Air Force Research Laboratory
Griffiss Business and Technology Park
Rome, Oneida County, New York

Main Site Inspection
Project NR: ULDF20187102

Work Plan

Prepared for:

Air Force Research Laboratory

150 Electronic Parkway
Rome, New York 13441

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February 2019

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

AF	Air Force
AFB	Air Force Base
AFRL	Air Force Research Laboratory
AFBRAC	Air Force Base Realignment and Closure
AOC	Area of Concern
AOI	Area of Interest
ARAR	Applicable or Relevant and Appropriate Requirement
AOI	Area of Interest
AST	Aboveground Storage Tank
CFR	Code of Federal Regulations
CERCLA	Comprehensive Environmental Recovery and Liability Act
CSM	Conceptual Site Model
DER	Division of Environmental Remediation
DUSR	Data Usability Summary Report
EA	Environmental Assessment
EBS	Environmental Baseline Survey
EIS	Environmental Impact Statement
ELAP	Environmental Laboratory Approval Program
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
GAFB	Griffiss Air Force Base
GBTP	Griffiss Business and Technology Park
HASP	Health and Safety Plan
MOA	Memorandum of Agreement
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PA/SI	Preliminary Assessment/Site Investigation
PID	Photoionization Detector
PCB	Polychlorinated Biphenyl
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
RI/FS	Remedial Investigation/Feasibility Study
SPDES	State Pollution Discharge Elimination System
SVOC	Semi-Volatile Organic Compounds
SARA	Superfund Amendments and Reauthorization Act (1986)
SAP	Sampling and Analysis Plan
TPH	Total Petroleum Hydrocarbons
USAF	United States Air Force
USC	United States Code
USGS	U.S. Geological Survey

UST	Underground Storage Tank
VOC	Volatile Organic Compounds

1.0 Introduction

Lu Engineers has prepared this Site Inspection (SI) Work Plan on behalf of the United States Air Force (USAF) Research Laboratory (AFRL) to attain regulatory compliance at Rome Research Site, Main Site (150 Electronic Parkway). Figure 1 provides the Site Location and Figure 2 shows the location of each building. The work discussed herein will be completed in accordance with 40 Code of Federal Regulations (CFR) 300.430 *Remedial Investigation* and U.S. Environmental Protection Agency (EPA) *Guidance for Conducting Remedial Investigations and Feasibility Studies* under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by Superfund Amendments and Reauthorization Act of 1986 (SARA) and the National Oil and Hazardous Substances Contingency Plan (NCP).

The SI will be completed in coordination with the New York State Department of Environmental Conservation (NYSDEC) and with oversight by the USAF. Project activities will follow the procedures established by the NYSDEC Division of Environmental Remediation (DER)-10 including 6 New York Codes, Rules and Regulations (6 NYCRR Parts 375 and 703 and Commissioner Policy (CP)-51) as well as applicable federal protocols as required by the USAF.

The objective of the SI is to characterize 14 Areas of Concern (AOCs) selected from previously completed Environmental Baseline Surveys (EBS) by Lu Engineers. Based upon prior assessments, these AOCs were determined to require additional investigation. The SI will either confirm the presence or absence of impacted material and potential for migration of constituents of concern. AOCs identified with constituents in exceedance of applicable standards will be remediated in accordance with an approved plan. Findings will assist in determining whether a Remedial Investigation (RI), Removal Action (RA) or a No Further Action (NFA) decision is appropriate at each AOC.

An EBS was previously completed by Lu Engineers for AFRL-owned Griffiss Business and Technology Park (GBTP), formerly Griffiss Air Force Base (EBS Lu Engineer, 2014). The EBS was prepared to assist AFRL in documenting the physical condition of AFRL buildings relating to suspected past storage, use, distribution, and disposal of hazardous substances, petroleum products, and associated derivatives over the property's history. The EBS report classified discrete areas of AFRL and adjacent buildings/parcels into one (1) of seven (7) categories prescribed by the Air Force Instruction (AFI) 32-7066 (as amended in January 2015) which include the following:

Category 1 – An area or real property where no storage, release, or disposal of hazardous substances or petroleum products or their derivatives has occurred into the environment or structures or disposed on the subject property (including no migration of these substances from adjacent properties).

Category 2 – An area or real property where only the release or disposal of petroleum products or their derivatives has occurred.

Category 3 – An area or real property where release, disposal, or migration or some combination thereof, of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action.

Category 4 – An area or real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred, and all remedial actions necessary to protect human health and the environment have been taken.

Category 5 – An area or real property where release, disposal, or migration, or some combination thereof, of hazardous substances has occurred and removal or remedial actions or both, are under way, but all required actions have not yet been taken.

Category 6 – An area or real property where release, disposal, or migration or some combination thereof, of hazardous substances has occurred, but required response actions have not yet been initiated.

Category 7 – An area or real property that is unevaluated or requires additional evaluation.

Properties in Categories 1 through 4 are considered to be suitable for transfer by deed. Property in Categories 5 through 7 would be unsuitable for transfer by deed until necessary actions have been completed and the property has been reclassified into one (1) of the first four (4) categories.

Areas of the property identified by previous investigations were designated as EBS "areas of concerns" (AOCs). These designations facilitated the defining areas potentially requiring further investigation as part of the SI. This work plan is focused on the 14 AOCs listed below:

- AOC-B2-03 Hydraulic Dock Plates
- AOC-B3-04 Exterior Grease Interceptor
- AOC-B3-07 Past Use of B-3 Location
- AOC-B3-13 Former B17- Located Immediately South of B-3
- AOC-B14-09 Metals Burial Site
- AOC-B106-05 Oil/Water Separator #1
- AOC-B106-06 Oil/Water Separator #2
- AOC-B106-09 Storm Drain System, East End
- AOC-B106-11 Suspected Former Emergency Generator Building

- AOC-B115-03 Drywells
- AOC-B116-01 Former B116
- AOC-B118-01 Former B118
- AOC-P3-01 Former B-117 Steam Plant
- AOC-P3-02 Former B-115

The location of each AOC is indicated on Figures 3-6a.

Planned SI efforts are anticipated to include the following: geophysical survey using ground penetrating radar (GPR), limited excavations, soil borings using direct push methods, subsurface soil sampling, and smoke and/or dye testing. Sampling of environmental media will be completed for various constituents, including, but not limited to, analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), petroleum constituents, metals, and polychlorinated biphenyls (PCBs). Analytical data and relevant findings obtained during the SI will be used to: 1) assist in determination of appropriate remedies to address the identified environmental impacts as part of the Remedy Selection; 2) generate a Proposed Plan; and 3) issue a Record of Decision. As part of this project, a No Further Response Action Planned determination is also included as part of attaining Site Closure (SC).

Implementation of the work described herein will result in greater understanding of environmental impacts to surface and subsurface soil and underground utilities associated with the historic use of GBTP.

2.0 Site History and Description

2.1 Site Location

GBTP (formerly GAFB) is located at 150 Electronic Parkway in central Oneida County, approximately 12 miles east of the City of Rome. The location of GBTP is indicated on the Site Location Map (Figure 1) and has a combined area of 3,552 acres. The Building Plan (Figure 2) provides detail on GBTP layout as well as the location of relevant features. This is SI is limited to the property owned by AFRL which is a subset of the GBTP. Land to the north and east of GBTP are predominantly rural and residential in nature. Commercial, industrial and residential land use is generally limited to properties located to the south and west of GBTP.

2.2 Site History

In 1941, the federal government began construction of the Rome Air Depot on approximately 2,488 acres of purchased and donated land, in the area known as Wright Settlement. The Air Depot was officially opened in February of 1942. Over the next six (6) years the facility went through numerous name changes until 1948 when it was permanently named Griffiss Air Force Base (GAFB). Over the next 42 years the base was modified with additions to runways and various support facilities, eventually encompassing 3,552 acres at the time of realignment and closure in 1993.

During its period of active operation, GAFB maintained an extensive system of underground petroleum pipelines called “hydrant fueling systems,” which included various salvage pits and transfer systems. This system was known as the Aqua Pipeline Fueling System. In 1998 and 1999, Air Force Base Conversion Agency (AFBCA) conducted an extensive decommissioning procedure for portions of this system. Follow-up sampling and testing by AFBCA indicated that residual contamination had been appropriately remediated. Specific locations of pipelines, hydrant fueling systems, and salvage pits and transfer systems associated are outlined in the EBS. A description of work conducted and general findings for these systems can be found in the appropriate sections of Table ES-1 of the EBS.

2.3 Previous Site Assessments and Investigations

Lu Engineers reviewed available information regarding the potential for environmental contamination at GBTP including regulatory databases and extensive historic individual EBS reports conducted on select AFRL buildings and parcels.

The following agencies were utilized as sources of information for the previously completed EBS reports:

- The United States Environmental Protection Agency (USEPA)
- National Priorities List (NPL)
- Comprehensive Environmental Response, Compensation, Liability Information System (CERCLIS)
- Resource Conservation and Recovery Information System (RCRIS)
- Toxic Release Inventory System (TRIS)
- Emergency Response Notification System (ERNS)
- Aerometric Information Retrieval System (AIRS)
- Asbestos Contractors Tracking System (ACTS)
- Federal Facility Identification System (FFIS)
- Permits Compliance Systems (PCS)

The most notable finding provided by the USEPA database searches is that the entire GBTP property was previously listed as a NPL Site.

The Environmental and Occupational Health Office (RIOCV) office provided documentation used in the preparation of previous EBSs. Sources of information provided by RIOCV include, historical building plans and maps, property deed and title information, compliance planning documents and related information. Information obtained through this document review has been used and referenced as appropriate throughout this document.

- Inactive Hazardous Waste Sites (IHWS)
- Petroleum and Chemical Bulk Storage (PBS and CBS) facilities

- Leaking Underground Storage Tanks (LUST)
- Spills and Major Oil Storage Facilities (MOSF).

NYSDEC databases were searched beyond the distance specified in ASTM E-1527-13. Based on the information reviewed to date, environmental assessment and investigation projects at the former GAFB have been almost entirely undertaken by the AFBCA. AFRL has generally focused environmental efforts at the GBTP toward compliance issues rather than environmental assessment and investigation.

Previous EBS work was included in the GAFB EBS (presently being updated by AFBCA), and CERCLA Areas of Interest (AOI) studies conducted in 1994 and 1996. A study conducted by the US Army Corps of Engineers (COE) in 1994 was intended to identify AOIs located at GAFB.

The GBTP was first inspected by Lu Engineers in March 2000. Site inspection activities were conducted in accordance with ASTM E1527–00. Exterior areas of individual properties were evaluated for features including, but not limited to the following:

- Pits, ponds or lagoons
- Stained soil or pavement
- Stressed vegetation
- Solid and/or liquid waste(s)
- Waste water
- Wells
- Septic Systems
- Aboveground and underground storage tanks
- Vent or fill pipes
- Chemical storage areas
- Unusual odors
- Fill or borrow areas
- Abnormal wildlife

Findings relating to conditions and features within various structures of AFRL properties include, but are not limited to, the following:

- Heating and cooling systems
- Stains or corrosion
- Petroleum storage
- Stormwater systems
- Sanitary sewer systems
- Suspected hazardous and/or contaminated materials storage or disposal
- Potentially hazardous or otherwise contaminated building materials

- Electrical systems

It is noted that AFRL has not been responsible for evaluating groundwater conditions within the GBTP Site and this SI excludes groundwater evaluation. The Air Force Base Realignment and Closure (AFBRAC) has been completing on-going review and cleanup relative to groundwater contamination at the GBTP facility.

Based upon prior assessments, the 14 AOCs selected as part of this SI were determined to require additional investigation.

3.0 Physical Characteristics

The GBTP is situated in the Mohawk River Valley lowland immediately north of the Allegheny Plateau. The Mohawk River Valley defines the northern edge of Allegheny Plateau. The land surface of the GBTP generally slopes toward the south from the highest elevations along the north and northeast sides of the GBTP. Two (2) hills in the southern section of the GBTP interrupt the overall slope and reach elevations approaching those to the northeast. Elevations range from approximately 450 feet along the southeast portion of GBTP to 600 feet along the northeast perimeter. The highest elevation of the hills to the south is 539 feet. Northeast of the GBTP, elevations rise to over 1,000 feet in the foothills of the Adirondack Mountains. The New York State Barge Canal and the Mohawk River to the south lie below 430 feet.

Surface drainage at the GBTP is dominated by storm sewer systems that direct water to either Three Mile or Six Mile Creek. Both creeks eventually discharge to the New York State Barge Canal. The extreme northern portion of the GBTP drains to the Mohawk River. The extreme southern portion of the GBTP drains directly to the New York State Barge Canal. The GBTP is not located within either the 100 or 500-year floodplain with the exception of the extreme western portion along the Mohawk River.

4.0 Preliminary Conceptual Site Model (CSM)

A preliminary CSM describing the anticipated subsurface conditions, contaminant types, and distribution patterns is presented in this section. The preliminary CSM has been used as the basis for the investigative work described herein, and the data collected during the SI will be used to refine this model as the project progresses and assist in evaluating remedial options for the Site. This preliminary CSM identifies and describes: (1) the known or potential sources of contamination; (2) the types of contaminants and affected media; (3) release mechanisms and potential migration pathways; and (4) actual/potential human health and environmental receptors.

Historically, the Site has been used for various industrial purposes since the 1940s. Potential impacted soil, groundwater, and soil vapor are inferred to be related to past USAF operations.

4.1 Known or Suspected On-Site Sources of Contamination

This CSM is based on findings from previous EBSs (Lu Engineers, 2014). Known or suspected on-Site sources of contamination are likely associated with past Site operations. Former Site operations involved the use of PCBs, petroleum, heavy metals, and solvents (VOCs). It is noted that prior investigation with respect to the AOCs involved in this SI is generally limited to visual inspection and reported historical use.

- AOC-B2-03 Hydraulic Dock Plates: Potential presence of elevated PCB/glycol concentrations.
- AOC-B3-04 Exterior Grease Interceptor: Potential presence of elevated petroleum concentrations.
- AOC-B3-07 Past Use of B-3 Location: Potential presence of elevated PCB concentrations.
- AOC-B3-13 Former B17- Located Immediately South of B3: Potential presence of mercury contamination.
- AOC-B14-09 Metals Burial Site: Contamination Unknown.
- AOC-B106-05 Oil/Water Separator #1: Potential presence of elevated petroleum/PAH concentrations.
- AOC-B106-06 Oil/Water Separator #2: Potential presence of elevated petroleum/PAH concentrations.
- AOC-B106-09 Storm Drain System, East End: Potential presence of elevated concentrations of RCRA metals, ignitability, corrosivity, and reactivity.
- AOC-B106-11 Suspected Former Emergency Generator Building: Potential presence of elevation concentrations of soil vapors and RCRA metals.
- AOC-B115-03 Drywells: Potential for PCB, petroleum, and/or RCRA metals contamination.
- AOC-B116-01 Former B116: Contamination unknown.
- AOC-B118-01 Former B118: Contamination unknown.
- AOC-P3-01 Former B117 Steam Plant: Records indicate known sources of petroleum contamination in the area of Parcel 3 that previously contained B117.

- AOC-P3-02 Former B115: Records indicate the past presence of several features of potential environmental significance associated with B115 including an emergency generator room, a below grade transformer vault, and a solvent storage and transfer system involving (2) 5,000 gallon solvent ASTs.

4.2 Potential Release Mechanisms and Contaminant Migration Pathways

Potential release mechanisms and contaminant migration pathways away from known or suspected source areas may include one (1) or more of the following:

- Volatilization directly from the ground surface into the air;
- Surficial flow across surfaces, possibly enhanced by precipitation events;
- Preferential subsurface migration within subsurface utilities or their bedding materials (including the stormwater/groundwater drainage system associated with the Inner Loop Expressway);
- Migration horizontally and vertically through the overburden soil, fill, bedrock, or groundwater; and/or;
- Migration along impermeable subsurface layers.

4.3 Potential Human Receptors and Environmental Receptors

The Site is currently occupied by GBTP which includes 23 buildings. Therefore, there is the possibility of on-Site human receptors if identified contamination is not adequately addressed. In addition, it is possible that PCE-related and/or petroleum-related VOCs are migrating off-site (most likely in an inferred southerly direction) as a non-aqueous phase liquid (NAPL). Under these scenarios, it is possible that petroleum-related VOCs could impact off-site human receptors in terms of the soil vapor intrusion exposure pathway. GBTP is serviced by public water supply, and groundwater in the area of the Site is not used as a potable source of water. In addition, there is some potential that off-site migration of contaminants could impact environmental and/or human receptors should contaminants enter the combined sewer system located around the Site.

It is noted that during the most recent EBS update (Lu Engineers, 2014), properties surrounding, and in the general vicinity of the Site were inspected for indications of potential environmental significance related to the Site. Visual evaluation focused on the potential presence of industrial facilities, chemical and/or petroleum bulk storage, stained soils and stressed vegetation and other indications of potentially significant past or present activities or operations. No obvious visual indications of apparent concern were identified during this evaluation.

4.4 Nearby Known Off-Site Contamination Sources

General land uses of adjacent properties include commercial and government office buildings, maintenance shops, parking lots, a powerplant, and a commercial distribution center. No information has been obtained to suggest these adjacent properties have

impacted subsurface conditions at the Site. Therefore, off-Site contamination sources are unknown.

5.0 Scope of Work

The objective of the SI is to:

- Characterize environmental conditions;
- Determine the absence or presence of contamination above Unrestricted Use SCOs; and
- Qualitatively estimate the potential exposure to human or environmental receptors through the collection of data.

The rationale for the selected Scope of Work is based on the historical uses and investigations (including previous EBS work) conducted at the selected AOCs to date. Investigation efforts will be closely coordinated with AFRL prior to mobilization and during field activities. AOC locations are shown on the attached Figures 3-6a. Approval will be obtained from applicable parties prior to modification of the Scope of Work presented in this Section.

Groundwater generally flows southward throughout the majority of the GBTP. In accordance with BRAC jurisdiction and as previously stated, AFRL has not been responsible for groundwater quality determination or investigation at the present time; therefore, groundwater evaluation is not included as part of this SI.

5.1 Planned Field Activities

A Site Inspection will be completed to characterize environmental conditions, determine the absence of presence of contamination, and estimate the risk of human health and environment at 14 AOCs. These tasks will be completed through the collection of quantitative and qualitative data, including environmental samples.

Material will be sampled and waste characterized, as necessary, from each AOC. Sampling will be conducted in accordance with the Sampling and Analysis Plan (SAP). The SAP discusses sampling activities and how they are designed to achieve data quality objectives. Refer to Section 5.4.2. Sample locations will be documented on Site layout plans in ArcGIS®.

5.2 Documentation

Field sampling activities will be documented in a field book and/or documentation logs. Documentation will be provided in electronic format with the Site Inspection Report.

5.3 Site Preparation and Security

The SI will be observed by environmental professionals possessing the appropriate level of knowledge and experience. The selected subcontractor will be responsible for coordinating a utility stakeout for identification and clearance of utilities prior to

commencement of work. Access to work areas will be limited to staff, workers, and pertinent agencies involved with the project only. The public will not be permitted to enter within the work area.

5.4 Governing Documents

5.4.1 Health and Safety Plan (HASP)

A project specific Health and Safety Plan (HASP) was developed pursuant to applicable general industry and construction standards of the Federal Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, as well as any other Federal State or local applicable statues or regulations. The HASP is included as Appendix A of this work plan.

Monitoring of the work area and screening of subsurface material will be conducted throughout the duration of field activities to assure the safety of on-Site workers. Air monitoring of the work areas and environmental media therein will be conducted using a MiniRAE 3000® Photoionization Detector (PID) equipped with a 10.2 eV lamp (or equivalent). If necessary, dust/particulate monitors will be used during intrusive activities in accordance with the New York State Department of Health (NYSDOH) guidelines (Appendix 1A NYSDOH Generic Community Air Monitoring Plan), provided in Appendix B.

5.4.2 Sampling and Analysis Plan (SAP)

All monitoring and sampling activities will be completed in accordance with the approved Sampling and Analysis Plan (SAP) included in Appendix C. The SAP describes assurance/quality control activities designed to achieve the project data quality objectives.

Samples will be obtained, handled and characterized in accordance with applicable methods including NYSDEC Analytical Services Protocol methods. Once obtained, samples will be immediately labeled and stored on ice in a cooler. Analytical work will be performed by a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-accredited laboratory.

Vali-Data of WNY or an equivalent qualified company will prepare Data Usability Summary Reports (DUSR) in accordance with the provisions set forth in Appendix 2B of the NYSDEC “DER-10 Technical Guidance for Site inspection and Remediation” dated May 2010. The findings of the DUSR(s) will be incorporated in analytical laboratory tables that will be included in the SI Report and other associated reports as applicable. An Environmental Resources Program Information Management System (ERPIMS) Data submission and NYSDEC EQuIS data repository will be completed.

A SAP for this project has been created as a separate document and is included as Appendix C.

5.5 AOCs

The following subsections describe the AOCs part of this SI and associated scope of work. Direct-push Geoprobe depths of 12' bgs were selected based upon general depth at which groundwater is encountered at GBTP.

5.5.1 AOC-B2-03 Hydraulic Dock Plates

This AOC consists of three (3) plates located in a loading dock along the west side of the west wing on the exterior of the building. The system was previously inaccessible for inspection, however, partial inspection of the southern-most unit indicated the presence of a hydraulic cylinder, below floor grade. Staining was also observed beneath the inspected system. Prior uses involved the application of polychlorinated biphenyls (PCBs).

An investigation of the masonry and soils beneath the dock plate systems for PCBs and total petroleum hydrocarbons (TPH) will be completed. Eight (8) soil samples will be collected for PCB and TPH analysis.

5.5.2 AOC-B3-04 Exterior Grease Interceptor

A rectangular manhole labeled "grease interceptor" was observed approximately ten feet north of the staircase at the southwest corner of the building and 2.5 feet west of the B-3 west wall. Plan review indicates the presence of an "oil separator" at this location in 1954. Plan review also indicated that this unit was linked to floor drains in a paint shop formerly located on the west side of B-3, adjacent to the interceptor.

The interceptor is partitioned in the center. The western half of the unit contained an unknown volume of a black liquid with the appearance of oil. The eastern half contained approximately one inch of what appeared to be water overlying an unknown volume of sediment. No elevated PID readings or unusual odors were observed within the interceptor.

Direct-push sampling to a depth of approximately 12 feet below ground surface (bgs) will be completed. The direct-push equipment will be advanced through asphalt and/or lawn. Three (3) soil samples will be collected for analysis of PCBs, RCRA metals, and VOCs.

5.5.3 AOC-B3-07 Past Use of B3 Location

Research conducted to date indicates that the area currently occupied by B3 formerly included a variety of uses with the potential to impact environmental conditions. Past activities and facilities indicated on record plans and aerial photographs reviewed to date include:

- A Salvage Warehouse located at the west side of the present building until approximately 1955. This finding is documented in the AFBCA's current EBS as "OTH-003-01" and is considered to be a Category 3 issue based on existing information.

- A Salvage Yard which is occupied now as the central portion of B3 until approximately 1955. This finding is also documented as "OTH-003-01" in the AFBCA's current EBS, and is also considered to be a Category 3 finding.

- An Aircraft Reclamation building was located north of the present north wall of the building until approximately 1957. This finding is documented in the AFBCA's current EBS as "OTH-0003-02" and is considered to be a Category 3 issue based on existing information.

- A Chemical Storage Warehouse (T-15) was located within the property now occupied by the southern area of B3 until approximately 1957. This finding is documented as "OTH-003-03" in the AFBCA's current EBS and is considered to be a Category 3 issue based on existing information.

- Acid and solvent storage, use and disposal occurred prior to 1984 within, and in the vicinity of, room numbers 97 and 98 on the east side of B3. A dry well designated by AFBCA as "DRY-003-02" was removed from the property adjacent to the outside wall of room number 97. Remediation of affected soils was conducted under the IRP (DP-11) and DRY-003 is considered to be a Category 3 finding in the current AFBCA EBS.

- An "Engineering Maintenance Shop" was located at the northeast corner of the present building until approximately 1955. No information has been found that describes environmental investigation of this specific area. No prior environmental designation has been assigned to this finding.

- A chemical sink was formerly located at the south wall of the present High Bay in B3 at the south side of the current location of the anechoic chamber.

The AFBCA conducted investigations to characterize environmental conditions associated with several of the former uses described above. These investigations have not been intended to evaluate conditions beneath the B3 floor slab. Documentation of investigation and removal actions conducted by AFBCA in the area of B3 generally indicates the presence of relatively low-level residual soil and groundwater contamination. The fact that much of the environmentally significant past use of the property occupied by B3 occurred beneath the existing building footprint indicates that higher levels of contamination may be present beneath the floor of B3.

An evaluation of subsurface features for the presence of environmental impacts will be performed. This will be completed through the following activities:

- Grid-based soil sampling program
- Passive Soil Vapor Survey (PSVS) of B3; a total of 25 PSVS sample systems will be completed for analysis of VOCs.
- Direct-push method to sample soil to 12 feet bgs in 10 locations based off findings of PSVS.
- Collection of 10 subsurface soil samples for analysis of VOCs and RCRA metals.

5.5.4 AOC-B3-13 Former B17- Located Immediately South of B3

Former uses of this AOC included a "Supply Box Shop", "Depot Woodworking Shop," and "Woodworking/Arts and Crafts Shop." A boiler room with a coal storage area was located at this AOC. This building was demolished in 1988.

Direct-push subsurface sampling to a depth of approximately 12 feet bgs through asphalt and/or lawn will be completed at this AOC. Five (5) soil samples will be analyzed for petroleum constituents and RCRA metals.

5.5.5 AOC-B14-09 Metals Burial Site

AOC-B14-09 is located adjacent to B14, north of Donaldson Road. This AOC consist of a grass field/hill with areas of exposed buried metal. Reportedly, this AOC was used as a landfill in the 1950s for metals, including copper and lead ingots and wire. Additional investigation at this AOC is necessary. Potentially impacted material included soil and groundwater.

An inspection and direct-push sampling to a depth of 12 feet bgs through asphalt and/or lawn will be completed. An estimated five (5) subsurface soil samples will be collected and analyzed for RCRA metals.

5.5.6 AOC-B106-05 Oil/Water Separator #1

A manhole containing what appeared to be an oil/water separator was found to be located in the parking area located immediately east of Room #A137, on the north side of B106. Plan review confirmed the presence of an "oil interceptor" in this location. The circular cover on this manhole was lifted for inspection. Piping was observed in the manhole which confirms its use as an oil/water separator. Plan review conducted to date has not indicated the drainage connections associated with this feature. Water was present in this structure; however, the total volume of water retained could not be determined. The water appeared to be slightly greenish in color. No elevated PID readings or indications of the presence of oil were noted. Based on the location of this oil/water separator, it is assumed that it may have been related to the former use of Room #A127 as a sand blasting shop associated with AOC-B106-12.

Further evaluation of this AOC will be completed through direct-push sampling to a depth of approximately 12 feet bgs through the building floor. Subsurface soils samples will be collected for VOCs, RCRA metals, and PCBs. Excavation through the floor as well

as smoke/dye testing may be completed if determined necessary to confirm subsurface connections.

5.5.7 AOC-B106-06 Oil/Water Separator #2

Record plans dating from 1943 indicate the presence of an oil/water separator, labeled as "oil interceptor" located immediately north of the northwest corner of the east wing of the building. Plans indicate that this unit was linked to the site sanitary sewer system and received waste water from a floor drain measuring 2-feet by 2-feet. According to the plans, this floor drain was located beneath the floor of Room #W162 at the west end of the east wing. Plans reviewed to date do not indicate the closure of this unit, but the manhole access indicated on the plan was not visible during the site inspection. It is possible that the separator has been paved over.

Without further information regarding the past use, condition and contents associated with this oil/water separator, the possibility of past discharge of contaminants into the subsurface at this location cannot be assessed.

Further evaluation at this AOC involves sampling and analysis for RCRA metals, ignitability, reactivity/corrosivity to determine the presence of impacted materials. This will be completed through direct-push sampling to a depth of approximately 12 feet bgs through the building floor. An estimated three (3) soil samples will be collected for VOCs, RCRA metals, and PCBs and smoke testing may be performed to verify subsurface connections.

5.5.8 AOC-B106-09 Storm Drain System, East End

Site inspections and review of record plans indicate that the storm drain system located at the east end of B-106 receives water from within B-112, located approximately 75 feet to the east. Environmental contamination including various hazardous wastes and PCBs have been identified with respect to B-112. Although the majority of these problems have been assessed and/or cleaned up, the possibility of residual contamination associated with the storm sewer system shared by B-112 and B-106 has not been assessed.

The possible presence of contaminated liquids and/or sediment in the storm sewer at the east end of B-106 has not been evaluated.

Inspection and completion of direct-push sampling to a depth of approximately 12 feet bgs through the asphalt and/or lawn will be completed. To verify connections, smoke/dye testing may be utilized. Samples may be analyzed for VOCs, PCBs, and RCRA metals.

5.5.9 AOC-B106-11 Suspected Emergency Generator Building

Site inspection and plan review has indicated the presence of what appears to be the former location of an emergency generator shed. This shed was located on the east wall of B-106 adjacent to the radar antenna structure at the southeast corner of the building. The concrete pad foundation of this structure remains in place. No confirmation of the past use of this structure as an emergency generator shed has been found other than a plan dated 1951. This plan includes an unnamed structure situated on the present concrete pad. The structure included a flue approximately 3 inches in diameter that extended approximately 10 feet above the former roof line. No indication of past or present petroleum storage has been identified with respect to this structure.

No assessment has been conducted as to the potential presence of petroleum tanks or contamination resulting from possible past bulk storage in this area of the property.

Further evaluation of this AOC will involve the use of GPR to identify subsurface features including underground storage tanks (USTs). Direct-push sampling (an estimated four (4) samples) to a depth of 12 feet bgs may also be completed for subsurface soil analysis of VOCs and PCBs.

5.5.10 AOC-B115-03 Drywells

Review of record plans indicates the presence of a drywell located within Parcel 3 at the southeast corner of the former B-115. The past use in the area of this drywell for activities that may have involved handling, storage and/or use of hazardous materials indicates the potential for residual environmental contamination. Plans indicate that the drywell was connected to a floor drain located in the below-grade transformer vault that was formerly located in this area. No records detailing the construction of this drywell have been found. Inspection did not indicate the presence of a drywell or other drainage feature at the specified location. This feature does not appear to have been a subject of research or investigation by AFBCA.

Further evaluation of this AOC will involve direct-push sampling to a depth of approximately 12 feet bgs. Six (6) subsurface soil samples will be analyzed for VOCs, RCRA metals, and PCBs.

5.5.11 AOC-B116-01 Former B116

Review of record plans and aerial photographs indicates the former presence of B-116, located to the southeast of the east wing of B-106. The Griffiss AFB Historic Real Property Inventory indicates that this building was used as a “Maintenance Building (Aircraft Hangar)”, “Aircraft Field Maintenance Hangar” and “Supply and Issue Shop/Comm. and Electric Shop/Aircraft General Purpose Shop”. The building was apparently demolished in 1973. The former building location is currently a paved parking area. No plans detailing drainage features or interior facilities at the former B-

116 have been found. This building does not appear to have been a subject of research or investigation by AFBCA.

The past use of this portion of Parcel 3 for activities that commonly involve handling, storage and use of hazardous materials indicates the potential for residual environmental contamination.

Evaluation of this AOC will involve direct-push sampling to a depth of approximately 12 feet bgs. Six (6) subsurface soil samples will be analyzed for VOCs, RCRA metals, and PCBs.

5.5.12 AOC-B118-01 Former B118

Review of record plans and aerial photographs indicates the former presence of B-118, located to the south of B-105. The Griffiss AFB Historic Real Property Inventory indicates that this building was used as a "Medical Dispensary", "Dispensary" and "Administrative Office". The building was apparently demolished in 1973. The former building location is currently a paved parking area. No plans detailing drainage features or interior facilities at the former B-118 have been found. This building does not appear to have been a subject of research or investigation by AFBCA. The past use of this portion of Parcel 3 for activities that may have involved handling, storage and/or use of hazardous materials indicates the potential for residual environmental contamination.

Evaluation of this AOC will involve direct-push sampling to a depth of approximately 12 feet bgs. A total of three (3) subsurface soil samples will be evaluated for VOCs and RCRA metals.

5.5.13 AOC-P3-01 Former B117 Steam Plant

Past EBSs and investigations have indicated several sources of subsurface petroleum contamination in the area of Parcel 3 that previously contained B117. This building was an oil-fired steam plant that included a total of two (2) 25,000-gallon heavy weight fuel oil USTs (UST-117-01 and 02). The USTs were reportedly removed in 1988. This area has been designated as an Installation Restoration Program (IRP) Site # ST-39. Remediation and investigation have been conducted under project # JREZ 95-7050 for this property. Review of aerial photographs and record plans has also confirmed the presence of the B-117 steam plant from 1943 until its demolition in 1988.

Further evaluation of this AOC will involve direct-push sampling to a depth of 12 feet bgs for collection of six (6) subsurface samples for analysis of PCBs and petroleum constituents. The purpose of this evaluation is to verify conditions associated with past remedial efforts.

5.5.14 AOC-P3-02 Former B115

Review of record plans and aerial photographs has indicated the former presence of B115, located to the north of B2, on the north side of Brooks Road. The Griffiss AFB Historic Real Property Inventory indicates that former uses of this building included an "Engine Storage", "Base Warehouse" and "Depot Logistical Facility". The building was apparently demolished in 1996. The former building location is currently a roughly graded lawn. Record plans indicate the past presence of several features of potential environmental significance associated with B-115 including:

- an emergency generator room located at the north end of the building
- a below-grade transformer vault located on the east side of the building
- a solvent storage and transfer system involving two 5,000-gallon solvent ASTs (AST-115-01 and 02) and underground piping located on the east side of the building

The past presence of the solvent system at B115 is documented as AOI 78 and is considered to be a Category 1 issue in the current AFBCA EBS. Information provided by AFBCA indicates that no further study of the solvent system was considered to be necessary since the ASTs were apparently removed prior to 1955 and there is no record of spills having occurred relating to this system. No information has been found relating to research or investigation of the former presence of the emergency generator room or underground transformer vault associated with the former B115. Evaluation of this AOC will include direct-push sampling to a depth of 12 feet bgs for collection of six (6) subsurface samples and analysis of VOCs, RCRA metals, and PCBs.

6.0 Investigation-Derived Waste Plan

Refer to the SAP (Appendix C).

7.0 Site Inspection Report

Once the contract laboratory has provided all analytical data and all information has been evaluated, Lu Engineers will develop a Site Inspection Report based on the findings of the inspection activities.

The report will document investigative activities and analytical results and will be supplemented with field notes, subsurface soil logs and cross sections, and area plans. Findings will assist in determining whether a Remedial Investigation (RI), Removal Action (RA) or a No Further Action (NFA) decision is appropriate at each AOC; future re-use of the Site will be considered. Site specific contaminant levels will be compared to 6NYCRR Part 375-6.8 Remedial Program Soil Cleanup Objectives.

8.0 Project Organization

The personnel for this project are anticipated as follows:

Jaclyn Holbritter, AFRL	Contracting Office Representative
Andrew Salisbury, AFCEC/CZOE	Remedial Project Manager
Greg Andrus, Lu Engineers	Project Director/Manager/Geologist
Steve Campbell, Lu Engineers	Quality Assurance Officer

Subcontractors

Paradigm Environmental	Analytical Laboratory
Trec Environmental, Inc	Geoprobe® Contractor
TBD	Alternate Excavation Contractor
ValiData of WNY	Data Validation

9.0 Schedule

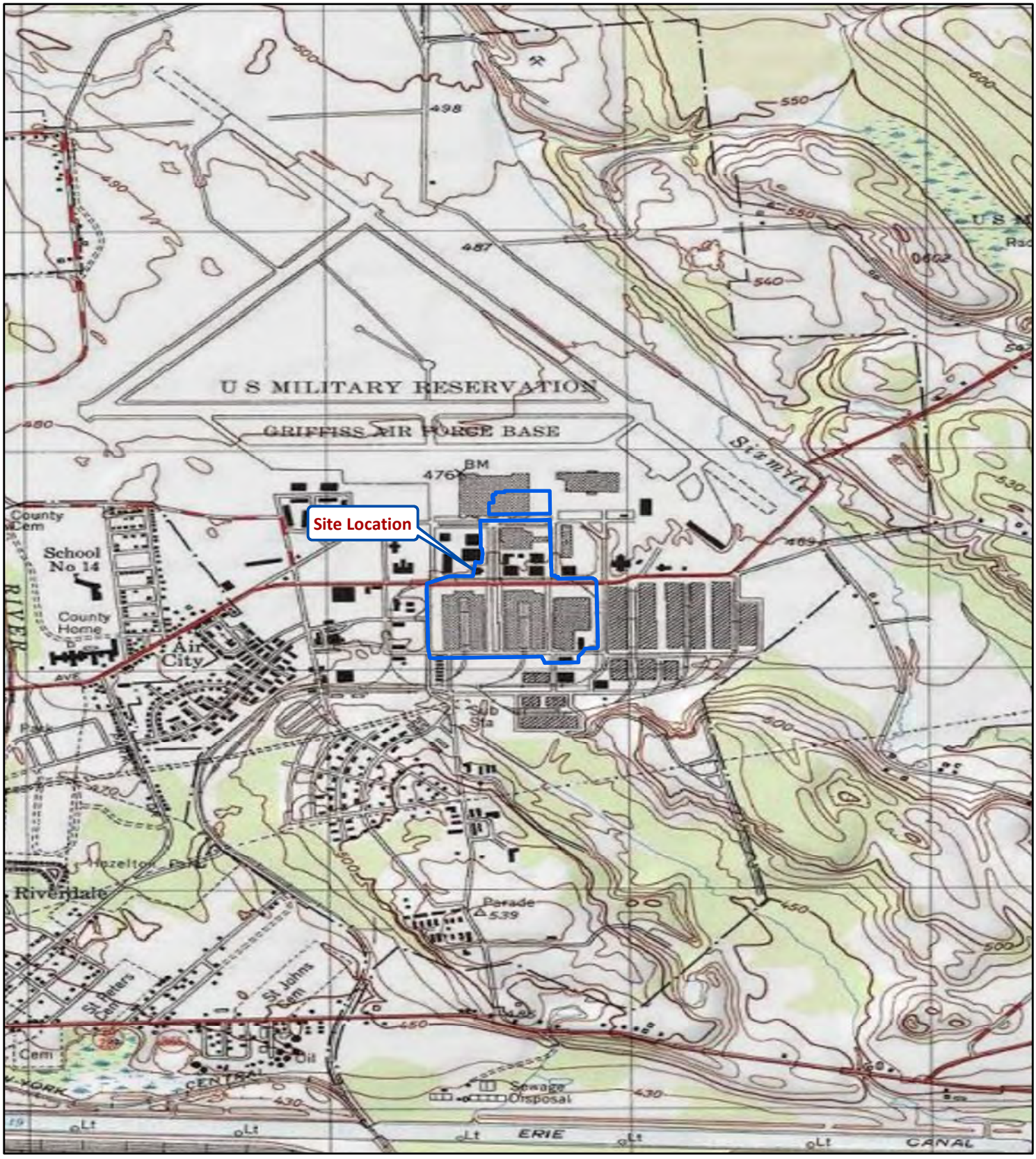
It is assumed that review and approval of this work plan will be completed in January 2019. Field work will commence on or about February 2019. Field activities and laboratory analysis will require an estimated three (3) months to complete. The SI Report will be submitted for review 30 calendar days from receipt of all validated analytical.

10.0 References

Guidance for Performing Site Inspections Under CERCLA, Interim Final. September 1992. Hazardous Site Evaluation Division. Office of Solid Waste and Emergency Response. U.S. Environmental Protection Agency, Washington, DC

Environmental Baseline Survey for Rome Research Site Griffiss Business and Technology Park. Lu Engineers. December 2014.

Figures



Scale 1:24,000

Contour Interval: 10 feet

1,000 0 1,000 2,000 3,000 4,000

Feet

N

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FIGURE 1. SITE LOCATION PLAN
Air Force Research Lab
Rome, NY

DATE: February 2019
PROJECT #: 13124-15
DRAWN/CHECKED: BGS/GLA
DATA SOURCE: ESRI online basemap

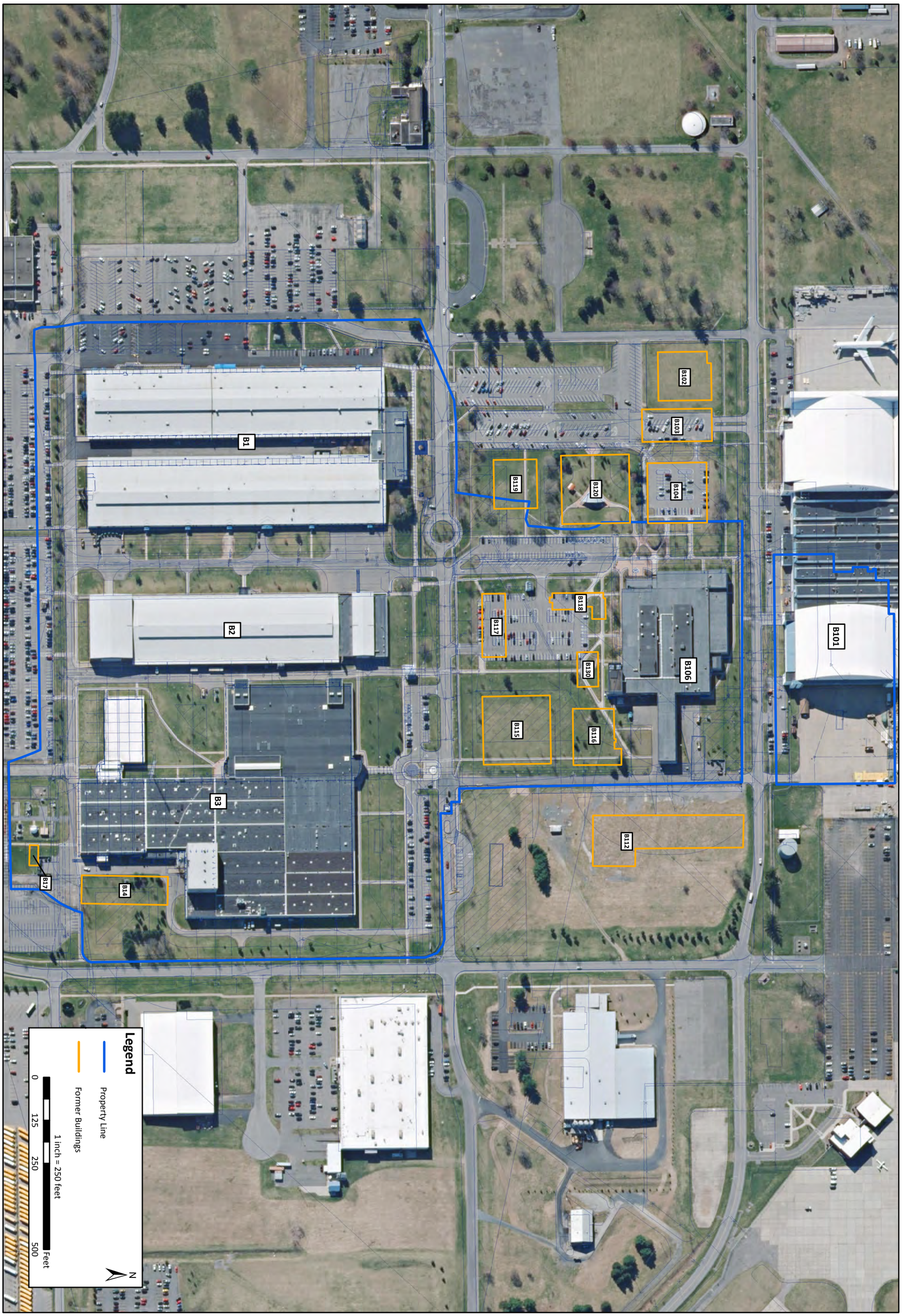

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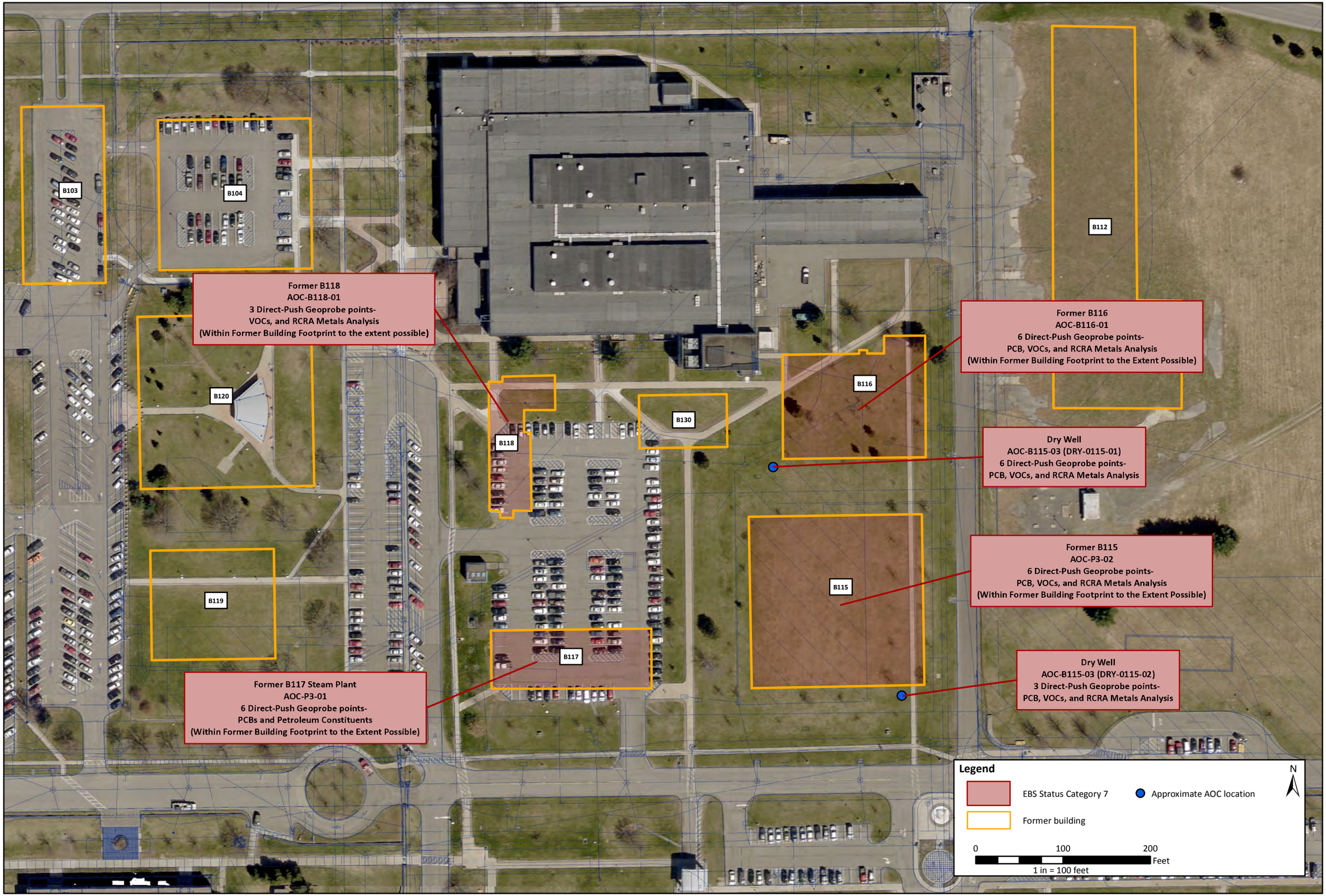
FIGURE 2. AFRL BUILDING LOCATION PLAN
Air Force Research Laboratory
Rome, NY

DATE: February 2019
Project Number: 13124-15
DRAWN/CHECKED: BGS/GLA
DATA SOURCE: ESRI Online



DATE: February 2019
Project Number: 13124-15
DRAWN/CHECKED: BGS/GLA
DATA SOURCE: Pictometry

FIGURE 3. BUILDING 115, 116, 118, & PARCEL 3 AOCs
Air Force Research Laboratory
Rome, NY

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Oil Water Separator #1
AOC-B106-05 (OWS-B106-01)
3 Direct-Push Geoprobe points-
PCB, VOCs, and RCRA Metals Analysis

Oil Water Separator #2
AOC-B106-06 (OWS-B106-02)
3 Direct-Push Geoprobe points-
PCB, VOCs, and RCRA Metals Analysis

Storm Drain Systems East End
AOC-B106-09
3 Direct-Push Geoprobe points-
PCB, VOCs, and RCRA Metals Analysis

Suspected Former Emergency Generator Building
AOC-B106-11
4 Direct-Push Geoprobe points-
PCB and VOCs Analysis

FIRST FLOOR

Legend

EBS Status Category 7

Approximate AOC Location

Notes
Refer to reference plan: 106-A-7, 106-A-57, 106-C-7, 106-C-11, 106-C-30, and 106-M-48

1 in = 40 feet

0 40 80 Feet

N

DATE: February 2019
Project Number: 13124-15
DRAWN/CHECKED: BGS/GLA
DATA SOURCE: Pictometry

FIGURE 4. BUILDING 106 AOCs
Air Force Research Laboratory
Rome, NY

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Hydraulic Dock Plates
AOC-B2-03
8 masonry and surface manual samples-
PCBs and TPH Analysis

Legend

- EBS Status Category 7
- Former Dock Location
- Current Dock Location

0 60 120 Feet

1 in = 60 feet

N

DATE: February 2019
Project Number: 13124-15
DRAWN/CHECKED: BGS/GLA
DATA SOURCE: Pictometry

FIGURE 5. BUILDING 2 AOCs
Air Force Research Laboratory
Rome, NY

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B14 Metals Burial Site
AOC-B14-09
Direct Push Geoprobe- 5 samples for
RCRA Metals Analysis
(Within Former Building Footprint to the Extent Possible)

Former B17
AOC-B3-13
Direct-Push Geoprobe- 5 samples for
RCRA Metals and Petroleum Constituents Analysis
(Within Former Building Footprint to the Extent Possible)

Exterior Grease Interceptor
AOC-B3-04
Direct-Push Geoprobe- 3 samples for PCBs,
RCRA Metals, VOCs Analysis

Past Use of B3 Location
AOC-B3-07
25 PSVSs- VOC Analysis
10 Direct-Push Geoprobe Points- VOC and
RCRA Metals Analysis

AOC-B3-07-SV-01(Rm. C8-C)
AOC-B3-07-SV-02(Rm. D8-H)
AOC-B3-07-SV-03(Rm. G8-A)
AOC-B3-07-SV-04(Rm. A6-A)
AOC-B3-07-SV-05(Rm. E7-C)
AOC-B3-07-SV-06(Rm. H7-A)
AOC-B3-07-SV-07(Rm. K6-D)
AOC-B3-07-SV-08(Rm. K5-D)
AOC-B3-07-SV-09(Rm. I5-J)
AOC-B3-07-SV-10(Rm. E5-G)
AOC-B3-07-SV-11(Rm. C4-A)
AOC-B3-07-SV-12(Rm. F4-B)
AOC-B3-07-SV-13(Rm. F2-B)
AOC-B3-07-SV-14(Rm. F1-D)
AOC-B3-07-SV-15(Rm. A1-D)
AOC-B3-07-SV-16
AOC-B3-07-SV-17
AOC-B3-07-SV-18
AOC-B3-07-SV-19
AOC-B3-07-SV-20
AOC-B3-07-SV-21
AOC-B3-07-SV-22
AOC-B3-07-SV-23
AOC-B3-07-SV-24
AOC-B3-07-SV-25

B14
B17

Legend

- EBS Status Category 7
- Former Building Outline
- Proposed Passive Vapor Screening Location
- Approximate AOC Location

0 80 160 Feet
1 in = 80 feet

DATE: February 2019
Project Number: 13124-15
DRAWN/CHECKED: BGS/GLA
DATA SOURCE: Pictometry

FIGURE 6. BUILDING 3 AOCs
Air Force Research Laboratory
Rome, NY

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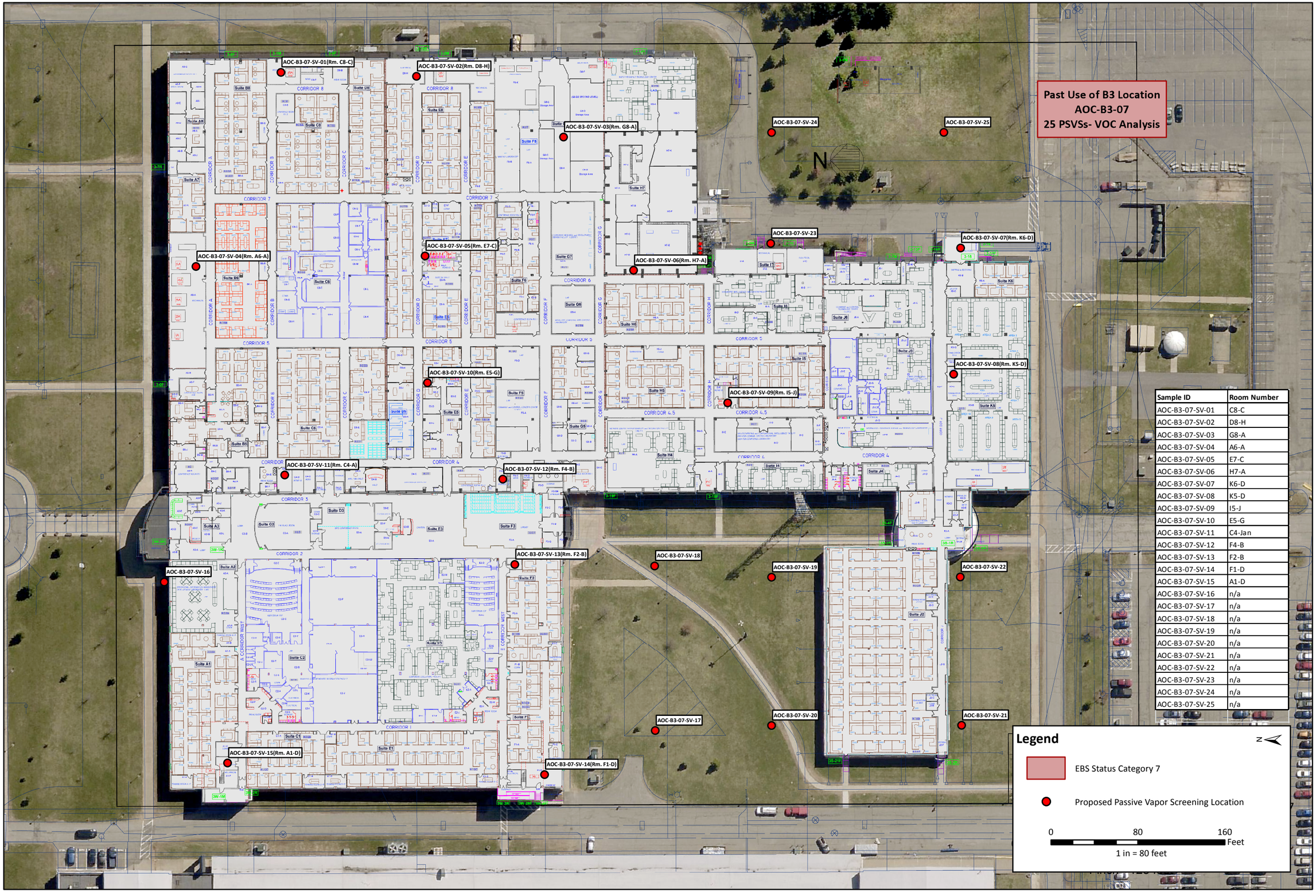

Sample ID	Room Number
AOC-B3-07-SV-01	C8-C
AOC-B3-07-SV-02	D8-H
AOC-B3-07-SV-03	G8-A
AOC-B3-07-SV-04	A6-A
AOC-B3-07-SV-05	E7-C
AOC-B3-07-SV-06	H7-A
AOC-B3-07-SV-07	K6-D
AOC-B3-07-SV-08	K5-D
AOC-B3-07-SV-09	I5-J
AOC-B3-07-SV-10	E5-G
AOC-B3-07-SV-11	C4-Jan
AOC-B3-07-SV-12	F4-B
AOC-B3-07-SV-13	F2-B
AOC-B3-07-SV-14	F1-D
AOC-B3-07-SV-15	A1-D
AOC-B3-07-SV-16	n/a
AOC-B3-07-SV-17	n/a
AOC-B3-07-SV-18	n/a
AOC-B3-07-SV-19	n/a
AOC-B3-07-SV-20	n/a
AOC-B3-07-SV-21	n/a
AOC-B3-07-SV-22	n/a
AOC-B3-07-SV-23	n/a
AOC-B3-07-SV-24	n/a
AOC-B3-07-SV-25	n/a

DATE: February 2019
Project Number: 13124-15
DRAWN/CHECKED: BGS/GLA
DATA SOURCE: Pictometry

Figure 6a. Building 3 AOC-B3-07
Proposed Passive Soil Vapor Screening
Air Force Research Laboratory
Rome, NY

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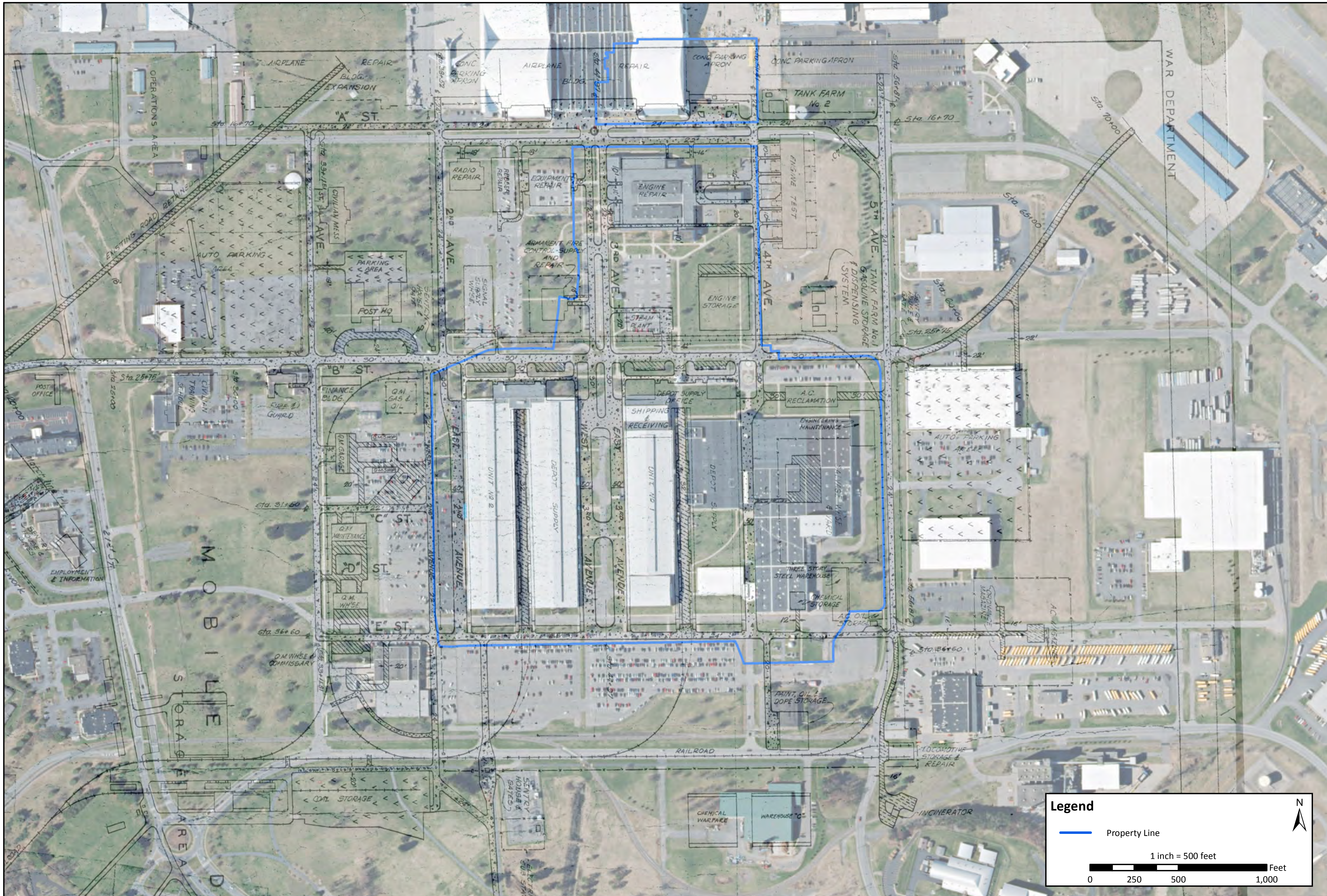

DATE: February 2019
SCALE: 1 inch = 500 Feet
DRAWN/CHECKED: BGS/GLA
DATA SOURCE:
ESRI Online Basemap

Figure 7. Reference Drawing R-2 Overlay
Air Force Research Laboratory
Rome, NY

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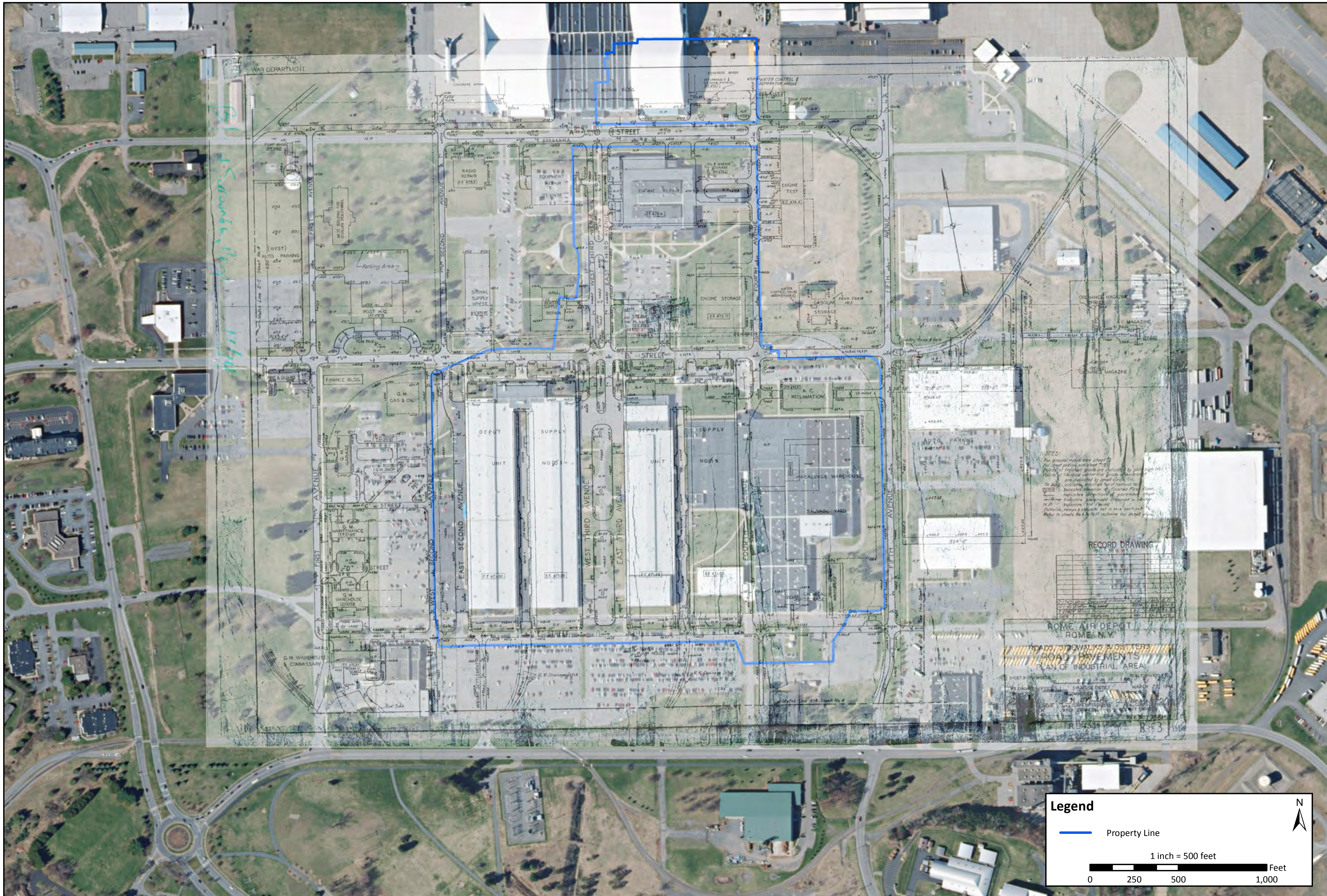

DATE: February 2019
SCALE: 1 Inch = 500 Feet
DRAWN/CHECKED: BGS/GLA
DATA SOURCE:
ESRI Online Basemap

Figure 8. Reference Drawing R-3 Overlay
Air Force Research Laboratory
Rome, NY

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Appendix A-
Health and Safety Plan

Air Force Research Laboratory
Rome Research Site
Griffiss Business and Technology Park
Oneida County, New York

Main Site Inspection
Health and Safety Plan

Prepared for:

Air Force Research Laboratory
Rome Research Site

150 Electronic Parkway
Rome, New York 13441

Prepared By:

Lu Engineers
ENVIRONMENTAL • TRANSPORTATION • CIVIL

339 East Avenue, Suite 200
Rochester, NY 14604

July 2018

Table of Contents

FIGURES

APPENDICES

Lu Engineers
Site Safety Plan

A. GENERAL INFORMATION

Project Title: Main Site Inspection Lu Project No. 13124-15
Oneida County, New York
Work Plan

Project Director and Manager: Gregory L. Andrus, CHMM

Site Safety Officer: Steven Campbell, CHMM
Location: 150 Electronic Parkway
City of Rome, Oneida County, New York

Prepared by: Laura Gregor Date Prepared: September 5, 2017
Date Revised: July 26, 2018

Approved by: Gregory L. Andrus, CHMM Date Approved:

Site Safety Officer Review: Steven Campbell, CHMM Date Reviewed:

Scope/Objective of Work:

The objective of the SI is to characterize 14 sub-Areas of Concern (AOCs) selected from previously completed Environmental Baseline Surveys (EBS) by Lu Engineers. The inspection will either confirm the presence or absence of impacted material and potential for migration of constituents of concern. AOCs identified with constituents in exceedance of applicable standards will be remediated in accordance to an approved plan. Findings will assist in determining whether a Remedial Investigation Feasibility Study (RI/FS), Removal Action (RA) or a No Further Action (NFA) decision is appropriate at each sub-AOC.

Proposed Date of Field Activities: Fall 2018

Background Information: [ ] Complete [X] Preliminary (limited analytical data)

Overall Chemical Hazard: [ ] Serious [ ] Moderate
[X] Low [ ] Unknown

Overall Physical Hazard: [ ] Serious [ ] Moderate
[X] Low [ ] Unknown

B. SITE/WASTE CHARACTERISTICS

Waste Type(s):

[X] Liquid [X] Solid [X] Sludge [X] Gas/Vapor

Characteristic(s):

[X] Flammable/Ignitable [X] Volatile [X] Corrosive [ ] Acutely Toxic
[ ] Explosive (moderate) [ ] Reactive [X] Carcinogen [ ] Radioactive
Other: _____

Physical Hazards:

[X] Overhead [ ] Confined Space [X] Below Grade [X] Trip/Fall
[X] Puncture [ ] Burn [X] Cut [X] Splash
[X] No.ise [X] Other: Heat Stress/Cold Stress

Site History/Description and Unusual Features:

In 1941, the federal government began construction of the Rome Air Depot on approximately 2,488 acres of purchased and donated land, in the area known as Wright Settlement. The Air Depot was officially opened in February of 1942. Over the next six (6) years the facility went through numerous name changes until 1948 when it was permanently named Griffiss Air Force Base (GAFB). Over the next 42 years the base was modified with additions to runways and various support facilities, eventually encompassing 3,552 acres at the time of realignment and closure in 1993. An EBS was completed by Lu Engineers for RRS-owned Griffiss Business and Technology Park (GBTP), formerly Griffiss Air Force Base. The EBS was prepared to assist RRS in documenting the physical condition of RRS buildings relating to suspected past storage, use, distribution, and disposal of hazardous substances, petroleum products, and associated derivatives over the property's history. The EBS report classified discrete areas of RRS and adjacent buildings/parcels into one (1) of seven (7) categories prescribed by the Air Force Instruction (AFI) 32-7066.

Locations of Chemicals/Wastes: Known

Estimated Volume of Chemicals/Wastes: Unknown

Site Currently in Operation: [X] Yes [ ] No [ ] Not Applicable

C. HAZARD EVALUATION

PHYSICAL HAZARD EVALUATION:		
TASK	**HAZARD(S)**	**HAZARD PREVENTION**
Tasks 1-3	Heat stress/ cold stress exposure	Implement heat stress management techniques such as shifting work hours, increasing fluid intake, and monitoring employees**. See Appendix A.**
	Weather Extremes	Establish site-specific contingencies for severe weather situations. Discontinue work in severe weather.
	Slip/ trip/ fall	Observe terrain and be aware of the dangers while walking to minimize slips and falls. Steel-toed boots provide additional support and stability. Use adequate lighting. Inspect Site and mark existing hazards.
	Noise	**See Appendix B**
	Native wildlife presents the possibility of insect bites and associated diseases.	Avoid wildlife when possible. Use insect repellant. Check for ticks on skin and clothing.
	Biological (flora, fauna, etc.)	Be aware of sharp, rough vegetation especially during geophysical survey. Wear proper work boots and clothing.
Tasks 1-3	General physical hazards associated with drilling and excavating operations (overhead equipment, noise).	Hard hats and steel-toed boots required while working around heavy equipment. Keep a safe distance from equipment. **See Appendix B.**
	Heavy Equipment Operation	Define equipment routes, traffic patterns, and site-specific safety measures. Ensure that operators are properly trained and equipment has been properly inspected and maintained. Verify back-up alarms. Ensure that ground spotters are assigned and informed of proper hand signals and communication protocols. Identify special PPE and monitoring needs. Ensure that field personnel do not work in close proximity to operating equipment. Ensure that lifting capacities, load limits, etc., are not exceeded. Overhead obstructions and falling objects.
	Overhead Hazards/ Falling Objects	Wear hard hat. Identify overhead hazards prior to each task.
	Contact with or inhalation of contaminants, potentially in high concentration in soil.	To minimize exposure to chemical contaminants, a thorough review of suspected contaminants should be completed and implementation of an adequate protection program.
	Power Tools	Ensure compliance with 29 CFR 1910 Subpart P.
	Utility Lines	Identify/locate existing utilities prior to work. Ensure overhead utility lines are at least 25 feet away from project activities. Contact utilities to confirm locations, as necessary.
	Contact with or inhalation of decontamination solutions.	Material Safety Data Sheets for all decon solutions. First aid equipment available.
	Contact with or inhalation of remedial solutions or compounds.	Avoid contact with skin and eyes.

Physical Hazard Evaluation: Level D health and safety protection, steel-toed boots, work clothes, hard hat, and gloves (as appropriate) will be worn by all personnel at all times. Any allergies should be reported to the Site Safety Officer prior to the start of the project. Respirators and Tyvek suits required for entry into buildings posted for asbestos.

D. SITE SAFETY WORK PLAN

Site Control: Site entrance is secured with a control facility. Only authorized personnel may enter Site buildings.

Perimeter Identified?	**[Y]**	**Site Secured?**	**[Y]**
Work Areas Designated?	**[Y]**	**Zone(s) of contamination identified?**	**[N]**

Anticipated Level of Protection (cross-reference task numbers in Section C):

All Site work will be performed at Level D (steel-toed boots, work clothes, eye protection, gloves and hard hats) unless monitoring indicates otherwise. Chemical resistant boots or booties shall be worn as appropriate to avoid contact with wet areas.

Level C will be available and shall be donned if sustained photoionization detector (PID) readings exceed 5 ppm and/or olfactory indications warrant.

Air Monitoring:

Contaminant	Monitoring Device	Frequency
Organic Vapors	MiniRAE 3000 PID	As Necessary
Particulates	Dustrack/Sidepack	Per Generic NYSDOH CAMP

Action Level Organic Vapors:
PID readings of **>5 ppm to 10 ppm** above background in the breathing zone, sustained for greater than 1 minute,

Action: Hault work activities and move away from the vapor source. Consider vapor suppression actions. If PID readings drop to within 5 ppm above background, work may resume with continuous air monitoring.

PID readings of **10 ppm to <25 ppm** above background at breathing zone, sustained for greater than 1 minute,
Action: Stop work and consider upgrade to Level C protection.

PID readings of **>25 ppm** above background at breathing zone, sustained for greater than 1 minute,
Action: Stop work.
All air monitoring results as well as wind direction and speed (estimates) will be documented in the site-specific log book.

Action Level Particulates (Per NYSDOH CAMP):
If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) 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/m3 above the upwind level and 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 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/m3 of the upwind level and in preventing visible dust migration.

Decontamination Solutions and Procedures for Equipment, Sampling Gear, etc.
Specified in work plan.

Personnel Decon Protocol: Soap, water, and paper towels or baby wipes will be available for all personnel and will be used before eating, drinking or leaving the site. Personnel will shower upon return to home or hotel. Disposable PPE will be double bagged and disposed of in a sanitary waste dumpster. Tykev suits will be disposed of in the site buildings upon exiting the building.

Decon Solution Monitoring Procedures, if Applicable: Based on previous investigations, it is assumed that decontamination solutions may be discharged onsite to the ground surface.

Special Site Equipment, Facilities or Procedures (Sanitary Facilities and Lighting Must Meet 29CFR 1910.120): Personnel will be required to maintain the Buddy System. All parties will be required to attend an on-Site briefing, which will identify the roles of each organization's personnel and will integrate emergency procedures for all Site participants.

Site Entry Procedures and Special Considerations: Consult with RRS/ RIOCV prior to entry/ egress. The Buddy System should be employed when on-site and entering and exiting the Site, along with the work zone areas.

Work Limitations (time of day, weather conditions, etc.) and Heat/Cold Stress Requirements:
All work will be completed during daylights hours. Severe inclement weather may be cause to suspend outdoor activities. Cold stress protocol will dictate work/rest regimen. Heavy equipment will not be used during electrical storms. No transfer of materials can be conducted outside of normal RRS working hours.

Investigation Derived Material (i.e., Expendables, Decon Waste, Cuttings) Disposal:
Specified in the work plan.

Sampling Handling Procedures Including Protective Wear: All sample handling will be performed while wearing nitrile gloves. To minimize hazards to lab personnel, sample volumes

will be no larger than necessary, and the outside of all sample containers will be wiped clean prior to shipment.

Accident and Injury Reporting: Any work-related incident, accident, injury, illness, exposure, or property loss must be reported to the Lu Engineers project manager. This includes:

- Accident, injury, illness, or exposure of an employee;
- Injury of a subcontractor;
- Damage, loss, or theft of property; and/or
- Any motor vehicle accident regardless of fault, which involves a company vehicle, rental vehicle, or personal vehicle while employee is acting in the course of employment.

E. TRAINING REQUIREMENTS

All personnel conducting field activities on site are required to have completed training sessions in accordance with Occupational Safety and Health Administration (OSHA) for Parts 1926 and 1910 (Title 29 Code of Federal Regulations [CFR] Part 1926.65 and Part 1910.120 - Hazardous Waste Operations and Emergency Response- 'HazWOPER'). This training shall consist of a minimum of 40 hours of instruction off-site and three (3) days of actual field experience under the direct supervision of a trained, experienced supervisor. Each employer will maintain documentation stating that its on-site personnel have complied with this regulation.

In addition, each employee PPE worn by each employee will be in compliance with OSHA Parts 1910.132-140. Also, each employee needed to wear a respirator will be in compliance with OSHA Respiratory Protection standards Part 1910.134.

All personnel will have reviewed this HASP and received a site-specific health and safety briefing prior to participating in field work.

All visitors entering the work area must review the HASP and be equipped with the proper PPE. All site personnel and visitors shall sign the last page of the HASP as an acknowledgement that they have read and understand the Site health and safety requirements.

Medical Surveillance Requirements: All Lu Engineers field staff who engage in onsite activities for 30 days or more per year participate in a medical monitoring program and have completed applicable training per 29CFR 1910.120. Respiratory protection program meets requirements of 29CFR 1910.134.

Team Member*	Responsibility
Gregory L. Andrus	Project Manager
Steven Campbell	Safety Officer
Gregory L. Andrus	Field Geologist/Field Team Leader

Benjamin Seifert	Field Team Member
Patrick Colern	Field Team Member
Laura Gregor	Field Team Member

* All entries into the work zone require use of "Buddy System".

F. EMERGENCY INFORMATION

LOCAL RESOURCES

Ambulance:	911
Hospital Emergency Room:	Rome Memorial Hospital 1500 N James St, Rome, NY 13440
Poison Control Center:	911
Police (include local, county sheriff, state):	911
Fire Department:	911
Airport:	N/A
Laboratory:	Paradigm Environmental Services, Inc. 179 Lake Ave., Rochester, NY 14608 (585) 647-3311
UPS/Federal Express:	**Nearest Fed Ex**: 115 Dry Rd., Oriskany, NY 13424 (last ground pickup 6:00 pm M-F) **Nearest UPS**: 4948 Commercial Dr. Yorkville, NY 13495

SITE RESOURCES

Site Emergency Evaluation Alarm Method:	Sound vehicle horn
Water Supply Source:	Gallons of water will be available in vehicles
Telephone Location, Number:	None available
Cellular Phone, if Available:	Onsite cell # TBD
Other: IFOCV Office	(315) 330-2098

EMERGENCY CONTACTS

1.	Fire/Police:	911
2.	Lu Engineers, Safety Director:	(585) 385-7417 (office)
3.	Lu Engineers, Gregory L. Andrus	(585) 385-7417, Ext. 215 (office) (585) 732-5786 (Cellular phone)

EMERGENCY ROUTES

Note: Field team must know route(s) prior to start of work.

Directions from the site to Oneida Health Care Center (map on following page):
Head south toward Hangar Road, Turn right at the 1st cross street to stay on Hangar Road (0.6 miles). At the traffic circle, take the 1st exist onto Mohawk Drive (0.5 miles). Mohawk Drive turns slightly right and becomes E Chestnut St. Turn left onto N James Street (0.1 miles)

On-site Assembly Area: At Site entry point.

Off-site Assembly Area: Consult with RRS/IFCOV.

Emergency egress routes to get off-Site: West on to Hill Road.

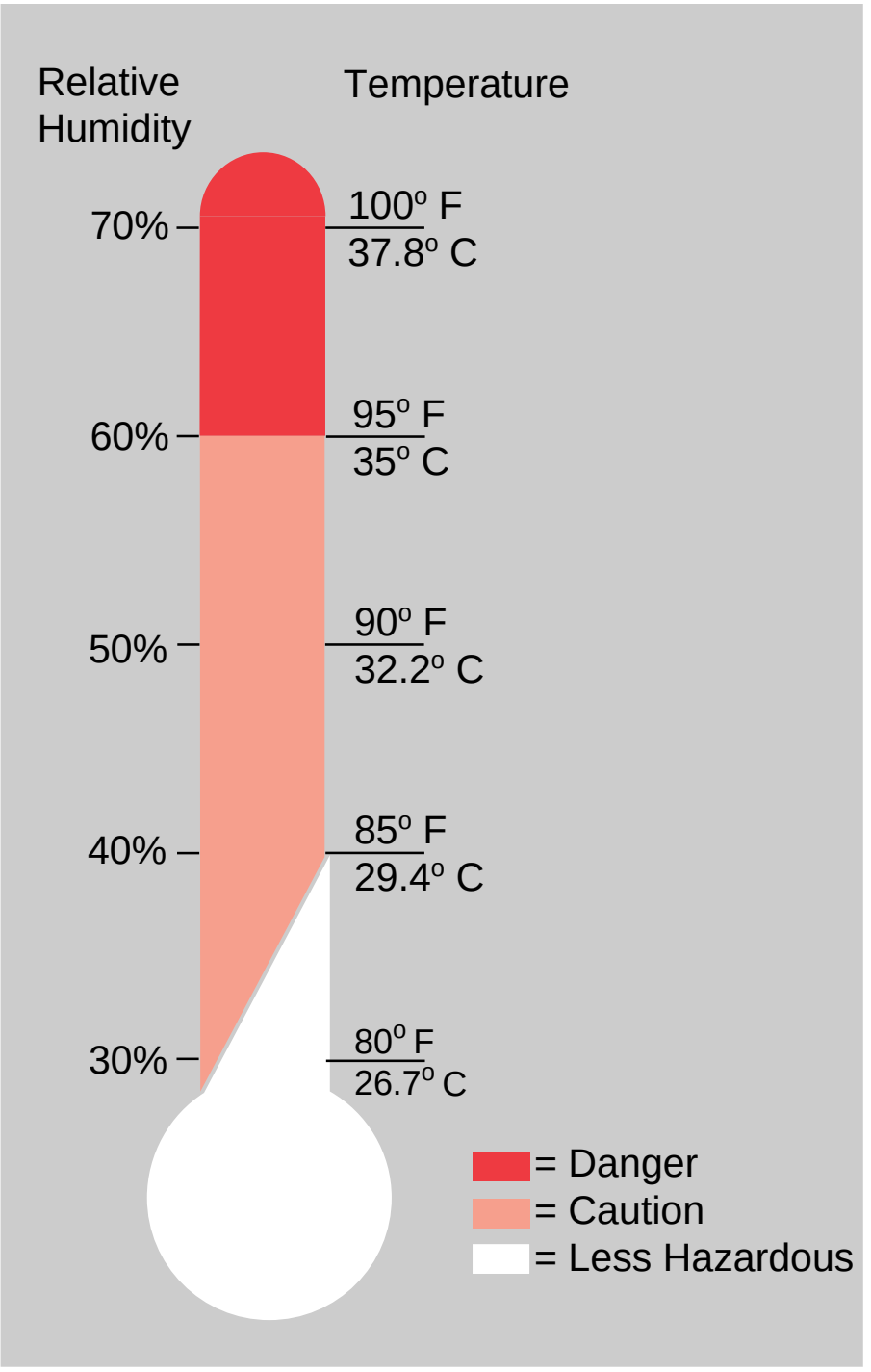
APPENDIX A

HEAT AND COLD EXPOSURE

THE HEAT EQUATION

HIGH TEMPERATURE + HIGH HUMIDITY + PHYSICAL WORK = HEAT ILLNESS

When the body is unable to cool itself through sweating, **serious** heat illnesses may occur. The most severe heat-induced illnesses are **heat exhaustion** and **heat stroke**. If actions are not taken to treat heat exhaustion, the illness could progress to heat stroke and possible **death**.



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Occupational Safety and Health Administration
OSHA 3154
1998

HEAT EXHAUSTION

What Happens to the Body:

HEADACHES, DIZZINESS/LIGHT HEADEDNESS, WEAKNESS, MOOD CHANGES (irritable, or confused/can't think straight), FEELING SICK TO YOUR STOMACH, VOMITING/THROWING UP, DECREASED and DARK COLORED URINE, FAINTING/PASSING OUT, and PALE CLAMMY SKIN.

What Should Be Done:

- Move the person to a cool shaded area to rest. Don't leave the person alone. If the person is dizzy or light headed, lay them on their back and raise their legs about 6-8 inches. If the person is sick to their stomach lay them on their side.
- Loosen and remove any heavy clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if they are not feeling sick to their stomach.
- Try to cool the person by fanning them. Cool the skin with a cool spray mist of water or wet cloth.
- If the person does not feel better in a few minutes call for emergency help (Ambulance or Call 911).

(If heat exhaustion is not treated, the illness may advance to heat stroke.)

HEAT STROKE—A MEDICAL EMERGENCY

What Happens to the Body:

DRY PALE SKIN (no sweating), HOT RED SKIN (looks like a sunburn), MOOD CHANGES (irritable, confused/not making any sense), SEIZURES/FITS, and COLLAPSE/PASSED OUT (will not respond).

What Should Be Done:

- Call for emergency help (Ambulance or Call 911).
- Move the person to a cool shaded area. Don't leave the person alone. Lay them on their back and if the person is having seizures/fits remove any objects close to them so they won't strike against them. If the person is sick to their stomach lay them on their side.
- Remove any heavy and outer clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if they are alert enough to drink anything and not feeling sick to their stomach.
- Try to cool the person by fanning them. Cool the skin with a cool spray mist of water, wet cloth, or wet sheet.
- If ice is available, place ice packs under the arm pits and groin area.

How to Protect Workers

- Learn the signs and symptoms of heat-induced illnesses and what to do to help the worker.
- Train the workforce about heat-induced illnesses.
- Perform the heaviest work in the coolest part of the day.
- Slowly build up tolerance to the heat and the work activity (usually takes up to 2 weeks).
- Use the buddy system (work in pairs).
- Drink plenty of cool water (one small cup every 15-20 minutes)
- Wear light, loose-fitting, breathable (like cotton) clothing.
- Take frequent short breaks in cool shaded areas (allow your body to cool down).
- Avoid eating large meals before working in hot environments.
- Avoid caffeine and alcoholic beverages (these beverages make the body lose water and increase the risk for heat illnesses).

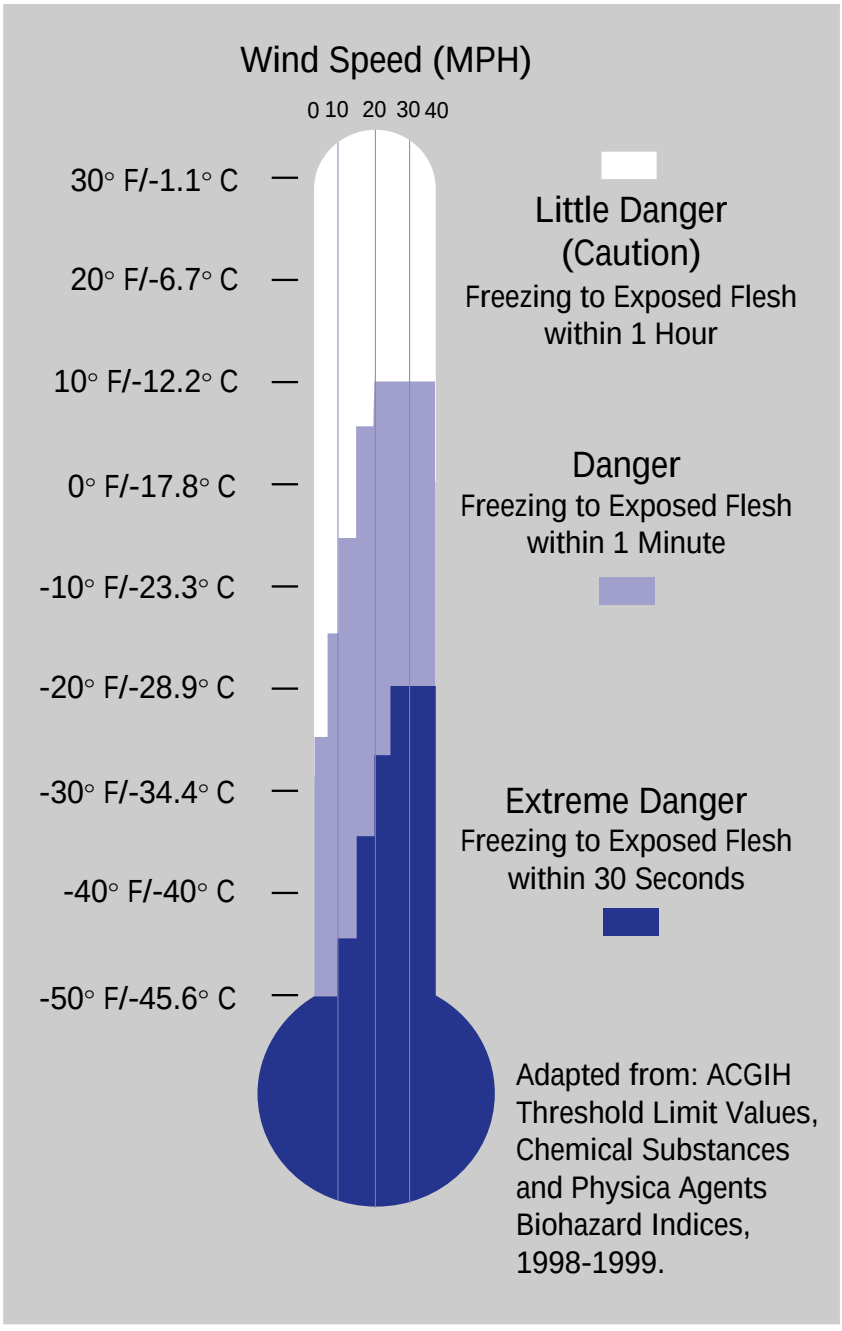
Workers Are at Increased Risk When

- They take certain medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you when working in hot environments).
- They have had a heat-induced illness in the past.
- They wear personal protective equipment (like respirators or suits).

THE COLD STRESS EQUATION

LOW TEMPERATURE + WIND SPEED + WETNESS = INJURIES & ILLNESS

When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, and permanent tissue damage and death may result. **Hypothermia** can occur when *land temperatures* are **above** freezing or *water temperatures* are below 98.6°F/ 37°C. Cold-related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing.



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Occupational Safety and Health Administration

OSHA 3156
1998

FROST BITE

What Happens to the Body:

FREEZING IN DEEP LAYERS OF SKIN AND TISSUE; PALE, WAXY-WHITE SKIN COLOR; SKIN BECOMES HARD and NUMB; USUALLY AFFECTS THE FINGERS, HANDS, TOES, FEET, EARS, and NOSE.

What Should Be Done: (land temperatures)

- Move the person to a warm dry area. Don't leave the person alone.
- Remove any wet or tight clothing that may cut off blood flow to the affected area.
- **DO NOT** rub the affected area, because rubbing causes damage to the skin and tissue.
- **Gently** place the affected area in a warm (105°F) water bath and monitor the water temperature to **slowly** warm the tissue. Don't pour warm water directly on the affected area because it will warm the tissue too fast causing tissue damage. Warming takes about 25-40 minutes.
- After the affected area has been warmed, it may become puffy and blister. The affected area may have a burning feeling or numbness. When normal feeling, movement, and skin color have returned, the affected area should be dried and wrapped to keep it warm. **NOTE:** If there is a chance the affected area may get cold again, do not warm the skin. If the skin is warmed and then becomes cold again, it will cause severe tissue damage.
- Seek medical attention as soon as possible.

HYPOTHERMIA - (Medical Emergency)

What Happens to the Body:

NORMAL BODY TEMPERATURE (98.6° F/37°C) DROPS TO OR BELOW 95°F (35^0 C); FATIGUE OR DROWSINESS; UNCONTROLLED SHIVERING; COOL BLUISH SKIN; SLURRED SPEECH; CLUMSY MOVEMENTS; IRRITABLE, IRRATIONAL OR CONFUSED BEHAVIOR.

What Should Be Done: (land temperatures)

- Call for emergency help (i.e., Ambulance or Call 911).
- Move the person to a warm, dry area. Don't leave the person alone. Remove any wet clothing and replace with warm, dry clothing or wrap the person in blankets.
- Have the person drink warm, sweet drinks (sugar water or sports-type drinks) if they are alert. **Avoid drinks with caffeine** (coffee, tea, or hot chocolate) or alcohol.
- Have the person move their arms and legs to create muscle heat. If they are unable to do this, place warm bottles or hot packs in the arm pits, groin, neck, and head areas. **DO NOT** rub the person's body or place them in warm water bath. This may stop their heart.

What Should Be Done: (water temperatures)

- Call for emergency help (Ambulance or Call 911). Body heat is lost up to 25 times faster in water.
- **DO NOT** remove any clothing. Button, buckle, zip, and tighten any collars, cuffs, shoes, and hoods because the layer of trapped water closest to the body provides a layer of insulation that slows the loss of heat. Keep the head out of the water and put on a hat or hood.
- Get out of the water as quickly as possible or climb on anything floating. **DO NOT** attempt to swim unless a floating object or another person can be reached because swimming or other physical activity uses the body's heat and reduces survival time by about 50 percent.
- If getting out of the water is not possible, wait quietly and conserve body heat by folding arms across the chest, keeping thighs together, bending knees, and crossing ankles. If another person is in the water, huddle together with chests held closely.

How to Protect Workers

- Recognize the environmental and workplace conditions that lead to potential cold-induced illnesses and injuries.
- Learn the signs and symptoms of cold-induced illnesses/injuries and what to do to help the worker.
- Train the workforce about cold-induced illnesses and injuries.
- Select proper clothing for cold, wet, and windy conditions. Layer clothing to adjust to changing environmental temperatures. Wear a hat and gloves, in addition to underwear that will keep water away from the skin (polypropylene).
- Take frequent short breaks in warm dry shelters to allow the body to warm up.
- Perform work during the warmest part of the day.
- Avoid exhaustion or fatigue because energy is needed to keep muscles warm.
- Use the buddy system (work in pairs).
- Drink warm, sweet beverages (sugar water, sports-type drinks). Avoid drinks with caffeine (coffee, tea, or hot chocolate) or alcohol.
- Eat warm, high-calorie foods like hot pasta dishes.

Workers Are at Increased Risk When…

- They have predisposing health conditions such as cardiovascular disease, diabetes, and hypertension.
- They take certain medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you while working in cold environments).
- They are in poor physical condition, have a poor diet, or are older.

APPENDIX B

ADDITIONAL POTENTIAL PHYSICAL AND CHEMICAL HAZARDS

ADDITIONAL POTENTIAL PHYSICAL AND CHEMICAL HAZARDS	
POTENTIAL PHYSICAL HAZARDS	**CONTROL METHODS**
Overhead Hazards/Falling Objects	Overhead hazards will be identified prior to each task (i.e., inspecting drill rig mast, building structure). Hard hats will be required for each task that poses an overhead hazard.
Contact with Utilities	Prior to initiating site activities, all utilities will be located by the appropriate utility company and will be marked and/or barricaded to minimize the potential of accidental contact. A minimum distance of 25 feet between the derrick and overhead power lines must be maintained at all times.
Noise Exposure	Areas of potentially high sound pressure levels (>85 dBA) will be restricted to authorized personnel only. Engineering controls will be used to the extent possible. Hearing protection will be made available to all workers on site. Exposure to time-weighted average levels in excess of 85 dBA is not anticipated.
POTENTIAL CHEMICAL HAZARDS	**GENERAL CONTROL METHODS**
Contaminant Inhalation	Direct reading instruments (Op-Tech) and/or olfactory indications will be used to monitor airborne contaminants. Established Lu Engineers' action levels will limit exposure to safe levels. Respiratory protection will be used as appropriate.
Contaminant Ingestion	Standard safety procedures such as restricting eating, drinking, and smoking to the support zone and utilizing proper personal decontamination procedures will minimize ingestion as a potential route of exposure.
Dermal Contaminant Contact	The proper selection and use of personal protective clothing and decontamination procedures will minimize dermal contaminant contact.
Potential contact with lower concentration waste and naturally occurring contaminants (i.e., methane)	Dermal contact with contaminants will be minimized by proper use of the following PPE: • Tyvex coveralls • Neoprene gloves • Booties (latex) or over-boots.
Splash hazard	The proper selection and use of personal protective clothing and decontamination procedures will minimize splash contaminant contact.

APPENDIX C

CHEMICAL HAZARD EVALUATION

CHEMICAL HAZARD EVALUATION

Task Number	Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	FID/PID	
		PEL	REL	TLV					Relative Response	Ionization Potential (eV)
1-2	Acetone	1000 ppm	250 ppm	500 ppm	Y	Inh, Ing, Con	Irritation to eyes, nose, or throat, skin, skin burns, loss of coordination and equilibrium	Sharp penetrating odor, mint like	1.1	9.69
1-2	Aroclor 1260 (PCB)*	0.5 ^{sk} mg/m^3	---	0.5 ^{sk} mg/m^3	Y	Abs, Inh, Ing	Irritation to eyes and skin; dermatitis, liver damage	---	---	---
1-2	Aroclor 1242	1 mg/m^3	0.001 mg/m^3	1 mg/m^3	Y	Inh, Ing, Con	Irritant, high levels can cause narcosis	---/ Butter-like	---	---
1-2	Aroclor 1248	N/A	---	---	Y	Abs, Inh, Ing	Irritant, Central Nervous System depression, hypoglycemia, and narcosis	Clear, colorless/penetrating, sweet odor	---	---
1-2	Aroclor 1254	0.5 ^{sk} mg/m^3	0.001 mg/m^3	0.5 ^{sk} mg/m^3	Y	Abs, Inh, Ing	Irritation to eyes and skin; dermatitis, liver damage	---/ Butter-like		
1-2										
1-2	Arsenic*	0.010 mg/m^3	---	0.01 mg/m^3	Y	Inh, Ing, Abs, Con	Coughing, irritation to eyes, nose, throat, respiratory tract, inflammation of mucous membranes, dyspnea (labored breathing), cyanosis, and rales (rattle breathing), vomiting, bloody diarrhea, cold clammy skin, low blood pressure, weakness, headache cramps, convulsions, coma, redness, burns to skin	Odorless/silver gray or tin white brittle (metal, inorganic), also can be in solution (clear & odorless)	---	---

CHEMICAL HAZARD EVALUATION										
Task Number	**Compound**	**Exposure Limits (TWA)**			**Dermal Hazard (Y/N)**	**Route(s) of Exposure**	**Acute Symptoms**	**Odor Threshold/ Description**	**FID/PID**	
		PEL	**REL**	**TLV**					**Relative Response**	**Ionization Potential (eV)**
1-3	Benzene*	1 ppm	---	10 ppm	Y	Inh, Abs, Ing, Con	Irritation to eyes, skin, nose, respiratory system; headache, nausea, dizziness, drowsiness, unconsciousness, harmful, fatal if aspirated into lungs	Colorless to light yellow liquid, sweet aromatic odor	0.5	9.25
1-3	Chlorobenzene	75 ppm	---	10 ppm	Y	Inh, Ing, Con	Irritation skin, eyes, nose, respiratory tract, coughing, shortness of breath, dizziness, incoordination, unconsciousness. GI irritation, toxic may cause systematic poisoning, nausea, vomiting, diarrhea	Colorless liquid, faint almond-like odor	0.4	9.06
1-3	1,2-Dichlorobenzene	50 ppm	---	---	Y	Inh, Ing, Con	Irritation to eyes, skin	2 ppm	---	---
1-3	1,3-Dichlorobenzene	No Data	No Data	No Data	Y	Inh, Abs, Con, Ing	INHALATION: Causes headache, drousiness, unsteadiness. Irritating to mucous membranes. EYES: Severe irritation. SKIN: Severe irritation. INGESTION: Irritation of gastric mucosa, nausea, vomiting, diarrhea, abdominal cramps and cyanosis.	odorless	No Data	No Data
1-3	1,4-Dichlorobenzene*	75 ppm	---	10 ppm	Y	Inh, Abs, Con, Ing	Irritation to eyes, nose, throat, skin, coughing/wheezing, shortness of breath, headache, nausea, burning sensation, vomiting	Mothball odor	---	8.98

CHEMICAL HAZARD EVALUATION

Task Number	Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	FID/PID	
		PEL	REL	TLV					Relative Response	Ionization Potential (eV)
1-3	Dichlorobenzene (p-)	75 ppm	---	10 ppm	Y	Inh, Ing, Abs, Con	Irritation to eyes, nose, throat, skin, loss of consciousness, cyanosis, irregular pulse	Moth balls	---	---
1-3	Dichlorodifluoromethane (CFC 12)	1000 ppm	1000 ppm	---	N	Inh, skin or eye contact	Dizziness, tremor, asphyxia, unconsciousness, cardiac arrhythmias, cardiac arrest; liquid: frostbite	Colorless, odorless gas	---	11.75
1-3	Dieldrin	N/A	---	N/A	Y	Inh, Con, Abs	Irritation to eyes, nose, throat, skin, death	---	---	---
1-3	Diesel Fuel	N/A	---	N/A	Y	Ing, Ing, Abs, Con	Irritation to eyes, lungs, skin	Gasoline	---	---
1-3	Endosulfan II (beta)	---	---	---	N	Inh, Ing, Con	N/A (Toxic irritant)	Grayish-white powder (pesticide)	---	N/A
1-3	Methyl Ethyl Ketone (2-Butanone, MEK)	200 ppm	200 ppm	200 ppm	Y	Inh, Ing, Con	Irritation to eyes, nose; skin, dizziness, nausea, drowsiness, CNS depression, unconsciousness	Mint or acetone-like	0.9	9.51
1-3	Naphthalene	10 ppm	10 ppm	10 ppm	Y	Inh, Ing, Abs, Con	Irritation to eyes; headache; confusion; excitement; profuse sweating, jaundice, blurred vision, renal shutdown			
1-3	Total Petroleum Hydrocarbons	---	---	---	N	Inh, Ing, Con	Dependent upon specific petroleum compounds	---	---	---
1-3	1,2,3-Trichlorobenzene	---	---	---	Y	Inh, Ing	Causes eye, skin, and respiratory tract irritation. Harmful if swallowed.	White solid with a sharp chlorobenzene odor. (mothlike) Insoluble in water and denser than water.	---	

CHEMICAL HAZARD EVALUATION

Task Number	Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	FID/PID	
		PEL	REL	TLV					Relative Response	Ionization Potential (eV)
1-3	1,2,4-Trichlorobenzene	N/A	---	N/A	N	Inh, Abs, Ing, Con	Irritation to eyes, mucous membranes, possible liver, kidney damage	Colorless to white liquid, aromatic odor (@ 63 F turns solid/ crystalline)	---	N/A
1-3	Trichloroethene* (TCE)	100 ppm (per 6/97 NIOSH Pocket Guide)	25 ppm (per 2005 NIOSH Pocket Guide)	10 ppm	Y	Inh, Abs, Ing, Con	Irritation to eyes, skin, mucous membranes and GI, headache, vertigo, fatigue, giddiness, tremors, vomiting, nausea, may burn skin, visual disturbance, paresthesia, cardiac arrhythmias	Colorless liquid, sometimes dyed blue, chloroform odor	---	9.45
1-3	Vinyl Chloride*	1 ppm	---	1 ppm	Y	Inh, Con	Dulled auditory and visual response, headache, weakness, frostbite, GI bleeding, pallor or cyanosis of extremities, abdominal pain, bleeding	Colorless liquefied gas, pleasant odor at high concentrations (3000 ppm)	2.0	9.99

KEY:
PEL = Permissible Exposure Limit
REL = Recommended Exposure Limit
--- = Information not available
TLV = Threshold Limit Value(ACGIH)
Inh = Inhalation
Ing = Ingestion
mg/m^3 = Milligrams per cubic meter
* = Chemical is a known or suspected carcinogen
Abs = Skin Absorption
Con = Skin and/or eye Contact
ppm = Parts per million
sk = Skin notation

Appendix B-
Community Air Monitoring Plan

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. “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, 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-
Sampling and Analysis Plan

DRAFT
SAMPLING AND ANALYSIS PLAN

Main Site Inspection
Project NR: ULDF20187102
Griffiss Business and Technology Park
Air Force Research Laboratory
Rome, New York

Prepared for:

Air Force Research Laboratory
150 Electronic Parkway
Rome, New York 13441

Prepared by:

Lu Engineers
ENVIRONMENTAL • TRANSPORTATION • CIVIL

Lu Engineers
339 East Avenue, Suite 200
Rochester, New York 14604

December 2018

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TABLES

1.0 INTRODUCTION

Lu Engineers was retained by the Air Force Research Laboratory (AFRL) to complete this Sampling and Analysis Plan for the Main Site Inspection (SI). The purpose of the SI is to characterize environmental conditions through the collection of subsurface data and estimate the risk to human health and the environment. Data will be collected from 14 Areas of Concern (AOCs) selected based off findings from the Environmental Baseline Survey (EBS) (Lu Engineers, 2014). Findings from this SI will assist in the determination of appropriate remedies to attain regulatory compliance.

The objective of the SAP is to discuss protocols that will be used to collect, analyze, and report sample data obtained during the SI. This SAP follows guidelines set forth by the United States Environmental Protection Agency (USEPA) and New York State Department of Environmental Conservation (NYSDEC).

1.1 Site Location

The main campus of AFRL (Rome), "the Site," is located at the Griffiss Business and Technology Park (GBTP); 150 Electronic Parkway in Rome, New York, formerly the Griffiss Air Force Base (GAFB) and is now part of GBTP. The Site is located in central Oneida County, immediately east of the City of Rome. Rome is located 12 miles northwest of the City of Utica, the county seat for Oneida County, approximately 40 miles east of the City of Syracuse. Lands to the north and east of GBTP are predominantly rural and residential in use. Commercial, industrial and residential land use is generally limited to properties located to the south and west of GBTP.

1.3 Responsible Agency

Lu Engineers will be conducting the sampling for AFRL with NYSDEC and EPA guidance.
The objective of the SI is to characterize 14-Areas of Concern (AOCs) selected from previously completed EBSs. Environmental media samples will confirm the presence or absence of impacted material and potential for migration of constituents of concern. Analytical findings will assist in determining whether a Remedial Investigation (RI), Removal Action (RA) or a No Further Action (NFA) decision is appropriate at each AOC.

1.4 Scope of Work

The scope of the sampling effort will involve subsurface investigation (e.g. direct push Geoprobe®, ground penetrating radar [GPR], passive soil vapor survey [PSVS], and dye/smoke testing) and associated sampling to determine the presence or absence of environmental impacts. Based upon reported historic uses of the Site, soil sampling for PCBs, petroleum, metals, VOCs, and SVOCs will be completed.

A detailed description of each work task is provided in SI Work Plan. Proposed and approximate sampling locations are indicated on Figures 3, 4, and 5 of the SI work plan. Sample locations have not been definitively selected, but will be determined in the field.

1.5 Health and Safety Plan (HASP)

A Site-specific Health and Safety Plan (HASP) was prepared in accordance with applicable general industry and construction standards of the Federal Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, as well as any other Federal, State or local applicable statutes or regulations. The HASP will be adhered to by all personnel involved in the investigation. A copy of the HASP and Community Air Monitoring Plan (CAMP) is provided in Appendix A and B of the SI Work Plan.

Monitoring of the work area and screening of soil and groundwater will be conducted throughout the duration of field activities to assure the safety of on-Site workers.

Air monitoring of the work areas will be conducted using the following (or equivalent) instrumentation:

- An aerosol particulate meter
- A PID equipped with a 10.2 eV lamp (or equivalent)

A Community Air Monitoring Plan (CAMP), in accordance to the New York State Department of Health (NYSDOH) and attached to this Plan, will be adhered to during SI activities.

Prior to beginning subsurface sampling and testing, the Underground Facilities Protective Organization (UFPO) will be contacted to determine the locations of underground utilities within the study area. It may be necessary to alter the proposed locations of the soil borings due to underground utilities. Any such modifications will be made at the discretion of the field team leader in consultation with AFRL and NYSDEC staff as appropriate.

1.6 Schedule

Key project personnel information and associated responsibilities are listed in the following Table 1-1.

Table 1-1 – Key Project Personnel Contact Information and Responsibilities

Title	Name	Phone Number	Responsibilities
AFRL Contracting Representative	Jaclyn Holbritter	315-330-2643	Project Contracting Representative
AFCEC/CZOE Remedial Project Manager	Andrew Salisbury	716-236-3122	Project Management
Contractor Project Manager (include Company Name)	Gregory L. Andrus	585-385-7417	Overall responsibility for implementing the project and ensuring that objectives are met. Primary point of contact and control.
Contractor QAO	Steven A. Campbell	585-385-7417	Project Quality Assurance/Quality Control
Contractor Field Team Leader	TBD	585-385-7417	Adhere to project tasks as outlined in the SI Work Plan
Laboratory Quality Assurance Officer (include Laboratory Name)	Test America Laboratories, Inc.	716-691-2600	Work in conjunction with the lab QA unit regarding QA elements of specific analytical tasks.

2.0 BACKGROUND

2.1 Site Area Description

The former Griffiss Air Force Base (GAFB), now currently referred to as the Griffiss Business and Technology Park (GBTP) occupies 3,552 acres in a business technology/industrial area. The GBTP is owned by Air Force Research Laboratory (AFRL). The Site is bordered on the north and east by predominantly rural and residential areas. Commercial, industrial, and residential land use is generally limited to the properties located to the south and west of the Site. The specific location of the Site is shown in Figure 1, Site Location. Figure 2, Site Plan, provides a layout of GBTP, including relevant Site features.

Former features and operations at each AOC of this SI include the following:

- AOC-B2-03 Hydraulic Dock Plates
- AOC-B3-04 Exterior Grease Interceptor
- AOC-B3-07 Past Use of B-3 Location
- AOC-B3-13 Former B17- located immediately south of B3
- AOC-B14-09 Metals Burial Site (AOI-25)
- AOC-B106-05 Oil/Water Separator #1
- AOC-B106-06 Oil/Water Separator #2
- AOC-B106-09 Storm Drain System, East End
- AOC-B106-11 Suspected Emergency Generator Building
- AOC-B115-03 Drywells
- AOC-B116-01 Former B116
- AOC-B118-01 Former B118
- AOC-P3-01 Former B-117 Steam Plan
- AOC-P3-02 Former B-115

3.0 PROJECT DATA QUALITY OBJECTIVES

3.1 Project Objectives and Problem Definition

Samples will be collected for laboratory analysis to determine the presence or absence in surface and subsurface soils at the Site. The objective of this project is to perform actions necessary to attain regulatory compliance at AFRL/RI. Possible historic chemical use and/or known records at the previously discussed AOCs (Section 2.2) warrant the need for additional investigation, as noted in previous EBSs.

The scope of the sampling effort will involve subsurface investigation (e.g. direct push Geoprobe®, ground penetrating radar [GPR], passive soil vapor survey [PSVS], and dye/smoke testing) and associated sampling to determine the presence or absence of environmental impacts. Based upon reported historic uses of the Site, soil sampling for PCBs, petroleum, metals, VOCs, and SVOCs will be completed. Findings will determine appropriate remedial actions or if additional investigation through a Remedial Investigation/Feasibility Study (RI/FS) is necessary. The intent of the Air Force Environmental Restoration Program is to ultimately achieve Site Closure (i.e. unrestricted use/unrestricted exposure criteria).

3.2 Data Quality Objectives (DQOs)

Date Quality Objectives:

- Obtain data representative of subsurface soil conditions at 14 selected AOCs.

Project Decision Statements:

Future use at the Site is anticipated to remain as commercial/industrial use. Analytical results will be compared to 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs.

1. If the concentration of VOCs in soil samples is above Unrestricted Use SCOs, then remedial actions may be required.
2. If the concentration of RCRA Metals in soil samples is above Unrestricted Use SCOs, then remedial actions may be required.
3. If the concentration of TPH in soil samples is above Unrestricted Use SCOs, then remedial actions may be required.
4. If the concentration of PCBs in soil samples is above Unrestricted Use SCOs, then remedial actions may be required.

3.3 Data Quality and Measurement Quality

NYSDEC Analytical Services Protocol (ASP) Category B data deliverables are required for soil samples. QA/QC samples (duplicates, MS/MSD, blanks) will be necessary. Analytical data obtained to determine soil re-use will also be presented in ASP Category B data deliverables, with QA/QC samples.

Waste characterization samples do not require NYSDEC ASP Category B deliverables or QA/QC samples. NYSDEC ASP Category A deliverables are anticipated for waste characterization samples.

The quantitative analytical data quality objectives (DQOs) will be determined by the method detection limits (MDLs) and reporting limits (RLs) to be specified by the analytical laboratory. MDLs and RLs are highly dependent upon the sample matrix and concentrations of target constituents present. The MDL is a statistically derived value, representing the theoretical minimum level at which a particular analyte can be detected. MDL studies are performed annually by the laboratory. The RL (also referred to as the Contract Required Quantitation Limits (CRQL) for the Contract Laboratory Program (CLP)) is a detection limit that the laboratory is confident can be accurately achieved consistently over time.

3.4 Data Review and Validation

Data packages will be reviewed as to content and sample information upon receipt by the Project Team and the Third Party Data Validation Personnel, Vali-Data of Western New York. Vali-Data of Western New York will provide data validation services and issue a Data Usability Summary Report (DUSR). The DUSR will describe the rationale for the data and the presentation of any data limitations. For example, if the performance criteria are not usable to address the regulatory requirements or support the project-decision for AFRL, then the DUSR should address how this problem can be resolved and can discuss the alternative approach.

Project Data Validation Process

Validation Input	Description	Responsible for Validation (Name, Organization)
SOPs	Ensure that the sampling methods/procedures outlined in QAPP were followed, and that any deviations were noted/approved.	Greg Andrus, Lu Engineers
SOPs	Determine potential impacts from noted/approved deviations, in regard to PQOs.	Greg Andrus, Lu Engineers
Chains of custody	Examine CoC forms against QAPP and laboratory contract requirements (e.g., analytical methods, sample identification, etc.).	Vali-Data of WNY
Laboratory data package	Examine packages against QAPP and laboratory contract requirements, and against COC forms (e.g., holding times, sample handling, analytical methods, sample identification, data qualifiers, QC samples, etc.).	Vali-Data of WNY
Laboratory data package	Determine potential impacts from noted/approved deviations, in regard to PQOs. Examples include PQLs and QC sample limits (precision/accuracy).	Vali-Data of WNY
Field duplicates	Compare results of field duplicate (or replicate) analyses with RPD criteria	Vali-Data of WNY

Data Elements for Data Review Process				
Item	Step I - Data Verification	Step IIa - Data Validation Compliance	Step IIb - Data Validation Comparison	Step III - Data Usability
Planning Documents				
Evidence of approval of SAP	X			Use outputs from previous steps
Identification of personnel	X			
Laboratory name	X			
Methods (sampling & analytical)	X	X	X	
Performance requirements (including QC criteria)	X	X		
Project quality objectives	X		X	
Reporting forms	X	X		
Sampling plans – locations, maps grids, sample ID numbers	X	X		
Site identification	X			
SOPs (sampling & analytical)	X	X		
Staff training & certification	X			

List of project-specific analytes	X	X		
Analytical Data Package				
Case narrative	X	X	X	Use outputs from previous steps
Internal lab chain of custody	X	X		
Sample condition upon receipt, & storage records	X	X		
Sample chronology (time of receipt, extraction/digestion, analysis)	X	X		
Identification of QC samples (sampling /lab)	X	X		
Associated PE sample results	X	X	X	
Communication Logs	X	X		
Copies of lab notebook, records, prep sheets	X	X		
Corrective action reports	X	X		
Definition of laboratory qualifiers	X	X	X	
Documentation of corrective action results	X	X	X	
Documentation of individual QC results (e.g., spike, duplicate, LCS)	X	X	X	
Documentation of laboratory method deviations	X	X	X	
Electronic data deliverables	X	X		
Instrument calibration reports	X	X	X	
Laboratory name	X	X		
Laboratory sample identification no.	X	X		
QC sample raw data	X	X	X	
QC summary report	X	X	X	
Data Elements for Data Review Process				
Raw data	X	X	X	Use outputs from previous steps
Reporting forms, completed with actual results	X	X	X	
Signatures for laboratory sign-off (e.g., laboratory QA manager)	X	X		
Standards traceability records (to trace standard source form NIST, for example)	X	X	X	
Sampling Documents				
Chain of custody	X	X		Use outputs from
Communication logs	X	X		
Corrective action reports	X	X	X	
Documentation of corrective action results	X	X	X	
Documentation of deviation from methods	X	X	X	

Documentation of internal QA review	X	X	X	previous steps
Electronic data deliverables	X	X		
Identification of QC samples	X	X	X	
Meteorological data from field (e.g., wind, temperature)	X	X	X	
Sampling instrument decontamination records	X	X		
Sampling instrument calibration logs	X	X		
Sampling location and plan	X	X	X	
Sampling notes & drilling logs	X	X	X	
Sampling report (from field team leader to project manager describing sampling activities)	X	X	X	
External Reports				
External audit report	X	X	X	Use outputs from previous steps
External PT sample results	X	X		
Laboratory assessment	X	X		
Laboratory QA plan	X	X		
MDL study information	X	X	X	
NELAP accreditation	X	X		

3.5 Data Management

Copies of COC forms will be included in the final report. All field notes and the Site logbook will be maintained in the project file(s). All laboratory records will be included in the ASP-Category B Deliverable package to be submitted with the final report.

Field Sample Collection Documents and Records	Analytical Laboratory Documents and Records	Data Assessment Documents and Records	Project File
• Site and field logbook • Chain-of-Custody (CoC) forms • Air Monitoring Data Logs	• Sample receipt logs • Internal and external CoC forms • Equipment calibration logs • Sample preparation worksheets/logs • Sample analysis worksheets/run logs • Telephone/email logs • Corrective action documentation	• Data validation reports • Field inspection checklist(s) • Laboratory Audit checklist (if performed) • Review forms for electronic entry of data into database • Corrective action documentation	• Project files will be maintained and stored at the Environmental Contractors' offices for a minimum of 5 years after completion of the project. • Files will also be kept at AFRL • Laboratory data, logbooks, and client reports are retained for 5 years unless specified otherwise.

3.6 Assessment Oversight

Refer to Section 3.4.

Table 3-1: Contaminants of Concern and Action Levels (Matrix = Soil)

AOC	Contaminant(s) of Concern	Action Levels
AOC-B2-03	PCBs and TPH	Unrestricted Use SCOs
AOC-B3-04	PCBs, VOCs, RCRA Metals	
AOC-B3-07	VOCs and RCRA Metals	
AOC-B3-13	Petroleum constituents and RCRA Metals	
AOC-B14-09	RCRA Metals	
AOC-B106-05	PCBs, RCRA Metals, and VOCs	
AOC-B106-06	PCBs, RCRA Metals, and VOCs	
AOC-B106-09	PCBs, RCRA Metals, and VOCs	
AOC-B106-11	PCBs and VOCs	
AOC-B115-03	PCBs, RCRA Metals, and VOCs	
AOC-B116-01	PCBs, RCRA Metals, and VOCs	
AOC-B118-01	RCRA Metals and VOCs	
AOC-P3-01	PCBs and Petroleum Constituents	
AOC-P3-02	PCBs, RCRA Metals, and VOCs	

4.0 SAMPLING RATIONALE

The sampling effort will involve subsurface investigation (e.g. direct push Geoprobe®, ground penetrating radar [GPR], passive soil vapor survey [PSVS], and dye/smoke testing) and associated sampling to determine the presence or absence of environmental impacts. Based upon reported historic uses of the Site, soil sampling for PCBs, petroleum, metals, VOCs, and SVOCs will be completed.

Sample locations will be determined in concurrence with AFRL personnel once geophysical surveys (e.g. ground penetrating radar [GPR]) and utility stake-out has been completed.

4.1 Soil Sampling

Subsurface soil sampling will be completed at each AOC to a depth of approximately 12 feet bgs. Refer to Table 4-1. Sampling is being completed to further characterize each AOC.

4.3 Water Sampling

Not applicable. No water sampling, including groundwater and surface water, will be completed as part of the SI.

4.4 Other Sampling

Not applicable.

Table 4-1: Sampling Design
Matrix = Soil

Sampling Location/ID Number	Depth (ft bgs)	Analytical Parameter	Anticipated Number of Samples
AOC-B2-03	TBD	PCB and TPH	8
AOC-B3-04	TBD	PCBs, RCRA Metals, and VOCs	3
AOC-B3-07	TBD	PSVS for VOCs, Soil for VOCs and RCRA Metals	10 (25 PSVS)
AOC-B3-13	TBD	TPH and RCRA metals	5
AOC-B14-09	TBD	RCRA Metals	5
AOC-B106-05	TBD	PCBs, RCRA Metals, and VOCs	3
AOC-B106-06	TBD	PCBs, RCRA Metals, and VOCs	3
AOC-B106-09	TBD	PCBs, RCRA	3

Sampling Location/ID Number	Depth (ft bgs)	Analytical Parameter	Anticipated Number of Samples
		Metals, and VOCs	
AOC-B106-11	TBD	PCBs and VOCs	4
AOC-B115-03	TBD	PCBs, RCRA Metals, and VOCs	6
AOC-B116-01	TBD	PCBs, RCRA Metals, and VOCs	6
AOC-B118-01	TBD	RCRA Metals and VOCs	3
AOC-P3-01	TBD	PCBs and TPH	6
AOC-P3-02	TBD	PCBs, RCRA Metals, and VOCs	6

5.0 REQUEST FOR ANALYSES

5.1 Analyses Narrative

Analytical method references (for preparation and analysis of the samples) and corresponding analytical laboratory SOPs that will be used for this project are indicated below and in Tables 5-1 and 5-2.

ANALYTICAL METHOD REFERENCE
1a. SW846 Method 8260C GCMS Volatiles, August 2006
2a. EPA Method 624 GCMS Purgeables, 40 CFR Part 136, Appendix A
3a. SW846 Method 8270D GCMS Semivolatiles, August 2006
4a. SW846 Method 6010C ICP-AES Metals, August 2006
5a. SW846 Method 7471B CVAA Mercury, August 2006
6a. SW846 Method 8082A, GC PCBs, Rev. 1, February 2007
ANALYTICAL LABORATORY SOPs *To be provided by laboratory

5.2 Analytical Laboratory

The selected analytical laboratory for this SI is Test America Laboratories, Inc., an Environmental Laboratory Approval Program (ELAP)-certified laboratory located in Buffalo, New York. A standard analytical turn-around-time (TAT) will be requested unless project findings warrant otherwise. A Quality Assurance Manual will be provided by the Test America Laboratories, Inc.

Table 5-1: Analytical Method, Containers, Preservation, and Holding Times Requirements
Matrix = Soil

Analytical Parameter and/or Field Measurements	Analytical Method Number	Containers (number, type, size/volume)	Preservation Requirements (chemical, temperature, light protection)	Maximum Holding Times
Volatiles	SW-846 Method 8260B	2-4 oz wide mouth glass jar with Teflon-lined cap	Chill with ice to 4°C	48 hours
Metals	SW-846 Method 6010/7470	8 oz glass jar	Chill with ice to 4°C	<180 days/<28 days for Hg
PCBs	SW-846 Method 8082A	8 oz glass jar with Teflon-lined cap	Chill with ice to 4°C	14 days
TPH	SW-846 Method 8015B	4 oz wide mouth glass jar with Teflon-lined cap	Chill with ice to 4°C	14 days

TPH = total petroleum hydrocarbons

Sample preservation will be verified at the lab just prior to extraction, digestion, and/or analysis and the pH will be recorded in the extraction/digestion logbook. The pH may be checked upon arrival, if desired. If the samples are improperly preserved, a QA/QC discrepancy form will be submitted to the lab manager and QA coordinator for appropriate follow-up action (i.e., evaluation of the data during the data validation process and, if necessary, additional instruction of personnel regarding proper procedures).

Table 5-2: Analytical Services
Matrix = Soil

Sample Number	Sample Location	Depth (ft)	Special Designation	Analytical Methods			
				SW846 Method 8260B (volatiles)	SW846 Method 6010/7470 (metals)	SW846 Method 8015B (TPH)	SW846 Method 8082A (PCBs)
GP-01- GP-06 (6 samples)	AOC-B115-03	TBD	TBD	6	6		6
GP-01- GP-06 (6 samples)	AOC-B116-01	TBD	TBD	6	6		6
GP-01- GP-03 (3 samples)	AOC-B118-01	TBD	TBD	3			3
GP-01-GP-06 (6 samples)	AOC-P3-02	TBD	TBD			6	6
GP-01- GP-06 (6 samples)	AOC-P3-02	TBD	TBD	6	6		6
GP-01- GP-03 (3 samples)	AOC-B106-05	TBD	TBD	3	3		3
GP-01- GP-03 (3 samples)	AOC-B106-06	TBD	TBD	3	3		3
GP-01- GP-03 (3 samples)	AOC-B106-09	TBD	TBD	3	3		3
GP-01- GP-04 (4 samples)	AOC-B106-11	TBD	TBD	4			4
GP-01- GP-08 (8 samples)	AOC-B2-03	TBD	TBD			8	8
GP-01- GP-03 (3 samples)	AOC-B3-04	TBD	TBD	3	3		3
GP-01-GP-10 (10 samples)	AOC-B3-07	TBD	TBD	10	10		
GP-01- GP-05 (5 samples)	AOC-B3-13	TBD	TBD		5	5	
GP-01- GP-05 (5 samples)	AOC-B14-09	TBD	TBD	5	5		
Total number of Soil Samples, excluding QC:				52	50	19	51
Total number of Soil Samples, including QC:				TBD	TBD	TBD	TBD

6.0 FIELD METHODS AND PROCEDURES

6.1 Field Equipment

6.1.1 List of Equipment Needed

The on-Site monitoring equipment includes volatile organic compound (VOC) monitors, particulate monitors and Global Positioning System (GPS) units. Operation and calibration of monitoring equipment anticipated for use during the project are discussed below.

6.1.2 Calibration of Field Equipment

Refer to Table 6-2.

6.2 Field Screening

During subsurface investigation, a Lu Engineers field team member will document visual observations, screen the soils with a PID, collect selected samples for laboratory analysis, photograph the field work, and prepare the appropriate field logs to document pertinent information. Pertinent information will be recorded on test pit logs and boring/well logs, and will include:

- Date, location identification, and project identification;
- Name of individual completing the log;
- Name of contractor;
- Equipment make and model, and auger size;
- Drilling methods used;
- Depths recorded in feet and fractions thereof referenced to ground surface;
- Standard penetration test (American Standards Testing Materials (ASTM) D-1586) blow counts;
- Sample depth interval and % recovered;
- Description of soil type using the Unified Soil Classification System or New York State Department of Transportation (NYSDOT) Soil Control Procedure STP-2 “An Engineering Description of Soils, Visual-Manual Procedure”;
- PID screening results of soil samples.

6.3 Soil

6.3.1 Surface Soil Sampling

Exact soil sampling locations will be determined in the field based on accessibility, visible signs of potential contamination (e.g., stained soils), and topographical features which may indicate the location of hazardous substance disposal (e.g., depressions that may indicate a historic excavation). Soil sample locations will be recorded in the field logbook as sampling is completed. A sketch of the sample location will be entered into the logbook and any physical reference points will be labeled. If possible, distances to the reference points will be given.

Samples will be obtained with a pre-cleaned stainless steel trowel or spoon and transferred to the appropriate clean glass containers. Sufficient sample volume (as specified by the

laboratory) will be collected to fill the sample bottles. All tools to be used will be decontaminated according to procedures outlined in Section 4.0 prior to usage.

Any observable physical characteristics of the soil, sediment or non-aqueous water as it is being sampled (i.e., color, odor, physical state) will be recorded on appropriate sampling logs. See Section 7.0 for preservation and shipping procedures.

6.3.2 Subsurface Soil Sampling

Exact soil sampling locations will be determined in the field based on accessibility, visible signs of potential contamination (e.g., stained soils), and topographical features which may indicate the location of hazardous substance disposal (e.g., depressions that may indicate a historic excavation) with the concurrence of AFRL. Soil sample locations will be recorded in the field logbook as sampling is completed. A sketch of the sample location will be entered into the logbook and any physical reference points will be labeled. If possible, distances to the reference points will be given.

During subsurface investigation, a Lu Engineers field team member will document visual observations, screen the soils with a PID, collect selected samples for laboratory analysis, photograph the field work, and prepare the appropriate field logs to document pertinent information. Pertinent information will be recorded on test pit logs and boring/well logs, and will include:

- Date, location identification, and project identification;
- Name of individual completing the log;
- Name of contractor;
- Equipment make and model, and auger size;
- Drilling methods used;
- Depths recorded in feet and fractions thereof referenced to ground surface;
- Standard penetration test (American Standards Testing Materials (ASTM) D-1586) blow counts;
- Sample depth interval and % recovered;
- Description of soil type using the Unified Soil Classification System
- Depth of water encountered; and
- PID screening results of soil samples.

See Section 7.1 for preservation and shipping procedures. Excess set-aside soil from the above sampled interval will containerized and disposed of as IDW.

6.4 Decontamination Procedures

All decontamination will be performed in accordance with NYSDEC-approved decontamination procedures. Sampling methods and equipment have been chosen to minimize decontamination requirements and prevent the possibility of cross-contamination.

Split-spoons, other non-disposable sampling equipment, and stainless steel spoons will be decontaminated using the following procedure:

- Alconox/tap water wash
- Tap water rinse
- Deionized/distilled water rinse
- Air dry

During periods of transportation and non-use, all decontaminated sampling equipment should be wrapped in aluminum foil.

One (1) field rinseate blank will be collected for each type of equipment used each day a decontamination event is carried out.

If necessary, a temporary decontamination pad will be established in a secure area on-site using 6-mil polyethylene sheeting. The equipment and associated tooling will be decontaminated using steam-cleaning methods at the designated location. Fluids generated during decontamination will be collected in the plastic-lined decontamination pad. All decontamination wastes will be transferred into drums or an on-site holding tank for appropriate staging and disposal. The AFRL contractor/representative will be responsible for proper staging and disposal of all investigation-derived wastes. Final disposal of soils and water will be dependent on the results of the soil and groundwater analyses to be conducted during this investigation.

Table 6-1: Field and Sampling Equipment

Description of Equipment	Material (if applicable)	Dedicated (Yes/No)
Sampling sleeves	Acetate or equivalent	Yes
Hand auger	Hardened steel	No
Sample jars	Plastic	Yes
Sampling trowel	Plastic or stainless steel	Yes

Table 6-2: Field Equipment/Instrument Calibration, Maintenance, Testing, and Inspection

Analytical Parameter	Field Equipment/ Instrument	Calibration Activity	Maintenance & Testing/ Inspection Activity	Frequency	Acceptance Criteria	Corrective Action
VOCs	MiniRAE 3000 PID (or equivalent) equipped with 10.6 eV lamp	Zero calibration; span calibrate with isobutylene standard gas	N/A	Prior to day's activities; anytime anomaly suspected	± 10%	Replace filter, blow-dry the sensor module, re-calibrate
Particulates	DataRAM, or equivalent	Internal Span Check; Zero Calibration	Optical sensor chamber and cyclone cleaning, as needed.	Prior to day's activities; anytime anomaly suspected	"Calibration OK" output	Repair as necessary
Gas	EntryRAE Multi-Gas Monitor	Fresh air calibration; Span gas calibration	Replace sensors and charcoal filter, as needed.	Fresh air calibration prior to day's activities; anytime anomaly suspected. Full calibration every 30 days.	Methane: 0% to +20%; no "Err" code during span calibration	Replace filter, clean PID sensor, re-calibrate

7.0 SAMPLE CONTAINERS, PRESERVATION, PACKAGING AND SHIPPING

This section describes procedures for sample handling and chain-of-custody to be followed by Lu Engineers sampling personnel and the analytical laboratory. The purpose of these procedures is to ensure that the integrity of the samples is maintained during their collection, transportation, storage, and analysis. All chain-of-custody requirements comply with SOPs (Standard operating procedures) indicated in EPA sample-handling protocols, described in the EPA QAPP guidance and Contract Laboratory Protocols.

Sample identification documents will be carefully prepared so that sample identification and chain-of-custody can be maintained and sample disposition controlled. Sample identification documents include field notebooks, sample labels, custody seals, chain-of-custody records, and laboratory sample log-in and tracking forms.

The primary objective of the chain-of-custody procedures is to provide an accurate written record that can be used to trace the possession and handling of a sample from the moment of its collection through it analyses. A sample is in custody if it is:

- In someone's physical possession;
- In someone's view;
- Locked up; or
- Kept in a secured area that is restricted to authorized personnel.

New laboratory-grade sample containers obtained from a reliable supplier will be provided by the analytical laboratory. All containers provided by the laboratory are pre-cleaned (Level 1), with Certificates of Analysis available for each bottle type. Certifications of Analysis provided by the vendor are kept on file by the laboratory.

All samples will be stored on ice pending delivery to the laboratory. A list of preservatives and holding times for each type of analysis is included in Table 5-2.

All containers of samples collected by Lu Engineers from the project will be identified using a format identified in the field on a label affixed to the sample container (labels are to be covered with clear tape). Generally, the format will include the following.

- AOC Name (i.e., AOC-B3-07); leave blank if Test Pit or Geoprobe sample is not associated with a specific building or area
- One (1), two (2) or three (3) letters identifying the type of sample:
  - GP- Geoprobe soil sample
  - TP- test pit soil sample
  - SS- surface soil sample
  - SV- soil vapor sample
  - S-soil sample
- Two (2) numbers identifying a sample number;
- Additional letters identifying special parameters, if applicable.
  - D – Field Duplicate
  - MS – Matrix Spike

MD- Matrix Spike Duplicate

Example: AOC-B3-07-GP-01 is a Geoprobe soil sample collected from AOC-B3-07.

Each sample will be sealed and labeled immediately after collection. To minimize handling of sample containers, labels may be filled out prior to sample collection. The sample label will be filled out using waterproof ink and will be firmly affixed to the sample containers and protected with Mylar tape. The sample label will give the sample number, the date of the collection, analysis required, and pH and preservation, if appropriate.

7.1 Packaging and Shipping

All sample containers will be placed in a strong-outside shipping container (a steel-belted cooler). The following outlines the packaging procedures that will be followed for low concentration samples.

1. When ice is used, pack it in zip-locked, double plastic bags. Seal the drain plug of the cooler with fiberglass tape to prevent melting ice from leaking out of the cooler.

2. The bottom of the cooler should be lined with bubble wrap to prevent breakage during shipment.

3. Check screw caps for tightness and, if not full, mark the sample volume level of liquid samples on the outside of the sample bottles with indelible ink.

4. Secure bottle/container tops with clear tape and custody seal all container tops.

5. Affix sample labels onto the containers with clear tape.

6. Wrap all glass sample containers in bubble wrap to prevent breakage.

7. Seal all sample containers in heavy duty plastic zip-lock bags. Write the sample numbers on the outside of the plastic bags with indelible ink.

8. Place samples in a sturdy cooler(s) lined with a large plastic trash bag. Enclose the appropriate COC(s) in a zip-lock plastic bag affixed to the underside of the cooler lid.

9. Fill empty space in the cooler with bubble wrap or Styrofoam peanuts to prevent movement and breakage during shipment. Vermiculite should also be placed in the cooler to absorb spills if they occur.

10. Ice used to cool samples will be double sealed in two zip lock plastic bags and placed on top and around the samples to chill them to the correct temperature.

11. Each ice chest will be securely taped shut with fiberglass strapping tape, and custody seals will be affixed to the front, right and back of each cooler.

8.0 DISPOSAL OF RESIDUAL MATERIALS

In the process of collecting environmental samples, the sampling team will generate different types of potentially contaminated IDW that include the following:

- Used personal protective equipment (PPE)
- Disposable sampling equipment
- Decontamination fluids
- Soil cuttings from soil borings

The EPA's National Contingency Plan (NCP) requires that management of IDW generated during sampling comply with all applicable or relevant and appropriate requirements (ARARs) to the extent practicable. The sampling plan will follow the *Office of Emergency and Remedial Response (OERR) Directive 9345.3-02* (May 1991), which provides the guidance for the management of IDW. In addition, other legal and practical considerations that may affect the handling of IDW will be considered.

Listed below are the procedures that should be followed for handling the IDW. The procedures have enough flexibility to allow the sampling team to use its professional judgment as to the proper method for the disposal of each type of IDW generated at each sampling location.

- Used PPE and disposable equipment will be double bagged and placed in a municipal refuse dumpster. These wastes are not considered hazardous and can be sent to a municipal landfill. Any PPE and disposable equipment that is to be disposed of which can still be reused will be rendered inoperable before disposal in the refuse dumpster.

- Decontamination fluids that will be generated in the sampling event will consist of dilute nitric acid, pesticide-grade solvent, deionized water, residual contaminants, and water with non-phosphate detergent. The volume and concentration of the decontamination fluid will be sufficiently low to allow disposal at the site or sampling area. The water (and water with detergent) will be poured onto the ground or into a storm drain. Pesticide-grade solvents will be allowed to evaporate from the decontamination bucket. The nitric acid will be diluted and/or neutralized with sodium hydroxide and tested with pH paper before pouring onto the ground or into a storm drain.

- Soil cuttings generated during the subsurface sampling will be containerized and disposed of as either non-hazardous or hazardous IDW, depending on sample results.

9.0 SAMPLE DOCUMENTATION AND SHIPMENT

9.1 Field Notes

9.1.1 Field Logbooks

At a minimum, the following information will be recorded during the collection of each sample:

- Sample location and description
- Site or sampling area sketch showing sample location and measured distances
- Sampler's name(s)
- Date and time of sample collection
- Designation of sample as composite or grab
- Type of sample (soil)
- Type of sampling equipment used
- Field instrument readings and calibration
- Field observations and details related to analysis or integrity of samples (e.g., weather conditions, noticeable odors, colors, etc.)
- Preliminary sample descriptions (e.g., for soils: clay loam, very wet; for water: clear water with strong ammonia-like odor)
- Sample preservation
- Lot numbers of the sample containers, sample identification numbers and any explanatory codes, and chain-of-custody form numbers
- Shipping arrangements (overnight air bill number)
- Name(s) of recipient laboratory(ies)

In addition to the sampling information, the following specific information will also be recorded in the field logbook for each day of sampling:

- Team members and their responsibilities
- Time of arrival/entry on site and time of site departure
- Other personnel on site
- Summary of any meetings or discussions with tribal, contractor, or federal agency personnel
- Deviations from sampling plans, site safety plans, and SAP procedures
- Changes in personnel and responsibilities with reasons for the changes
- Levels of safety protection
- Calibration readings for any equipment used and equipment model and serial number

9.1.2 Photographs

Photographs will be taken at the sampling locations and at other areas of interest on the site or sampling area. They will serve to verify information entered in the field logbook. For each photograph taken, the following information will be written in the logbook or recorded in a separate field photography log:

- Time, date, location, and weather conditions
- Description of the subject photographed
- Name of person taking the photograph

9.2 Labeling

All samples collected will be labeled in a clear and precise way for proper identification in the field and for tracking in the laboratory. A copy of the sample label is included in Appendix __. The samples will have pre-assigned, identifiable, and unique numbers. At a minimum, the sample labels will contain the following information: AOC location, date of collection, analytical parameter(s), and method of preservation.

The format will include the following.

- Building number or location if applicable (i.e., B1250; MH-Manhole; WDA- Waste Disposal Area; etc.); leave blank if Test Pit or Geoprobe sample is not associated with a specific building or area
- One, two or three letters identifying the type of sample:

  GP- Geoprobe soil sample
  TP- test pit soil sample
  SV- soil vapor sample
  SS- surface soil sample
  S-soil
- Two (2) numbers identifying a sample number;
- Additional letters identifying special parameters, if applicable.

  D – Field Duplicate
  MS – Matrix Spike
  MD- Matrix Spike Duplicate

9.3 Sample Chain-Of-Custody Forms and Custody Seals

All sample shipments for analyses will be accompanied by a chain-of-custody record. Form(s) will be completed and sent with the samples for each laboratory and each shipment (i.e., each day). If multiple coolers are sent to a single laboratory on a single day, form(s) will be completed and sent with the samples for each cooler.

The chain-of-custody form will identify the contents of each shipment and maintain the custodial integrity of the samples. Generally, a sample is considered to be in someone's custody if it is either in someone's physical possession, in someone's view, locked up, or kept in a secured area that is restricted to authorized personnel. Until the samples are shipped, the custody of the samples will be the responsibility of Lu Engineers. The sampling team leader or designee will sign the chain-of-custody form in the "relinquished by" box and note date, time, and air bill number.

A self-adhesive custody seal will be placed across the lid of each sample. For VOC samples, the seal will be wrapped around the cap. The shipping containers in which samples are stored (usually a sturdy picnic cooler or ice chest) will be sealed with self-adhesive custody seals any

time they are not in someone's possession or view before shipping. All custody seals will be signed and dated.

10.0 QUALITY CONTROL

10.1. Equipment Blanks

Equipment rinsate blanks will be collected to evaluate field sampling and decontamination procedures by pouring High Performance Liquid Chromatography (HPLC) organic-free (for organics) or deionized water (for inorganics) over the decontaminated sampling equipment. One equipment rinsate blank will be collected per matrix each day that sampling equipment is decontaminated in the field. Equipment rinsate blanks will be obtained by passing water through or over the decontaminated sampling devices used that day. The rinsate blanks that are collected will be analyzed for VOCs, RCRA Metals, TPH, and/or PCBs.

The equipment rinsate blanks will be preserved, packaged, and sealed in the manner described for the environmental samples. A separate sample number and station number will be assigned to each sample, and it will be submitted blind to the laboratory.

10.2 Field Blanks

Field blanks will be collected to evaluate whether contaminants have been introduced into the samples during the sampling due to ambient conditions or from sample containers. Field blank samples will be obtained by pouring High Performance Liquid Chromatography (HPLC) organic-free water (for organics) and/or deionized water (for inorganics) into a sampling container at the sampling point. The field blanks that are collected will be analyzed for VOCs, PCBs, RCRA metals, and or TPH.

The field blanks will be preserved, packaged, and sealed in the manner described for the environmental samples. A separate sample number and station number will be assigned to each sample, and it will be submitted blind to the laboratory.

10.3 Trip Blanks

Trip blanks will be prepared to evaluate if the shipping and handling procedures are introducing contaminants into the samples, and if cross contamination in the form of VOC migration has occurred between the collected samples. A minimum of one (1) trip blank will be submitted to the laboratory for analysis with every shipment of samples for VOC analysis. Trip blanks are 40-mL vials that have been filled with HPLC-grade water that has been purged so it is VOC free and shipped with the empty sampling containers to the site or sampling area prior to sampling. The sealed trip blanks are not opened in the field and are shipped to the laboratory in the same cooler with the samples collected for volatile analyses. The trip blanks will be preserved, packaged, and sealed in the manner described for the environmental samples. A separate sample number and station number will be assigned to each trip sample and it will be submitted blind to the laboratory.

10.4 Temperature Blanks
For each cooler that is shipped or transported to an analytical laboratory a 40-mL VOA vial will be included that is marked "temperature blank." This blank will be used by the sample custodian to check the temperature of samples upon receipt.

10.5 Assessment of Field Variability (Field Duplicate or Co-located Samples)
Duplicate soils samples will be collected at sample locations determined in the field. It is anticipated that duplicate samples will be collected from locations with moderate concentrations of contaminants of concern.

Duplicate samples will be preserved, packaged, and sealed in the same manner as other samples of the same matrix. A separate sample number and station number will be assigned to each duplicate, and it will be submitted blind to the laboratory.

10.6 Laboratory Quality Control Samples
A routinely collected soil sample (a full 8-oz sample jar) contains sufficient volume for both routine sample analysis (for other than VOCs) and additional laboratory QC analyses. Therefore, a separate soil sample for laboratory QC purposes will not be collected.

The laboratory should be alerted as to which sample is to be used for QC analysis by a notation on the sample container label and the chain-of-custody record or packing list.

At a minimum, one laboratory QC sample is required per 14 days or one (1) per 20 samples (including blanks and duplicates), whichever is greater. If the sample event lasts longer than 14 days or involves collection of more than 20 samples per matrix, additional QC samples will be designated.

Samples designated for laboratory QC samples will be determined based on observation and findings during the SI.

11.0 FIELD VARIANCES
As conditions in the field may vary, it may become necessary to implement minor modifications to sampling as presented in this plan. When appropriate, the QA Office will be notified and a verbal approval will be obtained before implementing the changes. Modifications to the approved plan will be documented in the sampling project report.

12.0 FIELD HEALTH AND SAFETY PROCEDURES
Monitoring of the work area and screening of soil and groundwater will be conducted throughout the duration of field activities to assure the safety of on-Site workers. A copy of the Site-Specific Health and Safety Plan (HASP) is provided as Appendix A of the SI Work Plan.

Air monitoring of the work areas and environmental media therein will be conducted using a PID equipped with a 10.2 eV lamp (or equivalent). A Community Air Monitoring Plan (CAMP), in accordance to the NYSDOH guidelines, will be implemented if determined necessary.