



Blackstone Canal Preservation Study



Sponsored by:

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Blackstone River Valley
National Heritage Corridor Commission
Woonsocket, RI

Worcester Historical Museum
Worcester, MA

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Blackstone Canal Preservation Study

Blackstone, Millville, Uxbridge,
Northbridge, Grafton, Sutton, Millbury,
and Worcester,
Massachusetts

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Executive Summary

Overview

In 1986 the Blackstone River Valley in Massachusetts and Rhode Island was recognized as a special place and designated as a National Heritage Corridor by the U.S. Congress. With this designation, the Blackstone River Valley National Heritage Corridor Commission (BRVNHCC) was appointed to oversee the Corridor's operations in accordance with the National Park System's (NPS) tradition of management of cultural and natural resources. The BRVNHCC works in partnership with a variety of Federal, State and local agencies, and non-profit and private organizations to preserve the historic and environmental elements of the Valley's landscape, and to seek opportunities for investment in the Valley's historic mill villages and revitalization of its river system. Among the key goals of the Commission are to:

- Tell the story of the American Industrial Revolution by shaping experiences for visitors and making the story accessible to large numbers of people;
- Promote preservation and new life for the Valley's older village centers, mills, and other historic resources;
- Assist local communities in balancing conservation and growth; and
- Reaffirm an active commitment to improving the health of the River system.

The subject of the Blackstone Canal Preservation Study (the Study) is the portion of the Blackstone Canal in Massachusetts extending from Blackstone, MA to Worcester, MA. Constructed between 1824 and 1828, the Blackstone Canal connected Worcester, MA and Providence, RI. Though superseded as a transportation route by the construction of the railroad in 1847, many remnants of the Canal remain discernible along its route through Massachusetts. The purpose of the Study is to support the BRVNHCC mission to promote preservation of historic resources in the Blackstone River Valley and tell the story of the American Industrial Revolution in the region.

The goals of the Blackstone Canal Preservation Study are to facilitate a better understanding of the character and condition of the extant segments of the Blackstone Canal in Massachusetts; to assess opportunities for preservation, restoration, and interpretation of the Canal and its history; and to recommend key segments for such action. The Study includes the following elements:

- Inventory and comprehensive mapping of the existing and historic location of the Blackstone Canal and associated historic and archaeological resources,
- Narrative documentation of the existing conditions of canal resources,

- Identification of key canal segments in Massachusetts that offer outstanding opportunities for preservation, restoration, and interpretation of the history of the Blackstone Canal and the Blackstone River Valley, and
- Preliminary tasks and cost estimates associated with recommended restoration efforts.

Study Area

The portion of the Blackstone Canal in Massachusetts extends approximately 27.5 miles from the Rhode Island state line in the Town of Blackstone to the Canal's northern terminus in the City of Worcester, passing through the cities and towns of Blackstone, Millville, Uxbridge, Northbridge, Grafton, Sutton, Millbury, and Worcester (Figure 1).

The Study Area includes the path of the Canal and its associated engineering resources (locks, bridges, etc.), as well as adjacent mill buildings, homes and villages surrounding mill sites, and natural bodies of water used to sustain the Canal's water supply.

Planning Process

Resource Inventory and Mapping

A Resource Inventory and Existing Conditions assessment was conducted based upon existing data inventories, consultation with staff from the BRVNHCC, and consultation with local historians and stakeholders. The documentation of extant canal resources and their condition is based on the 1995 National Register of Historic Places Registration Form (NR form) for the Blackstone Canal Historic District in Massachusetts.

After the initial refinement of the location of the Blackstone Canal, the canal path and significant associated historic and archaeological resources identified in the NR form for the Blackstone Canal Historic District were mapped using a Geographic Information System format. The resulting maps show the following information for each of the eight Massachusetts towns containing remnants of the Blackstone Canal:

- Where the Canal is located in the Blackstone River or other water bodies;
- Where it is no longer visible;
- Where it is partially visible;
- Where it is clearly visible; and
- Where the Canal is visible and watered.

Public Workshop

A public workshop was held in February 2005 with representatives from the eight Massachusetts communities containing the Blackstone Canal to solicit input on the accuracy of the Resource Inventory and mapping and to gather suggestions for areas in their communities where the Canal could be preserved and made publicly accessible. The workshop resulted in a list of 28 suggested sites for future preservation and accessibility.

Canal Segment Selection Methodology

Selection of outstanding segments of the Blackstone Canal in Massachusetts for further study was a phased process relying on public input from Blackstone Canal corridor communities, input from BRVNHCC staff, and assessment of the Resource Inventory and Existing Conditions summary. Where feasible, field inspections were conducted for sites suggested by the public. Canal segments were reviewed and rated based on the following criteria:

- The state of preservation of the canal segment and associated resources,
- The rarity of survival of the Canal or associated features relative to the entirety of the Canal in Massachusetts or the community within which the segment was located,
- The level of protection afforded to the resource via ownership or management status,
- Current and potential public access, and
- Restorative and interpretive opportunities.

In selecting key canal segments for restoration, emphasis was put on those segments of the Canal that were well-preserved (i.e. visible and/or watered), that were unprotected through public ownership or conservation or preservation restrictions, that were presently or would soon be publicly accessible, and that included resources associated with important historic contexts in the Blackstone River Valley.

Summary of Recommendations

Key Canal Segments for Restoration

Based on the selection methodology outlined above, five segments of the Blackstone Canal were put forward for further evaluation for protection, stabilization and restoration. These segments were identified as offering outstanding opportunities for preservation, restoration, and interpretation by virtue of their high degree of integrity, unprotected status, accessibility to the public, proximity to other protected



segments of the Canal, and high interpretive value. The five selected segments include:

Millville Lock Area, Millville

The Millville Lock Area in Millville comprises a 0.5-mile length of dry canal trench and well-preserved towpath berm beginning in the east at the Millville Lock unit of the Blackstone River and Canal Heritage State Park and extending west to the Central Street Bridge over the Blackstone River.

The Millville Lock is currently interpreted as part of the Blackstone River and Canal Heritage State Park, however there is no formal public access or interpretation for the extant segment of the Blackstone Canal adjacent to the Lock. The well-preserved section of the Blackstone Canal near an established interpretive site presents a prime opportunity to expand interpretive programming. The Canal in this area would also lend itself well to future restoration and re-watering efforts, as it is structurally intact and close to the source of water provided by the Blackstone River.

Skull Rock Area, Uxbridge

The Skull Rock Area of the Blackstone Canal is comprised of a 0.5-mile segment of watered and dry canal trench and intact towpath berm in the vicinity of Old Millville Road in Uxbridge. The Area begins in the south at a bend in the Blackstone River off Old Millville Road where the Canal leaves the river and enters an engineered trench, and ends in the north near the crossing of Millville Road (Route 122).

The Skull Rock Area presents outstanding opportunities for interpretation of notable engineering features along the Canal such as the Skull Rock Lock and Skull Rock Bridge, as well as potential for restoration of the Skull Rock Lock. In addition, the watered segment of the Canal remaining in place at Skull Rock could be reopened to water flow for interpretive and recreational use.

Plummer's Landing-Riverdale Mill Area, Northbridge

The Plummer's Landing-Riverdale Mill Area comprises a 0.8-mile segment of watered canal and visible towpath northwest of the Plummer Corner section of Northbridge. The Area begins in the south at the north bounds of the Plummer's Landing unit of the Blackstone River and Canal Heritage State Park off Church Street and ends in the north at the Riverdale Mill on Riverdale Street.

The Plummer's Landing-Riverdale Mill Area presents a prime opportunity for restoration of the dry segment of the Blackstone Canal between Church Street and Riverdale Street and the potential restoration of the former basin at Plummer's Landing. The Canal in the Plummer's Landing-Riverdale Mill Area also appears to be a feasible site for restoration and re-watering efforts, as it is structurally intact and close to the source of water provided by the Blackstone River.

The greater public accessibility to the Plummer's Landing-Riverdale Mill Area of the Blackstone Canal with the completion of the Blackstone River Bikeway and its proximity to the Blackstone River and Canal Heritage State Park present a prime opportunity to continue the preservation and interpretive mission exemplified by the Heritage State Park. As a northern anchor to this segment, the Riverdale Mill presents an opportunity to interpret the industrial history of the Blackstone River Valley and the later uses of the former Blackstone Canal for power generation.

Fisherville Area, Grafton

The Fisherville Area of the Blackstone Canal in Grafton consists of a one-mile long segment of watered canal, visible towpath, and the remains of the Fisher Manufacturing Company in the mill village of Fisherville. The area extends from south of the Main Street (Route 122A) crossing of the Blackstone Canal and extends north of the site through the former Fisherville Mill Pond and marshes and west through a watered canal segment to Pleasant Street.

The Fisherville Area offers opportunities for interpretation of the rise and decline of local industry through the Fisherville Mill and the cultural landscape of the mill village of Fisherville. The planned redevelopment of the Fisher Manufacturing Company site and the current local planning efforts surrounding the Blackstone River and Fisherville Mill Pond present a prime opportunity to restore a pivotal segment of the Blackstone Canal in Grafton, reconnecting the open, navigable watered sections of the Canal north and south of Main Street. In addition to reopening a covered section of the Canal, the potential exists to preserve, interpret, and possibly restore remnants of Lock #30 which may be extant on the covered section of the Canal on the site.

Cross Road-Grafton Street Area, Millbury

The Cross Road-Grafton Street Area of the Blackstone Canal consists of dry canal trench and visible towpath beginning in the south at the Millbury-Sutton town line near Cross Road and Grafton Street. This approximately one-mile long segment of the Blackstone Canal passes through a largely undeveloped portion of the east side of the town and constitutes the only visible segment of the Canal in the Town of Millbury.

The Cross Road-Grafton Street Area offers opportunities for restoration, interpretation, recreation, and greater public access to the Blackstone Canal. The well-preserved condition and proximity to water in the Blackstone River at both ends of the segment make it a potentially feasible site for re-watering. There is also an opportunity to restore a key feature of the Blackstone Canal with the visible remains of Lock #35. The Cross Road-Grafton Street Area will soon become partially publicly accessible via completion of the Blackstone River Bikeway, and there is the potential for even greater public access via a system of walking trails along the Canal in this largely undeveloped area of Millbury.

Segments for Future Action

In addition, the following five segments were identified for consideration in a second phase of planning and study to be conducted in the future:

- Blackstone Manufacturing Company Area, Blackstone
- Leland's Landing Area, Grafton
- Depot Street-Chase Road Area, Sutton
- Millbury-Winnipeg Street Area, Worcester
- Brosnihan Square-Hurley Square Area, Worcester

These segments meet many of the criteria used to select the key segments for restoration and should be priority areas for preservation, public access, and interpretation in the future. Several of these sites pose preservation, access, or restoration challenges that make them less feasible for immediate action, while others do not require substantive restoration efforts.

General Recommendations

While each of the key segments of the Blackstone Canal in Massachusetts proposed for restoration is unique, a phased set of general recommendations has been developed to be applied to each segment. The general recommendations include a phased program of short-term preservation and protection; mid-term stabilization, maintenance, and management; and long-term rehabilitation and interpretation. The general recommendations address issues such as land or easement acquisition, facilitation of public access to canal segments, and further study regarding historic restoration and interpretation opportunities.

It should be emphasized that the recommendations in this Study are preliminary, and additional, site-specific research and planning activities will need to be completed prior to implementation. Such activities should take into consideration impacts to natural and historic resources, including known and potential archaeological sites, through research and/or survey. Further environmental study will ensure that important resources are not harmed and that all rehabilitation or restoration activities comply with applicable state and federal laws. In addition, information gained from a deeper understanding of each site's natural, historic, and archaeological resources will inform the treatment plan and enhance interpretive opportunities.

Protection and Preservation

Though there have been many efforts made over the past 30 years to preserve and protect the Blackstone Canal from adverse impacts, at present, the major portion of the Canal in Massachusetts remains in private ownership with no real protection

from demolition, natural deterioration, or inappropriate abutting development and no public access.

Providing protection of the most intact, well-preserved segments is the first step in facilitating future restoration and interpretation efforts. A concerted and cooperative effort between the BRVNHCC, state entities, municipalities in which the Canal is located, private organizations with preservation or conservation missions, and property owners should be undertaken to ensure sensitive treatment and long-term management of, and public access to, the Canal's most intact and well-preserved segments.

The strongest measure to ensure public access and appropriate treatment and management of extant segments of the Blackstone Canal is acquisition in fee simple, or acquisition of an interest in the property through an easement by donation or with federal, state, or local funds. In circumstances where acquisition is not feasible or appropriate, alternatives such as preservation or conservation restrictions, establishment of a local historic district or conservation district, zoning overlays, corridor protection bylaws or ordinances, or transfer of development rights provisions can be pursued. This is recommended for all well-preserved, extant sections of the Canal as identified in the Resource Inventory and Existing Conditions section of the Study, regardless of interpretive opportunity or public access.

Stabilization and Management

Though the key segments of the Canal recommended for restoration as part of the Study remain in a recognizable state, most are in need of stabilization and planning for ongoing management and maintenance. As segments of the Canal are planned for protection and future actions, resource management plans should be implemented at the corridor and local levels to assist stewards of the Canal in this work. The resource management plans should guide both routine operation and long-term decisions and planning concerning the use, interpretation, study, and preservation of the Canal, and provide the means to make informed decisions concerning future stewardship of key canal segments, with identified strategic objectives, achievable goals, and concrete action items. The plans should be completed prior to the commencement of rehabilitation or restoration activities and should take into consideration potential impacts to natural, historic, and archaeological resources.

Rehabilitation, Restoration, and Interpretation

The long-term goal for the five key segments of the Blackstone Canal identified by the Study is to rehabilitate or restore the canal structure and associated features in these locations in support of the preservation and interpretive goals of the BRVNHCC. This Study makes preliminary recommendations for potential restoration and rehabilitation of key canal segments and features as well as preliminary recommendations for interpretive opportunities. Rehabilitation or

restoration tasks could include restoration of key features such as lock structures and water control gates, opening covered or hidden sections of the Canal, rebuilding damaged or destroyed towpath sections, and re-watering dry sections of extant Canal. Additional, site-specific research and planning activities will need to be completed prior to implementation of any rehabilitation, restoration, or interpretive activities. Such research and planning should take into consideration potential impacts to natural, historic, and archaeological resources to ensure that these resources are not harmed and that all rehabilitation or restoration activities comply with applicable state and federal laws.

Introduction

Study Purpose and Goals

In 1986 the Blackstone River Valley was recognized as a special place and designated as a National Heritage Corridor by the U.S. Congress. With this designation, the Blackstone River Valley National Heritage Corridor Commission (BRVNHCC) was appointed to oversee the Corridor's operations in accordance with the National Park System's (NPS) tradition of management of cultural and natural resources. Unlike a more traditional National Park, the Heritage Corridor is prohibited by the U.S. Congress from owning or purchasing any land or buildings within its boundaries. Instead, the BRVNHCC works in partnership with a variety of Federal, state, and local agencies, and non-profit and private organizations to preserve the historic and environmental elements of the Valley's landscape as well as to tell its story. As a partnership park, the Blackstone River Valley National Heritage Corridor Commission (BRVNHCC) works to preserve the historic and environmental elements of the Valley's landscape, and seek opportunities for investment in the Valley's historic mill villages and revitalization of its river system. Among the key goals of the Commission are to:

- Tell the story of the American Industrial Revolution by shaping experiences for visitors and making the story accessible to large numbers of people;
- Promote preservation and new life for the Valley's older village centers, mills, and other historic resources;
- Assist local communities in balancing conservation and growth;
- Reaffirm an active commitment to improving the health of the River system.

The subject of the Blackstone Canal Preservation Study (the Study) is the portion of the Blackstone Canal in Massachusetts extending from Blackstone, MA to Worcester, MA. Constructed between 1824 and 1828, the Blackstone Canal connected Worcester, MA and Providence, RI. Though superseded as a transportation route by the construction of the railroad in 1847, many remnants of the Canal remain discernible along its route through Massachusetts. The purpose of the Study is to support the BRVNHCC mission to promote preservation of historic resources in the Blackstone River Valley and tell the story of the American Industrial Revolution in the region.

The Study includes a detailed inventory and comprehensive mapping of the existing and historic location of the Blackstone Canal and significant associated resources,

and a narrative documentation of the existing conditions of these resources. The Study also identifies key canal segments in Massachusetts that offer outstanding opportunities for preservation, restoration, and interpretation of the history of the Blackstone Canal and the Blackstone River Valley, and provides preliminary tasks and cost estimates associated with recommended restoration efforts.

The Blackstone Canal

The portion of the Blackstone Canal in Massachusetts extends approximately 27.7 miles from the Rhode Island state line in the Town of Blackstone to the Canal's northern terminus in the City of Worcester, passing through the cities and towns of Blackstone, Millville, Uxbridge, Northbridge, Grafton, Sutton, Millbury, and Worcester (Figure 1).

Completed in 1828, the Blackstone Canal was a major engineering structure of the early 19th century. For several decades it served as the primary transportation corridor for the movement of agricultural products, raw materials, and manufactured goods between Providence, RI and Worcester, MA. The evolution of the Canal and its significance in the transportation and industrial history of the Blackstone River Valley make the Blackstone Canal an important historic and archaeological resource. The Canal was the last major transportation canal to be constructed in New England, and it embodies the distinctive design, materials, workmanship and methods of construction typical of the period. Remarkably, the Blackstone Canal still possesses a high degree of physical integrity over 150 years after it was discontinued, and its setting is also well-preserved in many sections of the rural Massachusetts towns south of Worcester.

Public appreciation for the canal tradition pervades past and present interest in preserving the significant attributes of the Canal and promoting its contributions to the history of New England and the emergence of the United States as an industrialized nation. In addition to the designation of the Blackstone River Valley as a National Heritage Corridor in 1986, the historic importance of the Canal was further federally recognized through the listing of a portion of the Blackstone Canal in Massachusetts to the National Register of Historic Places in 1972, and the listing of the entire length of the Canal in Massachusetts in 1995. Similarly, the establishment of the Blackstone River and Canal Heritage State Park along the length of the Canal between Northbridge and Uxbridge, the Millville Lock, and the Blackstone Gorge further recognized the importance of the Canal to the Commonwealth of Massachusetts.

Historic Context

The Blackstone River Valley has played a significant role in the history of the United States, serving as the birthplace of the American Industrial Revolution. Following the

end of the Revolutionary War, new technologies and skilled labor began to emigrate from Europe, along with the discovery of building dams to control the current of rivers to generate power for industrial purposes. As a result of this new technology, and the changes in American society and demographics through the emerging industrial economy, the remarkable expansion of textile manufacturing along the Blackstone River in the late 19th century began to occur. With this expansion came significant challenges for inland factories to obtain raw materials from, and ship finished products to, the growing urban marketplaces and tradeports along the coast of New England.

First settled in the late 17th century, Native Americans and early settlers used the Blackstone River for sustenance, a source for drinking water and fishing. By the early 18th century entrepreneurial industrialists found significant resources in the river's steep and constant drop in elevation; the ability to build dams to gather and control the current of rivers provided opportunities to use water-powered wheels to drive carding and spinning mills, iron forges, and other small-scale rural industries. In 1790 Samuel Slater, an ambitious manager from England's trend-setting Arkwright Mills, arrived in the United States and engineered America's first successful water-powered cotton spinning mill along the Blackstone River in Pawtucket, RI. The Slater Mill marked the beginning of the Industrial Revolution, and the transformation of America from an agricultural to an industrial society.

By the late 18th century, the Blackstone River Valley had become a significant intersection of major routes linking Boston, MA with Hartford, CT and Worcester, MA with Providence, RI. While most early American development occurred where boat traffic was easily navigable, the Blackstone River's change in elevations and numerous waterfalls provided a power source for industrial development that spurred a remarkable expansion of textile manufacturing in communities along the river. However, the Blackstone's attributes as an economic engine were also an economic liability for many merchants as the changing grades and waterfalls made the river difficult for boats to navigate.

The necessity to create a navigable waterway connecting the tidewater port of Providence with inland central Massachusetts was viewed by many merchants and industrialists as a significant mechanism to expand their trades. As early as 1792, the idea of constructing a canal to allow horse-drawn boats to carry freight and passengers between inland factories and coastal seaports was receiving significant interest. Overland travel on unreliable and poor quality roads was time consuming and expensive; significant savings could be provided to merchants using a canal from Worcester to Providence rather than taking overland routes to Boston. In 1796, John Brown, a merchant in Providence, RI, obtained a charter from the Rhode Island General Assembly to create a canal. However, a lack of support from merchants in Boston and Springfield, MA, who thought the canal would impede their existing trade traffic, led the Massachusetts Legislature to withhold their approval, and the project lapsed in both states.



Inspired by the success of the Erie Canal, where construction began in 1817, similar ventures were begun in New England. The remarkable expansion of textile manufacturing along the Blackstone River in the early 19th century helped to generate additional support for the construction of the Blackstone Canal, and in 1822, the project was revived and a survey of the proposed route was conducted. Charters were finally obtained for the complete project, and the Blackstone Canal Company (BCC) was formed in 1823. The cost of construction was estimated at \$500,000. Holmes Hutchinson, a veteran of the Erie Canal, was appointed chief engineer to oversee the project, with a corps of assistant engineers, including Joseph D. Allen, who was in charge of the Worcester division.

Before the completion of a resurvey for the 45-mile long route from Worcester to Providence in 1825, construction of the Canal began in Worcester. As most of the construction work was done by hand with picks, shovels, and wheelbarrows, the survey route followed existing contours of the Blackstone River as was reasonably possible. Construction of the entire Canal was completed in the fall of 1828. A final survey and mapping of the finished corridor was conducted in 1828 by Edward N. Phelps, who was brought in by the BCC in March 1828 as a new assistant engineer.

On July 1, 1828, the BCC's flagship, the canal packet *Lady Carrington*, took the canal's maiden ten-mile run from Providence to Scott's Pond in Albion, RI. The *Lady Carrington*, named for Mrs. Edward Carrington, was also the first boat to travel the entire length of the canal on October 6, 1828. Following these initial voyages, the canal was closed for another month to remove the last obstacles to navigation. The full canal opened on November 17th, but by mid-December ice had set in and the levels were drained and the canal closed for the season.

The actual cost of building the Blackstone Canal reached over \$700,000, exceeding the original cost pitched to BCC shareholders by \$200,000. Yet, despite its initial financial problems, the BCC was able to declare dividends for its shareholders from 1832 through 1836. Even during these years, however, operations were hampered by difficulties in sustaining a consistent water level, maintenance problems, and disputes with mill owners over water rights. Historians have noted that if the canal had been constructed when originally proposed in 1796, there would have been few mills to compete with the BCC over water rights. But, with the expansion of industrial activity, by 1844 there were over 90 cotton factories that lined the River between Worcester and Pawtucket, RI.

The contentious relations due to competition and negotiations for water flow resulted in numerous lawsuits filed by mill owners. An agreement between the parties in 1837 restricted the BCC's right to river water. However, higher water levels created by the canal also precipitated the development of new mills along the route, and the Canal's reservoir impoundment system benefited factories as well. By the late 1830's, the BCC's operations were adversely affected by water flow arrangements. The operations were also adversely affected by the emergence of railroad transportation as a cheaper, faster and more reliable means to transport

goods and materials, including a series of new railroad lines that were being developed in Massachusetts. However, unlike earlier antagonistic relations, the BCC's proposals to close the Canal in the 1840's were opposed by mill owners concerned about the loss of the reservoir system that helped stabilize their water power supply.

In 1844, the same year that the Providence & Worcester Railroad was chartered, the last boat traveled the full length of the Blackstone Canal. In 1846, the northern portion of the Canal was closed, and the Providence & Worcester Railroad bought all the canal property, exclusive of the reservoirs. The railroad, which opened in 1847, generally followed the canal corridor, and was built in part on the canal towpath. The BCC finally closed all aspects of its business in 1848, with the last toll collected on a run from Providence to Woonsocket, RI. With the closure of the company, most of the Canal's locks were dismantled, the stone was sold, and many road crossings were filled in. By 1851, disposal of all of the BCC's property along the canal route, including the reservoirs, was complete.

The defunct Blackstone Canal was quickly supplanted by five railroads which opened in Worcester between 1835 and 1848, linking Worcester to Boston, New York, Providence and other cities, thereby creating a regional rail center in Worcester. With the closure of the Canal, mills along its route acquired the water rights or reclaimed rights taken by the BCC. The canal trench was converted to power canals for existing and new mills in many locations, creating a new wave of industrial construction in the Valley.

Previous Planning Efforts

The Blackstone Canal Preservation Study seeks to expand upon previous planning efforts for the Blackstone River Valley and its cultural and natural resources. The BRVNHCC, the Commonwealth of Massachusetts, and local communities have undertaken numerous studies and assessments of various elements within the Valley to promote public awareness and increase public access to the rich historic and cultural resources; to recommend strategies for protection, restoration, management or acquisition of significant resources; and to provide a framework for local and regional decision making.

The following sections describe some of the planning and preservation efforts that have been undertaken in the Blackstone Valley in recent decades. It should be noted that many local grass-roots initiatives have also generated significant enthusiasm to identify opportunities to support the mission of the BRVNHCC, many of which have included recommendations for areas to concentrate preservation efforts. The following studies provide a general overview of key assessments conducted to date.

BRVNHCC Cultural Heritage and Land Management Plan

When Congress established the Blackstone River Valley National Heritage Corridor in 1986, it established a Heritage Corridor Commission comprised of local and state representatives to help preserve and interpret the unique resources and qualities that made the Blackstone Valley significant both to the nation and to its residents. When the Commission was established in 1986, it was part of a then novel idea to have a 10-year trial project to enlist the National Park Service in a partnership dedicated to helping states and localities conserve their special regions - those places where historical and natural characteristics had left their mark on American history.

Approved by the Secretary of the Interior in 1990, the *Cultural Heritage and Land Management Plan* was prepared by the Commission to serve as a blueprint for action to implement their goals and objectives. Several overriding goals from the document continue to direct the Commission's work:

- Protect the Valley's historic, cultural and natural resources in an integrated manner;
- Educate and interpret the Corridor's importance to the people of the Valley and its visitors;
- Foster specific activities that tap the Valley's unique resources and invite people to enjoy and celebrate them;
- Stimulate the research necessary to understand the Valley's role in the American Industrial Revolution and the lessons it holds for our times; and;
- Coordinate and encourage all the partnerships that will be necessary to achieve these goals.

It should be noted that the Management Plan, which was appended by a series of five reports, including a Historic Resources Inventory, Design Guidelines and Standards, an Interpretive Plan, a Land Use Management Plan and an Economic Assessment, is now recognized as an early national model for the "heritage area" experiment.

With reauthorization of the Commission in 1996, Congress gave a clear message to the Commission - stay the course! It basically said the Commission should not alter significantly the *Cultural Heritage and Land Management Plan* approved in 1990. The legislation mandated that the Commission develop a "revised" plan within one year. Among the revisions or supplements to the Management Plan were:

- Addressing a boundary change for the district;
- Including a Natural Resource Inventory; and
- Developing a 10-year development plan outlining resource protection needs and projects critical to maintaining or interpreting the distinctive character of the Corridor, as well as a work program that reflects the authorized \$5 million and the partnerships necessary to carry out the plan.

The revised plan document, *The Next Ten Years*, is a companion piece to the Management Plan, reaffirming the commitments of the first 10 years of the Commission, and describing an emerging focus and strategy that called attention to important work which remained undone. The Development Strategy designed by the Commission in *The Next Ten Years* was intended to create a legacy of sustainable development project and programs, including:

- Heritage Infrastructure, such as signs, trails, gateways and exhibits;
- Heritage Programming, such as educational programs, festivals, tourism development and marketing, and other elements to complement the heritage infrastructure;
- Strategic Design and Planning Assistance for partners to guide new investment that preserves historic resources, help communities manage growth and preserve open space, and respond to opportunities which preserve the Valley's special character.

The Next Ten Years is available in PDF format at <http://www.nps.gov/blac/who/tenyear.htm>.

Blackstone Valley Sustainability Study

In November 2006, the legislation establishing the BRVNHCC is set to expire. In 2003, the Commission established a "Futures Committee" to formulate a strategy to address the 2006 sunset and a future management framework. Following a series of meetings, focus group discussions, and workshops over the last year, the Futures Committee initiated a request to the Rhode Island and Massachusetts congressional delegation representing the Blackstone Valley to pursue legislation directing the National Park Service to conduct an analysis of the sustainability of the Blackstone National Heritage Corridor.

Pursuant to the legislation directing the National Park Service to conduct an analysis of the sustainability of the BRVNHCC, it was suggested that the study be coordinated with the National Park System Advisory Board that was in the process of undertaking an analysis of the National Park Service's role with national heritage areas. A recent report published by the NPS Advisory Board, *Rethinking the National Parks for the 21st Century*, called for greater collaboration in stewardship for our natural and cultural heritage. The report states,

The diverse ethnic groups and nationalities that worked the farms and factories of a growing nation have also created cultural landscapes worthy of preservation. These special places, formed by traditional land use or the legacy of early transportation systems, bind residents together through shared stories, traditions, and pride in local accomplishments. Visitors looking for authenticity in America treasure them. Communities looking for a way to save their special places have



worked across jurisdictional boundaries and joined together to plan for a future that embraces the past. Many have sought National Park Service recognition and assistance to validate the significance of their heritage to the nation. The Service should welcome such efforts.

The National Park System Advisory Board's Subcommittee on Partnerships has voted to utilize the Blackstone as a case study for the National Park System Advisory Board report. The Blackstone Sustainability Study will also produce a "stand-alone" report that will serve the needs of the Blackstone Commission as it seeks to evaluate the Corridor's future and the Commission's pending legislative sunset in November 2006. Preparation of the sustainability study is currently being drafted with the assistance of a multidisciplinary, independent group of professionals, scholars, and experts.

Blackstone Canal National Register Historic District

The first federal recognition of the historical importance of the Blackstone Canal occurred in 1972 with the listing of a 3.5-mile segment of the Canal between Uxbridge and Northbridge in the National Register of Historic Places (National Register). In June of 1995, the Massachusetts Historical Commission (MHC) prepared a more comprehensive nomination for the Blackstone Canal in Massachusetts, resulting in the listing of the entire 27-mile length of the Canal and all associated resources in the National Register. The National Register Registration Form (NR form) for the Blackstone Canal Historic District was the first comprehensive catalog of the Canal and its features, and continues to serve as an important planning tool. The Blackstone Canal Historic District NR form is one of the primary sources of information for the Blackstone Canal Preservation Study.

The Blackstone Canal Historic District NR form included extensive review and synthesis of existing information on the construction and history of the Canal, and field investigations of the entire length of the Canal to observe, record, and photograph general attributes and specific features. During the field work, a copy of the final mapping of the Canal completed in 1828 by Edward N. Phelps was compared with on-site observations. Information was also collected from the MHC files on mills and other structures adjacent to and associated with the Canal, both during its operation and after its closure. Only limited new primary research was conducted, and no subsurface archaeological investigations were performed, although previous investigations at canal locations in Northbridge, Millbury, and Worcester were reviewed.

The Blackstone Canal Historic District NR form evaluated state-owned, locally-owned, and privately held properties abutting the canal route, and identified 471 contributing resources (48 of which were already listed in the National Register) and 93 noncontributing resources. These resources include approximately 144 buildings, four objects, 165 archaeological and non-archaeological sites, and 158

structures.¹ Buildings may include mills, industrial buildings, houses, garages, barns, or commercial buildings. Objects consist of monuments and mile markers. Sites include resources that are still wholly or partially extant, and resources which are no longer visible above ground, but which may survive as archaeological sites. Sites encompass farms, cemeteries, feeder streams, basin sites, aqueduct sites, bridge sites, mill sites, mile marker sites, lock sites, street crossings, and embankments. Structures encompass trenches, towpaths, locks, basins, ponds, channels, bridges, dams, and water control gates. The Blackstone Canal Historic District includes a number of individual properties and districts that are already listed on the National Register, including three industrial village districts that were listed simultaneously with the Blackstone Canal.

The Blackstone Canal Historic District meets National Register Criteria A, C and D and its areas of significance include transportation, commerce, engineering, industry, and archaeology. The period of significance specified for the district ranges from 1825 to 1945, with significant dates being 1828 (first canal voyage), 1845 (last full voyage of the entire length of the Canal), and 1848 (Blackstone Canal Company closure).

Blackstone River Bikeway Planning

The following studies were completed to identify a feasible alignment for the Massachusetts Blackstone River Bikeway, to further refine sections of the Bikeway alignment, and to study the specific bridge crossings:

- *Off Road Bikeway Alignments, Quinsigamond Village, Worcester Feasibility Study*, December 2004, prepared by VHB for Blackstone Valley Chamber of Commerce and J.H. Chafee Blackstone River Valley National Heritage Corridor.
- *Alternative Alignment Feasibility Studies*, prepared by VHB for the Blackstone Valley Chamber of Commerce and J.H. Chafee Blackstone River Valley National Heritage Corridor– Millbury, April 2003; Grafton, June 2003; Northbridge, September 2003; and Worcester, December 2003.
- *Blackstone River Bikeway Alternative Alignments, Conceptual Designs and Feasibility Study for Massachusetts Segments in Millbury, Northbridge and Uxbridge*, December, 2002, prepared by Heritage Design Group for Blackstone Valley Chamber of Commerce.
- *Feasibility Study for the Blackstone Valley Bikeway located in Sutton, MA from Singing Dam to Depot St.* October, 2002 prepared by Heritage Design Group for J.H. Chafee Blackstone River Valley National Heritage Corridor.

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¹The figures for contributing resources presented in this section are taken from the summary information in Section 5 of the Blackstone Canal Historic District National Register Registration Form. These numbers differ from other counts of resources included in the District Data Sheet submitted with the National Register Registration Form. According to the District Data Sheet, there are 160 contributing buildings, 4 contributing objects, 178 contributing sites, and 176 contributing structures in the Blackstone Canal Historic District, or a total of 518 contributing resources. The discrepancy between these contributing resource counts is because the District Data sheet separates the Canal into segments based on condition in each town and counts each segment separately. The Canal is counted as a single resource in each community in Section 5.

- *Blackstone Bikeway over Blackstone River Bridge No. B-13-027 and Blackstone Bikeway over Land Bridge No. B-13-018 Type Study Reports, Blackstone, MA, 2001* prepared by Gordon R. Archibald, Inc. for the Massachusetts Highway Department.
- *The Massachusetts Blackstone River Bikeway Conceptual Design and Feasibility Study, 1996*, prepared by Cullinan Engineering for the Massachusetts Highway Department and the Massachusetts Department of Environmental Management.
- *Southern New England Trunk Trail over Blackstone River Bridge Evaluation, Blackstone River and Canal State Heritage Park, Blackstone MA, July, 1988* prepared by Urban Design Group and Goodkind & O’Dea, Inc. for the Massachusetts Department of Environmental Management (now part of the Massachusetts Department of Conservation and Recreation).

Also, the John H. Chafee Blackstone River Valley National Heritage Corridor recently completed the *Blackstone Valley Trail & Greenway Vision Report*. The report outlines a vision for trail and greenway development for years to come. This report should help municipalities and state agencies prioritize their planning, development and land acquisition strategies in an efficient and cost effective manner. This report, completed in cooperation with the states of Rhode Island and Massachusetts, along with the twenty four municipalities within the Blackstone Valley, is available in PDF format on the Corridor website at <http://www.nps.gov/blac/what/current.htm>.

Blackstone River Visioning Project

The Blackstone River Visioning Project was developed in 2002 by a coalition of groups led by the John H. Chafee Blackstone River Valley National Heritage Corridor Commission (BRVNHCC) and the Massachusetts Audubon Society. The ultimate goal of the project was to guide the direction of growth along the main stem of the river and ensure that growth is complementary, as well as sensitive, to the river environment. The objectives of the project were to plan and visualize appropriate growth and economic revitalization, while at the same time demonstrating how to protect and rebuild the river’s sensitive environmental resources.

To meet these goals and objectives, the project proceeded in three phases. The first was research and outreach to identify past and present initiatives up and down the river valley. The second phase of the project was a series of public workshops held in eleven main stem communities. The workshops focused on gathering information on each community’s needs and planning issues, and identifying specific opportunities and constraints for areas along the river. The final phase involved detailed design charrettes for four key sites identified in the community workshops:

- Grafton: Fisherville
- Uxbridge: Route 16 Corridor from Downtown to Waukentuck Mill
- Blackstone/N. Smithfield/Woonsocket: Downtown Blackstone and corners of North Smithfield and Woonsocket

► Lincoln: Lonsdale Bleachery Mill Complex #4

These demonstration sites were the subject of in-depth site analysis and exploration of future alternatives for both conservation and economic development. Landowners, town officials and local residents participated in an all-day charrette for each of the four sites. The results of these exercises are described in the *Blackstone River Visioning* report produced in October 2004, and illustrated in a series of posters for public use.

Blackstone Canal Feasibility Study, Worcester

In June 2003, the City of Worcester commissioned a study prepared by Rizzo Associates, ICON Architecture, The Williams Group, and Daniel R. Benoit and Associates to daylight the Mill Brook and the Blackstone Canal and to assess the potential impact on the City and its neighborhoods. The Plan calls for the integrated implementation of a coordinated set of public and private initiatives that, taken together, will define Worcester's historic Canal District, and create a revitalized mixed-use neighborhood and an attractive, water-based urban amenity for the entire City. Core elements of the plan include: telling the Canal District's story; maximizing the District's waterfront potential; respecting the area's historic fabric; taking full advantage of underutilized properties; designating gateways (Washington, Kelley, and Brosnihan Squares); organizing circulation around the Canal District's squares, unique settings, and water linkages; and creating a pedestrian and bicycle network to and through the District.

The study examined the technical feasibility of daylighting and re-watering all or portions of the historic Blackstone Canal as it runs through the neighborhood, and an assessment of the market potential of the area with and without improvements to the Canal. The Plan assumes a unified strategy for the entire Canal District Neighborhood, recognizing that there are inherent differences within the neighborhood's four identified sectors. Within each sector, a specific approach was identified for using its water segment as part of a comprehensive revitalization strategy.

Resource Inventory and Existing Conditions

The Resource Inventory and Existing Conditions Chapter provides an overview of the route of the Blackstone Canal in Massachusetts, extant historic and archaeological features associated with the Canal, and their physical condition. The chapter describes the number and condition of various types of canal components, as well as specific canal components and associated resources present in each of the towns along the canal route. The history of the Blackstone Canal and its significance in the development of the Blackstone River Valley as an industrialized region is conveyed by more than just the history of the physical canal structure and associated engineering resources. The Resource Inventory and Existing Conditions Chapter also describes associated mill buildings, homes and villages, and natural bodies of water used to sustain the Canal's water supply. These descriptions are supplemented with maps showing the refined location of the canal segments and selected associated resources in each town.

Methodology

The Resource Inventory and Existing Conditions Assessment component of the Blackstone Canal Preservation Study was compiled through existing data inventories, consultation with staff from the John H. Chafee Blackstone River Valley National Heritage Corridor Commission (BRVNHCC), and consultation with local historians and stakeholders. The documentation of extant canal resources and their condition is based on the 1995 National Register of Historic Places Registration Form (NR form) for the Blackstone Canal Historic District in Massachusetts.

The NR form for the Blackstone Canal Historic District documented the path of the Blackstone Canal in Massachusetts on local tax assessor's maps, catalogued extant historic resources and known and potential archaeological resources associated with the Canal, and described existing conditions. As part of the Resource Inventory and Existing Conditions Assessment, the information presented in the NR form was refined by comparing it with the path of the Blackstone Canal as shown on a series of maps drawn in 1828 by the engineer-in-charge, Edward N. Phelps (Phelps Maps), at the completion of canal construction, aerial photography, and input from BRVNHCC staff.



After the initial refinement of the path of the Blackstone Canal, the canal path and each of the historic resources identified in the NR form for the Blackstone Canal Historic District were mapped using a Geographic Information System format. The resulting maps show the following information for each of the eight Massachusetts towns containing remnants of the Blackstone Canal:

- Where the Canal is located in the Blackstone River or other water bodies;
- Where it is no longer visible;
- Where it is partially visible;
- Where it is clearly visible; and
- Where the Canal is visible and watered.

The results of the resource inventory mapping were presented at a public workshop with interested stakeholders on February 15, 2005 to obtain input from knowledgeable parties on the accuracy of the mapping and identification of known extant features. This information was used to further refine the location of the Blackstone Canal, the condition of extant related resources, and possible locations of non-extant resources. A record of comments and input received at this workshop is provided in Appendix A.

Canal Features and Resources

As documented in the National Register Registration Form for the Blackstone Canal National Register Historic District, there are 471 individual resources which contribute to the historical and archaeological significance of the Blackstone Canal. These resources include approximately 144 buildings, four objects, 165 archaeological and non-archaeological sites, and 158 structures.² Contributing buildings may include mills and other industrial buildings, houses, farms, and commercial buildings. Contributing objects consist of monuments and canal mile markers. Contributing sites include resources that are still wholly or partially extant, and resources which are no longer visible above ground, but which may survive as archaeological sites. Sites encompass the former locations of farms, basins, aqueducts, bridges, mills, mile markers, locks, street crossings, and embankments, as well as extant resources such as cemeteries and feeder streams. Structures encompass trenches, towpaths, locks, basins, ponds, channels, bridges, dams, and water control gates.

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²The figures for contributing resources presented in this section are taken from the summary information in Section 5 of the Blackstone Canal Historic District National Register Registration Form. These numbers differ from other counts of resources included in the District Data Sheet submitted with the National Register Registration Form. According to the District Data Sheet, there are 160 contributing buildings, 4 contributing objects, 178 contributing sites, and 176 contributing structures in the Blackstone Canal Historic District, or a total of 518 contributing resources. The discrepancy between these contributing resource counts is because the District Data sheet separates the Canal into segments based on condition in each town and counts each segment separately. The Canal is counted as a single resource in each community in Section 5.

The table below summarizes the number of significant historic resources associated with the Blackstone Canal in each Massachusetts town along the Canal as identified in the National Register Registration Form for the Blackstone Canal .

Contributing Resources by Town

Town	Contributing
Blackstone	42
Millville	33
Uxbridge	84
Northbridge	72
Grafton	60
Sutton	18
Millbury	80
Worcester	82
Total:	471

Source: National Register Registration Form, Blackstone Canal Historic District

Canal Components

Within the Massachusetts section of the Blackstone Canal, the primary physical components of the Canal (i.e. the canal trench, the towpath and berm) are reasonably intact and recognizable over much of the existing route. In addition, related engineering features, such as locks, masonry walls, spillways, basins, bridge footings, as well as water power features and buildings associated with post-canal use of the water channel by local industries, exist in many locations.

Approximately 90 percent of the Canal consisted of trenches that were hand-dug using ox-carts, picks, axes, iron bars, shovels, and limited quantities of black powder. The remaining 10 percent of the Canal was merged with navigable portions of the Blackstone River. The Canal was fed by a system of reservoirs, most of which were natural ponds that were enlarged by dams.

For the most part, the physical elements of the Canal conform to the construction specifications, under the direction of Holmes Hutchinson, and funded by the Blackstone Canal Company, chartered in 1823. However, in some cases, unexpected field conditions, variations among construction crews, and requests from abutting property owners or other affected parties for bridges or feeder stream control may have resulted in minor differences between the planned and final site design.

The following sections describe the canal components according to their anticipated design by the Blackstone Canal Company engineers, and the existing condition of the class of resources along the canal corridor in Massachusetts. The tables below summarize the total number of canal features originally constructed in each town

along the Canal in Massachusetts and the number of extant canal features in each community.

Canal Trench

In most areas, the Blackstone Canal was in a trench that was prism shaped and generally designed to be 34-feet wide at the top and 18-feet at the bottom, containing water between four- to six-feet deep. Depending on soils and topography conditions, these dimensions varied along the route, in some areas widening to 45 feet at the top, and narrowing in others to only 30 feet.

The side walls of the trench were built at 45-degree angles, with the banks rising at least three feet above the water, and where ever possible, were dug against the side of a hill or slope contour to keep earth removal at a minimum. The trench was essentially an earthen structure, however, in some instances the walls were lined with rubble stone. The design intended for the walls to be solid, compact and water-tight, and elements that could cause erosion (i.e. vegetation, roots, sticks and brush) were expressly prohibited from construction specifications. While the use of clay or puddling techniques were commonly used to ensuring water-tight seals, there is no evidence to indicate that these elements were used on the Blackstone Canal.

Most of the construction of the canal trench involved excavation and embankment, along with grubbing vegetation, and blasting in some areas. It was also necessary in some areas to build rubble stone walls on the exterior slope of the canal bank where it was exposed to seasonal flooding and scoring of the river. In such areas, the river bed was also widened to reduce the severity of such potential situations. Both the towpath and the canal trench incorporated numerous drains and culverts to carry water from intersecting springs and streams. Stop gates, consisting of wood gates and posts set in stone supports, were also installed to isolate sections of the trench for repairs.

Of the approximately 27.7 miles of canal trench in Massachusetts, 7.4 miles are visible and watered, 6.3 miles are visible and dry, 2.2 miles are partially filled, and 7 miles are destroyed or not visible. Approximately 4.8 miles of the Blackstone Canal in Massachusetts are in natural bodies of water such as rivers or ponds. A town-by-town inventory of segments of the Blackstone Canal trench follows in this chapter.

Extant Canal Features by Town

Town	Canal Trench (miles)					Discernable Towpath (miles)*	Discernable or Extant Locks	Mile Markers	Towpath Bridge Remnants	Farm or Road Bridge Remnants	Dams	Lay-by Sites	Visible Basin Sites	Feeder Streams
	Total	Visible, watered	Visible, dry	In River/Pond	Partially Visible or Not Visible									
Blackstone	1.7	0.9	0.1	0.4	0.3	1.4	0	1	0	1	2	1	0	0
Millville	1.9	0	0.7	1.2	0	1.9	1	1	2	0	0	0	0	0
Uxbridge	6.6	1.8	0.5	2.2	2.1	6.6	3	2**	3	1	1	0	7	0
Northbridge	5.4	1.9	3	0	0.5	4.9	2	0	2	0	0	0	5	5
Grafton	3.1	2.8	0	0.3	0	3.1	2	0	1	1	4	0	2	0
Sutton	1	0	0.7	0.3	0	1	0	0	0	1	2	0	0	1
Millbury	3.8	0	1.1	0.4	2.3	1.6	1	1	0	2	0	0	0	2
Worcester	4.2	0	0.2	0	4	0.2	0	0	0	0	1	0	0	0
Total:	27.7	7.4	6.3	4.8	9.2	20.7	9	5	8	6	10	1	14	8

Sources: National Register of Historic Places Registration Form, Blackstone Canal Historic District; February 2005 Blackstone Canal Preservation Study Public Workshop; field inspection; BRVNHCC staff

*Discernable towpath includes visible, partially visible, and altered sections of the canal towpath.

**Mile Marker #25, originally situated in Uxbridge, is now in the collection of the Worcester Historical Museum, Worcester. A resident of Millbury has Mile Marker #24, originally situated in Uxbridge, in his personal collection according to a participant at the public workshop held as part of the Blackstone Canal Preservation Study in February 2005.

Canal Features in 1828 by Town

Town	Locks	Mile Markers	Towpath Bridges	Farm or Road Bridges	Dams	Lay-by Sites	Basins	Feeder Streams
Blackstone	3	2	3	2	2	1	0	0
Millville	1	1	2	1	0	0	0	0
Uxbridge	3	7	4	6	0	0	8	0
Northbridge	4	5	6	2	0	0	7	7
Grafton	5	3	2	2	1	0	2	0
Sutton	1	1	0	1	2	0	0	1
Millbury	9	4	1	6	0	0	2	4
Worcester	6	5	1	10	0	0	8	3
Total:	32	28	19	30	5	1	27	15

Source: National Register of Historic Places Registration Form, Blackstone Canal Historic District

Towpath

The towpath was designed to be at least 10 feet wide for sections of the Canal in the river and canal trench, however, in some areas rock outcroppings and topographical considerations limited the width to only eight feet. Generally, the towpath was located between the canal and the river to serve as a buffer during heavy rains or spring thaws. The towpath generally rose no more than five feet above the water line, and in some instances it included a timber cap to keep the tow rope from catching. In locations where the water flow was particularly strong, the towpath edge was reinforced with stone work, laid either in courses or as riprap to reinforce the area and prevent erosion.

When the canal route was located in navigable sections or the river, the towpath was an enhancement of the natural river or pond bank. Wooden bridges were constructed to carry the towpath over the many streams along the route, and twice across the Blackstone River (in Blackstone and Millbury). At the Mumford River crossing in Uxbridge, a wood aqueduct structure on stone footings carried the canal trench and the towpath across the river.

Of the approximately 27.7 miles of towpath along the Blackstone Canal in Massachusetts, 19.5 miles are visible and 1.2 miles are partially visible or altered. Seven miles of the canal towpath have been destroyed. A town-by-town inventory of towpath segments follows in this chapter.

Locks

A series of canal locks helped boats to ascend and descend the elevation changes between Worcester, MA and Providence, RI. Forty-eight locks were built of stone quarried close to where they were erected, of which thirty-two locks are located along the Massachusetts segments of the Canal. Cut stone was more expensive than wood, but required less maintenance. The locks were generally 10-foot wide with 82 feet between the large oak gates on either end. The average lift of a lock was 9.5 feet. Wooden sheathing lined the lock to help protect the canal boats as they passed through. An attendant operated the locks and collected tolls, but later, to cut costs, the attendants were eliminated and tolls were billed.

The floor of the excavated lock pit was some two or three feet below the water level, over which sills and priming planks were laid. The stonework was granite, five feet thick at the foundations, and varied in height according to the lift design of the lock. With four feet of water in the locks at all times, an eight-and-one-half foot lift required a height of fourteen-and-one-half feet. The shape of the lock ends differed, with a squared cross section at the upstream end and fan wing walls outside of the downstream gates to help guide boats entering against the current.

A pair of wood mitre gates sealed the lock chamber from the canal levels above and below the lock and fit snug against a wood sill. When open, the gates folded into seven foot-long recesses, and iron straps attached to the granite coping at the top of the lock held the gate in place and were used for opening and closing the gates. The lock was filled by two culverts passing under the gate sill at the upper end, and paddle gates controlled the water flow.

Of the thirty-two locks built along the Massachusetts portion of the Blackstone Canal, nine are presently visible or partially visible, and twenty-three exist as archaeological sites or have been destroyed. Millville Lock #21 is the best preserved lock on the entire length of the Canal. Its east and west side walls consist of cut granite facing stones backed by earth on the outside edge. Curved gate post sockets at either end are intact, as well as the distinctive squared corners and sill of the upstream end and the downstream fan wing walls. Goat Hill Lock #25 in Northbridge is the second best preserved lock and is nearly intact, with only a few stones dislodged from the upper courses. The remains of a wood gate post have also survived, submerged under water in the east upstream post pocket.

Three locks are visible as a narrowing of the canal channel with some stone work or rubble stone remnants, including Skull Rock Lock (Lock #22) and the Lower Taft Lock (Lock #23) in Uxbridge, and Lock #29 in Grafton. No stone work from Lock #24 in Uxbridge remains, but the site is marked by narrowing of the canal channel that is the proper length and width for a lock. Portions of Plummer's Landing Lock #26 in Northbridge, Lock #32 in Grafton, and Lock #35 in Millbury survive, with varying amounts of cut granite or backing stone remaining. A portion of Lock #30 in Grafton is also believed to be extant under the covered segment of the Canal on the Fisher Manufacturing Company site in the village of Fisherville.

Dams and Reservoirs

An integrated system of dams and reservoirs provided a percentage of the water in the Canal, and kept it at proper levels. Except for two, all of the reservoirs were in Massachusetts upstream from the Canal. The reservoirs were natural ponds enlarged by damming and were generally located from one to two-and-a-half miles from the canal.

Several ponds along the path of the Canal, mostly associated with manufacturing uses, are visible: Blackstone Manufacturing Co. Mill Pond in Blackstone; Calumet Pond, Hecla Pond, and Rice City Pond in Uxbridge; Riverdale Mill Pond in Northbridge; Farnumsville Mill Pond and Fisherville Mill Pond in Grafton; Pleasant Falls Pond in Sutton; Woolshop Pond and Cordis Mill Pond in Millbury; and Burbank's Mill Pond in Worcester. The Rockdale Mill Pond in Northbridge, though still visible, is barren and devoid of vegetative cover.

On the canal route itself, a series of dams raised the level of the Blackstone River, maintained optimum water levels in the Canal, and served the power needs of manufacturers along the Canal's path. Several of these dams are extant, including: Saranac Dam and Rolling Dam in Blackstone; the dam associated with Rice City Pond in Uxbridge; two Farnumsville Cotton Mill dams, Fisherville Dam, and Saundersville Dam in Grafton; Wilkinsonville Dam and Pleasant Falls/Singing Dam in Sutton; and the Burling Mills Overflow Dam in Worcester.

Extant or partially extant water control resources associated with the Canal and area manufacturers include: a water control dam on the Canal south of Hartford Avenue and remains of an overflow dam installed in the towpath south of Hartford Avenue in Uxbridge; stone work from a water control gate and dam remains east and west of Pleasant Street where the Canal enters the River in Grafton; the Holbrook and Rockdale Mill dam remains in Northbridge; dam and stone work near Woolshop Pond in Millbury; and a dam in the River near the site of Lock #46 in Worcester.

The specific ponds, brooks, reservoirs, and dams that served the Canal are described later in this chapter according to the Town in which they are located.

Mile Markers

Each mile of the 45-mile canal route was marked by an upright stone set in the towpath and carved with the mileage distance between the stone and the Canal's origin in Providence. All but three of the Mile Markers have been removed from the Canal route, with Mile Marker #18 in Blackstone, Mile Marker #20 in Millville (lying on its side) and Mile Marker #37 in Millbury being the only markers in Massachusetts known to survive at their original locations. Mile Marker #25, originally situated in Uxbridge, is now in the collection of the Worcester Historical Museum, Worcester, MA. According to a participant at the public workshop held as part of the Study in February 2005, a resident of Millbury has Mile Marker #24, originally situated in Uxbridge, in his personal collection.

Canal Resources by Town

The following sections provide a geographically progressive, narrative description of the route of the Blackstone Canal and associated natural, historic, and archaeological features that contribute to the Canal's historic significance within the host communities in Massachusetts. The primary source of information for this existing conditions assessment is the Blackstone Canal Historic District National Register of Historic Places Registration Form, June 28, 1995, on file at the Massachusetts Historical Commission. Additional information has been gathered through discussions with staff from the BRVNHCC, as well as interested parties that attended a public workshop held as part of this assessment on February 15, 2005.

Although not explicitly stated in the narrative descriptions, it is assumed that features noted as being no longer extant or partially extant are archaeological resources, or have archaeological resources associated with them. Because no archaeological investigations were undertaken as part of this study, the integrity of archaeological resources, or the extent to which archaeological material associated with no-longer-extant canal features survives, has not been determined.

The descriptions of the canal path and associated resources are supplemented with maps showing the refined location of the canal segments and key associated resources in each town.

Town of Blackstone

The Blackstone Canal and the Blackstone River flow east-west through the southern portion of the Town of Blackstone. The towns of Blackstone and Millville were collectively part of the Town of Mendon until 1845, when Blackstone – which then included Millville – was set aside as a separate town. Millville was established as its own town in 1916. Textiles and related industries dominated manufacturing in Blackstone’s economy throughout the 19th century. The Blackstone Manufacturing Company, which was a major force in the local economy, constructed its first building in 1809, expanded considerably throughout the first half of the 19th century, and reacquired its water rights from the Blackstone Canal Company when the Canal closed in 1848.

The Town of Blackstone contains 1.7 miles of the Blackstone Canal. This length is composed of approximately 0.9 miles of visible, watered canal; 0.4 miles of canal in natural bodies of water; 0.1 miles of dry, visible canal; and 0.3 miles of destroyed or filled canal. Blackstone also retains 1.4 miles of discernable canal towpath and one of only three canal mile markers in Massachusetts in its original location (Mile Marker #18). The path of the Canal in Blackstone and selected features described below are illustrated on Figure 2.

The Blackstone Canal’s southernmost point in Massachusetts starts at the boundary of Blackstone, MA and North Smithfield, RI. Beginning at the state line, the **canal trench**, with water visible, exists for approximately 0.1 miles to St. Paul Street. Canal Street, which hugs the Canal on its east side, overlays the original **towpath**, and the 1917 **Norfolk County Railroad Bridge** crosses both the Canal and Canal Street midway between the state line and St. Paul Street.

At the intersection of Canal Street and St. Paul Street, an 1851 **stone arch bridge** carries St. Paul Street over the Blackstone Canal. This is also the **site of an earlier bridge**, probably constructed of wood, that appears at this location on the 1829 Phelps map. North of St. Paul Street, the watered canal prism continues for approximately 0.1 miles to a large **concrete and earth berm**, oriented west-east, where the Canal originally connected to the Blackstone River. This section contains

the site of a **farm bridge** over the Canal, which has extant dry laid stone abutments on either side of the prism.

In the area of the concrete and earth berm, to the east side of the Canal, lies the site of the early 19th-century **Waterford Mill headrace**, which is now filled, although some stonework remains at the west end. The Canal crossed the River here with a **towpath bridge** (no longer extant) located to the west of the early 19th-century **Saranac Dam** and east of the present 1955 **Canal Street Bridge**.

For a stretch of approximately 0.4 miles, from the Blackstone River crossing to the site of the former Blackstone Manufacturing Co. mill, the Canal has been filled and is no longer visible. Present-day Canal Street runs along the former route of the Canal. Three locks aided navigation in this area around the steep and rocky section of the Blackstone River known as the "Gorge." The archaeological remains of the three canal locks: **Lock #18, Lock #19, and Lock #20**, are located along or under Canal Street.

In Monument Square, the 1853 **Union House/Union Hotel** and a 1913 **Civil War Monument** are located along the Canal Route. Another 1917 **Norfolk County Railroad Bridge** also crosses the canal route in this section.

Two bridges carried Old Mendon Street and Church Street over the Blackstone Canal in this section. There are no visible remains of either the **Old Mendon Street Bridge** (at the Lock #20 site) or the **Church Street Bridge**. The towpath crossed to the east side of the Canal at one of these bridges, probably at the Old Mendon Street Bridge. This section of the Canal appears to have been filled by 1847, due to both the construction of the Providence and Worcester Railroad and the channeling of the downstream flow to the Blackstone Manufacturing Co. mills. This section of the Blackstone Canal, from approximately Old Mendon Street to the Blackstone Manufacturing Company, is included in the Blackstone Manufacturing Company National Register Historic District.

Further up the Canal, just west of Church Street, the canal trench is open and watered, with the towpath running on the east side for approximately 0.7 miles to the early 19th-century Rolling Dam. This section contains the 1844 **Blackstone Manufacturing Co. storehouse** and associated **building sites**, the ca. 1809 **mill headrace**, and the site of the ca. 1820 **Band Wagon Bridge** over the Canal (no longer extant).

At the west end of the mill headrace, the Canal turns north in the mill water supply channel and passes under the 1917 **Main Street/Route 122 Bridge** and a ca. 1903 **Providence and Worcester Railroad Bridge**. Immediately north of the railroad bridge, the channel is contained within **visible stone-lined walls** with an early 19th-century **stone bulkhead** and **sluice gate** that controlled the flow of water into the mill. The east wall is straight, while the west wall has several angled sections creating a zigzag pattern. Although the stonework on the east side and much of the



west side is large cut blocks, indicating rebuilding, some early dry laid stone work exists along the west side. On the east side, portions of the towpath are visible with **dry laid stone retaining walls** at the water's edge. **Mile Marker #18**, which remains present, is located along this section.

North of the sluice gate, the canal channel extends in a broad arc north and northwest through the **Blackstone Manufacturing Co. Mill Pond** and rejoins the Blackstone River west of the intersection of Route 122 and Staples Street above the Rolling Dam. This section of the Canal contains the a ca. 1918 **New York and New England Railroad Co. Bridge** at the east end of the pond, a ca. 1918 **New York and New England Railroad Co. Bridge** at the west end of the pond, and a ca. 1903 **Providence and Worcester Railroad Co. Bridge** at the west end of the pond.

While post-canal use of this section as a power canal has widened the channel at the outside of the curve, much of the canal trench, berm, and towpath remain intact, especially in the sections north and west of the point where the Canal passes under a second 1917 **Main Street/Route 122 Bridge** near Staples Street. The towpath remains on the east side of the canal channel through this trenched section. This section also contains a **lay-by site**; the early 19th-century **Rolling Dam** (originally a Blackstone Manufacturing Co. dam) located downstream from where the Canal and River diverge; and **two 19th-century houses** on Staples Street. A **farm bridge** over the Canal was also located in this site, but has no visible remains. Immediately south of this area is the Blackstone Gorge unit of the Blackstone River and Canal Heritage State Park, which includes the Rolling Dam.

From the point where the Canal and River rejoin just above Rolling Dam, the Canal runs in the Blackstone River with the towpath partly visible on the north bank for approximately 0.4 miles. A visible 0.1-mile segment of the towpath separates the River from a low marshy area. The canal trench with towpath still on the north side begins 0.1 miles east of the Blackstone and Millville boundary. **Mile Marker #19**, which is no longer present, was located in this section.

Town of Millville

The Blackstone Canal and the Blackstone River flow east-west through the southern portion of the Town of Millville. Millville, formerly part of the Town of Blackstone, was incorporated as a town in 1916. Like Blackstone, Millville relied predominantly on manufacturing in the 19th century, and the Blackstone Canal directly impacted industrial development in the town.

The Town of Millville contains 1.9 miles of the Blackstone Canal. This length is composed of approximately 0.7 miles of visible, dry canal and 1.2 miles of canal in the Blackstone River. The Canal towpath in Millville remains discernable for the entire 1.9-mile path of the Canal through the town. Millville also contains one of the best preserved canal locks along the entire Blackstone Canal, Lock #21, and one of

only three canal mile markers in its original location (Mile Marker #20). The path of the Canal in Millville and selected features described below are illustrated on Figure 2.

At the Blackstone-Millville town line, the Canal runs in a **trench** with the **towpath** visible on the north and east side for approximately 0.2 miles. The Canal then reenters and runs in the River, with the towpath on the north and east river bank, for approximately 0.6 miles. This section of Canal and river are crossed by three extant and partially extant railroad bridges: a ca. 1900 **Providence and Worcester Railroad Co. Bridge**, the 1914 **Massachusetts Central Railroad Co. Bridge** (abutments only), and the ca. 1900 **Grand Trunk Railroad Bridge**.

A **towpath bridge**, of which there are no visible remains, carried the towpath across to the west and south side of the River. From this point, the towpath proceeds north up the west side of the River for approximately 0.2 miles, with a ca. 1900 **Providence & Worcester Railroad Co. bridge** over the River. In this area, the east bank of the River has been altered with the reconstruction of Route 122.

The towpath crossed Angelica Brook on a **towpath bridge** that is no longer extant. At this point, the Canal leaves the River and enters a trench. Although the mouth of this trench has silted in, its location is clearly marked by the brook and by the nearby downstream end of **Lock #21**, the best preserved lock on the entire length of the Blackstone Canal. Lock #21 is nine feet seven inches in width and 75 feet in length from gate to gate. The east and west side walls are approximately twelve feet above the water surface and consist of cut granite facing stones which are typically three feet long and eighteen inches high. The masonry walls are backed by earth on the outside edge, and the curved gate post sockets at either end are intact, as are the distinctive squared corners and sill of the upstream end, and the downstream fan wing walls. The Millville Lock is a unit of the Blackstone River and Canal Heritage State Park.

This trenched section of the Canal in Millville, which no longer carries water in most sections, extends approximately 0.5 miles from Angelica Brook to just north of the Central Street Bridge over the Canal and River in Millville Village center. Dumping has occurred along the bank, and much of the area is heavily overgrown, but the berm is in good condition and the towpath remains on the west side of the Canal. The ca. 1885 **abutments of the "Red Bridge"** over the River remain extant in this section. **Mile Marker #20** is located in situ, and is lying on its side. A **farm bridge** over the canal which has no visible remains was located in this section.

The northern area of this trenched section at Central Street in Millville intersects the heavily used, industrial **Stone Mill site**. From the 18th century into the 20th century, four or five mills operated in the area, several of which were located on the east bank of the River and on an island at the center of the River. On the west bank of the River, which is also the canal side, a cluster of visible masonry features associated with the Collins Capron Stone Mill of 1825 and subsequent uses of the site into the

20th century are present. These include a **concrete gate structure, dry laid stone-lined banks,** and a **stone-lined overflow channel.**

Just upstream in the Canal, grooves cut in the stone of the walls indicate the location of posts for gates which controlled water flow into the mill. Central Street is carried over the Canal on a ca. 1880 **stone arch bridge,** the arch of which has been blocked by siltation or infill during the 20th century. Stone work-lined banks continue for several hundred feet from the bridge to the joining of the Canal and the River.

North of Central Street, the Canal continues along the west side of the River with the towpath on the west bank, following a broad sweeping “S” curve for approximately 0.6 miles to the Millville-Uxbridge town line. In three spots, the towpath was carried on a short section of berm to cut across low and wet areas on the edge of the River. Significant associated resources in this section include **eighteen houses** on Ironstone Street built in the 18th and 19th centuries.

Town of Uxbridge

The Blackstone Canal and the Blackstone River flow north-south through the eastern portion of the Town of Uxbridge. Uxbridge, the halfway point between Providence and Worcester and probably the most important secondary port along the canal route in Massachusetts, experienced marked prosperity resulting from the Blackstone Canal. Between 1820 and 1830, the town grew by over 34.4 percent, more than twice the county average, and by the mid-1830s, Uxbridge’s population was second only to Worcester among Massachusetts canal towns. The town’s commercial and manufacturing importance were greatly enhanced by the Canal. Goods arriving at Uxbridge included bulk wool and cotton for the surrounding textile mills, lumber, and coal, as well as commercial commodities such as salt, sugar, flour, and codfish. Freight shipped from Uxbridge was even more significant, with nearly 45 percent of all exports along the Canal in 1832, probably its peak year, originating in the town.

The Town of Uxbridge contains 6.6 miles of the Blackstone Canal. This length is composed of approximately 1.8 miles of visible, watered canal; 2.2 miles of canal in the Blackstone River; 0.5 miles of dry, visible canal; and 2.1 miles of partially filled canal. The Canal towpath remains discernable for the entire 6.6-mile length of the Blackstone Canal in Uxbridge. The town retains three discernable lock structures (Locks #22, #23, and #24) though none are intact. Two Canal mile markers originally situated in Uxbridge are extant at the Worcester Historical Museum (Mile Marker #25) and a private collection in Millbury (Mile Marker #24). The portion of the Blackstone Canal between Mendon Street and the Uxbridge-Northbridge town line is included in the Blackstone River and Canal Heritage State Park. The path of the Canal in Uxbridge and selected features described below are illustrated on Figure 3.

The **Canal** enters Uxbridge in the Ironstone section of South Uxbridge with the Canal running in the River and the **towpath** along the west bank. **Mile Marker #21,** which



is no longer present, was located just on the Uxbridge side of the town line, as was the **Ironstone towpath bridge**, where only footing stones remain extant. The Canal continues along the west bank of the River for approximately 2.2 miles with many sections of the towpath embankment visible, especially north of the power line easement crossing. This section, up to the Emerson Brook area, includes remains of the **Emerson Brook towpath bridge**. **Mile Markers #22 and #23**, which are no longer present, were located along this section of the Canal.

Approximately 0.2 miles above Emerson Brook, the Canal leaves the River and enters a long trenched section, with the towpath on the east side, running to South Main Street/Route 122. The site of **Lock #22 (Skull Rock Lock)** marks the downstream entrance to this section of the Canal, and is visible primarily as a narrowing of the canal channel. Most rock has been removed, but the lower courses of the gate recesses, hinge pocket stones, and several loose courses of backing rock still exist. The towpath remains on the west side of the trench as it passes by the lock.

Skull Rock Bridge is located approximately 0.1 miles above Lock #22. This early crossing appears on the 1829 Phelps map, but not on any later 19th-century maps, indicating that it fell out of use by the middle of the century. Surviving structural features include the sloped changes in the towpath and several courses of dry laid support stone along the towpath on the east side. The dry laid stone abutments are approximately seven or eight feet high and are backfilled with earth. The east abutment is better preserved than the west abutment.

North of Skull Rock Bridge, the canal prism is well preserved and watered, and the towpath runs along the top of the earth berm on the east side. A small canal **basin** is located on the west side of the Canal. Approximately 0.2 miles above the bridge, the Canal and River come very close together, separated only by the berm, and there is a sharp bend in the River. The Canal follows this same sharp bend, and **dry laid cobble riprap** laid into the east bank of the towpath protects the riverside slope from erosion. North of the curve, the Canal widens into another **basin**, and north of the basin, the canal prism and towpath disappear under an earthen slope of an abandoned roadway which crosses the Canal and under **South Main Street/Route 122**. The canal prism is filled near the crossing of Route 122 over the Canal and River.

North of the South Main Street/Route 122 crossing, the canal trench is clear and dry, and a town sewer is laid in the towpath, widening its contours. The Canal is crossed by the 1847 **Providence and Worcester Railroad Co. embankment** 0.2 miles north of Route 122. North of the embankment and tracks, the canal prism with berm and towpath reappears in the woods for 0.1 miles, curves west, and disappears under the embankment again. After about 0.1 miles, the canal prism is fully visible along the west side of the railroad track embankment and the tracks are laid upon the towpath, which has been widened, a configuration which continues northward as the River angles northeasterly away from the Canal and railroad.

This section of the Canal includes the rubblestone remains of **Lock #23 (Lower Taft Lock)** and a **farm bridge** that is now an earth covered culvert. The Canal is directly bounded in this section by the ca. 1780 **Bazaleel Taft House**, the early 19th-century **Bazaleel Taft Jr. House**, and the 19th-century **Bazaleel Taft Law Office**. **Mile Marker #24**, which is no longer present but apparently survives in a private collection, was located along this section of the Canal. A **farm bridge**, of which no above ground elements remain, was also located in this area, as was a fourth house constructed before 1828 owned by the Taft Family. This house was demolished at an unknown date and has no visible remains.

Approximately 0.4 miles north along the canal prism is the site of **Lock #24 (Upper Taft Lock)**. This lock is discernable as a narrowing of the canal channel, but there are no stone work remains. A **farm bridge**, of which there are no visible remains, crossed the Canal along this section, and **Mile Marker #25**, which is no longer present but is part of the collection at the Worcester Historical Museum, was located nearby.

North of the site of Lock #24, the Canal disappears under the railroad and a power line easement. The prism reappears as a ditch for a short distance and then the ditch is filled in to the **Depot Street crossing**.

On the north side of Depot Street, a narrow strip of vegetated earth forms the south bank of the Mumford River, which empties into the Blackstone River about 200 feet east of the site of the 1828 **Mumford River Aqueduct**. This aqueduct, which is no longer extant, carried the Canal across the Mumford River on a slightly northwest-southeast angle. While no trace of the structure is visible on the river bank, and the cut stone has been removed from the site, a small riffle in the Mumford River and a small concentration of random stone in the north bank face may be related to the aqueduct.

On the north side of the Mumford River, the Canal continued in a ditched channel with the towpath on the east side. This area contains the ca. 1821 **C.C. Capron Yarn Mill** and the filled site of **Capron's Mill Basin, two early 20th-century industrial buildings**, and the 19th-century **Prospect Hill Cemetery**. At the north edge of the Capron's Canal basin, the Canal took a sweep westward and northward, and the canal trench and towpath are visible for a short distance against the hill in the northwest corner of the filled part of the Prospect Hill Cemetery. Subjected to fill during the 19th and 20th centuries, the land in this area has been leveled and is clearly higher than the original grade. Lowlands to the east and north are wooded wetlands which extend eastward to the Blackstone River.

The section of the Blackstone Canal and Blackstone River between Mendon Street in Uxbridge and the Uxbridge-Northbridge town line is included in the Blackstone River and Canal Heritage State Park. The park continues north into Northbridge. In the area where Mendon Street crosses of the Canal, there are **two 19th-century houses** on Mendon Street that abut the Canal, as well as a granite retaining wall possibly associated with a Canal **basin**. The **Mendon Street Bridge**, which is no longer extant,

crossed the Canal in this area. Proceeding north, the canal trench is visible, though partly filled in, for several hundred feet extending to the **Cross Street crossing**. Significant associated resources in this area include **six 19th-century houses** on Mendon and Cross Streets.

North of Cross Street, the canal trench is deep and dry with the towpath along the east side. The section of the Canal from Cross Street at the 1852 **Central Woolen Mill (Stanley Woolen Mill)** to Hartford Avenue is about 6,300 feet long, and the Canal has been cleared of vegetation and is watered through much of this section. The southern part of this stretch of the Canal encompasses the sites of **three farm bridges**, which have no visible remains, and components of the 19th-century Voss Farm, including a **house, cow barn, milking barn, and agricultural field**. The Voss Farm, now known as River Bend Farm, is the visitor center for the Blackstone River and Canal Heritage State Park. **Mile Marker #26**, which is no longer present, was also located along this section of the Canal.

The north end of this section of the Canal, approaching Hartford Avenue, is marked by a cluster of water control structures that transformed the transportation canal into a power canal beginning in the 1860s. The visible **water control dam and head gates** are a stone and earth structure installed at the head of the power canal to control the flow of water to the Central Woolen Mill. Between the gates and Hartford Avenue, installed in the towpath, are the remains of an **overflow dam**, a masonry structure in the water channel that is oriented north-south and runs between the point where the towpath meets the east end of the water control dam and Hartford Avenue. When the main dam burst in 1955, this overflow dam and a 40-foot section of the towpath were washed out. Hartford Avenue is raised on a high embankment, 650 feet long, and carried on the 1866 **Hartford Avenue Stone Arch Bridge over the Canal** and the 1869 **Hartford Avenue Stone Arch Bridge over the River**.

The main **dam** constructed in 1865-1869 is located immediately north of the Hartford Avenue Bridge over the River, and its construction created **Rice City Pond**, a large holding pond in the Blackstone River, and flooded the Canal upstream from the dam for nearly 100 years. The dam burst in 1955 during Hurricane Diane and was repaired in 1957 at an elevation five feet lower than its previous height. Visible rust colored shadow marks indicate the prior water level at the main dam and the overflow dam.

Above Hartford Avenue, the Canal continues in a trench with the towpath on the east side between the Canal and Rice City Pond. The towpath is visible in many sections, but has flooded in others due to the rise in the water level of Rice City Pond. **Two basins** also remain extant in this section. **Mile Marker #27**, which is no longer present, was located in this section.

Town of Northbridge

The Blackstone Canal and the Blackstone River flow north-south through the eastern section of the Town of Northbridge. Whitinsville, the largest manufacturing village in the Town along the Mumford River, and Northbridge Center are located to the west. With the construction of the Canal, Northbridge's population rose from approximately 900 people in 1820 to over 1,400 people in 1837, which was substantially higher than the county average increase of approximately 31 percent. The Canal's success in the early 1830's attracted a number of new businesses, partially due to the Town's distinction of having one of the better known trading stores along the canal route, Plummer's Landing.

The Town of Northbridge contains 5.4 miles of the Blackstone Canal. This length is composed of approximately 1.9 miles of visible, watered canal; 3 miles of dry, visible canal; and 0.5 miles of destroyed or filled canal. Northbridge retains 4.9 miles of discernable towpath and two discernable lock structures. Goat Hill Lock (Lock #25) remains intact, and the remains of the Plummer's Landing Lock (Lock #26) are extant below Church Street. The portion of the Blackstone Canal in Northbridge between the Uxbridge-Northbridge town line and Church Street is included in the Blackstone River and Canal Heritage State Park. The path of the Canal in Northbridge and selected features described below are illustrated on Figure 4.

North of the Uxbridge-Northbridge town line, the Canal is in a **trench** that runs just under two miles to Church Street, with the **towpath** on an earth berm on the east side between the Canal and the River. Just north of the town line, there is a **feeder stream** that links the Canal and the River to the east, with a probable **towpath bridge** site over the stream. Shortly north of this stream is **Lock #25 (Goat Hill Lock)**, which is the second best preserved lock on the entire length of the canal route (Lock #21 in Millville is the most well preserved lock today). Lock #25 is nearly intact, with only a few stones dislodged, and the remains of a wood gate are intact and submerged under water in the east upstream post pocket. High water levels in the Rice City Pond from the 1850's to 1950's supposedly kept the lock submerged which would have helped to preserve it. Immediately upstream of the lock, the canal trench opens out to the west into a wide **basin**.

Between Lock #25 and Church Street is a long straight run of the Canal that contains the site of a **farm bridge**, which has no visible remains; a feeder stream; and the site of a canal basin, which is no longer discernable. **Mile Marker #28** and **Mile Marker #29**, which are no longer present, were located along this segment of the Canal. About 350 yards south of Church Street, the canal route is interrupted by a dirt road and the towpath is breached and culverted in several places. The water level in the canal trench varies seasonally.

At Church Street, the Canal passes through the remains of the 1828 Plummer's Landing and **Lock #26**. Plummer's Landing is the northernmost extent of the Blackstone River and Canal Heritage State Park. The cut granite block lower

courses of the lock's downstream gate pockets and wing walls are partially visible under the modern **Church Street Bridge**, but the remainder of the lock has been destroyed. Immediately northwest of Lock #26 is the 1828 **Plummer's Landing Basin** on the west side of the Canal, and the 1828 **Plummer's Landing Trading House foundation and cellar hole**. The north wall of the Trading House's foundation also forms the four-foot high embankment of the basin, which is faced on the north side by random field stones and curves at the edge of the Canal. The towpath along the east side of the Canal has been modified in this area by the installation of a town sewer line. Storm water flow has eroded the towpath and partially exposed sections of the sewer just north of Church Street.

North of Plummer's Landing, the Canal continues as a trench with the towpath on the east side. While the canal trench and towpath are basically intact, this section contains few specific features. There are two possible feeder channels between the Canal and the River, which are shown on the 1829 Phelps map in this section, as well as a **feeder stream** entering the west side of the Canal, approximately 0.1 miles south of Riverdale Street. **Mile Marker #30**, which is no longer present, was also located in this area.

At the former site of Mile Marker #30, the canal route sweeps to the west before straightening out again, following the original path of the River that once formed an oxbow but now flows in a straighter channel to the east. The 1847 **Providence & Worcester Railroad embankment** crosses the Canal and the Blackstone River twice on filled sections in this segment of the route, with the northern crossing putting the two corridors on a parallel course north to Riverdale Street. An area of slack water in the Blackstone River between these two crossings is locally referred to as the "Dead River." When the Canal closed, the trench was incorporated into the power system for the mills in Riverdale, which was known as Holbrook's Lower Village when the Canal was built. The Canal in this section is widened from its original dimensions, and the towpath has likely been inundated and washed out.

At Riverdale Street, the stone-lined canal channel narrows and passes under the western-most standing building at the ca. 1850 Riverdale Mill and Riverdale Street. The route enters the downstream side of the mill and empties into a wide trench where the turbines that helped power the mills were installed. The Riverdale Mill complex consists of the ca. 1850 **mill building**, a ca. 1900 **warehouse**, and **sluice gates** located in the canal trench on the north side of Riverdale Street. Canal-related resources surrounding the mill include the site of an 1828 **bridge** which carried Riverdale Street over the Canal (now a modern structure), the 1931 **Riverdale Street Bridge** (relocated from New Hampshire in 1962); and the site of **Lock #27 (Dunn's Lock)**, which has no visible remains.

Leaving Riverdale Street, the canal trench is filled, and the site is covered by a Riverdale Mill warehouse. The canal trench is visible as a shallow depression on the north end of the warehouse, and then the route becomes a clearly visible, watered trench. The towpath is located on the east side of the Canal as it heads north to the

Riverdale Mill Pond, originally called Dunn's Pond, located in the Blackstone River. According to the 1829 Phelps map, two small islands on the west side of Dunn's Pond were connected to the canal towpath bridges. **Cut stone footings** for the 1828 southern island bridge are visible on the east side of the towpath. There are no visible remains of the northern island bridge. This area is also the site of a canal **basin** and a canal **feeder stream**, neither of which have visible remains.

Leaving the Riverdale Mill Pond, the Providence & Worcester Railroad embankment forms the west side of the Canal for a small stretch, and then it diverges to the west. Approximately 0.4 miles north of Riverdale Street, the Canal is interrupted and filled by the **Providence Road/Route 122 crossing**. The canal route is then filled for approximately 0.5 miles to Elston Street.

Emerging northwest of **Elston Street**, immediately west of the railroad tracks, the canal trench reappears and is filled with water, with the towpath on the east side, for approximately 0.2 miles until the 1847 **Providence & Worcester Railroad Company embankment**. The canal route continues on the east side of the embankment for approximately 0.1 miles to Sutton Street; however there is no visible evidence of the Canal or the towpath. This area also includes the site of a canal **basin** and the site of an 1828 **bridge** carrying Sutton Street over the Canal, west of the Rockdale Mill. There are no visible remains of either of these resources. Extant resources in this area include a canal **feeder stream** and **two 19th-century houses** on the south side of Sutton Street. **Mile Marker #31**, which is no longer present, was located along this segment of the Canal.

Approximately 0.1 miles north of Sutton Street, the dry canal bed and towpath on the west are clearly visible, with the Providence & Worcester Railroad embankment forming the west side of the Canal. A **basin** is still extant on the west side of the Canal and the railroad tracks. Immediately north of this section, the canal route, now filled, ran by the 1814 **Sylvanus Holbrook Mill** and the ca. 1832 **Holbrook Dam**. There are no visible remains of the Holbrook Mill, though the ruins of the Holbrook Dam remain extant. The former Holbrook Mill site is now partially occupied by the mid 19th-century **Rockdale Mill buildings**, the **Rockdale Mill Pond**, and remains of the 1856 **Rockdale Mill Dam**. The small hamlet that developed on the east side of the River, now Rockdale Village, was known as Holbrook's Upper Village in the canal era. No visible traces remain of **Holbrook's Lock (Lock #28)** which was about 0.2 miles north of Sutton Street, although a **basin** just north of the lock site remains extant. Additionally, the **dry laid stone bridge abutments** of a bridge over the Canal are extant on both sides of the canal prism at approximately 0.4 miles north of Sutton Street.

Approximately 0.5 miles north of Sutton Street, the canal route travels to the west, and is crossed by the 1847 **Providence & Worcester Railroad embankment** with a ca. 1847 **stone bridge** over the Canal. The River also follows this path, but then jogs north again for a straight run into Grafton. The canal trench reappears on the west side of the railroad, and the towpath is a berm that originally separated the Canal

from the River. The railroad embankment now lies between the towpath and the river. At this location a **feeder stream** flows downhill and enters the west side of the Canal, which forms a **basin** to accommodate the flow into the canal prism. **Mile Marker #32**, which is no longer present, was located near the basin, approximately 0.7 miles from where the Canal crosses the Grafton town line.

Town of Grafton

Grafton was characterized by prosperous, dispersed agricultural settlements until the relatively late introduction of manufacturing in 1826. The approximately three-mile section of Blackstone Canal in Grafton was located in the southwest section of the town and played an important role in the textile industry that became the basis for the town's 19th century industrialized economy at three principal mill villages: Farnumsville, Fisherville, and Saundersville.

The Town of Grafton contains 3.1 miles of the Blackstone Canal. This length is composed of approximately 2.8 miles of visible and partially watered canal and 0.3 miles of canal in natural bodies of water. The Canal towpath remains discernable along the entire 3.1-mile Canal route in Grafton. The town also retains the discernable remains Lock #29 in Farnumsville and the potential remains of Lock #30 in Fisherville. The path of the Canal in Grafton and selected features described below are illustrated on Figure 5.

As the Canal crosses the Northbridge-Grafton town line, it is in a **trench** with the **towpath** on the east side. The features of the Canal are generally well preserved, but the towpath is breached in a few places. **Mile Marker #33**, which is no longer present, was located in this section.

The site of **Lock #29** is located south of Farnumsville, just south of Ferry Street/Depot Street, where the Canal narrows and there is evidence of cut stone in the water and the remains of a **feeder stream dam** at the lower end of the lock site. Above the lock, the channel widens into a **basin** at Depot Street. At the **Depot Street crossing and bridge**, the Canal flows under the bridge and curves to the west. A small **basin** with another **channel** flows to the east, which was created after the Canal closed by breaching the towpath for purposes of redirecting water to the Farnumsville Mill Pond. The Canal is bounded in the Farnumsville area by the 1844-1940 **Farnumsville Cotton Mill**, including a **gatehouse**, an **office**, a **stockhouse** and a **salt house**. Related hydropower features include a **flood gate**, **two dams**, a **lock gate** and the **Farnumsville Mill Pond**. There are also numerous **residences dating from the middle of the 19th-century to the early 20th- century**. The section of the Blackstone Canal from approximately Lock #29 to the Providence & Worcester Railroad crossing is located in the Farnumsville National Register Historic District.

From Depot Street, the towpath picks up again on the east side of the Canal as it flows northwest for approximately 0.2 miles. At this location, the towpath is

breached and the **Providence & Worcester Railroad** crosses and fills the canal channel. On the northwest side of the Railroad embankment, the canal trench is present with water, and is tucked between the railroad and a hill for approximately 0.1 miles. The towpath is under the railroad in this section. The Canal then curves eastward, being crossed by the railroad embankment, reemerging on the east side with the trench and towpath being fairly intact to Route 122A at Fisherville.

The northern stretch of this section of the canal is also the **headrace and tailrace** for the 1881 **Fisher Manufacturing Company**, which is no longer extant. The Canal was incorporated into the power system of the manufacturing mill at the west end when the Canal's transportation function ended. Following in a stone arched culvert under Route 122A, the canal route passed under the westernmost buildings of the complex. **Lock #30** and **Mile Marker #34** were located at the road crossing and are now under either the road or the mill site. The 1881 **Fisherville Dam**, located east of the mill site was originally constructed by the Blackstone Canal Company, and was probably rebuilt as a granite-block "step-dam" by the Fisherville Mill in 1881. The enlarged dam created **Fisherville Pond** at the confluence of the Blackstone River with the Quinsigamond River. North of the control gate for the dam, the Canal's towpath is breached for a short distance, before continuing along the north side of the pond. This section of the Blackstone Canal from approximately the Providence & Worcester Railroad embankment north to the **control gate** is also located in the Fisherville National Register Historic District.

From Fisherville, the canal trench continues heading northwest, generally following a hill contour for approximately 0.8 miles to Leland's Landing at Pleasant Street, which is now the mill village of Saundersville. The towpath runs along the east side of the Canal. In sections of the southern part of this segment, the Canal is silted in, but the trench location is visible and the towpath is clear. Dry laid stonework remains of 1828 **bridge abutments** are in a watered section of the Canal about 0.3 miles north of Fisherville. Approximately 0.1 miles to the north, the towpath is breached, and the Canal carries most of the River's water. As the river bed meanders farther to the east, the canal route is more direct, and the water flow naturally follows the Canal. The canal trench is widened by this rise in the water level, and the towpath is most likely flooded. The channel runs adjacent to the Providence & Worcester Railroad for approximately 0.5 miles, then jogs east and north, and continues straight for approximately 0.2 miles to Pleasant Street. **Lock #31**, which was originally located on the Canal east of Pleasant Street, has no visible remains. The only visible masonry features in this area are some **stone retaining walls** from a canal control gate, later used as a bridge abutment, on either side of the Canal for a road that no longer exists.

At Pleasant Street, the Canal passes under the 20th-century Pleasant Street Bridge to rejoin the River. The towpath crossed over the Blackstone River on a **bridge** to the east side of the riverbank. There are visible stone work remains of an 1828 **dam** on both river banks downstream of the towpath bridge site. The dam held back river water and directed it into the Canal.

Leland's Landing, where the Canal, the River and Pleasant Street intersect, included a cluster of buildings and a small trading center, consisting of the 18th- century **Leland-McClennan House**, the mid-19th-century **Leland-White House**, and the site of the demolished **Joshua W. Leland House** (built before 1828). The Leland-McClennan House contained the Leland's Landing store, and includes a stone landing platform at the riverfront basement.

North of Pleasant Street, the River turns and flows to the southwest and then curves to the northwest, and the canal route ran in the river with a well preserved section of towpath on the north side of the river. **Mile Marker #35**, which is no longer present, was located approximately 0.1 miles north of the Pleasant Street Bridge, in the general location of the ca. 1900 **Providence & Worcester Railroad Company Bridge** over the Canal.

Past the Providence & Worcester Railroad Bridge, just east of Saundersville, the Canal reenters a trench on the north side of the River, with the towpath on an earth berm between the River and the Canal. In this section the canal trench is visible as a dry channel in sections. The remains of **Lock #32** are located in this section. Although the cut granite for the lock has been removed, some backing stone remains in place. **Lock #33** is also visible in the dry channel, but it has been partially obscured by the dumping of soil and construction materials.

Northwest of the locks in this section, raceways and building foundation remains from part of the industrial complex at Saundersville. This complex included the ruins of the 1835 **Saundersville Cotton Company Mill**, the extant 1835 **Saundersville raceways**, and the ca. 1820 **Saundersville Dam** on the south side of the River. The Saundersville Cotton Company area also includes the site of a **scythe factory** constructed prior to 1835 (no visible remains) and the site of the **David Wilkinson cotton mill** constructed in 1829 (no visible remains).

The canal prism and towpath continue past the mill remains, with occasional interruptions, to just south of Follett Street in Wilkinsonville. Here, the trench is under the **Follett Street crossing**, and north of Follett Street the canal prism becomes visible as part of a depression formed by Follett Street, Blackstone Road and the Providence & Worcester Railroad.

Town of Sutton

The Blackstone canal route passes east-west through the northeast corner of the Town of Sutton for approximately one-mile, located adjacent to an early 19th century industrial quadrant referred to as Wilkinsonville, which predated the Canal. The opening of the Canal in Sutton complemented the completion of the Central Turnpike in 1824, which ran roughly in an east-west direction through the town. The initiation of the Canal and the Turnpike enhanced Sutton's once agricultural base by



facilitating the movement of lumber, agricultural produce, as well as raw material and manufactured goods.

The Town of Sutton contains one mile of the Blackstone Canal. This length is composed of approximately 0.7 miles of visible, dry canal and 0.3 miles of canal in natural bodies of water. The Canal towpath remains discernable along the entire one-mile length of the Blackstone Canal in Sutton. The path of the Canal in Sutton and selected features described below are illustrated on Figure 5.

In Wilkinsonville the Canal is filled across the **Blackstone Street crossing**, and is then in a **trench** with the **towpath** on the south side between the Canal and the River. The section west of Follett Street is filled, but the canal prism reappears west of the portion of the ca. 1904 **Sutton Manufacturing Company** that lies on the north side of the River. In this area, the **Wilkinsonville Dam**, built in 1823, is located in the River between the Sutton Manufacturing Company and the site of the 1823 **David Wilkinson Mill**.

West of the towpath in Wilkinsonville, the railroad runs closer to the Canal and is supported on a **masonry retaining wall** over the Canal. After a series of turns, the Canal passes under the railroad in a 19th-century **masonry arch culvert**. The railroad continues on the towpath for a short distance, which contains the site of **Mile Marker #36** – no longer present – before crossing the river on a **Providence & Worcester Railroad bridge** which was constructed ca. 1900.

From the railroad bridge, the Canal is visible as it runs north for approximately 0.5 miles to the **Chase Road crossing**. Just south of Chase road, stone work is visible which may have been part of a **control gate** as shown on the 1829 Phelps maps. Immediately north of Chase Road is the 1828 **Pleasant Falls Dam/Singing Dam** which crosses the River. Singing Dam is a curved, granite dam which creates **Pleasant Falls Pond**, which is the site of an 18th century **carding mill that became the Goodale Manufacturing Company** cotton textile mill in 1822.

At Singing Dam, the Canal leaves the trench to reenter the River, with the towpath on the northeast riverbank until approximately 0.1 miles before the Sutton-Millbury town line. Within this section, a **feeder stream** enters the river from the northeast. Just before the town line, there is a small island in the River that is shown on the Phelps maps, at which point the River narrows. At this point the Canal enters a trench with the towpath on the northeast side.

Town of Millbury

The Blackstone Canal passes north-south through the central portion of the Town of Millbury. Prior to the construction of the Blackstone Canal, Millbury was a rural farming community, with smaller industrial establishments primarily located along the Blackstone River and its tributaries. With the initiation of the Canal, Millbury saw

significant opportunities for development of several key mill sites, and in several areas, the new mills transformed the local character from agricultural to rural industrial, providing employment for residents and newcomers. Construction of the Canal in Millbury, however, required significant challenges to overcome steep cross sections, resulting in the need for six locks over the 3.8-mile route of the Canal through the town.

The Town of Millbury contains 3.8 miles of the Blackstone Canal. This length is composed of approximately 1.1 miles of visible, dry canal; 0.4 miles of canal in natural bodies of water; and 2.3 miles of destroyed or filled canal. Millbury retains 1.6 miles of discernable Canal towpath and the discernable remains of one lock structure (Lock #35). Millbury also contains one of three canal mile markers remaining in their original locations in Massachusetts: Mile Marker #37. The path of the Canal in Millbury and selected features described below are illustrated on Figure 6.

Starting at the Sutton-Millbury town boundary, the Canal is located in a **trench** with the **towpath** on the northern bank, which is visible for approximately .02 miles. Adjacent to the town line is the **Cross Street Bridge**, which appears on the 1829 Phelps maps and crosses the River, a small island, and the Canal. Today, Cross Street is abandoned, and only the abutments of the bridges remain.

North of Cross Street, the Canal returns to the River and the towpath has a **retaining wall** constructed of large stones laid into the river bank. A short distance north of the retaining wall, the Canal leaves the River and enters a trench, with **Mile Marker #37** still intact and in its original location.

Approximately 0.1 miles after the Canal and the River split, **Lock #35** is visible, with earth walls and some backing stones intact, however, little cut granite remains. In this area, the towpath and berm rise sharply in elevation above the River, as the Canal crosses the 340-foot contour. At the upstream end of Lock #35, the Canal, towpath and berm are intact until close to where the Canal reaches Grafton Street, where the prism is filled. **Lock #36** was located in this section, but there are no visible remains of the structure.

After the **Grafton Street crossing**, the canal trench is filled and the towpath is no longer extant for approximately 0.2 miles to the Cordis Mill Pond. The **Dorothy Brook feeder stream crossing** (marked by a narrow spot on the brook in the woods), which was one of the main feeder reservoirs for the Canal, remains extant below **Woolshop Pond**. This section of the Canal also contains the site of a **basin** just north of Grafton Street, the sites of **Lock #37** and an adjacent building which may have been a **lock keepers house**, and the site of **Lock #38**. These resources have no visible remains.

North of the site of Lock #38, the Canal entered **Cordis Mill Pond**, with another **feeder stream** from Dorothy Pond running into the pond. The **Cordis Mill building**,



built in 1822 is a four-story brick mill on the south side of the pond, and was probably a significant contributor to the filling of the Canal in this area after its closure. A portion of Cordis Mill Pond was filled in the 20th century, but a section of the canal is partially filled yet visible along with the towpath which is still intact. **Mile Marker #38**, which is no longer present, was located at the west end of the mill pond.

After leaving the Cordis Mill Pond the Canal continued in a trench with the towpath on the west side for approximately 1.3 miles to McCracken Street. This section of the Canal is completely filled. Here, the Canal angled northwest, up the steep slope of Prospect Hill, where numerous **historic homes and other structures** exist that contribute to the significance of the Canal. The Canal navigated the slope of the hill through a series of four locks (**Lock #39, Lock #40, Lock #41, and Lock #42**), of which no visible trace remains today. This section of the Canal also contains the site of a small 1828 **bridge** that carried North Main Street/Route 122A over the canal. There are no visible remains of the bridge today.

Crossing North Main Street, the Canal, now filled, ran toward the River and took a right angle to flow parallel to the River and North Main Street. At the right angle there is a **dry laid retaining wall** which may be either a remnant of the Canal or a landscaping feature added at a later time. This section contains the 1954 **St. Brigid's Church and Rectory**, and **numerous houses** dating from the seventeenth to the 20th century. **Mile Marker #39**, which is no longer present, was also located in this area.

Approaching Dewey Avenue, the Canal is visible for approximately 0.1 miles, and the trench, road, and the River run very close together with the towpath located between the Canal and the River. A **feeder stream**, which is no longer extant, fed the Canal in this location. The ca. 1850 **Burling Mill** and the 1891 **Worcester Consolidated Railways powerhouse and car barn**, which are no longer extant, were located along the Canal in this area. This section of the Canal is bounded in this area by eight **houses** dated from the 19th and 20th centuries and two mid 19th-century **Burling Mill workers houses**.

Proceeding north from McCracken Street, the Canal and towpath are intermittently visible within the last approximately one-mile stretch to the Worcester town boundary, including an approximately 0.1 mile stretch which is present north of McCracken Street. The east side of the canal prism has been modified by the Route 146 embankment, which contains the ca. 1859 **Burling Mill overflow dam** that is built into the towpath. The dam was built after Burling Mills acquired the water rights north to Worcester and operated a small textile mill south of McCracken Street. The dam was part of the industrial water power system that transformed the Canal after it closed. Other resources in the section between McCracken Street and the Worcester border include the sites of **two farm bridges** and a **basin** site, of which there are no visible remains. **Mile Marker #40**, which is no longer present, was also located in this area.

Today, the canal route is traversed by two highway overpasses (the Massachusetts Turnpike and Route 20). North of Route 20, an approximately 0.4 mile section of the Canal and towpath are visible. **Lock #43** was located in this section, but was most likely destroyed in conjunction with the construction of Route 20.

City of Worcester

In the Massachusetts segments of the Blackstone Canal, the City of Worcester is the most urbanized community, and outside of Providence, RI, was the town that most significantly prospered with the construction of the approximately 4.2 miles of the Canal's route through the City. Between 1825 and 1835, Worcester's population increased from approximately 3,650 to over 6,600 people. As the county seat for well over a century, the growth and prosperity in Worcester following the construction of the Canal contributed to the town's rising prominence as a regional manufacturing and commercial center for the next several decades.

The City of Worcester contains 4.2 miles of the Blackstone Canal. This length is composed of approximately 0.2 miles of visible, dry canal and 4 miles of destroyed or filled canal. Worcester retains 0.2 miles of discernable towpath along the extant segment of canal in the city. The path of the Canal in Worcester and selected features described below are illustrated on Figure 7.

For the most part, the Canal is no longer visible in Worcester, with many areas filled by as early as the 1860's and 1870's. The most clearly visible section is where the Canal enters Worcester after crossing the town boundary with Millbury. The canal **trench** and **towpath** are present to the east of Route 146 and west of Millbury Street, and this extent runs for approximately 0.5 miles. There is visible evidence of the canal trench prism, the towpath and a **feeder stream** in this area. In other parts of Worcester, canal-related resources are not visible above-ground, but may survive as archaeological resources.

North of the preserved segment of the Canal, the canal path is located in a commercial area that runs to Kane Square, where the Canal has been either completely filled or substantially altered. Resources in this area include the site of a **farm bridge**; the site of **Lock #44**; the site of a **basin** on the east side of the Canal; and the site of **Lock #45** approximately opposite of Lochwan Avenue. The site of a **farm bridge** and the site of a ca. 1870 **grist mill** are located near the intersection of Ballard Street and Providence Street. **Mile Markers #41 and #42**, which are no longer present, were also located in this area.

North of Kane Square, a one-mile long section of the Canal passes through land that was developed for manufacturing uses between 1850 and the mid 20th century, during which time the canal channel was altered many times and filled in by various industrial uses. Prior to the construction of the Canal, there was just one major



industrial location along the route at the site of the **Thomas-Burbank Paper Mill**, which was established in 1794. After construction, the Canal shared water flow and land with the mill. At the site of the former Thomas-Burbank Mill, the **American Steel & Wire Works Company Cable Building** (1910-1933), **Wire Drawing Mill** (1937-1957), and the Storage/Varnish/Reel Shop buildings (after 1957) remain extant.

Located just below the confluence of the Middle River and Mill Brook in the vicinity of Hurley Square, Burbank's Village developed as a small residential hamlet around the Thomas-Burbank Paper Mill. This area grew to be the core of the Worcester neighborhood of Quinsigamond Village. One of the direct impacts of the construction of the Blackstone Canal in this area was an expansion of the village population through the retention of many of the Irish laborers brought in to construct the Canal. This section of the canal route includes the site of a **basin** and the site of **Lock #46**, of which there are no visible remains.

The 1886-1892 **Washburn & Moen Barbed Wire Manufacturing building** on Ballard Street and the 1886-1892 **Washburn & Moen Galvanizing House** on Millbury Street remain extant in this area.

North of Hurley Square the canal route followed the east bank of **Burbank's Mill Pond**, which was formed in the Middle River, for approximately 0.1 miles until the Canal and the River diverged for the final time just below the present day Brosnihan Square. Today the site contains **two Standard Oil Company garages**, built in 1918. Most of the canal route is now under the Providence and Worcester Railroad Tracks north to the **I-290 crossing** at Brosnihan Square. **Lock #47**, of which there are no visible remains, was located in the vicinity of Millbury and Perry Streets.

From Brosnihan Square northward, the canal trench and towpath are completely filled, and no canal-related structures are visible today. Historically the Canal shared the channel of Mill Brook through Brosnihan Square. At the approximate location of Ashmont Street, the canal route entered a trench that traveled along the present-day path of Harding Street, which was built on top of the filled Canal. The section of the Canal historically included a **feeder stream** in the vicinity of Canton Street and a **bridge** over the Canal in the vicinity of Endicott Street. **Mile Marker #43**, which is no longer present, was located in the vicinity of Canton Street.

The area presently known as Kelley Square historically contained several resources built in 1828, of which there are now no visible remains. **Lock #48**, with a possible adjacent **Lock Keepers house**; a **bridge** over the Canal; a **bridge** over the Mill Brook feeder stream; **Lock #49**; and a small square **basin** were all located in the vicinity of Kelley Square.

Immediately north of Kelley Square, in the area bounded by Water Street, Green Street, Harrison Street and Pond Street, was **Flagg's Pond**, a large basin on the west side of the Canal that marked the summit level of the Canal at 449.71 feet above tide

water. The **Crompton Loom Works building**, built in 1860, no occupies the filled Flagg's Pond site, along with numerous **residential and commercial buildings**.

North of Flagg's Pond, the Washington Square area historically included a **feeder basin** and a **towpath bridge** under the present 1909-1911 **Union Station**. An 1847 **Providence & Worcester Railroad Co. Bridge** remains at the west end of the station. **Mile Marker #44**, which is no longer present, was also located in this area. Historic views of Union Station when it was under construction show the stone lined, open channel of the Canal, which was then the **Mill Brook Sewer**, as it flowed under the railroad tracks and Union Station. Within Washington Square, the Canal left the Mill Brook Sewer stream bed and ran in a straight line through an excavated trench now occupied by a **Providence & Worcester Railroad viaduct** and an **embankment with tracks**. A **bridge** over the Canal was located at the former Front Street alignment through Washington square, and a small **basin** was located on the west side of the Canal and Mill Brook just south of their juncture. There are no visible remains of these resources.

From Washington Square the canal route follows along the railroad tracks heading west, leading to a square **basin** and a **Mill Brook feeder stream** which are no longer extant in the vicinity of Blackstone, Manchester and Bridge Streets. North of Bridge Street, the canal route runs parallel to, and west of, Blackstone Street in the rail yards, ending at the **Canal Terminus Basin** between Central Street and Thomas Street. The canal terminus contains the site of the 1828 **Central Street Bridge** over the Canal, the site of the canal terminus basin, and the sites of **three terminus buildings** along the basin edge. **Mile Marker #45**, which is no longer present, was also located here. The former canal terminus is now occupied by railroad tracks, paved parking, an industrial building, and the sites of former industrial establishments which have been demolished, including the **Holyoke Machine Company**.

Recommendations

As shown by the Resource Inventory and Existing Conditions Chapter, the Blackstone Canal remains remarkably well-preserved over 150 years after its closure. This chapter presents those key segments of the Blackstone Canal that offer outstanding opportunities for public access, restoration, and interpretation. These segments warrant immediate attention in the areas of preservation, stabilization, and further study for restoration and public access feasibility. This chapter presents general recommendations for future planning actions and preliminary scopes and cost estimates for necessary stabilization and restoration tasks. It should be emphasized that the recommendations in this Study are preliminary, and additional, site-specific research and planning activities will need to be completed prior to their implementation.

Key Segment Selection Methodology

Selection of key segments of the Blackstone Canal in Massachusetts for restoration was a phased process relying on public input from Blackstone Canal corridor communities, input from BRVNHCC staff, and assessment of the Resource Inventory and Existing Conditions summary.

A public workshop was held in February 2005 with representatives from the eight Massachusetts communities containing the Blackstone Canal to solicit input on the accuracy of the Resource Inventory and mapping and to gather suggestions for areas in their communities where the Canal could be preserved and made publicly accessible. The workshop resulted in a list of 28 suggested sites for future preservation and accessibility (see Appendix A).

Following the public workshop, the suggested sites were reviewed and rated based on the following criteria:

- The state of preservation of the canal segment and associated resources,
- The rarity of survival of the Canal or associated features relative to the entirety of the Canal in Massachusetts or the community within which the segment was located,
- The level of protection afforded to the resource via ownership or management status,

- Current and potential public access, and
- Restorative and interpretive opportunities.

Where feasible, a field inspection was also conducted for each site.

In selecting key canal segments for restoration, emphasis was put on those segments of the Canal that were well-preserved (i.e. visible and/or watered), unprotected through public ownership or conservation or preservation restrictions, that were presently or would soon be publicly accessible, and that included resources associated with important historic contexts in the Blackstone River Valley. Canal segments and sites included in the Blackstone River and Canal Heritage State Park were excluded from consideration because of their existing protection, interpretation, and public accessibility. However, components of the Heritage State Park were considered as anchor locations for continued restoration and interpretation of unprotected segments adjacent to Heritage State Park units.

The City of Worcester has made substantial efforts to plan for and take advantage of the Blackstone River and Canal as urban water-based amenities. The 2003 *Blackstone Canal Feasibility Study* focused on the altered segments of the Blackstone Canal north of Brosnihan Square in Worcester and addressed many of the same issues as this Study for those portions of the Blackstone Canal. This Study does not examine those areas, but rather focuses on the remaining portions of the Canal.

Based on community input, the evaluation criteria, and field inspection, the segment selection process resulted in the following five segments of the Blackstone Canal being put forward for immediate action towards preservation and stabilization, more detailed evaluation of restoration opportunities, and additional resource study.

- Millville Lock Area, Millville
- Skull Rock Area, Uxbridge
- Plummer's Landing-Riverdale Mill Area, Northbridge
- Fisherville Area, Grafton
- Cross Road-Grafton Street Area, Millbury

In addition, the following five segments were identified for consideration in a second phase of planning and study to be conducted in the future:

- Blackstone Manufacturing Company Area, Blackstone
- Leland's Landing Area, Grafton
- Depot Street-Chase Road Area, Sutton
- Millbury-Winnipeg Street Area, Worcester
- Brosnihan Square-Hurley Square, Worcester

These segments meet many of the criteria used to select the key segments for restoration and should be priority areas for preservation, public access, and interpretation in the future. Several of these sites pose preservation, access, or

restoration challenges that do not make them feasible for immediate action, while others do not require substantive restoration efforts.

Each of the key canal segments for restoration and those worthy of future planning efforts are described and evaluated in detail in the following sections.

General Recommendations

While each of the key segments of the Blackstone Canal in Massachusetts proposed for restoration is unique, a phased set of general recommendations has been developed to be applied to each segment. The general recommendations include a phased program of short-term preservation and protection; mid-term stabilization, maintenance, and management; and long-term rehabilitation and interpretation. The general recommendations address issues such as land or easement acquisition, facilitation of public access to canal segments, and further study regarding historic restoration and interpretation opportunities. The recommendations are described in detail below.

It should be emphasized that the recommendations in this Study are preliminary, and additional, site-specific research and planning activities will need to be completed prior to implementation. Such activities should take into consideration impacts to natural and historic resources, including known and potential archaeological sites, through research and/or survey. Further environmental study will ensure that important resources are not harmed and that all rehabilitation or restoration activities comply with applicable state and federal laws. In addition, information gained from a deeper understanding of each site's natural, historic, and archaeological resources will inform the treatment plan and enhance interpretive opportunities.

Protection and Preservation

Though there have been many efforts over the past 30 years to preserve and protect the Blackstone Canal from adverse impacts, at present, the major portion of the Canal in Massachusetts remains in private ownership with no real protection from demolition, natural deterioration, or inappropriate abutting development and no public access.

A concerted and cooperative effort between the BRVNHCC, state entities, municipalities in which the Canal is located, private organizations with preservation or conservation missions, and property owners should be undertaken to ensure sensitive treatment and public access to the most intact and well-preserved segments of the Canal. Providing protection of these key segments is the first step in facilitating future restoration and interpretation efforts.

The strongest measure to ensure public access and appropriate treatment and management of extant segments of the Blackstone Canal is acquisition in fee simple, or acquisition of an interest in the property through an easement through donation or with federal, state, or local funds. In circumstances where acquisition is not feasible or appropriate, alternatives such as preservation or conservation restrictions, establishment of a local historic district or conservation district, zoning overlays, corridor protection bylaws or ordinances, or transfer of development rights provisions can be pursued. This is recommended for all well-preserved, extant sections of the Canal as identified in the Resource Inventory and Existing Conditions section of the Study, regardless of interpretive opportunity or public access.

To assist with assessment of land acquisition or protection priorities, areas of public and private ownership are presented for each outstanding segment of the Blackstone Canal. A detailed listing of tax parcels included in each of the five outstanding segments is also presented in Appendix B.

Stabilization and Management

More than 50% of the Blackstone Canal remains visible or visible and watered on its course through Massachusetts. Though the key segments of the Canal recommended for restoration as part of the Study remain in a recognizable state, most are in need of stabilization and planning for ongoing management and maintenance. Some of the most commonly observed passive threats to the integrity of the Canal include:

- Private dumping and filling and natural erosion contributing to a loss of integrity for the canal trench;
- Natural growth, including large trees, compromising the structural integrity of the canal trench and towpath berm;
- Existing breaches in the towpath being further eroded by natural processes; and
- Erosion of towpath berm dividing the Canal from the Blackstone River.

The BRVNHCC, state and local partners, and individual property owners should work cooperatively to plan for the stabilization and long-term management of those extant segments of the Blackstone Canal under their control. Preliminary cost estimates for typical stabilization tasks are presented in Appendix C.

As segments of the Canal are considered for protection and future actions, resource management plans should be implemented at the corridor and local levels to assist stewards of the Canal in this work. The resource management plans should guide both routine operation and long-term decisions and planning concerning the use, maintenance, and interpretation of the Canal. The plans should also provide the means to make informed decisions concerning future stewardship of key canal segments, with identified strategic objectives, achievable goals, and concrete action items. Successful implementation of the plans will require cooperative public and private partnerships among individuals, businesses, non-profit organizations, and

governmental entities. The plans should be completed prior to the commencement of rehabilitation or restoration activities and should take into consideration potential impacts to natural, historic, and archaeological resources. Stabilization and management of important canal resources should be a mid-term goal, achieved within a time frame of three to five years for key segments.

Rehabilitation, Restoration, and Interpretation

The long-term goal for the five key segments of the Blackstone Canal identified by the Study is to rehabilitate or restore the canal structure and associated features in these locations in support of the preservation and interpretive goals of the BRVNHCC. This Study makes preliminary recommendations for potential restoration and rehabilitation of key canal segments and features as well as preliminary recommendations for interpretive opportunities. Rehabilitation or restoration tasks could include restoration of key features such as lock structures, opening covered or hidden sections of the Canal, rebuilding damaged or destroyed towpath sections, and re-watering dry sections of extant Canal. Preliminary cost estimates for these tasks are presented in Appendix C.

Additional, site-specific research and planning activities will need to be completed prior to implementation of any rehabilitation, restoration, or interpretive activities. Such research and planning should include further study of historic and archaeological canal features and take into consideration potential impacts to natural, historic, and archaeological resources from restoration or interpretive activities. This work will ensure that these resources are not harmed and that all rehabilitation or restoration activities comply with applicable state and federal laws. In addition, information gained from a deeper understanding of each site's resources will inform the treatment plan and enhance interpretive opportunities.

Because of the historic and archaeological significance of the Blackstone Canal and associated resources, rehabilitation, and restoration efforts should be carried out in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. Copies of the Standards for Rehabilitation and the Standards for Restoration are included in this Study as Appendix D.

Key Canal Segments for Restoration

Five segments of the Blackstone Canal were identified as offering outstanding opportunities for preservation, restoration, and interpretation by virtue of their high degree of preservation, unprotected status, public accessibility, proximity to other protected segments of the Canal, and high interpretive value. The significance, state of preservation, degree of public access, and interpretive and restorative opportunities for each of the five segments is described below. Key historic and archaeological resources are also noted.

Millville Lock Area, Millville

The Millville Lock Area in Millville comprises a 0.5-mile length of dry canal trench and well-preserved towpath berm beginning in the east at the bounds of the Millville Lock unit of the Blackstone River and Canal Heritage State Park and extending west to the Central Street Bridge over the Blackstone River (Figure 8). In addition to being included on the National Register of Historic Places as part of the Blackstone Canal Historic District, much of this area is also listed on the National Register as part of the Central Street Historic District. The well preserved state of the Blackstone Canal in the Millville Lock Area and its proximity to a unit of the Blackstone River and Canal Heritage State Park make the area a key segment for protection, stabilization, restoration, and increased public access.

Resources

The Millville Lock (Lock #21) unit of the Blackstone River and Canal Heritage State Park is located on the south side of the Blackstone River in Millville off Central Street. Millville Lock is the best preserved extant lock along the entire route of the Blackstone Canal and is preserved, protected, and interpreted and can serve as an effective anchor for additional access, preservation, and interpretation nearby. The portion of the Blackstone Canal comprising the Millville Lock Area contains a well-preserved section of towpath berm and a moderately well-preserved section of partially watered canal trench. This segment of the Blackstone Canal is the only engineered section of canal trench in Millville. After crossing Central Street, the Canal returns to the river until it crosses the Millville-Uxbridge town line. Some dumping and filling has occurred along this section of the canal trench, and portions are overgrown, however the trench is easily visible alongside the towpath berm for the entire 0.5-mile length of the segment. In addition to the Canal and the Millville Lock, this area contains remnants of several stone mills, including the 1825 Collins Capron Stone Mill; a ca. 1880 stone arch bridge carrying Central Street over the Blackstone Canal; and Mile Marker #20, one of only three canal mile markers remaining present along the Canal. For additional historic and archaeological resources included in this segment, please refer to the Millville section of Chapter 2: Resource Inventory and Existing Conditions.

Ownership and Access

The Millville Lock Area includes one publicly owned parcel, located west of the Millville Lock, which contains a segment of the canal trench and towpath. With the exception of this parcel, and the lock which is part of the Blackstone River and Canal Heritage State Park, the Millville Lock Area is privately owned. The unprotected areas comprise the entire segment of the Canal between the publicly owned parcel west of the lock to the Central Street Bridge. Please see Appendix B for a list of the individual tax parcels containing the Blackstone Canal and associated resources in the Millville Lock Area.

The Millville Lock Area is accessible from Central Street via a system of trails on the Southern New England Trunkline Trail (SNETT). When constructed, the area will also be accessible from the Blackstone River Bikeway, which will run along the SNETT. The SNETT provides access to the Millville Lock structure, but there is no formal public access to the remainder of the area. An informal series of foot paths leading from the Millville Lock along the Blackstone Canal towpath berm provides access to the remainder of the Millville Lock Area. These paths also have access points on Prospect and Bow Streets.

Opportunities

The Millville Lock is currently interpreted as part of the Blackstone River and Canal Heritage State Park, however there is no formal public access or interpretation for the extant segment of the Blackstone Canal adjacent to the Lock. The well-preserved section of the Blackstone Canal near an established interpretive site presents a prime opportunity to expand interpretive programming. The Canal in this area would also lend itself well to future restoration and re-watering efforts, as it is structurally intact and close to the source of water provided by the Blackstone River.

Recommendations

Protecting and stabilizing this section of the Blackstone Canal is essential to protecting extant canal features in the Town of Millville and as preparation for future restoration and interpretation of the Blackstone Canal in the Millville Lock Area. Suggested actions include working with the Town of Millville, the Heritage State Park, and the individual private property owners along this segment of the Canal to ensure its preservation through acquisition, easements, or conservation or preservation restrictions. Stabilization efforts such as clearing fill, brush, and dumped debris from the canal trench and towpath, instituting an active vegetation management program, and working to establish a resource management plan are also recommended. The feasibility of re-watering this segment of the Canal should also be studied further.

Skull Rock Area, Uxbridge

The Skull Rock Area of the Blackstone Canal is comprised of a 0.5-mile segment of watered and dry canal trench and intact towpath berm in the vicinity of Old Millville Road in Uxbridge. The Area begins in the south at a bend in the Blackstone River off Old Millville Road where the Canal leaves the river and enters an engineered trench, and ends in the north near the crossing of Millville Road (Route 122) (Figure 9). The well preserved state of the Skull Rock Area, the important associated historical resources along this segment of the Canal, and the increased public access that will be facilitated by the future Blackstone River Bikeway make this area a key segment for protection, stabilization, interpretation, and restoration.

Resources

The Skull Rock Area consists of a watered segment of canal trench and visible towpath from the Skull Rock bend in the Blackstone River to just south of the crossing of Millville Road (Route 122). Discrete areas of the watered and dry segments of the Canal in the Skull Rock Area have suffered from dumping of fill and household trash, and the entire length of the Canal in this area has severe overgrowth of brush and small trees. The towpath berm also has substantial tree growth on its banks, though the top of the berm remains clear. In addition to a well-preserved section of canal trench and towpath, the Skull Rock Area contains the remains of Skull Rock Lock (Lock #22), a basin, and the Skull Rock Bridge, which used an innovative design to cross tow animals over the Canal without unhitching them from the boats or barges. For additional historic and archaeological resources included in this segment, please refer to the Uxbridge section of Chapter 2: Resource Inventory and Existing Conditions.

Ownership and Access

At present only one of the major features in the Skull Rock Area is publicly owned or managed. The Skull Rock Lock (Lock #22) is located within a parcel owned by the Town of Uxbridge. The remainder of the property abutting the Blackstone Canal in the Skull Rock Area is in private ownership. Please see Appendix B for a list of the individual tax parcels containing the Blackstone Canal and associated resources in the Skull Rock Area.

At present, there is no formal public access to the Skull Rock Area, though guided tours to the Skull Rock Lock are often arranged by BRVNHCC rangers. Skull Rock is a popular destination for boaters via the Blackstone River, and is also accessible from Quaker Highway (Route 146A) via a series of informal footpaths. North of Skull Rock, the dry and partially watered segments of the Canal are accessible via informal footpaths to the site and along the towpath berm. With the completion of the Blackstone River Bikeway, the entire length of the Skull Rock Area will become publicly accessible. The Bikeway will parallel the path of the Blackstone Canal in this segment and will be situated in part on the towpath berm.

Opportunities

The Skull Rock Area presents outstanding opportunities for interpretation of notable engineering features along the Canal such as the Skull Rock Lock and Skull Rock Bridge, as well as potential for restoration of the Skull Rock Lock. In addition, the watered segment of the Canal remaining in place at Skull Rock could be reopened to water flow for interpretive and recreational use.

Recommendations

Planning for the long-term preservation, stabilization, and interpretation of the Skull Rock Area of the Blackstone Canal is essential to protecting extant canal features in the Town of Uxbridge and as preparation for greater public accessibility to canal

resources in this area resulting from the proximity to the Blackstone River Bikeway. The anticipated rise in public access to the Skull Rock Area and the existing popularity of the area for boaters and BRVNHCC visitors also makes it a priority site for interpretation and restoration.

Recommended actions include working with the Town of Uxbridge, other state and local partners, and individual private property owners along this segment to ensure its protection and preservation through acquisition, easements, or conservation or preservation restrictions. Stabilization efforts such as clearing fill, brush, and dumped debris from the canal trench and towpath, instituting an active vegetation management program, and working to establish a resource management plan for the Canal to be carried out in partnership with the BRVNHCC and local entities are also recommended. Long-term recommendations include further study of the significant historic and archaeological resources in the segment, investigating the feasibility of restoring the Skull Rock Lock, interpreting the Skull Rock Bridge in the context of canal transportation, and facilitating public access to the Skull Rock Area by foot from Quaker Highway.

Plummer's Landing-Riverdale Mill Area, Northbridge

The Plummer's Landing-Riverdale Mill Area comprises a 0.8-mile segment of dry canal and visible towpath northwest of the Plummer Corner section of Northbridge. The Area begins in the south at the north bounds of the Plummer's Landing unit of the Blackstone River and Canal Heritage State Park off Church Street and ends in the north at the Riverdale Mill on Riverdale Street (Figure 10). The well-preserved condition, public accessibility, and proximity to the Blackstone River and Canal Heritage State Park make the Plummer's Landing-Riverdale Mill Area of the Blackstone Canal a key segment for protection, stabilization, restoration, and interpretation.

Resources

The Plummer's Landing unit of the Blackstone River and Canal Heritage State Park is on the north side of Church Street, and includes the remains of Plummer's Landing Lock (Lock #26), Plummer's Landing Basin, and the foundation and cellar hole for the Plummer's Landing Trading House. The rich history interpreted at this well-preserved archaeological site can serve as an effective anchor for additional access, preservation, and interpretation north of the site. The Blackstone Canal north of Plummer's Landing contains few specific canal features, but is a well-preserved, dry section of canal trench with a distinct and well preserved towpath berm. This segment of the Canal and a segment of the Blackstone River are filled in two locations by crossings for the Providence & Worcester Railroad. Although structurally intact, this segment of the Canal suffers in places from filling and substantial overgrowth. The former boat basin at Plummer's Landing retains its stone lining, but is now filled and dry. At the north end of this segment, the ca. 1850 Riverdale Mill is a well-preserved example of a mid-19th century brick mill complex

that used the Blackstone Canal as a power canal after its closure. For additional historic and archaeological resources included in this segment, please refer to the Northbridge section of Chapter 2: Resource Inventory and Existing Conditions.

Ownership and Access

Outside of the Heritage State Park, the canal towpath north of Church Street has been modified by the installation of a town sewer line, which likely carries an easement for access to the line. The extent of the sewer line easement through this area should be further investigated. All of the parcels within the Plummer's Landing-Riverdale Mill Area not included in the Heritage State Park are privately owned. Please see Appendix B for a list of the individual tax parcels containing the Blackstone Canal and associated resources in the Plummer's Landing-Riverdale Mill Area.

The Blackstone Canal north of Plummer's Landing is informally accessible via footpaths extending from the Heritage State Park trails off Church Street and via footpaths and a dirt drive from Riverdale Street. When constructed, the Blackstone River Bikeway will parallel this segment of canal on the towpath berm, providing public access to this part of the Canal and safe pedestrian and bicycle crossing over the former Providence & Worcester Railroad line.

Opportunities

The Plummer's Landing-Riverdale Mill Area presents a prime opportunity for restoration of the dry segments of the Blackstone Canal between Church Street and Riverdale Street and the potential restoration of the former basin at Plummer's Landing. The Canal in the Plummer's Landing-Riverdale Mill Area would lend itself well to future restoration and re-watering efforts, as it is structurally intact and close to the source of water provided by the Blackstone River. The Plummer's Landing site, already interpreted as part of the Blackstone River and Canal Heritage State Park, could serve as an anchor for further access, restoration, and interpretation efforts.

In addition, the increased public access to the Plummer's Landing-Riverdale Mill Area of the Blackstone Canal and its proximity to the Blackstone River and Canal Heritage State Park present a prime opportunity to continue the preservation and interpretive mission exemplified by the Heritage State Park. As a northern anchor to this segment, the Riverdale Mill presents an opportunity to interpret the industrial history of the Blackstone River Valley and the later uses of the former Blackstone Canal for power generation.

Recommendations

Protecting and stabilizing this section of the Blackstone Canal is essential to protecting extant canal features in the Town of Northbridge, to prepare for future public access to this area via the Blackstone River Bikeway, and to facilitate future restoration efforts. Recommended actions include working with the Town of

Northbridge, the Department of Recreation and Conservation and Blackstone River and Canal Heritage State Park, and local partners to protect the extant, well-preserved segments of the Blackstone Canal in this area. Stabilization efforts such as clearing fill, brush, and dumped debris from the canal trench and towpath and institution of a vegetation management program are recommended, as is working to establish a resource management plan. The feasibility of restoring and re-watering all or sections of the segments of dry canal trench north of Plummer's Landing should also be studied further. In addition to the information in the 1995 Blackstone Canal Historic District National Register Registration Form, such study should take into account previous studies of Plummer's Landing conducted in 1987 in conjunction with establishing the Plummer's Landing unit of the Blackstone River and Canal Heritage State Park.³

Fisherville Area, Grafton

The Fisherville Area of the Blackstone Canal in Grafton consists of a one-mile long segment of watered canal, visible towpath, and the remains of the Fisher Manufacturing Company in the mill village of Fisherville. The area extends from south of the Main Street (Route 122A) crossing of the Blackstone Canal and extends north of the site through the former Fisherville Mill Pond and marshes and west through a watered canal segment to Pleasant Street (Figure 11). The remarkable state of preservation of the canal trench and portions of the towpath in the Fisherville Area, as well as the numerous opportunities afforded for public access, interpretation, and restoration along the canal path in this Area make it a priority for protection, stabilization, and future interpretive and restorative planning.

The Town of Grafton, in conjunction with regional and state partners, has implemented a number of initiatives and planning efforts for Fisherville. Much of the village of Fisherville was listed on the National Register of Historic Places as an historic district in 1996. Fisherville was also the subject of in-depth site analysis and exploration of future alternatives for both conservation and economic development as part of the Blackstone River Visioning Project. The former Fisher Manufacturing Company site and natural areas along the Blackstone River nearby were highlighted as valuable resources for economic development, natural system restoration, and recreational access. Recommendations for the area resulting from the project included restoration of the Fisherville Pond for recreation and natural habitat, rehabilitation of the Fisherville Dam, development of a river greenway between Fisherville and Farnumsville, and development of a multi-use trail system and small boat access along the Blackstone River. In addition, the former Fisher Manufacturing Company site is in the planning stages for mitigation of industrial contamination and eventual redevelopment for housing, economic development, and habitat restoration.

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³ See Fitch, Virginia A. *Plummer's Landing, Northbridge, MA. Site Examination and Landscaping Damage Assessment Technical Memorandum*. The Public Archaeology Laboratory, Inc. Submitted to the Massachusetts Historical Commission and the Massachusetts Department of Environmental Management, Boston, MA; 1987.

Resources

The Blackstone Canal in the Fisherville Area is well-preserved and watered, though sections have been silted in. The towpath in this Area is clear and visible, but breached in a few locations. The Fisherville Area of the Blackstone Canal contains the remains of the Fisher Manufacturing Company, which was destroyed by fire in 1999. The former site of the company retains a covered, watered section of the Blackstone Canal converted for power generation. In addition, BRVNHCC staff believes that there is a high likelihood that the intact remnants of Canal Lock #30 may be entombed on the Canal below the site. The Area also contains the former Fisherville Mill Pond. For additional historic and archaeological resources included in this segment, please refer to the Grafton section of Chapter 2: Resource Inventory and Existing Conditions.

Ownership and Access

The Town of Grafton owns an 8.5 acre parcel of land containing a portion of the Blackstone Canal between Pleasant Street and the Fisherville Mill Pond. The Town is also in the process of taking tax title to 57 acres of former land associated with the Fisher Manufacturing Company north of the mill site along the Blackstone River and Canal. Please see Appendix B for a list of the individual tax parcels containing the Blackstone Canal and associated resources on the Fisherville Area.

The Fisherville Area is accessible via Main Street (Route 122). When completed, the Blackstone River Bikeway will parallel the path of the Blackstone Canal through Fisherville on a former rail bed, but will not be directly adjacent to the Canal in all areas. Development of a local trail system along the Blackstone River and Canal, the development of the Town of Grafton's Blackstone River Park, and the redevelopment of the Fisher Manufacturing Company site may facilitate greater public access to the Canal and its resources in the near future.

Opportunities

The Fisherville Area offers opportunities for interpretation of local industrial history through the Fisher Manufacturing Company site and the cultural landscape of the mill village of Fisherville. The planned redevelopment of the Fisher Manufacturing Company site and the current planning efforts surrounding the Blackstone River and Fisherville Mill Pond present a prime opportunity to restore a pivotal segment of the Blackstone Canal in Grafton, reconnecting the open, navigable watered sections of the Canal north and south of Main Street. In addition to reopening a covered section of the Canal, the potential exists to preserve, interpret, and possibly restore remnants of Lock #30 which may be extant on the covered section of the Canal on the site.

Recommendations

Short term recommendations for the Fisherville Area of the Blackstone Canal in Grafton include continuing to work in concert with the Town of Grafton and other regional and state partners to protect the bordering land along the Blackstone Canal

to facilitate the long-term preservation of this important historic and natural resource. The BRVNHCC should also work with the Town of Grafton and other local and regional stakeholders to ensure the protection and preservation of the Blackstone Canal as a priority in area redevelopment and revitalization projects.

Although well-preserved, certain areas of the Blackstone Canal in the Fisherville Area have suffered from silting in and filling, as well as overgrowth. Stabilization of the Canal through removal of debris is recommended, as is repairing existing breaches in the towpath to assist with development of access trails at the Fisherville Mill Pond and the Blackstone River. Active and on-going vegetation management is needed in, on, and around all canal structures and features. In addition, the BRVNHCC should work with the Town of Grafton to develop a resource management plan for the extant segments of the Canal in the town.

Further study, including archaeological investigations, should be conducted to assess the feasibility of uncovering the watered Blackstone Canal segment on the Fisher Manufacturing Company site and the condition of any remnants of Lock #30 on the site. Assessment of stabilization and rehabilitation or restoration of Lock #30 should also be undertaken.

Cross Road-Grafton Street Area, Millbury

The Cross Road-Grafton Street Area of the Blackstone Canal consists of dry canal trench and visible towpath beginning in the south at the Millbury-Sutton town line near Cross Road and Grafton Street. This approximately one-mile long segment of the Blackstone Canal passes through a largely undeveloped portion of the east side of the town and constitutes the only visible segment of the Canal in the Town of Millbury (Figure 12). The well-preserved condition of the Canal in this Area, the rarity of its survival in the Town of Millbury, and anticipated public access to the segment facilitated by the Blackstone River Bikeway make this area a key segment for protection, stabilization, interpretation, and restoration.

Resources

The Blackstone Canal trench is readily visible in this segment, and is watered in places seasonally. The towpath is also visible along the side of the Canal and on a raised towpath berm. In addition to the canal trench and towpath, this section of the Blackstone Canal contains Mile Marker #37, one of only three canal mile markers remaining present, and the visible remains of Lock #35. The area may also contain the archaeological remains of Lock# 36 and of two wooden bridges that carry the former Cross Street over the Canal. For additional historic and archaeological resources included in this segment, please refer to the Millbury section of Chapter 2: Resource Inventory and Existing Conditions.



Ownership and Access

The watered section of the Blackstone Canal between the Millbury-Sutton town line and Grafton Road contains no publicly owned or protected parcels. Please see Appendix B for a list of the individual tax parcels containing the Blackstone Canal and associated resources in the Cross Road-Grafton Street Area.

At present, the intact segment of the Blackstone Canal in Millbury is only minimally accessible to the public off of the abandoned, unpaved public way of Cross Street. Cross Street and portions of the canal towpath will be used for construction of the Blackstone River Bikeway, which will greatly increase the ease of public access to this area when completed. The remains of Lock #35 are not publicly accessible at present.

Opportunities

The Cross Road-Grafton Street Area offers opportunities for restoration, interpretation, recreation, and greater public access to the Blackstone Canal. The well-preserved condition and proximity to water in the Blackstone River at both ends of the segment make it a potentially feasible site for re-watering. There is also an opportunity to restore a key feature of the Blackstone Canal with the visible remains of Lock #35. The Cross Road-Grafton Street Area will soon become partially publicly accessible via completion of the Blackstone River Bikeway, and there is the potential for even greater public access via a system of walking trails along the Canal in this largely undeveloped area of Millbury.

Recommendations

Short-term recommendations include working with the Town of Millbury to enact protective measures for the extant section of the Blackstone Canal in the town, or work to acquire an interest in the land. This would facilitate greater public access to the majority of this important historic resource in Millbury, perhaps via a system of foot trails or a spur trail from the Blackstone River Bikeway. As with many other extant segments of the Canal, the segment in Millbury is in need of some stabilization and maintenance to clear debris and fill, as well as on-going vegetation management in, on, and around canal structures and features. In addition, the BRVNHCC should work with the Town of Millbury to develop a resource management plan for the extant segments of the Canal in the town. Restoration efforts to be studied further include re-watering the Canal between the Blackstone River near the Millbury-Sutton town line and the remains of Lock #35 near Grafton Street and restoration of the lock structure. Potential archaeological resources such as the remains of Lock #36 and the two wooden bridges could be explored through additional research and/or survey.

Canal Segments for Future Action

Five canal segments were identified for consideration in a second phase of planning and study to be conducted in the future. These segments meet many of the criteria

used to select the key segments for restoration and should be priorities for preservation, public access, and interpretation. Several sites pose preservation, access, or restoration challenges that make them less feasible for immediate action while others do not require substantive restoration efforts.

Blackstone Manufacturing Company Area, Blackstone

The Blackstone Manufacturing Company Area of the Blackstone Canal comprises a 0.7-mile segment of watered canal and visible towpath at the west end of the village of Blackstone. The Area begins in the east near Old Mendon Street and extends west to the crossing of Main Street (Route 122) over the Blackstone Canal near Staples Street (Figure 13). In addition to being included on the National Register of Historic Places as part of the Blackstone Canal Historic District, much of this area is also listed on the National Register as part of the Blackstone Manufacturing Company Historic District. The Blackstone Manufacturing Company Area abuts the Blackstone Gorge section of the Blackstone River and Canal Heritage State Park, and is bisected by the Massachusetts Southern New England Trunkline Trail (SNETT).

The well preserved state of the Blackstone Manufacturing Company Area; its proximity to a unit of the Blackstone River and Canal Heritage State Park; its easy accessibility by foot, car, and bicycle; and the associated opportunities for recreation and interpretation make protection, stabilization, and greater facilitation of access to the area important future planning goals.

Resources

The Blackstone Canal Manufacturing Company Area includes a watered canal segment contained in places within a stone-lined channel, and readily visible towpath at the waters edge. Mile Marker #18, one of the three mile markers remaining present along the Canal in Massachusetts, is also present in this segment. Sites associated with the Blackstone Manufacturing Company include a stone storehouse and building foundations. The Blackstone Manufacturing Co., which was a major force in the local economy, shared water control features with the Blackstone Canal to power the mill and maintain a consistent water level in the Canal. After the closure of the Canal, the Blackstone Manufacturing Company used the former canal trench for power generation. The Blackstone Manufacturing Company Area includes water supply structures such as the Blackstone Manufacturing Company Mill Pond, head race, and a reconstructed bulkhead and sluice gate. For additional historic and archaeological resources included in this segment, please refer to the Blackstone section of Chapter 2: Resource Inventory and Existing Conditions.

Ownership and Access

Nearly all of the property abutting the Blackstone Canal in the Blackstone Manufacturing Company Area is publicly owned or in private, non-profit ownership. The extant Blackstone Manufacturing Company buildings and structures

are owned by the Town of Blackstone and are presently being used by the Blackstone Valley Boys & Girls Club. There have been some local efforts to develop a town park on this site. Following the path of the Canal from the Blackstone Manufacturing Company site to the north across Main Street, an approximately 14-acre parcel abutting the Canal to the east is also owned by the Town of Blackstone. The SNETT is owned by the Commonwealth of Massachusetts. The Blackstone Valley Boys & Girls Club owns the majority of the land abutting the Blackstone Manufacturing Company Mill Pond.

The Blackstone Manufacturing Company Area is accessible via foot, car, and bicycle from Main Street (Route 122) and adjoining roads. The remaining Blackstone Manufacturing Company buildings and structures are also easily accessible from Main Street. The area around the Blackstone Manufacturing Company Mill Pond is accessible via a series of informal foot paths that leave Main Street near Middle Street. In the future, the Blackstone River Bikeway will pass through this area on the SNETT, crossing the Canal on an existing former railroad bridge south of the Mill Pond, and continuing on to cross the Canal a second time at the west outlet of the pond. All of the watered areas of the Blackstone Canal in the Blackstone Manufacturing Company Area are accessible by small boat, with portages.

Opportunities

The Blackstone Manufacturing Company Area provides an opportunity to interpret local and regional industrial history, including water power generation, and how the Blackstone Canal was adapted for that use after it ceased operation. In addition to interpretive opportunities, the Blackstone Mill Pond and associated canal remnants offer opportunities for passive recreation, walking, picnicking, and canoeing. A popular canoe trip on the Blackstone River that begins near this segment at the Rolling Dam at the head of the Blackstone Gorge could be expanded to include the former Blackstone Manufacturing Company Mill Pond. Similarly, the extant towpath segments along this section of canal could be rehabilitated to serve as a walking trail. The future completion of the Blackstone River Bikeway through the area will dramatically increase access to this important part of the Blackstone Canal.

Recommendations

Providing protection for this section of the Blackstone Canal is pivotal to prepare for future public access and interpretation of the Blackstone Canal and the Blackstone Manufacturing Company. Suggested actions include working with the Town of Blackstone, the Heritage State Park, and the individual private property owners along this segment of the Canal to ensure its preservation and to provide for greater public access. Long-term recommendations include developing an interpretive plan for the Blackstone Canal Manufacturing Company complex, including water-related resources, and facilitating greater public access to the Canal and Mill Pond.

Leland's Landing Area, Grafton

The Leland's Landing Area of the Blackstone Canal is situated between the Grafton mill villages of Fisherville and Saundersville at the confluence of a watered segment of the Blackstone Canal, the Blackstone River, and Pleasant Street (Figure 13). Leland's Landing contains an intact grouping of resources reflecting the history of the Blackstone Canal and the commercial opportunities the Blackstone Canal brought to rural areas of the Blackstone River Valley. This area has also been under study by the Department of Conservation and Recreation as an interpretive site in the Blackstone River and Canal Heritage State Park. The well-preserved state of the Blackstone Canal in this area, the proximity of important associated resources, the rarity of the survival of these resources along the canal corridor, and the strong interpretive potential of the Leland's Landing Area make protection and interpretation of the area an important future planning goal.

Resources

The Leland Family operated a prosperous trading business in the Leland's Landing Area during the operation of the Blackstone Canal. Extant buildings and structures include the 18th century Leland-McLellan House, the early 19th century Leland's Landing Storehouse and stone loading platform (now in residential use), and the mid-19th century Leland-White House. Extant canal features include the watered canal trench, the visible towpath berm, and the stone remains of a dam in the Blackstone River that regulated canal water levels. For additional historic and archaeological resources included in this segment, please refer to the Grafton section of Chapter 2: Resource Inventory and Existing Conditions.

Ownership and Access

At present, only one portion of the Leland's Landing Area is publicly owned or protected. The Town of Grafton owns a 53-acre parcel on the west side of the Blackstone River in this Area, accessible from Follette Street. This parcel is slated for development as the Town of Grafton's Blackstone River Park. The remainder of the property in the Leland's Landing Area is privately owned.

The Leland's Landing Area is accessible via Pleasant Street and by boat via the Blackstone Canal and Blackstone River. When completed, the Blackstone River Bikeway will pass near the Leland's Landing Area on Main Street (Route 122A). The planned development of a multi-use trail system and small boat access along the Blackstone River in Fisherville will dramatically increase multimodal access to the Leland's Landing Area in the future.

Opportunities

Leland's Landing provides a prime opportunity to interpret an important aspect of the commercial history of the Blackstone Canal. Leland's Landing is one of only two commercial landing sites along the Blackstone Canal that retain substantial built

historic resources. Unlike Plummer's Landing in Northbridge, which is part of the Blackstone River and Canal Heritage State Park, Leland's Landing retains a substantial number of well-preserved historic resources associated with commercial activity on the Canal in the early 19th century, including an extant storehouse and river landing dock.

Recommendations

Protecting this section of the Blackstone Canal and the individual resources associated with the Leland Family is essential to protecting extant canal features in the Town of Grafton and as preparation for future restoration and interpretation of the Blackstone Canal in the Leland's Landing Area. Suggested actions include working with the Town of Grafton, the Department of Conservation and Recreation, and the individual private property owners in this Area to ensure its preservation and stabilization. Long-term recommendations include further evaluation of the feasibility of developing an interpretive site at Leland's Landing and facilitation of greater public access via the Canal and River and the planned South Grafton Greenway. In addition to the information in the 1995 Blackstone Canal Historic District National Register Registration Form, such study should take into account previous archaeological studies of Leland's Landing conducted in 1982 in conjunction with preliminary planning for the Blackstone River and Canal Heritage State Park.⁴

Depot Street-Chase Road Area, Sutton

The Depot Street-Chase Road Area of the Blackstone Canal consists of a 0.5-mile segment of watered canal and well-preserved towpath berm beginning in the east approximately 300 feet west of Depot Street and extending west to the crossing of Chase Road (Figure 13). The Depot Street-Chase Road Area comprises the entirety of the visible or watered Blackstone Canal in Sutton. The well-preserved condition of this segment of the Blackstone Canal and the rarity of its survival in the Town of Sutton make protection and stabilization of the Area an important future planning goal.

Resources

The Depot Street-Chase Road Area contains few specific canal features along its length, but is anchored by former Sutton Manufacturing Company and the Wilkinsonville Dam on the east and the Pleasant Falls, or Singing Dam and Pleasant Falls Pond on the west. Though generally well-preserved, this segment of the Blackstone Canal has suffered from some discrete areas of filling, several breaches in the towpath, and overgrowth of trees and brush. For additional historic and

▼
⁴ See Rosebrock, Ellen Fletcher, Theodore Z. Penn, Scott J. Andrus, and John Rempelakis. *Phase I Archaeological Reconnaissance/Intensive Survey for the Heritage Park, Blackstone Canal, Massachusetts*. Submitted to the Massachusetts Department of Environmental Management, Boston, MA; 1982.

archaeological resources included in this segment, please refer to the Sutton section of Chapter 2: Resource Inventory and Existing Conditions.

Ownership and Access

The Depot Street-Chase Road Area contains no publicly owned or protected parcels. The extant segment of the Blackstone Canal in Sutton is accessible from Chase Road, and an informal footpath runs along the towpath berm in this segment. The Blackstone River Bikeway will be constructed on the path of the existing Blackstone Street and Chase Road in this area, and will provide a view of the Canal at the Chase Road crossing.

Opportunities

Though largely inaccessible to the public, this intact segment of watered canal in Sutton is an important historical resource at the local and regional level, and should be protected and preserved. The intersection of the Bikeway with the Canal on this quiet, local road presents an opportunity to interpret the industrial history of Sutton and the Blackstone Canal.

Recommendations

Short-term recommendations for the Depot Street-Chase Road Area of the Blackstone Canal include working with the Town of Sutton to enact protective measures for the extant section of the Blackstone Canal in the town, or working to acquire an interest in the land. As with many other extant segments of the Canal, the segment in Sutton is in need of some stabilization and maintenance to clear debris, remove fill, and institute an active program of vegetation management. In addition, the BRVNHCC should work with the Town of Sutton to develop a resource management plan for the extant segments of the Canal in the town. Some opportunity for public access should also be determined for this segment, perhaps from Chase Road.

Millbury-Winnipeg Street Area, Worcester

The Millbury-Winnipeg Street Area of the Blackstone Canal consists of a 0.5-mile long visible segment of the Blackstone Canal and towpath beginning in the south at the Worcester-Millbury town line and extending north along the west side of Millbury Street (Route 146) to the intersection with Winnipeg Street (Figure 13). The Millbury-Winnipeg Street Area comprises the only visible extant segment of the Blackstone Canal in Worcester and is the northernmost intact segment of the canal trench and towpath in the canal corridor. The well-preserved state of the Blackstone Canal in this area, the rarity of its survival in the City of Worcester, and its proximity to planned segments of the Blackstone River Bikeway make protection, stabilization, and interpretation of the Millbury-Winnipeg Street Area of the Blackstone Canal an important future planning goal.

Resources

The extant segment of the Blackstone Canal in Worcester contains few individual resources, but is a well-preserved, seasonally watered section of canal with a distinct and well-preserved towpath berm. For additional historic and archaeological resources included in this segment, please refer to the Worcester section of Chapter 2: Resource Inventory and Existing Conditions.

Ownership and Access

Within the Millbury-Winnipeg Street Area, the Commonwealth of Massachusetts owns an approximately 6.36-acre parcel which contains most of the visible sections of the canal trench and towpath. The remainder of the property abutting the Area is privately owned. The Millbury-Winnipeg Street Area is accessible from Millbury Street and the newly completed section of the Blackstone River Bikeway between Millbury and Worcester. A paved parking area for the Bikeway has been constructed off Millbury Street within view of the Canal.

Opportunities

As the only extant section of the Blackstone Canal in Worcester, protection and stabilization of the Canal in this location is paramount, and can be completed in tandem with the visionary plan put forth in the 2003 *Blackstone Canal Feasibility Study* for the former path of the Blackstone Canal in Worcester north of Brosnihan Square. The proximity of the Blackstone River Bikeway to the extant segment of the Canal also provides an opportunity to provide access and interpretation of the Canal.

Recommendations

The BRVNHCC should work with the City of Worcester, the Commonwealth, and local property owners to protect and stabilize this important segment of the Blackstone Canal. Action items should include clearing the canal trench of debris, fill, and overgrowth, further study on making the canal segment accessible or visible to Blackstone River Bikeway users, and development of interpretive infrastructure for the segment to be placed on site.

Brosnihan Square-Hurley Square Area, Worcester

The Brosnihan Square-Hurley Square Area of the Blackstone Canal consists of a 0.6-mile long segment of filled canal between the intersections of Millbury Street and Ballard Road (Route 146) on the south (Hurley Square) and Millbury Street and Interstate 290 on the north (Brosnihan Square) (Figure 13). Although the Brosnihan Square-Hurley Square Area no longer contains any visible extant canal-era resources, the segment is situated in a pivotal location for interpretation of the former path of the Blackstone Canal in the area.



The Brosnihan Square-Hurley Square Area has been the subject of several major planning efforts focusing on the revitalization of important local and regional waterways and the transformation of the Hurley Square area into a northern gateway to the Blackstone River Valley. Brosnihan Square was the southern terminus of the study area for the City of Worcester's 2003 *Blackstone Canal Feasibility Study*, which recommended creation of parkland, development of bike and pedestrian access to adjacent neighborhoods, and a waterway amenity between the former Mill Brook and the Middle River. The City of Worcester, in cooperation with regional partners, is also working to create a Northern Gateway Visitor Center in the former Washburn & Moen Wireworks building at 744 Millbury Street in Hurley Square. This center is slated to house a visitor center with tourist information, historical exhibits, and recreational amenities, as well as shops, a restaurant, and office space. The Greater Worcester Land Trust holds a conservation restriction on a 19-acre parcel of land west of the Canal in this segment, on both banks of the Middle River and is working with state and local partners to create a Middle River Park along this river segment. The BRVNHCC has been an active partner in these efforts.

Resources

The Blackstone Canal is no longer visible in this segment, and has been altered and filled many times since the mid 19th century. As originally constructed, the Blackstone Canal paralleled the path of present-day Millbury Street, between the street and the Blackstone/Middle River on what is now the Providence & Worcester Railroad right-of-way. This 0.6-mile segment of the Canal contains the archaeological remains of Lock #46 and Lock #47, as well as a basin site. After passing under what is now Interstate 290, the Canal shifted northeast and followed the present-day path of Harding Street.

The only visible extant canal-era resources in this segment are the late 18th century dam and mill pond associated with the Thomas Burbank Paper Mill on the Middle River. Extant historic resources postdating the operation of the Blackstone Canal in the Brosnihan Square-Hurley Square Area include three late 19th century buildings associated with the Washburn & Moen Wire Manufacturing Company, the ca. 1870 Mill Brook Sewer Portal, Burbank's Mill Pond, and two early 20th century Standard Oil Company garages. For additional historic and archaeological resources included in this segment, please refer to the Worcester section of Chapter 2: Resource Inventory and Existing Conditions.

Ownership and Access

Much of the land in the vicinity of this segment of the Blackstone Canal is under public ownership or non-profit conservation management. The City of Worcester's Middle River Park abuts the Brosnihan Square-Hurley Square Area to the west, and the Greater Worcester Land Trust owns a conservation restriction on a 19.4-acre parcel of property on both banks of the Middle River in this location. The former path of the Blackstone Canal remains under active railroad right-of-way. The Brosnihan Square-Hurley Square Area is easily accessible via car on Millbury

Street/Route 146 and will be accessible via bicycle with the completion of the Blackstone River Bikeway along Millbury Street.

Opportunities

Although there are no visible remains of the Blackstone Canal in the Brosnihan Square-Hurley Square Area, the segment offers a key opportunity for interpretation of the former path of the Blackstone Canal. The planned visitor center at the former Washburn & Moen Wire Manufacturing building, the proximity of the planned Blackstone River Bikeway, and the existing Middle River Park, and the potential for future development of additional parkland in the area will make this segment a destination point for local residents and visitors. The Blackstone Canal could be interpreted in this segment through the creation of a pedestrian walkway along the Canal path using paving patterns to mark the routes of the canal trench and towpath in the area. The lock sites in the segment could be marked with contrasting pavement patterns, and interpreted with text and photo panels. A similar approach to interpreting a filled section of the Blackstone Canal was proposed for interpretation of the Canal path along the southern part of Harding Street in the 2003 *Blackstone Canal Feasibility Study*. In addition to interpreting the path of the Canal, a pedestrian walkway through this segment would also serve as an access route through Middle River Park.

Recommendations

Interpretation of the historic path of the Blackstone Canal through the Brosnihan Square-Hurley-Square area should be incorporated into the planning efforts for the Middle River Park and the Northern Gateway Visitor Center.

Summary of Recommendations

Town	Segment	Ownership	Access	Opportunities			
				<i>Protect</i>	<i>Stabilize</i>	<i>Interpret</i>	<i>Restore</i>
Blackstone	Blackstone Manufacturing Company Area	Public and Private	Surface Roads, Bikeway, River	X		X	
Millville	Millville Lock Area	Public and Private	Surface Roads, Bikeway, River, Southern New England Trunkline Trail	X	X	X	X
Uxbridge	Skull Rock Area	Public and Private	River, Bikeway	X	X	X	X
Northbridge	Plummer's Landing -Riverdale Mill Area	Public and Private	Surface Roads, Bikeway	X	X	X	X
Grafton	Fisherville	Private	Surface Roads, River, Bikeway	X	X	X	X
Grafton	Leland's Landing	Public and Private	Surface Roads, River, Bikeway	X	X	X	
Sutton	Depot Street-Chase Road Area	Private	Surface Roads	X	X		
Millbury	Cross Road-Grafton Street Area	Private	Bikeway	X	X		X
Worcester	Millbury-Winnipeg Street Area	Public and Private	Bikeway, Surface Roads	X	X	X	
Worcester	Brosnihan Square/Hurley Square	Public and Private	Bikeway, Surface Roads	X		X	X

Appendix A

February 2005 Public Workshop Notes



**Meeting
Notes**

Attendees: List Attached
Chuck Arning, BRVNHCC
Scott Schilt, VHB
Elaine Stiles, VHB
Bill DeSantis, VHB
Paul Knapik, VHB
Justin Fay, VHB

Date/Time: February 15, 2005/7:00 PM

Project No.: 09097.00

Place: The Community Barn,
Grafton, MA

Re: Blackstone Canal Preservation Study
Workshop

Notes taken by: Attendees

As part of the Blackstone Canal Preservation Study, an Information Exchange Workshop was held to present draft maps of the historic location of the Blackstone Canal and towpath segments in Massachusetts, along with identified resources and features. Attendees were asked to provide input based on their historical expertise and first-hand knowledge of the canal to refine map information and document existing conditions. This input was collected in the form of written responses to three questions for each canal segment (documented below), as well as comments recorded directly onto the draft maps. Many of the comments recorded on the maps were site specific and indicated with arrows, circles, and shading. While these specific locations may not be evident in this memo, the comments will be incorporated in the subsequent refinement of the canal maps.

Blackstone/Millville

1. Is there anything on these maps that we should focus on as a historical resource?
 - National Register Districts abutting Canal.
 - Blackstone: Interpretive signage on Canal Street locks 18, 19, 20.
 - Mile markers 18, 19, and 21.
 - Blackstone: Canal remnant between St. Paul and Saranac Dam with bridge abutment access from Farnum Street dead end.
 - Canal era buildings in Millville.
 - Maps tend not to identify canal era bridgework.
 - Millville: Stabilize lock 21 and gates; dredge Angelica Brook.
 - Pre and post canal mill ruins in Millville on both sides of river and island.

- Millville: Associated 1828 Alexander Wilson Power canal on northeast bank.
2. Are there any inconsistencies on these maps?
 - Alignment along Canal Street Blackstone?
 - Show towpath bridges across river south of locks 21 and 18.
 - In general canal route (could) should show towpath and watered route.
 3. Where in your community do you think the canal can be preserved and made accessible?
 - Blackstone: Along Canal Street Blackstone to state line and beyond from St. Paul Street between road and railroad crossing.
 - Blackstone: Access to walk along Factory Pond by mile marker 18.
 - Blackstone: Acquire property between P&W and Factory Pond with bike route.
 - Blackstone: Access to canal and slack water of Route 122 around Mass. Electric substation.
 - Blackstone: Protect property around mile 19 between 122, bikeway, P&W, canal.
 - Hedquist property on south side of river (not canal).
 - Millville: Bark property and Turtle Island.
 - Millville: Acquire Tulemeld property between Triad and Central Street.
 - Millville lock to Central Street
 - Easements along towpath from Central Street northwest to Uxbridge.
 4. Comments recorded on map:
 - Preserve this section (indicated near 20 mile marker)
 - Towpath bridge
 - Tulemeld mayflower hill
 - Bark property
 - State owned land
 - Turtle Island
 - Hedquist property

Uxbridge

1. Is there anything on these maps that we should focus on as a historical resource?
 - Plummer's Landing – recreate lock basin.
 - Need to located "old" mills – Scott's, Waucantuck, Uxbridge, Worsted, Wheelock, etc.
 - Widow Willard Bridge.
 - Skull Rock Road – circa 1830.
 - Skull Rock Bridge restoration.
 - Locate "Ironstone" in S. Uxbridge. Some low grade iron ore was mined there.
 - Mumford aqueduct site.

- Mile marker 25 at Worcester Historical Society.
2. Are there any inconsistencies on these maps?
- 21 mile marker closer to river?
 - Mile marker #22 mislocated closer to power lines to the south.
 - Although Phelps show towpath on south side between mile 21.5 and 23, Val questions that evidence may be on north.
 - Skull Rock lock #22 is labeled as "bridge site."
 - Skull Rock Bridge site re-label.
 - Alignment near P&W trestle bridge north of 122 (sketch).
 - Capron canal spur could be shown.
 - Lock 23 should be relocated up canal short distance.
 - Lock 24 is close, but...
 - Central Mill aka Stanley Woolen.
 - In general, maps could show state and town land.
 - Alignment should be obvious near mile marker 26.
3. Where in your community do you think the canal can be preserved and made accessible?
- Recommend easement and trail head access at River Road toward mile marker 21 and Millville.
 - Protect stream as possible source to re-water Skull Rock level.
 - Short dry remnant at Prospect Cemetery.
 - Canoe access - 1-1½ foot "dam" at Skull Rock lock to re-water length back to 122.
 - Acquire property from 122 to Skull Rock and beyond [2 illegible words].
 - S. Uxbridge - protect land along Emerson Brook from SNETT to river.
4. Map comments
- Verify bike path

Northbridge

1. Is there anything on these maps that we should focus on as a historical resource?
- 30 mile marker closer to canal? Yes - No.
 - Repair damaged towpath 1,600' south of Church Street ext. (P.N.)
 - North of Riverdale Mill, the canal prism is under the out buildings.
 - Same sections of canal from redevelopment from Grafton to Northbridge. (P.N.)
 - Dead Man's River should feed into canal from continuous fresh water. It goes under R.R. tracks. (P.N.)
 - Purchase land with canal remnants between Church Street, Northbridge and Riverdale Street, Northbridge. Restore canal segments. Add to park trail system.
 - Lincoln Bordeaux Tainter Hill Road Millbury has canal marker #24. (P.N.)

- Just south of Goat Hill lock, the stream from the river is a feeder shown on the Phelps map.
 - Restore Plummer's Landing boat basin at Church Street. Expose Plummer's foundations.
 - More archaeological research at landing sites for education and prior to restoration.
 - Restore Goat Hill lock. Re-water canal between Route 16 North to Church Street Northbridge. Repair breaches in canal in Northbridge.
 - Repair canal washnuts in back of Northbridge sewer treatment plant. Repair eroded trail.
2. Are there any inconsistencies on these maps?
- At Riverdale, the mill is over the canal and the outfall is the canal until it reaches the river.
 - Without visible canal remains it's difficult to determine inconsistencies. Parcel level deed research can be used to verify canal locations in lieu of visible remains.
3. Where in your community do you think the canal can be preserved and made accessible?
- Hydrology – use flow from Dead River (at off section of Blackstone above Plummer's Landing) to pump into restored canal.
 - The canal can be watered and restored from Church Street to Goat Hill lock and the lock restored to use.
 - Restore canal in State Park south of Church Street – canal towpath has been broken by river current. Canal bed full of down trees.
 - Restore canal with archaeological dig data at Plummer's Landing/Lock #26
4. Comments recorded on map:
- Dead River (indicated near 30 mile marker)

Grafton

1. Is there anything on these maps that we should focus on as a historical resource?
- Lock 30 part of mill built cotton facility on lock 1850s.
 - What environmental concerns are there along the waterway?
 - Canal as it runs through Fisherville Mill.
2. Are there any inconsistencies on these maps?
- Lock 29 – near to canal?
3. Where in your community do you think the canal can be preserved and made accessible?
- (No recorded comments)
4. Comments recorded on map:
- 1847 RR trestle (Historic Register)

- Owner unknown; ready for tax title; DEP problems
- Wilkinsonville RR station (1880s); original station site; current station site
- Possible town open space acquisition – Follette Street (12-15 acre farm)
- Original NHRR double tracks
- Possible contamination
- Proposed Follette Street Park (town)
- 3 historic homes – lock houses?
- Town owned land
- Wenc Square
- Potential mills bricks along?
- Water control structure found – some granite. Chuck Arning knows.
- 57 acres ready for tax title. Traced back to Fisher Manufacturing.
- Riverview Park
- Mill village housing
- Historic Ferry Park (baseball)
- South Grafton Library
- Remediation ongoing (indicated near Fisher Manufacturing Co.)
- Box top lots area (Richard Chidos)
- Old RR water station – steam trains drew out of canal
- Favorable location for picnic area and canoe launch (near water/sewer treatment plant)
- Grafton Land Trust has duck preserve (island)
- Plans of Farnumsville Mill complex – mill-cotton shed: theater/bowling lanes, executive parking garage
- Water turbine in Farnumsville Mill; working until 1990ish; bought by Riverdale Mill
- Area for wetlands replication project (Donna Williams of corridor)

Sutton

1. Is there anything on these maps that we should focus on as a historical resource?
 - Canal visible with soft curve towpath below Singing Dam by railroad bridge over river.
2. Are there any inconsistencies on these maps?
 - (No recorded comments)
3. Where in your community do you think the canal can be preserved and made accessible?
 - (No recorded comments)
4. Where in your community do you think the canal can be preserved and made accessible?
 - Old path of bikeway (further south)
 - Canal and towpath visible (indicated east of 36 mile marker)

- RR arch (indicated near Providence and Worcester Railroad Co. Bridge Over Canal)
- Through building? (indicated near Sutton Manufacturing Co./Army and Navy Cotton Duck Co.)
- The towpath and canal are side by side through here – could be rewatered (indicated near 36 mile marker)

Millbury

1. Is there anything on these maps that we should focus on as a historical resource?
 - Between mile 39 and the bike path parking lot at Route 122A – the bike path follows closely by the canal route. This should be signed appropriately.
 - Mile 40 – need to investigate possible canal remnants in area south of Mass Pike to Route 122A interchange.
 - Lock 37 or 38 – gate keeper’s house still standing.
 - Lock 42 site – consider interpretive signage along Canal Street, where all the locks were to get over the steepest grade.
 - Canal milestones 37 and 38 are still there – but hidden. Ask Cyndi Burr.
 - Vicinity of canal mile marker 40 – believe that the Town of Millbury will ultimately own the land – suggest interpretive loop trail starting at Bailey Bridge at old McCracken Road crossing.
 - Feeder canals.
2. Are there any inconsistencies on these maps?
 - Correct numbering for lock 39 site – should be lock 40.
 - Only church noted on any map.
3. Where in your community do you think the canal can be preserved and made accessible?
 - Section of canal that runs from Millbury to Sutton line.
4. Comments recorded on map:
 - Remnants of towpath (indicated near 40 mile marker)
 - Towpath visible (indicated near 39 mile marker)
 - Check lock numbers (two lock 39 sites indicated on map)
 - Lock 39 site under store
 - Original St. Brigid’s Church site
 - Lock 36 site?
 - Lock remnants still there (indicated near lock 35 site)
 - Investigate re-watering possibilities in this area (indicated near lock 35)
 - Cross Street, not Route 122 (indicated north of 37 mile marker)
 - Route 122

Worcester

1. Is there anything on these maps that we should focus on as a historical resource?
 - What impact does the “rerouting” of Ballard Street, etc. have on canal reconstruction?

2. Are there any inconsistencies on these maps?
 - Lock 49? 48: Kelly Square. I thought the canal had 48 locks!
 - What about the associated system of reservoirs?
 - Reservoirs; gates; feeder canals.
 - Just off Granite Street the canal should be lower, bikeway higher. Can see canal.
 - Thomas Street; Central Street; canal basin.

3. Where in your community do you think the canal can be preserved and made accessible?
 - Bring the bike path through Compton Park to Harding Street.
 - The canal can be recreated behind Union Station, in the middle of Harding Street, and all they way to the Centrum!
 - Lock 48 (49?) should be recreated at Kelly Square!

4. Comments recorded on map:
 - Good canal and towpath remnants (near Millbury town line).

Blackstone Canal Preservation Study

Meeting: Information Exchange Workshop

Date/Time: February 15, 2005 7:00 PM

(Please Print)

Name	Organization	Address	E-Mail
VAL STEGEMOEN	DR BLACKSTONE HERITAGE	287 OAK ST UXBRIDGE	VAL.STEGEMOEN@STATE MA.US
John McLymmer	Assumption College		jmaclym@assumption.edu
Joe Torrese	Grafton Land Trust	63 Nottingham Rd Grafton	
David Barber	Blackstone Canal Conservancy	66 Ballou Rd Hopedeck MA	dav.laudrey.barber@compuserve.com
Richard Chiros	ME	7 Depot St	Richard@Woodhous.com
Jill Dupree	Holy Cross	1 College St Worcester	jdupree@holycross.edu
Cynthia Burke	MILLBURY IMPROVEMENT	PO Box 767 Millbury	7354046@COMPUSERVE.COM
Leonard W. Lapardo	Mass. Hist. Comm	Mass. Behrens Bldg 220 Merriman Blvd Boston	leonard.lapardo@sec.state.ma.us
Bill W. Mac	Worcester Municipal	30 Elm Boston	
Daniel Jewell		106 North Main St North Grafton	Daniel-J2002@yaho.com
Carolyn Hudson		200 Main St SO. GRAFTON	Chiphud@aol
LINDA CASEY		6 Hillside Grafton	
Ed Hazard	Grafton Land Trust	16 South St.	

Blackstone Canal Preservation Study

Meeting: Information Exchange Workshop

Date/Time: February 15, 2005 7:00 PM

(Please Print)

Name	Organization	Address	E-Mail
John LaPoint	SPRATTON HISTORICAL COMMISSION	220 PROVIDENCE RD, #505	GLP5L @ AOL.COM
John Gephart	AIKZ	11 Willard Street	john.gephart@willardchase.com
Stephen Bishop	COW	2 Worcester St	bishop5@ci.worcester.ma.us
Walter (Water)	Iron shoe Company	100 Quaker 12 Weymouth 159 Memorial Dr Shrewsbury, MA	
Colleen Orrell			colleenep@townisp.com
Bob + Marlene Largess	Canal CDC	298 Boston Rd	Largessfarm@charter.net
Phil Ireland	BRWA	39 Pine St W. Uxbridge 01588	
Phil Nyberg	Millbury Improvement Initiative	PO Box 13	W. Millbury, MA 01586
George Peterson	4 th Worcester Dist.		
John Pelousis	DCR	271 Oak St Uxbridge	John.Pelousis@state.ma.us
Margaret		1 Oxford Rd Barlington	Margaret@is94@aol.com

Blackstone Canal Preservation Study

Meeting: Information Exchange Workshop

Date/Time: February 15, 2005 7:00 PM

(Please Print)

Name	Organization	Address	E-Mail
Denise Worden		16 East St. / MERRIMACK	DWORDEN@AOL.COM

Appendix B

Tax Parcels for Key Canal Segments

Tax Parcels Data for Key Canal Segments for Restoration

Map #	Parcel No(s).	Ownership
<i>Millville Lock Area, Millville</i>		
123	90	Commonwealth of MA
123	89	Town of Millville
123	86, 87, 88, 131	Private
<i>Skull Rock Area, Uxbridge</i>		
35	4474	Town of Uxbridge
35	1987, 3862, 4369	Private
<i>Plummer's Landing-Riverdale Mill Area, Northbridge</i>		
22	41, 62	Private
23	E-22, T-26	Private
27	4, 5	Private
28	13	Private
28	E-48, E-49	Commonwealth of MA
<i>Fisherville Area, Grafton</i>		
115	2, 121	Private
106	13, 13A	Unknown, Town of Grafton, Providence & Worcester Railroad
105	20	Town of Grafton
<i>Cross Road-Grafton Street Area, Millbury</i>		
54	116, 117, 127, 54-127	Private
55	54-127	Private
64	54-127	Private
65	54-127	Private
61054	54-127	Private

Appendix C

Conceptual Cost Estimates

Note: The conceptual cost estimates presented in Appendix C are preliminary. They include anticipated costs for conceptual, short-term stabilization and basic rehabilitation and interpretive tasks. They do not include costs associated with land acquisition, planning activities, or any necessary environmental, historical, or archaeological study that may be required to implement these actions.

**BLACKSTONE CANAL PRESERVATION STUDY
CONCEPTUAL ESTIMATE OF COSTS
BLACKSTONE TO WORCESTER, MA**

DATE: 06/13/2005

EST. BY: S.STEARNS, P.E.

CHECKED BY: W. DESANTIS, P.E.

ACTIVITY TYPE*	WORK DESCRIPTION	QUANTITY	UNIT	UNIT COST**	TOTAL COST
MILLVILLE LOCK AREA, MILLVILLE					
B	CLEAR BOTH SIDES OF LOCK	7200 SF		\$0.50	\$3,600.00
B	REMOVE TRASH	1 LS		\$2,000.00	\$2,000.00
B	MINOR MASONRY/STONE WORK	240 SF		\$15.00	\$3,600.00
C	NEW 5' STONE DUST TRAIL FROM BIKEPATH TO LOCK	500 LF		\$40.00	\$20,000.00
C	INTERPRETIVE SIGN	1 EA		\$8,000.00	\$8,000.00
				SITE SUBTOTAL	\$37,200.00
				25% CONTINGENCY	\$9,300.00
SKULL ROCK LOCK AREA, UXBRIDGE					
FROM LOCK TO CANAL BRIDGE, BLACKSTONE RIVER BIKEWAY CONSTRUCTION WILL ADDRESS THE RECOMMENDED IMPROVEMENTS. ACTIVITIES BELOW ARE FOR NORTH OF OLD CANAL BRIDGE, WHERE BRBW IS NOT ALONG THE CANAL.					
C	SELECTIVE CLEARING	15000 SF		\$0.50	\$7,500.00
C	NEW 5' STONE DUST TRAIL ON TOWPATH	1500 LF		\$40.00	\$60,000.00
C	INTERPRETIVE SIGN	2 EA		\$8,000.00	\$16,000.00
				SITE SUBTOTAL	\$83,500.00
				25% CONTINGENCY	\$20,875.00
PLUMMERS LANDING - RIVERDALE MILL AREA, NORTHBRIDGE					
BLACKSTONE RIVER BIKEWAY WILL ADDRESS MOST OF THE RECOMMENDED IMPROVEMENTS.					
C	CLEAR BRUSH IN CANAL AT PLUMMERS LANDING	5000 SF		\$0.50	\$2,500.00
C	REMOVE SILT IN CANAL AT PLUMMERS LANDING	370 CY		\$10.00	\$3,700.00
				SITE SUBTOTAL	\$6,200.00
				25% CONTINGENCY	\$1,550.00
FISHERVILLE AREA, GRAFTON					
C	INTERPRETIVE SIGN ON BIKEPATH SOUTH OF MAIN ST.	1 EA		\$8,000.00	\$8,000.00
C	5' PUBLIC ACCES PATH IN CONJ. WITH FISHERVILLE MILL REDEVELOP.	400 LF		\$40.00	\$16,000.00
C	INTERPRETIVE SIGN IN CONJ. WITH FISHERVILLE MILL REDEVELOP.	1 EA		\$8,000.00	\$8,000.00
				SITE SUBTOTAL	\$32,000.00
				25% CONTINGENCY	\$8,000.00
CROSS ROAD - GRAFTON STREET, MILLBURY					
FROM MILLBURY/SUTTON LINE TO OLD CROSS RD BRIDGE OVER CANAL & RIVER, BLACKSTONE RIVER BIKEWAY CONSTRUCTION WILL ADDRESS THE RECOMMENDED IMPROVEMENTS. FROM CROSS RD BRIDGE OVER CANAL & RIVER NORTH, CANAL & REMNANTS ARE ON ACTIVE MASS ELECTRIC PROPERTY AND THEREFORE IMPROVEMENTS ARE LIMITED TO INTERPRETIVE SIGN ON GRAFTON STREET					
C	INTERPRETIVE SIGN	2 EA		\$8,000.00	\$16,000.00
				SITE SUBTOTAL	\$16,000.00
				25% CONTINGENCY	\$4,000.00
				TOTAL FOR ALL SITES	\$218,625.00

*ACTIVITY TYPE B IS FOR STABILIZING. ACTIVITY TYPE C IS FOR REHABILITATING & INTERPRETING

**PRICES BASED ON RECENT R.I. AND MA BIKEWAY, TRANSPORTATION ENHANCEMENT & HIGHWAY DEPARTMENT PRICES

Appendix D

Secretary of the Interior's Standards for the Rehabilitation and Restoration of Historic Properties

The Secretary of the Interior's Standards for the Rehabilitation of Historic Properties

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

The Secretary of the Interior's Standards for the Restoration of Historic Properties

1. A property will be used as it was historically or be given a new use which reflects the property's restoration period.
2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period will not be undertaken.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.
6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and where possible, materials.
7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.
8. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
10. Designs that were never executed historically will not be constructed.