DRAFT PUBLIC INVOLVEMENT PLAN

Barnstable Municipal Airport
Hyannis, Massachusetts

RTN 4-26347

July 12, 2019

Prepared for:
Barnstable Municipal Airport
480 Barnstable Road
Hyannis, MA 02840

Prepared by:
Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563

Table of Contents

DRAFT PUBLIC INVOLVEMENT PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

1.0 INTRODUCTION

The Barnstable Municipal Airport (the "Airport") has prepared this Draft Public Involvement Plan ("PIP") in accordance with the requirements of the Massachusetts Contingency Plan ("MCP"). On May 24, 2019 the Airport and the Massachusetts Department of Environmental Protection ("MassDEP") received a petition requesting that the Airport designate itself as a PIP site, pursuant to 310 CMR 40.1404. On June 10, 2019, the Airport notified the petitioners, via first class mail, that the Airport designated itself as a PIP site for MassDEP-regulated activities related to the presence of per- and polyfluoroalkyl substances ("PFAS") and 1,4-dioxane under Release Tracking Number ("RTN") 4-26347.

The focus of the PIP will be on the ongoing assessment of the nature and extent of PFAS and 1,4-dioxane at the Airport which are the subjects of the RTN for which the PIP was requested. There have been prior releases of solvents and petroleum hydrocarbons to soil and groundwater at the Airport which have been managed under a separate RTN (4-0823) and for which a separate PIP was created. The remediation process for the prior releases is complete. Following some additional monitoring, the release associated with RTN 4-26347 is anticipated to be completed and closed out in 2020.

This PIP establishes ways in which the Airport will make information related to RTN 4-26347 available for public review, and opportunities for the public to comment on the ongoing assessment and remediation activities subject to this PIP. Specifically, the PIP describes:

- An overview of the Airport and its location relative to drinking water wells in Hyannis;
- A summary of the applicable regulatory standards and guidelines for PFAS and 1,4-dioxane, including proposed new standards for PFAS in soil and groundwater;
- A description of the uses of aqueous film forming foam ("AFFF" or firefighting foam, a Federal Aviation Administration (FAA) regulatory requirement, at the Airport and actions taken by the Airport to prevent its release to soil or groundwater. AFFF is a known source of PFAS compounds that can affect soil and groundwater;
- An overview of the soil and groundwater investigations completed to date and a summary of the next steps the Airport must complete under the MCP; and
- A summary of how public comments will be accepted and incorporated into the PIP and how public involvement will continue as the assessment moves forward.

The Airport will revise this PIP based upon feedback received from the public during the public comment period and will implement the final PIP in conjunction with ongoing response activities.

This draft PIP will be presented by the Airport at a public meeting on July 29, 2019 at 6:00 PM in the Airport Conference room located in the Airport Terminal Building at 480 Barnstable Road, Hyannis, Massachusetts. Please park in the main parking lot and parking validation will be provided at the meeting.

Draft documents will also be available at the Hyannis Public Library, at the Yarmouth public libraries, at the Barnstable Municipal Airport and online at two websites as described further in section 4.4 below.

Comments on the PIP are encouraged and may be submitted at the meeting or by writing to:

Barnstable Municipal Airport
Attention: Public Involvement Plan
480 Barnstable Road
Hyannis, MA 02601

Comments may also be emailed to Sue Kennedy at Sue.Kennedy@town.barnstable.ma.us. All comments should be submitted by 6:00 PM, August 19, 2019, within 20 days of the public meeting. The Airport will issue a final PIP no later than September 17, 2019.

2.0 SITE BACKGROUND

2.1 Site Description

The Airport is located in Hyannis, Massachusetts, and provides scheduled airline service and general aviation services and other aviation related activities. The Airport is currently owned by the Town of Barnstable and is operated through the Barnstable Municipal Airport Commission ("BMAC"). The Airport began as a private airport consisting of a single grass runway before being given to the Town of Barnstable in the 1930's. With the outbreak of World War II, the airport was taken over by the federal government for wartime training and defense purposes. During the 1940's, the U.S. Navy used the Airport and expanded the airfield to include three runways. In 1946, the Airport was returned to a two-runway municipal airport (each runway has a designation at each end, being 15-33 and 6-24). In 1948, the property was conveyed by the United States government (pursuant to the Surplus Property Act of 1944) to the Town of Barnstable, acting by and through its Airport Commission, for the use and benefit of the Airport.

The Airport is comprised of approximately 645 acres of land, with approximately 140 acres that are impervious (e.g. paved areas such as parking lots, runways, taxiways, aircraft parking aprons, concrete walkways, and building rooftops). The Airport's structures include the main terminal and the Air Traffic Control Tower ("ATCT"), which are located south of the runways and taxiways, as well as several hangars used for general aviation and operations services. In addition, the Airport Rescue and Fire Fighting ("ARFF") building is located in the southeast corner of the property. The Airport is located in an area of Hyannis zoned for Business and Industrial uses. A topographic map with the Airport property boundary outlined is attached as Figure 1.

2.2 Hydrogeological Setting in the Vicinity of the Airport

The Airport is located within several zones of contribution (Zone II) to municipal drinking supply wells. Groundwater in the vicinity of the airport is located approximately 23 to 27 feet below ground surface ("BGS"). A regional water table map prepared by the USGS indicates groundwater generally flows in a southeasterly direction across the airport (Figure 2, LeBlanc, et al., 1986). Monitoring well elevation surveys and water level measurements conducted by the Horsley Witten Group ("HW") also indicate groundwater flows in a southeasterly direction. On the southern portion of the airport, groundwater flows parallel to Route 132 and Runway 15-33. In the northern portion of the Airport, the flow is also to the southeast, but turns further south, with groundwater flowing from the area of Mary Dunn Pond onto Airport property and curving south towards the Maher Wellfield located near the intersection of Route 28 and Yarmouth Road (Figure 2). Geologic materials encountered in soil borings at the Airport consist of outwash sands and gravel, indicating the aquifer is moderately to highly permeable, with an estimated hydraulic conductivity of 100 to 300 feet per day.

2.3 Current Status of Hyannis Water Supply Wells

Hyannis receives its drinking water from twelve wells located throughout the village. PFAS compounds have been detected in the raw water pumped from wells in the Mary Dunn Wellfield and the Maher Wellfield, and 1,4-dioxane has been detected at the Maher Wellfield. However, all water provided through the Hyannis Water District (the "District") meets the required state drinking water standards and guidelines for these compounds. The District has constructed treatment facilities at the Mary Dunn Wellfield to treat for PFAS compounds (associated with a release of these contaminants from the Barnstable Fire Training Academy) and has agreements to purchase water from the Town of Yarmouth and the Centerville, Osterville, Marstons Mills Water District. In addition, the District is in the process of installing a treatment system for both PFAS compounds and 1,4-dioxane at the Maher Wellfield.

2.4 Sources of PFAS in the Environment

PFAS are manmade chemicals that have been used widely since the 1950's to manufacture water resistant, stain-resistant, and non-stick products. They are widely used in common consumer products such as coatings on food packaging, clothing, carpets, leather goods, and waxes. PFAS is also found in certain types of firefighting foams used by the military, fire department, and airports to fight oil and gasoline fires. According to the Interstate Technology Regulatory Council ("ITRC") document titled *History and Use of Per-and Polyfluoroalkyl Substances (PFAS)* dated November 13, 2017, sources of PFAS found in the environment can include the following:

- Consumer Products - shampoo, hair conditioner, sunscreen, cosmetics, toothpaste, dental floss, adhesives, paints, cleaning agents, non-stick cookware, polishes and waxes, pesticides and herbicides, hydraulic fluids, and windshield wipers.
- Textile and Leather Manufactures – factory or consumer applied coatings (i.e., 3M Scotchgard ®) to repeal water, oil, and stains on clothing, umbrellas, tents, sails, architectural materials, carpets, and upholstery.
- Paper Product Manufacturers – factory applied surface coatings to repel grease and moisture from pizza boxes, fast food wrappers, microwave popcorn bags, baking papers, pet food bags, cardboard, carbonless forms, and masking papers.
- Metal Plating and Etching Facilities – coatings used during manufacture for corrosion prevention, mechanical wear reduction, as a surfactant, a wetting agent and fume suppressant, and as a post plating cleaner.
- Wire Manufacture – used as a coating and insulation for wires.
- Industrial Surfactants, Resigns, Molds, and Plastics - used during the manufacture of plastics and fluoropolymers, rubber, compression mold release coatings, plumbing fluxing agents, fluoroplastic coatings, composite resins, and flame-retardant polycarbonate.
- Photolithography and Semiconductor Industry –used as photoresists, top and bottom anti-reflective coatings, etchants, surfactants, wetting agents, and photo-acid generation.
- Class B Fluorine Containing Firefighting Foams - firefighting foams including AFFF, fluoprotein foam ("FP"), and film forming fluoprotein foam ("FFFP") used to extinguish fires.

Some examples of how these materials can be released to the environment include:

- Atmospheric deposition to the ground surface and/or surface water from smokestack emissions where PFAS was used in the manufacturing process;
- Releases to the ground surface, groundwater and/or surface water from industrial facilities where spills have occurred or where wastewater treatment methods were not designed to remove PFAS compounds from the waste stream;
- Littering of materials containing PFAS, like food wrappers
- Degradation of exterior surface coatings (i.e., waxes or 3M Scothgard ®) on materials containing PFAS;

- Releases to groundwater and/or surface water from landfills were PFAS containing wastes were disposed of;
- Releases to groundwater and/or surface water from wastewater treatment plants where wastewater treatment methods were not designed to remove PFAS compounds from the waste stream;
- Releases to groundwater and surface water from residential septic systems where PFAS compounds were used in the household;
- Releases to soil, groundwater and/or surface water from the application of biosolids obtained from wastewater treatment plants; and
- Releases to soil, groundwater and/or surface water from the application of Class B firefighting foams during training exercises, use in extinguishing a fire, or from incidental spillage. There firefighting foam used at the airport is currently the only approved FAA foam on the market and is required for use per federal regulations.

2.5 Potential Sources of 1,4-dioxane in the Environment

1,4-dioxane is a synthetic chemical that is completely mixable in water. It has not been detected in any of the Airport groundwater monitoring wells or in the area of a former release of chlorinated solvents associated with the release RTN 4-0823 located in the southwest quadrant of the airport. It has been detected in groundwater wells located hydraulically downgradient of the Airport. The Airport is still conducting investigations to determine if a release of 1,4-dioxane has occurred at the Airport. According to the United States Environmental Protection Agency ("US EPA") document titled *Technical Fact Sheet – 1,4-dioxane* dated November 2017, sources of 1,4-dioxane include:

- Solvent Stabilizer – historically, 90% of 1,4-dioxane use was to stabilize chlorinated solvents such as 1,1,1-trichloroethane. Use of 1,4-dioxane as a solvent stabilizer was phased out under the 1995 Montreal Protocol. Testing of groundwater at the Airport in an area of a historic release of chlorinated solvents did not identify 1,4-dioxane in groundwater.
- Consumer Products - 1,4-dioxane has been found as a by-product in paint strippers, dyes, greases, anti-freeze and aircraft deicing fluids, and in some consumer products such as deodorants, shampoos, and cosmetics. The Airport installed a centralized de-icing and aircraft washing pad in 2015 which directs de-icing fluids and fluids used in aircraft washing to the Barnstable Water Pollution Control Facility. 1,4-dioxane has not been detected in groundwater at the Airport.
- Pharmaceuticals and Plastic Manufacture - 1,4-dioxane is used in the manufacture of pharmaceuticals as a purifying agent and is a by-product in the manufacture of polyethylene terephthalate plastic.

- Food - 1,4-dioxane may be present in some food supplements, food containing residues from packaging adhesives or on food crops treated with pesticides that contain 1,4-dioxane.

Some examples of how these materials can be released to the environment include:

- Releases to the ground surface, groundwater and/or surface water from industrial/commercial facilities where spills of materials containing 1,4-dioxane have occurred;
- Releases to groundwater and/or surface water from wastewater treatment plants where wastewater treatment methods were not designed to remove 1,4-dioxane compounds from the waste stream;
- Releases to groundwater and surface water from residential septic systems where 1,4-dioxane compounds were used in the household;
- Releases to the ground surface, groundwater and/or surface water from industrial facilities where polyethylene terephthalate plastic was manufactured; and
- Releases to groundwater and/or surface water from landfills were 1,4-dioxane wastes were disposed of.

2.6 Management of Oil and/or Hazardous Materials at the Airport to Reduce the Potential for a Release

During its normal daily operations, the Airport accepts, stores, handles and transfers a variety of oil and/or hazardous materials ("OHM"), similar to most other airports and similar industries. Daily operations include refueling and maintenance of vehicles and aircraft that require a certain level of OHM storage and use. Over the past 20 years, it has been a priority of the Airport management to implement many OHM use reductions, improvements, and storage and training guidelines, as well as infrastructure improvements that continue to reduce the risk of impacts to environmental receptors at the Airport. Additionally, the ARFF building is where the emergency response vehicles, AFFF and all firefighting apparatus is stored. This is the only location where AFFF is stored at the Airport. Airport personnel are trained first responders and use and maintain the equipment in compliance with local, state and federal regulations. Good housekeeping practices currently implemented at Airport and tenant facilities to reduce the potential release of OHM to the environment include:

- Keeping impervious surfaces adjacent to buildings free of surface debris with brooms;
- Utilizing absorbent materials and drip pans to contain minor discharges of OHM to facility floors in maintenance areas, and promptly removing and containerizing for proper disposal;
- Keeping facility floors free of surface debris to prevent the spread of potential pollutants due to foot traffic;

- Removing surface debris from runways and taxiways seasonally with a streetsweeper;
- Maintenance of hangar doors and roofs to prevent stormwater from entering and exiting the facility during precipitation events;
- Regular garbage and waste container consolidation into common collection containers to encourage proper handling of solid waste;
- Using appropriately sized and constructed containers for the storage of maintenance products or waste products to reduce the potential for a release during storage, application, transfer, or transfer for disposal;
- Storage of maintenance products and waste products indoors, properly sealed and labeled to prevent misuse or premature disposal;
- Prohibition of washing of paved surfaces or facility floors resulting in a discharge of wash water to drainage utilities. Washing of facility floors is permitted where wash water is discharged to municipal sewer through a permitted municipal sewer connection or to a tight tank for proper disposal;
- Implementation of an aircraft deicing and washing program that established procedures for Airport and tenant personnel during use of the South Ramp pad for aircraft deicing or washing. The South Ramp Deicing and Washing Pad which discharges to the Barnstable Water Pollution Control Facility was constructed in 2015 by the Airport to provide tenants and aircraft operators with a central location to complete these activities and reduce the potential for environmental impacts. The MassDEP, Cape Cod Commission ("CCC"), Barnstable Department of Public Works ("DPW"), and Barnstable Water pollution Control Division ("WPCD") reviewed the construction plans;
- Implementation of a Stormwater Pollution Prevention Plan to establishes procedures and methods to prevent the discharge of OHM to the environment via the stormwater drainage system;
- Implementation of a Spill Prevention, Control, and Countermeasure Plan to establishes procedures and methods to prevent the discharge of OHM to the environment;
- Spill containment kits in all Maintenance and Operations vehicles;
- Regular inspections of all Airport facilities to inventory all hazardous materials present at the Airport;
- Closure of several hanger floor drains to meet EPA and MassDEP discharge requirements;
- Installation of Vortech stormwater units on the north side of the airfield and in the main terminal parking lot that are maintained and cleaned on a regular basis;

- Removal of a 20+ year 20,000-gallon jet A fuel tank with the replacement and installation of the new aboveground fuel farm, double wall containment and additional spill containment including the addition of an oil/water separator;
- Purchase and use of the Ecologic Cart testing unit in 2016 to prevent the discharge of foam on the ground during FAA required annual testing;
- No pesticides are used at the Airport;
- Road salt is not used to treat runways, aprons or taxiways;
- Chemicals are not used on runways, taxiways and aprons during snow removal operations; and
- Removal of the 250-gallon underground diesel fuel tank and replacement with natural gas for the airfield emergency generator.

2.6 Management of Fire Fighting Foam at the Airport

Details concerning the type, usage, and storage of AFFF at the Airport are set forth below.

- Annual testing per Federal Aviation Administration ("FAA") regulations is required to ensure that there is the appropriate AFFF to water mixture. Historically, the test consists of essentially shooting the mixture of AFFF from the fire rescue vehicle at a small square target. Adjustments are made, if needed, to allow for proper spray coverage.
    - Approximately 80 gallons of AFFF was historically used annually to conduct the test.
    - All testing has been conducted in the same location on the Airport for the past 16 plus years (Drill/Deployment area).

In 2016 the Airport purchased an Ecologic Cart system to prevent the discharge of foam on the ground surface during testing. The Ecologic Cart allows the Airport to test the fire truck's ability to properly mix and dispense foam without ground dispensing as previously required. This unit was the first unit purchased for any Massachusetts airport and well before final FAA testing and approval for universal use at airports.

- All firefighters must attend annual training which occurs off-site at various FAA approved training facilities such as Logan Airport or Concord New Hampshire.
- Tri-Annual Drill Dates:
    - With the exception of the drill in 1991 as shown on the Figure 5, all drills occurred on the East Ramp at the Drill / Deployment area
    - July 17, 1991
    - Nov. 16, 1994
    - Nov. 17, 1997

    - Nov. 2, 2000
    - Oct. 18, 2003
    - Oct. 25, 2006
    - Oct. 22, 2009
    - Oct. 11, 2012
    - Oct. 28, 2015 (No AFFF used during this drill – just water)
    - Sept 5, 2018 (No AFFF used during this drill – just water)
- FAA regulations require a supply of AFFF on hand to resupply two trucks. This is approximately 405 gallons.
- The Airport removes expired foam that is no longer useable for airport operations using an approved waste disposal company.

Firefighting hoses used in the training are cleaned and stored on the trucks or in the ARFF building fire bays. The hoses, when needed to be cleaned, are done so within the ARFF building only. The ARFF and SRE garage bays feature a floor drain discharging to an oil/water separator for pretreatment prior to discharge to municipal sewer under a permitted connection.

- Personnel working at the Airport since 1980 were consulted to determine when AFFF use occurred during an actual aircraft accident and only two instances were identified. Please note that AFFF is NOT used unless there is a spark of fire. The majority of accidents do not result in the use of AFFF.
    - 1981 crash of a Beech 18 aircraft east of runway 24 between Willow Street and the Airport.
    - 2016 crash of a Cirrus aircraft in the parking lot of the rental car facility west of the terminal building. Approximately 10 gallons of AFFF concentrate was used during the crash response. 100% of this AFFF liquid was contained within a solid bottom manhole and removed during response actions.

2.7 Applicable Regulatory Standards

In accordance with MCP Section 310 CMR 40.0900, the characterization of risk of harm to health, safety, public welfare, and the environment must be evaluated at each disposal site. This characterization includes the site-specific categorization of soil and groundwater based on site location and use, and the comparison of laboratory results of testing samples to their applicable standards. Standards for 1,4-dioxane were promulgated in 2006. The MassDEP currently has an Office of Research and Standards Guideline ("ORSG") for the five PFAS compounds as follows:

- Perfluoroheptanoic acid ("PFHpA");
- Perfluorohexanesulfonic acid ("PFHxS");

- Perfluorononanoic acid (“PFNA”);
- Perfluorooctanesulfonic acid (“PFOS”); and
- Perfluorooctanoic acid (“PFOA”).

A proposed revision to the MCP provides more stringent standards that may be promulgated for these compounds. The proposed standard will include the sum of the five mentioned above plus:

- Perfluorodecanoic acid (“PFDA”);

Groundwater located within a Current Drinking Water Source Area is considered category GW-1. The Airport is located within several zones of contribution (Zone II) for Barnstable Village, the Hyannis Water District and the Town of Yarmouth. Zone IIs are considered current drinking water sources as defined in 310 CMR 40.0006; thus, category GW-1 is applicable, which is the most stringent category.

Groundwater located within 30 feet of an occupied building that has an average annual depth of less than 15 feet is categorized as GW-2. This is primarily a concern because of the possibility of vapor impacts to indoor air. The average annual depth to groundwater at the Airport is greater than 15 feet, therefore GW-2 Standards do not apply. Also, all disposal sites shall be considered a potential source of discharge to surface water, and therefore categorized as GW-3. Based on these criteria, categories GW-1 and GW-3 are applicable to this site.

Pursuant to 310 CMR 40.0933, the applicable soil category is selected based upon the frequency, intensity of use, and accessibility of the Airport by adults and children. Based on these criteria, soil at the Airport is category S-1 & GW-1 and SW-1 & GW-3, which are the most stringent standard.

The current and proposed (2019 proposed MCP Revisions) soil and groundwater standards applicable to the Airport for PFAS and 1,4-dioxane are as follows:

PFAS*							
Current Soil Standard		Proposed Soil Standards		Current ORSG Groundwater Value		Proposed Groundwater Standard	
S-1 & GW-1	SW-1 & GW-3	S-1 & GW-1	SW-1 & GW-3**	GW-1	GW-3	GW-1	GW-3**
None	None	0.2 ug/kg	300 ug/kg	0.07 ug/L	None	0.02 ug/L	500-40,000 ug/L

* PFAS is the sum of perfluorodecanoic Acid (“PFDA”), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA)

**The proposed S-1 & GW-3 standard and the proposed GW-3 standard is not for the sum of PFAS but rather for each of the individual six PFAS compounds listed above.

1,4-dioxane							
Current Soil Standard		Proposed Soil Standards		Current Groundwater Value		Proposed Groundwater Standard	
S-1 & GW-1	SW-1 & GW-3	S-1 & GW-1	SW-1 & GW-3	GW-1	GW-3	GW-1	GW-3
200 ug/kg	20,000 ug/kg	200 ug/kg	20,000 ug/kg	0.3 ug/L	50,000 ug/L	0.3 ug/L	50,000 ug/L

2.8 Environmental Assessment History

The evaluation for 1,4-dioxane at the Airport began in July 2015 when the MassDEP requested samples of existing wells to evaluate the presence or absence of this compound on Airport property. In August 2016, the Airport also conducted an initial round of groundwater sampling to evaluate the presence of PFAS compounds, also at the request of MassDEP. Subsequently, a Notice of Responsibility ("NOR"), dated November 10, 2016, was issued to the Airport by the MassDEP. The NOR requested that the Airport conduct additional field investigations to evaluate sources of two types of contaminants at the Airport and on adjacent properties, and to identify potential impacts to public water supply wells operated by the Hyannis Water District at the Mary Dunn and Maher Wellfields.

Groundwater in the vicinity of historic releases from a floor drain at the former Provincetown Boston Airlines hangar (currently leased to Cape Air) had been known to contain 1,1,1-trichloroethane (1,1,1-TCA). Since 1,1,1-TCA solvent products have been known to potentially contain 1,4-dioxane, the past release of 1,1,1-TCA was investigated as part of this project as a potential source.

In July 2015, HW sampled groundwater from seven monitoring wells on and off the Airport property for analysis of 1,4-dioxane. The contaminant was detected in well OW-9DD at a concentration of 0.93 ug/L, above the 0.30 ug/L standard for 1,4-dioxane. This well is located off Airport property, within the Maher Wellfield property, and is screened from 77 to 87 feet below the ground surface. All samples taken from the other wells at the Airport property did not contain 1,4-dioxane above laboratory reporting levels. Subsequent testing in 2017 of 11 groundwater wells only detected 1,4-dioxane at OW-9DD, OW-19D and OW-18D which are all located off Airport property and within the Maher Wellfield property. An additional well was installed at the Airport in June 2019 as a final attempt to verify that the Airport is not the source of 1,4-dioxane at the Maher Wellfield property. Sampling of this well and select others for 1,4-dioxane is anticipated in the coming months.

In response to the August 4, 2016 NOR/ Request for Information ("RFI") the Airport contracted with HW to conduct additional groundwater investigations and collect samples for laboratory analysis. As described in the December 2016 Immediate Response Action Plan, these efforts were focused on suspected PFAS contamination locations on the Airport property based on the understanding of past use or potential release locations as described above.

In accordance with the MCP, HW prepared an Immediate Response Action Plan in December 2016, the most recent status report for which was dated April 2019. Details of the investigations of these contaminants is set forth below.

Summary of Response Actions Conducted between November 2016 and July 2019

- The installation of groundwater monitoring wells at six locations installed in April 2017: in the vicinity of potential sources of PFAS at the ARFF Building, at the firefighting training deployment area adjacent to the East Ramp, and at upgradient locations to evaluate potential off-site sources of PFAS and 1,4-dioxane.
- The first round of groundwater samples for PFAS and 1,4-dioxane were collected on April 5-7 and April 11, 2017. Additional groundwater samples and one surface water sample were collected for analysis of PFAS on June 20, 2017.
- An initial round of three soil samples were taken on December 6, 2016 as reported in the first status report. One sample was taken from each location where it was determined that AFFF had been used at the Airport, including the site of an airplane crash in 1991, the deployment area, and the drill location along the dirt road adjacent to the deployment area.
- A second round of soil samples were collected on June 20, 2017 adjacent to the ARFF building and within the deployment area to begin to determine the extent of PFAS within the surface soils. Based on the results of these analyses, a third round of samples from these two locations were collected on September 26, 2017. The third round of sampling was designed to further map the extent of PFAS in soils both horizontally and vertically, with samples taken at the ground surface and at two and four feet below grade.
- In October 2017, three composite soil samples were taken from piles of sediment and topsoil associated with the redevelopment of Runway 15/33. These piles were located on Airport property at the site of the former Mildred's Restaurant and were analyzed for PFAS compounds to evaluate if sediment removed from the airport as part of this redevelopment contained PFAS.
- Two samples of AFFF have also been analyzed for PFAS compounds to evaluate the foam previously used at the airport and that the foam that is currently in use.
- Six PFAS soil samples were also analyzed for leaching potential using an SPLP test between September and October 2017. The chosen samples included four samples from within the boundaries of the PFAS sites at the airport and two samples from runway reconstruction soils stockpiled at the airport.
- On August 14, 2018, 24 PFAS surface soil samples were collected in proximity to the ARFF building and the Deployment Area. PFAS compounds were previously detected in these areas and additional samples were collected to determine the vertical extent of PFAS impacts in soil and to refine the Disposal Site boundary at the Airport.
- In October 2018, three soil borings (DL11, DL14 and HW-F) were advanced in the deployment area. One soil boring (ARFF3) was advanced and one surface soil sample (HW-3) was collected near the ARFF Building in order to further delineate the extent of PFAS in soils both horizontally and vertically. All soil borings were advanced using direct push methods.

- In October 2018, six monitoring wells were installed at the Airport. A cluster of three wells (HW-G(s), HW-G(m), and HW-G(d)) was installed at an upgradient location to evaluate potential off-site sources of PFAS. Three additional wells (HW-H, HW-I, and HW-J) were installed southeast of the deployment area adjacent to the East Ramp.
- In November 2018, six groundwater samples were collected to evaluate PFAS concentrations in the Deployment area. Four groundwater samples and one surface water sample from Mary Dunn Pond were also collected for analysis of oxygen and hydrogen isotopes to determine the contribution of pond water from Mary Dunn Pond to the four downgradient wells.
- In December 2018, two soil samples were collected from the 1991 Drill Location to determine if PFAS detected in the area are related to background conditions.
- In February 2019, three additional surface soil samples were collected to further delineate the Disposal Site boundary around the ARFF building.
- In May and June 2019, HW installed an additional nine groundwater monitoring wells to delineate the vertical and horizontal extent of PFAS at the Airport and on adjacent hydraulically upgradient properties. HW is in the process of evaluating the potential groundwater impacts from other off-site sources such as the adjacent Fire Fighting Academy that may be contributing to the detection of PFAS both at the Airport and at the downgradient well fields.

Tabulated soil and groundwater data are included as Tables 1-5, Appendix A and Figures 3 through 5 indicate the sampling locations. PFAS analytical data for the nine recently installed monitoring wells is expected in mid-July 2019. Additional testing for 1,4-dioxane in groundwater is anticipated in the coming months.

As indicated on Figure 3 and 4, numerous soil borings have been advanced in the vicinity of the Deployment Area and ARFF Building. Analytical testing of approximately 76 soil samples from various depths and locations in these areas were utilized to determine the vertical and horizontal extent of PFAS impacts in soil. The delineated extent of these impacts is also indicated on Figures 3 and 4 as a yellow line.

As indicated on Figure 5, numerous groundwater monitoring wells have been advanced both on and off the Airport property. Analytical testing of approximately 34 groundwater samples between 2016 and 2018 from various depths and locations have been used to delineate the vertical and horizontal extent of the PFAS plume at the Airport. Analytical testing of nine recently installed groundwater monitoring wells were completed in June and July 2019. This data will be used to further define the vertical and horizontal extent of the PFAS plume and further define any contribution of PFAS from off-site sources.

3.0 POSSIBLE REMEDIAL ACTIONS

The Airport is currently evaluating the nature and extent of PFAS and 1,4-dioxane in soil and groundwater consistent with the MCP as part of the Phase II Comprehensive Site Assessment. In order to develop an appropriate remedial action that is protective of the public health, welfare, and the environment, the full extent of soil and groundwater impacts including the potential contribution from off-site sources (i.e., the adjacent Firefighting Academy) must be known. As indicated above, interim steps have been implemented by the District to meet the required drinking water standards and guidelines for these compounds. The District has constructed treatment facilities at the Mary Dunn Wellfield to treat for PFAS compounds and has agreements to purchase water from the Town of Yarmouth and the Centerville, Osterville, Marstons Mills Water District. In addition, they are in the process of installing a treatment system for both PFAS compounds and 1,4-dioxane at the Maher Wellfield. Based on the results of the Phase II Comprehensive Site Assessment, the following remedial actions may be implemented:

- Excavation and off-site disposal of all or a portion of soil identified as a source of groundwater impacts related to operations at the Airport;
- Reducing the ability for PFAS to leach from the soil into groundwater by mixing soil with a binding agent such as activated carbon;
- Excavation, thermal treatment, and reuse on-site of all or a portion of soil identified as a source of groundwater impacts related to operations at the Airport;
- Installation of a non-permeable cap over all or a portion of soil identified as a source of groundwater impacts related to operations at the Airport;
- Injection of a binding agent such as activated carbon to reduce the mobility and leachability to groundwater in areas impacted by Airport operations; or
- Installation of a groundwater pump and treat system to remove impacts from groundwater in areas impacted by Airport operations.

It should be noted that the investigation of PFAS at the Airport is still on-going and that remedial options will be evaluated as part of the Phase II Comprehensive Site Assessment. This report is due to the MassDEP on or before November 10, 2020.

4.0 PUBLIC INVOLVEMENT ACTIVITIES

The Airport is committed to involving the Public throughout the response action process. This draft PIP establishes how the Airport will provide information related to the site and make that information available for public review, and how the public will be able to comment on the ongoing assessment and remediation activities subject to this PIP. The Airport will revise this draft PIP based upon comments received by the public and will implement the final plan in conjunction with ongoing response activities. The dates for the draft PIP, comments, and final PIP are set forth below.

- This draft PIP will be presented by the Airport at a public meeting on July 29, 2019 at 6:00 PM in the Airport Conference room located in the Airport Terminal Building at 480 Barnstable Road, Hyannis, Massachusetts. Please park in the main parking lot and parking validation will be provided at the meeting.
- A public comment period will begin on July 29, 2019 and extend to August 19, 2019. Comments on the PIP are encouraged and may be submitted at the meeting or by writing to:

  Barnstable Municipal Airport
  Attention: Public Involvement Plan
  480 Barnstable Road
  Hyannis, MA 02601

- Comments on the draft PIP may also be emailed to Sue Kennedy at Sue.Kennedy@town.barnstable.ma.us. All comments should be submitted by 6:00 PM, August 19, 2019, within 20 days of the public meeting. The Airport will issue a final PIP no later than September 17, 2019. Any comments received with be incorporated into the Final PIP.

In accordance with the MCP, public involvement activities serve several purposes:

- To identify local concerns and sources of information through interviews and other appropriate measures and ensure that the implementation of the PIP reflects such concerns and the nature and level of relevant public interest;
- To inform the public about response actions and the public involvement process by providing notification of public meetings; and,
- To inform the public of site information related to the remediation of hazardous material releases to the environment.

4.1 Public Involvement History

The Airport has carried out all the public involvement requirements that have applied to the MCP activities it has, and is currently, performing. Bi-annual monitoring and project milestone reports submitted to MassDEP are available for public review at:

https://eeaonline.eea.state.ma.us/EEA/fileviewer/Rtn.aspx?rtn=4-0026347

Additionally, the Board of Health and Chief Municipal Office have been notified of the availability of reports submitted to MassDEP as required by 30 CMR 40.1403 and the ability to review such reports.

4.2 Soliciting Public Input

A public comment period will begin on July 29, 2019 and extend to August 19, 2019. Any comments received with be incorporated into the Final PIP.

4.3 Interviews with Petitioner and Town Officials

The Airport conducted three interviews as part of the PIP development. The interviews were held with:

- Ronald Beaty, chief petitioner for the 20 people who requested the PIP;
- Daniel Santos, Director, Barnstable Department of Public Works on behalf of the Town of Barnstable; and
- Mark Forest, Select Board Member and Karl von Hone, Natural Resources Director, Town of Yarmouth.

The issues raised during each interview are summarized below. Where possible, responses to the questions raised during the interviews are provided.

Interview with Ron Beaty

- Mr. Beaty asked where the documents and reports were housed and where would they be made available to the public.
    - Hard copies of the documents will be made available at the following locations: Hyannis Public Library, West Yarmouth Public Library, and Barnstable Municipal Airport Administration Offices.
    - Online via the MassDEP website and Barnstable Municipal Airport's Website.

- Mr. Beaty asked that the Airport clarify the extent of PFAS and 1,4-dioxane contamination and explain the amount of testing that has been conducted to date to evaluate these contaminants.
    - Section 2.7 of the PIP, along with the associated figures and tables provides a summary of what has been done related to these contaminants since work began in 2016.
    - A total of 34 groundwater samples and 76 soil samples have been collected in that time.
- Mr. Beaty also asked if the Airport is sampling for contaminants of emerging concern other than PFAS and 1,4-dioxane.
    - The focus of the investigations since 2016 has been on PFAS compounds and 1,4-dioxane as these emerging contaminants have impacted public supply wells in Hyannis above the state's drinking water standards and guidelines.

- Mr. Beaty asked if the Airport has sampled for PFAS in Upper Gate or Lewis Ponds on the Airport or in Mary Dunn or Lamson ponds adjacent to the Airport.
    - The Airport recently collected samples from Upper Gate and Lewis Ponds. The results are not yet available at the time of this draft report.

    - Mary Dunn and Lamson ponds are upgradient of sites at the Airport where PFAS compounds have been used and are not part of the ongoing Phase II investigations.
    - Mary Dunn Pond was sampled by Barnstable County as part of the assessment of firefighting foam use at the Barnstable Fire Training Academy.
- Mr. Beaty asked if there was any issue with a series of soil piles on Airport property alongside Attucks Lane.
    - These soils were moved to this location as part of the redevelopment of Runway 15-33 and were not in an area associated with either the Deployment Area or ARFF building where PFAS compounds were identified in shallow soils.
- Mr. Beaty asked if a map would be furnished that identifies the area of contaminant/plume.
    - The airport has identified the majority of the area of concern but is still in the process of collecting additional data.

Interview with Daniel Santos, Town of Barnstable

- Mr. Santos stressed that the Town of Barnstable's main issue is understanding the impacts to the public supply wells serving Hyannis from firefighting foam use at the Airport. The primary concern he mentioned was to the Maher Wellfield located downgradient of the Airport.
    - Section 2.7 of the PIP provides an overview of the assessment of soil and groundwater contamination conducted to date to evaluate this issue. Further work will be conducted to complete this assessment in order to develop the Phase II Comprehensive Site Assessment for the Airport as required by MassDEP.

Interview with Mark Forest and Karl von Hone, Town of Yarmouth

The interview with Mark Forest and Karl von Hone included a summary overview of the work done to date at the Airport. In that discussion, Mr. von Hone asked if there has been any evaluation of the impacts of contaminants from the Airport on Mill Pond and the associated herring runs in Yarmouth, just across the town line with Barnstable. He also mentioned the wetland area adjacent to the Maher wellfield that was a former white cedar swamp and stressed the importance of these areas to the Town of Yarmouth. It was discussed that the primary risk associated with PFAS compounds in groundwater is associated with its presence in drinking water. This issue will be evaluated further in the development of the Phase II Comprehensive Site Assessment for the Airport.

4.4 Site Information Repositories

All Airport files are available for public review, by appointment only, at MassDEP's Southeast Regional Office. Files may also be reviewed electronically at:

https://eeaonline.eea.state.ma.us/EEA/fileviewer/Rtn.aspx?rtn=4-0026347

The Airport will establish and maintain local information repositories at the Barnstable Airport Manager's Office, the Hyannis Public Library and the Yarmouth Public Libraries. The local information repository will contain site files, including this PIP, MassDEP filings, and all other appropriate site information. Files will also be available at the DEP Southeast Regional Office. The locations of these repositories are provided below.

Barnstable Municipal Airport
480 Barnstable Road
Hyannis, MA
(508) 775-2020

Hyannis Public Library
401 Main Street
Hyannis, MA
(508) 775-2280

West Yarmouth Public Library
391 Main Street, Route 28
West Yarmouth, MA
(508)775-5206

South Yarmouth Public Library
312 Old Main Street
South Yarmouth, MA
(508)760-4820

MassDEP Southeast Regional Office
20 Riverside Drive
Lakeville, MA
(508) 946-2700

Information will also be available on the Airport's and DEP's websites listed below:

https://airport.town.barnstable.ma.us/about/documents.aspx:
https://eeaonline.eea.state.ma.us/EEA/fileviewer/Rtn.aspx?rtn=4-0026347

4.5 Site Mailing List

The Airport will establish a mailing list to ensure a reliable means of notifying interested parties of the availability for public involvement opportunities. The mailing list shall include: a representative for the original petitioners, local chief municipal officials, local board of health agents, MassDEP, and anyone indicating their desire to be added to the mailing list. The mailing list will be used to announce upcoming public meetings, distribute site updates, public comment periods, and the availability of information related to the site. Persons wishing to be added to the mailing list should notify the Airport in writing at the address below, or email by contacting Sue Kennedy, Administrative Assistant to the Airport Manager at Sue.Kennedy@town.barnstable.ma.us

Barnstable Municipal Airport
Attention: Public Involvement Plan
480 Barnstable Road
Hyannis, MA 02601

4.6 Notification of Major Milestones and Events

The MCP requires a minimum 20-day comment period for response actions at PIP sites including:

- The Phase I Initial Site Investigation Report;
- The Phase II Comprehensive Site Assessment and Phase III Scope of Work;
- The Phase IV Report;
- Implementation of Phase IV Remedy Implementation Plan;
- Implementation of a Release Abatement Measure (RAM); and
- Implementation of a new IRA to address an imminent hazard.

Consistent with the MCP, status reports do not require a public review period. The people listed on the Community Notification List, Table 6, Appendix A, shall be notified of the availability of all future response actions. Notification will also include the Board of Health and Chief Municipal Officers for the Towns of Barnstable and Yarmouth.

4.7 Public Meetings

The Airport will conduct a public meeting to present this draft PIP on July 29, 2019. The meeting will include a presentation of the materials included in the draft PIP. A series of informational storyboards, provided here in Appendix B, will be posted in the meeting room to help further explain the ongoing work at the Airport. During this public meeting, the necessity of future public meetings shall be discussed.

The Airport will send notices of any future public meetings to all petitioners on the initial request to MassDEP, all individuals on the site mailing list, Yarmouth and Barnstable

Chief Municipal Officers and Board of Health agents, and local newspapers. The Airport will prepare a meeting summary and maintain a copy in the local information repository.

4.8 Public Comment Periods

The Airport will provide the public with an opportunity to submit comments about the draft PIP. The length of the comment period, unless specified otherwise, shall be 20 calendar days from the date of the public meeting July 29, 2019.

Within 30 days of the close of the public comment period on the draft PIP, it will be finalized, and a summary of comments received on the draft PIP shall be developed that contains the comments received, identifies comments that have been incorporated and provides an explanation for comments that were not incorporated into the final PIP. A copy of the response to comments and the final PIP shall be made available in the information repositories established for the Airport.

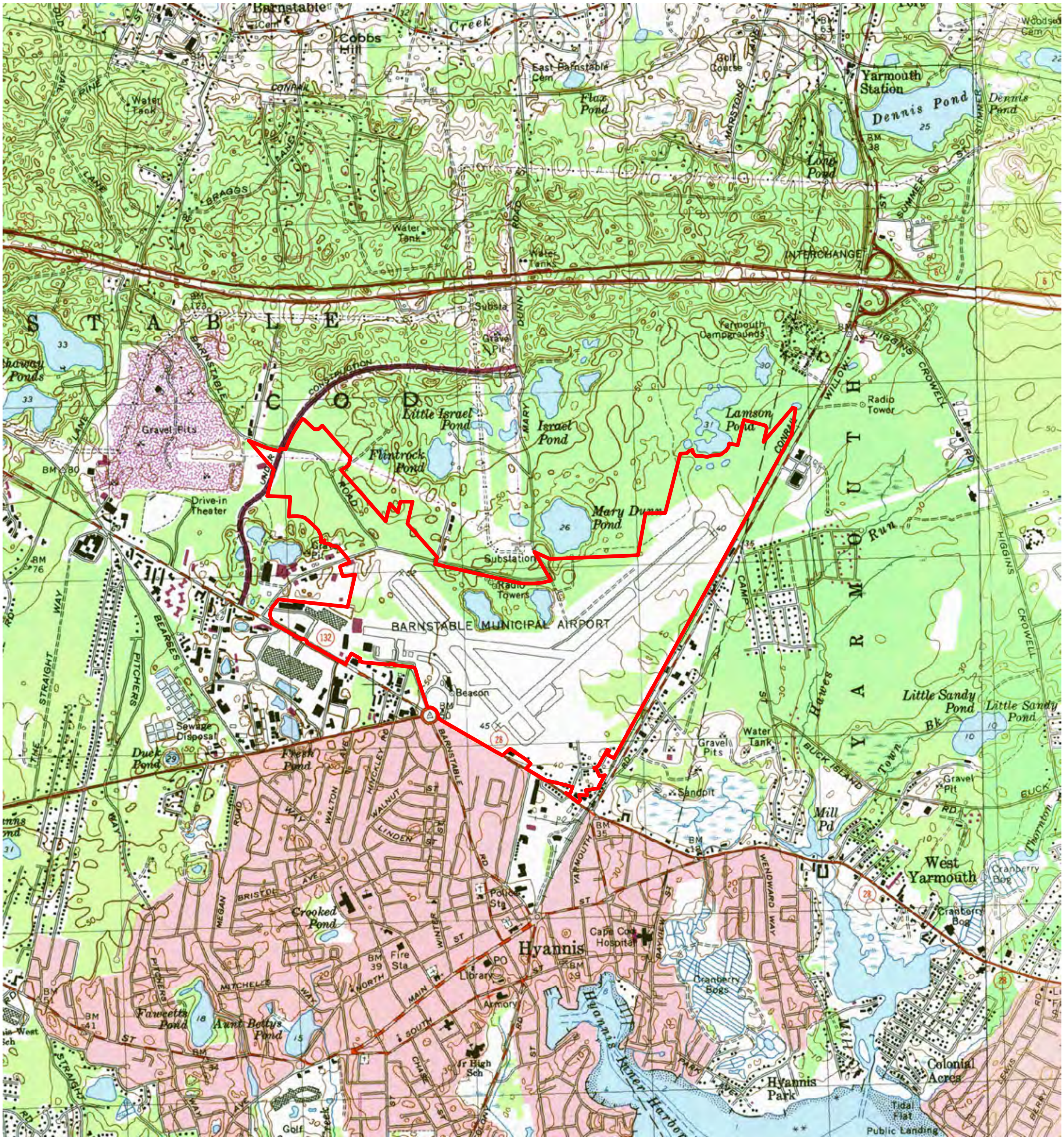
4.9 Public Involvement Plan Revision

This PIP may be revised, when necessary, during the course of the response activities at the Airport. If a revision to this PIP is necessary, the Airport will make a draft available for public review, and shall notify all persons listed in Table 6, and on the site mailing list, of the availability of the draft revised PIP. The Airport will hold a 20-day public comment period prior to the final publishing of the revised PIP and will review and respond to submitted comments.

REFERENCES

1. The Massachusetts Contingency Plan, 310 CMR 40, prepared by the Massachusetts Department of Environmental Protection, dated May 23, 2014.
2. The Draft 2019 Massachusetts Contingency Plan, 310 CMR 40, prepared by the Massachusetts Department of Environmental Protection.
3. Technical Fact Sheet - 1,4 Dioxane, prepared by the United States Environmental Protection Agency, dated November 2017.
4. History and Use of Per-and Polyfluoroalkyl Substances (PFAS), prepared by the Interstate Technology Regulatory Council, November 2017.
5. Phase I Report and Tier Classification Report, prepared by Horsley Witten Group, dated November 2017.
6. Immediate Response Action Plan Status Reports 1 through 5, prepared by Horsley Witten Group, dated April 2017 to April 2019.

FIGURES



Document Path: H:\Projects\HYA\11072 (697 Barnstable Airport)\GIS_Maps\USGS_Locus_20130815.mxd

Legend

Airport Property Line

**Hyannis Topographic Quadrangle*

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Sandwich, MA • 02563
Tel: 508-833-6600 • Fax: 508-833-3150 • www.horsleywitten.com

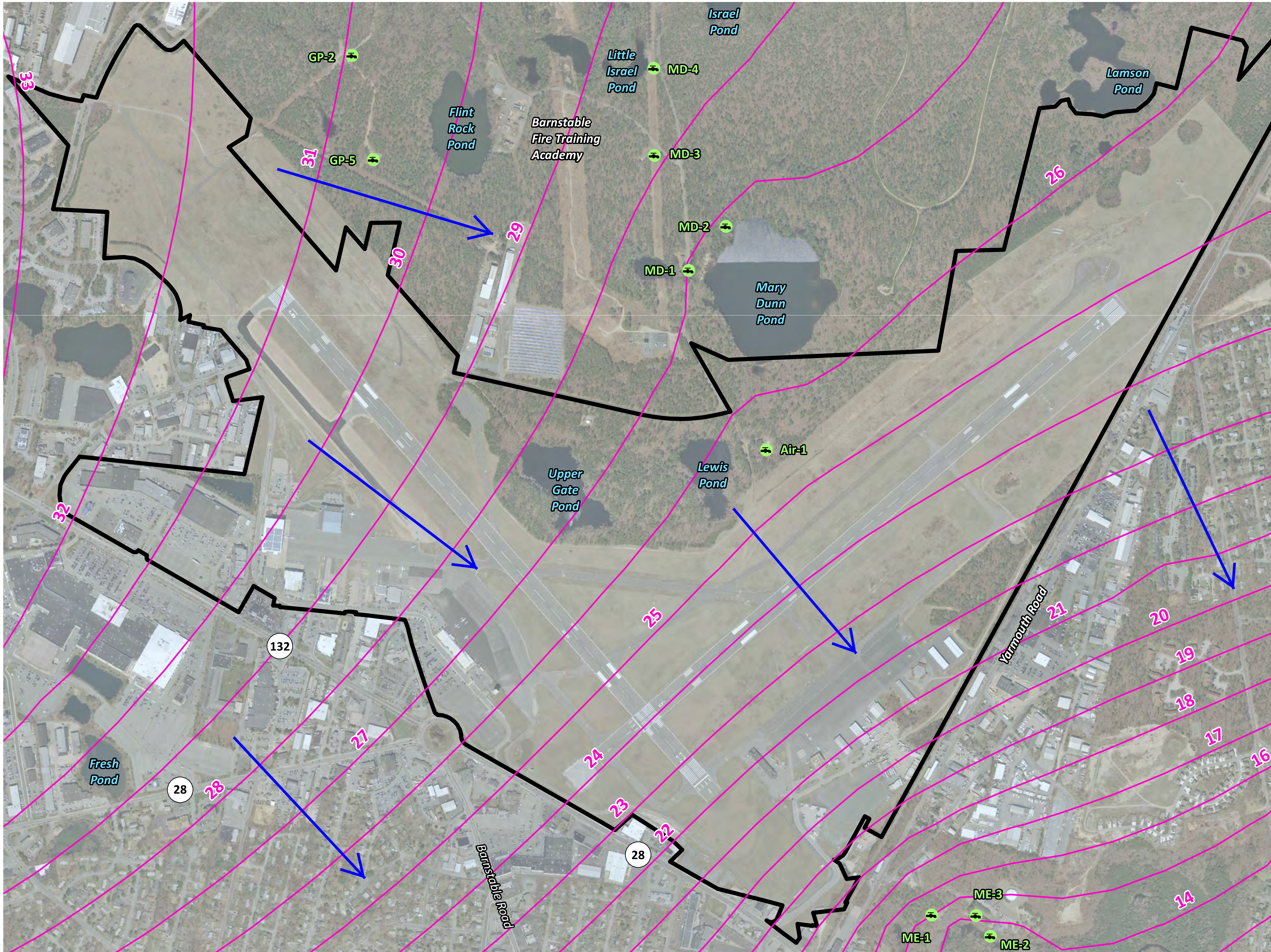
N

Miles
0.5

USGS Locus
Barnstable Municipal Airport
Hyannis, MA

Date: 7/2/2019

Figure 1



Legend

- USGS Sagamore Lens Modeled Contours
- Drinking Water Wells
- Barnstable Municipal Airport Property Boundary
- Groundwater Flow Direction

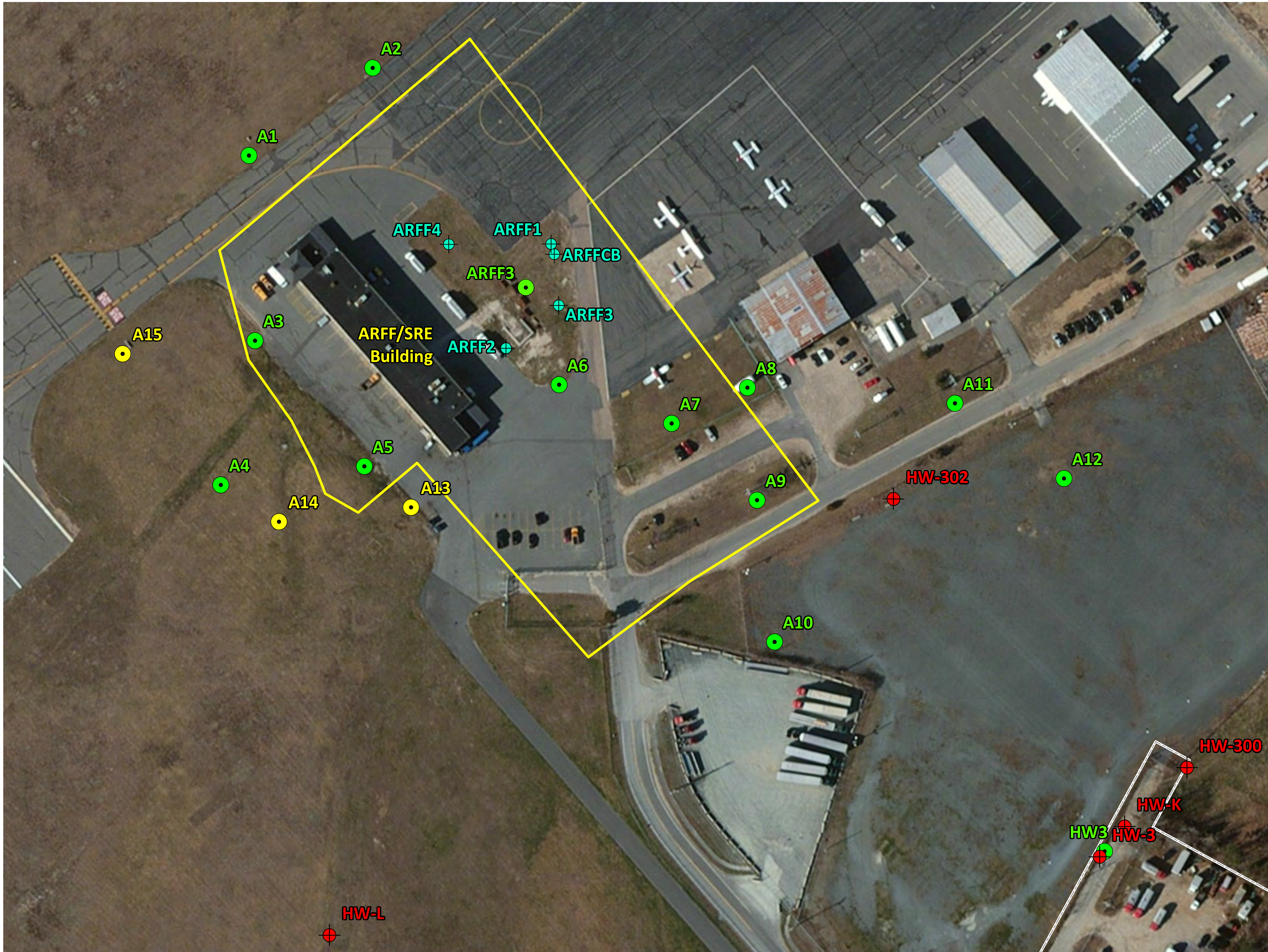
Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Unit 1 • Sandwich, MA 02563
508-833-6600 • horsleywitten.com

USGS Sagamore Lens Modeled Contours
Barnstable Municipal Airport
Hyannis, MA

July 1, 2019 Figure 2

*Imagery - MassGIS 2014

Path: H:\Projects\HYA\17027 BMA PFOS 1-4 IRA\GIS\Maps\Report_Maps\171108_Groundwater.mxd



Legend

- 2017 PFAS Soil Samples
- 2018 PFAS Soil Samples
- 2019 PFAS Soil Samples
- Monitoring Wells
- Barnstable Municipal Airport Property Boundary
- Approximate extent of PFAS soil impacts

N

0 100 Feet

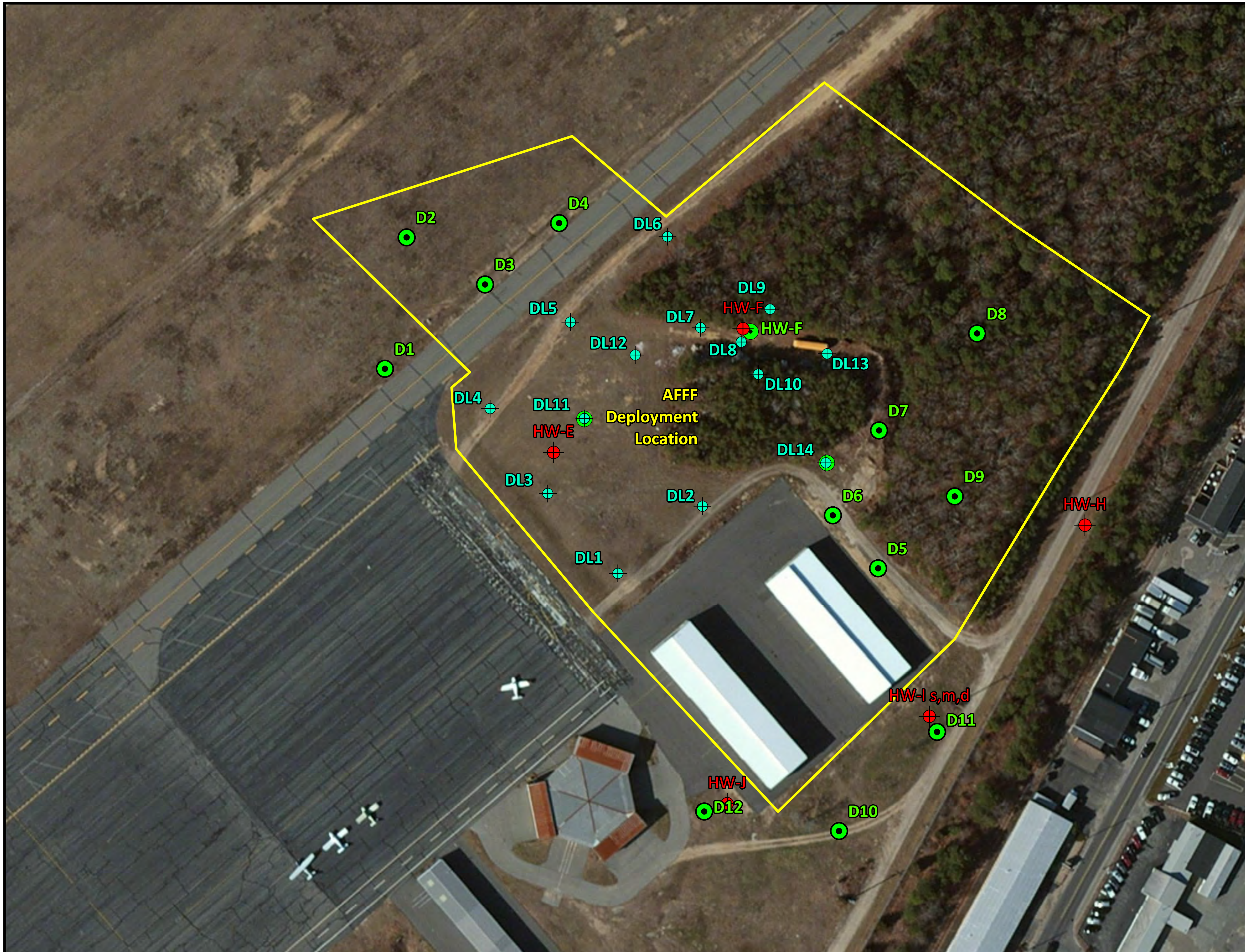
1 inch = 100 feet

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Unit 1 • Sandwich, MA 02563
508-833-6600 • horsleywitten.com

PFAS Sampling Locations
ARFF/SRE Building
Barnstable Municipal Airport
Hyannis, MA

July 1, 2019 Figure 3

Path: H:\Projects\HYA\17027 BMA PFOS 1-4 IRA\GIS\Maps\190701_PFOS_ARFF_SamplingLocations.mxd



Legend

- 2017 PFAS Soil Samples
- 2018 PFAS Soil Samples
- Monitoring Wells
- Barnstable Municipal Airport Property Boundary
- Approximate extent of PFAS soil impacts

N

0 100 Feet

1 inch = 100 feet

Horsley Witten Group
Sustainable Environmental Solutions

PFAS Sampling Locations
Deployment Location
Barnstable Municipal Airport
Hyannis, MA

Date: 7/1/2019

Figure 4

Path: H:\Projects\HYA\17027 BMA PFOS 1-4 IRA\GIS\Maps\190701_PFAS_DEPLOY_Sampling Locations.mxd

Path: H:\Projects\HYA\17027 BMA PFOS 1-4 IRA\GIS\Maps\190701_PFAS Well Locations.mxd

APPENDIX A
TABLES

Table 1: Total PFAS in Soil at ARFF Area

	ARFF1 (0-1') 6/20/2017	ARFF1 (2') 9/26/2017	ARFF1 (4') 9/26/2017	ARFF2 (0-1') 6/20/2017	ARFF3 (0-1') 9/26/2017	ARFF3 (10-12') 10/9/2018	ARFF4 (0-1') 9/26/2017	ARFFCB (0-1) 9/26/2017
Perfluoroheptanoic acid (PFHpA)	0.82 J	1.8	0.66 J	0.17 U	0.60 J	0.32 J	0.75 J	0.60 J
Perfluorohexanesulfonic acid (PFHxS)	0.23 U	0.23 U	0.23 U	0.23 U	0.64 J	0.24 U	0.23 U	0.23 U
Perfluorooctanoic acid (PFOA)	0.75 J	2.6	0.75 J	0.26 U	0.78 J	1.9	0.97 J	0.90 J
Perfluorononanoic acid (PFNA)	2.5	5.7	1.4	0.20 J	0.91 J	3.1	2.9	0.17 U
Perfluorooctane sulfonate (PFOS)	4.5	2.7	1.1	0.29J	4.4	1.1	1.0	1.1
Total PFAS	8.57 J	12.8	3.91 J	0.49 J	7.33 J	6.42 J	5.62 J	2.6 J
	A1 (0-1') 8/14/2018	**A2 (0-1') 8/14/2018**	**A3 (0-1') 8/14/2018**	**A4 (0-1') 8/14/2018**	**A5 (0-1') 8/14/2018**	**A6 (0-1') 8/14/2018**	**A7 (0-1') 8/14/2018**	**A8 (0-1') 8/14/2018**
Perfluoroheptanoic acid (PFHpA)	0.19 U	0.19 U	0.38 J	0.19 U	1.1	0.19 U	0.19 U	0.19 U
Perfluorohexanesulfonic acid (PFHxS)	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Perfluorooctanoic acid (PFOA)	0.25 U	0.25 U	0.37 J	0.30 J	1.9	0.25 U	0.25 U	0.25 U
Perfluorononanoic acid (PFNA)	0.22 U	0.22 U	0.51 J	0.22 U	0.87 J	0.22 U	0.22 U	0.22 U
Perfluorooctane sulfonate (PFOS)	0.26 U	0.26 U	0.29 J	0.26 U	0.26 U	0.26 U	0.38 J	0.26 U
Total PFAS	0.26 U	0.26 U	1.55 J	0.30 J	3.87 J	0.26 U	0.38 J	0.26 U
	A9 (0-1') 8/14/2018	**A10 (0-1') 8/14/2018**	**A11 (0-1') 8/14/2018**	**A12 (0-1') 8/14/2018**	**A13 (0-1')**	**A14 (0-1')**	**A15 (0-1')**	**HW-3 (0-1') 10/9/2018**
Perfluoroheptanoic acid (PFHpA)	0.19 U	0.19 U	0.19 U	0.19 U	2.0 U	1.9 U	2.0 U	0.19 U
Perfluorohexanesulfonic acid (PFHxS)	0.24 U	0.24 U	0.24 U	0.24 U	2.0 U	1.9 U	2.0 U	0.24 U
Perfluorooctanoic acid (PFOA)	0.34 J	0.25 U	0.25 U	0.25 U	2.0 U	1.9 U	2.0 U	0.25 U
Perfluorononanoic acid (PFNA)	0.22 U	0.22 U	0.22 U	0.22 U	2.0 U	1.9 U	2.0 U	0.22 U
Perfluorooctane sulfonate (PFOS)	0.85 J	0.26 U	0.26 U	0.26 U	2.0 U	1.9 U	2.0 U	0.26 U
Total PFAS	1.19 J	0.26 U	0.26 U	0.26 U	2.0 U	1.9 U	2.0 U	0.26 U

Results in ug/kg = micrograms per kilogram

Maxxim Laboratory analysis

U - Not detected above method detection limit

J = Estimated value, result between laboratory reporting limit and method detection limit

Total = Five (5) combined PFAS compounds (PFHpA + PFHxS + PFNA + PFOS +PFOA)

Note: Totals include estimated values.

Table 2: PFAS in Soil at Deployment Area

	DL1(0-1') 6/20/2017	DL2 (0-1') 6/20/2017	DL2 (2') 9/26/2017	DL2 (4') 9/26/2017	DL3 (0-1') 6/20/2017	DL3 (2') 9/26/2017	DL3 (4') 9/26/2017	DL4 (0-1') 6/20/2017
Perfluoroheptanoic acid (PFHpA)	0.30 J	1.9	1.2	0.48 J	0.84 J	0.17 U	0.17 U	0.31 J
Perfluorohexanesulfonic acid (PFHxS)	0.23 U	1.8	1.3	0.59 J	0.34 J	0.23 U	0.23 U	0.23 U
Perfluorooctanoic acid (PFOA)	0.26 U	1.6	4.1	0.74 J	0.80 J	0.26 U	0.26 U	0.83 J
Perfluorononanoic acid (PFNA)	0.17 U	0.81 J	2.5	0.17 U	0.55 J	0.17 U	0.17 U	2.7
Perfluorooctane sulfonate (PFOS)	0.40 J	12	1.5	0.21 U	0.51 J	0.21 U	0.21 U	2.0
Total PFAS	0.7 J	18.11 J	10.6	1.81 J	3.04 J	0.26 U	0.26 U	5.84 J

	DL4 (2') 9/26/2017	DL4 (4') 9/26/2017	DL5 (0-1') 6/20/2017	DL5 (2') 9/26/2017	DL5 (4') 9/26/2017	DL6 (0-1') 6/20/2017	DL7 (0-1') 6/20/2017	DL8 (2') 6/20/2017
Perfluoroheptanoic acid (PFHpA)	0.17 U	0.17 U	2.5	0.40 J	0.50 J	5.0	2.5 J	2.9 J
Perfluorohexanesulfonic acid (PFHxS)	0.23 U	0.23 U	0.49 J	0.49 J	0.23 U	0.23 U	0.23 U	2.3 U
Perfluorooctanoic acid (PFOA)	0.26 U	0.26 U	3.7	1.6	0.26 U	0.26 U	4.2 J	25
Perfluorononanoic acid (PFNA)	0.17 U	3.7	0.19 J	0.17 U	0.17 U	0.19 J	9.6 J	46
Perfluorooctane sulfonate (PFOS)	0.21 U	0.50 J	0.21 U	0.21 U	0.21 U	0.21 U	3.9 J	14
Total PFAS	0.26 U	4.2 J	6.88 J	2.49 J	0.50 J	5.19 J	20.2 J	87.9 J

	DL8 (4') 9/26/2017	DL9 (0-1') 6/20/2017	DL10 (0-1') 6/20/2017	DL 11 (0-1') 9/26/2017	DL11 (4-6') 10/4/2018	DL11 (10-12') 10/4/2018	DL11 (14-16') 10/4/2018	DL12 (0-1') 9/26/2017
Perfluoroheptanoic acid (PFHpA)	4.7J	0.66 J	1.3	2.1	1.3	0.31 J	0.23 J	1.2
Perfluorohexanesulfonic acid (PFHxS)	2.3 U	0.35 J	0.94 J	0.82 J	0.24 U	0.24 U	0.24 U	0.23 U
Perfluorooctanoic acid (PFOA)	22	0.68 J	1.7	4.7	2.9	1.9	0.50 J	4.6
Perfluorononanoic acid (PFNA)	1.7 U	0.22 J	0.17 U	16	2.5	0.22 U	0.22 U	7.3
Perfluorooctane sulfonate (PFOS)	2.1 U	0.38 J	0.26 J	29	0.26 U	0.26 U	0.26 U	23
Total PFAS	26.7 J	2.29 J	4.2 J	52.62 J	6.7	2.21 J	0.73 J	36.1 J

	DL13 (0-1') 9/26/2017	D1 (0-1') 8/14/2018	D2 (0-1') 8/14/2018	D3 (0-1') 8/14/2018	D4 (0-1') 8/14/2018	D5 (0-1') 8/14/2018	D6 (0-1') 8/14/2018	D7 (0-1') 8/14/2018
Perfluoroheptanoic acid (PFHpA)	1.6	0.19 U	0.21 J	0.19 U	0.95 J	0.22 J	0.25 J	7.8
Perfluorohexanesulfonic acid (PFHxS)	0.23 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Perfluorooctanoic acid (PFOA)	2.4	0.25 U	0.33 J	0.25 U	1.1	0.25 U	0.28 J	14
Perfluorononanoic acid (PFNA)	1.5	0.22 U	0.67 J	0.22 U	0.98 J	0.22 U	0.22 U	10
Perfluorooctane sulfonate (PFOS)	0.66 J	0.26 U	0.66 J	0.38 J	2.9	0.26 U	0.26 U	3.4
Total PFAS	6.16 J	0.26 U	1.87 J	0.38 J	5.93 J	0.22 J	0.53 J	35.2

	D8 (0-1') 8/14/2018	D9 (0-1') 8/14/2018	D10 (0-1') 8/14/2018	D11 (0-1') 8/14/2018	D12 (0-1') 8/14/2018	DL 11 (0-1') 9/26/2017	DL11 (4-6') 10/4/2018	DL11 (10-12') 10/4/2018
Perfluoroheptanoic acid (PFHpA)	1.0	2.7	0.19 U	0.19 U	0.19 U	2.1	1.3	0.31 J
Perfluorohexanesulfonic acid (PFHxS)	0.31 J	0.24 U	0.24 U	0.24 U	0.24 U	0.82 J	0.24 U	0.24 U
Perfluorooctanoic acid (PFOA)	2.2	3	0.25 U	0.25 U	0.25 U	4.7	2.9	1.9
Perfluorononanoic acid (PFNA)	0.59 J	0.83 J	0.22 U	0.22 U	0.32 J	16	2.5	0.22 U
Perfluorooctane sulfonate (PFOS)	2.1	0.67 J	0.54 J	0.91 J	0.44 J	29	0.26 U	0.26 U
Total PFAS	6.2 J	7.2 J	0.54 J	0.91 J	0.76 J	52.62 J	6.7	2.21 J

	DL11 (14-16') 10/4/2018	DL14 (0-1') 9/26/2017	DL14 (4-6') 10/4/2018	DL14 (10-12') 10/4/2018	HW-F (10-12') 10/4/2018	HW-F (14-16') 10/4/2018
Perfluoroheptanoic acid (PFHpA)	0.23 J	4.9	0.36 J	0.19 U	0.32 J	1.3
Perfluorohexanesulfonic acid (PFHxS)	0.24 U	0.71J	0.24 U	0.24 U	0.24 U	0.24 U
Perfluorooctanoic acid (PFOA)	0.50 J	23	0.58 J	0.32 J	0.25 U	1.4
Perfluorononanoic acid (PFNA)	0.22 U	10	0.22 U	0.22 U	0.22 U	0.22 U
Perfluorooctane sulfonate (PFOS)	0.26 U	7.6	0.26 U	0.26 U	0.26 U	0.26 U
Total PFAS	0.73 J	46.21 J	0.94 J	0.32 J	0.32 J	2.7

Results in ug/kg = micrograms per kilogram

Maxxim Laboratory analysis

U - Not detected above method detection limit

J = Estimated value, result between laboratory reporting limit and method detection limit

Total = Five (5) combined PFAS compounds (PFHpA + PFHxS + PFNA + PFOS +PFOA)

Note: Totals include estimated values.

Table 3: PFAS in Soil at 1991 Drill Location

	1991A (0-1') 8/14/2018	1991B (0-1') 8/14/2018	1991C (0-1') 8/14/2018	1991D (0-1') 8/14/2018	1991A-B (3-4') 12/14/2018	1991C-D (2-3') 12/14/2018
Perfluoroheptanoic acid (PFHpA)	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Perfluorohexanesulfonic acid (PFHxS)	0.24 U	0.66 J	0.24 U	0.24 U	0.24 U	0.24 U
Perfluorooctanoic acid (PFOA)	0.25 U	0.26 J	0.25 U	0.25 U	0.25 U	0.25 U
Perfluorononanoic acid (PFNA)	0.22 U	0.22 U	0.22 U	0.30 J	0.22 U	0.22 U
Perfluorooctane sulfonate (PFOS)	0.49 J	1.1	0.55 J	0.36 J	0.30 J	0.42 J
Total PFAS	0.49 J	2.02	0.55 J	0.66	0.30 J	0.42 J

Results in ug/kg = micrograms per kilogram

Maxxim Laboratory analysis

U - Not detected above method detection limit

J = Estimated value, result between laboratory reporting limit and method detection limit

Total = Five (5) combined PFAS compounds (PFHpA + PFHxS + PFNA + PFOS +PFOA)

Note: Totals include estimated values.

Table 4: Groundwater Results for PFAS Compounds 2016-2017

	North Ramp							Lewis PoU		
Sample ID Sample Date	**HW-1 7/1/2016**	**HW-1 6/20/2017**	**HW-4M 4/5/2017**	**HW-5 7/1/2016**	**HW-5 4/7/2017**	**HW-23 6/20/2017**	**HW-19D 6/20/2017**	**HW-D 4/7/2017**	**HW-401S 4/7/2017**	**HW-C 4/7/2017**
Perfluorobutanesulfonic acid (PFBS)	0.009 U	0.02	0.005J	0.009 U	0.0048 U	0.0051J	0.0081J	0.0048 U	0.0048 U	0.0048 U
Perfluoroheptanoic acid (PFHpA)	0.01	0.0042J	0.007J	0.041	0.0084J	0.0045J	0.0052J	0.0033 U	0.0043J	0.0033 U
Perfluorohexanesulfonic acid (PFHxS)	0.018	0.065	0.02	0.011	0.018J	0.021	0.046	0.0089J	0.011J	0.0034 U
Perfluorononanoic acid (PFNA)	0.002 U	0.0057J	0.0046 U	0.002 U	0.0046 U	0.0038 U	0.0065J	0.0046 U	0.0046 U	0.0046 U
Perfluorooctane sulfonate (PFOS)	0.017	**0.24**	0.043	0.12	0.052	0.0079J	0.061	0.022	0.012J	0.0026 U
Perfluorooctanoic acid (PFOA)	0.033	0.022	0.011J	0.031	0.020J	0.0046 U	0.017J	0.0046 U	0.0046 U	0.0046 U
Total	**0.078**	**0.3369**	**0.081**	**0.203**	**0.0984**	0.0334	**0.1357**	0.0309	0.0273	0.0046 U

	Steamship Parking Lot						Airfield		Airport Road	
Sample ID Sample Date	**HW-2 7/1/2016**	**HW-3 7/1/2016**	**HW-3 4/5/2017**	**HW-300 7/1/2016**	**HW-301 7/1/2016**	**HW-302 7/1/2016**	**HW-E 4/5/2017**	**HW-F 4/5/2017**	**HW-A(S) 4/7/2017**	**HW-B(S) 4/7/2017**
Perfluorobutanesulfonic acid (PFBS)	0.009 U	0.009 U	0.0048 U	0.009 U	0.009 U	0.009 U	0.0048 U	0.0048 U	0.017J	0.0077J
Perfluoroheptanoic acid (PFHpA)	0.0071	0.016	**0.1**	0.0096	0.002	0.019	**0.15**	**0.34**	0.0048J	0.049
Perfluorohexanesulfonic acid (PFHxS)	0.0035	0.0043	0.020J	0.012	0.038	0.0063	0.042	0.019J	0.0079J	0.044
Perfluorononanoic acid (PFNA)	0.002 U	0.0063	0.027	0.002 U	0.002 U	0.054	0.0087J	0.0046 U	0.0046 U	0.0046 U
Perfluorooctane sulfonate (PFOS)	0.012	**0.084**	**0.15**	0.017	0.011	0.014	0.047	0.0026 U	0.0026 U	0.026
Perfluorooctanoic acid (PFOA)	0.0063	0.0091	0.065	0.0052	0.0037	0.033	0.053	**0.075**	0.0046 U	0.0094J
Total	0.0289	**0.1197**	**0.362**	0.0438	0.0547	**0.1263**	**0.3007**	**0.434**	0.0127	**0.1284**

	Maher Wells									Surface Water
Sample ID Sample Date	**OW-9S 7/5/2016**	**OW-9D 7/5/2016**	**OW-9D 4/11/2017**	**OW-18S 7/5/2016**	**OW-18M 7/5/2016**	**OW-18D 7/5/2016**	**OW-18D 4/11/2017**	**OW-18D Duplicate 7/5/2016**	**OW-19D 4/11/2017**	**Kmart 6/20/2017**
Perfluorobutanesulfonic acid (PFBS)	0.009 U	0.009 U	0.0048 U	0.009 U	0.009 U	0.009 U	0.016J	0.009 U	0.0055J	0.0048 U
Perfluoroheptanoic acid (PFHpA)	0.014	0.0028	0.034	0.0071	0.0029	0.0071	0.015J	0.0063	0.0051J	0.0033 U
Perfluorohexanesulfonic acid (PFHxS)	0.003 U	0.012	**0.12**	0.0068	0.016	0.01	**0.13**	0.011	0.029	0.0034 U
Perfluorononanoic acid (PFNA)	0.0077	0.0036	0.059	0.002 U	0.0076	0.0065	0.0046 U	0.0058	0.006J	0.0043 J
Perfluorooctane sulfonate (PFOS)	0.0074	0.041	**0.5**	0.0083	0.044	0.018	**0.22**	0.019	0.029	0.0026 U
Perfluorooctanoic acid (PFOA)	0.007	0.0052	0.055	0.018	0.0058	0.0059	0.025	0.0059	0.0046 U	0.0046 U
Total	0.0361	0.0646	**0.768**	0.0402	**0.0763**	0.0475	**0.39**	0.048	0.0691	0.0043 J

J = Estimated concentration between the EDL and RDL.

Results in ug/L, micrograms per kilogram

U= Undetected at the limit of quantitation.

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

MDL= Method Detection Limit

Shaded/ Bold results above DEP GW-1 standard (0.07 ug/L)

Total PFAS = Five (5) combined PFAS compounds (PFHpA + PFHxS + PFNA + PFOS +PFOA)

Note: Totals include estimated values. Totals do not include PFBS.

Table 5: Groundwater Results for PFAS Compounds 2018

Sample ID Sample Date	North Ramp				Airport Road		Steamship Parking Lot	
	HW-1 10/26/2018	HW-5 10/26/2018	HW-23 10/26/2018	HW-19D 11/7/2018	HW-B(S) 10/26/2018	HW-B(D) 10/26/2018	HW-3 10/26/2018	HW-302 12/3/2018
Perfluorobutanesulfonic acid (PFBS)	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U
Perfluoroheptanoic acid (PFHpA)	0.013 J	0.0074 U	0.0098 J	0.0080 J	0.012 J	0.0074 U	**0.10**	0.015 J
Perfluorohexanesulfonic acid (PFHxS)	0.018 J	0.0056 U	0.023	0.045	0.047	0.0056 U	0.012 J	0.016 J
Perfluorononanoic acid (PFNA)	0.0087 U	0.0088 J	0.0087 U	0.0087 U	0.0087 U	0.0087 U	0.023	0.0097 J
Perfluorooctanoic acid (PFOA)	0.031	0.011 J	0.011 J	0.014 J	0.020 J	0.012 J	0.057	0.03
Perfluorooctane sulfonate (PFOS)	0.028	**0.12**	0.015 J	0.069	0.019 J	0.010 J	0.053	0.031
Total	**0.09**	**0.1398**	0.0588	**0.136**	**0.098**	0.022	**0.245**	**0.1017**

Sample ID Sample Date	Solar Field			Deployment Area				
	HW-G(S) 12/3/2018	HW-G(M) 12/3/2018	HW-G(D) 12/3/2018	HW-H 11/7/2018	HW-I * 11/7/2018	HW-J 11/7/2018	HW-E 11/7/2018	HW-F 11/7/2018
Perfluorobutanesulfonic acid (PFBS)	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.011 U	0.0054 U	0.0054 U	0.0054 U
Perfluoroheptanoic acid (PFHpA)	0.0074 U	0.0074 U	0.0074 U	**0.077**	**0.2**	0.025	0.0074 U	0.0074 U
Perfluorohexanesulfonic acid (PFHxS)	0.0056 U	0.012 J	0.0056 U	0.0056 U	**0.18**	0.0056 U	0.0056 U	0.0056 U
Perfluorononanoic acid (PFNA)	0.0087 U	0.011 J	0.0087 U	0.0087 U	**0.16**	0.028	0.0087 U	0.0087 U
Perfluorooctanoic acid (PFOA)	0.0033 U	0.0033 U	0.0033 U	0.0050 J	**0.26**	0.026	0.0033 U	0.0033 U
Perfluorooctane sulfonate (PFOS)	0.0060 U	0.036	0.0060 U	0.0060 U	0.066	**0.13**	0.0060 U	0.0060 U
Total	0.0087 U	0.059	0.0087 U	**0.082**	**0.866**	**0.209**	0.0087 U	0.0087 U

Sample ID Sample Date	Maher Wells							
	OW-9S 12/3/2018	OW-9M 12/3/2018	OW-9D 12/3/2018	OW-9DD 12/3/2018	OW-18S 12/7/2018	OW-18M 12/7/2018	OW-18D 12/7/2018	OW-19D 12/7/2018
Perfluorobutanesulfonic acid (PFBS)	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	NS
Perfluoroheptanoic acid (PFHpA)	0.048	**0.11**	0.033	0.015 J	0.0074 U	0.0074 U	0.014 J	NS
Perfluorohexanesulfonic acid (PFHxS)	0.023	0.0056 U	**0.12**	0.042	0.0056 U	**0.073**	**0.13**	NS
Perfluorononanoic acid (PFNA)	0.0087 U	0.044	**0.1**	0.038	0.0087 U	0.0087 U	0.0087 U	NS
Perfluorooctanoic acid (PFOA)	0.032	0.052	0.057	0.020 J	0.012 J	0.0060 J	0.019 J	NS
Perfluorooctane sulfonate (PFOS)	0.024	0.0081 J	**0.52**	**0.14**	0.028	**0.24**	**0.32**	NS
Total	**0.127**	**0.2141**	**0.83**	**0.255**	0.04	**0.319**	**0.483**	NS

J = Estimated concentration between the EDL and RDL.

Results in ug/kg, micrograms per kilogram

U= Undetected at the limit of quantitation.

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

MDL= Method Detection Limit

Shaded/ Bold results above DEP GW-1 standard (0.07 ug/L)

Total PFAS = Five (5) combined PFAS compounds (PFHpA + PFHxS + PFNA + PFOA +PFOS)

Note: Totals include estimated values. Totals do not include PFBS.

* HIGHER DETECTION LIMIT

Table 6
Community Notification List
Barnstable Municipal Airport Public Involvement Plan

NAME	ADDRESS	PHONE
Ronald Beaty	245 Parker Road West Barnstable, MA 02668	774-994-2959
Luiz Gonzaga	92 High School Rd. Hyannis, MA 02601	508-815-9994
Anthony Alva	184 Mockingbird Ln. Marstons Mills, MA 02646	774-521-9350
Richard Rougeau	306 Longbeach Rd. Centerville, MA	508-280-5536
Sylvia Laselva	358 Sea St. Hyannis, MA	508-958-8706
Richard A. Zoino	92 High School Rd. Hyannis, MA 02601	508-801-8219
Arthur Beatty	699 Cotuit Rd. Marstons Mills, MA	508-428-1518
Christian Cook	37 Maple Ave. Hyannis, MA	774-428-9763
Amanda Rose	504 Pitchers Way Hyannis, MA	508-685-4241
Araceli Alcantara	67 Coolidge Rd. West Yarmouth	508-534-9197
Jeanny Fichter	1640 Old Stage Rd. West Barnstable, MA	508-685-6889
Janine Voiles	67 Coolidge Rd. West Yarmouth, MA	774-487-7744
Vilson Kote	106 Betty's Path West Yarmouth, MA	774-534-0525
Mainur Kote	106 Betty's Path West Yarmouth, MA	508-280-7185
Nancy Johns	P.O Box 382 Hyannis, MA	508-280-6025
David Beaty	137 Harbor Bluff Rd. Hyannis, MA	508-280-1049
Scott Beaty	29 Washington Ave. West Yarmouth, MA	508-280-6026
Mainur Kote	106 Betty's Path West Yarmouth, MA	508-360-0910
Margo Pisacano	73 Harbor Bluff Road Hyannis, MA	508-776-5508
Rong Jian Liu	5 Fishing Brook Rd. Yarmouth, MA	508-272-1825
Sue Phelan	Green Cape - PO Box 631 West Barnstable, MA 02668	508-494-0276

APPENDIX B

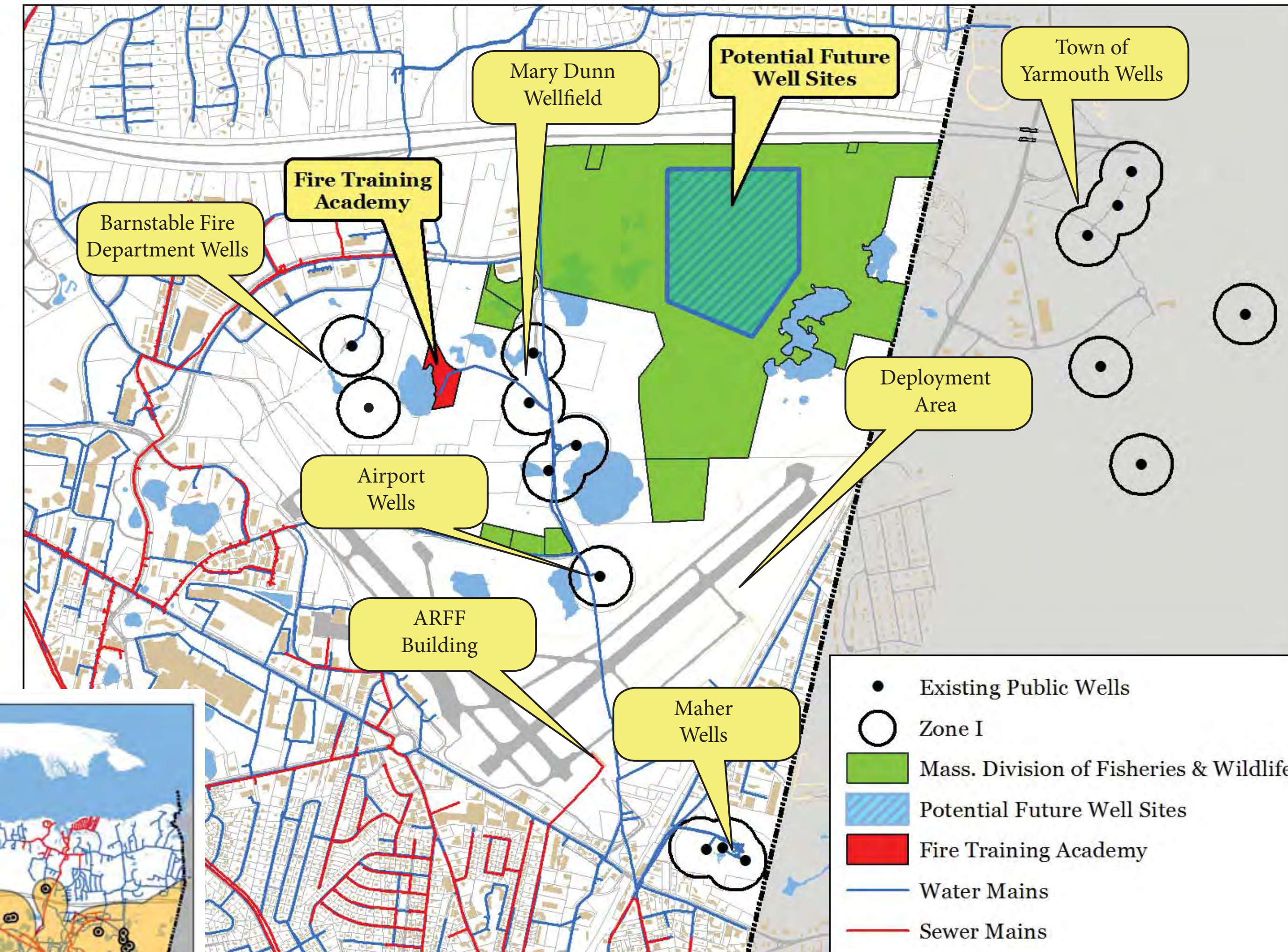
INFORMATIONAL STORY BOARDS

Drinking Water Protection in Hyannis

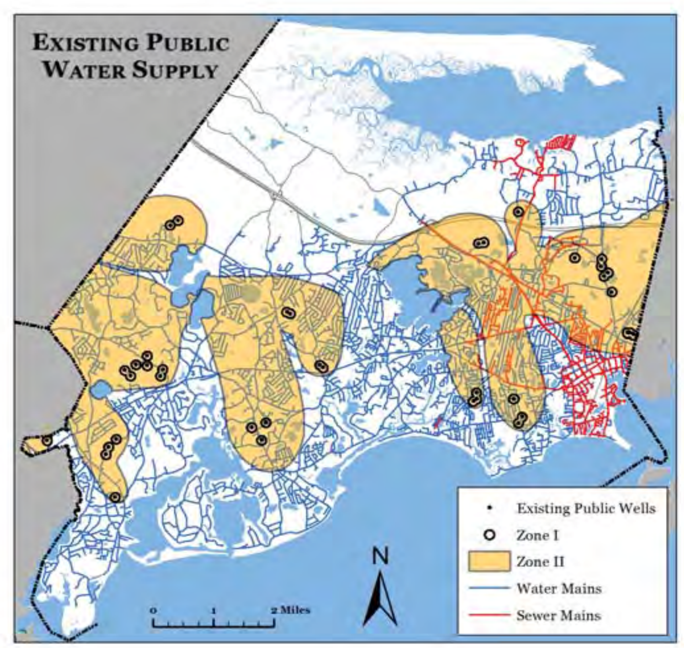
The Hyannis Water System continues to provide drinking water that meets federal and state drinking water standards and guidelines. Water is provided from 12 wells located across Hyannis. Wells in the Mary Dunn and Maher Wellfields (shown here) have been impacted by PFAS compounds.

To compensate for this, the Water District has constructed water filtration systems for the Mary Dunn Wellfield and is in the process of constructing a treatment system for the Maher Wellfield.

The Water District also has interconnections with the Yarmouth and Centerville-Osterville-Marstons Mills Water District to augment the water provided by its own wells.



Planning for future wells in Town is underway, including the evaluation of wells in proctected open space north of the Airport.



Barnstable AIRPORT HYANNIS

Environmental Stewardship at the Airport

Over the last 15 years, a number of improvements have been made to manage hazardous materials at the Airport and to minimize the need for their use. These include:

- **Regular Inspections -** Inspections are conducted at all Airport facilities to inventory all hazardous materials present on the Airport.
- **Upgraded Fuel Farm -** A new fuel storage facility was built in 2015. This consists of storage tanks with secondary containment and monitoring equipment to warn of any unexpected releases of fuel. This replaced a 20,000 gallon underground storage tank that was removed in 2015.
- **Aircraft Deicing/Wash Pad -** A deicing/wash pad was constructed and all aircraft must wash and/or deice at this location. Deicing fluids and approved "green" washing products are captured and treated at the Town's wastewater treatment facility.
- **No Road Salt is Applied to Airport Runways**
- **No Pesticides are Used at the Airport**
- **No Chemicals are Used to Treat Airport Runways**
- **Ecologic Cart -** Since 2016, the Airport has used the Ecologic Cart to test and verify that fire fighting trucks will properly apply foam in the event of an accident. The Cart allows the testing of the equipment without releasing foam to the environment. Barnstable Municipal Airport was the first airport in Massachusetts, required to use such foam by the FAA, to purchase such a unit.
- **Stormwater Management -** During the construction of the new terminal, the Airport installed a Vortech treatment systems and bioretention stormwater facilities that capture and treat runoff before it infiltrates into the ground. Vortech treatment systems were also installed to treat stormwater that drains to Lewis and Upper Gate ponds. These systems are cleaned as necessary by a certified remediation company.
- **Solar Array -** The Airport generates enough solar power to cover all of its electrical needs from a 7 megawatt array along the northern boundary of the airport.
- **SWPPP/SPCCP -** The Airport has a spill prevention plan and stormwater management plan that are designed to minimize impacts from hazardous materials use at the Airport. These plans are updated regularly.
- **Emergency Generator -** The Airport removed a 250 gallon diesel underground storage tank used for the airfield lighting emergency generator and replaced it with a natural gas feed.

Barnstable AIRPORT HYANNIS

Sources of PFAS

Where do we see PFAS in soils?
A recent study in Vermont collected 66 soil samples from background locations away from known releases of PFAS materials. All 66 samples contained dectable levels of PFAS compounds.* A change in habits may be the best solution to reduce sources of PFAS.

*Sources of PFAS obtained from the document titled "History and Use of Per- and Polyfluoroalkyl Substances (PFAS)", prepared by the Interstate Technology Regulatory Council and dated November 2017.

Fire Fighting Foam Use at the Airport

- Federal aviation regulations require the Airport to equip their fire fighting vehicles with foam, and to use foam in response to emergencies.
- The foam used at the airport is the only foam approved for use at an airport by the FAA. At present, the FAA has not identified an alternative foam and requires all airports in the United States to use the foam currently approved and available on the market.
- Foam is needed to suppress or extinguish fires associated with the release of fuels or oils released during an accident or spill.

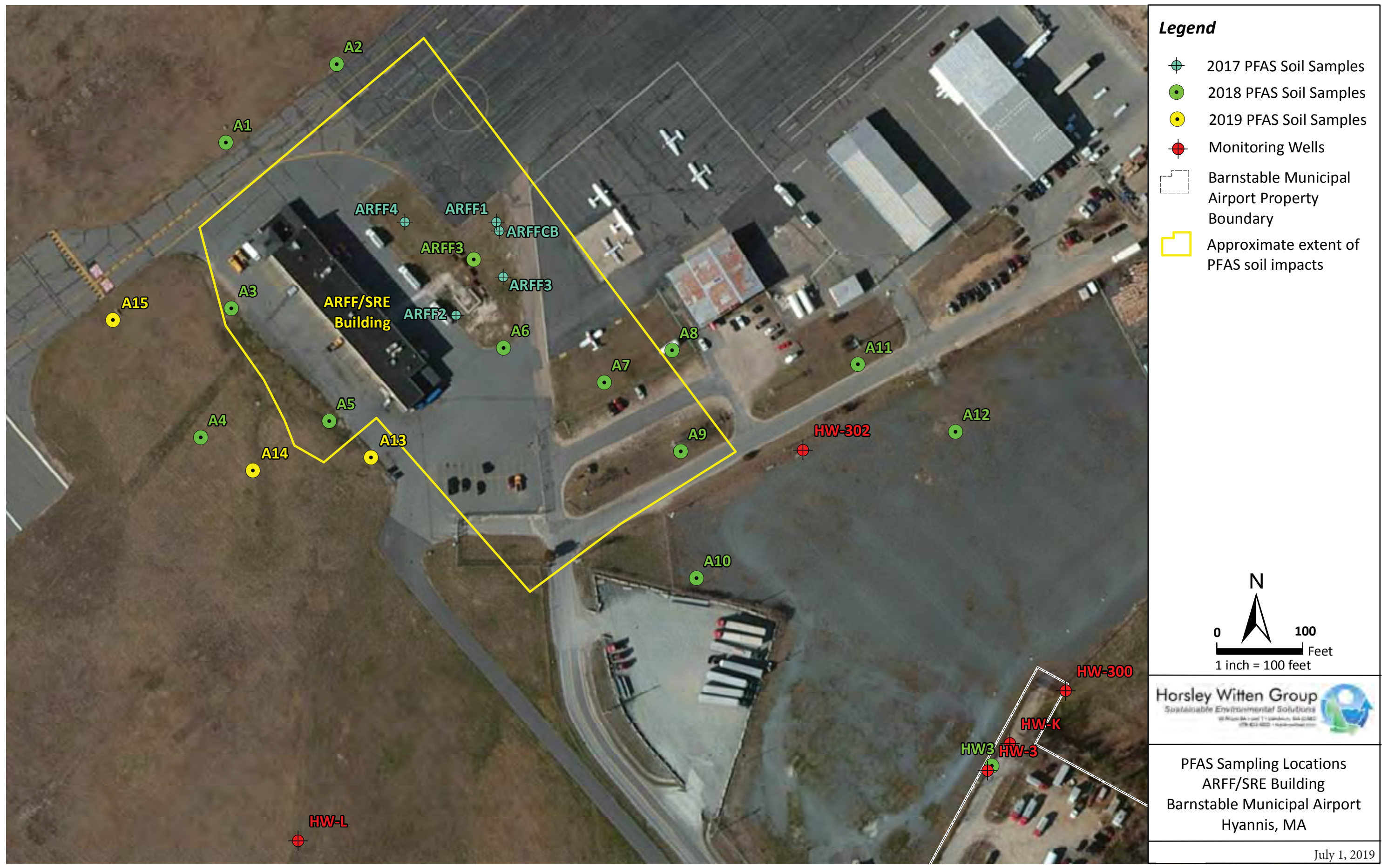
To Date Last Known Use of Foam at the Airport:

- Foam was most recently used in July 2016 to respond to an airplane crash.
  - Foam was sprayed on pavement and collected in a solid wall stormwater catch basin.
  - It was vacuumed out of the basin within 24 hours and was not allowed to enter groundwater.
  - Ten gallons of the foam solution was used.
- No foam has been released to the ground for training or testing purposes since 2015.
- Prior to 2015, tests and exercises using foam took place in one area on the East Ramp of the Airport called the Deployment Area (pictured below).
  - This area is a primary focus of the ongoing investigations.
- Foam is stored at the Airport Rescue and Fire Fighting (ARFF) Building (pictured below).
  - The area around the building is a second focus area for the ongoing investigation.

- The FAA requires annual testing of the foam/water mixture to meet the standards of the Airport's Federal Aviation Regulation (FAR) Part 139 certificate.
- In 2016 the Airport purchased an Ecologic Cart system to prevent the discharge of foam on the ground during annual testing.
- The Ecologic Cart allows the Airport to test the fire truck's ability to properly mix and dispense foam without using foam.
- The Airport purchased and started using this unit prior to FAA approvals to test in this manner.
- Barnstable Municipal Airport was the first airport in Massachusetts to purchase such a system.

Barnstable AIRPORT HYANNIS

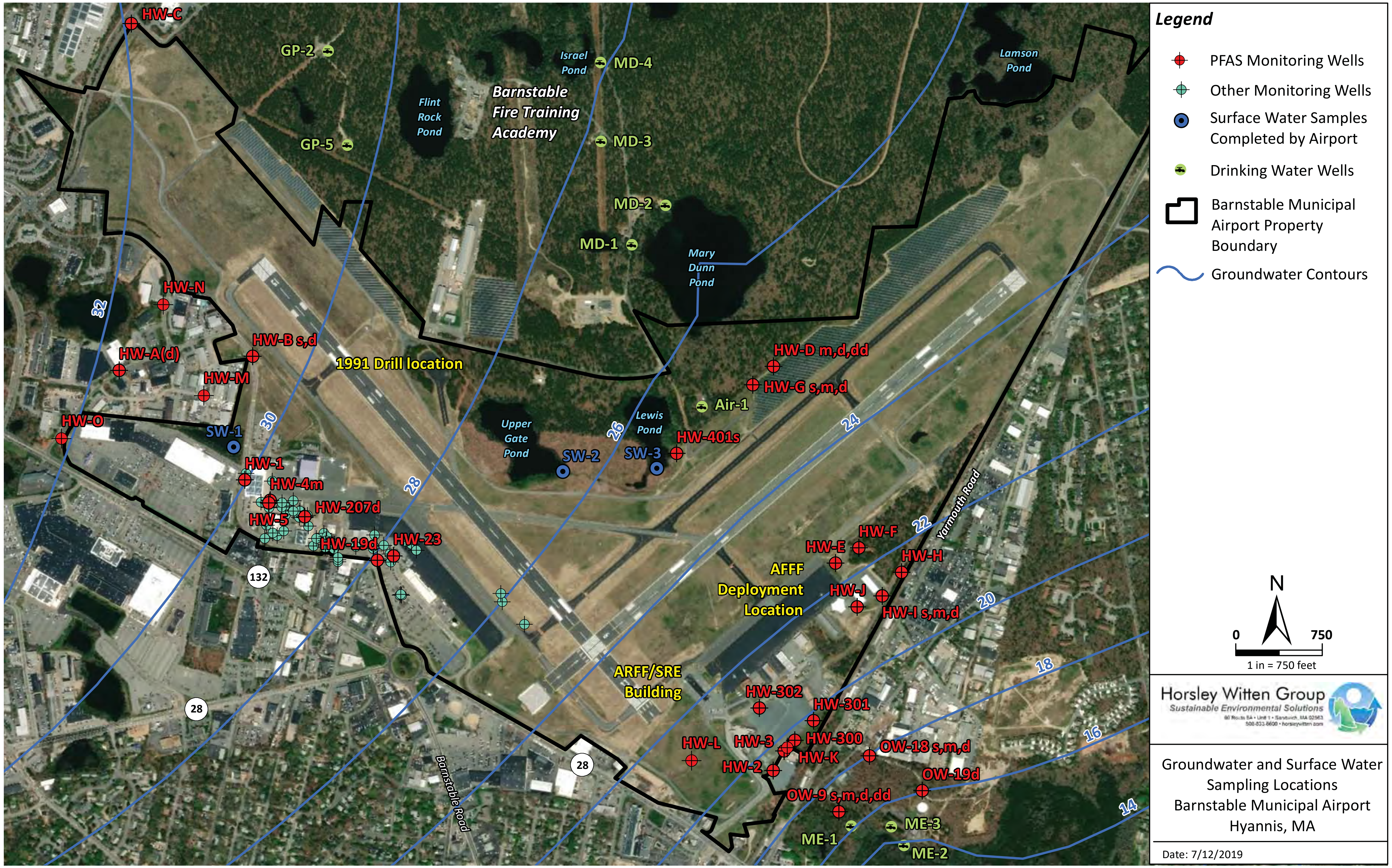
Aircraft Rescue Firefighting/Snow Removal Equipment Building Soil Sampling Locations



Aqueous Film Forming Foam Deployment Area Soil Sampling Locations

The FAA requires that airports certified under Federal Aviation Regulation Part 139, such as Barnstable Municipal Airport, test foam to water mixture on an annual basis. The airport now uses the Ecologic Cart to test the foam/water mixture without need to deploy foam on the ground.

Airport Monitoring Well Locations



Barnstable AIRPORT HYANNIS