MOVE YOUR ENVIRONMENT FORWARD

SITE CHARACTERIZATION WORK PLAN

Francis S. Gabreski Airport – Site #152261
Old Riverhead Road
Westhampton, New York 11978

Prepared For:

Contract# D009808, Work Assignment No. 29
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Division of Environmental Remediation
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1.0 INTRODUCTION

On December 21, 2021, HRP Associates, Inc. (HRP) was authorized to complete this New York State Department of Environmental Conservation (NYSDEC) Work Assignment (WA) No. 29 (D009808-29) for Site Characterization (SC) at the Francis S. Gabreski Airport, NYSDEC Site #152261, located on Old Riverhead Road in Westhampton, New York, hereinafter referred to as the Site (**Figure 1**). The focus of this SC is to investigate sources of per- and polyfluoroalkyl substances (PFAS) impacts on the airport. The scope of work for the WA, discussed herein, was developed based on HRP's review of documents detailing previous subsurface investigations completed at the Site and surrounding area between 2016 and 2020, as well as discussions and planning with NYSDEC staff.

1.1 Purpose and Objectives

This site-specific SC Work Plan describes the details of the scope of work, including all proposed field activities, laboratory analyses, and data QA/QC evaluation that will be associated with the SC at the Sites. This document is intended to supplement information provided in the NYSDEC-approved *Generic Field Activities Plan for Work Assignments*, completed by HRP on August 8, 2019.

The purpose of the SC is to determine soil and groundwater quality at the Site to determine whether the Site conditions pose a risk to public health and the environment. In accordance with DER-10 *Technical Guidance for Site Investigation and Remediation (May 2010),* the primary objectives of the SC scope of work are to:

- Investigate the identified areas of concern (AOCs) associated with the Site and determine if they have resulted in surface or subsurface contamination and evaluate the extent of the contamination.
- Obtain geologic and hydrogeologic data from the Site. The specific information that should be collected and/or verified includes soil types (or fill), depth to groundwater, groundwater flow direction, subsurface geology, bedrock characteristics, etc.
- Determine if applicable standards, criteria, and guidance contained in NYSDEC DER-10 and set forth for the Site are contravened
- Preliminarily delineate the vertical and horizontal extent of contaminated soil, sediment, surface water, and groundwater, if any.
- Establish a baseline for any remedial work that will be necessary to address impacted media.
- Determine if the Site represents a threat to public health or the environment.

1.2 Site Description and Background Information

The 1,361-acre Site is located in Westhampton, a hamlet of the Town of Southampton, Suffolk County, New York, (**Figure 1**). The Site is owned and operated by Suffolk County as Francis S. Gabreski Airport and consists of two 5,000-foot runways, a 9,000-foot runway, an administration building, a terminal building, as well as several hangars and office buildings. An 88.5-acre area on the southwest portion of the airport property is leased by Suffolk County to the New York ANG, which uses the area as a base for the 106th Rescue Wing. The ANG Base has been previously investigated in relation to PFAS releases and impacts as site #152148. Three fire training areas historically used and currently in-use by the ANG, located on the airport property but outside of ANG Base boundaries were also investigated as part of site #152148. In addition, PFAS impacts have been investigated at the former Suffolk Airport Canine Kennel located on the eastern perimeter of Francis S. Gabreski Airport under sites #152079 and #C152079. Other PFAS-related investigation work has been performed in the surrounding area by Suffolk County Department of Health Services (SCDHS). Previous investigations conducted at these sites are discussed below. A Site layout plan showing locations of the other remediation sites and other areas of interest is included as **Figure 2**.

The Site property is zoned LI200 – Light Industrial on the Town of Southampton zoning map. Properties surrounding the Site consist primarily of residential properties and undeveloped land. At present the areas surrounding the property (within one mile) include:

North: A shooting range, a former demolition area (Suffolk Air Force Base Formerly Used Defense Site [FUDS], site #152226) which has been investigated related to unexploded ordinances, and Westhampton Dwarf Pine Planes Preserve.
South: The Long Island Railroad, Aspatuck River, Quiogue Landfill (site #152061), and residential properties in the Village of Westhampton Beach.
East: Quantuck Creek and undeveloped land associated with the Quogue Wildlife Refuge and residential properties along Quogue Riverhead Road.
West: Commercial properties along Old Riverhead Road, undeveloped land, Beaverdam Creek, a residential neighborhood off Stewart Avenue (0.7 miles),the Suffolk County Army Airfield Bombing and Gunnery Range (site #152224) - undeveloped land used by the Army Air Force between 1943-1945 which has been investigated related to unexploded ordinances, Westhampton Landfill (site #152060, 1.5 miles), and the former Boeing Michigan Aeronautical Research Center (BOMARC, site #152262, 1.7 miles) – a decommissioned missile base which has been identified as a source of PFAS.

Site history was detailed in previous investigation reports prepared for the ANG Base site by BB&E, Inc., AECOM, and Parsons. The Site was first developed in 1941 as the Westhampton Beach Army Airfield. At that time, the Site was leased by Suffolk County to the United States (US) Army who used the airfield for fighter pilot training during World War II. From 1948 to 1951 the US Army discontinued use of the airfield and the property was leased to a private oil company. In 1951 the US Airforce reactivated the airfield as the Suffolk County Air Force Base. In 1969 the US Air Force deactivated and closed the base and Suffolk County began operation of Suffolk County Airport, later renamed Francis S. Gabreski Airport. In 1970 the New York ANG began operating a base on the Site

concurrently with the county airport. Aqueous film forming foam (AFFF) has historically been used onsite by the ANG in firefighting training activities, firefighting emergency responses, and in base fire suppression systems. According to previous investigations conducted at the Site, a firefighting training area (IRP Site 7 Former Fire Training Area) located on the eastern portion of the Site was used by the US Army and the ANG between 1943 and 1986. In 1986 firefighting training was moved to a separate site (Current Fire Training Area), southeast of the original location. A third fire training area known as the Mobile Fire Training Area was located on the eastern portion of the Site. The fire training areas are depicted on **Figure 2**.

From the 1980s to 2010s several remedial activities were performed at the ANG Base related to the investigation and remediation of fuel releases. From 2015 to 2020, several investigations were performed to identify and assess impacts of PFAS releases at the ANG Base. These investigations are summarized in **Section 1.4** below.

1.3 Site Geology and Hydrogeology

The Site is relatively flat, sloping gently south-southeast, towards the Atlantic Ocean, located approximately 2 miles south of the Site. Surface elevations range from approximately 20 feet above mean sea level (ft amsl) in the southern portion of the property to 70 ft amsl in the northern portion.

Surface water runoff from the western portion of the Site drains to the Aspatuck River (which begins south of the Site), while surface runoff from the eastern portion of the Site drains to the Quantuck Creek (located to the east and southeast of the Site). Quantuck Creek flows through North Pond and Old Ice Pond, which are located east of the Site. The Aspatuck River and Quantuck Creek each drain south into the Quantuck Bay and Atlantic Ocean. Surface water bodies surrounding the Site are depicted on **Figure 2**.

Site soils are mapped by the Natural Resources Conservation Service (NRCS) as consisting primarily of Cut and Fill Land," with smaller areas of Carver and Plymouth soils (defined as excessively drained coarse sands derived from outwash plains and moraines) and Urban Land (soils covered by buildings and pavement).

On the New York State bedrock geology map, the Site is mapped as coastal plain deposits belonging to the Upper Cretaceous Monmouth Group, Matawan Group, and Magothy Formation and consisting of silty clay, glauconitic sandy clay, sand, and gravel (Fisher et al., 1970). The unconsolidated units form the Long Island aquifer system which dips gently south towards the Atlantic Ocean. The uppermost unit, referred to as the Upper Glacial aquifer consists of Pleistocene sand and gravel outwash deposits and has been measured to be approximately 100-120 feet in thickness at the airport (ABB-ES, 1997). The Upper Glacial aquifer is a major source of drinking water in central Suffolk County, including residential areas surrounding the airport. The Gus Guerrera and Meeting House Road well fields, located crossgradient (southwest) and downgradient (southeast) of the Site, draw water from the Upper Glacial aquifer and include wells screened at depths ranging from 54 ft to 108 ft (Parsons, 2021). PFAS, including perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) have been detected at elevated concentrations at each well field and both are treated

with granular activated carbon (GAC) to remove PFAS from drinking water. The well fields are depicted on **Figure 2**.

Across the majority of the Site, groundwater flow has been mapped in a northwest to southeast direction towards Quantuck Creek. On the southwestern portion of the Site, in the area of the ANG Base, groundwater flow direction has been mapped as flowing north to south. Groundwater elevation ranges between approximately 4 ft amsl (5 ft bg) on the southeastern portion of the Site, near Old Ice Pond and Quantuck Creek and approximately 15 ft amsl (45 ft bg) on the northern portion of the Site. Depth to groundwater has been observed at approximately 30-45 ft bg across most of the previously investigated areas of the Site (i.e., ANG Base, runways and taxiways, and Airport Development District). Groundwater flow direction is depicted on **Figure 2**.

1.4 Previous Investigations

In preparation of this Work Plan, HRP reviewed the following previous environmental investigations conducted at the Site:

- Preliminary Assessment Site Visit Report (2015 ANG PA), dated February 2016 and prepared by BB&E Inc. Field work conducted November 2015
- Investigation Summary Report (2018 NYSDEC ANG Investigation) dated July 2018 and prepared by Environmental Assessment & Remediations (EAR). Field work conducted May 2018
- Site Inspection Report (2018 ANG SI) dated February 2019 and prepared by AECOM. Field work conducted January – April 2018
- Expanded Site Inspection Report (2020 ANG ESI) dated April 2021 and prepared by Parsons. Field Work conducted January – August 2020

The previous PFAS-related investigations conducted at the Site have focused on the ANG Base located on the southwest portion of the airport property. These investigations have also studied three fire training areas which are located outside of the ANG Base boundaries on the eastern side of the Site. The fire training areas are referred to as the Former Fire Training Area (also known as IRP Site 7), the Current Fire Training Area, and the Mobile Fire Training Area. In addition to on-base investigations, the 2020 ANG ESI conducted an extensive records review which summarized soil, groundwater, sediment, and surface water data collected in previous investigations conducted by the ANG, the NYSDEC, and Suffolk County Department of Health Services (SCDHS). Investigation areas, including a summary of groundwater results from previous investigations, are depicted on **Figure 3**. Previous investigation results are summarized below, organized by environmental media.

Soil

Shallow soil samples (generally 0-5 ft bg) have been collected from AOCs within ANG Base boundaries, within the area of two stormwater discharge outfalls downgradient of the Base (SDO-001 and SDO-002), and the three fire training areas. Total PFAS concentrations (consisting primarily of PFOS) were detected above 100 parts per billion (ppb) in soil samples collected from the following AOCs investigated during previous investigations:

- Several AOCs in the area of the Eastern Concrete Ramp/Apron on the northeastern portion of the ANG Base, including a "Nozzle Testing Area" which may have been utilized for spraying AFFF and septic tanks associated with Building 300 and Hangar 358;
- The stormwater drainage ditch located on the southwestern boundary of the ANG Base;
- The IRP-7 Former Fire Training Area; and
- The Current Fire Training Area.

At on-base AOCs, PFOS was detected at a maximum concentration of 2,600 parts per billion (ppb) in a soil sample collected in the area of Building 300 (Fire Department). PFOS was detected at maximum concentrations of 570 ppb and 1,660 ppb at the IRP-7 Former Fire Training Area and Current Fire Training Area, respectively.

In addition to the areas where soil impacts have been identified, the Mobile Fire Training Area and the ANG Base outfalls SDO-001 and SDO-002, are also considered to be PFAS release areas based on Site history and the conceptual site model. Identified release areas are depicted on **Figure 3**.

Groundwater

Groundwater sampling was performed at several AOCs within the ANG Base boundaries, in the area of the stormwater outfalls downgradient of the base, at the three fire training areas, and at off-site locations to the north, south, and east of the Site. Groundwater sampling included collection of grab groundwater vertical profile samples as well as the installation of permanent monitoring wells. Vertical profile samples were generally collected in 10-ft intervals beginning at the top of the water table and continuing to a maximum depth of approximately 100 ft bg. Permanent monitoring wells installed onsite were screened at various depths based on results of the vertical profile samples.

PFAS was detected in groundwater samples collected in from the ANG Base and at the three fire training areas as well as downgradient of these areas. According to the 2020 ANG ESI, groundwater samples collected from AOCs on the ANG Base and the Former and Current Fire Training Areas exhibit a PFAS signature dominated by PFOS and perfluorohexane sulfonic acid (PFHxS), characteristic of an AFFF release. The AFFF signature is also exhibited by the majority of groundwater samples collected downgradient of the ANG Base and the Fire Training Areas. The distribution of PFAS detections in groundwater indicate two distinct plumes migrating from the ANG Base (on the western portion of the Site) and the fire training areas (on the eastern portion of the Site). PFAS detections in groundwater samples collected downgradient of the ANG Base and fire training areas indicate there is an exposure pathway between historic AFFF releases and drinking water supply wells, including the Gus Guerrera and Meeting House Road wellfields and other private supply wells where PFAS have been detected.

PFAS detections in groundwater samples collected upgradient and crossgradient of the ANG Base and fire training area AOCs, indicate other unidentified sources are contributing to PFAS impacts to groundwater. This is evidenced by the following sample locations:

- MW-001, MW-002, and MW-003 installed upgradient (on the northern boundary) of the ANG Base and ANG Base AOCs. PFOS was detected at a concentration of 46.5 ppt, 104 ppt, and 36.3 ppt in the three monitoring wells, respectively. The screen intervals of the three monitoring wells, which were sampled in 2016, were not provided in the 2020 ANG ESI.
- GB-IRP7-MW03 installed upgradient (northwest) of the former and current fire training areas. PFOS was detected at a concentration of 180 ppt in a sample collected from 72 ft bg.
- GB-OB-MW07 installed upgradient (northwest) of the Mobile Fire Training Area on the northern portion of the Site. PFOS was detected at a concentration of 370 ppt at a depth of 82 ft bg.

A summary of groundwater results from previous investigations is depicted on **Figure 3**.

Stormwater, Surface Water, and Sediment

Stormwater samples have been collected from catchments located within the ANG Base boundaries and outfalls SDO-001 and SDO-002 located downgradient of the Base. PFOS has been detected in stormwater samples collected from across the ANG Base and was detected at a maximum concentration of 194 ppt in a sample collected from outfall SDO-001. Outfalls SDO-001 and SDO-002 receive discharge from the ANG Base and drain to the headwaters of the Aspatuck River.

Surface water samples collected from the Aspatuck River and the Quantuck Creek indicate elevated concentrations of PFAS have been detected in the two water bodies. Sediment samples collected from the Aspatuck River and Quantuck Creek indicate PFAS impacts are present in sediment from the water bodies. Surface water and sediment samples from the Aspatuck River and Quantuck Creek are characteristic of an AFFF source according to the 2020 ANG ESI.

1.5 Areas of Concern

Groundwater samples collected during previous investigations indicate PFAS impacts are present upgradient of identified release areas located on the ANG Base and the fire training areas. Based upon previous investigation results, several unidentified sources may be contributing to PFAS impacts downgradient of the Site.

Based on HRP's review of the previous investigations, Site history, and available regulatory records, as well as correspondence with airport administration and the NYSDEC, the following 16 AOCs were identified for further characterization as part of this study.

AOCs 1-6: Six Aircraft Crash Sites

Six aircraft crashes have been identified as potential sites of PFAS release, as AFFF may have been used in crash response activities. Reported locations of the six aircraft crash sites were identified from interviews with airport and ANG personnel, National Transportation Safety Board (NTSB) records, and news articles. Crash site locations are depicted on **Figure 2**. Available details from each crash site are discussed below.

- Crash Site 1 – 1977 Air Show Biplane Crash: A NTSB accident report indicates the aircraft failed during air show acrobatics leading to a crash and fire. The crash location was identified by Suffolk County.
- Crash Site 2 – 1989 Plane Crash and Fire: According to interviews conducted for the 2015 ANG PA, a plane crashed and caught fire on the central area of the runways (the location was identified by the interviewee). No NTSB accident report was found for this crash.
- Crash Site 3 – 1992 Cessna 337 Accident/Fuel Leak: A crash occurring at the approach end of Runway 24 was identified by NYSDEC during their review of the 2018 ANG SI prepared by AECOM. No NTSB accident report was found for this crash.
- Crash Site 4 – 1994 Cessna 340 Crash Short of the Runway 6: A NTSB crash report indicates the aircraft crashed approximately 500 ft short of the approach to Runway 6 located on the southwest portion of the Site. According to the report no fire or explosion occurred on impact. Additionally, the record indicates fuel was found in the pumps and fuel lines of both of the plane's engines.
- Crash Site 5 – 1997 Air Show Plane Crash: According to the NTSB crash report, two planes collided in midair resulting in one of the aircrafts crashing in a grassy are on the southwest portion of the Site. The crash report indicates the aircraft caught fire after impact. The location of the crash site, southeast of Runway 1 was identified by interviews conducted for the 2015 ANG PA.
- Crash Site 6 – 2017 Crash into Woods: The crash site was identified by airport personnel during HRP and NYSDEC's visit to the Site in February 2022. According to the NTSB crash report, the aircraft caught fire upon impact and a fuel leak occurred.

The six crash sites have been identified as AOCs due to the potential or actual release of AFFF in crash response. AFFF releases at these sites may explain detections of PFAS in groundwater from previous investigations. Notably, Crash Site 2 is located upgradient of PFAS detections in vertical profile location GB-IRP-7-MW03, which is located upgradient of the former fire training area. A PFOS concentration of 250 ppt was detected at 70-72 ft bg at this location. The Aircraft Crash Sites are depicted on **Figure 2**.

AOC 7: Suspected Release Area Upgradient of GB-OB-MW07

Vertical profile location GB-OB-MW07 was sampled to evaluate groundwater upgradient of the Mobile Fire Training area. PFOS was detected at this location at concentrations of 238.4 ppt in the grab groundwater sample collected from 80-82 ft bg and 370 ppt in the sample from the permanent monitoring well screened from 75-85 ft bg. Based on these detections a suspected release area, located on a paved area extending from a northern taxiway, was identified as an AOC for further investigation. At vertical profile location Q-39, which is located upgradient of the suspected release area, PFOA and PFOS were not detected at any sample depth. The Suspected Release Area is depicted on **Figure 2**.

AOC 8: Current Airport Fueling Area – North

A tank farm/fueling station currently in use by the airport is located on the northwestern portion of the Site and on the northeastern border of the Airport Development District. Based on historical aerial photographs, the tank farm was installed sometime between 2009 and 2013. The fueling station consists of one 2,000-gallon Avgas (aviation gasoline) aboveground storage tank (AST) and two 12,000-gallon Jet A (jet fuel) tanks. An overhead fire suppression system, equipped with class B/C dry chemical fire extinguishers is installed over the Avgas tank pump station. It is unknown if the fire suppression system was ever equipped with AFFF. This area is currently on lease to Sheltair. The Current Airport Fueling Area – North is depicted on **Figure 2**.

AOC 9: Current Airport Fueling Area – South

A tank farm/fueling station currently in use by the airport is located on the western portion of the Site, along the northeastern boundary of ANG Base. Based on historical aerial photographs, fueling station operations began as early as 1994. Aerial photographs indicate the fueling area includes an overhead canopy and several ASTs. It is unknown if the area has historically included an AFFF fire suppression system. This area is currently on lease to Sheltair. The Current Airport Fueling Area – South is depicted on **Figure 2**.

AOC 10: Suspected Historic Airport Fueling Area – North

Historic aerial photographs from 2006 and 2009 show what appear to be ASTs in a third area along the eastern boundary of the Airport Development District. The suspected ASTs are replaced by a building in the 2013 aerial photograph, the same time the Current Airport Fueling Area –North appears. It is unknown if fueling took place in this area or if it was equipped with an AFFF fire suppression system. This area is currently on lease to Sheltair. The Suspected Historic Airport Fueling Area – North is depicted on **Figure 2**.

AOC 11: Historic Airport Fueling Area – South

The area identified by NYSDEC Info Locator as the Suffolk Airport Storage Tank Farm (Site No. 152110) is an approximately 7-acre area located in south-central portion of airport, along South Perimeter Road. The area is currently classified as a Class "N" site in the NYSDEC Inactive Hazardous Waste program and has been previously investigated related to various petroleum spills. The tank farm consisted of 16 storage tanks including USTs and ASTs. It is unknown if an AFFF fire suppression system was ever in use. This area is currently on lease to the Village of Westhampton Beach and is used as a Department of Public Works facility. The Historic Airport Fueling Area – South is depicted on **Figure 2**.

AOC 12: Former Canine Kennel

The former Suffolk Airport Canine Kennel (sites #152079 and #C152079) is located on the eastern perimeter of the airport property. The site was used by the Air Force as a disposal area for wastes including polychlorinated biphenyl (PCB)-containing electrical distribution equipment such as

capacitors and transformers. PCB related impacts have been remediated through excavation and the western portion of the property was redeveloped as a motorboat storage yard. During investigation, PFAS was detected in groundwater monitoring wells installed around the perimeter of the site. PFOS was detected at a concentration of 17,000 ppt in a shallow groundwater sample collected from MW-1, located on the northern perimeter of the Former Canine Kennel, upgradient of the former PCB impacted area. Additional groundwater vertical profile sample locations installed around the perimeter of the Former Canine Kennel confirmed that the highest concentrations of PFAS were found in shallow groundwater upgradient of the site and consisted primarily of PFOS. Based on these results it is suspected that the source of PFAS impacts to groundwater is located upgradient of the Former Canine Kennel. The Former Canine Kennel is depicted on **Figure 2**.

AOC 13: Airport Sewage Treatment Plant

The airport sewage treatment plant is located on the south-central portion of the Site. According to the SPDES permit obtained for the sewage treatment plant, plant effluent discharges to a leach field south of the treatment plant. Monitoring performed under the SPDES permit obtained through NYSDEC Info Locator (which expired in 2014) included collection of influent and effluent samples as well as groundwater samples from one monitoring well upgradient of the leach field and two monitoring wells downgradient of the leach field. It is unknown if PFAS sampling has been performed at sewage treatment plant influent and effluent sample locations or groundwater monitoring wells. The location of the sewage treatment plant and the three monitoring wells are depicted on **Figure 2**.

AOC 14: Historic Airfield Dump

The area identified by NYSDEC Info Locator as the Airport Dump Site (Site No. 152226), and Suffolk Airport C&D Site (Site No. 152078) is located on the southeastern portion of the Site along South Perimeter Road. According to NYSDEC database records materials disposed of at the dump sites include C&D debris, 55-gallon drums, solvent cans, and rocket packaging material. Available information found on NYSDEC Info Locator does not include any records or remedial action in the area. Vertical profile grab groundwater samples collected downgradient of this area on South Perimeter Road (GB-OB-MW04 and GB-OB-MW05) and further southwest of South Perimeter Road (GB-OB-MW06, Q-1, and MH-1), indicate PFAS has been detected at elevated concentrations in both shallow and deep intervals. Based on data collected to date, it is not clear if the PFAS detections are related to a release in the dump area or if they are related to the known releases at the fire training areas, located upgradient of the dump areas to the northwest. The Historic Airfield Dump is depicted on **Figure 2**.

AOC 15: Offsite Businesses

Several offsite properties located to the west of the airport on Old Riverhead Road, have been identified as potential sources of PFAS releases. The offsite businesses were identified through review of historic city directories obtained through Environmental Database Resources, Inc. (EDR), current business listings on Google Maps, and observations made during HRP and NYSDEC's Site visit in February 2022. The businesses were categorized as low, moderate, or high risk for PFAS

release based on the potential for PFAS-related operations associated with the business types. Actual use or release of PFAS at the offsite businesses is unknown. The business names, addresses, potential PFAS uses, and risk categories are presented on **Table 1**. The locations of the offsite businesses relative to the Site are depicted on **Figure 2**.

Of note are several properties which have been occupied by businesses categorized as a high risk of PFAS release upgradient of the Site, northwest of the Airport Development District on Old Riverhead Road. These include the following:

- 333 Old Riverhead Road: Hampton Watercraft & Marine and Classic Touch Detailing
- 343 Old Riverhead Road: Rosanti Floors
- 351 Old Riverhead Road: The Old World Rug Washing Company
- 381 Old Riverhead Road: Island Carpet Cleaners
- 411 Old Riverhead Road: Professional Carpet Systems

PFAS detections in monitoring wells MW-001, -002, and -003, installed on the northern, upgradient boundary of the ANG Base indicate an off-base release may be contributing to the PFAS impacts to groundwater. The locations of MW-001, -002, and -003 in relation to offsite businesses are depicted on **Figure 3**.

AOC 16: Vehicle Extraction Training Area

The Vehicle Extraction Training Area is located along a taxiway on the northeastern portion of the Site. During HRP and NYSDEC's Site visit, abandoned vehicles were observed staged on a paved area off of the taxiway. According to airport management, the vehicles were stationed at the location by the ANG in 2021 for vehicle extraction rescue training and other military scenarios and the location has not been used for fire training involving AFFF. However, based on PFAS detections in deep groundwater both upgradient (GB-OB-MW07) and downgradient (Q-41 and Q-45), the vehicle extraction area has been identified as an AOC for further characterization. The Vehicle Extraction Training Area is depicted on **Figure 2**.

In order to investigate these AOCs, HRP has proposed a subsurface investigation which includes the installation of shallow soil borings and deep vertical profile groundwater samples. Preliminary locations for the proposed soil borings and vertical profile groundwater samples are depicted Site-wide on **Figure 2** and at each AOC on **Figures 5-1** through **5-16**. Additional permanent monitoring wells will be installed based on results of the vertical profile sampling. Soil boring and vertical profile groundwater sample locations were selected in consideration of Airport and Federal Aviation Administration (FAA) rules and regulations which prohibit drilling through paved areas on the Site and require all work to be performed 250 ft from the centerline of airport runways, and 130 ft from the centerline of airport taxiways. The scope of work for the proposed subsurface investigation is detailed in **Section 2.0** below.

2.0 SITE CHARACTERIZATION (SC) SCOPE OF WORK

This scope of work has been designed to gather data to evaluate each project objective listed in **Section 1.1**. The following sections provide specifics regarding the scope of work developed under this NYSDEC-approved Work Assignment (D009808-29) in support of a Site Characterization at Francis S. Gabreski Airport (#152261).

2.1 Preliminary Activities

As part of the scope of work, the following documents have been prepared under this Work Assignment:

- Project-specific Work Plan (this document) to accompany the generic Field Activities Plan (FAP),
- Site-specific Health and Safety Plan (HASP) (included as **Appendix A** of this Work Plan),
-
- Generic Quality Assurance Project Plan (QAPP).

These NYSDEC-approved generic FAP, HASP, and QAPP are on file with the NYSDEC. The site-specific elements are provided below.

2.1.1 Work Plan

This SC Work Plan has been prepared for use in performing the Site Characterization and will serve as the "site-specific FAP." This SC Work Plan identifies the components of the Site Characterization and a description of the tasks to be performed including the specific methods or procedures that will be used to conduct the field sampling. A proposed project schedule is included in **Section 4.1** of this SC Work Plan.

2.1.2 Health and Safety Plan

A site-specific HASP is provided in **Appendix A**. The site-specific HASP provides guidance to maximize health and safety of onsite workers during SC - specific tasks including media sampling, installation of wells, surveying, and other field related activities. The generic HASP has guidelines for health and safety supervision, air monitoring, medical monitoring, personal protective equipment, site controls, safe work practices and decontamination, etc.

2.1.3 Community Air Monitoring Plan (CAMP)

A site-specific Community Air Monitoring Plan (CAMP) is provided in **Appendix B.** The CAMP details procedures for air monitoring during intrusive activities including (soil and groundwater sampling, installation of wells, and other field related activities). It is the intent of the CAMP to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and business and on-site workers not directly involved with the subject work activities. CAMP data summary tables will be provided to the NYSDEC and the New York State Department of Health

(NYSDOH) on a weekly basis. HRP will notify NYSDEC and NYSDOH within 24 hours of any CAMP action level exceedances and corrective measure taken.

2.1.4 Quality Assurance Project Plan

A site-specific QAPP has been prepared and is included in **Section 3.0** of this SC Work Plan. The site-specific QAPP was prepared as a supplement to the Generic QAPP with necessary site-specific information. Deviations from the protocols specified in the QAPP will be subject to the NYSDEC approval.
The Generic QAPP provides general information related to QA/QC procedures associated with the collection and analysis of samples of environmental media and includes specific representative standard operating procedures (SOPs) applicable to sample handling and field instrumentation use. Information provided in the Generic QAPP includes definitions and generic goals for data quality and required types and quantities of QA/QC samples. The procedures address field documentation; sample handling, custody, and shipping; instrument calibration and maintenance; auditing; data reduction, validation, and reporting; corrective action requirements; and QA/QC reporting specific to the analyses performed by the laboratories that are used for analysis of environmental media collected under Standby Contract No. D009808.

All laboratory analytical work will be performed by a NYSDOH Environmental Laboratory Approval Program (ELAP) approved laboratory certified in all categories of Contract Laboratory Protocol (CLP) and Solid and Hazardous Waste analytical testing. A Data Usability Summary Report (DUSR) will be included in the Site Characterization Report (SCR) for each round of analytical work. Category B deliverables will be retained in the project files and available for full data validation by a qualified, independent third party.

2.2 Investigation, Environmental Sampling, and Implementation

The SC will include the components described below and consist of subsurface/intrusive characterization. The SC will consist of characterizing and sampling groundwater to meet project objectives. The number and type of samples to be collected is discussed below and summarized on **Table 2**. The field investigation tasks for the SC are listed below in the general order in which they will be completed. Some activities in the groundwater characterization will be conducted concurrently as is explained in the work plan.

1. Permit Acquisition, Underground Utility Identification, Clearance, and Location using Ground-Penetrating Radar (GPR)
2. Surface/Subsurface Soil Investigation (shallow soil boring installation and sample collection)
3. Groundwater Characterization (vertical profile grab groundwater sampling, permanent monitoring well installation, development, and sample collection)
4. Characterization and Disposal of Investigation Derived Waste
5. Analytical Data Quality Evaluation

6. Survey of Investigation Locations

2.2.1 Permit Acquisition, Underground Utility Clearance, and Ground Penetrating Radar (GPR)

HRP will work with Francis S. Gabreski Airport, ANG administration, Suffolk County, and property leaseholders to ensure investigation work is performed in coordination with each group and in accordance with the rules and regulations of the FAA. HRP will coordinate with NYSDEC to ensure access agreements are in place with all property owners and leaseholders. For each investigation area (i.e., each AOC where borings are to be installed), HRP will complete FAA Form 7460-1 – Notice of Proposed Construction or Alteration, which will include a description of the proposed work and specify the work location. The forms will be submitted to the FAA by the airport administration.

Prior to implementing any intrusive activities, a utility clearance will be conducted. HRP will rely upon multiple lines of evidence to ensure to the maximum extent practicable that subsurface features are identified prior to commencement of intrusive work.

HRP will mark sampling locations prior to installation and contact public utility clearance services to mark out the utilities prior to the survey. The drilling contractor, or HRP, will request utility mark outs through NYS Code Rule 753/Dig Safe System (NY Dig Safe). The dig safe system is limited to public right-of ways and will only identify utilities entering private property rather than utilities present onsite.

HRP requests that a knowledgeable party (site representative) provide all available Site utility information prior to the survey or drilling activities and that, if possible, a knowledgeable Site person to clear each boring location prior to drilling.

HRP will utilize a qualified subcontractor to conduct a survey to conduct a GPR survey to attempt to locate any privately underground structures or utilities within the vicinity of each AOC to ensure boring areas are clear of obstructions and identify any other potential AOCs.

GPR is a non-destructive and non-intrusive geophysical exploration technique that uses radar waves to detect subsurface objects, such as tanks, drums, and piping. The GPR is also capable of detecting discontinuities in the subsurface materials indicative of excavated and backfilled areas, such as those associated with possible UST graves. The objective of performing this survey is to not only to make subsurface investigation as safe as possible for the field staff while protecting utilities, but also to identify possible sources and migration pathways (utility corridors, etc.). All anomalies identified during the GPR survey will be marked out in the field.

2.2.2 Soil Characterization

To assess the nature of Site soils at each AOCs, the unconsolidated soils will be evaluated at representative locations. These proposed testing locations are depicted Site-wide on **Figure 2** and

at each AOC on **Figures 5-1** through **5-16**; exact locations may vary based on field observations and results of the GPR survey.

Proposed sampling locations were selected based on sampling data from previous investigations, groundwater flow direction, locations of historic stormwater structures, topography, and inferred surface water flow. In general, shallow soil boring locations are biased towards low areas in the vicinity of each AOC, where AFFF may have collected through surface runoff while deep soil boring locations are biased towards areas hydraulically downgradient of each AOC.

2.2.2.1. Advancement of Exploratory Soil Borings and Soil Sample Collection

Up to 70 soil borings will be advanced using direct push methods. A total of 45 shallow soil borings will be installed to evaluate PFAS impacts to surface soil and near surface soils. The shallow borings will be advanced to a completion depth of approximately 5 ft bg, except for borings targeting underground structures (e.g., culverts, dry wells, etc. to be identified during the GPR survey) which will be advanced to the depth of the base of the structure. A total of 25 deep soil borings will be installed for the collection of vertical profile groundwater samples as discussed in **Section 2.2.3** below. Groundwater vertical profile borings are to be advanced to a depth of approximately 100 ft bg.

In accordance with airport and FAA rules and regulations, no soil borings will be installed in paved areas or within runway and taxiway buffer zones (250 ft and 130 ft respectively). The proposed shallow soil boring and groundwater vertical profile locations and runway and taxiway buffer zones are depicted Site-wide on **Figure 2** and for each AOC on **Figures 5-1** through **5-16**.

All soil borings will be installed within Site boundaries, on airport property with the exception of three groundwater vertical profile borings to be installed in the right-of-way on the eastern shoulder of Old Riverhead Road, in order to evaluate groundwater impacts from offsite businesses (AOC 15). Additionally, several areas of the airport property are occupied by leaseholders, including AOCs 8, 9, and 10 which are leased to Sheltair (a corporation operating at the airport) and AOC 11 which is leased to the Village of Westhampton Beach. HRP will work with NYSDEC to obtain access agreements from Suffolk County and each leaseholder prior to commencement of work.

During installation of all soil borings, continuous soil samples will be collected with a macrocore sampler in five-foot intervals. All soil samples will be screened for volatile organic vapors using a Photoionization Detector (PID), and any evidence of contamination will be noted and used for selection of soil samples.

Up to 70 soil samples will be collected from the 70 soil borings, with one sample collected from each shallow and deep boring. Soil samples will be collected from intervals of 0-2 ft bg, except at locations targeting underground structures, in which case the sample will be collected at the depth of the base of the structure. Soil sample depths will also be biased towards evidence of impacts observed in the field such as staining, odor, elevated PID readings, or a soil which produces a foam when agitated (an indicator of PFAS impacts). Additionally, 18 of the 70 soil samples (approximately 25%) will be collected from the 0-2-inches below grade, to evaluate potential human exposures to PFAS in

exposed surface soils. The soil samples collected from 0-2 inches below grade will be collected from representative areas throughout the Site. A total of 82 soil samples (70 regular samples and 12 QA/QC) will be analyzed for a list of 21 PFAS (consistent with Appendix G of *Sampling Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs, June 2021*), via modified EPA Method 537.1.

All samples will be submitted under chain of custody to the NYSDOH ELAP certified laboratory selected from the NYSDEC call-out contract. Duplicate, matrix/matrix spike duplicates, and PFAS field blanks will be collected at a frequency of 1 per 20 samples. The sample totals and laboratory analyses are summarized on **Table 2**.

Sample handling procedures are described in **Section 2.2.4**. Decontamination procedures are described in **Section 2.2.5**. Any soil cuttings exhibiting evidence of contamination will be containerized and labelled in 55-gallon drum(s) for proper disposal. Further discussion of investigation derived waste is discussed in **Section 2.2.6**.

Following the collection of grab groundwater samples (described below), soil borings will be backfilled with soil cuttings, clean sand, and/or Portland cement. If soil cuttings are used to backfill the borehole, cuttings will be returned in order to maintain original stratigraphy (i.e., first soils out, last soils returned).

2.2.3 Groundwater Characterization

In order to characterize PFAS impacts to groundwater related to the AOCs identified in **Section 1.5** above, HRP proposes to complete the following activities as part of this SC:

- Install 25 soil borings to a completion depth of approximately 100 ft bg for the collection of 175 vertical profile samples (7 per boring) vertical profile groundwater samples.
- Collect up to four water samples from the Airport Sewage Treatment Plant, including a sample of plant effluent, and groundwater samples from three monitoring wells downgradient of the plant leach field.
- Install, develop, and sample 4 permanent monitoring wells located and constructed based on vertical profile grab sample results.

Proposed vertical profile groundwater sample locations are depicted Site-wide on **Figure 2** and at each AOC on **Figures 5-1** through **5-16**. Proposed sampling locations were selected based on sampling data from previous investigations, groundwater flow direction, locations of historic stormwater structures, topography, and inferred surface water flow.

2.2.3.1. Collection of Groundwater Vertical Profile Samples

In an effort to further characterize PFAS impacts to groundwater across the Site, vertical profile grab groundwater samples will be collected from 25 locations across the Site. Each groundwater vertical profile boring will be advanced in two runs for separate soil sample and groundwater sample collection. The first run will be completed using a macrocore or microcore sampler to collect

continuous soil samples to a completion depth of 100 ft bg. The second run will be completed adjacent to the first (offset 1-5 ft) using an expendable point and a 3-foot retractable steel screen. At each location grab groundwater samples will be collected in 10-foot intervals beginning at the water table interface (at approximately 40 ft bg) and continuing to the boring completion depth of approximately 100 ft bg. Once advanced to appropriate depth the inner stainless-steel screen will be held in place so that the base of the screen is stationed at the base of the sampling interval while outer rods are retracted, releasing the expendable point, and exposing the screen. Groundwater samples will then be collected using a tubing actuator pump (Waterra Hydrolift or similar), dedicated high density polyethylene (HDPE) tubing, and dedicated check valves. The stainless-steel screen, inner rods, and outer rods will be decontaminated between each sampling interval and between vertical profile locations, as described in **Section 2.2.5**.

A total of 207 groundwater samples (7 samples per location for a total of 175 regular samples, plus 32 QA/QC samples) will be submitted to the NYSDEC approved laboratory under chain of custody procedures and analyzed for PFAS via modified EPA Method 537.1. Duplicate, matrix/matrix spike duplicates, and field blanks will be collected at a frequency of 1 per 20 samples. The sample totals and laboratory analyses are summarized on **Table 2**.

2.2.3.2. Collection of Sewage Treatment Plant Samples

In order to evaluate potential PFAS impacts to groundwater related to the airport sewage, water samples will be collected from the plant effluent stream and from three monitoring wells located upgradient and downgradient of the treatment plant leach field. Locations of leach field monitoring wells are depicted on **Figure 5-13**.

Groundwater samples will be collected from each of the three leach field wells in accordance with low-flow groundwater sampling procedures (as described in the Generic FAP) for laboratory analysis.

A total of 8 groundwater samples (4 samples, plus 4 QA/QC) will be submitted to for laboratory analysis under chain of custody procedures and analyzed for PFAS via modified EPA Method 537.1. Duplicates, matrix/matrix spike duplicates, and field blanks will be collected at a frequency of 1 per 20 samples. The sample totals and laboratory analyses are summarized on **Table 2**.

Sample handling procedures are described in **Section 2.2.4**. Decontamination procedures are described in **Section 2.2.5**. It is anticipated that any purge water will be containerized and labelled in 55-gallon drum(s) for proper disposal, if any evidence of contamination is noted during the investigation. Further discussion of investigation derived waste is discussed in **Section 2.2.6**.

2.2.3.3. Installation of Proposed Monitoring Wells

Up to four monitoring wells will be installed as part of this SC. Locations and final construction details of the proposed monitoring wells will be determined based on analytical data and field observations from groundwater vertical profile sampling, and consultation with the NYSDEC.

Hollow-stem augers will be advanced through the overburden materials and used to set monitoring wells to a maximum depth of 100 ft bg. monitoring wells are to be constructed of 2-inch diameter, Schedule 40 PVC solid well pipe riser and a ten-foot PVC 10-slot screen. Depending on the location of the well, it will be finished with either a 4-foot stick-up protective casing, or a flush mounted protective cover. All equipment will be appropriately decontaminated between sampling locations, as described in **Section 2.2.5**. Based on well location, any soil cuttings will be spread either onsite or containerized as discussed in **Section 2.2.6**. Additional drilling activities are described in **Section 2.2.3.1** of this Work Plan.

2.2.3.4. Development of Proposed Monitoring Wells

Each newly installed well will be developed a minimum of 24 hours after completion by pumping and surging until the field parameters stabilize for a minimum of three consecutive readings of 10 percent variability of less. The field parameters include temperature, pH, and specific conductance. In addition, the turbidity of the groundwater must achieve a reading of 50 Nephelometric Turbidity Units (NTUs) or less during the field parameter readings.

All purge water obtained during well development and sampling will be containerized and disposed of in accordance with NYSDEC DER-10. If impacts are observed, the contaminated groundwater will be segregated and handled as described in **Section 2.2.6**. All sampling equipment will be appropriately decontaminated between sampling locations or disposed of after a one-time use as described in **Section 2.2.5**.

2.2.3.5. Sampling of Proposed Monitoring Wells

Depth to groundwater measurements will be collected from all accessible existing Site monitoring wells (approximately 36 wells) and the 4 new monitoring wells to the nearest 0.01 foot from the surveyed points (the survey is discussed in **Section 2.2.7**) prior to sampling activities and the data will be used to construct a groundwater contour map to determine the direction of groundwater flow and the hydraulic gradient on the Site.

Groundwater sampling will occur a minimum of one week after development has been completed. Groundwater samples will be collected from each of the newly installed wells in accordance with low-flow groundwater sampling procedures (as described in the Generic FAP) for laboratory analysis.

A total of 8 groundwater samples (4 samples, plus 4 QA/QC) will be submitted to for laboratory analysis under chain of custody procedures and analyzed for PFAS via. Duplicates, matrix/matrix spike duplicates, and field blanks will be collected at a frequency of 1 per 20 samples. The sample totals and laboratory analyses are summarized on **Table 2**.

Sample handling procedures are described in **Section 2.2.4**. Decontamination procedures are described in **Section 2.2.5**. It is anticipated that any purge water will be containerized and labelled in 55-gallon drum(s) for proper disposal, if any evidence of contamination is noted during the investigation. Further discussion of investigation derived waste is discussed in **Section 2.2.6**.

2.2.4 Sample Collection and Handling Procedures

Nitrile gloves will be worn at all times by personnel collecting and handling the samples. All non-disposable equipment and tooling used for sampling will be properly decontaminated between sampling locations and intervals. Decontamination procedures are described in **Section 2.2.5**. All soil and groundwater samples will be collected using clean laboratory-supplied, appropriate containers (as listed in **Table 3**) and will be preserved on ice in coolers during field sampling activities. Samples will then be submitted for laboratory analysis, as listed in **Table 3**. Duplicates and matrix/matrix spike duplicates will be collected at a frequency of 1 per 20 samples. Additional information related to methodology and materials used for soil sampling is provided in Section 14 of the Generic FAP, on file with the NYSDEC.

Protocols for the collection and analysis of soil and water samples for PFAS will be in accordance with the NYSDEC *Sampling, Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs, June 2021* or the most recent NYSDEC guidance. Additional information related to methodology and materials used to sample for PFAS is provided in Section 14 of the Generic Field Activities Plan, on file with the NYSDEC.

2.2.5 Decontamination Procedures

Non-dedicated sampling equipment (i.e., submersible pump, water level indicators, etc.) and drill rig tooling (i.e., steel screen and drilling rods) used for collection of grab groundwater samples will be subject to decontamination procedures prior to each sample collected to reduce the potential for cross-contamination as described in the Generic FAP. The decontamination procedures will include the use of a scrub wash with a solution consisting of Alconox® detergent and PFAS-free water. The decontaminated equipment will be stored in clean environments (i.e., the manufacturer's storage case). Decontamination fluids will be properly labeled and securely stored in the designated waste-container staging area.

2.2.6 Disposal of Investigation Derived Waste

Investigation derived waste (IDW) that is generated from the subsurface characterization, monitoring well installation and the development of monitoring wells shall be handled in accordance with NYSDEC DER-10. Representative samples of cuttings and spoils may have to be analyzed to determine classification, treatment, and disposal. Waste generated during the above-described activities will be containerized and shipped offsite. HRP and their subcontractors will be responsible for the supplying and transport of materials necessary for the proper handling and storage of the IDW, such as DOT-approved 55-gallon drums, roll-off containers and/or holding tanks. All containers will be labeled and stored properly.

Soil shall be handled and disposed of in accordance with DER-10. Any offsite disposal of the derived waste will be disposed of or treated according to applicable local, state, and federal regulations. Soil boring locations not converted into wells will be backfilled with drill cuttings. Soils may be disposed

within the direct push hole provided the hole will not be used for the installation of a monitoring well (cuttings may be used to backfill grab groundwater soil borings), given the direct push hole did not penetrate an aquitard nor an aquiclude, and backfilling the hole with cuttings will not create a significant path for vertical movement of contaminants. Soil additives (bentonite) may be added to the cuttings to reduce permeability. Six (6) inches of cohesive, compacted soil should be placed over the area of the hole.

Material that is visually stained and/or exhibits high PID measurements or strong odors, shall be sampled and analyzed to ensure chemical compatibility with other cuttings before placing the materials in a common storage/disposal area if staining is present in the cuttings.

All purge water generated during monitoring well development will be containerized for offsite disposal. Decontamination fluids will be containerized separately from other SC derived waste.

2.2.7 Analytical Data Quality Evaluation

This Work Plan and the associated site-specific QAPP Section detail the data quality objectives and analytical requirements needed for this WA. All quality assurance protocols will be provided in the Generic QAPP.

During the final Work Plan review period, the site-specific QAPP Section and Work Plan will be reviewed and modified according to NYSDEC requirements and comments. Once the plans are finalized, deviations, if required, from protocols specified in the plans will be approved in advance by NYSDEC. As required, the selected analytical laboratory will maintain NYSDOH ELAP certification in all categories of Contract Laboratory Protocol (CLP) and Solid and Hazardous Waste analytical testing for the duration of the project.

The selected laboratory will supply all required data deliverables (USEPA CLP and NYSDEC ASP deliverable format) to enable the data to be validated. All environmental data will be submitted electronically in a specified format named 'NYSDEC' in accordance with the data submission procedures outlined on the NYSDEC's website (http://www.dec.ny.gov/chemical/62440.html).

Upon receipt of the sample data, the validation contractor will quantitatively and qualitatively validate the laboratory data. The validation of the analytical data will be performed according to the protocols and QC requirements of the analytical methods, the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic and Inorganic Data Review (February 1994), the USEPA Region II CLP Data Review SOP, and the reviewer's professional judgment.

2.2.8 Survey of Investigation Locations

Each sample location, including shallow soil borings, vertical profile groundwater sample locations, and newly installed monitoring wells will be field surveyed by HRP. Sample location latitude and longitude coordinates will be recorded using a global positioning system (GPS) device. Monitoring well top of casing elevation survey will be completed using a previously surveyed Site benchmark (or monitoring well) and the same vertical datum as was used on the previous Site survey. Monitoring

well top of casing elevation will be surveyed to the nearest 0.01 foot. A notch will be etched in all interior casings, or a permanent black mark, to provide a reference point for all future groundwater elevation measurements. The survey data be entered into HRP's GIS databases for use in Site plans, groundwater elevation contour maps, and submission to the NYSDEC EQuIS database.

2.3 Site Characterization Report

2.3.1 Electronic Data Delivery

In addition to appropriate data summary tables and boring logs included in the report, all environmental data will be submitted electronically in a specified Electronic Data Deliverable (EDD) format named in accordance with the data submission procedures outlined on the NYSDEC's web site (http://www.dec.ny.gov/chemical/62440.html).

2.3.2 Site Characterization Report

The Site Characterization Report (SCR) will be prepared as part of this work assignment following completion of the field activities. The SCR will provide a description of the field activities, present data collected during field characterization, present a physical description of the Site including geology and hydrogeology, and provide an analysis and interpretation of the available data in the context of existing Site conditions. The report will include tabulated laboratory analytical results, Site maps and a discussion of contaminant concentrations, including a comparison to NYSDEC Standards, Criteria and Guidelines as described in Section 3.13 of DER-10.

The SCR prepared as part of this assignment will also provide a summary of the general nature of contamination on the Site to the extent investigated by the SC including, without limitation, the numbers of areas of concern requiring further investigation and/or remediation and any significant events or seasonal variation which may have influenced sampling procedures or analytical results. A description of each area of concern identified, including dimensions, suspected and actual contamination and suspected source of discharge or disposal recommendations for either additional investigation in the SC, remediation, or no further action for each area of concern. The submitted report will include the report text, appropriate tables, figures, photographs, data summary tables, and boring logs in a PDF format on a compact disc. The electronic file will contain 'bookmarks.' In addition, one hard copy of the report will be sent to the NYSDEC Project Manager.

3.0 SITE-SPECIFIC QUALITY ASSURANCE PROJECT PLAN

This site-specific QAPP has been prepared as a companion Section to accompany the Generic QAPP for the standby subcontract prepared by HRP for the NYSDEC under Standby Contract No. D009808. The purpose of the QAPP is to specify QA/QC procedures for the collection, analysis, and evaluation of data that will be legally and scientifically defensible.

3.1 Site Specific Sampling

Soil and groundwater samples will be collected during this SC. Detailed sampling procedures are included in Section 4.0 of the Generic QAPP. Matrix types, number of samples (including QA/QC) and analytical details are summarized in **Table 3**. Proposed sample locations are depicted on **Figure 2.**

3.2 PFAS Sampling

Sampling for PFAS will occur at the Site during the planned activities covered in this Work Plan. Specific requirements for field sampling procedures including precautions to be taken, pump and equipment types, decontamination procedures, and a list of approved materials to be used during sampling for PFAS compounds are included in Section 14.1 of HRP's Generic FAP, on file with NYSDEC. During soil and groundwater sampling, PFAS samples will be collected and placed in appropriate laboratory provided containers prior to sampling for other parameters. Only regular ice will be used in the transport of samples being analyzed for PFAS.

The PFAS compounds will be analyzed by methods based on EPA Method 537.1. Specific PFAS compounds to be analyzed include:

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonates	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanesulfonic acid	PFOS	1763-23-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluoroalkyl carboxylates	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUA/PFUdA	2058-94-8

Group	Chemical Name	Abbreviation	CAS Number
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTriA/PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTA/PFTeDA	376-06-7
Fluorinated Telomer Sulfonates	6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2
	8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4
Perfluorooctane-sulfonamides	Perfluroroctanesulfonamide	FOSA	754-91-6
Perfluorooctane-sulfonamidoacetic acids	N-methyl perfluorooctanesulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethyl perfluorooctanesulfonamidoacetic acid	N-EtFOSAA	2991-50-6

The minimum method achievable Reporting Limits for PFAS will be less than or equal to 0.5 μg/kg (micrograms per kilogram or ppb) for soil samples and less than or equal to 2 ng/l (nanograms per liter or ppt) for aqueous samples.

3.3 Data Quality Assessment and Usability

Data quality objectives for the Site are focused towards 1) the characterization of releases of PFAS impacting environmental media throughout the Site and 2) the evaluation of the requirements and feasibilities of remediation in significantly impacted areas and/or a specific source area, if defined.

To achieve these objectives, QA/QC measures will be implemented throughout the SC investigation to provide input as to the validity and usability of data generated through soil, groundwater, soil gas and indoor air sampling. The procedures for data QA/QC management includes field documentation; sample handling, custody, and shipping; instrument calibration and maintenance; auditing; data reduction, validation, and reporting; corrective action requirements; and QA reporting specific to the analyses performed by the laboratory under subcontract to HRP. **Table 3** lists the sample containers, preservation, and holding time requirements for the parameters specific to this Site. These tables will be referenced by field personnel.

For all data generated during the SC, a Category B Data package and DUSR will be prepared to provide a thorough evaluation of analytical data utilizing third-party data validation. Environmental Data Services, Inc. (EDS) will be the third-party data validator for this project. EDS's qualifications are included in **Appendix C.**

4.0 PROJECT MANAGEMENT

HRP has the responsibility of the overall management of this project and will respond to any NYSDEC requests. A proposed project schedule, key milestones, key project personnel, and project-specific subcontractors follow.

4.1 Project Schedule and Key Milestones

This WA will be performed according to the following time frames (includes estimated review times for reports by the Department), understanding that the schedule may compress as best as circumstances may allow. A summary table follows below.

CATEGORY	TASK	START	END
Task 1 – Preliminary Activities	File Review	12/21/2021	1/11/2022
	Development of 2.11's	12/21/2021	1/11/2022
	Work Plan, QAPP, HASP (Includes Department Review and Approval)	6/01/2022	8/01/2022
Task 2 – Investigation, Environmental Sampling, and Implementation	Permitting	5/01/2022	9/30/2022
	Utility Clearance Soil Sampling Vertical Profile Sampling Groundwater Well Installation Groundwater Sampling Data Validation and Analysis	10/03/2022	11/25/2022
Task 3 – Site Characterization Report (SCR)	Report Preparation and Submittal	11/01/2022	2/01/2023

4.2 Key Project Personnel

A list of the project personnel of the prime consultant and subcontractors responsible for performance of the investigation has been submitted to the NYSDEC for approval. Primary project staffs are listed in the table below. Resumes for key project personnel are included in **Appendix C**.

Personnel	Company	Title for this Work Assignment	Responsibility
Mark Wright PG, CSP (Project Manager)	HRP Associates, Inc. (Prime Consultant)	Project Manager/ Office Health & Safety Manager	Overall management of the WA Approval of HASP and responsible for overall health and safety issues with the WA
Michael Varni (Senior Project Geologist)	HRP Associates, Inc.	Corporate QA/QC Officer	Responsible for QA/QC on the WA
Patrick Montuori (Senior Project Consultant)	HRP Associates, Inc.	Field Manager and Site Health & Safety Officer	Responsible for the onsite sampling and investigative tasks

Subcontractors for this project will include:

- GPR – American Geophysics Inc.
- Drilling – Island Pump & Tank
- Laboratory – a laboratory selected through the NYSDEC callout contract
- Data Validation – Environmental Data Services, Inc.
- IDW Disposal – will be determined contingent upon analytical results

5.0 REFERENCES

Previous Environmental Reports

ABB-ES, May 1997. Installation Restoration Program, Site Investigation Report, Volume 1, 106th Rescue Group, New York Air National Guard, Westhampton Beach, New York, Francis S. Gabreski Airport.

AECOM, February 2019. Final Site Inspection Report, Air National Guard Phase II, Regional Site Inspections for Per- and Polyfluoroalkyl Substances, Gabreski Air National Guard Base, Westhampton, New York.

BB&E, March 2016. Final Perfluorinated Compounds Preliminary Assessment Site Visit Report, Francis S. Gabreski Air National Guard Base, Westhampton Beach, New York.

Environmental Assessment & Remediations, 2018. Gabreski Air National Guard Base, Old Riverhead Road, Westhampton: Site No. 152148, Investigation Report.

Parsons, April 2021. Final Expanded Site Inspection Report for Per- and Polyfluoroalkyl Substances (PFAS) at the Gabreski Air National Guard Base, Westhampton, Long Island, New York.

Published Resources

Fisher, D.W., et. al., 1970, Geologic Map of New York, New York State Museum and Science Service, Map and Chart Series No. 15.

New York State Department of Environmental Conservation, Division of Environmental Remediation, DER-10 Technical Guidance for Site Investigation and Remediation, May 2010.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. http://websoilsurvey.sc.egov.usda.gov/. Accessed [2/1/2022].

United States Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation, National Functional Guidelines for Inorganic Data Review, January 2017.

Environmental Database Provider

Environmental Database Resources (EDR)

- Aerial Photo Decade Package
- Historical Topographic Map Report
- Certified Sanborn Map Report
- City Directory Image Report
- Radius Map Report with GeoCheck

Regulatory Agency Files

New York State Department of Environmental Conservation Info Locator. https://www.dec.ny.gov/pubs/109457.html. Accessed [4/26/2022].

FIGURES

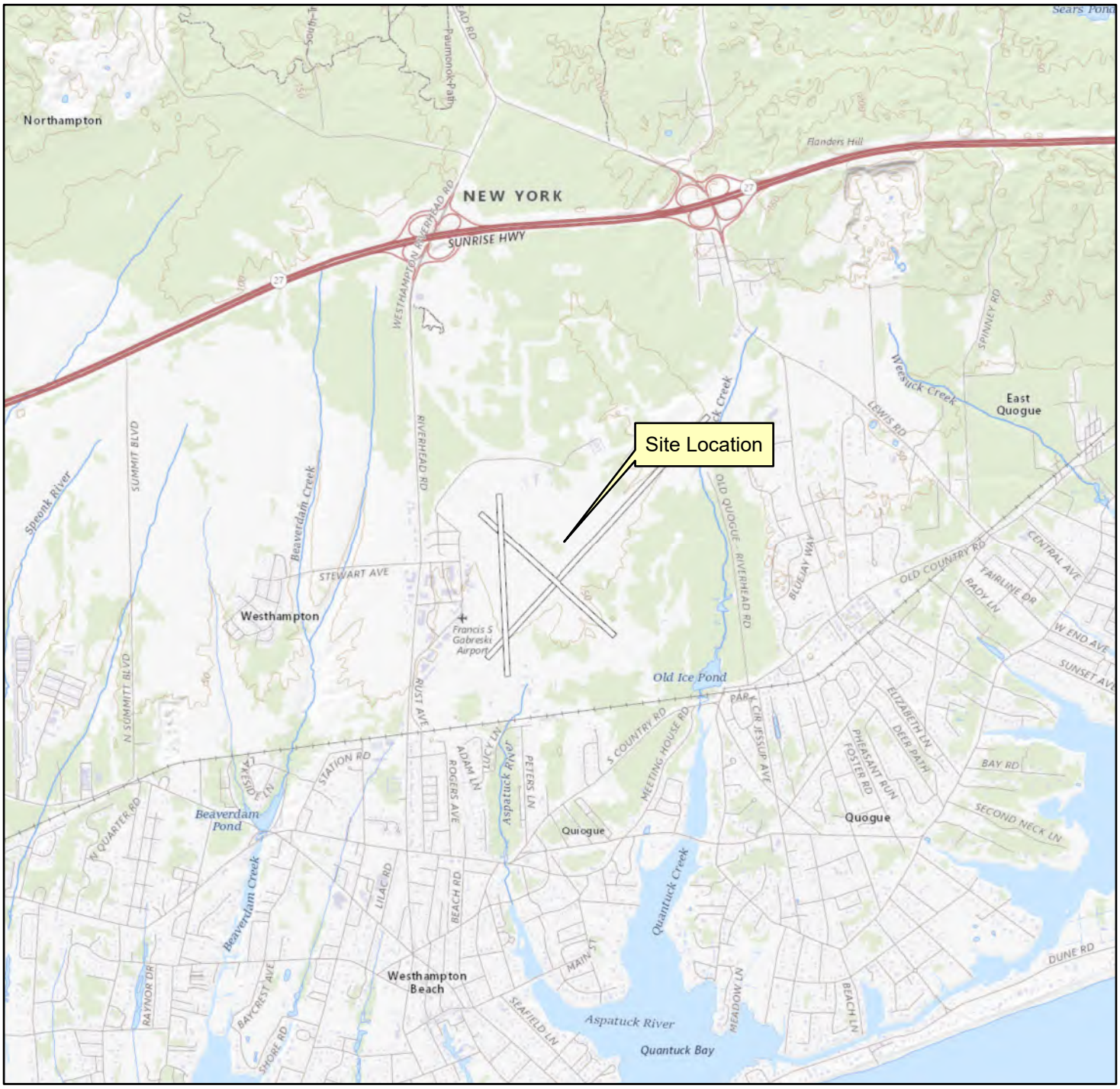

Figure 1
Site Location
Gabreski Airport
R9V5+C9
Westhampton Beach, New York
HRP# DEC1029.P2
Scale 1" = 4,000'

USGS Quadrangle Information
Quad ID: 13534-TM
Name: Eastport, New York
Date Pub: 2010

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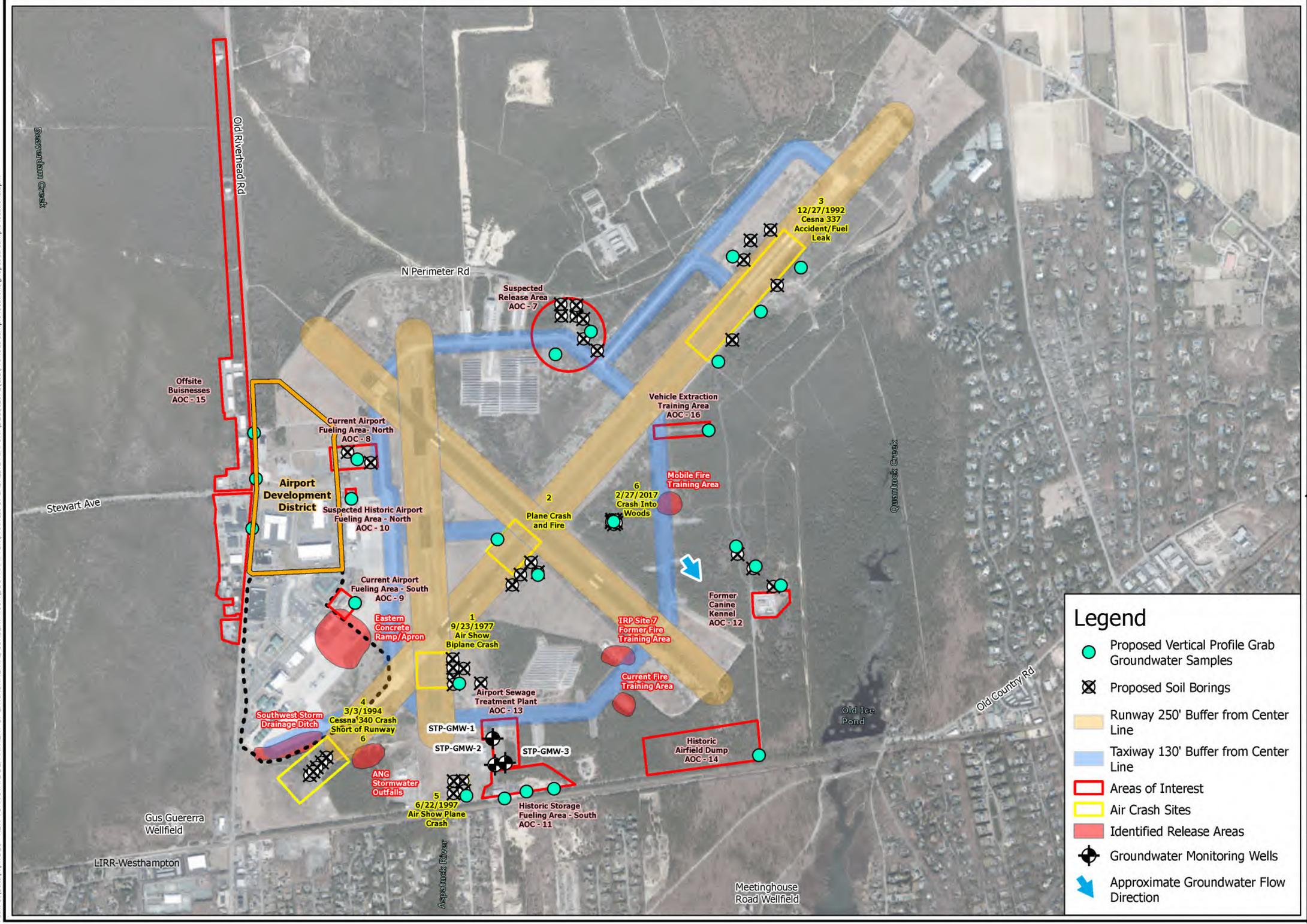
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM



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Revisions					
No.	Date				

Designed By:	Drawn By:	Reviewed By:
CMS	CMS	PWM

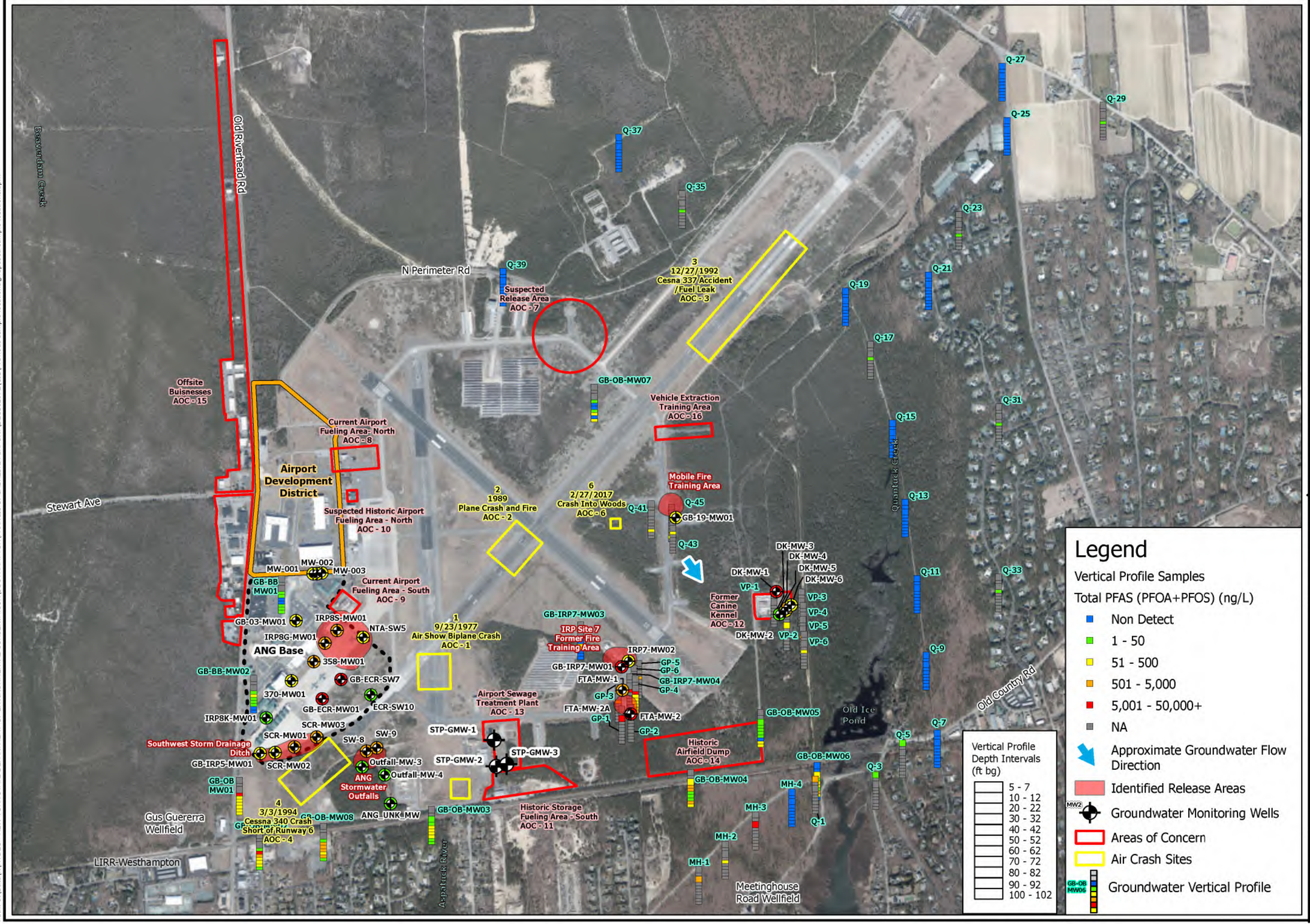
Issue Date:	Project No:	Sheet Size:
7/5/2022	DEC1029.P2	11x17

Site Plan and Proposed Sample Locations

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.
2

Path: S:\Data\NWYDEC - NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\SOUTHAMPTON\FRANCIS S. GABRESKI AIRPORT\DEC1029P2\GIS\Previous sample locations\proposed sample locations.aprx



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ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

0 600 1,200
Feet

Revisions		
No.	Date	

Designed By:	Drawn By:	Reviewed By:
CMS	CMS	PWM

Issue Date:	Project No:	Sheet Size:
6/16/2022	DEC1029.P2	11x17

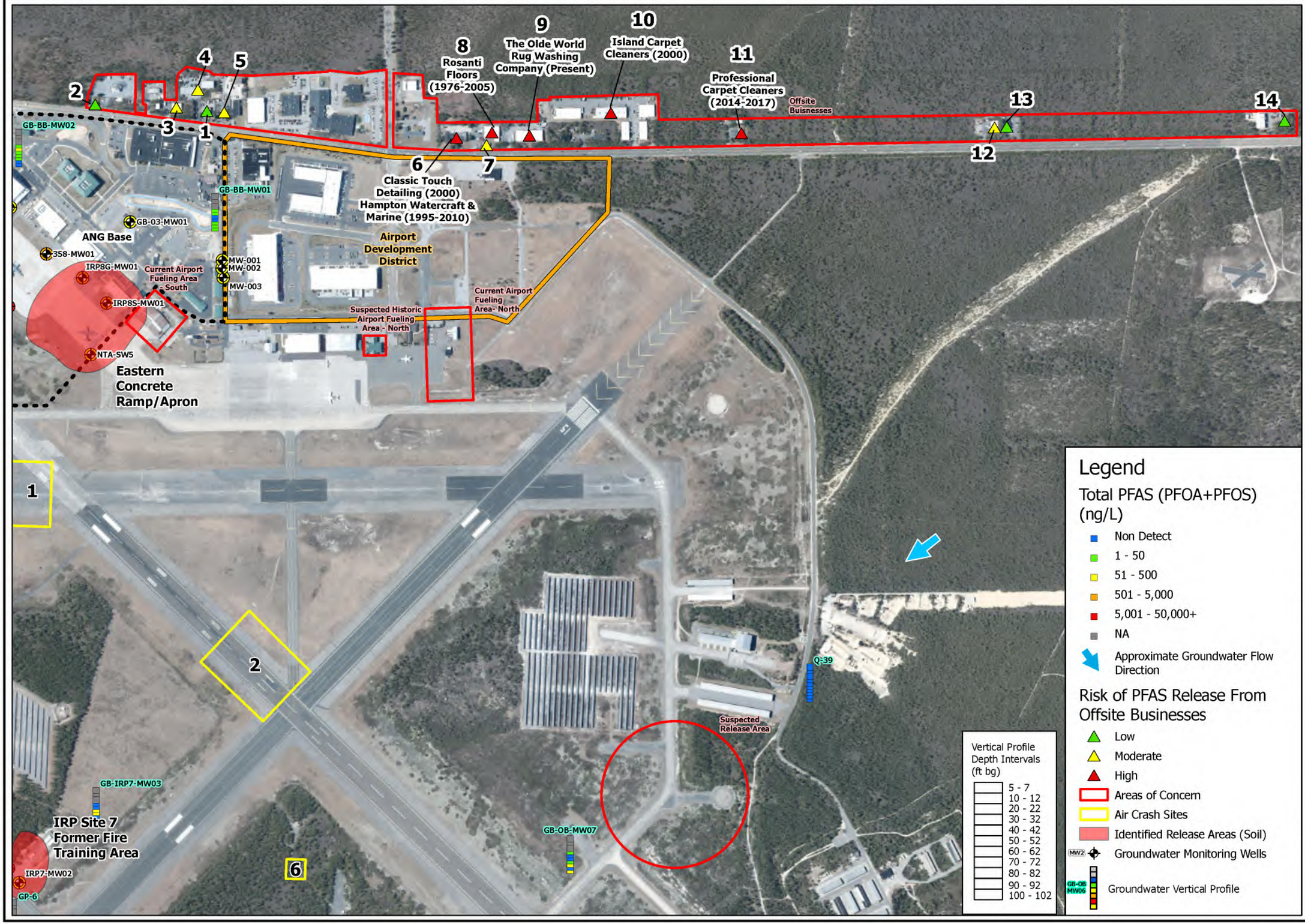
Previous Investigation Results

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.

3

Path: S:\Data\NWYDEC - NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\SOUTHAMPTON\FRANCIS S. GABRESKI AIRPORT\DEC1029P2\GIS\Previous sample locations\proposed sample locations.aprx



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SUITE 110
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(518) 877-7101
HRPASSOCIATES.COM

North

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Designed By:	Drawn By:	Reviewed By:
CMS	CMS	PWM

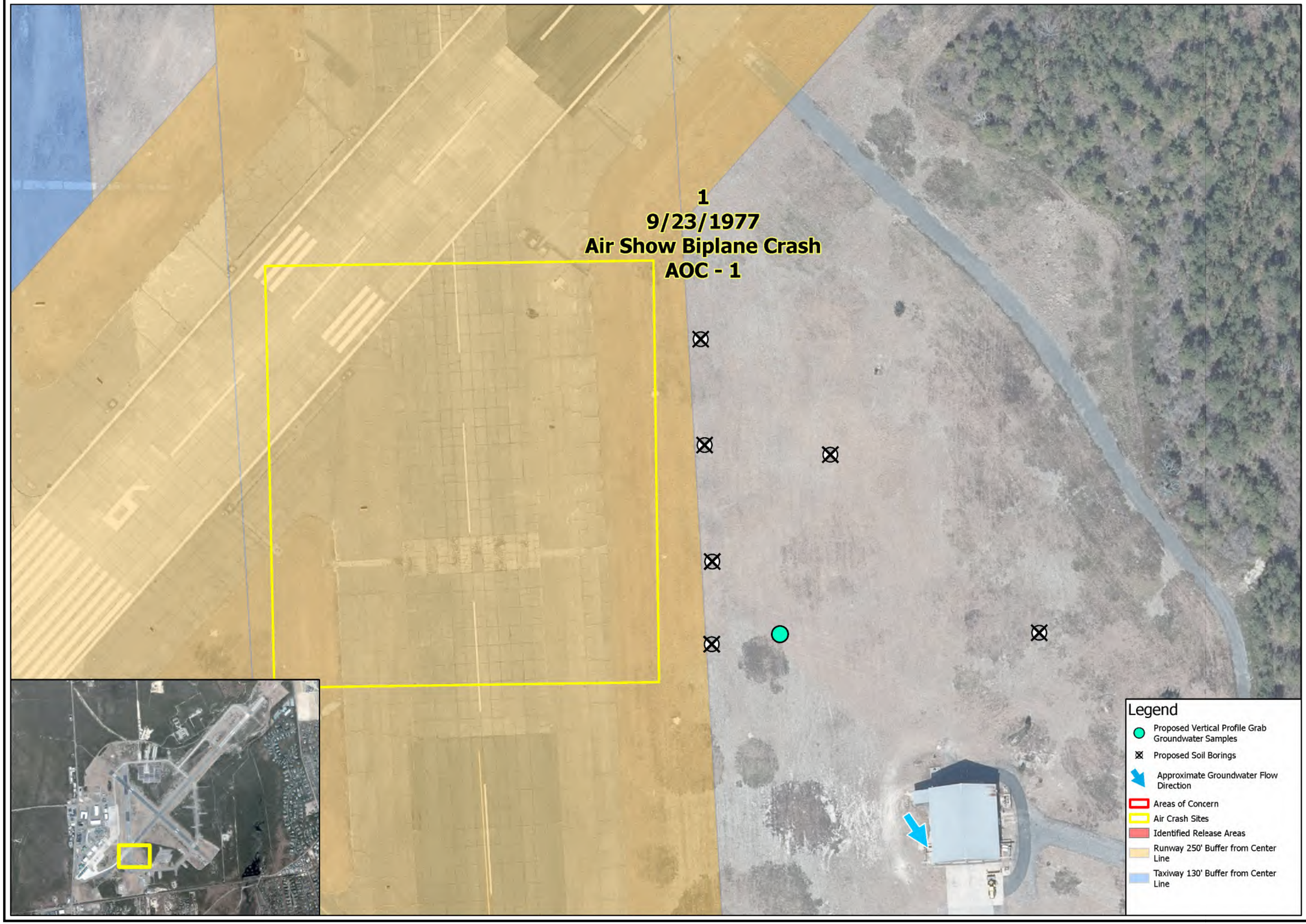
Issue Date:	Project No:	Sheet Size:
3/22/2022	DEC1029.P2	11x17

Offsite Businesses of Interest

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.

4



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North

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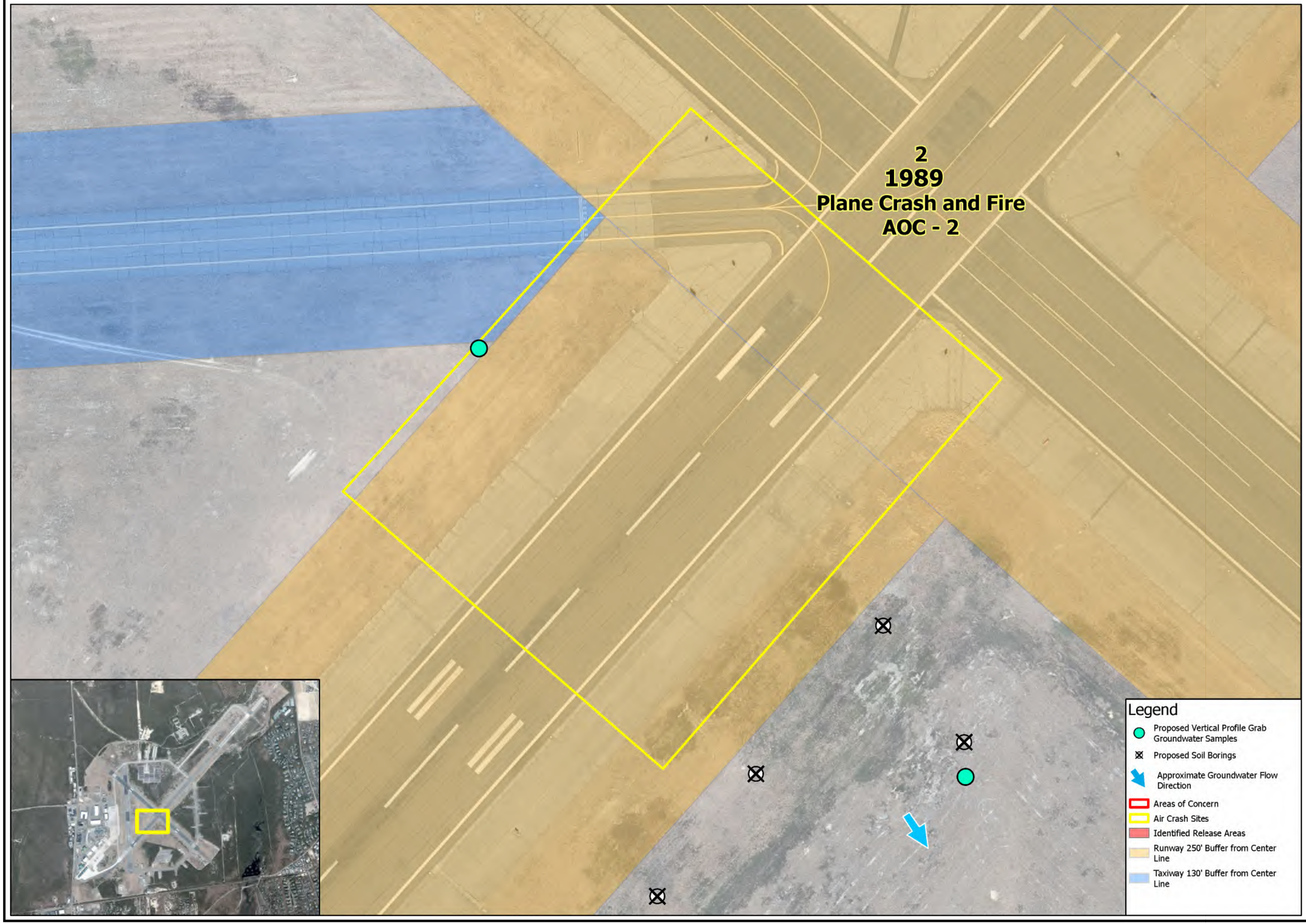
Proposed Investigation Locations
Crash Site 1 (AOC-1)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.
5-1



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SUITE 110
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North

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Date						

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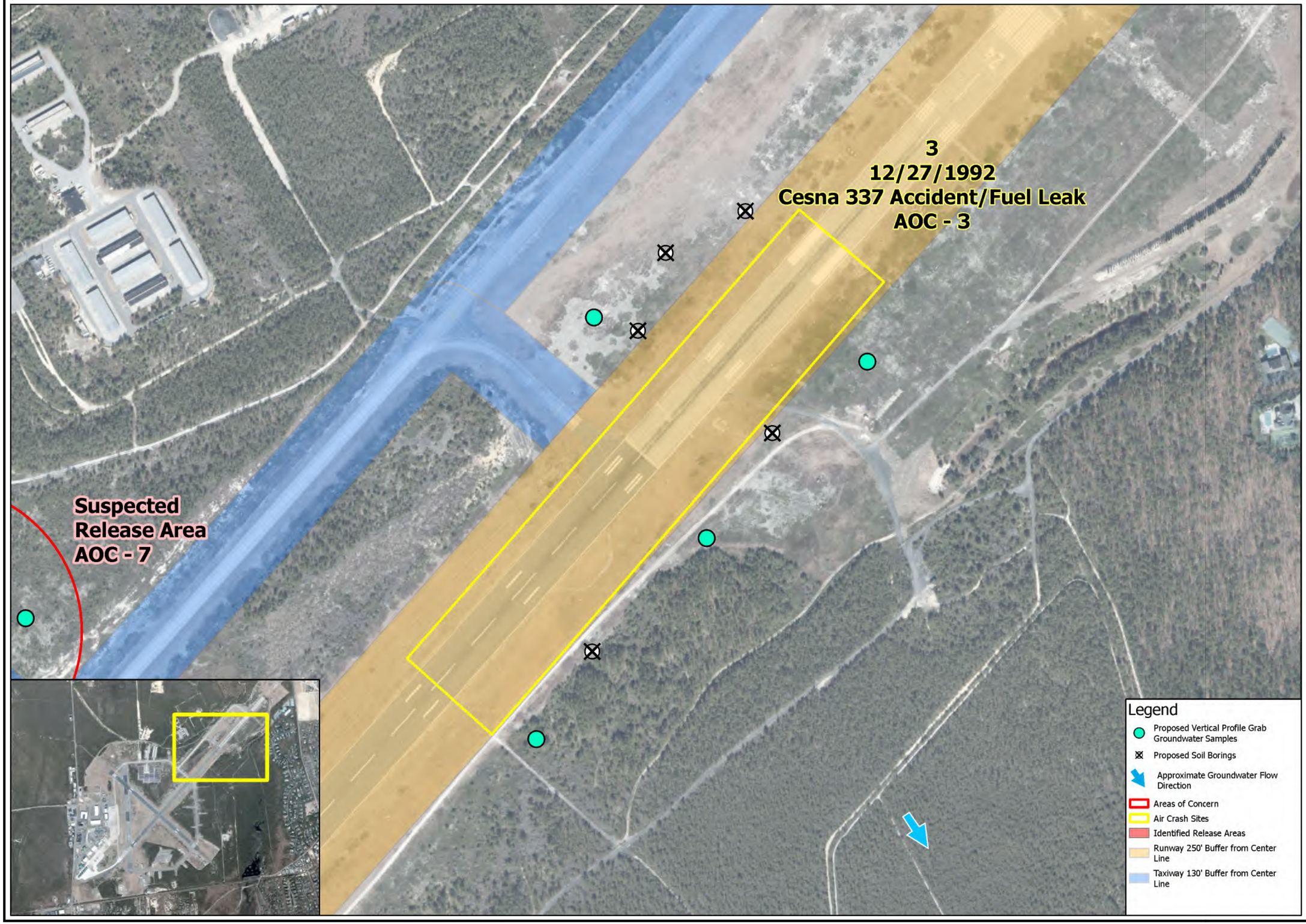
Reviewed By: PWM

Issue Date: 6/20/2022
Project No: DEC1029.P2
Sheet Size: 11x17

Proposed Investigation Locations
Crash Site 2 (AOC-2)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.
5-2



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SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

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CMS	CMS	PWM

Issue Date:	Project No:	Sheet Size:
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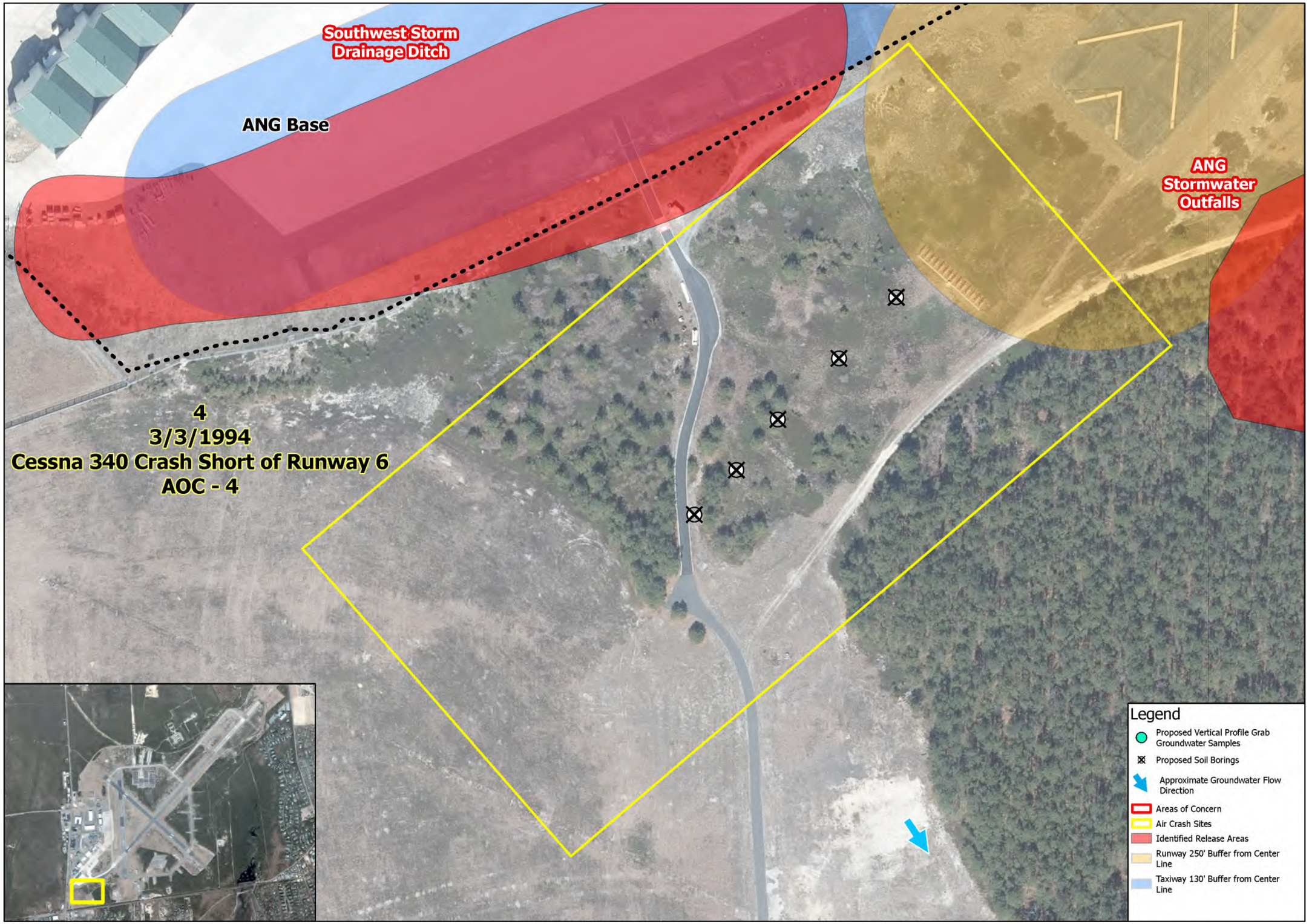
Proposed
Investigation Locations
Crash Site 3 (AOC-3)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.

5-3



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SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

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Date					

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CMS	CMS	PWM

Issue Date:	Project No:	Sheet Size:
6/20/2022	DEC1029.P2	11x17

Proposed Investigation Locations
Crash Site 4 (AOC-4)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.
5-4

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

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Feet

Revisions					
No.					
Date					

Designed By: CMS	Drawn By: CMS	Reviewed By: PWM
Issue Date: 6/20/2022	Project No: DEC1029.P2	Sheet Size: 11x17

Proposed
Investigation Locations
Crash Site 5 (AOC-5)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.

5-5

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

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Feet

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Date						

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Drawn By: CMS
Reviewed By: PWM

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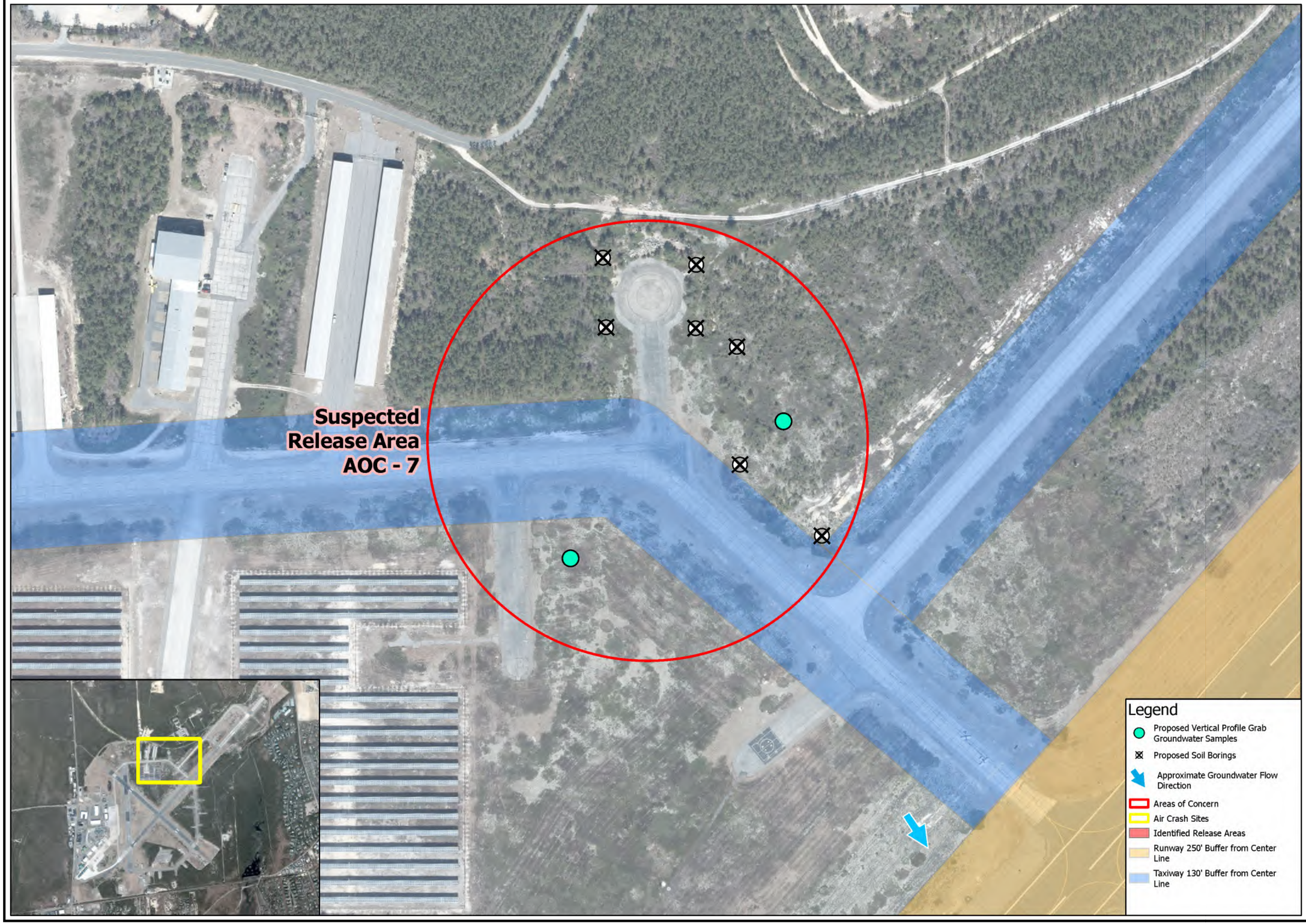
Project No: DEC1029.P2
Sheet Size: 11x17

Proposed Investigation Locations
Crash Site 6 (AOC-6)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.
5-6



HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

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Feet

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Issue Date:	Project No:	Sheet Size:
6/20/2022	DEC1029.P2	11x17

Proposed Investigation Locations
Suspected Release Area (AOC-7)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.

5-7

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
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HRPASSOCIATES.COM

North

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Feet

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CMS	CMS	PWM

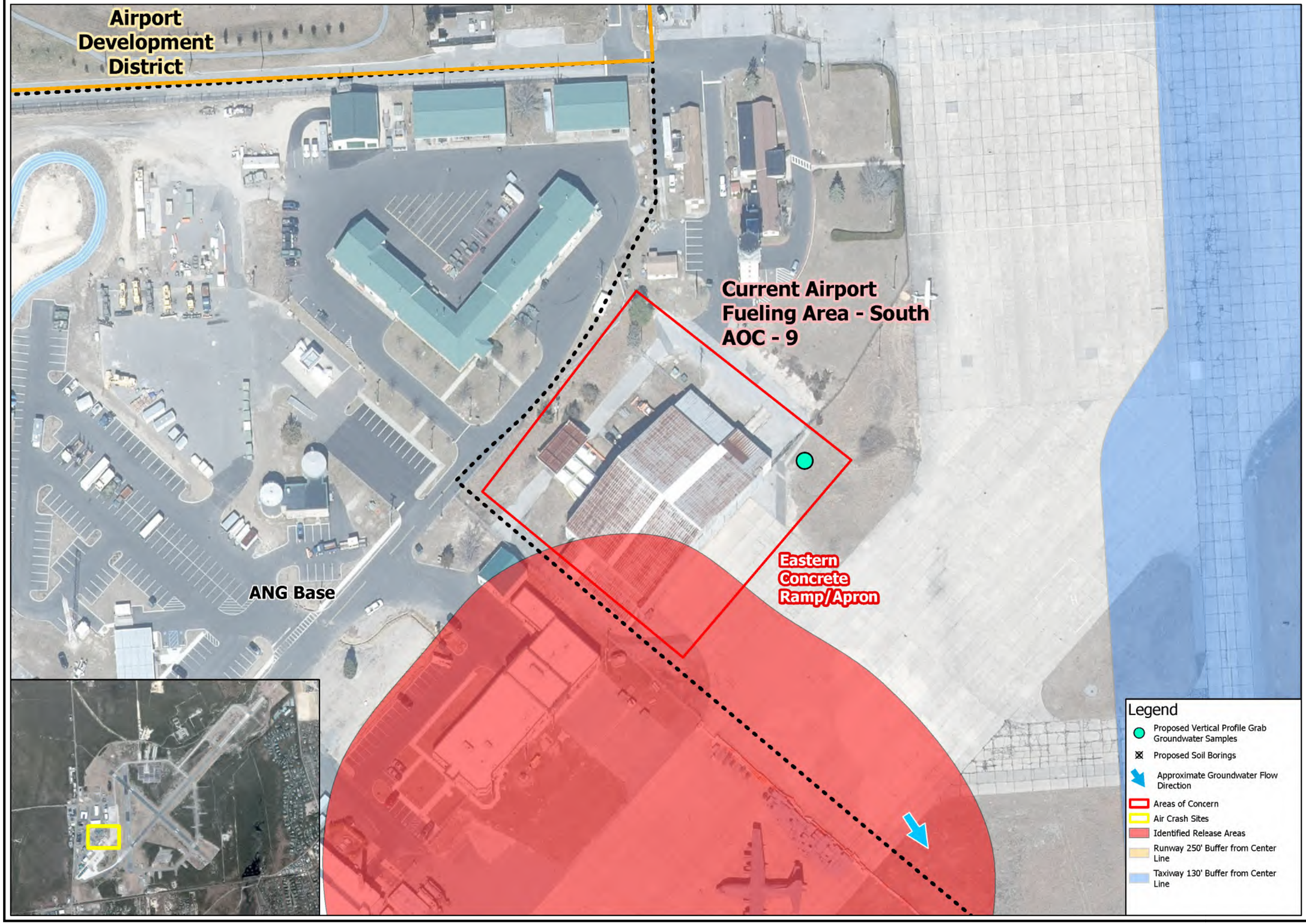
Issue Date:	Project No:	Sheet Size:
6/20/2022	DEC1029.P2	11x17

Proposed Investigation Locations Airport Refueling Area-North (AOC-8)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.

5-8



HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

0 50 100
Feet

Revisions					
No.					
Date					

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Issue Date:	Project No:	Sheet Size:
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Proposed Investigation Locations Airport Fueling Area - South (AOC-9)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.

5-9

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

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Feet

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Proposed
Investigation Locations
Suspected Historic Airport
Fueling Area -
North (AOC-10)
Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.
5-10

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

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Feet

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Date					

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Issue Date:	Project No:	Sheet Size:
6/20/2022	DEC1029.P2	11x17

Proposed Investigation Locations Historic Airport Fueling Area - South (AOC-11)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.

5-11

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

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Feet

Revisions					
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Date					

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CMS	CMS	PWM

Issue Date:	Project No:	Sheet Size:
6/20/2022	DEC1029.P2	11x17

Proposed
Investigation Locations

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.
5-12

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

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Feet

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CMS	CMS	PWM

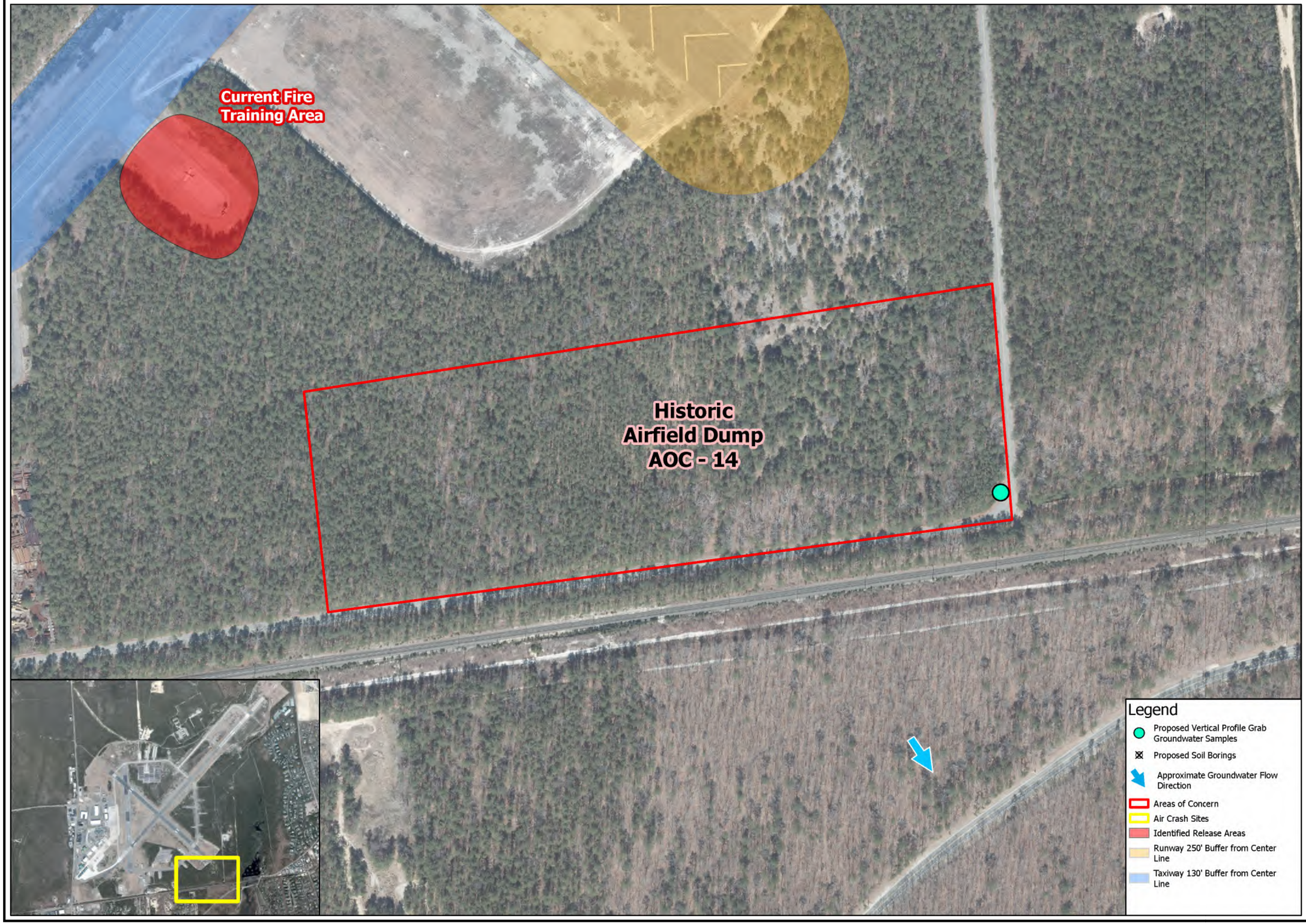
Issue Date:	Project No:	Sheet Size:
6/20/2022	DEC1029.P2	11x17

Proposed Investigation Locations
Airport Sewage Treatment Plant (AOC-13)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.

5-13



HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

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Revisions					
No.					
Date					

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CMS	CMS	PWM

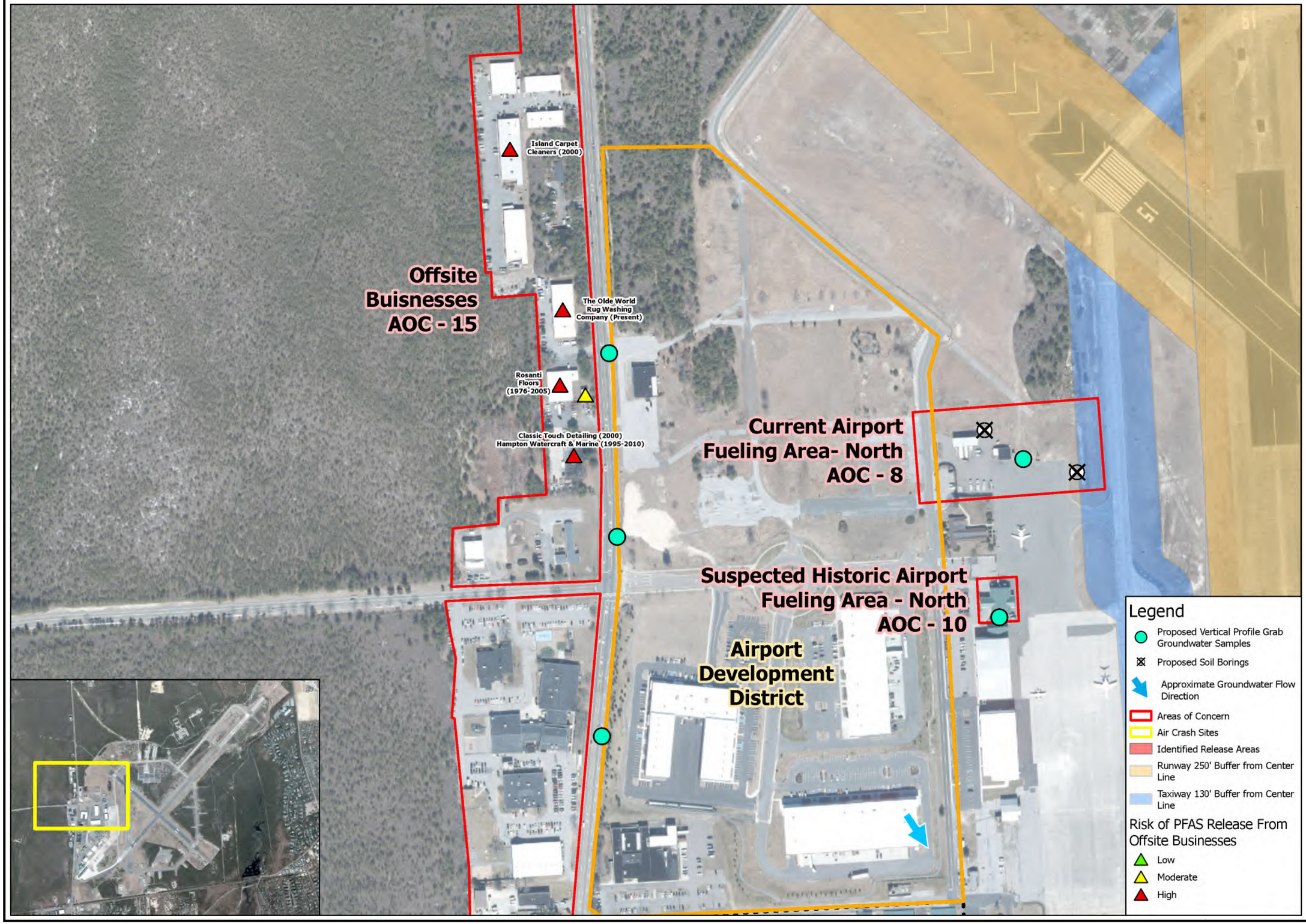
Issue Date:	Project No:	Sheet Size:
6/20/2022	DEC1029.P2	11x17

Proposed Investigation Locations Historic Airfield Dump (AOC-14)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.

5-14



HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

0 150 300
Feet

Revisions						
No.						
Date						

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CMS	CMS	PWM

Issue Date:	Project No:	Sheet Size:
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Proposed
Investigation Locations
Offsite Businesses
(AOC-15)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.

5-15

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

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Feet

Revisions					
No.					
Date					

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CMS	CMS	PWM

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Proposed
Investigation Locations
Vehicle Extraction Training
Area (AOC-16)

Francis S. Gabreski Airport
NYSDEC Site #152261
Old Riverhead Road
Westhampton, New York

FIGURE NO.

5-16

TABLES

Table 1

Offsite Businesses of Interest

Francis S. Gabreski Airport
NYSDEC Site No. 152261
Old Riverhead Road
Westhampton, New York

Map Number	Address	Business Name	Years Listed	Potential PFAS Uses	Risk of PFAS Release
1	207 Old Riverhead Road	East End Transmissions	2010-Present	Auto part installation and service	Low
2	225 Old Riverhead Road	Liberty Gas Service	2017-Present	AFFF fire suppression system	Low
3	241 Old Riverhead Road	Lawrence Racing Engines Inc.	2000-Present	Auto part installation and service	Moderate
4	247 Old Riverhead Road	Pro Cor M Tennis Court Construction	2000-Present	Artificial turf materials	Moderate
5	251 Old Riverhead Road	Quogue Imports Auto Service	1992-Present	Paints, waterproofing, waxing, auto parts	Moderate
6	333 Old Riverhead Road	Houcks Fuel Oil	2000-Present	AFFF fire suppression system	Moderate
		Classic Touch Detailing	2000	Waterproof waxes/coatings used for automotive detailing	High
		Hampton Watercraft & Marine	1995-2010	Waterproof waxes/coatings used in paints	High
7	337 Old Riverhead Road	Paint Shine	1995-2010	Waterproof waxes/coatings used in paints	Moderate
8	343 Old Riverhead Road	Rosanti Floors	1976-2005	Stain, soil, water repellents in carpeting, wood, and tile flooring	High
		Ultimate Car Care	2005-Present	Auto part installation and service	Moderate
		East End Undercoating (Automotive Undercoating)	Present	Undercarriage coatings	Moderate
9	351 Old Riverhead Road	The Olde World Rug Washing Company	Present	Stain, soil, water repellents in carpeting	High
		Pine Barrens Express (Commercial Printing)	1992-Present	Inks	Moderate
		Hampton Engines	1992-2017	Auto part installation and service	Moderate
		Goodfellows East Autobody Supply Corp.	1992-2005	Auto part sales	Low
10	381 Old Riverhead Road	Hampton Rubber Surfacing	2017	Non-stick coatings to rubber surfaces/rubber molds	Moderate
		Hudson Canvas & Awning	2014-2017	Waterproof treatment	Low
		Beach Stove and Fireplace	2017- Present	Waterproof/nonstick treatments	Low
		Island Carpet Cleaners	2000	Stain, soil, water repellents in carpeting	High
11	411 Old Riverhead Road	Professional Carpet Systems	2014-2017	Stain, soil, water repellents in carpeting	High
		All American Autocare Inc.	2005	Auto part installation and service	Moderate
12	479 Old Riverhead Road	Faze1 Autobody	2010	Paints, waterproofing, waxing, auto parts	Moderate
13	481 Old Riverhead Road & 1111 Old Riverhead Road	East End Hospice	1995-Present	Medical devices	Low
14	541 Old Riverhead Road	Island Duraclean Service	1992	Stain, soil, water repellents in carpeting	Low
15	Old Riverhead Road (No Street Number)	Coca-Cola Bottling	1971-1987	Inks/coatings on packaging	Moderate
		Dr. Pepper	1971-1982	Inks/coatings on packaging	Moderate
		Eureka Auto Works	1982-1987	Auto part installation and service	Moderate

Table 2

Sampling Summary

Francis S. Gabreski Airport
NYSDEC Site No. 152261
Old Riverhead Road
Westhampton, New York

Area of Concern	Proposed Shallow Soil Borings	Proposed Deep Soil Borings/ Vertical Profile Groundwater Locations	Proposed Soil Samples	Proposed Groundwater Samples
			PFAS by Modified EPA Method 537.1	
Soil Boring and Vertical Profile Installation and Sampling				
AOC 1: Crash Site 1 - 1977 Air Show Biplane Crash	6	1	7	7
AOC 2: Crash Site 2 – 1989 Plane Crash and Fire	4	2	6	14
AOC 3: Crash Site 3 – 1992 Cessna 337 Accident/Fuel Leak	5	4	9	28
AOC 4: Crash Site 4 – 1994 Cessna 340 Crash Short of the Runway	5	0	5	0
AOC 5: Crash Site 5 – 1997 Air Show Plane Crash	5	1	6	7
AOC 6: Crash Site 6 – 2017 Crash into Woods	5	1	6	7
AOC 7: Suspected Release Area Upgradient of GB-OB-MW07	7	2	9	14
AOC 8: Current Airport Fueling Area – North	2	1	3	7
AOC 9: Current Airport Fueling Area – South	3	1	4	7
AOC 10: Suspected Historic Airport Fueling Area – North	0	1	1	7
AOC 11: Historic Airport Fueling Area – South	0	3	3	21
AOC 12: Former Canine Kennel	3	3	6	21
AOC 13: Airport Sewage Treatment Plant	0	0	0	0
AOC 14: Historic Airfield Dump	0	1	1	7
AOC 15: Offsite Businesses	0	3	3	21
AOC 16: Vehicle Extraction Area	0	1	1	7
Subtotal - Soil Boring and Vertical Profile Samples	45	25	70	175
QA/QC - Soil Boring and Vertical Profile Samples	-	-	12	32
Sewage Treatment Plant Sampling				
AOC 13: Airport Sewage Treatment Plant	-	-	0	4
QA/QC - Sewage Treatment Plant Samples	-	-	0	4
Proposed Monitoring Well Sampling				
Locations to be Determined	-	-	0	4
QA/QC - Proposed Monitoring Well Samples	-	-	0	4
Total	**45**	**25**	**82**	**223**

Notes:
QA/QC includes 4 samples per 20 (Duplicate/MS/MSD/Field Blank)
AOC: Area of Concern
PFAS: Per- and polyfluoroalkyl substances

Table 3
Analytical Methods/Quality Assurance Summary

Francis S. Gabreski Airport
NYSDEC Site No. 152261
Old Riverhead Road
Westhampton, New York

					Containers per Sample			Preservation Requirements			
Parameter	**Matrix**	**Number of Samples (including Field QC)**	**Preparation Method**	**Analytical Method**	**No.**	**Size**	**Type**	**Temp.**	**Light Sensitive**	**Chemical**	**Maximum Holding Time**
SOIL											
PFAS	Soil/Sediment	223	NA	Modified Method 537.1	2	8 oz	polypropylene	2-6º C	No	NA	14 days
GROUNDWATER											
PFAS	Aqueous	82	NA	Modified Method 537.1	2	250 ml	polypropylene	2-6º C	No	NA	14 days

APPENDIX A
Site-specific Health and Safety Plan

MOVE YOUR ENVIRONMENT FORWARD

SITE-SPECIFIC HEALTH AND SAFETY PLAN (HASP)

Francis S. Gabreski Airport – Site #152261
Old Riverhead Road
Westhampton, New York 11978

Prepared For:

Contract# D009808, Work Assignment No. 29
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7012

Prepared By:

HRP Associates, Inc.
1 Fairchild Square, Suite 110
Clifton Park, NY 12065

HRP #: DEC1029.P2

Issued On: September 28, 2022

Addendum Number	Date Issued	Reason For Modification

Disclaimer

HRP Associates does not guarantee the health or safety of any person entering this site. Due to the potential hazards of this site and the activity occurring thereon, it is not possible to discover, evaluate, and provide protection for all possible hazards which may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury at this site. The health and safety guidelines in this plan were prepared specifically for this site for use and should not be used on any other site.

CERTIFICATION

This Addendum to HRP's Generic Health and Safety Plan has been prepared under the supervision of, and has been reviewed by, a Certified Safety Professional (CSP) certified by the Board of Certified Safety Professionals.

Alisa Werst, CSP
BCSP # 36431

TABLE OF CONTENTS

Figures

Tables

Appendices

1.0 EMERGENCY CONTACTS/PLANNING

The Health and Safety Officer will coordinate the entry and exit of response personnel in the event of an emergency. The following information, including directions to the nearest hospital shall be posted at the Site. When contacting the local authorities, be sure to provide: your name, facility name, full address, telephone number, and the nature of the emergency.

Emergency Phone Numbers Elton Street and Linwood Street Groundwater Sites Brooklyn, NY	
Emergency Contact	**Phone Number**
Fire, Ambulance, Police Emergency:	911
Suffolk County Police Department – Aviation East	631-852-6000
Quogue Fire Department	631-653-4620
Peconic Bay Medical Center	631-548-6000
Poison Control Center:	1-800-222-1222
DEC spills hotline:	1-800-457-7362
National Response Center:	800-424-8802
Project Manager: Mark Wright	203-308-0983
Site Safety Officer: Patrick Montuori	845-531-9490
NYSDEC Project Manager: Heather Bishop	518-402-9620

Map and directions to the following medical facilities are provided in **Figure 3**:

- **Peconic Bay Medical Center -** located at 1300 Roanoke Ave, Riverhead, NY (approximately 7.1 miles from the work site)

First Aid, Fire Protection, Emergency Response Equipment Storage Locations	
First Aid Kit:	In Vehicle
Fire Extinguisher:	In Vehicle
Eye Wash (Bottle):	In Vehicle

A Safety and Logistics Planning call will be held prior to conducting any intrusive activities at the site. Representatives from HRP and each subcontractor will attend the call to discuss logistical and safety challenges general to the scope of work and specific to the Site. This call is documented on the Safety and Logistics Planning Call Log in **Appendix A.**

2.0 INTRODUCTION

2.1 Purpose and Scope

This Health and Safety Plan (HASP) addresses the health and safety practices that will be employed by HRP Associates, Inc. personnel and our subcontractors participating in the Site Characterization (SC) that will be performed at the site. The SC will be comprised of several tasks to evaluate the environmental condition of the Site and the surrounding area, including installation of soil borings and monitoring wells to collect groundwater samples.

This HASP has been developed in accordance with HRP's Generic Safety and Health Program as required under OSHA's Hazardous Waste Operations Standard (29 CFR 1910.120). This Plan has been developed to establish minimum standards necessary for onsite investigation activities to protect the health and safety of HRP personnel. HRP site personnel have received the required level of training and field experience as required under subpart (e) of the Standard and have received medical examinations in accordance with HRP's medical surveillance program as required under subpart (f) of the Standard. No other personnel will be permitted in the Exclusion Zone unless they have received training and medical surveillance under the Standard.

HRP personnel and associated contractors shall be familiar with this HASP prior to conducting proposed site work. This plan must be present on site and be available for reference/inspection when the subject site work is being conducted.

2.2 Site Information and Areas of Environmental Concern

2.2.1 Site Information and Description

Site Name: Francis S. Gabreski Airport

Site Address: Old Riverhead Road, Westhampton, New York

Site Contact: Heather Bishop, NYSDEC

Phone Number: 518-402-9620

2.3 Background and Project Description

The focus of this SC is to investigate sources of per- and polyfluoroalkyl substances (PFAS) impacts on the Francis S. Gabreski Airport (NYSDEC Site No. 152261), hereinafter referred to as the Site. The 1,361-acre Site is located in Westhampton, a hamlet of the Town of Southampton, Suffolk County, New York, (**Figure 1**). The Site is owned and operated by Suffolk County as Francis S. Gabreski Airport and consists of two 5,000-foot runways, a 9,000-foot runway, an administration building, a terminal building, as well as several hangars and office buildings. An 88.5-acre area on the southwest portion of the airport property is leased by Suffolk County to the New York ANG, which uses the area as a base for the 106th Rescue Wing. The ANG Base has been previously investigated in relation to PFAS releases and impacts as site #152148. Three fire

training areas historically used and currently in-use by the ANG, located on the airport property but outside of ANG Base boundaries were also investigated as part of site #152148. In addition, PFAS impacts have been investigated at the former Suffolk Airport Canine Kennel located on the eastern perimeter of Francis S. Gabreski Airport under sites #152079 and #C152079. Other PFAS-related investigation work has been performed in the surrounding area by Suffolk County Department of Health Services (SCDHS). Previous investigations conducted at these sites are discussed below. A Site layout plan showing locations of the other remediation sites and other areas of interest is included as **Figure 2**.

Groundwater samples collected during previous investigations indicate PFAS impacts are present upgradient of identified release areas located on the ANG Base and the fire training areas. Based upon previous investigation results, several unidentified sources may be contributing to PFAS impacts downgradient of the Site. Previous investigation results, including groundwater monitoring well and vertical profile grab groundwater sampling results and identified release areas, are depicted on **Figure 2**.

HRP has identified the following 16 areas of concern (AOCs) for further investigation as part of this study. The AOCs are depicted on **Figure 2**.

- AOC 1: Crash Site 1 - 1977 Air Show Biplane Crash
- AOC 2: Crash Site 2 – 1989 Plane Crash and Fire
- AOC 3: Crash Site 3 – 1992 Cessna 337 Accident/Fuel Leak
- AOC 4: Crash Site 4 – 1994 Cessna 340 Crash Short of the Runway 6
- AOC 5: Crash Site 5 – 1997 Air Show Plane Crash
- AOC 6: Crash Site 6 – 2017 Crash into Woods
- AOC 7: Suspected Release Area Upgradient of GB-OB-MW07
- AOC 8: Current Airport Fueling Area – North
- AOC 9: Current Airport Fueling Area – South
- AOC 10: Suspected Historic Airport Fueling Area – North
- AOC 11: Historic Airport Fueling Area – South
- AOC 12: ANG Fueling Area
- AOC 13: Airport Sewage Treatment Plant
- AOC 14: Historic Airfield Dump
- AOC 15: Offsite Businesses
- AOC 16: Vehicle Extraction Area

2.3.1 Personnel Designations

The following personnel are designated to perform the stated project activities and to ensure that the requirements of this HASP are met. The same person may fill more than one role, and/or serve as an alternate in the absence of the designated team member.

The following personnel are designated to perform the stated project activities and to ensure that the requirements of this HASP are met. The same person may fill more than one role, and/or serve as an alternate in the absence of the designated team member. All subcontractors must have received the required level of training and field experience as required under subpart (e) of

OSHA 29 CFR 1910.120 and OSHA 29 CFR 1926.65 for Hazardous Waste Operations and Emergency Response (HAZWOPER).

Project Team Member	Responsibilities and Tasks
Patrick Montuori (or Qualified Alternate Safety Officer)	HSO – HRP Associates, Inc. - Ensuring all site work is being performed in accordance with HRP Associates, Inc. Safety Program, as well as in accordance with local, state and federal regulations. - Directing and implementing HRP's HASP. - Reviewing the Subcontractor's HASP and being aware of the hazards detailed therein. - Conduct a job orientation meeting and routine safety meetings for HRP Associates, Inc. employees and subcontractors, as applicable. - Provide copies of these inspections, recordkeeping/personnel logs to the engineer/contractor as required. - Ensuring all project personnel have been adequately trained in the recognition and avoidance of unsafe conditions. - Authorizing Stop Work Orders that shall be executed upon the determination of an imminent health and safety concern, and will notify the appropriate contacts upon issuance of this order. - Authorizing work to resume, upon approval from the Contractor. - Directing activities, as defined in the HRP's and the Contractor's written HASP, during emergency situations. - Providing personnel monitoring where applicable. - Ensuring that adequate personal protective equipment and first aid supplies are available. - Ensure site security, to the extent practicable. - Ensure accident victims are promptly cared for, and the incident is investigated and properly reported.
Mark Wright (Site Supervisor/ Project Manager) **Jessica Kruczek (Alternate Site Supervisor)**	Site Supervisor/Project Manager – HRP Associates, Inc. - Monitor and assist the site Health and Safety officer. - Maintain appropriate rules, regulations and codes at the job site. - Provide advance safety planning for all activities through the use of scheduling and administrative controls. - Obtain site-specific health and safety information and communicate that information with the appropriate personnel (i.e. contractors, client, etc.) - Report all injuries, illnesses and other incidents to the Director of Safety. - Ensure all HRP personnel are trained and qualified to perform site work.
Site Workers (Subcontractors)	**Site Workers** - Read and work in accordance with this HASP. - Report all unsafe work practices to the HSO. - Report all incidents, including near-misses to the HSO. - Work in a safe manner. - Provide Designated Competent Person
A complete list of HRP employee and subcontractor responsibilities (as applicable) can be found in the HRP Generic Health and Safety Plan. 1 A list of site workers will be maintained in the Personnel Log (**Appendix B**) 2 Supervisors Investigation Report included as (**Appendix C**)	

3.0 AREAS OF ENVIRONMENTAL CONCERN

3.1 Scope of Work

In general, the work to be performed by HRP and HRP's subcontractors consists of investigative methods to evaluate the environmental condition of the Site. The SC investigation fieldwork for this task includes the following subtasks:

1. Permit Acquisition, Underground Utility Identification, Clearance, and Location using Ground-Penetrating Radar (GPR)
2. Surface/Subsurface Soil Investigation (shallow soil boring installation and sample collection)
3. Groundwater Characterization (vertical profile grab groundwater sampling, permanent monitoring well installation, development, and sample collection)
4. Characterization and Disposal of Investigation Derived Waste
5. Analytical Data Quality Evaluation
6. Survey of Investigation Locations

Each subtask is described in greater detail below. Additional information is provided in the Site-Specific Work Plan prepared for this Site under separate cover.

Permit Acquisition, Underground Utility Identification, Clearance, and Location using Ground-Penetrating Radar (GPR)

HRP will work with Francis S. Gabreski Airport, ANG administration, Suffolk County, and property leaseholders to ensure investigation work is performed in coordination with each group and in accordance with the rules and regulations of the Federal Aviation Administration (FAA). HRP will coordinate with NYSDEC to ensure access agreements are in place with all property owners and leaseholders. For each investigation area (i.e. each AOC where borings are to be installed), HRP will complete FAA Form 7460-1 – Notice of Proposed Construction or Alteration, which will include a description of the proposed work and specify the work location. The forms will be submitted to the FAA by the airport administration.

Prior to implementing any intrusive activities, a utility clearance will be conducted. HRP will rely upon multiple lines of evidence to ensure to the maximum extent practicable that subsurface features are identified prior to commencement of intrusive work.

HRP will mark sampling locations prior to installation and contact public utility clearance services to mark out the utilities prior to the survey. The drilling contractor, or HRP, will request utility mark outs through NYS Code Rule 753/Dig Safe System (NY Dig Safe). The dig safe system is limited to public right-of ways and will only identify utilities entering private property rather than utilities present on-site.

HRP requests that a knowledgeable party (site representative) provide all available Site utility information prior to the survey or drilling activities and that, if possible, a knowledgeable Site person to clear each boring location prior to drilling.

HRP will utilize a qualified subcontractor to conduct a survey to conduct a GPR survey to attempt to locate any privately underground structures or utilities within the vicinity of each AOC to ensure boring areas are clear of obstructions and identify any other potential AOCs.

Soil Characterization

Up to 66 soil borings will be advanced using direct push methods. A total of 43 shallow soil borings will be installed to evaluate PFAS impacts to surface soil and near surface soils. The shallow borings will be advanced to a completion depth of approximately 5 ft bg, except for borings targeting underground structures (e.g. culverts, dry wells, etc. to be identified during the GPR survey) which will be advanced to the depth of the base of the structure. A total of 23 deep soil borings will be installed for the collection of vertical profile groundwater samples as discussed below. Groundwater vertical profile borings are to be advanced to a depth of approximately 100 ft bg.

In accordance with airport and FAA rules and regulations, no soil borings will be installed in paved areas or within runway and taxiway buffer zones (250 ft and 130 ft respectively). The proposed shallow soil boring and groundwater vertical profile locations and runway and taxiway buffer zones are depicted Site-wide on **Figure 2**.

All soil borings will be installed within Site boundaries, on airport property with the exception of three groundwater vertical profile borings to be installed in the right-of-way on the eastern shoulder of Old Riverhead Road, in order to evaluate groundwater impacts from offsite businesses (AOC 15). Additionally, several areas of the airport property are occupied by leaseholders, including AOCs 8, 9, and 10 which are leased to Sheltair (a corporation operating at the airport) and AOC 11 which is leased to the Village of Westhampton Beach. HRP will work with NYSDEC to obtain access agreements from Suffolk County and each leaseholder prior to commencement of work.

During installation of all soil borings, continuous soil samples will be collected with a macrocore sampler in five-foot intervals. All soil samples will be screened for volatile organic vapors using a PID, and any evidence of contamination will be noted and used for selection of soil samples.

Up to 66 soil samples will be collected from the 66 soil borings, with one sample collected from each shallow and deep boring. Soil samples will be collected from intervals of 0-2 ft bg, except at locations targeting underground structures, in which case the sample will be collected at the depth of the base of the structure. Soil sample depths will also be biased towards evidence of impacts observed in the field such as staining, odor, elevated PID readings, or a soil which produces a foam when agitated (an indicator of PFAS impacts). A total of 86 soil samples (66 regular samples, 20 QA/QC) will be analyzed for a list of 21 PFAS (consistent with Appendix G of *Sampling Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs, June 2021*), via modified EPA Method 537.1 or the most current NYSDEC approved method.

Groundwater Characterization

In order to characterize PFAS impacts to groundwater related to the AOCs, HRP proposes to complete the following activities as part of this SC:

- Install 21 soil borings to a completion depth of approximately 100 ft bg for the collection of vertical profile groundwater samples;
- Collect up to five water samples from the Airport Sewage Treatment Plant, including plant influent and effluent samples, and three groundwater samples; and
- Install, develop, and sample 4 permanent monitoring wells located and constructed based on vertical profile grab sample results.

Proposed vertical profile groundwater sample locations are depicted Site-wide on **Figure 2**. Proposed sampling locations were selected based on sampling data from previous investigations, groundwater flow direction, locations of historic stormwater structures, topography, and inferred surface water flow.

Collection of Groundwater Vertical Profile Samples

In an effort to further characterize PFAS impacts to groundwater across the Site, vertical profile grab groundwater samples will be collected from 21 locations across the Site. Each groundwater vertical profile boring will be advanced in two runs for separate soil sample and groundwater sample collection. The first run will be completed using a macrocore or microcore sampler to collect continuous soil samples to a completion depth of 100 ft bg. The second run will be completed adjacent to the first (offset 1-5 ft) using an expendable point and a 3-foot retractable steel screen. At each location grab groundwater samples will be collected in 10-foot intervals beginning at the water table interface (at approximately 40 ft bg) and continuing to the boring completion depth of approximately 100 ft bg. Once advanced to appropriate depth the inner stainless-steel screen will be held in place so that the base of the screen is stationed at the base of the sampling interval while outer rods are retracted, releasing the expendable point and exposing the screen. Groundwater samples will then be collected using a tubing actuator pump (Waterra Hydrolift or similar), dedicated high density polyethylene (HDPE) tubing, and dedicated check valves. The stainless-steel screen, inner rods, and outer rods will be decontaminated between each sampling interval and between vertical profile locations.

A total of 193 groundwater samples (7 samples per location for a total of 161 regular samples, plus 32 QA/QC samples) will be submitted to the NYSDEC approved laboratory under chain of custody procedures and analyzed for PFAS via modified EPA Method 537.1 or the most current NYSDEC approved method. Duplicate, matrix/matrix spike duplicates, and field blanks will be collected at a frequency of 1 per 20 samples.

Collection of Sewage Treatment Plant Samples

In order to evaluate potential PFAS impacts to groundwater related to the airport sewage, water samples will be collected from plant influent and effluent streams and from three monitoring wells

located upgradient and downgradient of the treatment plant leach field. Locations of leach field monitoring wells are depicted on **Figure 2.**

Groundwater samples will be collected from each of the three leach field wells in accordance with low-flow groundwater sampling procedures (as described in the Generic FAP on file with the NYSDEC) for laboratory analysis.

A total of 8 groundwater samples (4 samples, plus 4 QA/QC) will be submitted to for laboratory analysis under chain of custody procedures and analyzed for PFAS via. Duplicates, matrix/matrix spike duplicates, and field blanks will be collected at a frequency of 1 per 20 samples.

Installation, Development and Sampling of Proposed Monitoring Wells

Up to four monitoring wells will be installed as part of this SC. Locations and final construction details of the proposed monitoring wells will be determined based on analytical data and field observations from groundwater vertical profile sampling, and consultation with the NYSDEC.

Hollow-stem augers will be advanced through the overburden materials and used to set monitoring wells to a maximum depth of 100 ft bg. monitoring wells are to be constructed of 2-inch diameter, Schedule 40 PVC solid well pipe riser and a ten-foot PVC 10-slot screen. Depending on the location of the well, it will be finished with either a 4-foot stick-up protective casing, or a flush mounted protective cover.

Each newly installed well will be developed a minimum of 24 hours after completion by pumping and surging until the field parameters stabilize for a minimum of three consecutive readings of 10 percent variability of less. The field parameters include temperature, pH, and specific conductance. In addition, the turbidity of the groundwater must achieve a reading of 50 Nephelometric Turbidity Units (NTUs) or less during the field parameter readings.

Depth to groundwater measurements will be collected from all newly installed monitoring wells to the nearest 0.01 foot from the surveyed points (the survey is discussed in **Section 2.2.7**) prior to sampling activities and the data will be used to construct a groundwater contour map to determine the direction of groundwater flow and the hydraulic gradient on the Site.

Groundwater sampling will occur a minimum of one week after development has been completed. Groundwater samples will be collected from each of the newly installed wells in accordance with low-flow groundwater sampling procedures (as described in the Generic FAP on file with the NYSDEC) for laboratory analysis.

A total of 8 groundwater samples (4 samples, plus 4 QA/QC) will be submitted to for laboratory analysis under chain of custody procedures and analyzed for PFAS via. Duplicates, matrix/matrix spike duplicates, and field blanks will be collected at a frequency of 1 per 20 samples.

Additional information is provided in the Site-Specific Work Plan prepared for this Site under separate cover.

4.0 HAZARD ANALYSIS

The project hazard analysis below identifies the hazards that are anticipated to be encountered by the project team.

Physical Hazards Present	☐ Electricity ☒ Trips/Falls/Floor openings ☒ Holes/Pits ☒ Inclement weather ☐ Heat ☐ Cold ☐ Vibration ☐ Flying particles	☐ Ionizing radiation ☐ Non-Ionizing radiation ☐ Lasers ☒ Overhead hazards ☒ Noise ☐ Visible dust ☐ Falling objects ☐ Other _____
Health/Chemical Hazards Present [1]	☒ Dust/Fumes/Particulates ☐ Flammable/Combustible ☐ Compressed gas ☐ Explosive ☐ Water reactive ☐ Unstable ☒ Contact with contaminated media	☐ Oxidizer ☐ Corrosive ☐ Toxic ☐ Highly Toxic ☐ Irritant ☐ Sensitizer ☐ Carcinogen/Mutagen ☐ Other _____
Environmental/Equipment Hazards Present	☒ Heavy machinery ☒ Drilling ☐ Water operations ☒ Mobile equipment ☒ Road work ☐ Railroad work ☐ Forklifts ☐ Power tools ☐ Welding ☐ Gas cylinders ☒ Overhead/underground utilities	☐ Trenching/excavation ☐ Elevated heights/man lifts ☐ Scaffolding ☐ Ladders ☐ Confined spaces ☐ Energized equipment ☐ Overhead hazards ☒ Drums/container handling ☒ Insects/rodents/snakes ☐ Biological hazards ☐ Other _____
Personal Safety Considerations	☐ Security Issues ☐ Remote setting ☐ Employees working alone ☐ Limited lighting	☐ Off hour shifts ☐ Dangerous wildlife/animals ☐ Limited cell phone service ☐ Other _____
[1] **Table 1** (following the text of this HASP) provides a list of chemical substances for reference, along with odor threshold, permissible exposure limit (PEL), threshold limit value (TLV), OSHA ceiling, IDLH concentration, route of exposure and symptoms of acute exposure, if any.		

Details of specific hazards associated with individual tasks will be discussed in the Daily Job Brief Record (**Appendix D**).

4.1 Hazard Analysis Summary/Minimization

HRP's Corporate Health & Safety Plan (in conjunction with this HASP) will be cross-referenced in order to obtain the safe work practice procedures for mitigating and preventing project site hazards identified in the table above. Job site hazard prevention and minimization information can be found in Section 3 of HRP's Generic Health & Safety Plan.

Confined Spaces

Only properly trained HRP personnel are authorized to enter confined spaces. Confined space entry may be performed by subcontractors who have the proper training and experience to conduct this work. Confined space entry is not anticipated during the SC.

Excavations

It is HRP's policy to ensure that for excavation projects the subcontracted environmental contractor will provide a competent person to perform daily and as needed inspections of excavation sites. This policy will be conveyed through the subcontract agreement with the environmental contractor. At a minimum HRP will provide our employees involved with construction projects with awareness level training regarding excavation hazards and notify the subcontracted firm if any obvious excavation safety hazard exists during on-site activities.

Chemical Hazards

Hazardous chemicals known or suspected to be onsite are listed in **Table 1** (follows text). **Table 1** includes Chemical name, odor threshold OSHA PEL, ACGIH TLV, OSHA STEL, IDLH Concentrations, routes of exposure and symptoms of acute exposure. Chemicals likely to be encountered during site work are highlighted.

4.2 Changes in Conditions or Scope

Should conditions or the scope of work described herein change significantly; a HASP Addendum will be completed.

4.3 Monitoring Procedures

Air monitoring will be used to determine the concentrations of various chemicals while working in the exclusion zone to evaluate worker exposure to contaminated media. In order to determine potential health hazards and to determine the level of personal protection needed during sampling activities within the areas of concern, a Photoionization Detector (PID) will be periodically operated to monitor air quality for the purpose of ensuring minimal exposure to volatile organic compounds. Monitoring of atmospheres adjacent to on-going excavations and around the treatment area shall also be conducted with a PID.

The following environmental monitoring instruments/procedures shall be used on-site at the specified intervals.

Instrument/Procedure	**Sampling Interval**
Photoionization Detector (PID) in the breathing zone	Periodically as deemed by HSO

Background ambient air levels will be established outside the exclusion zone prior to commencement of site work. Ambient air sampling will occur in the breathing zone of site workers for comparison to the action levels (described below). Additionally, air sampling will be conducted in the vicinity of any intrusive exploration (i.e., near excavations, trenches, etc.) to determine if any contaminants are present.

The following *Action Levels* will be used:

Instrument	Action Level	Level of Protection or Action Required
PID	No reading above background	▪ No action required. ▪ Continue PID monitoring. ▪ (Modified) Level D protection.
PID	Up to 5 ppm above background	▪ Evacuate exclusion zone. ▪ Recheck levels after 15 minutes. ▪ If levels are sustained, reassess. ▪ Use engineering controls to lower breathing zone vapors. ▪ Level C protection (at the HSO direction).
PID	>5 ppm above background	▪ Evacuate exclusion zone. ▪ Recheck levels after 15 minutes. ▪ Use engineering controls to lower breathing zone vapors. ▪ If levels are sustained, contact Safety Manager, and re-evaluate HASP.

When an action level is equaled or exceeded, the work area should be evacuated, and the area re-tested with the sampling device. If the appropriate action level continues to be exceeded, the HSO will have to assess the use of engineering controls to lower vapor levels or availability of required increased personal protection equipment before authorizing re-entry.

Calibration of all instruments will occur at least once per day, when in use. An equipment calibration log is included in **Appendix E.**

Community Air Monitoring

To ensure the protection of receptors surrounding the site HRP has developed and will implement a Community Air Monitoring Program (CAMP), which requires real time monitoring of volatile organics and dust during the remedial investigation. The CAMP, included separately as **Appendix B of the SC Work Plan**, will be implemented during all intrusive activities.

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter

less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than the background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work may continue with dust suppression techniques provided that no visible dust is migrating from the work area.

If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

CAMP data summary tables will be provided to the NYSDEC and NYSDOH on a weekly basis. HRP will notify the NYSDEC and NYSDOH within 24 hours of any CAMP action level exceedances and corrective measure taken.

5.0 ENGINEERING CONTROL MEASURES/GENERAL SAFETY

5.1 Air Monitoring

In order to determine potential health hazards and to determine the level of personal protection needed during drilling, excavation and sampling activities within the areas of concern, a PID will be periodically operated to monitor air quality for the purpose of ensuring minimal exposure to volatile organic compounds. Please refer to Section 4.3 of this plan for specific air monitoring procedures/action levels.

5.2 Protective Zones

Prior to commencement of work in area of suspected contamination, protective zones specific for each phase of the Plan will be established by the HSO if necessary, prior to the start of field work. The purpose of the protective zones is to prevent potential cross-contamination of adjacent areas as well as to protect project personnel from exposure to contaminated areas.

Protective zones shall be delineated as follows:

- Exclusion Zone: This is the contaminated area in which intrusive activities are performed. The "Area of Environmental Concern" (AOEC) is located within this area. A single access point for entrance and exit should be established and maintained, if possible. This zone should be delineated from the Contaminant Reduction Zone via perimeter cones or caution tape, or other applicable method. The work area is depicted on **Figure 2**. The Exclusion Zone delineation and any necessary modifications will be based on site conditions.

- Contaminant Reduction Zone: This zone is a transition zone located between the Exclusion Zone and the Support Zone and is utilized to decontaminate personnel and equipment.

- Support Zone: This zone will be utilized by equipment and vehicle storage and will be kept free of contaminated material. The HSO will determine the location of this zone. In the event of a site evacuation, the rally point will be the parking lot of the airport administration building located on Sheldon Way on the airport property (**Figure 2**). The designated rally point may be relocated by the HSO based on project or site conditions. All site workers will be notified of any relocation prior to implementation.

6.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

6.1 Level of Protection

As identified in Section 4.0, the overall health and safety risk associated with chemical hazards for HRP and associated contractors is considered significant. This is primarily due to the moderate concentrations of chemical contaminants expected based on minimal contact personnel will have with any potentially contaminated media. Therefore, the minimal level of protection for HRP personnel during the conduct of all the environmental work performed at the site will be Level D PPE, and will generally consist of the PPE listed below:

- Steel toe/shank work boots
- Hard hat, as necessary
- Safety vest, as necessary
- Coveralls/tyvek, as necessary
- Safety glasses/goggles/face shield, as necessary
- Hearing protection, as necessary

If site conditions warrant, an upgrade to Level C PPE may be required (refer to Section 4.3 for the appropriate *Action Levels*) then the contractors will make Level C personal protective equipment (PPE) readily available. Level C PPE generally includes:

- Full face, air purifying respirator with organic vapor cartridges
- Same as Level D, but also includes tyvek taped pant/boot and glove/shirt

If it is determined protection beyond Level C is required, HRP will re-evaluate the HASP as well as the site conditions, and will revise the HASP as required. The following table provides a summary of the minimum level of PPE required on site:

Description	Level of Protection [1]	
	D	C
Body		
Work Clothes	R	R
Chemical Protective Suit (Tyvek)	O	R
Visibility Vest	O [2]	O [2]
Apron	O	O
Fall Protection	O [2]	O [2]
Head		
Hard Hat	R	R
Head Warmer	O	O
Eyes & Face		
Safety Glasses	R	R
Goggles (based on hazard)	O	R
Face Shield	O	O
Ears		
Plugs or Muffs	R [2]	R [2]
Hands & Arms		
Work Gloves	R	O [2]

Description	Level of Protection [1]	
	D	C
Chemical Resistant Gloves (Nitrile)	O	R
Insulated Gloves	O	O
Foot		
Work Boots/Steel Toe Boots	R	R
Chemical Resistant Boots	O	O
Disposable Boot Covers	O	O
Respiratory Protection [3]		
½ Mask Air Purifying Respirator (APR) or Full face APR	NA	R
Dust Protection	O	NA
Powered APR	NA	NA
SCBA/Supplied Air Respirator	NA	NA

R = Required, **O** = Optional, **NA** = Not Applicable

[1] The level of protection identified here does not include the necessary equipment for entering confined spaces. Refer to Moran Environmental Recovery's Safety Manual Confined Space Program for atmospheric sampling protocols and breathing and rescue equipment necessary for those operations.

[2] The use of this PPE may or may not be required depending on site conditions/location and will be addressed at the time of task assignment by the HSO.

[3] Respiratory protection necessary to protect against VOC, dusts/particulates and not oxygen deficient atmospheres.

The following table provides a general description of potential field activity tasks to be performed and associated (recommended) PPE. The use of this PPE may or may not vary depending on site conditions and will be addressed at the time of task assignment by the HSO.

Task Description	Invasive (Y/N)	Protection Level
Site Mobilization - Surveying, fence and barrier installation, hay bale installation, decon and work zone set up, soil staging areas preparation	N	Level D
Soil and Water Sampling - Drilling, sampling, soil moving as needed.	Y	Modified Level D or Level C – Respirator as needed based on monitoring. Eye protection required during collection of any liquid sample
Soil Excavation, Staging and Load-Out	Y	Modified Level D – or Upgrade to Level C dependent on monitoring
Decontamination - Truck dry sweeping, decon pressure wash of equipment, PPE change out	Y	Modified Level D – or Upgrade to Level C dependent on monitoring
Waste Management - Soil load-out for off-site disposal, water removal for disposal, PPE disposal	Y	Modified Level D – or Upgrade to Level C dependent on monitoring
Site Control (Exclusion, Decontamination, Support Zones)	N	Modified Level D – or Upgrade to Level C dependent on monitoring
Communications - Use of hand signals, backup alarms, and voice	N	NA
Site Restoration	Y	Level D

7.0 DECONTAMINATION

7.1 Decontamination Procedures

All personnel and equipment leaving the exclusion zone must be properly cleaned and decontaminated. When there is evidence of chemical contamination during the site operations, all personnel will be decontaminated under the direction of the HSO. Clean-up and/or decontamination of personnel shall consist of washing off excessively soiled PPE with a disinfectant detergent scrub and water. At the very least, all personnel should wash their hands and face before leaving the exclusion zone. After washing, all disposable clothing (tyvek, gloves, etc.) will be removed and placed in a double lined plastic bag.

Sampling tools and any other non-disposable items will be decontaminated between sampling points, and at the direction of HRP personnel, to prevent cross-contamination of work areas or environmental samples, as applicable.

7.2 Emergency Decontamination

If immediate medical attention is required in an emergency, decontamination will be performed after the victim has been stabilized. If a worker has been exposed to an extremely toxic or corrosive material, then emergency decontamination will consist of flushing with copious amounts of water. If the victim cannot be decontaminated because it will interfere with emergency medical aid being administered, then the victim should be wrapped with plastic or other available items (i.e. an uncontaminated coverall) to reduce potential contamination of other personnel or medical equipment.

If a site worker has been overcome by heat related illness, then any protective clothing should be removed immediately. In the case of non-medical emergency evacuation, decontamination should be performed as quickly as possible, unless instant evacuation is necessary to save life or prevent injury.

7.3 Personal Hygiene

All employees will be required to wash hands and face prior to eating, smoking, drinking and going to the bathroom. Workers will be required to remove contaminated PPE and clothing prior to leaving the Contaminant Reduction Zone. All field personnel should avoid contact with potentially contaminated substances such as puddles, pools, mud, etc.

Additional personal hygiene requirements, intended to prevent the spread of the novel corona virus to site workers will be in effect during site activities. These procedures include mobile handwashing stations and the requirement for site workers to wear face coverings. Additional details are included in **Appendix H**.

8.0 EMERGENCY ACTION PLAN/SPILL RESPONSE

In the event of a worker injury, fire, explosion, spill, flood, or other emergency that threatens the safety and health of site workers, the following procedure will be followed:

1. If the emergency originates within the work area covered by this Plan, the HRP HSO shall act as the Emergency Coordinator. The emergency evacuation signal is an air horn or a loud yell. All emergency situations (including worker injuries, no matter how small) will be reported to the HSO, who will determine the appropriate emergency response, up to and including evacuation. Only the HSO may initiate evacuation of the work area. The HSO will be responsible for reporting any emergency situation to the appropriate authorities, using a telephone or other appropriate method.

2. In the case of an evacuation, site workers will exit the site along the safest route(s) and assemble with team members at a safe rally point. Those workers in the Exclusion Zone will follow the emergency decontamination procedures outlined in Section 7.2. Accounting of all site personnel will be conducted by the HSO using the personnel log at a location determined by the HSO.

3. HRP personnel are not permitted to participate in handling the emergency. Fire and medical emergencies will be handled by the local fire department and ambulance service. In the case of a spill of hazardous materials the NYSDEC will be contacted.

   In addition, the HSO/Project Manager must advise the site contact that the New York Spill Hotline should be contacted and, if the spill quantity is greater than the Reportable Quantity (RQ) under CERCLA and/or SARA, the National Response Center (NRC) and Local Emergency Planning Committee should also be contacted. If the spill begins to flow overland and threatens to contaminate a storm drain or surface water, HRP personnel may attempt to contain and isolate the spill using any available resources, but only if, in the judgment of the HSO, such action will not expose the workers to dangerous levels of hazardous substances and is necessary to preserve life or property. In the event that a spill of material of any amount threatens to reach navigable waters, the NRC shall be contacted.

4. Once initial emergency procedures to protect worker safety and health have been addressed, and control of emergency has been completed, the HSO will complete an Investigation Report and submit this form to the appropriate personnel (HRP and/or client contact).

5. All site workers will be familiarized with the above procedures during the pre-entry briefing to be conducted before site work begins.

9.0 TRAINING/MEDICAL SURVEILLANCE

9.1 Training Requirements

All HRP and HRP subcontractor personnel who enter the work zone and/or Exclusion Zone must have successfully completed the 40-hour or 24-hour training requirement outlined in 29 CFR 1910(e). If the 40-hour or 24-hour training of any person occurred more than 12 months prior to commencement of work, then that person must have attended an 8-hour refresher course within the 12 months prior to commencement of work. If respirators are in use in the Exclusion Zone, then all personnel must have undergone respirator training and a fit test within the last 12 months. Training certificates and records for HRP employee(s) are on file at HRP. All other contractors will be required to supply written proof of training before being allowed into the Exclusion Zone.

9.2 Pre-Entry Briefing

Prior to commencement of work in an area of suspected contamination, HRP's Health and Safety Officer will conduct a pre-entry briefing with on-site contractors, which will include the following:

- Name of the HSO and person responsible for the visitor log.
- Description of the parcel as well as location of emergency telephones and the location/boundaries of the Exclusion Zone, Contamination Reduction Zone, and Support Zone, if established.
- Review of hospital locations and directions.
- Review of tasks to be conducted within the parcel by the site workers.
- Review of the Emergency Action Plan and rally point, including the nearest emergency communications and telephone numbers.
- The nature, level, and degree of anticipated hazards (physical and chemical) involved in the site work.
- Required personal protective equipment.
- Decontamination procedures.

The HSO should also, at this time, ensure that all on-site HRP and HRP subcontractor personnel have read the HASP and signed the last page of the original (Section 11.0). If additional information on the site becomes available, the HSO will call additional briefings as necessary.

9.3 Morning Safety (Tailgate) Meeting

The HRP HSO will conduct a safety overview meeting at the beginning of each workday on the site. The meeting will be given in addition to any tailgate meetings that the subcontractor conducts. A summary of the meeting topics signed by the personnel attending the meeting is included in **Appendix D**.

9.4 Medical Surveillance

All HRP and HRP subcontractor personnel entering the Exclusion Zone must have had a physical within the 12 months prior to commencement of site work. A physician's written opinion regarding fitness for work for each employee including work limitations, if any, is on file at HRP, as applicable. A written opinion for all other site personnel must be supplied prior to commencement of site work to the HRP HSO. Any work limitations for site personnel, or relevant medical information (i.e. allergic reactions to medication) should be included in this Plan.

10.0 AUTHORIZATIONS

Personnel authorized to enter the Exclusion Zone include the personnel listed in Section 2.4. Persons not listed in Section 2.4 may enter the Exclusion Zone only if the appropriate training and medical fitness certifications have been supplied to either the HRP Project Manager or Health and Safety Manager and the HSO or his/her designee on site has approved site entry. All personnel entering or leaving the Exclusion Zone must sign in and sign out with the recordkeeper.

12.0 APPROVALS

This plan meets the minimum requirements of 29 CFR 1910.120 and 29 CFR 1929.65 and has been written for specified site conditions, dates, and personnel, and must be amended if conditions change. By their signature, the undersigned certify that this HASP is approved and will be utilized during activities at the project.

Patrick Montuori — 9/28/2022
On-Site Health and Safety Officer — Date

Mark Wright, PG, CSP — 9/28/2022
Project Manager — Date

Alisa Werst, CSP — 9/28/2022
Office Health and Safety Manager — Date

Subcontractor:

I have been provided a copy of this HASP for review.

_____ _____
Name — Date

Representing _____

The Designated Competent person representing [subcontractor] at the site will be

_____.

11.0 FIELD TEAM REVIEW

All HRP personnel shall sign below after reading this HASP and shall agree with the following statement:

*"I have read and understand this site specific Health and Safety Plan.
I will comply with the provisions set forth therein."*

Printed Name	Signature	Date

Any alternate Competent Person will be noted in the Daily Job Brief Record (**Appendix D**).

ADDITIONAL APPROVALS (or Re-Approvals)	
Name:	**Date:**

FIGURES

Figure 3: Route and Map to Nearest Hospital and Medical Center

Directions to Peconic Bay Medical Center: Emergency Room

Total Estimated Time: 15 minutes
Total Estimated Distance: 7.1 miles

Begin at Francis S. Gabreski Airport
Old Riverhead Road, Westhampton, New York 11978

End at Peconic Bay Medical Center: Emergency Room
1300 Roanoke Ave, Riverhead, NY 11901

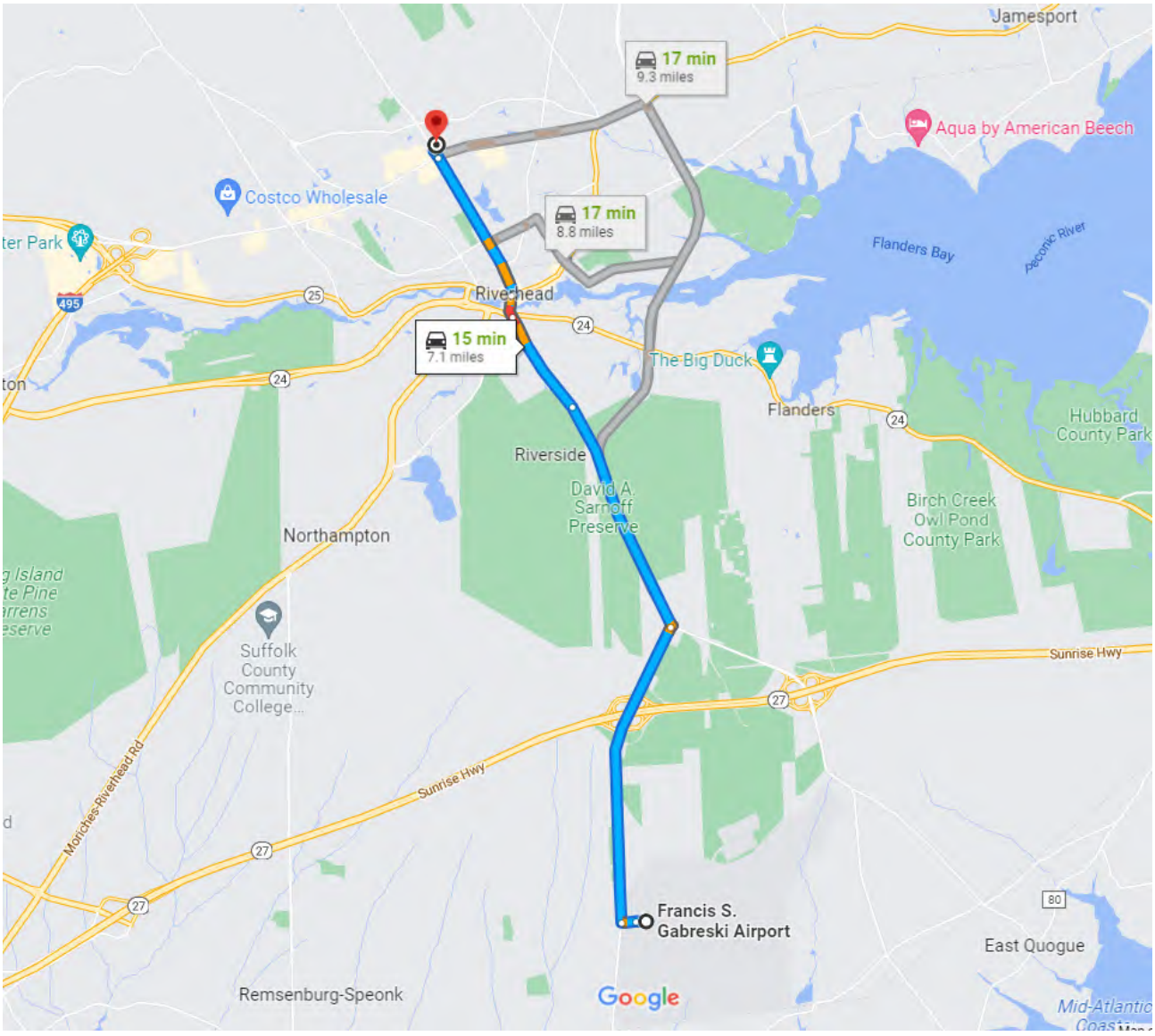


TABLE 1a: Chemical Hazards Known or Suspected On-Site

TABLE 1a
CHEMICAL HAZARDS KNOWN OR SUSPECTED ON-SITE

CONTAMINANT	ODOR THRESHOLD	OSHA PEL[1]	TLV (ACGIH)	OSHA CEILING[2] /STEL	IDLH CONC.	ROUTES OF EXPOSURE	SYMPTOMS OF ACUTE EXPOSURE[3]
1,1,1 Trichloroethane	44 ppm	350 ppm	350 ppm	---	700 ppm	Inh, Ing, Con	Head, Lass, CNS, Derm
1,1,2-Trichloroethane	---	10 ppm	10 ppm	----	[100 ppm]	Inh, Ing, Abs, Con	Eyes, Nose Irrit, Resp Irrit, CNS, Liver, Kidney Damage, Derm, [Carc]
1,2,4 Trimethylbenzene 1,3,5 Trimethylbenzene		25 mg/m^3	25 ppm	25 mg/m^3	ND	Inh, Ing, Con	Irrit Eyes, Skin, Nose, Throat, Resp Sys, Bron, Hyprochronic Anemia, Head, Drow, Ftg, Dizz, Nau, Inco, Vomit, Conf, Chemical Pneu (aspir lig)
1,1' Biphenyl	0.0062 mg/m^3	0.2 ppm	0.2 ppm	---	100 mg/m^3	Inh	
1,1-Dichloroethane	120 ppm	100 ppm	100 ppm	---	3,000 ppm	Inh, Ing, Con	CNS Depres, Skin Irrit, Liver, Lung and Kidney Damage
1,1-Dichloroethylene***	500 ppm	---	5 ppm	---	---	Inh, Con	CNS depress, Resp, [Carc]
1,2-Dichlorobenzene	50 ppm	50 ppm	25 ppm		200 ppm	Inh, Ing, Abs, Con	Irrit, Resp
1,2-Dichloroethylene	26-87 ppm	200 ppm	200 ppm	---	1,000 ppm	Inh, Ing, Con	Vomit, Irrit Eyes, Resp Sys; CNS Depres
1,2-Dichloropropane	130-190 ppm	75 ppm	75 ppm	---	[400 ppm]	Inh, Con, Ing	Eye irritation, Drow, light-headedness; irritated skin, [Carc]
1,3-Dichlorobenzene	---	----	---	----	---	----	----
1,4-Dichlorobenzene	20 ppm	75 ppm	10 ppm	----	[150 ppm]	Inh, Ing	[Carc], Eye Irrit, swelling around eye, headache, nausea, vomiting
1-Methylnaphthalene	0.02 ppm	---	---	---	---	---	---
2,4-Dichlorophenol	1.4007 mg/m^3	---	---	---	---	---	---
2,4-Dimethylphenol	0.001 mg/m^3	---	---	---	---	---	---
2-Methylnaphthalene	0.01 ppm	---	---	---	---	---	---
2-Methylphenol (o-cresol) [skin]	1.4 mg/L	5 ppm	5 ppm	---	250 ppm	Inh, Abs, Ing, Con	Confusion, depression, Resp Fail; difficulty breathing, irregular rapid respiration, weak pulse; skin, eye burns; dermatitis

TABLE 1a
CHEMICAL HAZARDS KNOWN OR SUSPECTED ON-SITE

CONTAMINANT	ODOR THRESHOLD	OSHA PEL[1]	TLV (ACGIH)	OSHA CEILING[2] /STEL	IDLH CONC.	ROUTES OF EXPOSURE	SYMPTOMS OF ACUTE EXPOSURE[3]
3, 3'-Dichlorobenzidine	---	None	**---**	---	---	Inh, Abs, Ing, Con	Sens, Derm, Head, Dizz, Burns, GI Upset, [Carc]
4-Isopropyltoluene	---	---	---	---	---	Con, Inh, Ing	Defat, Eryt
Acenephthene	0.5048 mg/m^3	---	---	---	---	---	---
Acenaphthylene	---	---	---	---	---	---	---
Acetone	47.5 mg/m^3	1,000 ppm	500 ppm		2,500 ppm	Ing, Inh, Con	Head, Dizz; Irrit Eyes, Nose, Throat; Derm, CNS, Depress, Derm
Acetonitrile	70 mg/m^3	40 ppm	20 ppm	---	500 ppm	Inh, Ing, Abs, Con	Asphy; Nau, Vomit; Chest Pain; Weak, Stupor, Convuls; Eye Irrit
Aldrin	---	0.25 mg/m^3	0.25 mg/m^3	---	25 mg/m^3	Inh, Abs, Ing, Con	Head, Dizz, Nau, Vomit, Mal, Myo, [Carc]
Anthracene (Coal Tar Pitch)	---	0.2 mg/m^3			[80 mg/m^3]	Inh, Con	Derm, bron, [carc]
Antifreeze		50 ppm	100 mg/m^3 (aerosol)	---	ND	Inh, Ing, Con	Irrit Eyes, Skin, Nose, Throat, Nau, Vomit, Abdom Pain, Lass, Dizz, Stup, Conv, CNS, Depres, Skin Sen
Arsenic	----	0.010 mg/m^3	0.01 mg/m^3	----	[5 mg/m^3]	Abs, Inh, Con, Ing	Derm; GI; Resp Irrit; ulceration of nasal septum; Resp, Irrit, Hyper Pig of Skin, [Carc]
Barium (elemental)	---	0.5 mg/m^3	0.5 mg/m^3		50 mg/m^3 (barium components)	Inh, Ing, Con	Resp. Irrit, GI, Muscle Spasm, Eye Irrit, Slow Pulse; skin burns
Benzene*	4.7 ppm	1 ppm	0.5 ppm	5 ppm	[500 ppm]	Inh, Ing, Abs, Con	Irrit Eyes, Nose, Throat; Head, Nau, Derm, Ftg, Anor, Lass, [Carc]
Benzo(a)anthracene (coal tar pitch)	---	0.2 mg/m^3			[80 mg/m^3]	Inh, Con	[Carc], Derm, Bron
Benzo(a)pyrene (coal tar pitch)	---	0.2 mg/m^3	---		[80 mg/m^3]	Inh, Con	[Carc], Derm, Bron
Benzo(b)fluoranthene (coal tar pitch)	---	0.2 mg/m^3	---		[80 mg/m^3]	Inh, Con	[Carc], Derm, Bron

TABLE 1a
CHEMICAL HAZARDS KNOWN OR SUSPECTED ON-SITE

CONTAMINANT	ODOR THRESHOLD	OSHA PEL[1]	TLV (ACGIH)	OSHA CEILING[2] /STEL	IDLH CONC.	ROUTES OF EXPOSURE	SYMPTOMS OF ACUTE EXPOSURE[3]
Benzo(g,h,i)perylene (coal tar pitch)	---	0.2 mg/m^3			[80 mg/m^3]	Inh, Con	[Carc], Derm, Bron
Benzo(k)fluoranthene (coal tar pitch)	---	0.2 mg/m^3			[80 mg/m^3]	Inh, Con	[Carc], Derm, Bron
Bis (2-ethylhexyl) Phthalate**	N/A	5 mg/m^3	5 mg/m^3	10 mg/m^3	[5,000 mg/m^3]	Inh, Ing, Con	[Carc], Irrit Eyes
Cadmium (dust)	---	0.005 mg/m^3	Lowest concentration feasible 0.01 mg/m^3	---	[9 mg/m^3]	Inh, Ing	CNS, Resp, Irrit, Vomit, Cough, Head, Chills, Nau, Diarr, Pulm Edema, Dysp, Chest Tight, [Carc]
Carbazole	---	---	---	---	---	Inh	---
Carbon disulfide	0.1-0.2 ppm	20 ppm	1 ppm	30 ppm	500 ppm	Inh, Abs, Ing, Con	Diz, Head,Ftg, Ner, anorexia, trembling hands, loss of fine motor coord, gastritis, eye, skin burns, Derm
Carbon Tetrachloride***	21.4 ppm	10 ppm	5 ppm	25 ppm	[200 ppm]	Inh, Abs, Con, Ing	CNS Depres, Nau, Vomit, Irrit, Irrit Eyes, Skin, Drow, Dizz, [Carc]
Chlorobenzene***	0.98 mg/m^3	75 ppm	10 ppm	---	1,000 ppm	Inh, Ing, Con	Irrit, Drow, CNS, Depres, Eyes, Skin, Nose, Inco.
Chloroform***	85 ppm	50 ppm	10 ppm	50 ppm	[500 ppm]	Inh, Ing. Con, Abs	Dizz, Dullness, Nau, Head, Ftg, Irrit Eyes, Skin, Conf, [Carc]
Chromium	---	1 mg/m^3	0.5 mg/m^3	---	250 mg/m^3	Inh, Ing, Con	Irrit Eyes, Sens Derm
Chrysene (coal tar pitch)		0.2 mg/m^3	---		[80 mg/m^3]	Inh, Con	Derm, Bron, [Carc]
Cis-1-2-Dichloroethylene	---	200 ppm	200 ppm	----	1000 ppm	Inh, Con, Ing	Irrit Eyes, Resp, CNS Depress
Copper (dusts and mists) (fumes)		1 mg/m^3 0.1 mg/m^3	1 mg/m^3 0.2 mg/m^3	----	100 mg/m^3	Inh, Ing, Con	Vomit, Derm, CNS, Irrit, Derm, Nau, Taste (metallic)
Cyanide	0.9 mg/m^3	5 mg/m^3	5 mg/m^3 (10 min)	5 mg/m^3	25 mg/m^3	Inh, Ing, Abs, Con	Weak, Head, Nau, Conf, Cyan
Dibenzo(a,h)anthracene						Inh, Ing	

TABLE 1a
CHEMICAL HAZARDS KNOWN OR SUSPECTED ON-SITE

CONTAMINANT	ODOR THRESHOLD	OSHA PEL[1]	TLV (ACGIH)	OSHA CEILING[2] /STEL	IDLH CONC.	ROUTES OF EXPOSURE	SYMPTOMS OF ACUTE EXPOSURE[3]
Dichloromethane	540 mg/m^3	25 ppm	50 ppm	125 ppm	[2,300 ppm]	Inh, Abs, Ing, Con	Irrit Eyes, Skin, lass, drow, dizz, Numb, tingl, Nau, [Carc]
Diethylphthalate**	---	None	5 mg/m^3	---	N.D.	Inh, Ing, Con	Irrit Eyes, Skin, Nose, Throat, Head, Dizz, Nau, Lac, Possible Polyneur, Vestibular Dysfunc, Pain, Numb, lass, Spasms in Arms and Legs
Di-n-octylphthalate	---	---	---	---	---	Inh, Ing, Con	---
Dimethylpthalate	---	5 mg/m^3	5 mg/m^3	---	2,000 mg/m^3	Inh, Ing, Con	Irrit, Resp, Abdom
Ethyl Benzene*	8.7 mg/m^3	100 ppm	100 ppm	125 ppm	700 ppm	Inh, Abs, Con	Head. Irrit, Derm, Narc., Irrit Eyes, Skin; Coma
Fluoranthene		0.2 mg/m^3	0.2 mg/m^3			Ing, Inh	[Carc]
Fluorine*	6 mg/m^3	0.1 ppm	1 ppm	2 ppm	25 ppm	Inh, Con	
Fuel Oil/#2	----	----	300 ppm	----		Inh, Abs, Ins, Con	Irrit Eyes, Skin, Derm, Head, Ftg, Blurred Vision, Dizz, Conf
Ideno(1,2,3-cd)pyrene		0.2 mg/m^3				Ing, Inh	
Lead (inorganic forms and dust as Pb)****		0.05 mg/m^3	0.05 mg/m^3		100 mg/m^3	Inh, Ing, Con	Irrit, Cns, Vomit, Narco, Weak, Pall, Insom, Lass, Abdom, Constip
Mercury (organic alkyl compounds) [skin]		0.01 mg/m^3	0.01 mg/m^3	0.03 mg/m^3	2 mg/m^3	Inh, Abs, Ing, Con	Irrit Eyes, Skin; Cough & Chest Pain, Bron Pneu, Tremor, Insom, Irrty, Indecision, Head, Ftg, Weak, Stomatitis, Salv, GI Dist, Anor, Low-wgt, Ataxia
Mercury (compounds)	----	0.1 mg/m^3	0.025 mg/m^3	0.1 mg/m^3	10 mg/m^3	Inh, Abs, Ing, Con	Irrit Eyes, Skin; Cough & Chest Pain, Bron Pneu, Tremor, Insom, Irrty, Indecision, Head, Ftg, Weak, Stomatitis, Salv, GI Dist, Anor, Low-wgt, Ataxia
Methanol	13.1150 mg/m^3	200 ppm	200 ppm	---	6,000 ppm	Inh, Abs, Ing, Con	Irrit Eyes, Skin, Resp, Head, drow, dizz, Nau, Vomit, vis dist, Optic, derm

TABLE 1a
CHEMICAL HAZARDS KNOWN OR SUSPECTED ON-SITE

CONTAMINANT	ODOR THRESHOLD	OSHA PEL[1]	TLV (ACGIH)	OSHA CEILING[2] /STEL	IDLH CONC.	ROUTES OF EXPOSURE	SYMPTOMS OF ACUTE EXPOSURE[3]
Methyl Ether	----	----	---	----	---	Inh	Poison
Methyl Ethyl Ketone (2-Butanone)***	0.7375 mg/m^3	200 ppm	200 ppm	300 ppm	3,000 ppm	Inh, Con, Ing	Irrit Eyes, Skin, Nose, Throat, Head, Dizz, Vomit, Derm
Methylene Chloride	540 mg/m^3	25 ppm	50 ppm	125 ppm	[2,300 ppm]	Inh, Ing, Con, Abs	Ftg, Weak, dizz, drow, Numb, Tingle [carc], Irrit Eyes, Skin, Nau
Mineral Spirit	20 ppm	500 ppm	100 ppm	---	20,000 mg/m^3	Inh, Ing, Con	Irrit Eyes, Nose, Throat, Dizz, Derm, Chemical pneu
Methyl tert butyl ether (MTBE)	---	---	50 ppm	---		Inh, Abs	
Naphtha	0.86 ppm	100 ppm	400 ppm	---	1,000 ppm	Inh, Con, Ing	Light Head, Drow, Irrit, Derm, Irrit Eyes, Skin, Nose
Naphthalene*	0.084 ppm	10 ppm	10 ppm	15 ppm	250 ppm	Inh, Abs, Ing, Con	Eye irritation; headache; confusion, excitement, malaise (vague feeling of ill-being); nausea, vomiting, abdominal pain; irritated bladder; profuse sweating; renal shutdown; dermatitis
Nickel (metal)	---	1 mg/m^3	1.5 mg/m^3	---	[10 mg/m^3]	Inh, Ing, Con	Head, Verti, Nau, Vomit, Pain, Cough, Weak, Convuls, Delirium, Pneu, ,[Carc]
Nitrobenzene	0.0235 mg/m^3	1 ppm	1 ppm	---	200 ppm	Inh, Abs, Ing, Con	Irrit Eyes, Skin, Anoxia, Derm, Anem, Methem
n-Butylbenzene	---	---	---	---	---	---	---
n-Propylbenzene	---	---	---	---	---	---	---
PCBs 42% chlorine (Aroclor 1242)	---	1 mg/m^3 (skin)	1 mg/m^3 (skin)	---	[5 mg/m^3]	Inh, Abs, Ing, Con	Irrit Eyes, Chloracne, Liver Damage [carc]
PCBs 54% chlorine (Aroclor 1254)	---	0.5 mg/m^3 (skin)	0.5 mg/m^3 (skin)	---	[5 mg/m^3]	Inh, Abs, Ing, Con	Irrit Eyes; Chloracne, Liver Damage [carc]

TABLE 1a
CHEMICAL HAZARDS KNOWN OR SUSPECTED ON-SITE

CONTAMINANT	ODOR THRESHOLD	OSHA PEL[1]	TLV (ACGIH)	OSHA CEILING[2] /STEL	IDLH CONC.	ROUTES OF EXPOSURE	SYMPTOMS OF ACUTE EXPOSURE[3]
Petroleum Distillates	---	500 ppm	100 ppm		[1,100 ppm]	Inh, Ing, Con	Dizz, Drow, Head, Dry Skin, Nau, Irrit Eyes, Nose, Throat, [Carc]
Per – and polyfluroalkyl substances (PFAS)	---	---	---	---	---	---	
Phenanthrene (Coal Tar Pitch)		0.2 mg/m^3	0.2 mg/m^3		[80 mg/m^3]	Inh, Con	Derm, bron, (carc)
Phenol**	0.1786 mg/m^3	5 ppm	5 ppm	---	250 ppm	Inh, Abs, Ing, Con	Irrit Eyes, Nose, Throat, Anor, Low Wgt, Weak Musc Ache, Pain, Dark Urine, Cyan, Liver, Kidney Damage, Skin, Burns, Derm, Ochronosis, Tremor, Convuls, Twitch
Pyrene		0.2 mg/m^3			[80 mg/m^3]	Inh, Con	[Carc]
Sec-Butylbenzene	---	---	---	---	---	---	---
Selenium	N/A	0.2 mg/m^3	0.2 mg/m^3	Unknown	1 mg/m^3	Inh, Ing, Con	Irrit, Head, Fever, Chills, Skin/Eye Burns, Metallic Taste, GI, Dysp, Bron
Silver (metal and soluble compounds as Ag)	----	0.01 mg/m^3	Metal = 0.1 mg/m^3 Soluble 0.01 mg/m^3		10 mg/m^3	Inh, Ing, Con	Blue-gray Eyes, Nasal Septum, Throat, Skin; Irrit, Ulcer, Skin, GI Dist
Tetrachloroethylene (a.k.a. perchloroethylene)***	4.68 ppm	100 ppm	25 ppm	200 ppm	[150 ppm]	Inh, Ing, Con, Abs	Irrit Eyes, Skin, Nose, throat, Resp. Nau, flush face, Neck, dizz, inco, head, drow, eryth, [Carc]
Toluene*	2.14 ppm	200 ppm	50 ppm	300 ppm	500 ppm	Inh, Abs, Ins, Con	Resp, Irrit, Ftg, Conf, Dizz, Head, Derm, Euph, Head, Dilated Pupils, Lac, Ner, Musc FTg, Insom, Pares, Derm, lass
Petroleum Distillates (naphtha)	10 ppm	100 ppm	400 ppm	---	1,000 ppm	Con, Inh, Ing	---
Trans 1,2-Dichloroethylene	0.3357 mg/m^3	200 ppm	200 ppm	---	1,000 ppm	Inh, Con	Irrit, Resp, CNS depress

TABLE 1a
CHEMICAL HAZARDS KNOWN OR SUSPECTED ON-SITE

CONTAMINANT	ODOR THRESHOLD	OSHA PEL[1]	TLV (ACGIH)	OSHA CEILING[2] /STEL	IDLH CONC.	ROUTES OF EXPOSURE	SYMPTOMS OF ACUTE EXPOSURE[3]
Trichloroethylene***	21.4 ppm	100 ppm	50 ppm	200 ppm	[1,000 ppm]	Inh, Con, Abs, Ing	Head, Vert, Nau, Vomit, Derm, Vis Dist, Tremors, Som, Nau, Irrit Eyes, Skin, Card Acc., Ftg, [Carc]
Trichlorofluoromethane	28 mg/m^3	1,000 ppm	1,000 ppm		2,000 ppm	Inh, Con, Ing	Inco, trem, derm, card, asph, frost
Trichlorotrifluoroethane	45 ppm	1,000 ppm	1,000 ppm	1,250 ppm	2,000 ppm	Inh, Con, Ing	Irrit Skin, throat, Drow, Derm, CSN, Depress
Vinyl Chloride***	10-20 ppm	1 ppm	1 ppm	5 ppm	ND	Inh, Con	Lass, Abdom, Gi Bleeding; Hepatomegaly; Pallor or Cyan of Extremities; Liq: Frostbite; [Carc]
VM&P Naphtha (petroleum naphtha)	---	---	300 ppm	---	ND	Con, Ing, Inh	Irrit Eyes, Nose, Throat, Dizz, drow, head, nau, dry skin, chem. Pneumonitis
Xylene*	4.5 mg/m^3	100 ppm	100 ppm	150 ppm	900 ppm	Inh, Ing, Abs, Con	Dizz, Drow, Irrit, Excite, Nau, Vomit, Eyes, Skin, Nose, Throat
Zinc (oxide)	---	5 mg/m^3	2 mg/m^3	---	500 mg/m^3	Inh	Dry Throat, Cough, Chills, Tight Chest, Blurred Vision
4,4′ DDD	---	---	---	---	---	Ing, Inh, Con	---
4,4′ DDE	---	---	---	---	---	Ing, Inh, Con	---
4,4′ DDT	5.0725 mg/m^3	1 mg/m^3	1 mg/m^3	---	[500 mg/m^3]	Inh, Abs, Ing, Con	Irrit Eyes, Skin, Pares, Tongue, Lips, Face, Trem, Anxi, Dizz, Conf, Mal, Head, Lass, Conv, Paresi Hands, Vomit, [Carc]
Aldrin		0.25 mg/m^3	0.25 mg/m^3	---	[25 mg/m^3]	Inh, Abs, Ing, Con	Head, Dizz, Nau, Vomit, Mal, Myo [Carc]
Chlordane [skin]	0.0084 mg/m^3	0.5 mg/m^3	0.5 mg/m^3		[100 mg/m^3]	Inh, Abs, Ing, Con	Blurred vision, confusion, delirium, cough; abdominal pian, nausea, vomiting diarrhea; irritability, tremor, convulsions [Carc]
EDB	76.8 mg/m^3	20 ppm		30 ppm	[100 ppm]	Inh, Abs	Resp. Irr, Eye Irr. [Carc]

TABLE 1a
CHEMICAL HAZARDS KNOWN OR SUSPECTED ON-SITE

CONTAMINANT	ODOR THRESHOLD	OSHA PEL[1]	TLV (ACGIH)	OSHA CEILING[2] /STEL	IDLH CONC.	ROUTES OF EXPOSURE	SYMPTOMS OF ACUTE EXPOSURE[3]
Endosulfan I Endosulfan II	---	0.1 mg/m^3	0.1 mg/m^3	---	N.D.	Inh, Abs, Ing, Con	Irrit, Skin, Nau, Conf, Agit, Flush, Dry, Trem, Conv, Head
Endosulfan Sulfate		---	0.1 mg/m^3	---	---	Ing, Con	---
Endrin	1.8 x 10^{-2} ppm	0.1 mg/m^3	0.1 mg/m^{-3}	---	2 mg/m^3	Inh, Abs, Ing, Con	Epil Conv, Stup, Head, Dizz, Abdom, Nau, Vomit, Insom, Agress, Conf, Drow, Lass, Anor
Endrin Aldehyde	1.8 x 10^{-2} ppm	---	---	---	---	Inh, Con	---
Endrin Ketone	---	---	---	---	---	---	---
Heptachlor	0.02 ppm	0.5 mg/m^3	0.05 mg/m^3	---	[35 mg/m^3]	Inh, Abs, Ing, Con	In animals, Trem, Conv, [Carc]
Heptachlor epoxide	0.02 ppm	---	0.05 mg/m^3	---	---	Ing, Inh	Trem, Conv, [Carc]
Hydrogen Cyanide(Hydrocyanic Acid)	0.9 mg/m^3	10 ppm (11 mg/m^3)	4.7 ppm	4.7 ppm	50 ppm	Con, Inh, Ing, Abs	Asphy & death at high levels; Weak, Head, Conf, Nau, Vomit, Incr. Rate and Depth of Respiration or Respiration Slow and Gasping

NOTES

* = Constituent found in ETPH

**=Constituent found in Acid/Base/Neutral Extractable Compounds

***=Constituent found in Volatile Organic Compounds

****=Constituent found in Leaching Lead

[1]PEL = Permissible Exposure Limit. If no PEL is available, then the NIOSH Threshold Limit Value (TLV) should be used, if available.

[2]Ceiling limit or Short Term Exposure Limit (STEL), if available. Again, the NIOSH TLV may be used if no OSHA standard exists.

[3]Abbreviations are contained on the next page

[ ] = Potential Occupational Carcinogen

ND = Not Been Determined

ABBREVIATIONS

abdom = Abdominal
abs = Absorption
aggress = Aggressiveness
agit = Agitation
anor = Anorexia
anos = Anosmia (loss of the sense of smell)
Anxi = anxiety
anem – Anemia
aspir = Aspiration
asph – asphyxia
bron = Bronchitis
bron pneu = Bronchitis pneumonitis
[carc] = Potential occupational carcinogen
Card = Cardiac arrhythmias
CNS = Central nervous system
conf = Confusion
constip = Constipation
con = Skin and/or eye contact
conv = Convulsions
corn = Corneal
cyan = Cyanosis
defat = Defatting
depres = Depressant/Depression
derm = Dermatitis
diarr = Diarrhea
dist = Disturbance
dizz = Dizziness
drow = Drowsiness
dry = Dry mouth
dysp = Dyspnea (breathing difficulty)
emphy = Emphysema
epil-conv = Epileptiform convulsions
eryth = Erythema
euph = Euphoria
fib = Fibrosis
frost = frostbite
ftg = Fatigue
flush = Flushing
GI = Gastrointestinal
head = Headache
hyperpig = Hyperpigmentation
inco = Incoordination
ing = Ingestion
inh = Inhalation
inj = Injury
insom = Insomnia
irrit = Irritation
irrty = Irritability
lac = Lacrimination (discharge of tears)
lass = Lassitude (weakness, exhaustion)
li-head = Lightheadedness
liq = Liquid
low-wgt = Weight loss
mal = Malaise (vague feeling of discomfort)
malnut = Malnutrition
methem = Methemoglobinemia
myo = Myochonic (jerks of limbs)
mg/m = milligrams/cubic meter
muc memb = Mucous membrane
mus ftg = Muscle fatigue
narco = Narcosis
nau = Nausea
ner = Nervousness
numb = Numbness
optic = Optic nerve damage (blindness)
pall = Facial pallor
parap = Paralysis
ppm = Parts per million
pares = Paresthesia
paresi = Paresis
peri neur = Peripheral neuropathy
pneu = Pneumonitis
prot = Proteinuria
pulm = Pulmonary
peri neur = Peripheral neuropathy
pneu = Pneumonia
prot = Proteinuria
pulm = Pulmonary
repro = Reproductive
resp = Respiratory
skin sen = skin sensitization
salv = Salvation
som = Somnolence (sleepiness unnatural drowsiness)
subs = Substernal (occurring beneath the sternum)
stup = Stupor
sys = System
tingle = tingle limbs
trem – Tremors
verti = Vertigo
vis dist = Visual disturbance
vomit = Vomiting
weak = Weakness

TABLE 1b: Physical Hazards Known or Suspected On-Site

TABLE 1b PHYSICAL HAZARDS KNOWN OR SUSPECTED ON-SITE			
Description of Hazard	**Methods to Identify and Minimize**	**Potential for Occurrence**	**Potentially Affected Tasks**
1. Operating Heavy Equipment	• Utilizing proper equipment operation methods • Maintain safe clearance distances • Wear appropriate eye/ear protection according to manufacturer's recommendations	Moderate	Observation of Excavation/Sampling
2. Inclement weather	• Determine probable weather conditions prior to arrival at site • Avoid working during hurricanes, blizzards, persistent heavy rain or snow, close thunderstorms	Moderate	Observation of Excavation/Sampling
3. Heat/cold Stress	• Determine probable weather conditions prior to arrival at site • Wear proper clothing • Monitoring of yourself and team mates • Drink plenty of fluids • Utilize work breaks as often as necessary • Avoid working in extreme cold conditions	Moderate	Observation of Excavation/Sampling
4. Slip, trip, and fall hazards caused by irregular and loose rocky topography	• Wear appropriate footwear to increase traction when possible • Be aware of surroundings	Low	Observation of Excavation/Sampling

TABLE 1b PHYSICAL HAZARDS KNOWN OR SUSPECTED ON-SITE			
Description of Hazard	**Methods to Identify and Minimize**	**Potential for Occurrence**	**Potentially Affected Tasks**
5. Utilities	• Complete a Call Before You Dig markout prior to the work start date • Obtain buried private lines information from and clear sampling locations with Site Contact • Avoid using heavy equipment or drill rig in close proximity to overhead utilities • Inspect sampling areas for Call Before You Dig markings; inspect catch basins and manholes to determine buried pipeline directions prior to sampling • Avoid sampling within area of pavement cuts that may be indicative of buried lines	Moderate	Observation of Excavation/Sampling
6. Vehicle Traffic	• Wear appropriate high visibility clothing • Block off the work area to prevent vehicles from entering	Moderate	High Traffic areas
7. Use of heavy machinery in indoor spaces	• Monitor the indoor air for appropriate gases with a 4-gas meter • Ensure proper ventilation of interior spaces while using gas powered machines • Use appropriate respirator protection and adequate wetting of the area if cutting or drilling through concrete creates silica dust	Low	Drilling in indoor spaces

TABLE 1b PHYSICAL HAZARDS KNOWN OR SUSPECTED ON-SITE			
Description of Hazard	**Methods to Identify and Minimize**	**Potential for Occurrence**	**Potentially Affected Tasks**
8. Inhalation of Volatiles	• Implement and adhere to action levels stipulated in air monitoring program for volatile organics • Wear appropriate protective equipment • Report potential exposure symptoms immediately • Utilize engineering controls such as fans	Low	Observation of Excavation/Sampling
9. Skin contact with volatile organic compounds, semi volatile organic compounds, metals, TPHs, PCBs, pesticides, cyanide	• Wear appropriate protective clothing • Follow proper decontamination procedures • Report potential exposure symptoms immediately	Low	Observation of Excavation/Sampling
10. Airplane runway may expose workers to increased levels of noise, exhaust fumes and struck by hazards	• Follow airport specific safety protocols when working adjacent to runways. • Wear reflective/high visibility clothing • Wear hearing protection with a high noise reduction rating	High	Observation of Excavation/Sampling

APPENDIX A

Safety and Logistics Planning Call Log

Safety and Logistics Call Log
DEC009808

Date of Call _____

Work Assignment Number / Task _____

DEC Site Name and Number _____

Names of Attendees (and phone #s):

HRP

HRP PM	_____
HRP SSO	_____
HRP Other	_____
HRP Other	_____
HRP Other	_____

Subcontractors

Driller Contact	_____
Utility Survey	_____
Surveyor	_____
Construction	_____
Other	_____

DEC

DEC PM	_____
DEC Other	_____

Other _____

Brief Description Scope of Work (Task Specific): Use additional forms for additional tasks.

_____

_____

_____

_____

_____

_____

_____

_____

_____

Logisitics:

Date of Work: _____

Time to Meet: _____

Site Contact (phone): _____

Notification of Site Contact made by: _____

Describe any unusal site-specific conditions/logistics here (if any): _____

_____

Notes below as needed:

Water Needed? Source Confirmed?	Y / N	_____
Electricity Needed? Source Confirmed?	Y / N	_____
Water Storage Needed?	Y / N	_____
Water Discharges? Permits Needed/Attained?	Y / N	_____
Air Monitoring - CAMP?	Y / N	_____

Will there be intrusive work? Y / N _____

Locations marked in the field? Y / N _____

NYS Code Rule 753/Dig Safe System: Ticket Number: _____

Confirmed that mark-out complete? Y / N

Anticipated Subsurface Conditions (Geology, Utilites, etc.): _____

Anticipated Depth to Groundwater: _____

Will NAPL/Product be Present: Y / N Describe: _____

_____

Safety and Logistics Call Log
DEC009808

Will there be any other parties entering the work zones? Describe control measures:

Lab and Equipment:

Equipment: Y / N PID IP Water Level Indicator CAMP Pumps controllers Survey Eq. GPS
Other: _____

Lab Analytical Required: Y / N VOCs SVOCs Metals PFAS 1,4D PCBs Pest/Herb
Other: _____

Media Tested: Soil Sediment Groundwater Surface Water Sub-slab[soil] Vapor Indoor Air
Notes of sample collection methods: _____

Bottle Order Received/ Checked? Y / N
How will samples be conveyed to lab? _____
Sample TAT? Standard 24 hr TAT 48 hr TAT Other: _____

Review Site - Specific Hazards (per Site-Specific HASP to be provided prior to all parties):

Site Constituents of Concern: (circle)
VOCs HVOCs AVOCs SVOCs PFAS 1,4-Dioxane
metals pesticides herbicides
Asbestos PCBs
Lead Other:_____
Biologicals

Site Setting: Urban Suburban Unoccupied
Traffic Bystanders Crime Plants Animals Vectors
Overhead Utilities Underground Utilities Large Equipment
High Voltage Flood/Tidal Limited Access
Confined Spaces

Task-Specific Chemicals and Hazards (describe): _____
PPE Level (circle): D C B A Modifications: _____
Glove types: _____ Face covering needed? Y/ N
Other specialty PPE: _____

Safe to Work Alone: Y / N
Other Precautions: Y / N Describe: _____

COVID 19 Protocols to be Observed: Y / N

Waste Containment:

How/ where will materials be contained, labelled, stored, or disposed? _____

Miscellaneous:

APPENDIX B
Personnel Log

PERSONNEL LOG				
Name	**Representing**	**Date**	**Time In**	**Time Out**

APPENDIX C
Supervisor's Investigation Report

INCIDENT REPORT

Section 1.0: Complete By Employee and Project Manager

(provide to Human Resources Manager) Incident Case No. _____

Employee Name: Employee Title/Position:	Age: Sex: □ Female □ Male	Time employee began work: Date of Incident: Time of Incident:	Weather Conditions: Date of Report: Time Report Completed:
Department: Office Location: Supervisor:			
Employee Address: Street: City/Town: Zip Code: Phone Number:	Location of Incident: Address: City/Town: State:		

Type of Incident:
□ Motor Vehicle Accident or □ Near Miss or □ Injury occurred during routine work

□ Company or □ Personal Vehicle?

First-Aid performed on-site? Yes / No
Other Medical Attention Provided? Yes / No

Time lost from work? Yes / No Number of Hours: or Number of Days:

If injuries occurred, list names and describe nature, degree, and body part injured: Number of injured:_____

1.

2.

3.

4.

Complete Section 3.0

WITNESS STATEMENT: WHAT HAPPENED AND WHAT WAS THE EMPLOYEE DOING BEFORE THE INCIDENT OCCURRED? WHAT WAS THE EMPLOYEE DOING WHEN THE INCIDENT OCCURRED? WHAT WAS THE EMPLOYEE DOING AFTER THE INCIDENT OCCURRED?	Describe what took place? Who was at fault for vehicle accidents, citation? Was power equipment involved, if so, describe?

WHAT WAS THE NATURE OF THE INJURY OR ILLNESS?	Tell us the body part that was affected and how it was affected – be specific Examples: strained lower back; chemical burn on hand
WHAT WAS THE ROOT CAUSE OF THE INCIDENT? List other individual involved in Section 3. COULD INCIDENT HAVE BEEN AVOIDED? HOW?	Get all the facts by studying the Job and situation involved. Question by use of WHY - WHAT – WHERE – WHEN – WHO – HOW Were there other factors (e.g., noise, ventilation, illumination, fatigue, age, medical conditions) that contributed to the accident?
WAS TRAINING FOR THE WORK ACTIVITY PROVIDED: TYPE: DATES:	WERE WARNING SIGNS OR LABELS POSTED:
WHAT SHOULD BE DONE? HOW CAN INCIDENT BE AVOIDED IN THE FUTURE?	WAS PERSONAL PROTECTIVE EQUIPMENT USED? NEEDED: AVAILABLE: CONTRIBUTED TO INJURY:
WHAT HAVE YOU DONE THUS FAR?	Take or recommend action, depending upon your authority. Follow up – was action effective?
HOW WILL THIS IMPROVE OPERATIONS?	OBJECTIVE Eliminate job hindrances

Completed by:	Reviewed by:	Date

Section 2.0: Complete By Supervisor or Human Resources Manager

Name: Role (witness, observer, injured, participant, etc.):	Address: Phone Number
Name: Role:	Address: Phone Number
Name: Role:	Address: Phone Number
Name: Role:	Address: Phone Number
Name: Role:	Address: Phone Number
Name: Role:	Address: Phone Number

Section 3.0: Corrective Actions (To be Completed by OHSM and CHSO)

Are corrective actions warranted? □ Yes □ No If so, proceed with corrective action list

Corrective Actions. List long term actions to be taken as a result of incident (use additional sheets if needed)	How was the corrective action implemented?	Target date of completion

OHSM Name:	CHSO Name:
OHSM Signature:	CHSO Signature:

End of incident report. Section 4.0 is to be completed and maintained by the Human Resources Department.

Section 4.0: Complete By Human Resources Manager

Incident Report Case No. _____

The information on this page is considered CONFIDENTIAL and must be treated as such. This page will only be available to Human Resources Department or the employee's supervisor.

Insured Name:	Employee Hire Dates: Start at Company: Current Position:
Policy Number:	Is employee a company: Owner, Officer, Neither.
Employee Soc. Sec. No.:	Marital Status: Spouse Name:
Was Employee Pay Interrupted, or paid in full for time:	Employee Pay Period: Weekly, Bi-Weekly, Monthly, Other (specify)
Employee Compensated by hourly or salary? Wage Information: (tips, bonuses, commission)	Typical No. of hours worked per day____, hours per week____. Typical Start of day time_____, end of day time_____.
Date of Stop Work: Date Returned to Work:	How often has employee visited doctor/hospital?
Doctor: Authorized by Co.: Y / N Street: City/Town: Zip Code: Phone Number: Authorized by Co.: Y / N	Hospital: Street: City/Town: Zip Code: Phone Number: Authorized by Co.: Y /N
Was the employee treated in an emergency room? □ Yes □ No	Was employee hospitalized overnight as an in-patient? □ Yes □ No If so, for how many days? _____

APPENDIX D
Daily Job Brief Record

JOB BRIEF RECORD

	Francis S. Gabreski Airport	DEC1029.P2
Person Conducting	Site Name/Address	HRP Client Name/Job #
Heather Bishop - 518-402-9620		Mark Wright
Client Contact/Phone	HRP H&S Rep.	HRP Supervisor
Date/Time	Number Attending	Weather

Designated Competent Person: _____

Description of Work: _____

_____

_____

_____

Attendees (use additional sheets as needed):

Name	Company	Signature

Emergency Telephone Numbers

FIRE / POLICE / AMBULANCE: 911

Hospital Name & Location: Peconic Bay Medical Center: 1300 Roanoke Ave, Riverhead, NY 11901

NYSDEC Spill Line: 1-518-457-7362 National Response Center: 800-424-8802 CBYD: 800-922-4455

Health & Safety Manager: Mark Wright: 203-308-0983

HAZARDS

- ☐ Toxic
- ☐ Corrosive
- ☐ Flammable
- ☐ Combustible
- ☐ Reactive
- ☐ Path Waste
- ☐ Asbestos
- ☐ Extreme Cold/Heat
- ☐ Drains/Sumps
- ☐ Sharp Objects
- ☐ Drilling in Soil
- ☐ Lighting
- ☐ Slips/Trips/Falls
- ☐ Lead
- ☐ Soil Excavation
- ☐ Tank Excavation
- ☐ Trenching
- ☐ Floor Holes
- ☐ Working on/near Water
- ☐ Underground/Overhead Utilities
- ☐ Vehicle Traffic
- ☐ Hot Work
- ☐ Vac Truck
- ☐ Ladders
- ☐ Noise
- ☐ Lifting
- ☐ Powerwashing
- ☐ Elevated Work Area
- ☐ Live Electrical Circuits
- ☐ Pneumatic Tools
- ☐ Drum Handling
- ☐ Abrasive Blasting

PERSONAL SAFETY

- ☐ Supplied Air Respirator
- ☐ Fully Encapsulating Suit
- ☐ Overboots
- ☐ Safety Glasses
- ☐ Reflective Vests
- ☐ Hearing Protection
- ☐ SAR w/Egress Bottle
- ☐ Flash Suit
- ☐ Lifebelt/Lanyard
- ☐ Chemical Goggles
- ☐ Eye Wash
- ☐ Evacuation Plan
- ☐ SCBA
- ☐ NOMEX (flam resistant)
- ☐ Hardhats
- ☐ Face Shield
- ☐ Safety Shower
- ☐ Communications
- ☐ Air Purifying Respirator Cartridge: _____
- ☐ Protected Coveralls, Type: _____
- ☐ Outer Gloves, Type: _____
- ☐ Inner Gloves, Type: _____
- ☐ First Aid Kit
- ☐ Properly Sloped Excavation/ Trench
- ☐ PFD's
- ☐ Ventilation

FIRE SAFETY

- ☐ Fire Extinguishers
- ☐ Hot Work Permit
- ☐ Fire Blanket
- ☐ Explosion-Proof Equipment
- ☐ Equipment Grounded & Bonded
- ☐ Non-Sparking Tools
- ☐ Eliminate Ignition Sources
- ☐ Area Kept Wet
- ☐ Smoking Area Designated Location: _____
- ☐ Alarm Box in Area, Location: _____
- ☐ Fire Hose Laid Out

ISOLATE EQUIPMENT

- ☐ Establish Exclusion Zone/Traffic Cones
- ☐ Work Signs
- ☐ Stop Transfers
- ☐ Caution Tape Area
- ☐ GFCIS
- ☐ Temporary Fencing

ELECTRICAL EQUIPMENT

- ☐ LockOut/TagOut
- ☐ Non-Conductive Tools
- ☐ Equipment Grounded
- ☐ FR Suits/Coveralls

AIR MONITORING Type of Meter: _____ Date last calibrated: _____

SUBSTANCE	LEVEL B MAX.	ACTION LEVEL/LEVEL C MAX.	LEVEL D MAX.

Health & Safety Comments / Topics & Safety Rules Reviewed / Questions / Concerns:

_____

_____

_____

_____

_____

_____

_____

Contaminants of Concern: _____

HEALTH & SAFETY SIGNATURE: _____ Date: _____

Is there a Site-Specific or Generic Health & Safety Plan available on-site? Yes ☐ No ☐

☐ HAZARD ZONES NOT APPLICABLE, GENERAL WORK AREA

Level D ☐ Modified Level D ☐ Level C ☐

Anything above Level C, foreman should use a Confined Space Permit/Form.

Note: HOT WORK requires a hot work permit and minimum 20# fire extinguisher. Foreman or HSM must record at least one contaminant of concern above. Toxic plants may be considered a COC if no chemical hazards are expected.

LEVEL C
Respirator Type: _____

Name	Zone	Time In	Time Out	Decon Type

Before performing Level C work, ALL employees must review HRP's Respiratory Protection Program - a copy of which must be on-site along with a HASP.

APPENDIX E
Equipment Calibration Log

EQUIPMENT CALIBRATION LOG		
Instrument	**Calibration Date**	**Calibrated By**

APPENDIX F

HRP Safe Work Permit

HRP SAFE WORK PERMIT

General Information:		
Project Description: Francis S. Gabreski Airport Site Characterization Site No. 152261	**Project Location:** Old Riverhead Road, Westhampton, NY	
Client: NYSDEC	Heather Bishop, NYSDEC **Contact Name**	518-402-9620 **Contact Phone**
Summary of Work:		
Soil boring installation and grab groundwater sample collection; Monitoring well installation and sampling; Soil Vapor Instrusion (SVI) investigations.		

Created By:	Patrick Montuori	**Approved by:**	Alisa Werst, CSP
Reviewed with affected employee	**Signature**		**Date**

Check if Project Involves:	Yes	No	Initial to Verify Completion	Criteria
Hot Work *(Welding, Grinding, etc.)*	☐	×		Hot Work Permit Issued – Fire Watch Required
Electrical Work	☐	×		LOTO, confirm zero energy
Rigging or Heavy Lifting	☐	×		Load Ratings, Employee Certification
Scaffolds	☐	×		Competent Person Inspection Required
Confined Space Entry	☐	×		Permit or Reclassification Form Required
Hazardous Chemicals	☐	×		Chemical Names and SDS review with Employees Spill kit available, Secondary containment provided
Ladders	☐	×		Proper Rating, No Metal Ladders, Current Inspection
Work at Heights	☐	×		Training (verified), Approved Anchor Pts. or Fall Protection
Lockout Tagout	☐	×		Training (verified), site first lock on
Excavation/Ground Penetration	×	☐		Line Locate performed
Roof Work	☐	×		Fall protection within 6 feet of edge
Portable Electrical Tools, cords	×	☐		GFCI used, No damaged cords, Inspected
Fire System Impairment	☐	×		External notifications made
Blocked Exits	☐	×		Post signs and alternate exits
Other *(list)*:	☐	☐		

Required Permits		PPE Required for Job or Required by Client	
☐ None	☐ Ground Disturbance	× Safety Glasses	× Hearing Protection
☐ Confined Space	☐ Scaffold Inspection	× Safety Toe Shoes	× Hard Hats
☐ Hot Work	☐ Working At Heights	☐ Metatarsal Guards	× Nitrile Gloves
☐ Emergency Medical Care Provisions		☐ Cut Resistant Gloves/Sleeves	☐ Other:
× Other Permits: FAA Form 7460-1 – Notice of Proposed Construction or Alteration		☐ Respirator	

Special Considerations				
☐ Chemical	☐ Tight/Crowded Area	☐ Laceration/Abrasion	☐ Struck By	☐ Press
☐ Explosion	☐ Fire	☐ Falling Debris/Loads	☐ Struck Against	☐ Security
× Slip/Trip/Fall	☐High Pressure	× Noise	☐ Automated Equip.	☐ Other:
☐ Exposed Movement	☐ Lighting	☐ Caught in/on	☐ Conveyors	☐ Other:
☐ Ergonomics	☐ Animals, bees, pests	☐ poisonous plants	☐ PCBs, Pb, asbestos	

REVISION APPROVAL LOG			
REV. #	**PREPARED BY**	**REVIEWED BY**	**APPROVED BY**
00	Date: 1/18/2021 Name: Scot Frost Sign: 	Date: 1/20/2021 Name: Jackie Baxley Sign: 	Date: 1/20/2021 Name: Tad Goetcheus Sign: 
01	Date: Name: Sign:	Date: Name: Sign:	Date: Name: Sign:
02	Date: Name: Sign:	Date: Name: Sign:	Date: Name: Sign:

CHANGE / REVIEW RECORDS			
REVISION DATE	**REVISION LEVEL**	**REASON / REVISION DESCRIPTION**	**APPROVED BY**

APPENDIX G

COVID-19 Health and Safety Guidelines

COVID19
SITE SPECIFIC HASP ADDENDUM

This addendum will remain in effect until what time the CDC, NIAID, and/or Surgeon General guidance is provided that removes the heightened awareness of social distancing, hand washing, and other protocols in response to COVID-19.

NECESSARY ADDITIONAL SUPPLIES

- Hand sanitizer (minimum 60% alcohol)
- Squeeze bottles of water (if no running water at job site)
- Soap
- Disinfectant (for tools, vehicles, common areas, etc.)
- Caution tape, cones or similar to set up social distancing boundaries as needed

EMPLOYEE HEALTH PROTECTION – ZERO TOLERANCE

The following applies to both HRP employees and contracted staff working on behalf of the HRP or the client.

- ZERO TOLERANCE FOR SICK WORKERS REPORTING TO WORK. IF YOU ARE SICK, STAY HOME! IF YOU FEEL SICK, GO HOME! IF YOU SEE SOMEONE SICK, SEND THEM HOME!
- If you are exhibiting any of the symptoms below, you are to report this to your supervisor (via phone, text or email) right away, and head home from the job site or stay home if already there.
  If you notice a co-worker showing signs or complaining about such symptoms, he or she should be directed to their supervisor (via phone, text or email) and asked to leave the project site immediately.
  COVID-19 Typical Symptoms:
    - Fever
    - Cough
    - Shortness of Breath
    - Sore Throat
    - Loss of taste or smell
- Prior to starting a shift, each employee will verbally self-certify to their supervisor that they:
    - Have no signs of a fever or a measured temperature above 100.3 degrees or greater, a cough or trouble breathing within the past 24 hours.
    - Have not had “close contact” with an individual diagnosed with COVID-19. “Close contact” means living in the same household as a person who has tested positive for COVID-19, caring for a person who has tested positive for COVID-19, being within 6 feet of a person who has tested positive for COVID-19 for about 15 minutes, or coming in direct contact with secretions (e.g., sharing utensils, being coughed on) from a person who has tested positive for COVID-19, while that person was symptomatic.
    - Have not been asked to self-isolate or quarantine by their doctor or a public health official.
    - These self-certifications may be documented at the request of the site owner
- Workers that are working in a confined space or inside a closed building envelope will have to be temperature screened by a Medical Professional or designated individual. Such screening shall be performed out of public view to respect privacy and results are kept private.
- Employees exhibiting symptoms or unable to self-certify should be directed to leave the work

site and seek medical attention and applicable testing by their health care provider. They are not to return to the work site until cleared by a medical professional.

GENERAL ON-THE-JOB GUIDANCE TO PREVENT EXPOSURE & LIMIT THE TRANSMISSION OF THE VIRUS

All Job Sites

- No touching or direct contact with other individuals, including handshaking.
- Wash hands often with soap and water for at least 20 seconds or alternatively when soap and water are not available, use an alcohol-based hand sanitizer with at least 60% ethanol or 70% isopropanol
- A "No Congregation" policy is in effect, individuals must implement social distancing by maintaining a minimum distance of 6-feet from all other individuals
- Avoid face to face meetings – critical situations requiring in-person discussion must follow social distancing
- Conduct all meetings via conference calls, if possible. Do not convene meetings of more than 10 people. Recommend use of cell phones, texting, web meeting sites and conference calls for project discussion
- Be sure to use your own water bottle, and do not share
- To avoid external contamination, bring food from home
- Maintain Social Distancing separation during breaks and lunch.
- To avoid sharing germs, please clean up after yourself. DO NOT make others responsible for moving, unpacking and packing up your personal belongings
- If you or a family member is feeling ill, stay home!

Multi-person job sites (i.e. HRP and subcontractors, etc.)

- Contractor and Field Offices are to be locked down to all but authorized personnel
- Each jobsite should develop cleaning and decontamination procedures that are posted and shared (if multi-person job site). These Procedures must cover all areas including trailers, gates, equipment, vehicles, etc. and shall be posted at all entry points to the sites, and throughout the project site.
- All individual work crew meetings/tailgate talks should be held outside and follow social distancing
- Please keep all crews a minimum of 6' apart at all times to eliminate the potential of cross contamination
- At each job briefing/tool box talk, employees are asked if they are experiencing any symptoms, and are sent home if they are
- Each jobsite should have laminated COVID-19 safety guidelines and handwashing instructions (last page of this addendum)
- All restroom facilities/porta-potties should be cleaned and handwashing stations must be provided with soap, hand sanitizer and paper towels
- All surfaces should be cleaned at least twice a day, including desk, work stations, door handles, laptops, etc.
- All common areas and meeting areas are to be regularly cleaned and disinfected at least once a day but preferably twice a day

- Single person job sites (just one HRP employee, no subs, vendors, etc.)
  - It is that person's responsibility to clean and disinfect all tools and reusable supplies upon return to the office

- Cover coughing or sneezing with a tissue, then throw the tissue in the trash and wash hands, if no tissue is available then cough into your elbow
- Avoid touching eyes, nose, and mouth with your hands

WORK SITE RISK PREVENTION PRACTICES

- At the start of each shift, confirm with all employees that they are healthy.
- All employees will be required to wear gloves (either latex or cut resistant depending on the task at hand)
- Use of eye protection is required (Safety glasses or googles at a minimum with or without face shields).
- In work conditions where required social distancing is impossible to achieve, affected employees shall be supplied PPE including as appropriate a standard face covering, gloves, and eye protection.
- All employees shall drive to work site/parking area in a single occupant vehicle. No one should ride together in the same vehicle
- When entering a machine or vehicle which you are not sure you were the last person to enter, make sure that you wipe down the interior and door handles with disinfectant prior to entry
- In instances where it is possible, workers should maintain separation of 6' from each other per CDC guidelines.
- Multi person activities will be limited where feasible (two person lifting activities)
- Large gathering places on the site such as shacks and break areas will be eliminated and instead small break areas will be used with seating limited to ensure social distancing.
- Contact the cleaning person for your office trailer or office space and ensure they have proper COVID- 19 sanitation processes. Increase their cleaning visits to daily
- Clean all high contact surfaces a minimum of twice a day in order to minimize the spread of germs in areas that people touch frequently. This includes but is not limited to desks, laptops and vehicles

Wash Stations: All sites without ready access to an indoor bathroom or running water MUST install Wash Stations or provide other means for handwashing

- Install hand wash stations with hot water, if possible, and soap at fire hydrants or other water sources to be used for frequent handwashing for all onsite employees.
- All onsite workers must help to maintain and keep stations clean
- If a worker notices soap or towels are running low or out, immediately notify supervisors
- Garbage barrels will be placed next to the hand wash station for disposal of tissues/towels
- If no other alternative exists, bring squeeze bottles with water and soap (only authorized for single employee job sites)

Please Note: This document is not intended to replace any formalized procedures currently in place within the site specific HASP or any job related contracts.

Where this guidance does not meet or exceed the standards put forth by the state, municipality, site owner, contractor or subcontractor, everyone shall abide by the most stringent procedure.

A site-specific COVID-19 Officer (also known as the Health and Safety Officer) shall be designated for every site.

Print and post at each job site

COVID-19/ Health and Safety Officer Name: _____

Phone Number: _____

Any issue of non-compliance with these guidelines shall be a basis for pausing the work. The Health and Safety Officer will address corrective actions with the subcontractor. Any additional issues of non-conformance may be subject to action against the subcontractor's prequalification and certification status.

APPENDIX H

Safety Data Sheets
(for chemicals brought to the site)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

1 Identification of the substance/mixture and of the supplier

1.1 Product identifier

Trade Name: Alconox
Synonyms:
Product number: Alconox

1.2 Application of the substance / the mixture : Cleaning material/Detergent

1.3 Details of the supplier of the Safety Data Sheet

Manufacturer	**Supplier**
Alconox, Inc. 30 Glenn Street White Plains, NY 10603 1-914-948-4040	Not Applicable

Emergency telephone number:
ChemTel Inc
North America: 1-800-255-3924
International: 01-813-248-0585

2 Hazards identification

2.1 Classification of the substance or mixture:

In compliance with EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments.

Hazard-determining components of labeling:
Tetrasodium Pyrophosphate
Sodium tripolyphosphate
Sodium Alkylbenzene Sulfonate

2.2 Label elements:

Skin irritation, category 2.
Eye irritation, category 2A.

Hazard pictograms:

Signal word: Warning

Hazard statements:
H315 Causes skin irritation.
H319 Causes serious eye irritation.

Precautionary statements:
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

Additional information: None.

Hazard description

Hazards Not Otherwise Classified (HNOC): None

Information concerning particular hazards for humans and environment:

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Classification system:

The classification is according to EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments, and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.

3 Composition/information on ingredients

3.1 Chemical characterization : None

3.2 Description : None

3.3 Hazardous components (percentages by weight)

Identification	Chemical Name	Classification	Wt. %
CAS number: 7758-29-4	Sodium tripolyphosphate	Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	12-28
CAS number: 68081-81-2	Sodium Alkylbenzene Sulfonate	Acute Tox. 4; H303 Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	8-22
CAS number: 7722-88-5	Tetrasodium Pyrophosphate	Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	2-16

3.4 Additional Information : None.

4 First aid measures

4.1 Description of first aid measures

General information: None.

After inhalation:

Maintain an unobstructed airway.

Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.

Seek medical attention if symptoms develop or persist.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.

Remove contact lens(es) if able to do so during rinsing.

Seek medical attention if irritation persists or if concerned.

After swallowing:

Rinse mouth thoroughly.

Seek medical attention if irritation, discomfort, or vomiting persists.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

4.2 Most important symptoms and effects, both acute and delayed

None

4.3 Indication of any immediate medical attention and special treatment needed:

No additional information.

5 Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents:

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition.

For safety reasons unsuitable extinguishing agents : None

5.2 Special hazards arising from the substance or mixture :

Thermal decomposition can lead to release of irritating gases and vapors.

5.3 Advice for firefighters

Protective equipment:

Wear protective eye wear, gloves and clothing.
Refer to Section 8.

5.4 Additional information :

Avoid inhaling gases, fumes, dust, mist, vapor and aerosols.
Avoid contact with skin, eyes and clothing.

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures :

Ensure adequate ventilation.
Ensure air handling systems are operational.

6.2 Environmental precautions :

Should not be released into the environment.
Prevent from reaching drains, sewer or waterway.

6.3 Methods and material for containment and cleaning up :

Wear protective eye wear, gloves and clothing.

6.4 Reference to other sections : None

7 Handling and storage

7.1 Precautions for safe handling :

Avoid breathing mist or vapor.
Do not eat, drink, smoke or use personal products when handling chemical substances.

7.2 Conditions for safe storage, including any incompatibilities :

Store in a cool, well-ventilated area.

7.3 Specific end use(s):

No additional information.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

8 Exposure controls/personal protection

8.1 Control parameters :

7722-88-5, Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m3.

8.2 Exposure controls

Appropriate engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

Respiratory protection:

Not needed under normal conditions.

Protection of skin:

Select glove material impermeable and resistant to the substance.

Eye protection:

Safety goggles or glasses, or appropriate eye protection.

General hygienic measures:

Wash hands before breaks and at the end of work.
Avoid contact with skin, eyes and clothing.

9 Physical and chemical properties

Appearance (physical state, color):	White and cream colored flakes - powder	**Explosion limit lower:** **Explosion limit upper:**	Not determined or not available. Not determined or not available.
Odor:	Not determined or not available.	**Vapor pressure at 20°C:**	Not determined or not available.
Odor threshold:	Not determined or not available.	**Vapor density:**	Not determined or not available.
pH-value:	9.5 (aqueous solution)	**Relative density:**	Not determined or not available.
Melting/Freezing point:	Not determined or not available.	**Solubilities:**	Not determined or not available.
Boiling point/Boiling range:	Not determined or not available.	**Partition coefficient (n-octanol/water):**	Not determined or not available.
Flash point (closed cup):	Not determined or not available.	**Auto/Self-ignition temperature:**	Not determined or not available.
Evaporation rate:	Not determined or not available.	**Decomposition temperature:**	Not determined or not available.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

Flammability (solid, gaseous):	Not determined or not available.	**Viscosity**:	a. Kinematic: Not determined or not available. b. Dynamic: Not determined or not available.
Density at 20°C:	Not determined or not available.		

10 Stability and reactivity

10.1 Reactivity : None

10.2 Chemical stability : None

10.3 Possibility hazardous reactions : None

10.4 Conditions to avoid : None

10.5 Incompatible materials : None

10.6 Hazardous decomposition products : None

11 Toxicological information

11.1 Information on toxicological effects :

Acute Toxicity:

Oral:

: LD50 > 5000 mg/kg oral rat - Product .

Chronic Toxicity: No additional information.

Skin corrosion/irritation:

Sodium Alkylbenzene Sulfonate: Causes skin irritation. .

Serious eye damage/irritation:

Sodium Alkylbenzene Sulfonate: Causes serious eye irritation .

Tetrasodium Pyrophosphate: Rabbit - Risk of serious damage to eyes .

Respiratory or skin sensitization: No additional information.

Carcinogenicity: No additional information.

IARC (International Agency for Research on Cancer): None of the ingredients are listed.

NTP (National Toxicology Program): None of the ingredients are listed.

Germ cell mutagenicity: No additional information.

Reproductive toxicity: No additional information.

STOT-single and repeated exposure: No additional information.

Additional toxicological information: No additional information.

12 Ecological information

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

12.1 Toxicity:

Sodium Alkylbenzene Sulfonate: Fish, LC50 1.67 mg/l, 96 hours.
Sodium Alkylbenzene Sulfonate: Aquatic invertebrates, EC50 Daphnia 2.4 mg/l, 48 hours.
Sodium Alkylbenzene Sulfonate: Aquatic Plants, EC50 Algae 29 mg/l, 96 hours.
Tetrasodium Pyrophosphate: Fish, LC50 - other fish - 1,380 mg/l - 96 h.
Tetrasodium Pyrophosphate: Aquatic invertebrates, EC50 - Daphnia magna (Water flea) - 391 mg/l - 48 h.

12.2 Persistence and degradability: No additional information.

12.3 Bioaccumulative potential: No additional information.

12.4 Mobility in soil: No additional information.

General notes: No additional information.

12.5 Results of PBT and vPvB assessment:

PBT: No additional information.

vPvB: No additional information.

12.6 Other adverse effects: No additional information.

13 Disposal considerations

13.1 Waste treatment methods (consult local, regional and national authorities for proper disposal)

Relevant Information:

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities. (US 40CFR262.11).

14 Transport information

14.1	**UN Number:** ADR, ADN, DOT, IMDG, IATA	None
14.2	**UN Proper shipping name:** ADR, ADN, DOT, IMDG, IATA	None
14.3	**Transport hazard classes:** ADR, ADN, DOT, IMDG, IATA	**Class:** None **Label:** None **LTD. QTY:** None

US DOT

Limited Quantity Exception: None

Bulk:	**Non Bulk:**
RQ (if applicable): None	**RQ (if applicable):** None
Proper shipping Name: None	**Proper shipping Name:** None
Hazard Class: None	**Hazard Class:** None
Packing Group: None	**Packing Group:** None
Marine Pollutant (if applicable): No additional information.	**Marine Pollutant (if applicable):** No additional information.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

	Comments: None	**Comments:** None
14.4	**Packing group:** ADR, ADN, DOT, IMDG, IATA	None
14.5	**Environmental hazards** :	None
14.6	**Special precautions for user:**	None
	Danger code (Kemler):	None
	EMS number:	None
	Segregation groups:	None
14.7	**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** Not applicable.	
14.8	**Transport/Additional information:**	
	Transport category:	None
	Tunnel restriction code:	None
	UN "Model Regulation":	None

15 Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.

North American

SARA

Section 313 (specific toxic chemical listings): None of the ingredients are listed.
Section 302 (extremely hazardous substances): None of the ingredients are listed.

CERCLA (Comprehensive Environmental Response, Clean up and Liability Act) Reportable

Spill Quantity: None of the ingredients are listed.

TSCA (Toxic Substances Control Act):

Inventory: All ingredients are listed.
Rules and Orders: Not applicable.

Proposition 65 (California):

Chemicals known to cause cancer: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males: None of the ingredients are listed.

Chemicals known to cause developmental toxicity: None of the ingredients are listed.

Canadian

Canadian Domestic Substances List (DSL):
All ingredients are listed.

EU

REACH Article 57 (SVHC): None of the ingredients are listed.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

Germany MAK: Not classified.

Asia Pacific

Australia

Australian Inventory of Chemical Substances (AICS): All ingredients are listed.

China

Inventory of Existing Chemical Substances in China (IECSC): All ingredients are listed.

Japan

Inventory of Existing and New Chemical Substances (ENCS): All ingredients are listed.

Korea

Existing Chemicals List (ECL): All ingredients are listed.

New Zealand

New Zealand Inventory of Chemicals (NZOIC): All ingredients are listed.

Philippines

Philippine Inventory of Chemicals and Chemical Substances (PICCS): All ingredients are listed.

Taiwan

Taiwan Chemical Substance Inventory (TSCI): All ingredients are listed.

16 Other information

Abbreviations and Acronyms: None

Summary of Phrases

Hazard statements:

H315 Causes skin irritation.
H319 Causes serious eye irritation.

Precautionary statements:

P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

Manufacturer Statement:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

NFPA: 1-0-0

SAFETY DATA SHEET

Version 5.2
Revision Date 02/24/2014
Print Date 11/13/2016

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Distilled water

Product Number : 07-6061
Brand : Katayama OEM Partner
REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
CAS-No. : 7732-18-5

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : +1-703-527-3887 (CHEMTREC)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture.

2.2 GHS Label elements, including precautionary statements

Not a hazardous substance or mixture.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula : H2O H_2O
Molecular Weight : 18.02 g/mol
CAS-No. : 7732-18-5
EC-No. : 231-791-2

No ingredients are hazardous according to OSHA criteria.
No components need to be disclosed according to the applicable regulations.

4. FIRST AID MEASURES

4.1 Description of first aid measures

If inhaled
If not breathing give artificial respiration

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
no data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2 Special hazards arising from the substance or mixture
no data available

5.3 Advice for firefighters
no data available

5.4 Further information
The product itself does not burn.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
For personal protection see section 8.

6.2 Environmental precautions
no data available

6.3 Methods and materials for containment and cleaning up
Wipe up with absorbent material (e.g. cloth, fleece).

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
No special storage conditions required.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice.

Personal protective equipment

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min

Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Respiratory protection
No special protective equipment required.

Control of environmental exposure
Prevent product from entering drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid Colour: colourless
b)	Odour	no data available
c)	Odour Threshold	no data available
d)	pH	6.0 - 8.0 at 25 °C (77 °F)
e)	Melting point/freezing point	0.0 °C (32.0 °F)
f)	Initial boiling point and boiling range	100 °C (212 °F) - lit.
g)	Flash point	not applicable
h)	Evapouration rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	no data available
k)	Vapour pressure	no data available
l)	Vapour density	no data available
m)	Relative density	1.000 g/cm3 at 3.98 °C (39.16 °F)
n)	Water solubility	completely miscible
o)	Partition coefficient: n-octanol/water	no data available
p)	Auto-ignition temperature	no data available
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information
no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
no data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
no data available

10.5 Incompatible materials
no data available

10.6 Hazardous decomposition products
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
no data available

Inhalation: no data available

Dermal: no data available

no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitisation
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

no data available

Specific target organ toxicity - single exposure
no data available

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Additional Information
RTECS: ZC0110000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
no data available

12.2 Persistence and degradability
not applicable

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Taking into account local regulations the product may be disposed of as waste water after neutralisation.

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. REGULATORY INFORMATION

REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
No SARA Hazards

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Water	7732-18-5	

New Jersey Right To Know Components

	CAS-No.	Revision Date
Water	7732-18-5	

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

HMIS Rating

Health hazard:	0
Chronic Health Hazard:	
Flammability:	0
Physical Hazard	0

NFPA Rating

Health hazard:	0
Fire Hazard:	0
Reactivity Hazard:	0

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 5.2 Revision Date: 02/24/2014 Print Date: 11/13/2016

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

HMIS: 1-0-0

Hydrochloric Acid,ACS

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name : **Hydrochloric Acid,ACS**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25358**

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:

Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:

Fisher Science Education Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:

Corrosive
Serious eye damage, category 1
Corrosive to metals, category 1
Skin corrosion, category 1B

Irritant
Specific target organ toxicity following single exposure, category 3

Corr. Metals 1
Corr. Skin 1B
Eye Damage 1
STOT. SE 3

Signal word :Danger

Hazard statements:
May be corrosive to metals
Causes severe skin burns and eye damage
May cause respiratory irritation

Precautionary statements:
If medical advice is needed, have product container or label at hand
Keep out of reach of children
Read label before use
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Keep only in original container
Do not get in eyes, on skin, or on clothing
Wash skin thoroughly after handling
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician
Specific treatment (see supplemental first aid instructions on this label)
Wash contaminated clothing before reuse
Absorb spillage to prevent material damage
Store in a well ventilated place. Keep container tightly closed
Store locked up
Store in corrosive resistant stainless steel container with a resistant inner liner
Dispose of contents and container to an approved waste disposal plant

Other Non-GHS Classification:

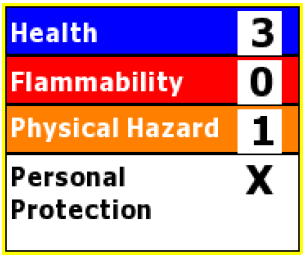
WHMIS

D1A 

E 

NFPA/HMIS

NFPA SCALE (0-4)



HMIS RATINGS (0-4)

SECTION 3 : Composition/information on ingredients

Ingredients:		
CAS 7647-01-0	Hydrochloric Acid, ACS	30-50 %
CAS 7732-18-5	Water	50-70 %
		Percentages are by weight

SECTION 4 : First aid measures

Description of first aid measures

After inhalation: Move exposed individual to fresh air. Loosen clothing as necessary and position individual in a comfortable position.Seek medical attention if irritation or coughing persists.

After skin contact: Wash affected area with soap and water. Immediately remove contaminated clothing and shoes.Rinse thoroughly with plenty of water for at least 15 minutes.Immediately seek medical attention.

After eye contact: Protect unexposed eye. Flush thoroughly with plenty of water for at least 15

minutes.Remove contact lenses while rinsing.Continue rinsing eyes during transport to hospital.

After swallowing: Rinse mouth thoroughly. Do not induce vomiting. Have exposed individual drink sips of water. Immediately seek medical attention.

Most important symptoms and effects, both acute and delayed:

Inhalation may cause irritation to nose and upper respiratory tract, ulceration, coughing, chest tightness and shortness of breath. Higher concentrations cause tachypnoea, pulmonary oedema and suffocation . Ingestion may cause corrosion of lips, mouth, oesophagus and stomach, dysphagia and vomiting.Pain, eye ulceration, conjunctival irritation, cataracts and glaucoma may occur following eye exposure.Erythema and skin irritation, as well as chemical burns to skin and mucous membranes may arise following skin exposure.;Potential sequelae following ingestion of hydrochloric acid include perforation, scarring of the oesophagus or stomach and stricture formation causing dysphagia or gastric outlet obstruction. In some cases, RADS may develop. Respiratory symptoms may take up to 36 hours to develop.Symptoms of burning sensation, cough, wheezing, laryngitis, shortness of breath, spasm, inflammation, edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Indication of any immediate medical attention and special treatment needed:

Provide SDS to Physician.Physician should treat symptomatically.

SECTION 5 : Firefighting measures

Extinguishing media

Suitable extinguishing agents: Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.

For safety reasons unsuitable extinguishing agents:

Special hazards arising from the substance or mixture:

Combustion products may include carbon oxides or other toxic vapors.If in contact with metals toxic fumes may be released.

Advice for firefighters:

Protective equipment: Wear protective eyeware, gloves, and clothing. Refer to Section 8. Wear respiratory protection.

Additional information (precautions): Thermal decomposition can produce poisoning chlorine. Hydrochloric acid reacts also with many organic materials with liberation of heat.Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing.

SECTION 6 : Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation. Ensure that air-handling systems are operational.

Environmental precautions:

Should not be released into environment. Prevent from reaching drains, sewer, or waterway.

Methods and material for containment and cleaning up:

Always obey local regulations. If necessary use trained response staff or contractor. Evacuate personnel to safe areas. Containerize for disposal. Refer to Section 13. Keep in suitable closed containers for disposal. Soak up with inert absorbent material and dispose of as hazardous waste. Cover spill with soda ash or calcium carbonate. Mix and add water to form slurry.Wear protective eyeware, gloves, and clothing. Refer to Section 8.

Reference to other sections:

SECTION 7 : Handling and storage

Precautions for safe handling:

Prevent formation of aerosols. Never use hot water and never add water to the acid.Do not allow contact between hydrochloric acid, metal, and organics.Follow good hygiene procedures when handling chemical materials. Refer to Section 8. Prevent contact with skin, eyes, and clothing. Follow proper disposal methods. Refer to Section 13. Do not eat, drink, smoke, or use personal products when handling chemical substances. Use only in well ventilated areas.Avoid splashes or spray in enclosed areas.

Conditions for safe storage, including any incompatibilities:

Store in a cool location. Keep away from food and beverages. Protect from freezing and physical damage. Store away from incompatible materials. Provide ventilation for containers. Keep container tightly sealed.Containers for hydrochloric acid must be made from corrosion resistant materials: glass, polyethylene, polypropylene, polyvinyl chloride, carbon steel lined with rubber or ebonite.

SECTION 8 : Exposure controls/personal protection




Control Parameters: 7647-01-0, Hydrochloric Acid, ACGIH: 2 ppm Ceiling
7647-01-0, Hydrochloric Acid, NIOSH: 5 ppm Ceiling; 7 mg/m3 Ceiling

Appropriate Engineering controls: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of handling.

Respiratory protection: Not required under normal conditions of use. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. When necessary use NIOSH approved breathing equipment.

Protection of skin: Select glove material impermeable and resistant to the substance. Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves. Wear protective clothing.

Eye protection: Faceshield (8-inch minimum).Tightly fitting safety goggles.

General hygienic measures: Perform routine housekeeping. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes, and clothing. Before rewearing wash contaminated clothing.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	Clear, colorless liquid.	**Explosion limit lower**: **Explosion limit upper**:	Non Explosive Non Explosive
Odor:	Pungent odor	**Vapor pressure**:	5.7mmHg @ 0C
Odor threshold:	0.3 – 14.9 mg/m3	**Vapor density**:	1.27 (Air=1)
pH-value:	< 1	**Relative density**:	1.0 - 1.2

Melting/Freezing point:	- 74 C	**Solubilities**:	Miscible
Boiling point/Boiling range:	81.5 - 110 C	**Partition coefficient (n-octanol/water)**:	Not Determined
Flash point (closed cup):	Not Applicable	**Auto/Self-ignition temperature**:	Not Determined
Evaporation rate:	>1.00	**Decomposition temperature**:	Not Determined
Flammability (solid,gaseous):	non combustible	**Viscosity**:	a. Kinematic:Not Determined b. Dynamic: Not Determined
Density: Not Determined **Hydrochloric Acid:**MW is36.46			

SECTION 10 : Stability and reactivity

Reactivity: Reacts violently with bases and is corrosive.
Chemical stability: No decomposition if used and stored according to specifications.
Possible hazardous reactions: Attacks many metals in the presence of water forming flammable explosive gas (hydrogen).Reacts violently with oxidants forming toxic gas (chlorine).
Conditions to avoid: Incompatible materials.
Incompatible materials: Bases, Amines, Alkali metals, Metals, permanganates (potassium permanganate), Fluorine, Metal acetylides, Hexalithium disilicide.
Hazardous decomposition products: Hydrogen chloride gas.Carbon oxides.

SECTION 11 : Toxicological information

Acute Toxicity:		
Inhalation:	7647-01-0	LD50 Rat 3124 ppm/hour
Oral:	7647-01-0	LD50 Rat 238 - 277 mg/kg
Dermal:	7647-01-0	LD50 Rabbit >5010 mg/kg
Chronic Toxicity: No additional information.		
Corrosion Irritation:		
Dermal:	7647-01-0	Skin - rabbit Result: Causes burns.
Ocular:	7647-01-0	Eyes - rabbit Result: Corrosive to eyes
Sensitization:		No additional information.
Single Target Organ (STOT):		7647-01-0: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.
Numerical Measures:		No additional information.
Carcinogenicity:		No additional information.
Mutagenicity:		No additional information.

Reproductive Toxicity:	No additional information.

SECTION 12 : Ecological information

Ecotoxicity

7647-01-0: Toxicity to fish LC50 - Gambusia affinis (Mosquito fish) - 282 mg/l - 96 h (Hydrochloric acid)

Persistence and degradability:
Bioaccumulative potential:
Mobility in soil:
Other adverse effects:

SECTION 13 : Disposal considerations

Waste disposal recommendations:

Do not allow product to reach sewage system or open water.It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Contact a licensed professional waste disposal service to dispose of this material. Dispose of empty containers as unused product. Product or containers must not be disposed together with household garbage. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14 : Transport information

UN-Number

1789

UN proper shipping name

HYDROCHLORIC ACID

Transport hazard class(es)

Class:
8 Corrosive substances

Packing group:II
Environmental hazard:
Transport in bulk:
Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

Acute

SARA Section 313 (Specific toxic chemical listings):

7647-01-0 Hydrochloric Acid

RCRA (hazardous waste code):

None of the ingredients is listed

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

7647-01-0 Hydrochloric Acid 5000 lbs

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed

Chemicals known to cause developmental toxicity:

None of the ingredients is listed

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients is listed

Canadian NPRI Ingredient Disclosure list (limit 1%):

7647-01-0 Hydrochloric Acid

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.Note:. The responsibility to provide a safe workplace remains with the user.The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.The information contained herein is, to the best of our knowledge and belief, accurate.However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material.It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases:

Abbreviations and acronyms:

IMDG: International Maritime Code for Dangerous Goods
PNEC: Predicted No-Effect Concentration (REACH)
CFR: Code of Federal Regulations (USA)
SARA: Superfund Amendments and Reauthorization Act (USA)
RCRA: Resource Conservation and Recovery Act (USA)
TSCA: Toxic Substances Control Act (USA)
NPRI: National Pollutant Release Inventory (Canada)
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
DNEL: Derived No-Effect Level (REACH)

Effective date : 01.08.2015
Last updated : 03.20.2015

APPENDIX B
Community Air Monitoring Plan

Community Air Monitoring Plan

This Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress during remedial activities at the site. The CAMP is not intended for use in establishing action levels for workers respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air. The CAMP was developed in accordance with Appendices 1A & 1B of DER-10, included at the end of this CAMP.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Depending on the nature of known or potential contaminants at the site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary.

CAMP data and summary tables will be provided to the New York State Department of Environmental Conservation and New York State Department of Health on a weekly basis. The departments will be notified within 24 hours of any CAMP action level exceedances and corrective measures taken.

Continuous monitoring will be required for all ground intrusive activities. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and groundwater samples. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuing monitoring may be required during sampling activities.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than the background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work may continue with dust suppression techniques provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work will be stopped and a re- evaluation of activities initiated. Work can resume provided that dust suppression measures

and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

- All readings will be recorded and be available for State (DEC and DOH) personnel to review.

VOC Monitoring, Response Levels, and Actions

VOCs will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using a photo ionization detector (PID) equipped with a 10.2 eV bulb. The PID will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15- minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of the vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less- but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

- All 15-minute readings will be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. APeriodic@ monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX C
Resumes of Key Project Personnel

SENIOR PROJECT CONSULTANT

PATRICK W. MONTUORI

IDENTIFIED WORK ELEMENTS EXPERIENCE

- Site Characterization
- Phased Remedial Investigation/Feasibility Study (RI/FS)
- Soil Vapor Intrusion (SVI) Investigations
- Remedial Design (RD)
- Site Response Activities/Interim Remedial Measures (IRM)
- Site Management (SM)
- Analytical Quality Assurance/Quality Control Activities (QA/QC)
- Citizen Participation (CP) Activities
- Health and Safety Plan (HASP) Development
- Potentially Responsible Parties (PRP) and Third-Party Oversight

SUMMARY OF QUALIFICATIONS

Mr. Montuori is an environmental consultant with four (4) years of experience involving a wide range of environmental and geologic projects. Mr. Montuori provides expertise in the field of site characterization, remedial investigation, and remediation of petroleum and chlorinated solvent impacted sites. He has prepared site management plans, site investigation work plans, remedial action work plans, Phase I and II environmental site assessments, health and safety plans, and Underground Storage Tank (UST) closure reports, and water supply studies. Mr. Montuori has managed remedial excavations, subsurface investigations, groundwater and soil vapor monitoring events, groundwater injections, and soil vapor extraction pilot testing. His responsibilities at HRP Associates include project management, environmental sampling, field oversight, data interpretation, and report preparation.

PROJECT EXPERIENCE

Remedial Action Implementation – Former Landfill BCP Site, Westchester County, NY – 2017-2020

As Project Geologist, conducted oversight, field work, and reporting related to the implementation of a Remedial Action Work Plan on a NYSDEC Brownfield Cleanup Program (BCP) site. Responsibilities included: remedial excavation oversight, excavation end-point soil screening and sampling, and community air monitoring program (CAMP) implementation; construction oversight, pilot, and start-up testing of a soil vapor extraction (SVE) system and two sub-slab depressurization (SSD) systems, including collection of air quality and vacuum performance data; groundwater well installation and monitoring; planning and conducting in-situ application of emulsified vegetable oil (EVO) and zero valance iron (ZVI) for treatment of chlorinated volatile organic compounds (VOCs) in groundwater; installation oversight of a vegetated site cap; presenting at monthly community meetings; correspondence and coordination with NYSDEC; preparation of progress reports, work plans, and documentation related to the site management plan (SMP) and final engineering report (FER).

Remedial Investigation– Former Retail Petroleum Station and Autobody BCP Site, Westchester County, NY – 2020

As Project Geologist, conducted a multi-stage remedial investigation according to the work plan approved under the NYSDEC BCP. Responsibilities included: Locating, installing, logging, and sampling soil borings; oversight of drilling contractor during installation of groundwater monitoring wells; installation and sampling of soil vapor points; conducting groundwater sampling, including sampling for per-and polyfluoroalkyl substances (PFAS) using the low-flow method; coordination and implementation of a site CAMP; coordination of on-site containment and removal of

NSPE LEVEL

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EDUCATION

- Bachelors of Science, Geological Sciences, State University of New York at Plattsburgh, 2016

TRAINING

- OSHA - 40-Hour HAZWOPER Health and Safety Training
- OSHA - 8-Hour HAZWOPER Annual Refresher Training
- OSHA - 30-Hour Construction Training
- OSHA - 10-Hour Construction Training

TECHNICAL TRAINING

- USCS Soil Classification
- Low-Flow Sampling
- Air and Soil Vapor Monitoring
- Geologic Cross-Section Preparation
- Contour Mapping
- CAMP Monitoring and Data Management
- Pressure Transducer-Data Logger Water Level Monitoring

BASE OFFICE LOCATION

Clifton Park, NY

EXPERIENCE

investigation derived waste.

Site Management Plan Development and Implementation - Former Dry Cleaner Inactive Hazardous Waste Site, Putnam County, NY – 2017-2020
As Project Geologist, developed an SMP for a site at which the drinking water supply aquifer was impacted by chlorinated solvents. Responsibilities included: on and off-site groundwater monitoring and sampling; sampling and maintenance of site engineering controls, including drinking water point of entry treatment (POET) systems and an SSD system; preparation of the SMP and periodic review reports (PRRs); coordination with NYSDEC and the client (site owner) to ensure project objectives were completed within budget.

Community Drinking Water Monitoring – Residential Fuel Oil Spill Site, Westchester County, NY – 2020
As Project Geologist, conducted quarterly sampling events of potable wells in a residential neighborhood where the groundwater aquifer was impacted by a fuel oil underground storage tank (UST) spill. Responsibilities included: developing a sampling plan in coordination with NYSDEC; oversight of POET system installation; conducting quarterly sampling of homeowner POET systems and wells.

Quarterly Groundwater and Air Monitoring – Commercial Chlorinated Solvent Spill Site, Westchester County, NY – 2019-2020
As Project Geologist, conducted quarterly fieldwork and reporting at a commercial site in the NYSDEC spills program where groundwater was contaminated with chlorinated VOCs. Responsibilities included: planning and executing quarterly groundwater sampling events; conducting indoor air and soil vapor sampling; preparing quarterly reports communicating findings and recommendations to NYSDEC.

In-Situ Groundwater Treatment and Monitoring – Residential Fuel Oil Spill Site, Atlantic County, NJ - 2020
As Project Geologist, managed the cleanup and monitoring of a leaking fuel oil underground storage tank (UST). Due to inaccessibility of contaminated soils under the house a combination of surfactant groundwater injections and enhanced fluid recovery (EFR) events were utilized to remove free-phase product and dissolved fuel oil constituents from groundwater beneath the site. Responsibilities included: planning and execution of surfactant injections; groundwater monitoring and sampling; and correspondence with the homeowner and NJDEP.

Water Supply Study – Commercial Shopping Center, Putnam County, NY – 2017
As Project Geologist, planned and executed two simultaneous 24-hour pumping tests to determine if two newly installed supply wells could meet project demands with minimal impacts to the surrounding aquifer. Responsibilities included: installing pressure transducer data loggers; calculating flow rate using a flow totalizer and by measuring volume with a bucket; monitoring water level using data logger readings and by taking manual measurements with electronic interface tape; collection of drinking water samples; reporting including hydrograph preparation, calculation of water level stabilization and water level after 180 days of pumping; correspondence with county health department.

SENIOR PROJECT SCIENTIST

ALISA WERST, CSP

Ms. Werst has more than ten years of direct experience in the environmental consulting field which includes execution and oversight of field work, report writing, building inspections for hazardous materials such as lead, asbestos, mold, PCBs, and project monitoring of asbestos and lead abatement projects. Ms. Werst also possesses strong knowledge of the regulatory environment in Connecticut with experience working in a variety of capacities including due diligence, sample collection, regulatory reporting, and subcontractor oversight.

EXPERIENCE

Danbury Corporate Center, Danbury, CT
Served as an environmental scientist for the Phase I and Phase II site investigation. Responsibilities included historical site research, soil and groundwater sample collection, report preparation. Services were completed in 2008.

Teachers Corner, Hartford, CT
Served as a environmental scientist for the Phase I Site Investigation. Additionally, served as an asbestos project monitor for the removal of asbestos containing materials and mold impacted materials during a building renovation. Responsibilities included oversite of the contractor preforming the work, review of submittals and report preparation. Services were completed in 2018.

Colt Gateway North Armory, Hartford, CT
Served as an Asbestos Project Designer to prepare asbestos abatement design specifications, school in session documentation, and alternative work practices for the renovation of a historic building. The abatement specifications including detailed figures showing the locations of the materials to be abated, tables of the ACM quantities and procedures for asbestos removal. Due to significantly damaged asbestos containing materials, Ms. Werst prepared an Alternative Work Practices for the removal of damaged asbestos containing plaster, as well as damaged window glazing. Services will be completed in 2020.

UCONN, Storrs, CT
Served as an Asbestos Inspector, Project Monitor and Project Designer for renovation of a dining hall. Ms. Werst completed the pre-renovation inspection for hazardous building materials and developed specifications for the removal of the asbestos containing materials. Additionally, served as an asbestos project monitor for the removal of asbestos containing materials and during the renovation. Responsibilities included oversite of the contractor preforming the work, review of submittals and report preparation. Services were completed in 2019.

Community Solutions, Hartford, CT
Served as an Asbestos Inspector, Project Monitor and Project Designer, as well as a lead paint inspector for the renovation of a former factory building which formerly stored hazardous materials and produced hazardous waste. Ms. Werst conducted weekly site visits throuout the duration of the abatement, preformed project monitoring duties, collected environmental samples for waste characterization, verified completion of work by the contractor and reviewed contractor documentation for the preparation of the close out report. Services were completed in 2019.

EDUCATION

- BS, Environmental Science, UCONN, 2006
- BS, Geology, UCONN, 2006

PROFESSIONAL REGISTRATIONS/ CERTIFICATIONS

- Asbestos Consultant-Project Monitor: #602, CT
- Asbestos Consultant-Project Designer: #343, CT
- Asbestos Consultant Inspector-Management Planner: #343, CT
- Asbestos Inspector: #AI900764, MA
- Asbestos Inspector: #057605, PA
- Asbestos Inspector: #19-00238, NY
- Asbestos Project Designer: #19-00238, NY
- Lead Inspector/Risk Assessor: #2278, CT
- NRPP Residential Measurement Provider-#109544 RT
- Certified Safety Professional: CSP-36431
- OSHA Authorized Construction Trainer - #11-0106286

TRAININGS

- Confined Space Trained
- OSHA 40HR Hazwoper Training Certificate and 8 Hour Refresher
- OSHA 10HR Construction
- Asbestos Site Inspector Refresher Training. Asbestos Accreditation, TSCA Title II. 40 CFR Part 763: #SIAR-5853
- RCRA trained and certified - Hazardous Waste Management
- DOT / IATA/IMDG certified for Hazardous Materials Shipment
- Hazwoper 24 hour trained
- Hazardous Waste Determination 2 hour training
- Hazardous Waste Management for Generators 2 hour training
- Universal Waste Management 1 hour training course
- Used Oil Management 45 minute training course
- EPA Community Right to Know Act (EPCRA) sections 301-303, 311-313
- DOT Hazardous Materials 3 hour training
- HazCom General Awareness
- Blood Borne Pathogens General Awareness

SENIOR PROJECT GEOLOGIST (STAFF)

MICHAEL A. VARNI, LEP

IDENTIFIED WORK ELEMENTS EXPERIENCE

- Site Characterization
- Phased Remedial Investigation/Feasibility Study (RI/FS)
- Soil Vapor Intrusion (SVI) Investigations
- Analytical Quality Assurance/Quality Control Activities (QA/QC)
- Citizen Participation (CP) Activities
- Health and Safety Plan (HASP) Development
- Potentially Responsible Parties (PRP) and Third-Party Oversight

SUMMARY OF QUALIFICATIONS

Mr. Varni has over 10 years of experience in environmental assessment and site investigation. He has performed these services for a number of governmental, municipal, commercial, industrial and private clients. Specifically, Mr. Varni has been responsible for Phase I Environmental Site Assessments at small- to large-scale commercial and industrial facilities. In all cases, the specific manufacturing processes were analyzed and waste streams were defined to identify all potential sources and releases of contaminants to the environment. Mr. Varni has performed numerous Phase II and Phase III investigations involving drilling and test pit supervision, monitoring well installation, and sampling of soils, groundwater, and soil vapor. Mr. Varni has performed numerous site remediation oversight projects including soil excavation, groundwater treatment systems, and vapor extraction systems.

Remedial Actions, West Hartford, CT

This project involved the cleanup and redevelopment of a former large engine break and drill chuck manufacturer contaminated with PCBs, petroleum, and chlorinated solvents. The project involved demolition of the existing industrial building, followed by removal of subslab piping and drainage structures, and finally remediation of soils to achieve compliance with both state and federal regulations. Mr. Varni's responsibilities included supervision of remediation contractors conducting soil excavation, field monitoring and sampling of soil and groundwater, field monitoring of dust and weather conditions according to a project specific remediation and health and safety plan, coordination with construction and remediation crews, and data management and analysis. The project culminated in a successful Brownfields-type redevelopment of the property into a retail shopping center.

Phase I Environmental Site Assessments

- Inspection of a wide variety of commercial and industrial facilities and properties to identify specific site environmental conditions and concerns
- Interviewing site contacts and municipal, state, and federal officials to determine current and former site use and environmental concerns
- Historical research into current and former land use and regulatory history through review of aerial photographs and other published sources and state and local agency records
- Review of published geologic data to determine site setting including surficial and bedrock geology, and groundwater and surface water, and other environmental factors to evaluation contaminant migration potential.

Phase II and III Subsurface Investigations

- Identification of potential contamination sources at sites due to present and historical land uses
- Collection, description, and interpretation of split spoon sediment samples

NSPE LEVEL

VII

EDUCATION

- MS, Geology, University of Maryland, College Park, Maryland, 2002
- BS, Environmental Earth Science, Eastern Connecticut State University, Willimantic, Connecticut, 1999

TRAINING

- OSHA 40 Hour Hazardous Waste Operations & Emergency Response
- OSHA 8 Hour Refresher Hazardous Waste Operations & Emergency Response

PUBLICATIONS

- The effect of rising atmospheric oxygen on carbon and sulfur isotope anomalies in Neoproterozoic Johnnie Formation, Death Valley, USA. Kaufman, A. J., Corsetti, F.A., and Varni, M.A.

BASE OFFICE LOCATION

Farmington, CT

Environmental Data Services, Inc. (EDS) is a woman-owned, small business providing laboratory data validation and data usability. We have been supporting the environmental industry since 1993 and have worked on hundreds of projects including many in New York State. We are a certified Women's Business Enterprise (WBE) by New York State Division of Minority and Women's Business Development.

We are experienced validating all analytical methods including organic, inorganic and radiological methods. We are experienced validating perfluorintated alkyl substances (PFAS), VOC, SVOC, pesticides, PCBs, herbicides, metals, cyanide, hexavalent chromium, petroleum hydrocarbons, MEE, and volatile compounds in air. As well as many other parameters. We have validated soil, sediment, groundwater, tissue and air samples.

We are experienced in using the USEPA Region 2 data validation SOPs and the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic and Inorganic Methods Data Review. We have prepared hundreds of DUSRs as specified in NYSDEC DER-10/Technical Guidance for Site Investigation and Remediation; Appendix 2B, Guidance for Data Deliverables and the Development of Data Usability Summary Reports (May 2010).

The following is a brief list of projects completed within New York State. DUSRs were prepared for each project within a 14 or 21 day turn around time.

Preferred Environmental

- Newtown Creek, Maspeth, New York
- Long Island Railroad, Long Island, New York
- Wortman Aveneue, Brooklyn, New York

CDM Smith

- IBM Owego, Owego, New York
- Lubricant Packaging, Middletown, New York
- Charlton Cleaners, Staten Island, New York

Majestic Weaving, Cornwall, New York

Wantagh Cleaners, Wantagh, New York

ERM Northeast

Honeywell, Hoosick, New York

TRW, Union Springs, New York

Lockwood, Kessler & Bartlett

Syossett Landfill, Syossett, New York

110 Sand, Melville, New York

AECOM

East Hampton Airport, Wainscott, New York

64th Street, Woodside, Queens, New York

Kenco Chemical, Glenville, New York

Crystal Cleaners, Pelham, New York

EA Engineering, Science and Technology

Hudson River, Upper Hudson River, New York

Millens Scrapyard, Kingston, New York

Cuba Landfill, Cuba, New York

Corning Materials, Corning, New York

Gannett Fleming

Frito-Lay, Brooklyn, New York, NYSDEC

Salem Fields Cemetary, Queens, New York

Norfolk Southern Railroad, Elmira, New York

Brown and Caldwell

Rensselaer MGP, Rensselaer, New York

Cohoes MGP, Cohoes, New York

Oswego MGP, Oswego, New York

CT Male

Miron Lumber, Kingston, New York

350 Liberty Street, Newburgh, New York

Stratis Consulting

Pelham Bay Landfill, Pelham, New York

Penn & Fountain Landfill, Brooklyn, New York

PROJECT MANAGER

MARK E. WRIGHT, PG, CSP, CHMM

ROLE AND RESPONSIBILITY

As a Project Manager for this contract, Mr. Wright will be responsible for the administration of work required by the Work Assignment. The management of each work assignment may include development of work scope and cost assessments, procurement of supporting subcontractors and/or consultants, coordination of work scope items from resource management to scheduling and implementation. Mr. Wright will work with the Quality Assurance Officer to develop site-specific quality assurance plans, as pertinent to the Work Assignment and will act as the primary point of contact for each assigned project.

IDENTIFIED WORK ELEMENTS EXPERIENCE

- Site Characterization
- Phased Remedial Investigation/Feasibility Study (RI/FS)
- Soil Vapor Intrusion (SVI) Investigations
- Site Response Activities/Interim Remedial Measures (IRM)
- Site Management (SM)
- Analytical Quality Assurance/Quality Control Activities (QA/QC)
- Citizen Participation (CP) Activities
- Health and Safety Plan (HASP) Development
- Potentially Responsible Parties (PRP) and Third-Party Oversight

SUMMARY OF QUALIFICATIONS

Mr. Wright has over 13 years of experience in conducting environmental investigations. Mr. Wright is experienced in all phases of environmental investigation projects, including Completing the initial Site Characterization Investigation, Completing Remedial Investigations and Feasibility studies, Soil Vapor Intrusion Studies, the selection and implementation of Interim Remedial Measures, the development and implementation of Quality Assurance Project Plans, the development and implementation of site specific Health and Safety Plans, participation in Citizen participation activities, implementation of Site Management Plans, and Third Party Oversight.

Mr. Wright has completed a diverse array of site investigations including investigations into groundwater contamination in various media including, overburden, fractured bedrock, and competent bed rock as well as the interaction between different aquifers. Mr. Wright has used investigation data to develop conceptual site models, including groundwater flow and contaminant transport, the completion of Aquifer testing to establish aquifer characteristics, the implementation of geophysical techniques and the uploading of data to EQuIS. In addition to completing investigatory step during projects Mr. Wright develops and tracks project budgets and other project management elements. Mr. Wright has provided these services on a number of projects for governmental, municipal, commercial and industrial clients.

Mr. Wright's areas of expertise include Site Characterizations and Remedial Investigations. Mr. Wright specializes in the investigation of contaminated groundwater plumes, including source area investigations, plume degree and extent and the identification of potential receptors of contaminated groundwater.

NSPE LEVEL

VI

EDUCATION

- BS, Water Resources, State University of New York Collage at Oneonta, 2003

PROFESSIONAL REGISTRATIONS/ CERTIFICATIONS

- PG, #693, NY
- Certified Safety Professional (#31227)
- Certified Hazardous Materials Manager (#173260)

PROFESSIONAL ORGANIZATIONS

- Environmental Professionals Organization of Connecticut
- National Ground Water Association

TRAINING

- OSHA 40 Hour Health and Safety for Hazardous Waste Site
- OSHA 8 Hour Supervisor of Hazardous Waste Operation
-

BASE OFFICE LOCATION

Clifton Park, NY

EXPERIENCE

MANAGEMENT OF INACTIVE HAZARDOUS WASTE, HAZARDOUS SUBSTANCE AND PETROLEUM SPILL SITES

Site Management of Petroleum Spill and Hazardous Waste Site, NYSDEC Contract D006130, North Lawrence Oil Dump Site, North Lawrence, NY

Served as a Senior Project Geologist for the NYSDEC North Lawrence Oil Dump Site. Responsibilities included implementation of the Site Management Plan, including monitored natural attenuation groundwater sampling, landfill gas monitoring and site inspections; the development of sampling reduction plans to eliminate several wells from the sampling program, oversight groundwater monitoring well decommissioning for a portion of the groundwater monitoring network. Analysis of groundwater sampling results and preparation of Periodic Review Reports. Services were completed in 2015.

Site Characterization of Petroleum Spill and Hazardous Waste Site, NYSOGS Contract SA 953, Fishkill Correctional Facility, Beacon, NY

Mr. Wright served as a Project Manager for this NYSOGS project to conduct an environmental sampling program during the development of the bid documents for the replacement of three 100,000 gallon AST at the boiler house of the correctional facility. Responsibilities included working with NYSOGS Project Managers on the development of a Site Characterization Plan, coordination with DOCs personnel to clear security requirements, oversight of the use of ground penetrating radar prior to initiating a soil boring program, field oversight of the installation of soil borings to identify areas of environmental impact from the historic use of the area as a tank farm, and the use of lead based paint on the system pipiing, identifying areas of lead paint using XRF equipment and collecting samples of building materials for the presence of PCBs. Information collected during the site characterization was used define the volumes of soil to be removed during the replacement of three 100,000 gallon AST at the boiler house of the correctional facility.

Site Characterization of Petroleum Spill and Hazardous Waste Site, NYSOGS, Contract SA 953, Otisville Correctional Facility, Building 165, Otisville, NY

Mr. Wright served as a Project Manager for this NYSOGS project to conduct a Site Characterization, in accordance with DER-10, during removal of a 1,000 gallon UST at building 165 of the correctional facility. Responsibilities included budget and scope development, field oversight of UST contractors conducting the removal, screening environmental media uncovered during the removal to identify a release of product to the environment, spill reporting, coordination with OGS field Engineer to approve and execute an immediate environmental remedial excavation, collection of environmental samples in coordination with OGS field Engineers and NYSDEC Spill Engineers, with NYSDEC requirements, completion of UST closure report, including request to close the spill, follow-up with NYSDEC to ensure spill was closed meeting standards.

Site Characterization of Petroleum Spill and Hazardous Waste Site, NYSOGS, Contract SA 953, DOT Region 9 Maintenance Sub-Headquarters, Schenevus, NY

Mr. Wright served as a Project Manager for this NYSOGS project to conduct a Site Characterization, in accordance with DER-10 during removal of a 1,000 and a 4,000 gallon UST at the DOT facility. Responsibilities, budget and scope development, field oversight of UST contractors conducting the removal, screening environmental media uncovered during the removal to identify a release of product to the environment, spill reporting, coordination with OGS field Engineer to approve and execute an immediate environmental remedial excavation, coordination with UST contractors to segregate and stockpile impacted soils, Coordination with OGS project Engineer and DEC spill manager to secure approval for onsite treatment and reuse of contaminated soil, collection of environmental samples in accordance with NYSDEC requirements, completion of UST closure report, including request to close the spill, follow-up with NYSDEC to ensure spill was closed meeting standards.

Aquifer Testing in support of Groundwater Withdrawal Permit, Kraft Foods, Campbell, NY

Served as Project Manager for the completion of an aquifer testing program in support of a Groundwater Withdrawal Permit approval from the Susquehanna River Basin Commission, Responsibilities included development of Aquifer Test Plan, obtaining general permit from the ACOE for weir construction, planning and oversight of installation of monitoring well network, public notifications for testing, coordination with neighboring property owners to conduct monitoring on their property, data collection, data analysis, including the calculating of aquifer flow parameters and long term stability of the proposed water withdrawal as well as permit form completion and submittal.

Emerging Contaminants Sampling, Balchem Corporation, Slate Hill, NY

Served as a Project Manager for the development and implementation of a emerging contaminates sampling program at a Class 04 State Superfund Program Site. Responsibilities included reviewing historic data to create a sampling plan for PFAS and 1,4-dioxane in the two groundwater aquifers on-site, submittal of the plan to the NYSDEC project manager for approval,

EXPERIENCE

development of a field sampling plan and training program to ensure that cross contamination was avoided during sampling, oversight of the sampling program and data analysis and reporting. Services were completed in 2018.

Site Management, Phased Remedial Investigation/Feasibility Study of Petroleum Spill and Hazardous Waste Site, Brownfields Site, Ulster County, NY

Served as a Project Manager for the completion of a Remedial Investigation/Feasibility Study and site management of a brownfield clean-up program of an inactive waste disposal site in Ulster County, NY. Project responsibilities included working under the supervision of the NYSDEC Project Manager to review historical data and using that data to aide in the development of a Remedial Investigation strategy, development of a field activities plan, development of a site specific health and safety plan, and coordination with the NYSDOH, NYSDEC and site owners to identify and investigate all potential receptors of subsurface contamination in the area that could impact human health and the environment. Specialized tasks performed during the investigation include: Interpretation of Ground Penetrating Radar (GPR) Electromagnetic Survey(EM) data to identify the location of subsurface anomalies indicative of disposal areas, Completion of soil vapor intrusion evaluation, including the evaluation of sampling network based on interpretation of geologic data, the use of passive gas sample network, and evaluation of passive soil gas data to identify potential groundwater contamination source areas, oversight of test pit installation in order to horizontally delineate subsurface contamination. oversight of soil boring installation to delineate contamination horizontally and vertically, the installation and sampling of a monitoring well network, the development of remedial alternatives, and the development and implementation of ad Site management Plan for the selected remedial strategy of monitored natural attenuation.

Site Characterization of Petroleum Spill and Hazardous Waste Site, NYSDEC Contract D006130 Site Characterization McCall Place, Newburgh, NY

Served as a Senior Project Geologist for the Site Characterization completed at the NYSDEC McCall Place Site. The Site Characterization was completed to identify the source of chlorinated solvents detected in private drinking water wells located along McCall Place. Proect responsibilities included working with NYSDEC Project Manager to review historical data and using that data to aide in the development of a Site Characterization strategy, development of a field activities plan, development of a site specific health and safety plan, and coordination with the NYSDOH, NYSDEC and area residents to identify and investigate all potential receptors of subsurface contamination in the area that could impact human health and the environment. Specialized tasks performed during the investigation include: The use of passive soil gas sampling and ground penetrating radar to identify potential hazardous waste disposal areas; the planning and oversight of the installation of an area wide groundwater monitoring well network, interpretation of groundwater flow and contaminant concentration data development and maintenance of conceptual site model, and the upload of project data to the NYSDEC EQuIS sever. The results of the site characterization identify three distinct plumes of chlorinated solvents in the area of the site, however a specific source area could not be identified.

Phased Remedial Investigation/Feasibility Study, Site Response Activities/Interim Remedial Measures of Petroleum Spill and Hazardous Waste Site, NYSDEC Contract D006130, Barthelmes Manufacturing Site, Rochester, NY

Served as a Senior Project Geologist for the Remedial Investigation/Feasibility Study, including Interim Remedial Measures, completed at the NYSDEC Barthelmes Manufacturing Site. The Remedial Investigation/Feasibility Study was completed to define the degree and extent of subsurface contamination related to the historic use of the site as a manufacturing facility. Project responsibilities included working with NYSDEC Project Manager to review historical data and using that data to aide in the development of a Remedial Investigation strategy, development of a field activities plan, development of a site specific health and safety plan, and coordination with the NYSDOH, NYSDEC and site owners to identify and investigate all potential receptors of subsurface contamination in the area that could impact human health and the environment. Specialized tasks performed during the investigation include: the completion of an Interim Remedial Measure to remove source material contributing to a chlorinated solvent groundwater plume. The IRM consisted of the removal of soil from under the slab on grade foundation of the building. Other task included the evaluation of an existing groundwater monitoring well network, planning and oversight of the installation additional groundwater monitoring wells to supplement the existing monitoring well network, interpretation of groundwater flow and contaminant concentration data, development and maintenance of conceptual site model to identify the source and potential receptors of subsurface contamination including evaluating hydrogeologic conditions for use in the evaluation of potential remedial actions, and the upload of project data to the NYSDEC EQuIS sever.