A	N	01/06/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-148A	N	01/06/2021	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-148A	N	01/06/2021	Process Water	0	0
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-148A	N	01/06/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-148A	N	01/06/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-148A	N	01/06/2021	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-148A	N	01/06/2021	Process Water	0	0
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-148A	N	01/06/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-148A	N	01/06/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-148A	N	01/06/2021	Process Water	0	0
J3 Range	90PLT01006	90PLT01006_S21	N	01/06/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-148A	N	01/06/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-148A	N	01/06/2021	Process Water	0	0
J2 Range Eastern	J2E-INF-I	J2E-INF-I-148A	N	01/06/2021	Process Water	0	0
J3 Range	MW-636M2	MW-636M2_S21	N	01/05/2021	Ground Water	110.5	120.5
J3 Range	MW-636M1	MW-636M1_S21	N	01/05/2021	Ground Water	141.6	151.6
Central Impact Area	CIA2-EFF	CIA2-EFF-84A	N	01/05/2021	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-84A	N	01/05/2021	Process Water	0	0
Central Impact Area	CIA2-MID1	CIA2-MID1-84A	N	01/05/2021	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-84A	N	01/05/2021	Process Water	0	0
Central Impact Area	CIA1-EFF	CIA1-EFF-84A	N	01/05/2021	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-84A	N	01/05/2021	Process Water	0	0
J3 Range	MW-653M2	MW-653M2_S21	N	01/05/2021	Ground Water	59.3	69.3
Central Impact Area	CIA1-MID1	CIA1-MID1-84A	N	01/05/2021	Process Water	0	0
Central Impact Area	CIA1-INF	CIA1-INF-84A	N	01/05/2021	Process Water	0	0
J3 Range	MW-653M1	MW-653M1_S21	N	01/05/2021	Ground Water	147.5	157.5
Central Impact Area	CIA3-EFF	CIA3-EFF-55A	N	01/05/2021	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-55A	N	01/05/2021	Process Water	0	0
Central Impact Area	CIA3-MID1	CIA3-MID1-55A	N	01/05/2021	Process Water	0	0
Central Impact Area	CIA3-INF	CIA3-INF-55A	N	01/05/2021	Process Water	0	0
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-172A	N	01/04/2021	Process Water	0	0
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-172A	N	01/04/2021	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-172A	N	01/04/2021	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-172A	N	01/04/2021	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 through 31 January 2021

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-172A	N	01/04/2021	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-172A	N	01/04/2021	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-172A	N	01/04/2021	Process Water	0	0
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-172A	N	01/04/2021	Process Water	0	0
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-172A	N	01/04/2021	Process Water	0	0
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-172A	N	01/04/2021	Process Water	0	0
J1 Range Northern	J1N-EFF	J1N-EFF-87A	N	01/04/2021	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-87A	N	01/04/2021	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-87A	N	01/04/2021	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-87A	N	01/04/2021	Process Water	0	0

**TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received January 2021**

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 Northern	MW-563M1	MW-563M1_F20	215	225	12/03/2020	SW6850	Perchlorate	0.075	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-590M2	MW-590M2_F20	238	248	12/03/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.66		µg/L	0.60	X	0.034	0.20
J1 Range Northern	MW-590M2	MW-590M2_F20	238	248	12/03/2020	SW6850	Perchlorate	3.8		µg/L	2.0	X	0.030	0.20
J1 Range Northern	MW-590M2	MW-590M2_F20D	238	248	12/03/2020	SW6850	Perchlorate	3.8		µg/L	2.0	X	0.030	0.20
J1 Range Northern	MW-590M1	MW-590M1_F20	258	268	12/03/2020	SW6850	Perchlorate	0.086	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-584M2	MW-584M2_F20	228	238	12/03/2020	SW6850	Perchlorate	0.052	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-584M1	MW-584M1_F20	248	258	12/03/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.16	J	µg/L	0.60		0.034	0.20
J1 Range Northern	MW-584M1	MW-584M1_F20	248	258	12/03/2020	SW6850	Perchlorate	2.2		µg/L	2.0	X	0.030	0.20
J1 Range Northern	MW-346M4	MW-346M4_F20	140	150	12/02/2020	SW6850	Perchlorate	0.095	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-346M3	MW-346M3_F20	0	0	12/02/2020	SW6850	Perchlorate	0.095	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-346M2	MW-346M2_F20	0	0	12/02/2020	SW6850	Perchlorate	0.10	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-346M2	MW-346M2_F20	0	0	12/02/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.0	J	µg/L	400		0.036	0.20
J1 Range Northern	MW-346M2	MW-346M2_F20	205.28	215.28	12/02/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.1	J	µg/L	0.60	X	0.034	0.20
J1 Range Northern	MW-346M2	MW-346M2_F20D	0	0	12/02/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.0	J	µg/L	400		0.036	0.20
J1 Range Northern	MW-346M2	MW-346M2_F20D	205.28	215.28	12/02/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.2	J	µg/L	0.60	X	0.034	0.20
J1 Range Northern	MW-346M1	MW-346M1_F20	0	0	12/02/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.25		µg/L	400		0.036	0.20
J1 Range Northern	MW-346M1	MW-346M1_F20	245	255	12/02/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	14.4		µg/L	0.60	X	0.034	0.20
J1 Range Northern	MW-346M1	MW-346M1_F20	0	0	12/02/2020	SW6850	Perchlorate	23.2		µg/L	2.0	X	0.15	1.0
J1 Range Northern	MW-346M1	MW-346M1_F20D	0	0	12/02/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.25		µg/L	400		0.036	0.20
J1 Range Northern	MW-346M1	MW-346M1_F20D	245	255	12/02/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	14.2		µg/L	0.60	X	0.034	0.20
J1 Range Northern	MW-346M1	MW-346M1_F20D	245	255	12/02/2020	SW6850	Perchlorate	22.7		µg/L	2.0	X	0.15	1.0
J1 Range Northern	MW-566M1	MW-566M1_F20	232	242	12/01/2020	SW6850	Perchlorate	0.081	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-656M2	MW-656M2_F20	222.1	232.1	12/01/2020	SW6850	Perchlorate	0.035	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-656M2	MW-656M2_F20	222.1	232.1	12/01/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.17	J	µg/L	0.60		0.034	0.20
J1 Range Northern	MW-656M1	MW-656M1_F20	244.1	254.1	12/01/2020	SW6850	Perchlorate	0.10	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-547M2	MW-547M2_F20	178	188	12/01/2020	SW6850	Perchlorate	2.9		µg/L	2.0	X	0.030	0.20
J1 Range Northern	MW-547M1	MW-547M1_F20	237	247	12/01/2020	SW6850	Perchlorate	1.3		µg/L	2.0		0.030	0.20
J1 Range Northern	MW-657M2	MW-657M2_F20	208.3	218.3	11/30/2020	SW6850	Perchlorate	0.16	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-657M1	MW-657M1_F20	240.3	250.3	11/30/2020	SW6850	Perchlorate	0.034	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-265M3	MW-265M3_F20	200	210	11/30/2020	SW6850	Perchlorate	0.10	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-265M2	MW-265M2_F20	225	235	11/30/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.21		µg/L	400		0.036	0.20
J1 Range Northern	MW-265M2	MW-265M2_F20	225	235	11/30/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.71		µg/L	0.60	X	0.034	0.20
J1 Range Northern	MW-265M2	MW-265M2_F20	225	235	11/30/2020	SW6850	Perchlorate	7.6		µg/L	2.0	X	0.030	0.20
J1 Range Northern	MW-265M2	MW-265M2_F20D	225	235	11/30/2020	SW6850	Perchlorate	7.7		µg/L	2.0	X	0.030	0.20
J1 Range Northern	MW-265M1	MW-265M1_F20	265	275	11/30/2020	SW6850	Perchlorate	1.5		µg/L	2.0		0.030	0.20
J1 Range Northern	MW-541M1	MW-541M1_F20	210	220	11/24/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.096	J	µg/L	0.60		0.034	0.20
J1 Range Northern	MW-541M1	MW-541M1_F20	210	220	11/24/2020	SW6850	Perchlorate	0.27		µg/L	2.0		0.030	0.20
J1 Range Northern	MW-401M3	MW-401M3_F20	228.5	238.5	11/24/2020	SW6850	Perchlorate	0.088	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-401M1	MW-401M1_F20	256.1	266.1	11/24/2020	SW6850	Perchlorate	0.097	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-430M2	MW-430M2_F20	188.41	198.41	11/24/2020	SW6850	Perchlorate	0.095	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-430M1	MW-430M1_F20	245.23	255.23	11/24/2020	SW6850	Perchlorate	0.12	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-567M1	MW-567M1_F20	215.5	225.5	11/23/2020	SW6850	Perchlorate	1.3		µg/L	2.0		0.030	0.20
J1 Range Northern	MW-286M2	MW-286M2_F20	205	215	11/23/2020	SW6850	Perchlorate	0.063	J	µg/L	2.0		0.030	0.20

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

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received January 2021

J1 Range Northern	MW-286M1	MW-286M1_F20	259	269	11/23/2020	SW6850	Perchlorate	0.043	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-606M2	MW-606M2_F20	193.2	203.2	11/23/2020	SW6850	Perchlorate	0.080	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-606M1	MW-606M1_F20	233.3	243.3	11/23/2020	SW6850	Perchlorate	1.1		µg/L	2.0		0.030	0.20
J1 Range Northern	MW-689M2	MW-689M2_F20	231.4	241.4	11/19/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.10	J	µg/L	0.60		0.034	0.20
J1 Range Northern	MW-689M1	MW-689M1_F20	253.5	263.5	11/19/2020	SW6850	Perchlorate	0.062	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-689M1	MW-689M1_F20	253.5	263.5	11/19/2020	SW8330	Nitrobenzene	0.10	J	µg/L	3.4		0.031	0.20
J1 Range Northern	MW-164M2	MW-164M2_F20	157	167	11/18/2020	SW8330	4-Amino-2,6-dinitrotoluene	0.060	J	µg/L	7.3		0.027	0.20
J1 Range Northern	MW-164M2	MW-164M2_F20	157	167	11/18/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.21		µg/L	0.60		0.034	0.20
J1 Range Northern	MW-164M2	MW-164M2_F20	157	167	11/18/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.6		µg/L	400		0.036	0.20
J1 Range Northern	MW-164M1	MW-164M1_F20	227	237	11/18/2020	SW6850	Perchlorate	0.076	J	µg/L	2.0		0.030	0.20
J1 Range Northern	MW-166M3	MW-166M3_F20	125	135	11/18/2020	SW8330	4-Amino-2,6-dinitrotoluene	0.36		µg/L	7.3		0.027	0.20
J1 Range Northern	MW-166M3	MW-166M3_F20	125	135	11/18/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.37		µg/L	400		0.036	0.20
J1 Range Northern	MW-166M3	MW-166M3_F20	125	135	11/18/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.42		µg/L	0.60		0.034	0.20
J1 Range Northern	MW-166M3	MW-166M3_F20D	125	135	11/18/2020	SW8330	4-Amino-2,6-dinitrotoluene	0.35		µg/L	7.3		0.027	0.20
J1 Range Northern	MW-166M3	MW-166M3_F20D	125	135	11/18/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.38		µg/L	400		0.036	0.20
J1 Range Northern	MW-166M3	MW-166M3_F20D	125	135	11/18/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.44		µg/L	0.60		0.034	0.20
J1 Range Northern	MW-564M1	MW-564M1_F20	227	237	11/17/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.50		µg/L	400		0.036	0.20
J1 Range Northern	MW-564M1	MW-564M1_F20	227	237	11/17/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.3		µg/L	0.60	X	0.034	0.20
J1 Range Northern	MW-564M1	MW-564M1_F20	227	237	11/17/2020	SW6850	Perchlorate	2.8		µg/L	2.0	X	0.030	0.20
J1 Range Northern	MW-564M1	MW-564M1_F20D	227	237	11/17/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.49		µg/L	400		0.036	0.20
J1 Range Northern	MW-564M1	MW-564M1_F20D	227	237	11/17/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.4		µg/L	0.60	X	0.034	0.20
J1 Range Northern	MW-564M1	MW-564M1_F20D	227	237	11/17/2020	SW6850	Perchlorate	2.8		µg/L	2.0	X	0.030	0.20
J1 Range Northern	MW-549M1	MW-549M1_F20	227.4	237.4	11/17/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.097	J	µg/L	0.60		0.034	0.20
J1 Range Northern	MW-549M1	MW-549M1_F20	227.4	237.4	11/17/2020	SW6850	Perchlorate	3.0		µg/L	2.0	X	0.030	0.20
J1 Range Southern	MW-592M1	MW-592M1_F20	201	211	11/16/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.070	J	µg/L	0.60		0.034	0.20
J1 Range Southern	MW-669M2	MW-669M2_F20	201.7	211.7	11/16/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.39		µg/L	0.60		0.034	0.20
J1 Range Southern	MW-669M2	MW-669M2_F20D	201.7	211.7	11/16/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.39		µg/L	0.60		0.034	0.20
J1 Range Southern	MW-669M1	MW-669M1_F20	223.7	233.7	11/16/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.3		µg/L	0.60	X	0.034	0.20
J1 Range Southern	MW-669M1	MW-669M1_F20	223.7	233.7	11/16/2020	SW8330	Nitroglycerin	15.7		µg/L	4.8	X	2.2	8.0
J1 Range Southern	MW-669M1	MW-669M1_F20D	223.7	233.7	11/16/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.1		µg/L	0.60	X	0.034	0.20
J1 Range Southern	MW-669M1	MW-669M1_F20D	223.7	233.7	11/16/2020	SW8330	Nitroglycerin	12.3		µg/L	4.8	X	2.2	8.0
J1 Range Northern	MW-245M2	MW-245M2_F20	204	214	11/10/2020	SW6850	Perchlorate	10.0		µg/L	2.0	X	0.030	0.20
J1 Range Northern	MW-245M2	MW-245M2_F20	204	214	11/10/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	22.3		µg/L	0.60	X	0.068	0.40
J1 Range Northern	MW-245M2	MW-245M2_F20	204	214	11/10/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	4.2		µg/L	400		0.036	0.20
J1 Range Northern	MW-245M2	MW-245M2_F20D	204	214	11/10/2020	SW6850	Perchlorate	10.3		µg/L	2.0	X	0.030	0.20
J1 Range Northern	MW-245M2	MW-245M2_F20D	204	214	11/10/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	23.5		µg/L	0.60	X	0.068	0.40
J1 Range Northern	MW-245M2	MW-245M2_F20D	204	214	11/10/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	4.3		µg/L	400		0.036	0.20
J1 Range Southern	MW-488M1	MW-488M1_F20	149.62	159.62	11/05/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.062	J	µg/L	0.60		0.034	0.20
J1 Range Southern	MW-482M2	MW-482M2_F20	172.64	182.64	11/02/2020	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.068	J	µg/L	400		0.036	0.20
J1 Range Southern	MW-482M2	MW-482M2_F20	172.64	182.64	11/02/2020	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.11	J	µg/L	0.60		0.034	0.20

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

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 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
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
Perfluorodecanesulfonic acid (PFDS)	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
Perfluoroheptanesulfonic acid (PFHpS)	0.910 U	0.950 U	0.980 U	0.980 U	0.980 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
Perfluorooctane sulfonate (PFOS)	2.70 U	2.80 U	2.90 U	3.00 U	2.90 U
Perfluorooctanesulfonamide (FOSA)	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)	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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 J1 Range Northern

Location	J1N-INF2	J1N-INF2	MW-136S	MW-564M1	MW-590M2
Field Sample ID	J1N-INF2_PFA19	J1N-INF2_PFA19R	MW-136S_PFA19	MW-564M1_PFA19	MW-590M2_PFA19
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
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
Perfluorodecanesulfonic acid (PFDS)	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
Perfluoroheptanesulfonic acid (PFHpS)	0.930 U	0.960 U	0.980 U	0.920 U	0.960 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
Perfluorooctane sulfonate (PFOS)	4.90	2.90 U	1.40 J	2.80 U	2.90 U
Perfluorooctanesulfonamide (FOSA)	1.80 J	2.90 U	2.90 U	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)	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

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 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
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
Perfluorodecanesulfonic acid (PFDS)	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
Perfluoroheptanesulfonic acid (PFHpS)	0.970 U	0.930 U	0.980 U	0.900 U	0.960 U	0.850 U
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
Perfluorooctane sulfonate (PFOS)	2.90 U	2.80 U	2.90 U	2.70 U	2.90 U	2.60 U
Perfluorooctanesulfonamide (FOSA)	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 (PFTTrDA)	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)	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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 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
Perfluorobutanesulfonic acid (PFBS)		0.880 U	0.900 U
Perfluorobutanoic acid (PFBA)		1.30 U	1.80 U
Perfluorodecanesulfonic acid (PFDS)		1.30 U	1.40 U
Perfluorodecanoic acid (PFDA)		0.800 J	4.30
Perfluorododecanoic acid (PFDoA)		1.30 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)		0.880 U	0.900 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
Perfluorooctane sulfonate (PFOS)		2.60 U	2.70 U
Perfluorooctanesulfonamide (FOSA)		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)	0.800	7.10
	§Sum of All Compounds Collected	3.20	8.70

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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
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
Perfluorodecanesulfonic acid (PFDS)	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
Perfluoroheptanesulfonic acid (PFHpS)	0.960 U	0.370 J	0.930 U	0.400 J	0.500 J	0.970 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
Perfluorooctane sulfonate (PFOS)	2.90 U	1.30 J	2.80 U	2.80 U	1.10 J	2.90 U
Perfluorooctanesulfonamide (FOSA)	2.90 U	3.00 U	2.80 U	2.80 U	2.90 U	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)	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
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 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
Perfluorobutanesulfonic acid (PFBS)		0.880 U	0.980 U	0.970 U
Perfluorobutanoic acid (PFBA)		1.80 U	0.700 J	1.50 U
Perfluorodecanesulfonic acid (PFDS)		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
Perfluoroheptanesulfonic acid (PFHpS)		0.880 U	0.980 U	0.970 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
Perfluorooctane sulfonate (PFOS)		1.90 J	2.90 U	2.90 U
Perfluorooctanesulfonamide (FOSA)		2.60 U	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)	3.05	2.30	0.00
	§Sum of All Compounds Collected	3.05	5.08	0.00

PFAS Summary Report – Groundwater
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 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
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
Perfluorodecanesulfonic acid (PFDS)	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
Perfluoroheptanesulfonic acid (PFHpS)	0.940 U	0.920 U	0.860 U	0.860 U	0.930 U	0.960 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
Perfluorooctane sulfonate (PFOS)	2.80 U	2.80 U	12.0	12.0	12.0	2.90 U
Perfluorooctanesulfonamide (FOSA)	2.80 U	2.80 U	2.60 U	2.60 U	2.80 U	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)	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

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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
Perfluorobutanesulfonic acid (PFBS)	0.970 U
Perfluorobutanoic acid (PFBA)	0.710 J
Perfluorodecanesulfonic acid (PFDS)	1.40 U
Perfluorodecanoic acid (PFDA)	0.970 U
Perfluorododecanoic acid (PFDoA)	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.970 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
Perfluorooctane sulfonate (PFOS)	2.90 U
Perfluorooctanesulfonamide (FOSA)	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)	0.00
§Sum of All Compounds Collected	0.710

PFAS Summary Report – Groundwater
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 KGS 2020 J1 Ranges SPM Fall
 J1 Range Northern

	Location	MW-136M1	MW-136M1	MW-191M2	MW-245M1	MW-245M2	MW-303M2
	Field Sample ID	MW-136M1_F20	MW-136M1_F20D	MW-191M2_F20	MW-245M1_F20	MW-245M2_F20	MW-303M2_F20
	Sampling Depth	124.00 - 134.00	124.00 - 134.00	120.00 - 130.00	244.00 - 254.00	204.00 - 214.00	235.09 - 245.10
	Sampling Date	12/07/2020	12/07/2020	12/07/2020	12/07/2020	11/10/2020	12/08/2020
	SDG	320677691	320677691	320677691	320677691	320665921	320677701
	Sample Type	Normal	Field Duplicate	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	18.0 U	19.0 U	19.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.60 U	9.20 U	9.70 U	9.30 U	9.30 U	9.50 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.60 U	9.20 U	15.0 J	9.30 U	9.30 U	9.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.60 U	9.20 U	2.90 J	9.30 U	9.30 U	9.50 U
Perfluorobutanesulfonic acid (PFBS)		0.960 U	0.920 U	0.970 U	0.930 U	0.930 U	0.950 U
Perfluorobutanoic acid (PFBA)		0.920 J	0.670 J	1.50 U	1.40 U	4.00	1.40 U
Perfluorodecanesulfonic acid (PFDS)		1.40 U	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)		0.960 U	0.920 U	0.970 U	0.930 U	0.930 U	0.700 J
Perfluorododecanoic acid (PFDoA)		1.40 U	1.40 U	1.50 U	1.40 U	1.40 U	1.70 J
Perfluoroheptanesulfonic acid (PFHpS)		0.960 U	0.920 U	0.970 U	0.930 U	0.930 U	0.950 U
Perfluoroheptanoic acid (PFHpA)		1.40 U	1.40 U	1.50 U	1.40 U	0.700 J	1.40 U
Perfluorohexanesulfonic acid (PFHxS)		0.360 J	0.920 U	0.970 U	0.930 U	0.930 U	0.950 U
Perfluorohexanoic acid (PFHxA)		0.960 U	0.920 U	0.970 U	0.930 U	0.850 J	0.950 U
Perfluorononanoic acid (PFNA)		1.40 U	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U
Perfluorooctane sulfonate (PFOS)		2.90 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluorooctanesulfonamide (FOSA)		2.90 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluorooctanoic acid (PFOA)		1.40 U	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPA)		0.960 U	0.920 U	0.970 U	0.930 U	4.00	0.410 J
Perfluorotetradecanoic acid (PFTA)		2.90 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluorotridecanoic acid (PFTTrDA)		2.90 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	1.50 U	1.40 U	1.40 U	2.80
	†PFOS + PFOA (EPA)	0.00	0.00	0.00	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	0.360	0.00	0.00	0.00	0.700	0.700
	§Sum of All Compounds Collected	1.28	0.670	17.9	0.00	9.55	5.61

PFAS Summary Report – Groundwater
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 KGS 2020 J1 Ranges SPM Fall
 J1 Range Northern

	Location	MW-303M3	MW-326M1	MW-326M2	MW-326M3	MW-346M1	MW-346M2
	Field Sample ID	MW-303M3_F20	MW-326M1_F20	MW-326M2_F20	MW-326M3_F20	MW-346M1_F20	MW-346M2_F20
	Sampling Depth	139.74 - 149.69	250.01 - 260.01	196.27 - 206.28	165.24 - 175.26	0.00 - 0.00	0.00 - 0.00
	Sampling Date	12/08/2020	12/09/2020	12/09/2020	12/09/2020	12/02/2020	12/02/2020
	SDG	320677701	320678771	320678771	320678771	320675551	320675551
	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)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	20.0 U	20.0 U	19.0 U	19.0 U	19.0 U	
8:2 Fluorotelomer sulfonate (8:2 FTS)	8.90 U	10.0 U	10.0 U	9.50 U	9.70 U	9.30 U	
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	8.90 U	10.0 U	10.0 U	9.50 U	9.70 U	9.30 U	
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	8.90 U	10.0 U	10.0 U	9.50 U	9.70 U	9.30 U	
Perfluorobutanesulfonic acid (PFBS)	0.890 U	1.00 U	1.00 U	0.950 U	0.970 U	0.930 U	
Perfluorobutanoic acid (PFBA)	0.920 J	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U	
Perfluorodecanesulfonic acid (PFDS)	1.30 U	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U	
Perfluorodecanoic acid (PFDA)	1.60 J	0.950 J	5.40	3.50	2.50	2.40	
Perfluorododecanoic acid (PFDoA)	1.30 U	1.50 U	1.20 J	0.600 J	1.40 U	1.40 U	
Perfluoroheptanesulfonic acid (PFHpS)	0.890 U	1.00 U	1.00 U	0.950 U	0.970 U	0.930 U	
Perfluoroheptanoic acid (PFHpA)	1.30 U	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U	
Perfluorohexanesulfonic acid (PFHxS)	0.890 U	1.00 U	1.00 U	0.950 U	0.970 U	0.930 U	
Perfluorohexanoic acid (PFHxA)	0.890 U	1.00 U	1.00 U	0.950 U	0.970 U	0.930 U	
Perfluorononanoic acid (PFNA)	2.60	1.50 J	1.40 J	2.70	3.40	3.50	
Perfluorooctane sulfonate (PFOS)	2.70 U	3.00 U	3.00 U	2.90 U	2.90 U	2.80 U	
Perfluorooctanesulfonamide (FOSA)	2.70 U	3.00 U	3.00 U	2.90 U	2.90 U	2.80 U	
Perfluorooctanoic acid (PFOA)	1.30 U	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U	
Perfluoropentanoic acid (PFPA)	0.890 U	0.440 J	1.00 U	0.950 U	0.620 J	0.870 J	
Perfluorotetradecanoic acid (PFTA)	2.70 U	3.00 U	3.00 U	2.90 U	2.90 U	2.80 U	
Perfluorotridecanoic acid (PFTTrDA)	2.70 U	3.00 U	3.00 U	2.90 U	2.90 U	2.80 U	
Perfluoroundecanoic acid (PFUnA)	1.30 U	1.00 J	13.0	6.90	5.90	2.50	
	†PFOS + PFOA (EPA)	0.00	0.00	0.00	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	4.20	2.45	6.80	6.20	5.90	5.90
	§Sum of All Compounds Collected	5.12	3.89	21.0	13.7	12.4	9.27

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 KGS 2020 J1 Ranges SPM Fall
 J1 Range Northern

	Location	MW-346M3	MW-346M4	MW-58S
	Field Sample ID	MW-346M3_F20	MW-346M4_F20	MW-58S_F20
	Sampling Depth	0.00 - 0.00	0.00 - 0.00	100.00 - 110.00
	Sampling Date	12/02/2020	12/02/2020	12/07/2020
	SDG	320675551	320675551	320677691
	Sample Type	Normal	Normal	Normal
PFAS 21 Cmps		Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		20.0 U	18.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.80 U	9.20 U	9.30 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.80 U	9.20 U	9.30 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.80 U	9.20 U	9.30 U
Perfluorobutanesulfonic acid (PFBS)		0.980 U	0.920 U	0.930 U
Perfluorobutanoic acid (PFBA)		1.50 U	1.40 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)		1.50 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)		0.730 J	1.70 J	0.930 U
Perfluorododecanoic acid (PFDoA)		1.50 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)		0.980 U	0.920 U	0.930 U
Perfluoroheptanoic acid (PFHpA)		1.50 U	1.40 U	1.40 U
Perfluorohexanesulfonic acid (PFHxS)		0.980 U	0.920 U	0.930 U
Perfluorohexanoic acid (PFHxA)		0.980 U	0.920 U	0.930 U
Perfluorononanoic acid (PFNA)		2.20	0.650 J	1.40 U
Perfluorooctane sulfonate (PFOS)		2.90 U	2.80 U	2.80 U
Perfluorooctanesulfonamide (FOSA)		2.90 U	2.80 U	2.80 U
Perfluorooctanoic acid (PFOA)		1.50 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPA)		0.750 J	0.410 J	0.930 U
Perfluorotetradecanoic acid (PFTA)		2.90 U	2.80 U	2.80 U
Perfluorotridecanoic acid (PFTTrDA)		2.90 U	2.80 U	2.80 U
Perfluoroundecanoic acid (PFUnA)		1.00 J	6.00	1.40 U
	†PFOS + PFOA (EPA)	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	2.93	2.35	0.00
	§Sum of All Compounds Collected	4.68	8.76	0.00

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 KGS 2020 J2 Ranges SPM Fall
 J2 Range Northern

Location	J2EW0002	J2EW0002	J2EW2-MW2-B	J2EW2-MW2-C	MW-293M2	MW-293M2
Field Sample ID	J2EW0002_F20	J2EW0002_F20D	J2EW2-MW2-B_F20	J2EW2-MW2-C_F20	MW-293M2_F20	MW-293M2_F20D
Sampling Depth	198.00 - 233.00	198.00 - 233.00	209.79 - 219.79	243.83 - 253.81	196.42 - 206.42	196.42 - 206.42
Sampling Date	09/10/2020	09/10/2020	09/09/2020	09/09/2020	08/27/2020	08/27/2020
SDG	320645641	320645641	320645661	320645661	320641331	320641331
Sample Type	Normal	Field Duplicate	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)	20.0 U	19.0 U	19.0 U	19.0 U	18.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.90 U	9.50 U	9.40 U	9.70 U	9.20 U	9.50 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.90 U	9.50 U	9.40 U	9.70 U	9.20 U	9.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.90 U	9.50 U	9.40 U	9.70 U	9.20 U	9.50 U
Perfluorobutanesulfonic acid (PFBS)	0.990 U	0.950 U	0.940 U	0.970 U	3.40	3.60
Perfluorobutanoic acid (PFBA)	1.50 U	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.50 U	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.990 U	0.950 U	0.940 U	0.970 U	4.90	4.50
Perfluorododecanoic acid (PFDoA)	1.50 U	1.40 U	1.40 U	1.50 U	3.50	3.60
Perfluoroheptanesulfonic acid (PFHpS)	0.990 U	0.950 U	0.940 U	0.970 U	0.920 U	0.950 U
Perfluoroheptanoic acid (PFHpA)	0.930 J	0.910 J	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorohexanesulfonic acid (PFHxS)	9.80	9.30	0.940 U	0.970 U	0.920 U	0.950 U
Perfluorohexanoic acid (PFHxA)	1.10 J	1.10 J	0.940 U	0.970 U	0.920 U	0.950 U
Perfluorononanoic acid (PFNA)	1.50 U	1.40 U	1.40 U	1.50 U	2.00	1.50 J
Perfluorooctane sulfonate (PFOS)	3.00 U	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U
Perfluorooctanesulfonamide (FOSA)	3.00 U	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U
Perfluorooctanoic acid (PFOA)	1.70 J	1.70 J	1.40 U	1.50 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPA)	1.10 J	1.20 J	0.940 U	0.970 U	0.460 J	0.410 J
Perfluorotetradecanoic acid (PFTA)	3.00 U	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)	3.00 U	2.80 U	2.80 U	2.90 U	1.50 J	1.90 J
Perfluoroundecanoic acid (PFUnA)	1.50 U	1.40 U	1.40 U	1.50 U	25.0	28.0
†PFOS + PFOA (EPA)	1.70	1.70	0.00	0.00	0.00	0.00
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	12.4	11.9	0.00	0.00	6.90	6.00
§Sum of All Compounds Collected	14.6	14.2	0.00	0.00	40.8	43.5

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 KGS 2020 J2 Ranges SPM Fall
 J2 Range Northern

	Location	MW-300M1	MW-300M2	MW-300M3	MW-302M2	MW-305M1	MW-348M2
	Field Sample ID	MW-300M1_F20	MW-300M2_F20	MW-300M3_F20	MW-302M2_F20	MW-305M1_F20	MW-348M2_F20
	Sampling Depth	293.03 - 303.02	197.23 - 207.23	135.31 - 145.31	194.35 - 204.43	202.82 - 212.82	206.54 - 216.54
	Sampling Date	09/08/2020	09/08/2020	09/08/2020	08/27/2020	08/31/2020	08/31/2020
	SDG	320644781	320644781	320644781	320641331	320642421	320642421
	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)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	18.0 U	19.0 U	18.0 U	18.0 U	20.0 U	
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.50 U	9.00 U	9.40 U	9.20 U	9.10 U	9.80 U	
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.50 U	9.00 U	9.40 U	9.20 U	9.10 U	9.80 U	
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.50 U	9.00 U	9.40 U	9.20 U	9.10 U	9.80 U	
Perfluorobutanesulfonic acid (PFBS)	0.950 U	0.900 U	0.940 U	0.920 U	0.910 U	0.980 U	
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	0.550 J	1.40 U	1.40 U	1.00 J	
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	
Perfluorodecanoic acid (PFDA)	3.10	3.60	1.50 J	2.80	2.40	2.50	
Perfluorododecanoic acid (PFDoA)	0.800 J	1.10 J	0.610 J	1.70 J	1.40 U	2.20	
Perfluoroheptanesulfonic acid (PFHpS)	0.950 U	0.900 U	0.940 U	0.920 U	0.910 U	0.980 U	
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	
Perfluorohexanesulfonic acid (PFHxS)	1.90 U	0.900 U	0.940 U	0.920 U	0.910 U	0.980 U	
Perfluorohexanoic acid (PFHxA)	0.950 U	0.900 U	0.940 U	0.920 U	0.910 U	0.980 U	
Perfluorononanoic acid (PFNA)	3.90	2.30	0.960 J	1.00 J	1.40 J	1.50 U	
Perfluorooctane sulfonate (PFOS)	2.90 U	2.70 U	2.80 U	2.80 U	2.70 U	2.90 U	
Perfluorooctanesulfonamide (FOSA)	2.90 U	2.70 U	2.80 U	2.80 U	2.70 U	2.90 U	
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	
Perfluoropentanoic acid (PFPA)	0.580 J	0.430 J	0.940 U	1.40 J	0.910 U	1.20 J	
Perfluorotetradecanoic acid (PFTA)	2.90 U	2.70 U	2.80 U	2.80 U	2.70 U	2.90 U	
Perfluorotridecanoic acid (PFTTrDA)	2.90 U	0.880 J	2.80 U	2.80 U	2.70 U	2.90 U	
Perfluoroundecanoic acid (PFUnA)	8.50	9.20	4.80	22.0	1.40 J	8.10	
	†PFOS + PFOA (EPA)	0.00	0.00	0.00	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	7.00	5.90	2.46	3.80	3.80	2.50
	§Sum of All Compounds Collected	16.9	17.5	8.42	28.9	5.20	15.0

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 KGS 2020 J2 Ranges SPM Fall
 J2 Range Northern

	Location	MW-586M1	MW-586M2	MW-587M1	MW-588M1	MW-588M2	MW-589M1
	Field Sample ID	MW-586M1_F20	MW-586M2_F20	MW-587M1_F20	MW-588M1_F20	MW-588M2_F20	MW-589M1_F20
	Sampling Depth	237.00 - 247.00	211.00 - 221.00	250.00 - 260.00	238.00 - 248.00	198.00 - 208.00	240.00 - 250.00
	Sampling Date	09/02/2020	09/02/2020	09/10/2020	08/27/2020	08/27/2020	09/02/2020
	SDG	320643521	320643521	320645641	320641331	320641331	320643521
	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)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	19.0 U	19.0 U	19.0 U	18.0 U	18.0 U	
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.20 U	9.60 U	9.40 U	9.30 U	9.20 U	9.00 U	
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.20 U	9.60 U	9.40 U	9.30 U	9.20 U	9.00 U	
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.20 U	9.60 U	9.40 U	9.30 U	9.20 U	9.00 U	
Perfluorobutanesulfonic acid (PFBS)	0.920 U	0.960 U	0.940 U	0.930 U	3.60	0.900 U	
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	
Perfluorodecanoic acid (PFDA)	0.920 U	0.960 U	0.940 U	0.930 U	0.920 U	0.900 U	
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	
Perfluoroheptanesulfonic acid (PFHpS)	0.920 U	0.960 U	0.940 U	0.930 U	0.920 U	0.900 U	
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	
Perfluorohexanesulfonic acid (PFHxS)	0.920 U	0.960 U	0.940 U	0.930 U	0.920 U	0.900 U	
Perfluorohexanoic acid (PFHxA)	0.920 U	0.960 U	0.940 U	0.930 U	0.920 U	0.900 U	
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	
Perfluorooctane sulfonate (PFOS)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.70 U	
Perfluorooctanesulfonamide (FOSA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.70 U	
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	0.600 J	
Perfluoropentanoic acid (PFPA)	0.490 J	0.490 J	0.940 U	0.420 J	0.920 U	0.600 J	
Perfluorotetradecanoic acid (PFTA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.70 U	
Perfluorotridecanoic acid (PFTTrDA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.70 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)	0.00	0.00	0.00	0.00	0.00	0.600
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	0.00	0.00	0.00	0.00	0.00	0.600
	§Sum of All Compounds Collected	0.490	0.490	0.00	0.420	3.60	1.20

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 J2 Range Northern

	Location	MW-589M2	MW-621M1	MW-621M2	MW-622M1	MW-622M2	MW-631M1
	Field Sample ID	MW-589M2_F20	MW-621M1_F20	MW-621M2_F20	MW-622M1_F20	MW-622M2_F20	MW-631M1_F20
	Sampling Depth	211.00 - 221.00	249.40 - 259.40	219.40 - 229.40	245.40 - 255.40	220.40 - 230.40	233.10 - 243.10
	Sampling Date	09/02/2020	08/26/2020	08/26/2020	09/01/2020	09/01/2020	08/26/2020
	SDG	320643521	320641331	320641331	320642411	320642411	320641331
	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)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	19.0 U	19.0 U	19.0 U	19.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.40 U	9.60 U	9.40 U	9.30 U	9.40 U	9.60 U	
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.40 U	9.60 U	9.40 U	9.30 U	9.40 U	9.60 U	
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.40 U	9.60 U	9.40 U	9.30 U	9.40 U	9.60 U	
Perfluorobutanesulfonic acid (PFBS)	0.940 U	0.960 U	0.940 U	0.930 U	0.940 U	0.960 U	
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	
Perfluorodecanoic acid (PFDA)	0.940 U	0.960 U	0.940 U	0.930 U	0.940 U	0.960 U	
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	
Perfluoroheptanesulfonic acid (PFHpS)	0.940 U	0.960 U	0.940 U	0.930 U	0.940 U	0.960 U	
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	
Perfluorohexanesulfonic acid (PFHxS)	0.940 U	0.960 U	0.940 U	0.930 U	0.940 U	0.960 U	
Perfluorohexanoic acid (PFHxA)	0.940 U	0.960 U	0.940 U	0.930 U	0.940 U	0.960 U	
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	
Perfluorooctane sulfonate (PFOS)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.90 U	
Perfluorooctanesulfonamide (FOSA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.90 U	
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	
Perfluoropentanoic acid (PFPA)	0.940 U	0.440 J	0.940 U	0.400 J	0.940 U	0.420 J	
Perfluorotetradecanoic acid (PFTA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.90 U	
Perfluorotridecanoic acid (PFTTrDA)	2.80 U	2.90 U	2.80 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)	0.00	0.00	0.00	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	0.00	0.00	0.00	0.00	0.00	0.00
	§Sum of All Compounds Collected	0.00	0.440	0.00	0.400	0.00	0.420

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 J2 Range Northern

	Location	MW-631M2	MW-632M1	MW-632M2	MW-632M2	MW-640M1	MW-640M2
	Field Sample ID	MW-631M2_F20	MW-632M1_F20	MW-632M2_F20	MW-632M2_F20D	MW-640M1_F20	MW-640M2_F20
	Sampling Depth	200.10 - 210.10	254.50 - 264.50	229.50 - 239.50	229.50 - 239.50	246.00 - 256.00	216.00 - 226.00
	Sampling Date	08/26/2020	09/03/2020	09/03/2020	09/03/2020	09/03/2020	09/03/2020
	SDG	320641331	320643511	320643511	320643511	320643511	320643511
	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)		18.0 U	19.0 U	18.0 U	19.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.20 U	9.40 U	9.00 U	9.60 U	9.40 U	9.30 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.20 U	9.40 U	9.00 U	9.60 U	9.40 U	9.30 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.20 U	9.40 U	9.00 U	9.60 U	9.40 U	9.30 U
Perfluorobutanesulfonic acid (PFBS)		8.50	0.940 U	0.900 U	0.960 U	0.940 U	0.930 U
Perfluorobutanoic acid (PFBA)		1.70 J	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)		1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)		0.920 U	0.940 U	0.900 U	0.960 U	0.940 U	0.930 U
Perfluorododecanoic acid (PFDoA)		1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)		0.920 U	0.940 U	0.900 U	0.960 U	0.940 U	0.930 U
Perfluoroheptanoic acid (PFHpA)		1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorohexanesulfonic acid (PFHxS)		1.80 U	0.940 U	0.900 U	0.960 U	0.360 J	0.930 U
Perfluorohexanoic acid (PFHxA)		5.40	0.940 U	0.900 U	0.960 U	0.940 U	0.930 U
Perfluorononanoic acid (PFNA)		1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorooctane sulfonate (PFOS)		2.80 U	2.80 U	2.70 U	2.90 U	2.80 U	2.80 U
Perfluorooctanesulfonamide (FOSA)		2.80 U	2.80 U	2.70 U	2.90 U	2.80 U	2.80 U
Perfluorooctanoic acid (PFOA)		1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPA)		1.90	0.450 J	0.900 U	0.960 U	0.630 J	0.930 U
Perfluorotetradecanoic acid (PFTA)		2.80 U	2.80 U	2.70 U	2.90 U	2.80 U	2.80 U
Perfluorotridecanoic acid (PFTTrDA)		2.80 U	2.80 U	2.70 U	2.90 U	2.80 U	2.80 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)	0.00	0.00	0.00	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	0.00	0.00	0.00	0.00	0.360	0.00
	§Sum of All Compounds Collected	17.5	0.450	0.00	0.00	0.990	0.00

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 KGS 2020 J2 Ranges SPM Fall
 J2 Range Northern

	Location	MW-703M1	MW-703M2	MW-704M1	MW-704M2
	Field Sample ID	MW-703M1_F20	MW-703M2_F20	MW-704M1_F20	MW-704M2_F20
	Sampling Depth	248.00 - 258.00	224.10 - 234.10	244.00 - 254.00	217.80 - 227.80
	Sampling Date	08/31/2020	08/31/2020	09/01/2020	09/01/2020
	SDG	320642421	320642421	320642411	320642411
	Sample Type	Normal	Normal	Normal	Normal
PFAS 21 Cmps		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	19.0 U	18.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.10 U	9.20 U	9.70 U	9.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.10 U	9.20 U	9.70 U	9.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.10 U	9.20 U	9.70 U	9.20 U
Perfluorobutanesulfonic acid (PFBS)		0.910 U	0.920 U	0.970 U	0.920 U
Perfluorobutanoic acid (PFBA)		1.40 U	1.40 U	1.40 J	1.40 U
Perfluorodecanesulfonic acid (PFDS)		1.40 U	1.40 U	1.50 U	1.40 U
Perfluorodecanoic acid (PFDA)		3.20	1.60 J	1.50 J	1.90
Perfluorododecanoic acid (PFDoA)		1.40 U	1.40 U	1.50 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)		0.910 U	0.920 U	0.970 U	0.920 U
Perfluoroheptanoic acid (PFHpA)		1.40 U	1.40 U	1.50 U	1.40 U
Perfluorohexanesulfonic acid (PFHxS)		0.910 U	0.920 U	0.970 U	0.920 U
Perfluorohexanoic acid (PFHxA)		0.910 U	0.920 U	0.970 U	0.920 U
Perfluorononanoic acid (PFNA)		1.80	0.900 J	1.50 U	0.890 J
Perfluorooctane sulfonate (PFOS)		2.70 U	2.70 U	2.90 U	2.80 U
Perfluorooctanesulfonamide (FOSA)		1.30 J	2.20 J	2.90 U	2.80 U
Perfluorooctanoic acid (PFOA)		1.40 U	1.40 U	1.50 U	1.40 U
Perfluoropentanoic acid (PFPA)		0.650 J	0.830 J	1.10 J	0.400 J
Perfluorotetradecanoic acid (PFTA)		2.70 U	2.70 U	2.90 U	2.80 U
Perfluorotridecanoic acid (PFTTrDA)		2.70 U	2.70 U	2.90 U	2.80 U
Perfluoroundecanoic acid (PFUnA)		0.650 J	1.40 U	1.00 J	1.40 U
	†PFOS + PFOA (EPA)	0.00	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	5.00	2.50	1.50	2.79
	§Sum of All Compounds Collected	7.60	5.53	5.00	3.19

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 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)	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	
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	
Perfluorodecanesulfonic acid (PFDS)	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	
Perfluoroheptanesulfonic acid (PFHpS)	0.940 U	0.950 U	0.970 U	0.980 U	0.940 U	0.960 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	
Perfluorooctane sulfonate (PFOS)	2.80 U	2.80 U	4.90	5.00	16.0	2.90 U	
Perfluorooctanesulfonamide (FOSA)	2.80 U	2.80 U	2.90 U	2.90 U	2.80 U	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 (PFTTrDA)	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)	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

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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)	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	
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	
Perfluorodecanesulfonic acid (PFDS)	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	
Perfluoroheptanesulfonic acid (PFHpS)	0.920 U	0.920 U	0.900 U	0.940 U	0.930 U	0.920 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	
Perfluorooctane sulfonate (PFOS)	2.80 U	1.10 J	3.80	2.80 U	10.0	2.80 U	
Perfluorooctanesulfonamide (FOSA)	2.80 U	2.80 U	2.70 U	2.80 U	2.80 U	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 (PFTTrDA)	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)	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

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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)	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	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	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	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	9.50 U
Perfluorobutanesulfonic acid (PFBS)	0.920 U	0.950 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	
Perfluorodecanesulfonic acid (PFDS)	1.40 U	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	0.950 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.920 U	0.950 U	0.950 U	0.950 U	0.950 U	0.950 U	0.950 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	1.40 U
Perfluorooctane sulfonate (PFOS)	1.00 J	2.80 U	2.90 U	2.80 U	2.30 J	2.90 U	
Perfluorooctanesulfonamide (FOSA)	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U	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 (PFTTrDA)	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)	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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 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
Perfluorobutanesulfonic acid (PFBS)		1.00 U	0.940 U
Perfluorobutanoic acid (PFBA)		3.20	1.40 U
Perfluorodecanesulfonic acid (PFDS)		1.50 U	1.40 U
Perfluorodecanoic acid (PFDA)		1.00 U	0.940 U
Perfluorododecanoic acid (PFDoA)		1.50 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)		1.00 U	0.940 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
Perfluorooctane sulfonate (PFOS)		3.00 U	15.0
Perfluorooctanesulfonamide (FOSA)		3.00 U	2.80 U
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 (PFTTrDA)		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)	1.10	15.8
	§Sum of All Compounds Collected	4.82	15.8

PFAS Summary Report – Groundwater
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 KGS 2021 J2 Ranges SPM Spring
 J2 Range Northern

	Location	J2EW0002
	Field Sample ID	J2EW0002_521
	Sampling Depth	198.00 - 233.00
	Sampling Date	01/13/2021
	SDG	320689351
	Sample Type	Normal
PFAS 21 Cmps		Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		7.40 J
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.40 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.40 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.40 U
Perfluorobutanesulfonic acid (PFBS)		0.940 U
Perfluorobutanoic acid (PFBA)		1.40 U
Perfluorodecanesulfonic acid (PFDS)		1.40 U
Perfluorodecanoic acid (PFDA)		0.940 U
Perfluorododecanoic acid (PFDoA)		1.40 U
Perfluoroheptanesulfonic acid (PFHpS)		0.430 J
Perfluoroheptanoic acid (PFHpA)		0.860 J
Perfluorohexanesulfonic acid (PFHxS)		11.0
Perfluorohexanoic acid (PFHxA)		0.900 J
Perfluorononanoic acid (PFNA)		1.40 U
Perfluorooctane sulfonate (PFOS)		1.00 J
Perfluorooctanesulfonamide (FOSA)		1.80 J
Perfluorooctanoic acid (PFOA)		1.80 J
Perfluoropentanoic acid (PFPA)		1.90 U
Perfluorotetradecanoic acid (PFTA)		2.80 U
Perfluorotridecanoic acid (PFTTrDA)		2.80 U
Perfluoroundecanoic acid (PFUnA)		1.40 U
	†PFOS + PFOA (EPA)	2.80
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	14.7
	§Sum of All Compounds Collected	25.2

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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 PFAS6 above the MassDEP MCL: PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA > 20 ng/L

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

‡ PFAS Maximum Contaminant Level (MCL) Final Amendments ("MCL", 310 CMR 22.00 PFAS MCL Amendments), Massachusetts Department of Environmental Protection, October 2, 2020

§ PFAS compounds used in the summation of all analytes are listed in the above table