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April 17, 2024

Ms. Robyn Stanicki
City of Bangor
73 Harlow Street
Bangor, ME 04401

Subject: **DRAFT Analysis of Brownfields Cleanup Alternatives**
Alert Building
Bangor International Airport, Bangor, ME 04401
Brownfields Cleanup Grant #: BF-00A01171

Dear Ms. Stanicki,

This Analysis of Brownfields Cleanup Alternatives has been prepared to present a comparison of alternatives related to the cleanup of known environmental contamination at the above referenced property.

Please do not hesitate to contact me at (207) 232-5387 if you have any questions, comments, or require additional information regarding this investigation.

Sincerely,

CREDERE ASSOCIATES, LLC

Judd Newcomb, PG, LG
Senior Project Manager

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Vice President

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DRAFT Analysis of Brownfields Cleanup Alternatives

Alert Building
Bangor International Airport
Bangor, Maine 04401

Prepared for and funded by:
Brownfields Cleanup Grant #: BF00A01171
City of Bangor
73 Harlow Street
Bangor, Maine 04401
Contact: Robyn Stanicki, Community Development Officer

March 17, 2024

In Reference to:
Credere Project No. 23001836

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1. INTRODUCTION

Credere Associates, LLC (Credere) was retained by the City of Bangor (City) to prepare this Analysis of Brownfields Cleanup Alternatives (ABCA) for the Alert Building facility (Site) located within the Bangor International Airport (BIA) property (Property) in Bangor, Maine. The City is using funding from a United States (U.S.) Environmental Protection Agency (EPA) Brownfields Cleanup Grant (BF-00A01171) to conduct cleanup planning activities for the Site. The following report provides a technical evaluation of remedial alternatives for addressing the identified environmental conditions at the Site.

1.1 PURPOSE AND SCOPE

The purpose of this ABCA is to evaluate appropriate cleanup alternatives to mitigate previously identified environmental conditions at the Site. Consistent with the findings of past environmental investigations, the following environmental conditions at the Site will be addressed:

- Asbestos-containing materials (ACMs), polychlorinated biphenyl (PCB)-containing materials, lead-based paint (LBP), and lead-containing paint (LCP) identified throughout the Site buildings.
- Universal, hazardous, or other regulated wastes identified throughout the Site buildings, including fluorescent lightbulbs and light ballasts, emergency lights containing batteries, fire extinguishers, mercury thermostats, air conditioners, and miscellaneous materials such as stored paints and solvents.

1.2 SITE DESCRIPTION

The Site comprises an approximate 1.31-acre portion of the larger BIA Property, located in the southern portion of the airport south of an unused taxiway and aircraft stands. The Site has not been formally subdivided from the BIA Property; however, the City intends to construct commercial hangar space at the Site that can be leased by private businesses. The approximate location and extent of the Site are depicted on **Figure 1** and **Figure 2**, respectively.

The Site served as aircraft pilot living quarters and an aircraft rapid response facility in the case of a national security threat. The Site building reportedly featured a command center, living quarters, common areas, and a mess hall when it was operational until about 1968. The multi-story concrete block structure is comprised of one above-ground floor, and two below-ground floors, including a basement, and a sub-basement that houses the building's boiler room. In addition, 11 concrete access ramps extend out from the Site building, which provided pilots rapid access to aircraft nearby. The building was once serviced by underground utility lines including those for heating oil, electricity, water, and sewer, which remain in place but inactive. Fuel oil for the boiler located in the sub-basement was stored in former underground storage tanks (USTs) near the southern Site boundary (USTs located offsite as the current Site boundary is defined).

The Site building has been vacant and unmaintained since 1968. As a result, the structure is severely dilapidated and no longer safe to enter due to collapsed roofing components, observed

presence of mold throughout, building debris throughout, and various damage resulting from exposure to the elements. Additionally, the sub-basement boiler room is typically flooded with water, as observed during past Site visits, making it entirely inaccessible.

A Site Location Plan has been provided as **Figure 1**, and **Figure 2** depicts pertinent Site features.

1.3 SITE HISTORY

General Airport History

BIA was first developed in 1927 as part of Godfrey Field, a municipal airport for the City, until a lease agreement was signed with the U.S. Army to construct facilities for the 43rd Bombardment Group. In 1942, the installation was officially referred to as Dow Army Airfield. By 1943, the Federal government acquired 750-acres surrounding the airfield by condemnation and/or purchase. The deed contained a clause reverting ownership back to the City when the Federal Government no longer needed it for military purposes.

During World War II, the Army Air Corps used the airfield as a major point of embarkation and debarkation for planes flying to and from Europe. The airfield was renamed Dow Air Force Base (AFB) in 1947. The base was initially deactivated in 1948 and was returned to the City under a license agreement. In 1951, Dow AFB was reactivated, and its use included the Strategic Air Command, the Tactical Air Command, and the Air Defense Command. In 1964, Dow AFB was declared excess and was reported to the General Services Administration for disposal when military operations ceased in 1968. A deed dated December 18th, 1968, conveyed 1,590 acres and extensive easement areas of the former AFB to the City. The deed restricted the use to public airport purposes, and it has remained a public airport since then. Generally, the airport area surrounding the Site has remained consistent from at least 1973 through the present.

The Site Building

The Site building was built sometime after the opening of Dow Army Airfield in 1942, and before the closure of Dow AFB in 1968. As indicated above, it served as aircraft pilot living quarters and rapid response facility in the event of a national security threat. During former operations, the building featured a command center, barracks, common areas, and a mess hall.

Once Dow AFB closed in 1968, the City regained ownership of the Site and the Site building was abandoned, and has remained so since 1968.

1.4 PROPOSED REUSE

The Site building is planned for demolition and the Site is targeted for redevelopment as hangar space and lease to an aviation industry related business.

2. SUMMARY OF PREVIOUS INVESTIGATIONS

Phase I Environmental Site Assessment, Credere, May 28, 2015

Credere completed a Phase I Environmental Site Assessment (ESA) at the Site in May 2015, on behalf of the City as part of their environmental due diligence prior to the possible redevelopment of the Site. The Phase I ESA identified the following recognized environmental conditions (RECs):

- REC #1 – Potential surface soil impacts due to the proximity of the Site to the airport taxiway
- REC #2 – Potential groundwater and soil impacts from the onsite unassessed fuel line and migration onto the Site from offsite historical USTs

The following were identified as environmental findings, which warranted the opinion of the Environmental Professional and could represent some degree of environmental business risk, but did not meet the definition of a REC, historical REC (HREC), controlled REC (CREC), or *de minimis* condition (DMC):

- Environmental Finding #1 – Possible presence of ACM
- Environmental Finding #2 – Possible presence of LCP
- Environmental Finding #3 – Possible presence of PCB-containing materials
- Environmental Finding #4 – Possible presence of universal, hazardous and other regulated wastes
- Environmental Finding #5 – Likely presence of mold throughout the Site building

Based on the RECs and environmental findings identified during the Phase I ESA, Credere recommended the following:

- Conduct a Phase II ESA, including a hazardous building materials survey, to assess the identified RECs and environmental findings at the Site

Supplemental Research, Credere, June 2015

During preparation of the Site-Specific Quality Assurance Project Plan (SSQAPP), Credere contacted Andy Rudzinski, Pretreatment/Safety Coordinator at the City's Wastewater Treatment Facility. Mr. Rudzinski indicated he was familiar with the Site, as the northern adjoining tarmac and aircraft stands had previously been used by the City Wastewater Treatment Facility for sludge composting operations. Further research revealed the northern adjoining area was used as the Wastewater Treatment Facility's sludge compost site from 1975 until February 1994. Aerial photographs provided by Bangor Wastewater Treatment Plant Lab Director Tom Hambrock showed a leachate drain extended onto the Site and around the western and southern sides of the Site building.

According to Mr. Rudzinski, the compost operations ended due to issues with leachate containment, indicating sludge compost leachate (a potential source of heavy metals) may have drained onto the Site and potentially into the Site building.

Site-Specific Quality Assurance Project Plan, Credere, August 20, 2015

Credere prepared a SSQAPP to guide assessment activities at the Site to confirm or dismiss the RECs identified during the Phase I ESA. The SSQAPP described Site conditions, established a preliminary conceptual site model (CSM), established specific objectives and tasks to fulfill the recommendation of the Phase I ESA, outlined proposed samples and justification, provided field activity methodology, and established the regulatory criteria for the Site. The SSQAPP was reviewed and approved by the EPA and Maine DEP prior to initiation of field activities at the Site.

Phase II Environmental Site Assessment, Credere, January 27, 2016

To assess the RECs and environmental findings presented in the Phase I ESA, Credere conducted a Phase II ESA in accordance with the August 20, 2015, SSQAPP. The following objectives were established for the Phase II ESA:

- Assess surface soil impacts associated with aircraft exhaust, possible historical spills of jet fuel, and wastewater sludge composting (REC #1)
- Assess the presence of presumed onsite historical out-of-service fuel oil lines (REC #2)
- Assess subsurface soil and groundwater impacts associated with the migration of petroleum compounds from presumed onsite out-of-service fuel lines and offsite historical USTs (REC #2)
- Assess the presence of hazardous building materials in/on the Site building (Environmental Findings #1 through #3)
- Assess impacts to standing water in the sub-basement boiler room of the Site building for future disposal purposes (data gap assessment)

The following tasks were completed to address these objectives:

- Direct-push soil boring advancement and surface/subsurface soil sampling
- A geophysical survey for utility clearance and to locate the out-of-service fuel lines
- A hazardous building materials survey including screening for LCP, sampling of suspect ACM, and sampling of suspect PCB-containing materials
- Sampling of standing water in the boiler room for waste characterization purposes

Based on the assessment results, Credere made the following conclusions regarding the RECs and environmental findings identified in the Phase I ESA:

- REC #1 – Potential surface soil impacts due to the proximity of the Site to the airport taxiway: DISMISSED

- REC #2 – Potential groundwater and soil impacts from the onsite unassessed fuel line and migration onto the Site from offsite historical USTs: Impacts DISMISSED, however, the presence of the fuel line was CONFIRMED
- Environmental Finding #1 – Possible presence of ACM: CONFIRMED; ACMs listed below in **Section 3.5**.
- Environmental Finding #2 – Possible presence of LCP: CONFIRMED; LCPs listed below in **Section 3.5**.
- Environmental Finding #3 – Possible presence of PCB-containing materials: CONFIRMED; PCB-containing materials listed below in **Section 3.5**.
- Boiler room standing water data gap assessment: Waste characterization results provided to the City for future use

Based on the conclusions of this investigation, Credere made the following recommendations:

- Properly remove the fuel oil supply lines in accordance with Maine DEP Chapter 691: Rules for Underground Storage Facilities
- Report the presence of PCB bulk product waste to the EPA Region 1 PCB coordinator, further delineate PCB paints, and prepare/implement a Self-Implementing PCB Cleanup Plan; [*however, this recommendation was not completed because the Site building is planned for full demolition and disposal, therefore a Self-Implementing PCB Cleanup Plan is not required.]*
- Further assess the presence of hazardous building materials and/or other wastes in the boiler room prior to building demolition and after the removal of standing water
- Prior to building demolition, properly abate identified ACM throughout the Site building
- During building demolition, provide proper notification to workers regarding LCP, and implement health and safety precautions in accordance with OSHA Lead in Construction Standards (29 CFR 1926.62)
- Prior to building demolition, consolidate and properly dispose of universal waste and other wastes identified throughout the building
- During building demolition, implement proper health and safety practices to prevent worker exposure to mold
- Utilize boiler room water characterization data for offsite disposal facility acceptance (if the water is removed from the building)

3. UPDATED CONCEPTUAL SITE MODEL

A CSM was developed using the findings of the previous investigations and will be updated in subsequent reports as new information becomes available. This CSM includes a Site description and Site history, description of the physical setting of the Site, contaminants of potential concern (COPCs), nature and extent of contamination, exposure pathways, and potential human and environmental receptors.

3.1 SITE DESCRIPTION

A detailed Site description consisting of Site use, the Site location, and subsurface utilities is included in **Section 1.2**.

3.2 SITE HISTORY

A description of the Site history as it relates to current environmental conditions is included in **Section 1.3**.

3.3 PHYSICAL SETTING

Topography

Based on Credere's Site observations and the United States Geological Survey (USGS) Topographic Map of the Bangor Quadrangle, Maine, topography at the Site and throughout the airport is artificially flat, and the local area slopes gently to the north-northwest towards a swale and vegetated areas surrounding the perimeter of the airport. The building itself is slightly mounded for ground level access to both the first floor and basement. An excerpt from the Bangor, Maine USGS topographic map of the area is presented as **Figure 1.**

Geology

Surficial Geology

According to the Maine Geological Survey (MGS) Surficial Geology map of the Bangor Quadrangle, Maine, the Site is underlain the Presumpscot Formation consisting of glaciomarine silt, clay, and sand deposited on the late glacial sea floor. According to the Overburden Thickness map of the Bangor 30 x 60-minute Quadrangle, overburden in the area of the Site is approximately 10 to 15-feet thick.

Soil borings from Credere's Phase II ESA indicated overburden thickness at the Site ranges from 4.5 feet below ground surface (bgs) to 9.8 feet bgs with deeper refusal trending westward and undulating. Overburden was observed to consist of topsoil at the surface underlain by sand with varying amounts of sand interlayered with gravel. Approximately 1 to 2-feet of weathered bedrock was encountered above refusal in previously advanced soil borings CA-SB-1, CA-SB-2, and CA-SB-3.

Bedrock Geology

According to the MGS map Bedrock Geology of the Bangor Quadrangle, Maine, bedrock beneath the Site consists of Silurian feldspathic-metawacke with areas of siltstone and claystone slate of the Penobscot River Member of the Bangor Formation within the Vassalboro Group. A large bedrock outcrop was observed just south of the southern Site boundary that appeared consistent with this mapped lithology. Weathered bedrock observed in previously advanced soil borings contained a high clay content with expanding clay observed in joints and fractures, which is also consistent with the mapped rock types.

Hydrology

The Site is located within a surficial drainage basin of an unnamed tributary of the Penobscot River, which is approximately 0.5-mile southeast of the Site. The unnamed tributary flows south and discharges into the Penobscot River approximately 2.3 miles southeast of the Site. The Penobscot River flows south and discharges to the Atlantic Ocean approximately 20 miles south of the Site. Stormwater is expected to infiltrate the permeable surfaces or flow via sheet flow into the storm drain in the southwestern portion of the Site, which discharges to a nearby swale.

Review of the MGS Significant Sand and Gravel Aquifers map for the Bangor Quadrangle, Maine, indicates the Site does not fall within a mapped significant sand and gravel aquifer.

Groundwater was not encountered in soil borings advanced during the Phase II ESA; therefore, groundwater flow direction has not been interpreted at the Site. Based on groundwater levels reported at a property approximately 1,300 feet southwest of the Site, groundwater at the Site is presumed to flow southeast; however, based on mapped topography and the location of the nearest surface water body, groundwater in the immediate area of the Site could also flow northwest, away from the aircraft stands and taxiway, toward the swale/vegetated area that surrounds the perimeter of the airport. Since groundwater at the Site is presumed to be within the bedrock, flow direction is likely influenced by bedrock structure.

Changing Climate Concerns

Based on the National Oceanic and Atmospheric Administration (NOAA) interactive map of Sea Level Rise and Coastal Flooding Impacts (https://coast.noaa.gov/digitalcoast/tools/slr.html), sea level rise of up to 10 feet and associated increased coastal flooding is not expected to impact the Site.

The Site is located within 0.75-miles of Back Cove. According to FEMA Flood Zone Map 2301020015C, the Site is located in Zone C, which is an area of minimal flooding. Increased frequency of weather events may impact exterior portions of the Site and may result in localized flooding and increased erosion of improperly stabilized surface soil.

Based on the nature of the proposed reuse of the Site and location of the Site outside of a flood zone, changing temperature, wildfires, changing dates of ground thaw/freezing, changing

ecological zone, and saltwater intrusion table are not likely to affect the Site and the proposed remedial measures.

3.4 SOURCE AREAS & CURRENT COPCS

Source Areas

The following source area has been identified at the Site based on previous environmental investigations:

- Building materials
- Fuel oil supply line

Contaminants of Potential Concern

Based on the cumulative results of previous environmental investigations performed at the Site, the following COPCs have been identified:

- Asbestos
- PCBs
- Lead
- Universal, hazardous, or other regulated wastes
- Volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), heavy metals, petroleum, and per- and polyfluoroalkyl substances (PFASs).
- Petroleum

Mold observed throughout the Site building will also be concurrently addressed through building demolition and disposal.

3.5 NATURE AND EXTENT OF CONTAMINATION

The inferred extent of COPCs based on currently available data is as follows:

Asbestos

Asbestos has been identified in the following building materials:

- blue-green floor tiles and mastic located throughout the Site building
- black waterproof wall coating observed in exposed areas of exterior walls
- wall board glue in several rooms
- mudded fittings assumed to be present on piping throughout the Site building
- roofing sealant and shingles on five exterior ramps
- duct insulation in the basement

Since the Site building is dilapidated, identified ACM could easily mobilize to the other building components and to the environment if they further degrade from exposure to wind, rain, and freezing conditions. Due to a lack of building floor plans, the variety of materials throughout the building, lack of access to the sub-basement boiler room, and general dilapidated state of the Site building during the survey, it was not deemed practical to estimate actual quantities of materials at that time. It should also be assumed that additional, unassessed asbestos may be present in the boiler room. Therefore, for purposes of demolition, building debris generated during demolition activities will be considered asbestos-contaminated.

PCBs

PCB-containing materials have been identified throughout the Site building in the form of paint, caulk, mastic, and sealant. Based on 14 sample results from Credere's Phase II ESA, PCB-containing paints (which have the highest PCB concentrations of identified PCB-containing materials, up to 110 mg/kg) appear to be concentrated to dark-gray and green paints; however, white, tan, and yellow paints were also noted to be layered within previously collected samples with elevated (greater than 50 mg/kg) concentrations. Therefore, segregation of paints during demolition is likely not feasible. The dark gray paint has generally been observed to be confined to bathrooms and metal door frames, while green paint is prevalent throughout the building, particularly on metal doors.

Paint throughout the building was observed to be in poor condition and has flaked to the floor. Due to the dilapidated nature of the Site building, PCBs have the potential to be mobilized by the elements (e.g., wind and rain). PCBs may have also migrated into building substrates (i.e., concrete, plaster, or wood). The full extent of PCBs within the unassessed boiler room is a data gap.

Lead

Building components coated with LBP (greater than or equal to 1 mg/cm^2 of lead) include exterior tunnel wall siding, interior door frames, interior stairs, and interior doors. Building components coated with LCP (less than 1 mg/cm^2 of lead) include exterior doors, and interior walls, doors, and trim. Paint was observed to be in poor condition throughout the building with abundant chipping and flaking to the floor. Generally, the chipping paint is observed to be contained to within the Site building; however, lead has the potential to be mobilized to areas outside the building from continued exposure to the elements (e.g., wind and rain) creating paint chips.

Universal, Hazardous, or Other Regulated Wastes

Certain materials, which when removed from use would be considered universal, hazardous, or other regulated wastes (e.g., mercury in light bulbs, PCBs in light ballasts), could be released to the environment if they not properly handled during building demolition. These wastes are currently contained to the interior of the Site building.

VOCs, SVOCs, Heavy Metals, PCBs, Petroleum, and PFASs

Efforts to assess the extent of contamination in the basement were prevented due to unsafe amounts of standing water observed in the basement. It is likely there is additional unidentified contamination in this room in the form of additional ACMs, PCB-containing materials, LBP/LCP, mold and universal waste. There is also the potential for additional COPCs such as VOCs, SVOCs, heavy metals, PCBs, petroleum, and PFAS in the standing water itself.

Petroleum

While results from the Phase II ESA indicate that releases of petroleum likely had not occurred from the out of service fuel line, there is the potential for petroleum impacts to soil or residual fuel within the line to be present. To the extent practical due to the presence of an explosives storage area over a portion of the line, the line will be removed and assessed for extractable petroleum hydrocarbons (EPH) and volatile petroleum hydrocarbons (VPH) to determine if releases of petroleum have occurred at the Site.

3.6 EXPOSURE PATHWAYS AND POTENTIAL RECEPTORS

Exposure pathways describe how a human or environmental receptor comes into contact with contaminants that may be present at the Site. Potential migration pathways through groundwater, surface water, air, soils, sediments, and biota were considered for each COPC and each source. A migration pathway is considered an exposure pathway if there is a mechanism of contaminant release from primary or secondary sources, a transport medium, and a point of potential contact with receptors. Both current and potential future releases and migration pathways to receptors are considered. Exposure pathways at the Site include the following:

Dermal Absorption:	Exposure via dermal absorption occurs when receptors are exposed to chemical concentrations present in soil, groundwater, surface water, or hazardous building materials through direct contact with the skin.
Active Ingestion:	The active ingestion pathway represents exposure which may occur through the active ingestion of contaminant concentrations via a drinking water supply well, through agricultural products, or through direct consumption of soil (e.g., typically by children or improper hygiene/health and safety of Site workers).
Incidental Uptake:	This pathway is applicable when receptors may incidentally inhale or ingest impacted media in the form of contaminated dust, soil, chips, or airborne asbestos fibers.

Potential Receptors are categorized by duration of exposure and intensity of use at the Site. The receptor categories at the Site include the following:

Commercial Workers:	Commercial receptors are those which are present at the Site for long durations but with low intensity exposure such as indoor office workers.

Excavation or Construction Worker:	Excavation or construction workers are present at the Site for short durations though intensity of use is high, such as during non-routine activities including construction or utility work. Examples include utility and construction contractors and landscapers.

Residents, park uses, and trespassers were not considered during development of the CSM as the Site is located within the high-security bounds of the airport that will not be utilized for residential or greenspace purposes, and trespassers would be highly unlikely.

3.7 CONCEPTUAL SITE MODEL SUMMARY

COPCs at the Site include asbestos, lead, PCBs, and mold, found in building materials in/on the Site building. Under current conditions, exposure to contamination at the Site is limited, as the Site is currently vacant and in a restricted area (within an active airport property). Remediation and demolition workers could also potentially be exposed to asbestos, lead, PCBs, mold, and certain components of universal, hazardous, or other regulated wastes within the Site building if health and safety precautions are not practiced. The building is in a dilapidated state, so asbestos, lead, PCBs, mold, and universal, hazardous, or other regulated wastes have the potential to have been and be mobilized through further building degradation or elemental exposure.

Current receptors are limited to airport employees (i.e., commercial workers) performing routine inspections of airport facilities who may come into contact with COPCs if in proximity to the Site building. However, even if approaching the Site building to ensure security measures are intact (e.g., to ensure small animals don't have access to the interior) and perform minor repairs, the potential for airport workers to be exposed to COPCs is minimal. As the Site building is planned for demolition, excavation/construction workers are the primary receptor at this time. Exposure pathways for COPCs during demolition include dermal absorption through direct contact with contaminated building materials (PCB-containing materials and/or LCP/LBP), incidental uptake (airborne asbestos fibers, lead-impacted dust, or airborne mold spores), or active ingestion of contaminated materials by construction workers employing poor hygiene.

4. CLEANUP GOALS AND APPLICABLE GUIDELINES

The goal relative to the identified COPCs is to eliminate or manage the risks to human health and the environment through proper management, mitigation, and/or disposal of identified COPCs. To achieve this objective, the following cleanup goals or guidelines will be applicable to the cleanup:

Asbestos-Containing Materials

Construction work involving exposure or potential exposure to any concentration of asbestos is regulated by OSHA 29 CFR 1910. The cleanup goal for ACM at this Site will be achieved by removing ACM during demolition in accordance with Maine DEP Chapter 425 Alternative Work Practice (Chapter 425) Requirements. Asbestos removal, handling, and oversight will be conducted by appropriately trained and certified personnel. Asbestos waste along with demolition debris will be transported and disposed of at a Maine DEP-approved off-site disposal facility. Project monitoring and confirmatory air sampling shall be conducted by an independent Maine DEP certified asbestos air monitor.

Lead-Based/Lead-Containing Paint

Where lead-impacted building materials have been identified in the form of LBP and LCP coated building materials, demolition debris generated under the selected alternative would be considered special waste and will be disposed offsite at an appropriately licensed landfill or recycling facility. Offsite disposal will be completed in accordance with Maine DEP Chapter 400 – Solid Waste Management (Chapter 400).

PCB-Containing Materials

Removal and disposal of PCB-containing materials in/on the Site building will be governed by Toxic Substance Control Act (TSCA) Title 40 CFR § 761.62, which establishes a PCB Bulk Product Waste threshold criterion of greater than, or equal to (≥) 50 milligrams per kilogram (mg/kg). Materials with PCB concentrations ≥ this threshold require removal from use and proper disposal as hazardous waste. Excluded PCB Bulk Product Wastes with concentrations between 1 mg/kg and 50 mg/kg are also required to be properly disposed when removed from use.

Because the Site building is planned for demolition, known PCB-containing materials will be removed from use and PCB-containing building materials must be disposed at a facility that is licensed to accept this waste in accordance with 40 CFR § 761.61(a)(5)(i)(B)(2)(ii). Building materials containing PCBs at concentrations less than (<) 1 mg/kg are unrestricted for future use and/or disposal per 40 CFR § 761.61(a)(4)(i)(A); however, no building materials are planned to remain onsite following demolition.

Universal, Hazardous, or Other Regulated Wastes

Materials that would be considered universal, hazardous, or other regulated waste materials, including fluorescent light bulbs and ballasts, thermostats, fire extinguishers, exit signs, containers of waste, storage tanks, and out-of-service boilers, if present, will be removed from service during the proposed redevelopment activities. As such, the cleanup goal for these materials is to properly

manage and dispose of universal, hazardous, or otherwise regulated waste materials in such a way as to prevent a release. Universal, hazardous, or other regulated wastes will be identified and managed in accordance with Maine Hazardous Waste Management Regulations – Chapters 850 through 857, 49 CFR § 100- 199 – Transportation of Hazardous Materials, and 40 CFR § 256 – Guidelines for Development and Implementation of State Solid Waste Management Plans.

VOCs, SVOCs, Heavy Metals, PCBs, Petroleum, and PFASs

The basement will be de-watered, and the water will either be infiltrated on the Site or, if this found to be unacceptable due to contamination, transported to a suitable treatment facility. This water will need to be re-sampled and analyzed for any contaminants determined to be applicable for disposable purposes. Details regarding the removal of the standing water in the boiler room of the Site building will be dependent upon waste characterization sample results and applicable limits for comparison.

Petroleum

The out-of-service fuel oil supply line will be removed to the extent practical in accordance with Maine DEP Chapter 425 regulations and confirmatory soil samples will be collected for EPH/VPH analyses. Results from soil samples will be compared to the Maine DEP Remedial Action Guidelines (RAGs) for a Commercial Worker exposure scenario.

5. PRESUMPTIVE REMEDIES

Considering the unsafe and dilapidated state of the Site building, the requirements for remediation of PCBs under TSCA, the presence of ACM, deteriorated LBP and LCP, mold-covered building materials throughout the Site Building, and scattered universal, hazardous, or other regulated waste materials throughout the Site building, it is the opinion of Credere that the only appropriate cleanup strategy will be to wholly remove contaminated building materials and dispose of them offsite. It is clear from past work that the Site building cannot be restored and reused for any purpose. No action is also not a consideration because the City plans to redevelop the Site. As such, the following remedies are the only alternatives provided in this ABCA and are therefore considered presumptive in nature.

5.1 PCB BULK PRODUCT WASTE REMOVAL

Various paints containing PCBs at concentrations ≥50 mg/kg, or presumed to contain PCBs at concentrations ≥50 mg/kg due to possible dilution of PCBs through multiple layers of paint, have been identified in/on the Site building, and require removal and proper disposal as PCB bulk product waste at a hazardous waste landfill in accordance with 40 CFR § 761.61(5)(i)(B)(2)(*iii*). In addition, PCBs at concentrations >1 mg/kg but <50 mg/kg were also identified in several materials throughout the Site building that require proper disposal when removed from use. Therefore, removal of these materials is considered a presumptive remedial measure. However, due to the dilapidated state of the Site building, it is no longer safe to enter, and therefore abatement of such paints cannot be completed prior to demolition. Therefore, known PCB containing building materials will be segregated to the extent possible during demolition and be disposed as PCB bulk product waste by appropriately licensed contractors. Remaining building debris will be further characterized, and handling and disposal of these materials will be completed in accordance with applicable State and Federal regulations.

5.2 ASBESTOS-CONTAINING MATERIAL REMOVAL

Proper abatement of identified ACMs is considered a presumptive remedial measure as it is required by Maine DEP Chapter 425 prior to demolition. However, due to the dilapidated state of the Site building, it is no longer safe to enter, and therefore abatement cannot be completed prior to demolition. Therefore, all demolition debris will be considered asbestos-contaminated. Known ACM will be segregated to the extent possible during demolition, and dust suppression techniques will be employed during demolition to prevent the release of airborne asbestos fibers; handling and disposal of ACM will be completed in accordance with applicable State and Federal regulations by appropriately licensed contractors.

5.3 LEAD PAINT-IMPACTED MATERIALS REMOVAL

Because the Site building is planned for demolition, building materials coated with LBP/LCP will require proper handling and disposal. The Site Building is not safely accessible for a full LBP/LCP survey and delineation nor subsequent abatement, and therefore LBP/LCP-contaminated materials, which when removed from use, would be considered lead waste cannot be fully

delineated. Based on the currently known extent of building materials coated with LBP/LCP, and because abatement is not feasible, the most cost-effective remediation method is full component removal, and therefore such removal is considered a presumptive remedial measure.

5.4 UNIVERSAL, HAZARDOUS, OR OTHER REGULATED WASTE REMOVAL

Removal and proper disposal of universal, hazardous, or other regulated waste materials in the Site building is considered a presumptive remedial measure because these materials are no longer suitable for use, and because the Site building is planned for demolition. However, due to the dilapidated state of the Site building, it is no longer safe to enter, and therefore removal of these wastes cannot be completed prior to demolition. Such waste will be segregated to the extent possible during demolition; handling and disposal of these wastes will be completed in accordance with applicable State and Federal regulations by appropriately licensed contractors.

5.5 BOILER ROOM STANDING WATER REMOVAL

Removal of the standing water is required to achieve Site cleanup goals of eliminating COPCs, therefore removal and proper disposal of the water is considered a presumptive remedy. The basement will be de-watered, and the water will be sampled, and pre-treated then either be infiltrated on the Site or, if found to be unacceptable, transported to a suitable treatment facility. Removal of standing water will allow for complete assessment of the boiler room prior to demolition if determined safe for entry, or visually assessed during demolition to the extent practical.

5.6 OUT-OF-SERVICE FUEL OIL LINE REMOVAL

The out-of-service fuel oil line will be removed as a presumptive remedial measure in order to bring the Site into compliance with Maine DEP Chapter 425 regulations for underground storage tank facilities. If petroleum impacted soils are encountered, the soil will also be removed for proper offsite disposal.

5.7 DISPOSAL STRATEGY CONSIDERATIONS

PCB bulk product waste and ACMs will be segregated as described above to the extent practical, and remaining demolition debris will be disposed of as a combined/special waste (lead, asbestos, or PCB remediation waste) at an appropriately licensed landfill or recycling facility in accordance with Maine DEP Chapter 400. Unpainted concrete foundations/floors will be further characterized to the extent possible to assess if they are appropriate for standard construction and demolition debris disposal.

Mold associated with building materials throughout the Site building will be disposed of along with the other COPCs, having no effect on the disposal strategy described above.

5.8 COST - PRESUMPTIVE REMEDIES

Based on prior project and contractor experience and current estimates received from contractors, the estimated cost all remedies listed above is broken down below:

o Consulting, Engineering, and Cleanup Oversight	$147,500
o Building Takedown and Segregation	$220,000
o Foundation Contingency*	$60,000
o Waste Segregation	$50,000
o Transportation & Disposal (950 tons)	$234,000
o Other Cleanup Requirements/Dewatering, Oil Line Removal, Etc.	$25,000
25% Contingency**	$147,250
Total	**$883,750**

*Contingency in the event Site building foundation was poured as 10Kpsi concrete with rebar.
**25% contingency due to uncertainty of building materials volumes of dilapidated building and inflation related increased shipping and disposal costs

6. PROPOSED REMEDIAL ACTION WORK PLAN

This section describes activities that will be completed as part of the Site remediation. A Health and Safety Plan for cleanup activities will be prepared prior to the start of remediation activities. In addition, Credere will present the proposed remediation activities for review and approval by the Maine DEP VRAP prior to initiating this project.

6.1 BUILDING DEMOLITION

A demolition contractor licensed to work with hazardous building materials will perform building removal using heavy equipment. General building debris will likely be intermingled with hazardous building materials, and as such will be planned to be transported and disposed of accordingly pursuant to below referenced regulations; however, if inert materials can be easily segregated (i.e., unpainted concrete, clean scrap metal, etc.), these materials may be consolidated and recycled as C&D material. Upon completion of building removal, the Site will be backfilled and restored in preparation for future construction.

6.2 ASBESTOS ABATEMENT

Concurrent with the building removal, all identified ACMs will be removed intact to the extent possible and disposed of along with building material waste pursuant to Maine DEP Chapter 425 for demolition by heavy equipment. Following the completion of asbestos abatement activities and once waste disposal and successful clearance results are obtained, all documentation will be submitted to the Maine DEP.

6.3 UNIVERSAL, HAZARDOUS, OR OTHER REGULATED WASTE REMOVAL AND DISPOSAL

Concurrent with the building removal, identified universal, hazardous, or other regulated waste materials will be segregated as feasible and disposed in accordance with the Maine DEP Hazardous Waste Management Rules (Chapters 850 through 857).

6.4 REMOVAL AND DISPOSAL OF LEAD AND PCB-CONTAINING DEMOLITION MATERIALS

Concurrent with the building removal, LBP/LCP and PCB-building materials will be disposed of along with building material waste. Based on previous assessments, the waste generated would be considered PCB Bulk Product Waste, excluded PCB Bulk Product Waste, and/or special waste and will be appropriately segregated, if feasible, and disposed offsite at appropriately licensed landfills or recycling facilities in accordance with the TSCA and Maine DEP Chapter 400.

6.5 BOILER ROOM STANDING WATER REMOVAL

Prior to building removal, standing water in the flooded sub-basement boiler room will require sampling, de-watering, and proper disposal either on Site or at a nearby treatment facility. This will allow for further assessment of contamination in the boiler room and eventually demolition of the building foundation

6.6 OUT-OF-SERVICE FUEL OIL LINE REMOVAL

Following demolition of the building, the out-of-service fuel oil line will be excavated and removed in accordance with Maine DEP Chapter 425 rules. If gross petroleum impacts are observed, grossly contaminated soil (i.e., soils that are visibly contaminated or "saturated" with petroleum based on oleophilic dye tests) will be removed for offsite disposal or recycling. Confirmation samples will then be collected in accordance with Chapter 425 for laboratory analysis of EPH/VPH. Pending laboratory results, additional petroleum-impacted soil would be removed until soil concentrations meet the Maine DEP Commercial Worker RAGs, then the excavation will be properly backfilled and compacted.

6.7 STATE AND FEDERAL PERMITS REQUIRED

Proper notification of asbestos projects to Maine DEP will be required. Local building and planning approvals may also be required for demolition. Maine DEP will be consulted, and if required, a Notice of Intent to Remove and Underground Product Piping will be filed to facilitate the removal of the out-of-service fuel oil line.

No other state or federal permits are anticipated to be required as a part of this remediation.

6.8 REMEDIAL ACTION REPORTING

Once cleanup activities are completed, Credere will prepare and submit a Remedial Action Completion Report to the Maine DEP VRAP summarizing the field activities conducted as part of the remediation effort, including disposal documentation.

7. SUMMARY

Credere was retained by the City to prepare this ABCA for the Site. The purpose of this ABCA was to evaluate potential cleanup alternatives to mitigate certain environmental conditions at the Site identified through previous environmental investigations. A summary of the findings of this ABCA is presented below:

1. Remedial action is necessary to address hazardous building materials and universal, hazardous, or other regulated wastes identified in/on the Site building. In consideration of the condition of the building and CSM, the only viable alternative to address these issues are whole component removal and disposal. 'No Action' cannot be recommended because it does not mitigate the risks posed by contaminants at the Site considering that the Site will be redeveloped.
2. The Remedial Action Plan (RAP) presented as **Section 6** of this document details the execution of the presumptive remedies.

FIGURES

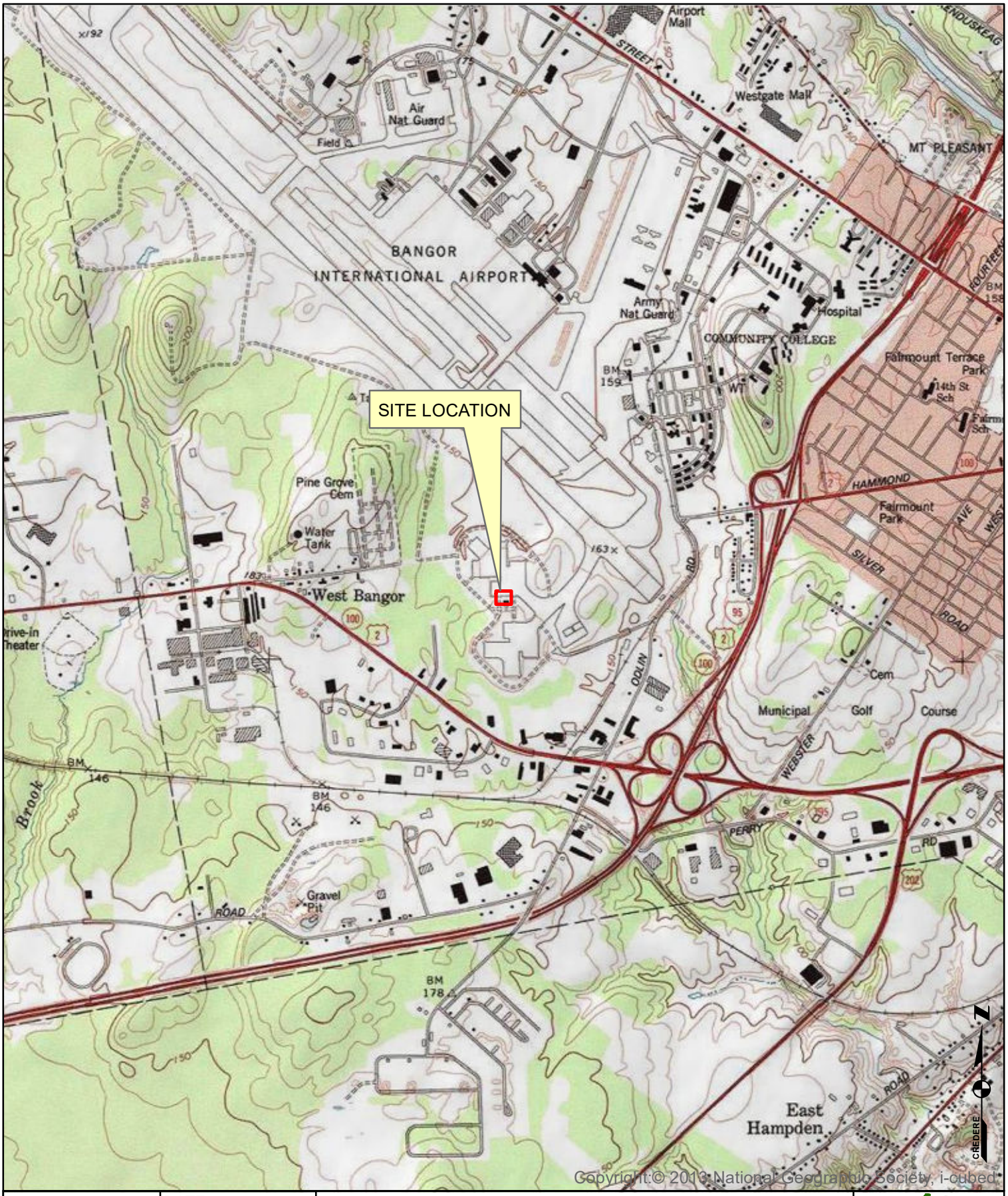

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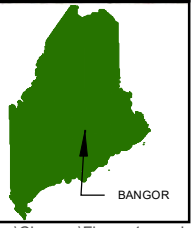
FIGURE 1
SITE LOCATION PLAN

ALERT BUILDING
BANGOR INTERNATIONAL AIRPORT
BANGOR, MAINE

1,000 0 2,000 Feet
1 INCH = 2,000 FEET



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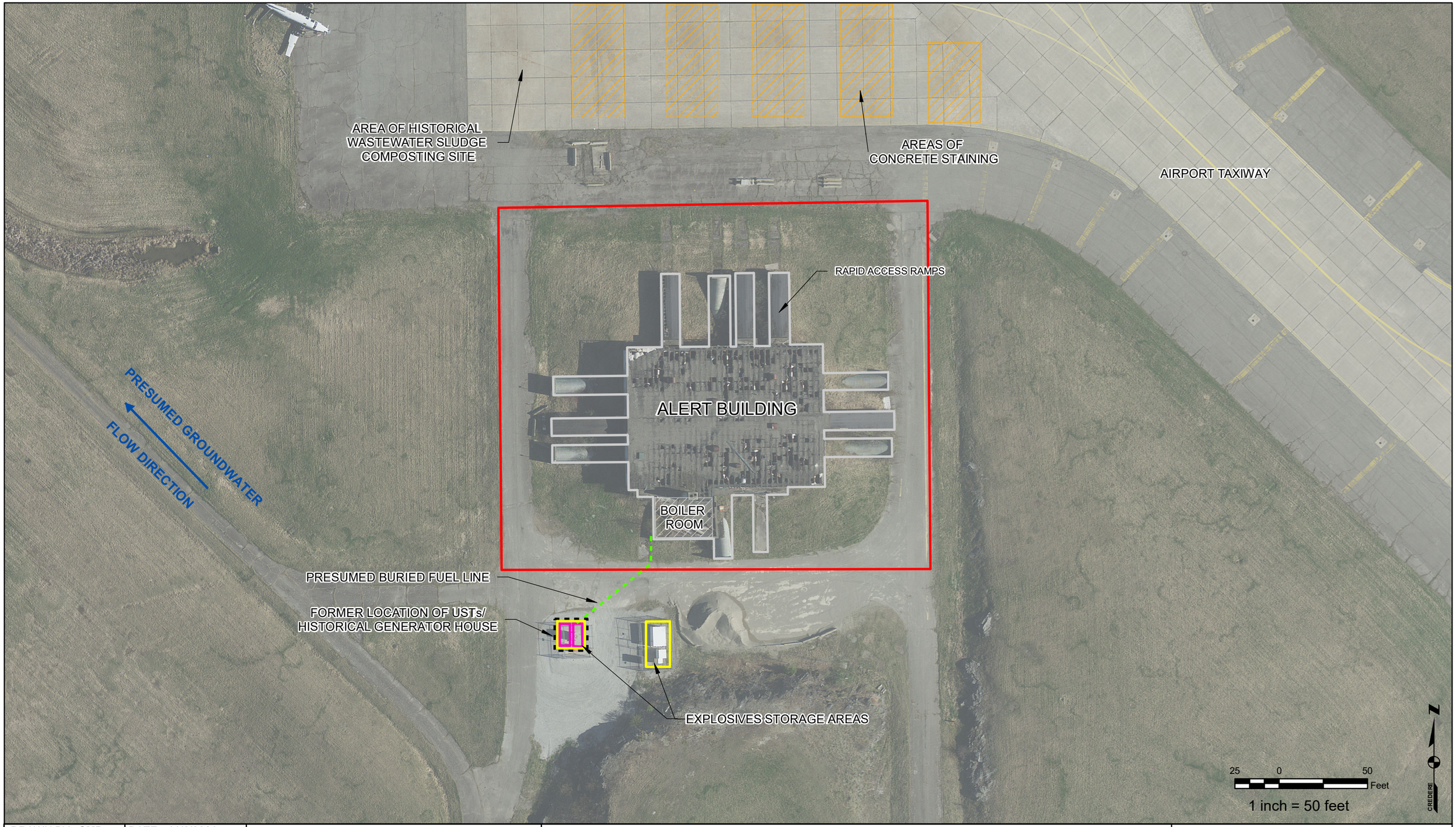

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FIGURE 2
DETAILED SITE PLAN

ALERT BUILDING
BANGOR INTERNATIONAL AIRPORT
BANGOR, MAINE

- SITE BOUNDARY
- SITE BUILDING
- AREAS OF CONCRETE STAINING
- APPROXIMATE LOCATION OF FORMER OFF-SITE USTs
- PRESUMED BURIED FUEL LINE
- HISTORICAL GENERATOR HOUSE
- EXPLOSIVES STORAGE AREA
- APPROXIMATE LOCATION OF BOILER ROOM (SUB-BASEMENT)
- PRESUMED GROUNDWATER FLOW DIRECTION

NOTES:
EXISTING CONDITIONS AND FEATURES SHOWN ON THIS PLAN ARE APPROXIMATE AND ARE BASED ON INFORMATION OBTAINED FROM THE CITY OF BANGOR, MAINE GEOLIBRARY AERIAL IMAGERY. FIELD WORK PERFORMED BY CREDERE ON OCTOBER 2, 2015, AND GPR SURVEY PERFORMED BY DIGSMART OF MAINE ON OCTOBER 14, 2015.

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