

**ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES &  
CONCEPTUAL REMEDIAL ACTION PLAN  
BRADBURY MANOR  
74 HIGH STREET  
BELFAST, WALDO COUNTY, MAINE**

Prepared for:

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131 Church Street  
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## 1.0 INTRODUCTION AND BACKGROUND

Ransom Consulting, LLC (Ransom) has completed this Analysis of Brownfields Cleanup Alternatives (ABCA) to evaluate remedial alternatives for the previously identified adverse environmental conditions on the property identified as Bradbury Manor located at 74 High Street in Belfast, Maine (the “Site”). This report summarizes the evaluation of remedial alternatives for the Site and includes a discussion of each remedial option, cost estimate, degree of effectiveness, ease of implementation, and the resilience of each remedial option in light of reasonably foreseeable changing climate conditions. This report also contains a discussion of the recommended remedial alternative for the Site, as well as a Conceptual Remedial Action Plan (RAP) for the selected alternative. This report was prepared using the City of Belfast’s United States Environmental Protection Agency (U.S. EPA) Brownfields Assessment Grant No. BF00A00905-0.

### 1.1 Purpose and Scope

The purpose of this report is to screen potential remedial action alternatives to mitigate previously identified adverse environmental conditions associated with the Site. Based on the information obtained during previous environmental investigations (further summarized in Section 2.0), including two Phase I Environmental Site Assessments (ESAs), a Hazardous Materials Assessment (HMA), and Hazardous Building Materials Inventory (HBMI), three remediation options were considered for the Site and evaluated based on feasibility, effectiveness, cost, required time schedule, ability to meet the overall cleanup goals (protection of human health and the environment), and resilience to climate change conditions. Key consideration was given to eliminating or reducing, to the extent possible, the risk of exposure for existing and potential future Site occupants, workers, and trespassers to the identified contamination at the Site, as well as the ability for the proposed cleanup alternative to meet redevelopment goals for the Site.

The overall objectives of this ABCA include the following:

1. Evaluating the remedial alternatives against specific evaluation criteria, including overall protection of human health and the environment; technical practicality; ability to implement; reduction of toxicity, mobility, and volume; time required until remedial action objectives are attained; costs; and resilience to climate change conditions.
2. Selecting the remedial alternative that best meets the objectives and considerations of the project.
3. Presenting a Conceptual RAP for implementing the selected remedial alternative.

Remediation alternatives evaluated in this ABCA include a No Action Alternative, a Targeted Hazardous Building Materials Removal with Partial Management in Place Alternative, and a Full Hazardous Building Materials Abatement and Building Demolition Alternative. The Evaluation of Remediation Alternatives (Section 5.0) discusses the requirements for each alternative. The alternatives are evaluated on the previously mentioned criteria, and one alternative is recommended for implementation at the Site. Furthermore, a Conceptual RAP is presented in Section 6.0 for the recommended alternative.

## 1.2 Site Description

The Site is currently improved with one building (the “Site building”), which is a three-story, wood-frame building encompassing a footprint of 5,272 square feet. Historical records indicate that the Site building was originally constructed in 1922 as the Bradbury Memorial Hospital. Hospital operations reportedly ceased in the early 1960s, and the building was subsequently used as a nursing home until 1995. The Site reportedly has remained vacant since 1995 and the Site building is currently in a dilapidated state. Structural remnants of a former garage remain at the southeastern portion of the Site building. Remaining portions of the Site consist of asphalt-paved parking/driveway areas and limited grass lawn/landscaping areas.

Please refer to Figure 1, Site Location Map, and Figure 2, Site Plan, for the location of the Site and notable features.

## 1.3 Potential Future Site Use

The Site is proposed to be redeveloped for mixed residential/commercial purposes to align with the City of Belfast’s current zoning for the Site (Residential-1).

## 1.4 Site Geology

According to the *2014 Surficial Geology of the Belfast Quadrangle*, surficial soils at the Subject Property are identified as glacial till (Pt), which consists of poorly sorted, angular-grained sediments of variable grain sizes from clay to boulders. According to *2011 Bedrock Geology of the Belfast Quadrangle*, bedrock at the Site is identified as the thick-bedded metasandstone member of the Penobscot Formation (O6ps), which consists of medium dark gray to gray metasandstone with minor slate and phyllite beds.

## 1.5 Site Topography and Hydrogeology

Topography at the Site and vicinity slopes downward generally northeast, towards Belfast Bay. Based on the Belfast, Maine United States Geological Survey (USGS) Quadrangle, the general elevation of the Subject Property is approximately 100 feet, as referenced to the National Geodetic Vertical Datum (NGVD) of 1988.

Groundwater at the Site and vicinity is inferred to flow northeast, towards Belfast Bay. Groundwater flow direction at the Site cannot be confirmed without the completion of a groundwater elevation survey, and no documentation of a groundwater elevation survey was provided in the prior reports reviewed for this assessment. Shallow groundwater flow may also be influenced by underground utilities, heterogeneous subsurface soil strata, and/or other subsurface structures, which may act as preferred pathways of flow.

## 2.0 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Phase I Environmental Site Assessment, 74 High Street, Belfast, Maine, prepared by Haley Ward, Inc., dated September 17, 2021

In September 2021, Haley Ward completed a Phase I ESA for the Site. The Phase I ESA revealed no RECs in connection with the Site; however, the following *de minimis* conditions were identified:

1. Localized stained concrete and a small quantity of No. 2 fuel oil were observed under one of the three No. 2 fuel oil aboveground storage tanks (ASTs) in the basement of the Site building. It was the opinion of Haley Ward that the stained concrete and No. 2 fuel oil associated ASTs represented a *de minimis* condition as the staining was observed on concrete and it was considered unlikely that fuel oil had reached underlying soils.
2. Suspect hazardous building materials, including asbestos-containing materials (ACM), lead-based paint (LBP), polychlorinated biphenyl (PCB)-containing materials and universal wastes were observed at interior and exterior portions of the Site building.

Hazardous Materials Assessment, 74 High Street, Belfast, Maine, prepared by Haley Ward, dated January 27, 2022

In January 2022, Haley Ward completed an HMA for the Site. Based on the reported project scope and methodology, the HMA was limited and select areas of the Site building were not evaluated. ACM was identified on the interior and exterior of the Site building, including cementitious ceiling board, floor tile adhesive, and cementitious exterior shingled siding. Presumed ACM (PACM) were identified on the fire door for the basement boiler room. LBP was identified on interior and exterior features including walls, door frames, concrete flooring, stair treads, window and door trim, sink glazing, and painted siding. In addition, universal wastes including fluorescent light bulbs, associated ballasts, mercury-containing thermostats, emergency light batteries, and emergency exit signs were observed throughout the Site building. Furthermore, PCB-impacted floor paint was observed in the basement hall of the building.

Site-Specific Quality Assurance Project Plan, 74 High Street, Belfast, Maine prepared by Ransom, June 1, 2023

On June 1, 2023, Ransom completed a Site-Specific Quality Assurance Project Plan (SSQAPP) to conduct a Supplemental HBMI at the Site. The Supplemental HBMI was proposed to address the following data gaps identified by Ransom:

1. LBP was evaluated with x-ray fluorescence (XRF) screening only. No confirmatory samples of paint chips were submitted for laboratory analysis during the HMA to facilitate off-site disposal of lead-painted building surfaces.
2. The HMA was limited to “structurally sound” portions of the building only. Therefore, the rear (southern) portion of the building was not evaluated by Haley Ward during their HMA.

Hazardous Building Materials Inventory, 74 High Street, Belfast, Maine, prepared by Ransom, September 26, 2023

Ransom conducted fieldwork for the Supplemental HBMI on June 5, 2023 and completed an HBMI report for the Site on September 26, 2023. The HBMI identified additional ACM in previously unevaluated crawlspace areas of the Site building and lead-based painted materials with leachable lead at concentrations exceeding the applicable Toxicity Characteristic Leaching Procedure (TCLP) threshold. Based on the TCLP results, remediation of lead-based painted materials (e.g., sand-blasting) would likely require disposal as hazardous waste. However, subsequent sampling of all painted building materials in the Site building did not identify a concentration of lead above the hazardous waste TCLP threshold. Therefore, special handling and/or disposal of painted building debris will not be required if the building or portions of the building were to be demolished and disposed off-site at a licensed facility.

Phase I Environmental Site Assessment, 74 High Street, Belfast, Maine, prepared by Ransom, September 26, 2023

On September 26, 2023, Ransom completed a Phase I ESA for the Site. The Phase I ESA revealed no evidence of RECs in connection with the Site. However, “Business Environmental Risks,” including hazardous building materials (i.e., ACM, LBP, PCB-containing materials, and universal wastes) were identified in connection with the Site building. Ransom indicated that these hazardous building materials will require abatement, special handling, and/or proper management/disposal, prior to and/or during future redevelopment or demolition activities. Ransom further indicated that current and future Site owners and occupants should address the hazardous building materials identified at the Site in accordance with the conclusions and recommendations documented in Ransom’s 2023 HBMI Report.

Phase I Environmental Site Assessment, 74 High Street, Belfast, Maine, prepared by Ransom, July 31, 2024

On July 31, 2024, Ransom completed an updated Phase I ESA for the Site to facilitate the City of Belfast’s acquisition of the property. Ransom provided conclusions and recommendations that coincided with those documented in the September 26, 2023 Phase I ESA regarding hazardous building materials identified at the Site.

### 3.0 SITE CHARACTERIZATION AND CLEANUP GOALS

Previous environmental investigations completed at the Site identified hazardous building materials in connection with the Site building. The identified contamination and applicable cleanup goals are summarized below.

#### 3.1 Asbestos-Containing Materials

Various ACM were identified in/on the Site building during Haley Ward's HBA and Ransom's HBMI including:

- Cementitious ceiling board (basement)
- Floor tile adhesive (throughout interior including basement)
- Cementitious exterior shingle siding (exterior)
- 2" air cell insulation (crawl space)
- 4" hard pack fitting (crawl space)

The cleanup goal for the Site, pertaining to the ACM, is to eliminate the risk of human contact and exposure to asbestos during future demolition activities and Site reuse. Cleanup actions, i.e. removal and proper offsite disposal of ACM, should be completed to meet U.S. EPA and Maine Department of Environmental Protection (MEDEP) regulatory requirements, eliminate human exposure pathways, and allow for Site redevelopment.

#### 3.2 Lead-Based Paint

Handling of components coated with lead-containing paint *at any concentration* requires compliance with the Occupational Safety and Health Administration (OSHA) lead standard (*Lead in Construction*, 29 CFR 1926.62). LBP was identified on interior and exterior features of the Site building including walls, door frames, concrete flooring, stair treads, window and door trim, sink glazing, and painted siding. Analysis of lead-based painted materials identified leachable lead at concentrations exceeding the applicable TCLP threshold of 5 milligrams per liter (mg/L) threshold. Based on the TCLP results, remediation of lead-based painted materials (e.g., sand-blasting) would likely require disposal as hazardous waste. This would only occur if the Site building were to be renovated for future use and not demolished. However, subsequent sampling of all painted building materials in the Site building did not identify a concentration of lead above the hazardous waste TCLP threshold. Therefore, special handling and/or disposal of painted building debris will not be required if the building or portions of the building were to be demolished and disposed off-site at a licensed facility.

#### 3.3 Universal Waste and Hazardous Wastes

Universal waste items including 11 electronic ballasts in lighting fixtures, 22 fluorescent light tubes, 6 emergency exit light/sign units, and 3 mercury containing thermostats, and three ASTs were identified in

the Site building during Haley Ward's prior HMA. Disposal of each of these items is also subject to hazardous and/or universal waste disposal requirements as part of building demolition. The cleanup goal for universal waste is to prevent these wastes from entering the general waste stream through proper removal, storage, and transport to an appropriate off-Site recycling or disposal facility as universal waste.

Universal waste is a general term used to describe hazardous wastes that are generated by a large, diverse population. Businesses as well as unregulated households generate universal waste. This term is intended to be broad so that a wider range of wastes may be managed under the reduced requirements of the U.S. EPA's Universal Waste Rule. U.S. EPA's universal waste regulations streamline hazardous waste management standards for federally designated "universal wastes," which include: batteries; pesticides; mercury-containing equipment; and bulbs (lamps). The State of Maine has expanded the designation of universal waste to include, in addition to those items listed above, automobile mercury switches and totally enclosed non-leaking PCB-containing ballasts. The regulations govern the collection and management of these widely generated wastes, thus facilitating environmentally sound collection and proper recycling or treatment.

### 3.4 Laws and Regulations Applicable to the Cleanup

Applicable laws and regulations associated with this cleanup will include, but are not limited to the following:

1. OSHA lead standard (*Lead in Construction*, 29 CFR 1926.62);
2. Small Business Liability Relief and Brownfields Revitalization Act;
3. Davis-Bacon Act of 1931;
4. U.S EPA rules and regulations, including the Toxic Substances Control Act (TSCA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA);
5. MEDEP rules and regulations; and
6. Municipal bylaws, as applicable.

In addition, federal, state, and local laws which identify procurement of cleanup contractors to conduct and oversee cleanup should be followed during the remediation and cleanup. All applicable permits to conduct the work and hazardous waste manifests for off-site disposal of the contaminated materials must be obtained by the cleanup contractor prior to starting work.

## 4.0 DESCRIPTION OF EVALUATION CRITERIA

The comparison of the remediation alternatives was conducted using the evaluation and threshold criteria discussed below.

### 4.1 Overall Protection of Human Health and the Environment

Alternatives must pass this threshold criterion to be considered for implementation as the recommended alternative. The goal of this criterion is to evaluate whether a remediation alternative provides adequate protection of human health and the environment. It also addresses how identified risks are eliminated, reduced, or controlled. Protection of human health is assessed by evaluating how site risks from each exposure route are eliminated, reduced, or controlled through the specific alternative.

### 4.2 Technical Practicability

The focus of this evaluation criterion is to assess the technical practicability of instituting the specific alternative. Technical feasibility assesses the ability to implement and monitor the effectiveness of the alternative.

### 4.3 Ability to Implement

This criterion analyzes technical feasibility and the availability of services and materials. Availability of services and materials evaluates the need for off-site treatment, storage or disposal services and the availability of such services. Necessary equipment, specialists and additional resources are also evaluated.

### 4.4 Reduction of Toxicity, Mobility, and Volume

This criterion evaluates the ability of the remediation alternative to significantly achieve reduction of the toxicity, mobility, and volume of the hazardous substances present at the Site. This analysis evaluates the quantity of hazardous substances to be removed, the degree of expected reduction in toxicity, the type and quantity of residuals to be reduced, and the manner in which the principal threat is addressed through the remediation alternative.

### 4.5 Short Term Effectiveness

This criterion addresses the period of time needed to complete the remediation, potential adverse impacts on human health and the environment that may exist until the cleanup goals are achieved, and the time frame for accomplishing the associated reduction in the identified environmental conditions.

### 4.6 Resilience to Climate Change Conditions

This criterion evaluates the resilience of the remediation alternative to reasonably foreseeable changing climate conditions, such as increasing/decreasing temperatures, increasing/decreasing precipitation, extreme weather events, rising sea level, changing flood zones, and higher/lower groundwater tables, among others.

#### 4.7 Preliminary Cost

The preliminary cost criterion for the remediation alternatives evaluates the estimated capital, operation, and maintenance costs of each alternative. Capital costs include direct capital costs, such as materials and equipment, and indirect capital costs, such as engineering, sampling contingencies, and licenses. Costs were developed as an evaluation criterion for the remedial alternatives and should not be construed as bid costs or engineer's cost estimates. Cost may be used as a distinguishing factor in the selection of the remedial action. The preliminary costs developed should in no way be construed as a cost proposal, but rather a guide for selecting a remedial action.

## 5.0 EVALUATION OF REMEDIATION ALTERNATIVES

Based on the evaluation criteria outlined in the previous section and the potential exposure pathways identified for the Site, the remedial actions selected for the Site should accomplish the following objectives:

1. Minimize the potential for human exposure to hazardous building materials;
2. Reduce the toxicity, mobility, and volume of hazardous building materials;
3. Eliminate the hazard to public safety posed by the structurally unsound condition of the Site building;
4. Facilitate mixed commercial/residential Site redevelopment; and
5. Maintain sufficient resilience to climate change.

To achieve these objectives, three remedial options were considered and are discussed in the following subsections.

### 5.1 Considered Remediation Alternatives

Three remedial alternatives were considered for the Site to remediate address hazardous building materials onsite, including the No Action Alternative, the Targeted Hazardous Building Materials Removal with Partial Management in Place Alternative, and the Full Hazardous Material Abatement and Building Demolition Alternative. These alternatives were evaluated using the criteria described in Section 4.0 and are summarized below. The attached Table 1 includes a Summary of the Evaluation and Comparison of the Remedial Alternatives.

### 5.2 No Action Alternative

A No Action Alternative signifies that no remediation activities would be conducted at the Site, hazardous building materials would not be removed, and the Site building would not be demolished. The No Action Alternative does not include a means for mitigating exposure to identified adverse environmental conditions or unacceptable risks remaining from hazardous building materials. Therefore, the potential for human exposure through direct contact, ingestion, and/or inhalation continues to exist for current trespassers and potential future Site occupants, workers, or trespassers. The No Action Alternative is not protective of human health and the environment and does not meet the threshold criteria. The No Action Alternative would also not achieve reduction of the toxicity, mobility, and volume of the hazardous substances present at the Site.

In addition, the No Action Alternative does not support the plan for Site redevelopment for mixed commercial/residential use. The No Action Alternative was not selected for implementation or further consideration because the hazardous building materials would continue to pose a health risk to trespassers and future Site occupants, workers, and trespassers.

### 5.3 Targeted Hazardous Building Materials Removal with Partial Management in Place Alternative

The second remediation alternative evaluated in this ABCA is the Targeted Hazardous Building Materials Removal with Partial Management in Place Alternative. This alternative is an effective way to eliminate and/or significantly reduce the potential risk of exposure to future site visitors and/or occupants by removing the identified ACM materials and universal wastes. LBP surfaces disturbed during this process would be required to be disposed off-site at a licensed facility as “hazardous waste” and/or stabilized on-site prior to off-site disposal. Remaining LBP would be encapsulated and managed in place, thereby mitigating exposure risks.

The Targeted Hazardous Building Materials Removal with Partial Management in Place Alternative fulfills the evaluation criteria, as discussed below.

#### 5.3.1 Overall Protection of Human Health and the Environment

Risks to human health and the environment by exposure or release of hazardous building materials is reduced by removing the hazardous building materials from the Site and/or managing in place.

#### 5.3.2 Technical Practicability

Asbestos and LBP abatement with partial management in place utilizes standard methods and techniques and contractors with experience with similar projects are readily available in the region; however, the structurally unsound condition of the building makes this alternative impractical to implement. The Structural Assessment completed by Gartley & Dorsky Engineering & Surveying, Inc. (Gartley & Dorsky) for the Site Building concluded, *“the building is unsafe and unsuitable to support abatement activities for renovation/future use of the building. The building cannot practically be stabilized or retrofitted to support abatement without danger to life and property. Given the extreme state of disrepair, the building will need to be demolished to safely complete abatement activities.”* A copy of Gartley & Dorsky’s Structural Assessment report is included in Appendix A.

#### 5.3.3 Ability to Implement

Removal and disposal of hazardous building materials is feasible and is a common action for reducing or eliminating the human health risks of contact with hazardous building materials. Services and materials are readily available; however, the structurally unsound condition of the Site building presents safety hazards to abatement workers making this alternative impractical to implement.

#### 5.3.4 Reduction of Toxicity, Mobility, and Volume

The mobility of hazardous building materials will be eliminated under this alternative. The volume and toxicity of hazardous building materials would be reduced, but not completely eliminated, as partial management in place would allow some hazardous building materials to remain at the Site under an appropriate maintenance plan.

### 5.3.5 Short-Term Effectiveness

The remedial action objectives would be attained almost immediately upon contracting the abatement work. The work described under this alternative could be performed on a relatively short timeframe, likely one to two months from mobilizing contractors. This alternative does not eliminate threats to physical safety at the Site as the Site building has been determined to be structurally unsound.

### 5.3.6 Resilience to Climate Change Conditions

Based on the distance of the Site from the nearest surface water body (approximately 950 feet northeast), climate change effects from rising sea level and changing flood zones, while possible, are not anticipated to represent a major threat. As such, the primary climate change concerns would be associated with extreme weather, increased rainfall, and rising groundwater tables. The implementation of this alternative would provide resilience to extreme weather conditions by removing and/or encapsulating hazardous building materials; which would help prevent future weather events from mobilizing those contaminants.

### 5.3.7 Preliminary Cost

The estimated costs associated with this remedial alternative are outlined in the attached Table 2: “Summary of Estimated Remediation Costs for a Targeted Hazardous Building Materials Removal with Partial Management in Place.” Capital costs include direct capital costs, such as materials and equipment, and indirect capital costs, such as engineering and contingencies. The costs associated with this alternative are greater than the costs associated with the Full Hazardous Building Materials Abatement and Building Demolition Alternative.

## 5.4 Full Hazardous Building Materials Abatement and Building Demolition Alternative

The third remediation alternative evaluated in this ABCA is the Full Hazardous Building Materials Abatement and Building Demolition Alternative. As part of this alternative, the identified hazardous building materials will be removed from the Site and the Site building will be demolished.

The Full Hazardous Building Materials Abatement and Building Demolition Alternative fulfills the evaluation criteria, as discussed below.

### 5.4.1 Overall Protection of Human Health and the Environment

This alternative provides adequate protection of human health and the environment by eliminating the potential risk of exposure to future site visitors and/or occupants by removing the identified hazardous building materials. In addition, physical safety concerns will be addressed with the demolition of a structurally unsound building. The Structural Assessment completed by Gartley & Dorsky for the Site Building is included in Appendix A.

#### 5.4.2 Technical Practicability

Building demolition is technically practicable and could be completed utilizing accepted remediation and construction techniques. Contractors with experience on similar projects are readily available in the region.

Hazardous building materials abatement utilizes standard methods and techniques and contractors with experience with similar projects are readily available in the region. Therefore, this alternative is technically practicable.

#### 5.4.3 Ability to Implement

Removal and disposal of hazardous building materials is feasible and is a common action for reducing or eliminating the human health risks of contact with hazardous building materials. Services and materials are readily available.

Building demolition is feasible and is a common action to eliminate physical safety concerns associated with a structurally unsound building and significantly reduces safety concerns for abatement workers.

#### 5.4.4 Reduction of Toxicity, Mobility, and Volume

Toxicity, mobility, and volume of hazardous building materials would each be eliminated under this alternative.

#### 5.4.5 Short Term Effectiveness

The remedial action objectives would be attained almost immediately upon contracting the abatement and demolition work. The work described under this alternative could be performed on a relatively short timeframe, likely one to two months from mobilizing contractors.

#### 5.4.6 Resilience to Climate Change Conditions

Based on the distance of the Site from the nearest surface water body (approximately 950 feet northeast), climate change effects from rising sea level and changing flood zones, while possible, are not anticipated to represent a major threat. As such, the primary climate change concerns would be associated with extreme weather, increased rainfall, and rising groundwater tables. Removal of hazardous building materials would reduce the potential of asbestos or contaminants associated with universal wastes from mobilizing during extreme weather events.

#### 5.4.7 Preliminary Cost

The estimated costs associated with this remedial alternative are outlined in the attached Table 3: “Summary of Estimated Remediation Costs for Full Hazardous Building Materials Abatement and Building Demolition.” Capital costs include direct capital costs, such as materials and equipment, and indirect capital costs, such as engineering and contingencies. The costs associated

with this alternative are lower than the costs associated with the Targeted Hazardous Building Materials Removal with Partial Management in Place Alternative.

## 5.5 Selection of Proposed Remediation Alternative

Based on the results of the initial screening of each alternative, as shown on Table 1 and discussed in detail above, the Full Hazardous Building Materials Abatement and Building Demolition Alternative has been selected as the preferred remediation alternative. This alternative is proven to protect human health and the environment; is effective, technically feasible, and practicable; provides resilience to climate change conditions; and is cost-effective. This Alternative is less costly than the Targeted Hazardous Building Materials Removal with Partial Management in Place Alternative and is similarly effective in meeting the cleanup objectives. This Alternative also removes safety hazards associated with the Site building which has been evaluated to be structurally deficient.

## 6.0 CONCEPTUAL REMEDIAL ACTION PLAN

The Full Hazardous Building Materials Abatement and Building Demolition Alternative is protective of human health and the environment; is effective, technically feasible, practicable, and sufficiently resilient to climate change; and supports Site redevelopment. Because this alternative meets the evaluation criteria and is not cost-prohibitive, this alternative has been selected for implementation at the Site.

Sequencing of the work will be essential to achieving the remediation goals of the selected alternative. The proposed phasing of the work is as follows.

### 6.1 Asbestos Abatement

Current MEDEP regulations require the removal of ACM that will be disturbed by renovation or demolition activities. Since the Site building is proposed for demolition under this alternative, all identified interior and exterior ACM at the Site must be properly removed and transported for off-site disposal. ACM removal must be performed by a fully trained and licensed asbestos abatement contractor, using approved methods in accordance with applicable regulations established by the U.S. EPA, OSHA, and the State of Maine. ACM will be removed in accordance with a project design prepared by a U.S. EPA-certified and MEDEP-licensed Abatement Project Designer.

### 6.2 Lead-Based Paint Removal

Handling of components coated with lead-containing paint *at any concentration* requires compliance with the OSHA lead standard (*Lead in Construction*, 29 CFR 1926.62). As previously discussed, sampling of all painted building materials in the Site building did not identify a concentration of lead above the hazardous waste TCLP threshold. Therefore, special handling and/or disposal of painted building debris will not be required if the Site building or portions of the building are demolished and disposed off-site at a licensed facility.

### 6.3 Universal and Hazardous Waste Removal

Universal and other identified wastes will be properly characterized, handled, transported, and disposed off-site in accordance with MEDEP regulations. Trained individuals will package the waste in appropriate containers with proper labeling. Shipment of waste will be conducted in accordance with established Maine Department of Transportation protocol.

### 6.4 Demolition of the Site Building

Notification: Prior to demolishing a building in the State of Maine, the owner or contractor must issue a Building Demolition Notification to MEDEP. This notification and permitting typically aligns with asbestos abatement notifications forms, and these are often issued in conjunction on such projects. Note that municipalities may require separate notification or application for permit to demolish, independent of MEDEP notification.

Work Practices and General Scope of Work:

1. Following completion of asbestos abatement, the selected demolition contractor will demolish the Site building and properly dispose of construction and demolition debris in compliance with State of Maine and federal guidelines.
2. During demolition phase, the contractor will establish work zones to limit access to the Site and to support decontamination of personnel and equipment. The Site should have adequate barricades, barriers and fences to ensure the public safety. No one should be allowed to enter the work area without appropriate personal protective equipment (PPE).
3. For demolition methods that generate significant dust, the Contractor will provide water misting sufficient to suppress airborne dust and prevent it from leaving the Site boundary.
4. To the extent practicable, wood, metal, and concrete demolition debris should be segregated and recycled.

Waste Characterization: Demolition debris should be disposed/recycled in accordance with local, state and federal requirements. Furthermore, the demolition contractor must comply with the conditions of the selected receiving facility.

#### 6.5 Site Controls

Erosion control measures are proposed to be implemented and maintained throughout the project in accordance with the Maine erosion and sediment control best management practices (BMPs). Dust control measures are proposed to be implemented in accordance with best management and construction practices.

#### 6.6 Green Remediation Principles

Abatement and demolition activities will be implemented in accordance with the U.S EPA's Clean and Greener Policy for Contaminated Sites, revised February 2012 (Green Remediation Principles). As much as feasible, the cleanup contractor will use well-maintained, appropriate-sized machinery, which may reduce fuel consumption and emissions. The cleanup will be conducted in a manner which is ultimately protective of the air (via dust control and minimizing equipment emissions), adjacent water bodies (through stringent erosion and sedimentation control measures), and human receptors (via physical barriers and restrictions to limit human contact with the impacted areas).

#### 6.7 Project Oversight

The remedial actions proposed in this plan shall be coordinated with and conducted under the periodic oversight of a Qualified Environmental Professional (QEP). Additionally, as part of the Brownfield's programmatic requirements, this ABCA and Conceptual RAP will be submitted to the U.S. EPA and MEDEP for approval prior to implementation of the proposed remedial actions at the Site.

## 6.8 Site Closure and Reporting

A completion report summarizing the field activities conducted as part of the Site remediation will be submitted to the MEDEP. The final report will include a description of the remedial actions and field methods implemented at the Site.

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

Previous environmental investigations conducted at the Site identified hazardous building materials in connection with the Site building. To address the identified hazardous building materials, three remediation alternatives were evaluated, including a No Action Alternative, Targeted Hazardous Building Materials Removal with Partial Management in Place Alternative, and Full Hazardous Material Abatement and Building Demolition Alternative. It should be noted that as part of both alternatives 2 and 3, abatement/removal of ACM, LBP, and universal wastes is assumed to be included prior to and/or concurrently with building demolition.

The No Action Alternative was determined to be unacceptable because it did not meet threshold criteria of the overall protection of human health and the environment. The Targeted Hazardous Building Materials Removal with Partial Management in Place Alternative was not selected since this alternative is more costly and did not meet all redevelopment goals. The Full Hazardous Material Abatement and Building Demolition Alternative protects human health and the environment and is effective, technically feasible, and practicable. Because the Full Hazardous Material Abatement and Building Demolition Alternative meets the evaluation criteria, and is not cost-prohibitive, this is the recommended remedial alternative.

## 8.0 SIGNATURE(S) OF ENVIRONMENTAL PROFESSIONAL(S)

The following Ransom personnel possess the sufficient training and experience necessary to conduct an ABCA, and from the information generated by such activities, have the ability to develop opinions and conclusions regarding remediation alternatives and a Conceptual RAP, as presented herein, for the Site.

### Environmental Professionals:



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Patrick Brown, L.G.  
Project Manager



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Aaron R. Martin, L.G.  
Consultant



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Elizabeth M. Ransom P.G.  
Vice President/Technical Leader

**TABLE 1 – SUMMARY OF THE EVALUATION AND COMPARISON OF REMEDIAL ALTERNATIVES**

**Bradbury Manor, 74 High Street  
Belfast, Maine**

Remedial Action Alternative (RAA)	Overall Protection of Human Health and the Environment	Technical Practicality	Ability to Implement	Reduction of Toxicity, Mobility and Volume	Short Term Effectiveness	Resilience to Climate Change	Estimated Cost	Comments
1) No Action	<ul style="list-style-type: none"> <li>Long-term risks to human health by direct contact, inhalation, and ingestion will remain.</li> <li>Cleanup levels will not be met.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable.</li> </ul>	<ul style="list-style-type: none"> <li>No reduction in toxicity, mobility or volume of the contaminated media.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable – no response action will be implemented.</li> </ul>	<ul style="list-style-type: none"> <li>No resilience to climate change will be achieved through the “no action” alternative.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>This alternative does not address the hazardous building materials or safety concerns at the Site.</li> </ul>
2) Targeted Hazardous Building Materials Removal with Partial Management in Place	<ul style="list-style-type: none"> <li>Risks to human health by direct contact, inhalation and ingestion of contaminated media is significantly reduced by abatement and partial management in place of hazardous building materials.</li> <li>The proposed alternative will not completely eliminate hazardous building materials at the Site and will require future management.</li> <li>Provides adequate protection of human health and the environment through either elimination or management in place of hazardous building materials.</li> <li>Does not provide protection of safety for future occupants or trespassers due to the structurally unsound condition of the Site building.</li> </ul>	<ul style="list-style-type: none"> <li>The goal of reducing or eliminating the risk of human exposure to hazardous building materials would be partially met as remaining hazardous materials would require management in place.</li> <li>Contractors with experience with similar projects are readily available in the region; however, the structurally unsound condition of the Site building presents significant safety concerns to abatement workers.</li> </ul>	<ul style="list-style-type: none"> <li>Targeted hazardous building materials removal with partial management in place at the Site is technically feasible, but impractical to implement due to the structurally unsound condition of the Site building.</li> <li>Services and materials necessary to conduct this alternative are readily available.</li> </ul>	<ul style="list-style-type: none"> <li>This remediation alternative can significantly achieve reduction of the toxicity and mobility of the hazardous building materials at the Site, but the volume be reduced, but not eliminated.</li> </ul>	<ul style="list-style-type: none"> <li>Future exposure to hazardous building materials managed-in-place would not be eliminated</li> <li>Ongoing maintenance of hazardous building materials would be required.</li> </ul>	<ul style="list-style-type: none"> <li>Due to the distance to the Passagassawakeag River (905’ northeast), climate change effects from changing flood zones are not anticipated to represent a major threat.</li> <li>Proper stormwater management controls and mitigation measures will also be implemented as part of the further Site redevelopment.</li> </ul>	<ul style="list-style-type: none"> <li>The estimated cost for the Targeted Hazardous Building Materials Removal with Partial Management in Place with contingency is \$650,000.</li> <li>Capital costs include direct capital costs, such as materials and equipment, and indirect capital costs, such as engineering and sampling contingencies.</li> <li>The costs associated with this would be greater than those estimated for the “Full Hazardous Materials Abatement and Building Demolition” alternative.</li> </ul>	<ul style="list-style-type: none"> <li>Because hazardous building materials would remain at the Site, a long-term management plan would be required.</li> </ul>
3) Full Hazardous Building Materials Abatement and Building Demolition	<ul style="list-style-type: none"> <li>This alternative provides adequate protection of human health and the environment through eliminating the risk of human exposure to the hazardous building materials present in/on the Site building.</li> <li>This alternative provides adequate protection of human safety by eliminating the hazard associated with the structurally unsound building.</li> </ul>	<ul style="list-style-type: none"> <li>The abatement of hazardous building materials could be completed utilizing accepted construction techniques.</li> <li>Both contractors and disposal facilities with experience with similar projects are readily available in the region.</li> </ul>	<ul style="list-style-type: none"> <li>Abatement of hazardous building materials and building demolition is technically feasible and is an effective action for eliminating the risk of human exposure.</li> <li>The necessary services and materials to complete the remedial tasks are readily available, including the necessary equipment and contractors.</li> </ul>	<ul style="list-style-type: none"> <li>This remediation alternative can significantly achieve reduction of the toxicity, mobility, and volume of hazardous building materials at the Site.</li> </ul>	<ul style="list-style-type: none"> <li>The remedial action objective could be attained when the building debris are removed from the Site.</li> </ul>	<ul style="list-style-type: none"> <li>Due to the distance to the Passagassawakeag River (905’ northeast), climate change effects from changing flood zones are not anticipated to represent a major threat.</li> <li>Proper stormwater management controls and mitigation measures will also be implemented as part of the further Site redevelopment.</li> </ul>	<ul style="list-style-type: none"> <li>The estimated cost for the Full Hazardous Building Materials Abatement and Building Demolition Alternative with contingency is \$460,000.</li> <li>Capital costs include direct capital costs, such as materials and equipment, and indirect capital costs, such as engineering and sampling contingencies.</li> <li>The costs associated with this alternative would be less than those estimated for the “Targeted Hazardous Building Materials Removal with Partial Management in Place” alternative.</li> </ul>	<ul style="list-style-type: none"> <li>Hazardous building materials would be removed in their entirety, eliminating potential risk of human contact with these materials.</li> <li>Safety concerns associated with a structurally unsound building would be eliminated.</li> </ul>

**Table 2: Summary of Estimated Remediation Costs**  
**Targeted Hazardous Building Materials Removal with Partial Management In-Place Alternative**  
**Bradbury Manor**  
**74 High Street**  
**Belfast, Maine**

<b>Targeted Hazardous Building Materials Removal with Partial Management In-Place Alternative</b>	<b>Number</b>	<b>Units</b>	<b>Unit Cost</b>	<b>Total</b>
Abatement of Hazardous Building Materials <sup>1</sup>				
Abatement of Asbestos	1	LS	\$400,000	\$400,000
Stabilization of Lead Paint	1	LS	\$75,000	\$75,000
Removal of Universal Wastes	1	LS	\$7,000	\$7,000
Remediation Engineering Design/Oversight/Closure Report				
Cooperative Agreement Oversight	1	LS	\$5,000	\$5,000
Community Relations Plan & Public Meetings	1	LS	\$5,000	\$5,000
Design, Bidding Documents & Cleanup Planning	1	LS	\$10,000	\$10,000
Cleanup Oversight	1	LS	\$10,000	\$10,000
Closure Reporting & Grant Closesout	1	LS	\$7,500	\$7,500
Post-Cleanup Maintenance of Remaining Lead-Based Paint	1	LS	\$10,000	\$10,000
<i>Subtotal</i>				<i>\$529,500</i>
Contingency 25% <sup>2</sup>				\$120,500
<b>TOTAL</b>				<b>\$650,000</b>

**Assumptions and Footnotes:**

1 - Engineering cost estimates based on recent comparable projects in Maine.

2 - Contingency does not include costs associated with Remediation Engineering Design/Oversight/Closure Report or Post-Cleanup Maintenance of Lead-Based Paint.

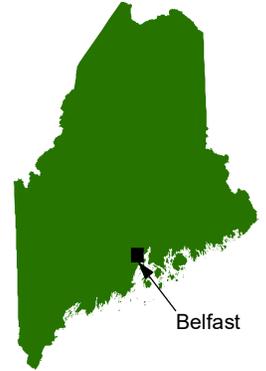
**Table 3: Summary of Estimated Remediation Costs- Full Hazardous Building Materials Abatement and Building Demolition Alternative**  
**Bradbury Manor**  
**74 High Street**  
**Belfast, Maine**

<b>Full Hazardous Building Materials Abatement &amp; Building Demolition Alternative</b>	<b>Number</b>	<b>Units</b>	<b>Unit Cost</b>	<b>Total</b>
Abatement of Hazardous Building Materials				
Integral Abatement of Hazardous Building Materials and Demolition	1	LS	\$275,000	\$275,000
Universal Waste Removal	1	LS	\$7,000	\$7,000
Backfill for Basement of Demolished Site Building	1	LS	\$60,000	\$60,000
Remediation Engineering Design/Oversight/Closure Report				
Cooperative Agreement	1	LS	\$5,000	\$5,000
Community Relations Plan & Public Meetings	1	LS	\$5,000	\$5,000
Design, Bidding Documents & Cleanup Planning	1	LS	\$10,000	\$10,000
Cleanup Oversight	1	LS	\$5,000	\$5,000
Closure Reporting & Grant Closesout	1	LS	\$7,500	\$7,500
<i>Subtotal</i>				<i>\$374,500</i>
Contingency 25% <sup>2</sup>				\$85,500
<b>TOTAL</b>				<b>\$460,000</b>

**Assumptions and Footnotes:**

- 1 - Engineering cost estimates based on recent comparable projects in Maine.
- 2 - Contingency does not include costs associated with Remediation Engineering Design/Oversight/Closure Report.

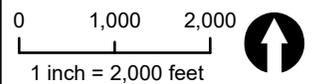
**Regional Locator Map**



**Notes**

1. Data Source: The National Map
2. USGS Quad Names: Belfast and Searsport, ME
3. Latitude: 44°25'26.153"N  
 Longitude: 69°0'11.041"W

**Scale and Orientation**



**Prepared For**

City of Belfast  
 131 Church Street  
 Belfast, Maine

**Site Address**

Bradbury Manor  
 74 High Street  
 Belfast, ME

111.06134.086 | Oct 2024

**Figure 1**  
 Site Location Map



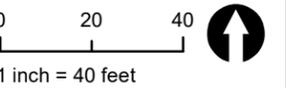
*Legend & Notes*

 SiteBoundary

Notes

1. Aerial Source: Google Earth 2018
2. Some features are approximate in location and scale
3. This plan has been prepared for City of Belfast. All other uses are not authorized unless written permission is obtained from Ransom Consulting, LLC.

*Scale & Orientation*



*Prepared For*

City of Belfast  
131 Church Street  
Belfast, Maine

*Site Address*

Bradbury Manor  
74 High Street  
Belfast, ME

111.06134.086 | Oct 2024

**Figure 2**  
Site Plan

## **APPENDIX A**

Structural Assessment of Bradbury Manor

Analysis of Brownfields Cleanup Alternatives &  
Conceptual Remedial Action Plan  
Bradbury Manor  
74 High Street  
Belfast, Waldo County, Maine

Project 111.06134.086



January 31, 2024

Patrick J. Brown  
Associate Project Manager  
Ransom Consulting, LLC  
400 Commercial Street, Suite 404  
Portland, ME 04101

**Bradbury Manor, 74 High Street, Belfast, ME: Structural Assessment**  
Project 2023-0395

Dear Patrick:

Per your request we conducted a site visit to 74 High Street in Belfast, Maine, also known as Bradbury Manor, on January 4, 2024. The purpose of our visit was to assess the structural integrity of the building to support abatement activities. Our assessment is based on visual observation only. For reference, the High Street side of the building is considered east throughout the report.

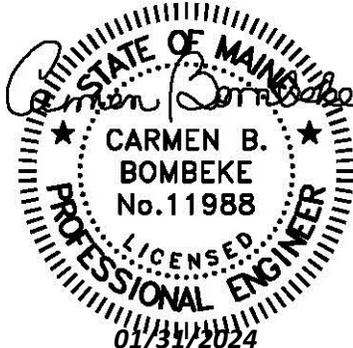
**OBSERVATIONS**

- The existing building is in a state of disrepair and non-conformance.
- The building has not been maintained, is dilapidated and portions of the structure are in the process of collapsing.
- Significant water intrusion has led to deteriorating and collapsed finishes, mold growth, and rot.
- Much of the floor framing is performing poorly and is likely deficient.
- Holes in the floor and the exterior walls are present.
- Part of the first floor has collapsed on the west side of the building.
- The main stair landing between the basement and first floor has started to fail.
- Many of the foundation walls are cracked and/or rotated and are beginning to fail.

**ASSESSMENT**

Due to a lack of maintenance and upkeep of the building, many of the structural components of the building are compromised. The building is unsafe and unsuitable to support abatement activities for renovation/future use of the building. The building cannot practically be stabilized or retrofitted to support abatement without danger to life and property. Given the extreme state of disrepair, the building will need to be demolished to safely complete abatement activities.

Sincerely,  
**Gartley & Dorsky Engineering & Surveying, Inc.**



Carmen B. Bombeke, PE  
Senior Engineer

Enclosures: Selected Photos



1) Collapsed finishes and saturated framing from water intrusion at the roof.



2) Collapsed finishes and mold from water intrusion at the roof.



3) Collapsed finishes and mold in the third floor from water intrusion.



4) Failing stair landing between the basement and first floor.



5) Multiple holes are present in the floors.



6) Partially collapsed first floor on the west side of the building.