



December 20, 2019

Bureau of Waste Site Cleanup
Southeast Regional Office
Massachusetts Department of Environmental Protection
C/o Angela Gallagher
Site Remediation Section
20 Riverside Drive
Lakeville, MA 02347

RE: **Immediate Response Action Status and Remedial Monitoring Report #34**
Barnstable County Fire Training Academy Facility
155 South Flint Rock Road
Hyannis, Massachusetts
DEP Release Tracking No. 4-26179
Project Number #6206

Dear Ms. Gallagher:

BETA Group, Inc. (BETA) has prepared this Immediate Response Action (IRA) Status and Remedial Monitoring Report (RMR) for the Disposal Site referenced as the Barnstable Country Fire Training Academy (the BCFTA or facility) located at 155 South Flint Rock Road in Hyannis, MA (the Site) on the behalf of Barnstable County. This report was completed in accordance with Massachusetts Contingency Plan (MCP) - 310 CMR 40.0000.

This is the 34th monthly IRA RMR Status report. It documents the IRA/RMR activities being conducted to address a release of PFOS/PFOA to groundwater, soils, surface water, and sediments located at the Site. A potential Imminent Hazard (IH) condition and Condition of Substantial Release Migration were previously identified at the Site. This letter report specifically addresses the status of the Site groundwater pumping and treatment system (GWPTS) during the monthly reporting period from September 1 to September 30, 2019.

The completed BWSC105 Immediate Response Action (IRA) Transmittal Form and attached BWSC105A and BWSC105B IRA Remedial Monitoring Report Forms are being submitted to the MassDEP electronically via the eDEP system. This letter is being submitted to the Massachusetts Department of Environmental Protection (MassDEP) as an attachment to those forms. Copies of these forms prior to electronic signature are included as **Attachment A**.

IRA and Remedial System Status September 2019

During the September 2019 reporting period, the treatment system was operable for approximately 30 days. There were no scheduled or unscheduled shutdowns during this reporting period. However, operational problems developed with the treatment system related to flow metering and the estimation of flow rates into and through the system. See below for additional discussion.

On September 26, 2019, BETA collected performance samples from the treatment system, which was in operation at the time of sample collection. Samples collected from the Influent (PRW-4), Midpoint and Effluent ports were submitted to Bureau Veritas Laboratories (formerly Maxxam Analytics) of Mississauga, Ontario (Bureau Veritas) for the laboratory analysis of Total PFAS via USEPA Method 537 M.

In July 2016, the USEPA revised their Health Advisory (HA) for two PFAS chemicals, PFOA and PFOS, to 0.070 µg/L; the HA was each compound individually or for the total concentration of the two. Subsequently, MassDEP adopted the EPA HA. On June 11, 2018, MassDEP's Office of Research and Standards (ORS) expanded on this HA and created the current ORS Guideline that applies to the individual concentrations or the total summed of five PFAS chemicals: PFOS, PFOA, Perfluorononanoic Acid (PFNA), Perfluorohexanesulfonic Acid (PFHxS), and Perfluoroheptanoic Acid (PFHpA). Effective June 11, 2018, individual concentrations of any of these five compounds or the total concentrations of all are to be compared to the HA of 0.070 µg/L. On April 19, 2019, MassDEP released the Public Comment Draft of proposed revisions to the MCP, which include proposed revised groundwater risk standards for the five PFAS compounds, plus those for an additional PFAS compound, Perfluorodecanoic Acid (PFDA). Since the May 2019 reporting period, tabulated treatment system analytical results have been compared to all six PFAS compounds of concern for informational purposes. As of the date of filing of this report, the proposed MCP PFAS risk standards, including 6 compounds, have been finalized and are due to become effective on December 27, 2019. Due to the results for this reporting period applying to the time period when the revised PFAS risk standards were draft only, total PFAS concentrations reported and discussed for comparison purposes in this report are based on the five PFAS included in the ORS HA. Results in all future status reports will be compared to the final MCP GW-1 risk standards for six PFAS compounds.

Refer to the attached **Table 1**, for a summary of the GWPTS PFAS analytical data including the September 2019 system sample results. Individual concentrations of PFOS, PFOA, PFNA, PFHxS, and PFHpA from the GWP&TS performance sample collected on September 26, 2019 (and historic data) are included on **Table 1**. The laboratory report/certificate of analysis is included as **Attachment B**.

The total sum of the five PFAS concentrations in the Influent sample, 5.331 µg/L, is approximately 40% lower than the August 2019 Influent results, but similar to the historical concentrations detected in the groundwater at PRW-4 (the recovery well). PFAS concentrations in the treatment system Influent/PRW-4 well since approximately January 2019 have been highly variable. Refer to **Figure 1**; this figure depicts the total summed concentrations of PFOA and PFOS compounds documented in the GWTS Influent/PRW-4 discharge and the system Midpoint from July 2015 to the current September 2019 sampling event. Due to the presentation of only PFOS and PFOA data in the status reports for the early years of system operation, the concentrations of the other three PFAS compounds of concern are not included in the sums depicted on Figure 1. However, since tracking of those began with the

June 2018 reporting period, the concentrations of those compounds have been relatively small compared to PFOS concentrations – see **Table 1**.

During the September system status reporting period, PFAS concentrations, specifically the PFOS compound, was detected in the Midpoint sample above the laboratory reporting limits but below the EPA/MassDEP HA. No PFAS concentrations were reported above method detection limits (MDLs) in the September 2019 Effluent sample; laboratory reportable detection limits (RDLs) were sufficiently low to allow comparison to the applicable EPA/MassDEP HA standards. Bureau Veritas reports the results for 23PFAS compounds, including six (6) PFAS precursors. Refer to the attached laboratory report in **Appendix B**.

As noted, during the month of September 2019, the system was operable for all or portions of 30 days. There were no extended shutdowns; however, in order to perform a backwash of the primary GAC vessel (LGAC #1), the system was shut down for several hours on September 20, 2019. As noted above, operational problems were observed with the system related to flow metering and the estimation of flow rates into and through the system. A propeller-style flow meter/totalizer was installed on the GWPTS Effluent line during the July 2019 reporting period. However, during the September 2019 reporting period it became apparent that the flow rate and totalizer readings may not be reliable due to low accuracy of that meter at discharge flow rates below 40 gallons per minute (gpm). Previous IRA Status reports and RMRs utilized influent flow rate calculations based on observed time of filling of the Equalization Tank (EQ Tank). However, the influent flow rate could not be reliably estimated during the September reporting period due to the accumulation of iron-oxide precipitates at the bottom of the EQ Tank. The iron-oxide sludge blocked flow into the sight-glass on the EQ Tank that was utilized for calculating the approximate influent flow rate. To address this problem, the County contracted with Global Cycle to pump out the sludge and all contents from the EQ tank, the bag filter unit, and the backwash water collection totes in October 2019.

For the September 2019 reporting period, the overall (average) system flow rate and gallons of groundwater treated were approximated, based on the only available information, the Effluent flow rate/net totalizer readings reported for the system by the O&M contractor. These values are considered approximations only. On this basis, approximately 0.6 million gallons of groundwater were estimated to be treated during the September 2019 reporting period, at an approximate average flow rate of 14 gpm. On this same basis, approximately 0.015 kilograms of PFAS were estimated to have been removed from the plume area during this reporting period. Refer to the attached **Table 2** for a summary of the GWPTS performance details.

Ongoing IRA Activities

Sampling results, system performance, and additional assessment work related to the ongoing response actions, such as system improvement and enhancement details, will be presented in the next IRA Status and RMR Report, for the October 2019 reporting period.

Public Involvement Activities

A copy of the municipal notification to the Town Manager and other officials is included as Attachment C.

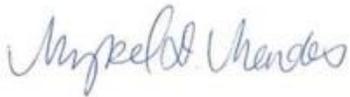
The Site has been designated a Public Involvement Plan Site under the MCP. The Draft Public Involvement Plan (PIP) was presented at a public meeting held at the Barnstable Town Hall on May 2, 2019. Following the end of the comment period, the PIP was finalized. The final PIP was filed with MassDEP on June 30, 2019. A copy of this report will be made available to the public through the traditional repository described in the Final PIP, the Hyannis Public Library. The document will also be available on Barnstable County's webpage for the Fire Rescue Training Academy Site cleanp.

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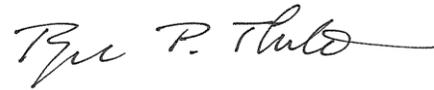
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Sincerely,

BETA Group, Inc.



Mykel Mendes
Environmental Engineer



Roger Thibault, P.E., LSP
Senior Environmental Engineer

Copy: Jack Yunits, Barnstable County Administrator
Steve Tebo, Assistant County Administrator

Attachments:

TABLES:

Table 1 – Summary of Groundwater Pump and Treatment System PFAS Analytical Data
Table 2 - Summary of Groundwater Pump and Treatment System Operating and Maintenance Data

FIGURES:

Figure 1 - BCFRTA GWPTS Influent and Midpoint PFOS Concentrations from 2015-2019

APPENDICES:

- A: BWSC 105, 105A, 105B Forms
- B: Laboratory Reports
- C: Municipal Notification Letter to Town Manager