



Strathmore Mill

Building 10 Debris Remediation and Removal Project

Montague, Massachusetts

ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES

Prepared for:

Franklin Regional Council of Governments' Regional Brownfields Program

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SECTION 1

INTRODUCTION

This Analysis of Brownfields Cleanup Alternatives (ABCA) has been prepared for the Strathmore Mill former building 10 located on 20 Canal Road in the Town of Montague, Franklin County, Massachusetts. This ABCA report addresses the health and safety issues associated with the disposal of the collapsed remains of building number 10. The building collapsed in May 2007 following a fire at the site. A majority of the historic mill complex was spared from the fire and is owned by the Town of Montague. The purpose of this evaluation is to fulfill the ABCA requirement of the U.S. Environmental Protection Agency (EPA) funded Franklin Regional Council of Governments (FRCOG) Rural Brownfields Cleanup Revolving Loan Fund and Subgrant Program by describing the remedy evaluation process, the remedy selected and the rationale for the selection.

1.1 Previous Investigations

In 2004, a Phase I Environmental Site Assessment was conducted of the entire Strathmore Mill site and in 2005 a hazardous material survey was conducted. Those investigations were funded using an EPA Brownfields assessment grant awarded to the FRCOG. A 2011 Opinion of Remediation cost was conducted which evaluated presumed asbestos containing materials (ACM) co-mingled within the debris pile. This investigation was funded by a state Chapter 43D Expedited Permitting implementation grant. A summary of the findings of those investigations is presented below.

1.1.1 Site Description

The Strathmore Mill includes one parcel identified in the Town's Assessor's records as Map 1, Lot 2. The property is located on a narrow strip of land between the Connecticut River and a hydroelectric power canal in downtown Turners Falls. The Strathmore Mill consists of 10 buildings which range in height from two to four stories, on a 1.92 acres site. The structure has a total floor area of approximately 224,000 square feet, and an overall footprint of 55,000 square feet, not including the Swift River Hydro Company, a 1.0 megawatt, privately owned and operated hydroelectric facility located in the center of the mill. The Strathmore Mill property is bounded to the north by the Connecticut River, to the south by the Turners Falls power canal, and to the west by the Southworth Paper Company. The 10 buildings were constructed between 1874 and 1970. The site is zoned Historic Industrial and is located within the downtown business district. Surrounding land uses include mixed commercial, industrial, and residential uses. The property is listed on the National Register of Historic Places, and was on the 2007 list of the ten most endangered historic resources by Preservation Massachusetts.

The subject area consists of a large pile of building debris resulting from a previous fire and subsequent collapse of building 10. The proposed work area is limited to the Debris Pile only. The Debris Pile is bound on two sides by five story structures that remain standing but are no longer occupied (buildings 11 and 1). The site is also bound by canals on each side of the property thus making access to the site limited to one 11.0' wide roadway. The Debris Pile is concentrated within a 90' x 40' area at the base of the five story brick structure and also covers a 50' x 40' sloped hill. The depths of the pile fluctuate from 1' to as much as 15' at its deepest areas. Refer to the photograph log attached herein for a better understanding of the site layout.

1.1.2 Surrounding Resource Areas

The site is not located within any potentially productive aquifers, Zone II's or an Interim Wellhead Protection Area of a public water supply. Also, no areas of Critical Environmental Concern, sole source aquifers or solid waste landfills were identified within 500 feet of the site. The site is located in an

estimated and priority habitat of rare wildlife and endangered species associated with the adjacent Connecticut River. Because of its proximity to the Connecticut River, the entire site is within an area designated as Living Waters Critical Supporting Watershed by the National Heritage and Endangered Species Program. The site is within the 200 Riverfront Resource Area under the Massachusetts Rivers Protection Act, but the Montague Conservation Commission has determined this site is exempt as a historic mill site predating 1900 (CMR 10.58(6)). According to the FEMA Flood Insurance Rate Map, dated 1982, the southeastern portion of the site is located in Zone C, which is identified by FEMA as an area of minimal flooding. The remaining portion of the site is within Zone A17, the 100-year flood zone

1.1.3 Site History

Town of Montague records indicate that the mill was constructed in 1877 with subsequent additions added in 1892, 1906, and 1918. The 1884 Sanborn Fire Insurance maps indicate that the property was occupied by the John Russell Cutlery Company and Montague Paper Company at that time. Industrial processes conducted included machining, stamping, forging, grinding, finishing, pulping, cutting, and bleaching. These operations continued at the property through at least 1895.

The 1902 Sanborn maps indicate that the John Russell Cutlery Company continued to occupy the southwest portion of the property in 1902, but the building area formerly occupied by Montague Paper was subsequently occupied by International Paper through at least 1914. The 1940 maps indicate that the entire complex was occupied by Keith Paper at that time. The cutlery operation had been removed and processes related to papermaking were distributed throughout the site. The Turners Falls city directories indicate that Keith Paper occupied the site through at least 1945 and Strathmore Paper occupied the site from 1960 through the mid 1980's at which time it was purchased by International Paper. International Paper closed the mill in the mid 1990's. Space was subsequently rented to small commercial businesses until it was purchased Western properties, LLC in January 2003. Western Properties used the mill for the storage of large quantities of waste paper. In 2007, ownership of the Strathmore Mill was transferred to Swift River Group. The developer's plan was to develop a film school and studios, and ancillary uses, at the mill, an estimated \$32 million project. Also in 2007, building 10 was destroyed due to an arson fire. Most of the damages were contained to that one structure. The Town invested over \$300,000 to repair the roof of adjacent building 1. Montague was ultimately forced to take the Strathmore Mill in February 2010 for taxes owed and is the current owner. The Town is actively planning redevelopment of the 225,000 sq. foot former mill complex. On the Connecticut River in Downtown Turners Falls, the mill holds considerable potential as an ideal site for a business incubator, manufacturing, and warehousing uses.

1.2 Phase I and II Subsurface Investigation

The Phase I investigation included the advancement of nine soil borings, two of which were completed as groundwater monitoring wells, and the laboratory analysis of groundwater and soil samples. The Phase I investigation identified exceedences in subsurface soils of the applicable Reportable Concentrations (RC's) for arsenic and polynuclear aromatic hydrocarbons (PAHs), thereby triggering a 120 day release notification requirement. The source of the PAHs has been attributed to coal, wood ash, and coal ash in the fill underlying the site. Arsenic was identified in one of the soil samples submitted for analysis, however, the calculated Exposure Point Concentration (EPC) for this metal was well below the applicable standards. A class B-1 RAO was prepared for the site. It was determined by a Massachusetts Licenses Site Professional (LSP) that no further remediation is required under the Massachusetts Contingency Plan.

1.3 Hazardous Material Survey

An April 2005 Hazardous Materials Survey report documented the presence of asbestos in specific buildings. It was a limited scope of work to identify easily accessible materials throughout the entire mill complex. The following materials were identified as asbestos-containing in various quantities and locations through the

entire mill: Transite, window glaze, window caulk, pipe thermal system insulation, pipe fitting insulation, tar covered insulation, boiler seams, boiler insulation, boiler gaskets, floor matting. The following hazardous materials were identified: light fixtures, hydraulic oil, household wastes, oils, paints, guano, various process chemicals, lead containing paints. Most of these materials are typically found in old mill buildings and can be readily disposed or recycled.

1.4 Opinion of Remediation Costs for debris pile

On May 9, 2011, Tighe + Bond personnel, who are also Massachusetts licensed asbestos inspectors, completed a pre-remediation investigation at the site, as required by law. The investigation included a limited asbestos survey consisting of bulk sampling in and around the debris pile. They assumed that most of the material will be disposed of as asbestos waste. Much of the material is brick, which because of its porous nature must be treated as an ACM. Bulk samples confirmed the following co-mingled throughout the pile: transite boards, roofing cements, black colored asphalt shingles. Inspection of the top 1'-3' of the pile did not reveal intact hazardous components; however per the hazardous materials survey it is likely that some material may be present. These will require separation, decontamination and proper disposal during the course of remediation.

SECTION 2 ALTERNATIVES ANALYSIS

The objective of the remediation and removal of the Debris Pile is to :

- 1) Remove a health and safety, and operational hazard;
- 2) Restore legal rights of access for abutting property interests; and
- 3) Provide the Town of Montague with a site that could be redeveloped.

As previously discussed, the building collapsed following a 2007 fire. An asbestos and hazardous material survey of the pile completed in 2011 identified asbestos containing material co-mingled with building rubble. The debris is exposed to the elements and even though the area is gated, it could be accessed by trespassers. The Town owns the property.

Three remedial options have been evaluated for the site remediation. These three options are:

- No action
- Complete remediation and removal of the debris
- Selective abatement removal of the debris

Each option was evaluated for its applicability to the site and its feasibility. Each option is discussed below. A plan with the buildings identified is included in Figure C.

2.1 No Action

The “no action” alternative is included in the evaluation as a standard to compare other remedial actions in order to compare and contrast any significant reduction in site risk, as necessary. For the “no action” option, the Town of Montague would not take any action to abate or remediate the issues identified at the site.

The building debris and associated asbestos and hazardous materials would remain exposed to the elements. The longer the debris remains at the site there is an increased chance for the asbestos fibers in the material to become airborne and migrate beyond the mill area, or for the fibers to leach into the Connecticut River. The mill is located immediately north of downtown Turners Falls- at a gateway and along the Canalside Bike Path and thus remains an ‘attractive nuisance’ as well as presenting a health and safety hazard to the area and abutting industries. Several walls and structures of the collapsed building remain standing, but unsupported or removed over time will collapse.

In addition, the Swift River Hydro Company, located inside the Strathmore Mill complex holds an access easement to their turbine over Town land. The debris is blocking that easement- which is critical for emergency maintenance of the hydro turbines.

Therefore, leaving the site in its current condition is not protective of human health or the environment. And it also opens the town to liabilities over Swift River Hydro’s right to access their property. Based on these concerns the “no action” alternative cannot be recommended.

2.2 Complete abatement and removal of the debris

This option includes abatement and demolition of building 10 including the removal of any ‘overhang’ threats including unstable walls or building debris hanging from the remaining building 11 and 1. The Town of Montague requested that an asbestos and hazardous material survey of the building be conducted. The results of this survey are presented in the tables included in Figure D. Based on that evaluation, an opinion of probable costs to abate the hazardous materials and demolish the buildings was developed. The opinion of cost included the following:

A four week remediation period at minimum. Contractor activities will include efforts to gain safe access and remediate the Debris Pile, obtain permits, construction of a decontamination pad for trucks leaving the site, construction of a personnel decontamination unit, construction of a regulated area to perform decontamination of various components for recycling, removal of co-mingled asbestos containing material, segregation and disposal of hazardous components, removal and disposal of wood waste and other non-ACM debris, secure remaining buildings and parking area.

Cost: \$340,000

Estimate breakdown includes removal of both 1,100 tons of presumed ACM and 900 tons of non-ACM.

2.3 Selective abatement and removal of the contaminated debris

This option includes abatement and removal of only ACM and hazardous materials. The contractor would select the approximated 1,100 tons of ACM material and not remove the 900 tons of clean material.

This will neutralize the threat of ACM spreading through the air or leaching into the river. The size of the pile would be reduced by over 50%. However, the site will remain an attractive nuisance, be a financial obstacle to redevelopment, and preclude Swift River Hydro’s right-of -way.

Cost: \$282,500

Note this cost reflects the reduction to remove the estimated 900 tons of clean material and 5 less days of labor. Cost for engineering services though the planning and remediation phase remain the same as complete abatement.

SECTION 3

COMPARATIVE ANALYSIS OF ALTERNATIVES

Based on the foregoing evaluation of remedial options, a comparative analysis was performed. The comparative analysis qualitatively ranked each alternative using the criteria indicated in Figure 1 included at the end of the section. Each evaluation criterion was given a score for each alternative of 1,2, or 3, with 1 being poor, 2 being average and 3 being good. The individual scores were summed for each alternative to give a total score, with the highest score indicating the best option. The evaluation of remedial alternatives and this comparative analysis were performed based on existing data.

3.1 Recommendations

Complete demolition had the highest score, followed closely by selective demolition (63 and 57 respectively). The difference between the two options is that with selective demolition, much of the material will remain on site with a comparable amount of contractor effort and project cost. Based on the raw scores complete demolition would be the preferred remedial alternative. However, if the Town has a planned re-use of the remaining debris that could be used as on-site fill in short timeframe- selective demolition may be an appropriate option. (This option is not likely as the recommended use is for this area is as a ground-level courtyard)

While both selective and complete demolition will address the health and environmental concerns, only complete demolition is the clear feasible option to address the suite of concerns at the site: health, safety, legal, and redevelopment potential.

A summary of applicable regulation for the project is included in Figure B- Applicable, Relevant, and Appropriate Requirements (ARARs), included at the end of this section.

Comprehensive Analysis of Alternatives- FIGURE A
Strathmore Mill Debris Pile, Turners Falls, MA 01376

	No Action	Complete Demolition	Selective Demolition
Effectiveness			
Protectiveness			
Protective of public health & community	1	3	2
Protective of workers during implementation	NA	2	2
Protective of environment	1	3	3
Complies with ARARs	1	3	3
Ability to Achieve Removal Objectives			
Level of treatment/containment expected	1	3	3
No residual effects concerns	1	3	2
Will meet the needs of abutting legal and business interests	1	3	2
Enhance the redevelopment of the Strathmore Mill	1	3	2
Implementability			
Technical Feasibility			
Construction & operational considerations	NA	3	3
Demonstrated performance/useful life	1	3	3
Adaptable to environmental conditions	1	3	3
Contributes to remedial performance	NA	3	3
Can be implemented within one year	3	3	3
Can be implemented within two months	3	2	2
Availability			
Equipment	NA	3	3
Personnel & services	NA	3	3
Outside laboratory testing capacity	NA	3	3
Off-site treatment and disposal capacity	NA	3	3
Post removal site control	NA	3	3
Administrative Feasibility			
Permits required	NA	2	2
Elimination of existing public safety & building code violations	NA	3	2
Easements or right-of-way requirements	NA	NA	NA
Impact on adjoining properties	NA	3	2
Ability to impose institutional controls	NA	NA	NA
Likelihood imposed obtaining exemption from statutory limits if needed	NA	NA	NA
Total	15	63	57

1=Poor; 2=Average; 3= Good NA= Not Applicable

ARARs for the Recommended Alternative FIGURE B

ARARS	STATUS	MAJOR REQUIREMENTS	RECOMMENDED ALTERNATIVE ACTION
Massachusetts Contingency Plan (MCP) 310 CMR 40,0000	Not Applicable	Establishes methodology for evaluation and remediation of oil/hazardous materials, and cleanup standards for risk characterization.	A Response Action Outcome has already been submitted to DEP. No recent testing has been conducted to determine if reportable conditions exist at the site
USEPA Disposal of PCB's 40 CFR Parts 750 and 761	Not Applicable	Establishes methods and standards for the removal and disposal of PCB -impacted media and decontamination for PCB contaminated materials.	PCB's are not a contaminant of concern at the site
OSHA 29 CFR Parts 1926	Applicable	Regulates worker protection standards and exposures.	The recommended alternative will require the Contractor to prepare a Health & Safety Plan in accordance with OSHA standards.

Standards Applicable to Generators of Hazardous Waste, 49 CFR Part 362, Subpart C, Pre-Transport Requirements: §262.30 Packaging; §262.31 Labeling; and §262.32 Marking	Applicable	Regulates the preparation of hazardous materials.	The packaging, labeling and marking of asbestos and hazardous materials will be met by proper pre-disposal and pre-trucking methods by the Contractor, as specified in the Specifications, and assured through supervision and oversight of the Contractor by the Engineer and client representative.
Massachusetts Rivers Protection Act	Not Applicable	Regulates activities occurring within 200 feet of a river.	The site is located within 200 feet of the Connecticut River but this work is understood to be exempt under 310 CMR 10.58(6) as a Historic Mill complex. Requirements of this Act will have to be evaluated depending on the redevelopment alternative selected.
Clean Air Act - Federal	Not Applicable	Establishes program control land prevents airborne-particulates and toxic emissions and control volatile and other hazardous emissions.	Abatement activities will be conducted under specific emission controls including dust suppression and wetting.
Resource Conservation and Recovery Act and regulations	Applicable	Defines federal dangerous waste requirements for those who generate, store, treat or dispose of it. Key elements included requirements for and permitting of disposal facilities and land disposal facilities.	Some RCRA requirements could be relevant and appropriate including siting and operation requirements for dangerous waste disposal facilities. These requirements will be met by disposing of site materials at appropriately permitted facilities.

Figure C- Locus Map



Figure D- Debris Pile Asbestos Inventory

ASBESTOS-CONTAINING MATERIAL INVENTORY TABLE
Debris Pile at 20 Canal Road, Montague, Massachusetts

Sample #	Material	Location	Approximate Quantity	Result	Comment
A-01, A-02, A-03	Transite board	Debris Pile: Co-mingled throughout the Debris Pile	Co-mingled throughout Debris Pile	Positive	Transite board, broken in pieces, were observed in several locations within the Debris Pile. This material has contaminated portions of the pile and all materials that have come in contact around the transite are considered contaminated due to the presence of this ACM. Careful separation of contaminated materials coupled with decontamination of large items will be necessary during all aspects of Debris Pile remediation.
A-04, A-05, A-06	Mastic on cork	Debris Pile: Throughout	-	Negative	Black mastic observed in-between a cork material and plaster wall remnant.
A-07, A-08, A-09	Plaster	Debris Pile: Throughout	-	Negative	Non-ACM 1/4" thick plaster application applied to cork. Observed scattered throughout pile.
A-10, A-11, A-12	Flashing cement	Debris Pile: Co-mingled throughout the Debris Pile	-	Positive	Asbestos containing flashing cement applied to slate roof shingles. This material has contaminated portions of the pile and all materials that have come in contact around the flashing cement are considered contaminated due to the presence of this ACM. Careful separation of contaminated materials coupled with decontamination of large items will be necessary during all aspects of Debris Pile remediation.
A-13, A-14, A-15	White paper	Debris Pile: Throughout	-	Negative	Non-ACM paper material presumed to have been used within floor boards.
A-16, A-17, A-18	Roof shingle, green and red pebble	Debris Pile: Throughout	-	Negative	Non-ACM roof shingle observed within the debris pile.
A-19, A-20, A-21	Silver roofing material	Debris Pile: Throughout	Co-mingled throughout Debris Pile	Positive	ACM roofing debris observed within the debris pile. This material is consistent with a multi-layered asphalt based roofing system and is considered non-friable due to its composition. This ACM is expected to be present throughout the debris pile and requires separation from clean solid waste materials during remediation.

Sample #	Material	Location	Approximate Quantity	Result	Comment
A-22, A-23, A-24	Black tar paper	Debris Pile: Throughout	-	Negative	Non-ACM roof type tarpaper observed within the debris pile. This same material may have been used as a paper in-between floor boards.
A-25, A-26, A-27	Black shingle	Main Building: Within Debris Pile	Co-mingled throughout Debris Pile	Positive	ACM roofing debris observed within the debris pile. This material is consistent with a multi-layered asphalt based roof shingle system and is considered non-friable due to its composition. This ACM is expected to be present throughout the debris pile and requires separation from clean solid waste materials during remediation.

LEGEND
ACM = ASBESTOS CONTAINING MATERIAL (Contains 1% or greater asbestos)
REFER TO ATTACHMENTS FOR ASBESTOS LABORATORY DATA