City of Portsmouth

Department of Public Works

April 22, 2020

PEASE TRADEPORT WATER SUPPLY UPDATE

Rendering of New Drinking Water Treatment Facility Upgrade – Grafton Road

Construction of the final treatment system, which includes both resin and activated carbon filtration systems, began in April 2019. Demolition of older structures began at that time and continues. Recent work includes construction of the underground treated water storage tanks and the installation of three new carbon filter vessels together with associated site work around the building.

Installation of New Carbon Filters

Delivery of Activated Carbon for New Carbon Filters April 2020

The City's engineering consultant continues to sample the performance of the activated carbon filters based on the amount of water treated. The following table provides a summary of the most recent treatment system testing results from samples taken on March 26, 2020.

PFAS Sampling for March 26, 2020

Sample Point	PFHxS	PFNA	PFOS	PFOA
NH MCLs (ppt)	18	11	15	12
Grafton Road Treatment Treated Water	ND	ND	ND	ND

Notes:
"NH MCLs" are the New Hampshire Maximum Contaminant Levels (effective October 1, 2019). These levels are currently on hold for enforcement purposes due to an ongoing lawsuit.
"ND" is considered Non Detect. Per NHDES, "estimated numbers below the reporting limit are considered Non Detects."

The carbon in Filter number 1 was changed out in November 2019 after 129 million gallons of Pease well water had been treated through that filter. The system flow was then swapped in the filters such that water would go through filter number 2 first and then into filter number 1, with the new carbon, prior to discharge into the system. Sampling results show that the activated carbon filters continue to remove the PFAS contaminants that New Hampshire had set regulatory standards for. Currently, two of the new carbon filters for the final treatment system have been equipped with fresh carbon and they will be brought into service by the end of April 2020. Once that switchover has been completed then the existing demonstration filters will be removed to make room for the installation of the resin filters.

A copy of the comprehensive demonstration filter sampling results since December 2018, when both filters had new carbon installed, is attached at the end of this update.

ONGOING WATER QUALITY MONITORING AND UPDATES

The Air Force's consultant continues to perform routine sampling of the water supply wells in the Pease water system. In addition to these water supply wells, the Air Force's consultant samples other monitoring wells in the surrounding area to track the aquifer and monitor for any PFAS moving toward the supply wells. Currently, with the demonstration filters on line, the supply wells are sampled monthly and eleven monitoring wells are sampled quarterly. Sampling data is posted on the City's website once it has been validated by the Air Force's engineering consultant. Information is also posted on the City's website for the City of Portsmouth's PFAS sampling program.

All samples collected are analyzed BUREAU VERITAS laboratories (formerly Maxxam), the same laboratory that has been performing the Pease well PFAS analysis since 2014. Data for the Pease Well sampling is uploaded to the City's website when it is validated by the Air Force's consultant

and sent to the City. A summary of the data for the Pease Well Carbon Treatment Demonstration Project is provided on the City's website.

OTHER ONGOING RESTORATION EFFORTS

SITE 8 INTERIM MITIGATION SYSTEM (excerpted from FORMER PEASE AIR FORCE BASE RESTORATION ADVISORY BOARD MARCH 18, 2020 UPDATE and via telephone with Roger Walton on April 20, 2020)

PFOS/PFOA FIELD WORK

- Next performance monitoring scheduled for late March/early April 2020
- Monthly samples from the Smith, Harrison, Portsmouth, and Collins continue

AIRFIELD INTERIM MITIGATION TREATMENT SYSTEM

- System online and operating at approximately 600 gallons per minute
- Next performance monitoring scheduled for late March/early April 2020
- Treated water being discharged is below detectable levels for PFOS and PFOA.

PUBLIC OUTREACH AND OTHER INFORMATION

The Pease Restoration Advisory Board (RAB) meeting scheduled for March 18, 2020 at the Pease office of the New Hampshire Department of Environmental Services was canceled. No date has been set for the next meeting.

Brian Goetz, Deputy Director of Public Works, co-chaired a session on PFAS at the March 13, 2020 New Hampshire Water and Watersheds Conference held at Plymouth State University. A copy of his presentation, summarizing the Pease International Tradeport PFAS contamination experience, is available on the City's website.

NEW HAMPSHIRE PFAS REGULATIONS

The state of New Hampshire's legislature's administrative rules committee approved drinking water standards for four Perfluorinated compounds (PFAS) compounds on July 18, 2019. These standards set maximum contaminant levels (MCLs) for public drinking water systems at the following levels:

- Perfluorooctanoic acid (PFOA): 12 ppt
- Perfluoroctane sulfonic acid (PFOS): 15 ppt
- Perfluorononanoic acid (PFNA): 11 ppt
- Perfluorohexane sulfonic acid (PFHxS): 18 ppt
    - ppt = Parts per Trillion

The new standards took effect in October 2019. However, enforcement of these standards is currently on hold due to a lawsuit. However, the Pease International Tradeport water system will continue to sample according to these new standards. This also applies to the City of Portsmouth's sampling of all of their other water sources. Results of that sampling is also posted on the City's website.

Additional information can be accessed at:

www.cityofportsmouth.com/publicworks/water/pease-tradeport-water-system

or by calling Al Pratt, Water Resources Manager, at: 603-520-0622 or Brian Goetz, Deputy Director of Public Works at: 603-766-1420

Table 2
Summary of PFAS Analytical Results
Demonstration Project
December 2018 to March 2020

Sample Location	Collection Date	Filter 1 Volume (MG)	Filter 1 Bed Volumes	Filter 2 Volume (MG)	Filter 2 Bed Volumes	6:2 Fluorotelomer sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl Perfluorooctane Sulfonamide (MEFOSA)	N-Methyl Perfluorooctane Sulfonamidoethanol (MEFOSE)	Perfluorobutanesulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecane sulfonate (PFDS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptane sulfonate (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (PFOSA)	Perfluorooctanesulfonic acid (PFOS)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)	PFOS+PFOA
NHDES MCL:						-	-	-	-	-	-	-	-	-	-	-	-	-	0.018	-	0.012	0.011	-	0.015	-	-	-	-	-
Method Detection Limit (MDL)						0.0065	0.0055	0.0053	0.0049	0.0040	0.0061	0.0019	0.0066	0.0043	0.0066	0.0057	0.0036	0.0047	0.0040	0.0046	0.0053	0.0046	0.0058	0.0033	0.0036	0.0052	0.0032	0.0037	
Reported Detection Limit (RDL)						0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	
GAC changed out in both vessels (11/7/2018)																													
Combined Raw	06-Dec-18	2.4	450	0.5	105	ND	ND	ND	ND	ND	ND	ND	0.0092 J	ND	ND	ND	ND	0.0140 J	0.0960	0.0360	0.0290	ND	ND	0.0470	0.0330	ND	ND	ND	0.0760
Filter 1- 25%	06-Dec-18	2.4	450	0.5	105	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Combined Raw	10-Jan-19	7.2	1,382	5.4	1,036	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0280	0.0100 J	0.0084 J	ND	ND	0.0160 J	0.0100 J	ND	ND	ND	0.0244 J
Filter 1- 25%	10-Jan-19	7.2	1,382	5.4	1,036	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Filter 2-100%	10-Jan-19	7.2	1,382	5.4	1,036	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Combined Raw	07-Feb-19	18.1	3,447	16.3	3,101	ND	ND	ND	ND	ND	ND	ND	0.0100 J	ND	ND	ND	ND	0.0130 J	0.0600	0.0220	0.0180 J	ND	ND	0.0270	0.0210	ND	ND	ND	0.0450 J
Filter 1- 25%	07-Feb-19	18.1	3,447	16.3	3,101	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Filter 2-100%	07-Feb-19	18.1	3,447	16.3	3,101	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Combined Raw	07-Mar-19	28.9	5,522	27.1	5,176	ND	ND	ND	ND	ND	ND	0.0084 J	0.0130 J	ND	ND	ND	ND	0.0160 J	0.0920	0.0320	0.0280	ND	ND	0.0420	0.0310	ND	ND	ND	0.0700
Filter 1- 25%	07-Mar-19	28.9	5,522	27.1	5,176	ND	ND	ND	ND	ND	ND	ND	0.0089 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Filter 2-100%	07-Mar-19	28.9	5,522	27.1	5,176	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Combined Raw	05-Apr-19	39.5	7,545	37.7	7,199	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0091 J	0.0660	0.0210	0.0180 J	ND	ND	0.0250	0.0210	ND	ND	ND	0.0430 J
Filter 1- 25%	05-Apr-19	39.5	7,545	37.7	7,199	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0059 J	ND	ND	ND	ND
Filter 1- 50%	05-Apr-19	39.5	7,545	37.7	7,199	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Filter 2-100%	05-Apr-19	39.5	7,545	37.7	7,199	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Combined Raw	09-May-19	53.2	10,159	51.4	9,813	ND	ND	ND	ND	ND	ND	ND	0.0073 J	ND	ND	ND	ND	0.0095 J	0.0730	0.0240	0.0200	ND	ND	0.0280	0.0210	ND	ND	ND	0.0480 J
Filter 1- 25%	09-May-19	53.2	10,159	51.4	9,813	ND	ND	ND	ND	ND	ND	ND	0.0097 J	ND	ND	ND	ND	ND	ND	0.0094 J	ND	ND	ND	ND	0.0170 J	ND	ND	ND	ND
Filter 1- 50%	09-May-19	53.2	10,159	51.4	9,813	ND	ND	ND	ND	ND	ND	ND	0.0083 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0048 J	ND	ND	ND	ND
Filter 2-100%	09-May-19	53.2	10,159	51.4	9,813	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Method Detection Limit (MDL)						0.00043	0.00047	-	-	-	-	0.00037	0.00045	0.00036	0.00018	0.00025	0.00063	0.00037	0.00033	0.00026	0.00023	0.00048	0.00031	0.00043	0.00048	0.00016	0.00030	0.00038	-
Reported Detection Limit (RDL)						0.004	0.004	-	-	-	-	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.004	0.002	0.002	0.002	0.002	0.002	-
Combined Raw	07-Jun-19	67.3	12,841	65.5	12,495	0.0007 J	ND	NA	NA	NA	NA	0.0043	0.0084	ND	ND	ND	0.0022	0.0100	0.0820	0.0240	0.0210	0.0009 J	ND	0.0330	0.0220	ND	ND	ND	0.0540
Filter 1- 25%	07-Jun-19	67.3	12,841	65.5	12,495	0.0006 J	ND	NA	NA	NA	NA	0.0017 J	0.0094	ND	ND	ND	ND	0.0040	0.0110	0.0140	0.0040	ND	ND	0.0021	0.0200	ND	ND	ND	0.0061
Filter 1- 50%	07-Jun-19	67.3	12,841	65.5	12,495	0.0005 J	ND	NA	NA	NA	NA	ND	0.0094	ND	ND	ND	ND	0.0008 J	0.0009 J	0.0047	0.0003 J	ND	ND	ND	0.0140	ND	ND	ND	ND
Filter 1- 75%	07-Jun-19	67.3	12,841	65.5	12,495	0.0005 J	ND	NA	NA	NA	NA	ND	0.0097	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0023	ND	ND	ND	ND
Filter 2-100%	07-Jun-19	67.3	12,841	65.5	12,495	0.0005 J	ND	NA	NA	NA	NA	ND	0.0022	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Combined Raw	08-Jul-19	84.4	16,117	82.6	15,771	0.0006 J	ND	NA	NA	NA	NA	0.0042	0.0079	ND	ND	ND	0.0018 J	0.0093	0.0740	0.0230	0.0220	0.0010 J	ND	0.0310	0.0220	ND	ND	ND	0.0530
Filter 1- 25%	08-Jul-19	84.4	16,117	82.6	15,771	ND	ND	NA	NA	NA	NA	0.0024	0.0074	ND	ND	ND	ND	0.0052	0.0240	0.0160	0.0087	ND	ND	0.0070	0.0190	ND	ND	ND	0.0157
Filter 1- 50%	08-Jul-19	84.4	16,117	82.6	15,771	ND	ND	NA	NA	NA	NA	0.0011 J	0.0082	ND	ND	ND	ND	0.0022	0.0043	0.0110	0.0024	ND	ND	0.0006 J	0.0170	ND	ND	ND	0.0030 J
Filter 1- 75%	08-Jul-19	84.4	16,117	82.6	15,771	ND	ND	NA	NA	NA	NA	ND	0.0093	ND	ND	ND	ND	ND	ND	0.0015 J	ND	ND	ND	ND	0.0110	ND	ND	ND	ND
Filter 1- 100%	08-Jul-19	84.4	16,117	82.6	15,771	ND	ND	NA	NA	NA	NA	ND	0.0087	ND	ND	ND	ND	ND	ND	0.0014 J	ND	ND	ND	ND	0.0084	ND	ND	ND	ND
Filter 2- 100%	08-Jul-19	84.4	16,117	82.6	15,771	ND	ND	NA	NA	NA	NA	ND	0.0057	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Combined Raw	15-Aug-19	107.1	20,440	105.3	20,094	ND	ND	NA	NA	NA	NA	0.0045	0.0079	ND	ND	ND	0.0021	0.0110	0.0860	0.0250	0.0230	0.0009 J	ND	0.0350	0.0240	ND	ND	ND	0.0580
Filter 1- 25%	15-Aug-19	107.1	20,440	105.3	20,094	ND	ND	NA	NA	NA	NA	0.0031	0.0076	ND	ND	ND	0.0007 J	0.0064	0.0320	0.0190	0.0110	ND	ND	0.0087	0.0200	ND	ND	ND	0.0197
Filter 1- 50%	15-Aug-19	107.1	20,440	105.3	20,094	ND	ND	NA	NA	NA	NA	0.0022	0.0080	ND	ND	ND	ND	0.0039	0.0120	0.0160	0.0050	ND	ND	0.0021	0.0190	ND	ND	ND	0.0071
Filter 1- 75%	15-Aug-19	107.1	20,440	105.3	20,094	ND	ND	NA	NA	NA	NA	0.0007 J	0.0088	ND	ND	ND	ND	0.0008 J	ND	0.0078	0.0005 J	ND	ND	ND	0.0180	ND	ND	ND	ND

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December 2018 to March 2020

Sample Location	Collection Date	Filter 1 Volume (MG)	Filter 1 Bed Volumes	Filter 2 Volume (MG)	Filter 2 Bed Volumes	6:2 Fluorotelomer sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl Perfluorooctane Sulfonamide (MEFOSA)	N-Methyl Perfluorooctane Sulfonamidoethanol (MEFOSE)	Perfluorobutanesulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecane sulfonate (PFDS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptane sulfonate (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (PFOSA)	Perfluorooctanesulfonic acid (PFOS)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)	PFOS+PFOA
	NHDES MCL:					-	-	-	-	-	-	-	-	-	-	-	-	-	0.018	-	0.012	0.011	-	0.015	-	-	-	-	-
Filter 1- 100%	15-Aug-19	107.1	20,440	105.3	20,094	ND	ND	NA	NA	NA	NA	0.0007 J	0.0099	ND	ND	ND	ND	0.0010 J	ND	0.0068	0.0008 J	ND	ND	ND	0.0170	ND	ND	ND	ND
Filter 2- 25%	15-Aug-19	107.1	20,440	105.3	20,094	ND	ND	NA	NA	NA	NA	ND	0.0096	ND	ND	ND	ND	ND	ND	0.0011 J	ND	ND	ND	ND	0.0110	ND	ND	ND	ND
Filter 2- 100%	15-Aug-19	107.1	20,440	105.3	20,094	ND	ND	NA	NA	NA	NA	ND	0.0086	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0035	ND	ND	ND	ND
Combined Raw	20-Sep-19	128.7	24,572	126.9	24,226	ND	ND	NA	NA	NA	NA	0.0036	0.0082	ND	ND	ND	0.0016 J	0.0100	0.0830	0.0250	0.0240	ND	ND	0.0430	0.0220	ND	ND	ND	0.0670
Filter 1- 25%	20-Sep-19	128.7	24,572	126.9	24,226	ND	ND	NA	NA	NA	NA	0.0024	0.0073	ND	ND	ND	ND	0.0066	0.0380	0.0190	0.0110	ND	ND	0.0150	0.0190	ND	ND	ND	0.0260
Filter 1- 50%	20-Sep-19	128.7	24,572	126.9	24,226	ND	ND	NA	NA	NA	NA	0.0018 J	0.0078	ND	ND	ND	ND	0.0050	0.0190	0.0170	0.0063	ND	ND	0.0042	0.0190	ND	ND	ND	0.0105
Filter 1- 75%	20-Sep-19	128.7	24,572	126.9	24,226	ND	ND	NA	NA	NA	NA	0.0006 J	0.0092	ND	ND	ND	ND	0.0014 J	0.0020	0.0120	0.0007 J	ND	ND	ND	0.0210	ND	ND	ND	ND
Filter 1- 100%	20-Sep-19	128.7	24,572	126.9	24,226	ND	ND	NA	NA	NA	NA	ND	0.0080	ND	ND	ND	ND	0.0009 J	0.0017 J	0.0088	0.0006 J	ND	ND	ND	0.0180	ND	ND	ND	ND
Filter 2- 25%	20-Sep-19	128.7	24,572	126.9	24,226	ND	ND	NA	NA	NA	NA	ND	0.0088	ND	ND	ND	ND	ND	ND	0.0036	ND	ND	ND	ND	0.0160	ND	ND	ND	ND
Filter 2- 100%	20-Sep-19	128.7	24,572	126.9	24,226	ND	ND	NA	NA	NA	NA	ND	0.0095	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0079	ND	ND	ND	ND
GAC changed out in Filter 1 (11/15/2019), lag filter changed to lead position																													
Combined Raw	18-Dec-19	6.2	1,191	157.9	30,140	ND	ND	NA	NA	NA	NA	0.0048	0.0095	ND	ND	ND	0.0027	0.0130	0.1000	0.0310	0.0280	0.0009 J	ND	0.0490	0.0290	ND	ND	ND	0.0770
Filter 2- 25%*	18-Dec-19	6.2	1,191	157.9	30,140	ND	ND	NA	NA	NA	NA	0.0019 J	0.0110	ND	ND	ND	ND	0.0038	0.0130	0.0170	0.0044	ND	ND	0.0022	0.0220	ND	ND	ND	0.0066
Filter 2- 50%*	18-Dec-19	6.2	1,191	157.9	30,140	ND	ND	NA	NA	NA	NA	ND	0.0088	ND	ND	ND	ND	ND	ND	0.0068	ND	ND	ND	ND	0.0200	ND	ND	ND	ND
Filter 2- 100%*	18-Dec-19	6.2	1,191	157.9	30,140	ND	ND	NA	NA	NA	NA	ND	0.0094	ND	ND	ND	ND	ND	ND	0.0018 J	ND	ND	ND	ND	0.0140	ND	ND	ND	ND
Filter 1- 25%*	18-Dec-19	6.2	1,191	157.9	30,140	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Filter 1- 50%*	18-Dec-19	6.2	1,191	157.9	30,140	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Filter 1- 75%*	18-Dec-19	6.2	1,191	157.9	30,140	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Filter 1- 100%*	18-Dec-19	6.2	1,191	157.9	30,140	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Combined Raw	23-Jan-20	21.9	4,178	173.6	33,127	ND	ND	NA	NA	NA	NA	0.0043	0.0093	ND	ND	ND	0.0023	0.0110	0.0910	0.0280	0.0230	0.0008 J	ND	0.0420	0.0260	ND	ND	ND	0.0650
Filter 2- 25%*	23-Jan-20	21.9	4,178	173.6	33,127	ND	ND	NA	NA	NA	NA	0.0025	0.0076	ND	ND	ND	ND	0.0053	0.0230	0.0190	0.0083	ND	ND	0.0055	0.0210	ND	ND	ND	0.0138
Filter 2- 50%*	23-Jan-20	21.9	4,178	173.6	33,127	ND	ND	NA	NA	NA	NA	0.0008 J	0.0089	ND	ND	ND	ND	0.0014 J	0.0020 J	0.0120	0.0006 J	ND	ND	ND	0.0200	ND	ND	ND	ND
Filter 2- 100%*	23-Jan-20	21.9	4,178	173.6	33,127	ND	ND	NA	NA	NA	NA	ND	0.0091	ND	ND	ND	ND	ND	ND	0.0043	ND	ND	ND	ND	0.0160	ND	ND	ND	ND
Filter 1- 25%*	23-Jan-20	21.9	4,178	173.6	33,127	ND	ND	NA	NA	NA	NA	ND	0.0041	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Filter 1- 50%*	23-Jan-20	21.9	4,178	173.6	33,127	ND	ND	NA	NA	NA	NA	ND	0.0008 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Filter 1- 75%*	23-Jan-20	21.9	4,178	173.6	33,127	ND	ND	NA	NA	NA	NA	ND	0.0005 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Filter 1- 100%*	23-Jan-20	21.9	4,178	173.6	33,127	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Combined Raw	25-Feb-20	35.1	6,703	186.8	35,651	ND	ND	NA	NA	NA	NA	0.0045	0.0084	ND	ND	ND	0.0024	0.0110	0.0930	0.0280	0.0250	0.0009 J	ND	0.0470	0.0260	ND	ND	ND	0.0720
Filter 2- 25%*	25-Feb-20	35.1	6,703	186.8	35,651	ND	ND	NA	NA	NA	NA	0.0024	0.0067	ND	ND	ND	ND	0.0061	0.0340	0.0180	0.0110	ND	ND	0.0098	0.0190	ND	ND	ND	ND
Filter 2- 50%*	25-Feb-20	35.1	6,703	186.8	35,651	ND	ND	NA	NA	NA	NA	0.0016 J	0.0070	ND	ND	ND	ND	0.0030	0.0074	0.0140	0.0032	ND	ND	0.0009 J	0.0190	ND	ND	ND	ND
Filter 2- 100%*	25-Feb-20	35.1	6,703	186.8	35,651	ND	ND	NA	NA	NA	NA	0.0004 J	0.0071	ND	ND	ND	ND	0.0006 J	ND	0.0065	0.0005 J	ND	ND	ND	0.0160	ND	ND	ND	ND
Filter 1- 25%*	25-Feb-20	35.1	6,703	186.8	35,651	ND	ND	NA	NA	NA	NA	ND	0.0074	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0017 J	ND	ND	ND	ND
Filter 1- 100%*	25-Feb-20	35.1	6,703	186.8	35,651	ND	ND	NA	NA	NA	NA	ND	0.0023	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Combined Raw	26-Mar-20	47.0	8,968	198.7	37,916	ND	ND	NA	NA	NA	NA	0.0038	0.0070	ND	ND	ND	0.0021	0.0098	0.0800	0.0240	0.0220	0.0007 J	ND	0.0390	0.0220	0.0002 J	ND	ND	0.0610
Filter 2- 25%*	26-Mar-20	47.0	8,968	198.7	37,916	ND	ND	NA	NA	NA	NA	0.0030	0.0070	ND	ND	ND	0.0010 J	0.0069	0.0340	0.0200	0.0120	0.0005 J	ND	0.0100	0.0210	ND	ND	ND	0.0220
Filter 2- 50%*	26-Mar-20	47.0	8,968	198.7	37,916	ND	ND	NA	NA	NA	NA	0.0018 J	0.0069	ND	ND	ND	ND	0.0035	0.0093	0.0150	0.0040	ND	ND	0.0011 J	0.0190	ND	ND	ND	0.0051 J
Filter 2- 100%*	26-Mar-20	47.0	8,968	198.7	37,916	ND	ND	NA	NA	NA	NA	0.0006 J	0.0070	ND	ND	ND	ND	0.0008 J	0.0010 J	0.0079	0.0008 J	ND	ND	ND	0.0160	ND	ND	ND	ND
Filter 1- 25%*	26-Mar-20	47.0	8,968	198.7	37,916	ND	ND	NA	NA	NA	NA	ND	0.0076	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0059	ND	ND	ND	ND
Filter 1- 100%*	26-Mar-20	47.0	8,968	198.7	37,916	ND	ND	NA	NA	NA	NA	ND	0.0037	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 2
Summary of PFAS Analytical Results
Demonstration Project
December 2018 to March 2020

Sample Location	Collection Date	Filter 1 Volume (MG)	Filter 1 Bed Volumes	Filter 2 Volume (MG)	Filter 2 Bed Volumes	6:2 Fluorotelomer sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl Perfluorooctane Sulfonamide (MEFOSA)	N-Methyl Perfluorooctane Sulfonamidoethanol (MEFOSE)	Perfluorobutanesulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecane sulfonate (PFDS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptane sulfonate (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (PFOSA)	Perfluorooctanesulfonic acid (PFOS)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)	PFOS+PFOA
NHDES MCL:						-	-	-	-	-	-	-	-	-	-	-	-	-	0.018	-	0.012	0.011	-	0.015	-	-	-	-	-

Grey text indicates the parameter was not analyzed or not detected.
All concentrations in µg/L - micrograms per liter (ppb)
J - The result is an estimated value.
B - Detected in Blank.
* - Since November 15, 2019, Filter 2 has been operating in the lead position and Filter 1 has been operating in the lag position.

USEPA - Environmental Protection Agency
NA - Not Analysed or Not Applicable
ND - Not detected
— - No Health Advisory available

- Denotes 'B' value, detected in blank
- Denotes raw water influent sample
- Denotes short chain compound